INTRODUCTION AND DISPERSAL OF EXOTIC FOOD PLANTS INTO EUROPE DURING THE ROMAN AND MEDIEVAL PERIODS (Volume I)

Thesis submitted for the degree of
Doctor of Philosophy
at the University of Leicester

by

Alexandra Livarda

School of Archaeology and Ancient History
University of Leicester

June 2008

Introduction and dispersal of exotic food plants into Europe during the Roman and medieval periods

Alexandra Livarda

Abstract

This thesis examines the introduction and importation of numerous exotic food plants into north-western and western Europe during the Roman and medieval periods. It constitutes the first part of a wider, ongoing research project directed by Prof. Van der Veen on "Long-Distance Trade and Agricultural Development". The aim is to establish the dispersal histories of these exotics and highlight the active role of food in processes of socio-economic change in past societies.

Relevant data were collected from all available archaeobotanical records in the area and period under study, and brought together in a uniform database format. Information was gathered on the species presence, mode of preservation and accuracy of identification. Sites are classified by period (Roman/early medieval/medieval), type (urban/rural/military), status (elite/non-elite) and context (secular/ceremonial/religious). Two types of analyses are employed to identify the chronological, social and geographical dispersal of the most common (forty-two) species: a species-specific, and a multivariate technique (Correspondence Analysis). Results indicate the emergence of very distinct dispersal patterns for each period and for the various species. In the Roman period numerous new food plants become available in different contexts. Many species that could be locally cultivated become incorporated into local diet, particularly near the Rhine frontier, while rarer species are limited to military, major urban and elite sites. In the following period most exotics disappear, indicating a turn towards more local dietary and agricultural regimes and highlighting the disjointed socio-economic context of the early medieval world. A shift in activities northwards is observed during the medieval period when the diversity of species increases again. Different food plants become prominent but most are associated with towns and the urban elite, marking socio-economic divisions.

This study advances understanding of the changing nature of the exotic status of many species, and reveals these as crucial guides to charting human and economic impacts and movements.

For my parents, Sofia and Tasos Livardas

"This vegetable world, which to us appears so placid, so resigned, in which all seems acquiescence, silence, obedience, meditation, is, on the contrary, that in which the revolt against destiny is the most vehement and the most stubborn…If it be difficult to discover among the great laws that oppress us that which weighs heaviest upon our shoulders, in the case of the plant there is no doubt: it is the law that condemns it to immobility from its birth to its death. Therefore it knows better than we, who disseminate our efforts, against what first to rise in rebellion. And the energy of its fixed idea, mounting from the darkness of the roots to become organized and full-blown in the light of the flower, is an incomparable spectacle. It exerts itself wholly with one object: to escape above from the fatality below, to evade, to transgress the heavy and sombre law, to set itself free, to shatter the narrow sphere, to invent or invoke wings, to escape as far as it can, to conquer the space in which destiny encloses it, to approach another kingdom, to penetrate into a moving and active world….The flower sets man a prodigious example of insubmission, courage, perseverance and ingenuity. If we had applied to the removal of various necessities that crush us…one half of the energy displayed by any little flower in our gardens, we may well believe that our lot would be very different from what it is"

Maurice Maeterlinck

The Intelligence of the Flowers 1907 (pp. 10-13)

(translation into English by Alexander Teixeira de Mattos 2001,
University Press of the Pacific, Honolulu, Hawaii)

CONTENTS

List of Figures ix
List of Tables xiv
Acknowledgements xv

VOLUME I

CHAPTER 1: Introduction 2

CHAPTER 2: Research Background: Perceptions of Food and its Roles in Contemporary Research 7

2.1 Why Study Food: Its Cultural and Social Dimensions 8
2.2 Food, Status and Social Relations 11
2.3 Food and Cultural Differences 17
2.4 Food, Ritual and Religion 21
2.5 Exotics and their Potential in Archaeobotanical Research 25

CHAPTER 3: Methodology 29

3.1 Data Collection 29
3.2 Study Area 31
3.3 Time Periods 31
3.4 Site Type Classification 34
3.5 Sampling and Contextual Assessment 37
3.6 The Species 37
3.6.1 Selection of Taxa 37
3.6.2 Quantification 38
3.6.3 Accuracy of Identification 38
3.6.4 Preservation 39
3.7 Terminology 39
3.8 The Database 40
3.9 Methods of Analysis 41
3.9.1 Univariate Analysis 41
3.9.2 Multivariate Analysis 42

CHAPTER 4: Results **45**
4.1 The Records 45
4.1.1 Roman 46
4.1.2 Early Medieval 46
4.1.3 Medieval 47
4.2 Geographical Distribution 48
4.2.1 The Roman Period 49
4.2.2 The Early Medieval Period 49
4.2.3 The Medieval Period 50
4.3 The Food Plants 50
4.3.1 Absent and Rare Food Plants 50
4.3.2 Distribution of Species over Time 53
4.3.2.1 The Roman Period 53
4.3.2.2 The Early Medieval Period 54
4.3.2.3 The Medieval Period 55
4.4 Mode of Preservation 55
4.5 Data Selection for Detailed Analysis 58
4.6 Summary and Concluding Remarks 62

CHAPTER 5: Univariate Analysis: Chronological, Social and Spatial Distributions **64**
5.1 Chronological Distribution 64
5.2 Social Access 67
5.2.1 Pattern 1: Decrease 71
5.2.2 Pattern 2: Increase (a) 73
5.2.3 Pattern 3: Increase (b) 74
5.2.4 Pattern 4: Stable 76
5.2.5 Ceremonial Contexts 77
5.3 Geographical Distribution 78
5.3.1 Record Distribution 78
5.3.2 Pattern 1: Decrease 81
5.3.3 Pattern 2: Increase (a) 83
5.3.4 Pattern 3: Increase (b) 84
5.3.5 Pattern 4: Stable 85
5.4 Summary 86

CHAPTER 6: Multivariate Analysis **90**
6.1 The Overall Data 90
6.1.1 Waterlogged Data 90
6.1.2 Carbonized Data 91
6.2 The Roman Period 92
6.2.1 Waterlogged Data 92
6.2.2 Carbonized Data 93
6.3 The Early Medieval Period 94
6.3.1 Waterlogged Data 94
6.3.2 Carbonized Data 95
6.4 The Medieval Period 96
6.4.1 Waterlogged Data 96
6.4.2 Carbonized data 97
6.5 Summary 98

CHAPTER 7: Discussion **100**
7.1 Taphonomic and Other Biases in the Overall Results 100
7.2 The Roman 'Culinary Map' 102
7.2.1 New Food Plants: Access and Distribution 102
7.2.2 The Role of the Army 106
7.2.3 Ceremonial Contexts 110
7.2.4 Regional Variations 115
7.2.5 The Role and Impact of the Roman Empire: A Comment 120
7.3 The Early Medieval Phase 121
7.3.1 A Different Culinary Regime 121
7.3.2 Changes in the Culinary Geography 124
7.4 Medieval Foodways 127
7.4.1 Ingredients of a New Cuisine 127
7.4.2 Urban Elite versus Peasantry 128
7.4.3 Spatial Distribution: Regional Specialisation or Homogenisation? 136
7.5 Concluding Remark 139

CHAPTER 8: Summary and Conclusions **140**

BIBLIOGRAPHY **149**

APPENDICES **177**
APPENDIX I 178
APPENDIX II 182

Addendum: One CD-R containing an excel file with the sites used in this thesis (including record codes) and their bibliographical references

VOLUME II

FIGURES **185**
Chapter 3 186
Chapter 4 190
Chapter 5 198
Chapter 6 284

TABLES **300**
Chapter 3 301
Chapter 4 305
Chapter 5 319
Chapter 7 328

LIST OF FIGURES

3.1:	The geographical area of study.	187
3.2:	The database design.	188
3.3:	Access form where the report details are stored.	189
3.4:	Access form where the record specific information is stored.	189
4.1a:	Number of Roman records with exotics, by broad site category.	191
4.1b:	Number of Roman records with exotics, by detailed site type.	191
4.1c:	Number of early medieval records with exotics, by broad site category.	192
4.1d:	Number of early medieval records with exotics, by detailed site type.	192
4.1e:	Number of medieval records with exotics, by broad site category.	193
4.1f:	Number of medieval records with exotics, by detailed site type.	193
4.2a:	Geographical distribution of the Roman records.	194
4.2b:	Geographical distribution of the early medieval records.	195
4.2c:	Geographical distribution of the medieval records.	196
4.3:	Relative proportion of preservation mode of species with >20 occurrences.	197
5.1a:	Pattern 1, waterlogged species which decrease after the Roman period, plotted as the percentage of records with a particular species, by broad period (waterlogged records only).	199
5.1b:	Pattern 1, carbonized species which decrease after the Roman period, plotted as the percentage of records with a particular species, by broad period (carbonized records only).	200
5.1c:	Pattern 2, common waterlogged species which increase further in the medieval period, plotted as the percentage of records with a particular species, by broad period (waterlogged records only).	201
5.1d:	Pattern 3, waterlogged species which increase in the medieval period, plotted as the percentage of records with a particular species, by broad period (waterlogged records only).	202
5.1e:	Pattern 4, waterlogged species which remain relatively stable, plotted as the percentage of records with a particular species, by broad period (waterlogged records only).	203
5.2a:	The relative proportion of the various site types with waterlogged food plants in the Roman period.	204
5.2b:	The relative proportion of the various site types with carbonized food plants in the Roman period.	204
5.2c:	The relative proportion of the various site types with waterlogged food plants in the early medieval period.	205
5.2d:	The relative proportion of the various site types with carbonized food plants in the early medieval period.	205
5.2e:	The relative proportion of the various site types with waterlogged food	

plants in the medieval period. 206
5.2f: The relative proportion of the various site types with carbonized food plants in the medieval period. 206
5.2.1a: The social distribution of waterlogged Pattern 1 species in the Roman period. 207
5.2.1b: Approximate abundance of each species (of Pattern 1 waterlogged) in selected site types for the Roman period. 208
5.2.1c: The social distribution of waterlogged celery (Pattern 1) in the early medieval period. 209
5.2.1d: Approximate abundance of early medieval waterlogged celery records in selected site types. 210
5.2.1e: The social distribution of waterlogged Pattern 1 species in the medieval period. 211
5.2.1f: Approximate abundance of waterlogged celery, coriander, peach and summer savory in selected site types for the medieval period. 212
5.2.1g: The social distribution of carbonized Pattern 1 species in the Roman period. 213
5.2.1h: Approximate abundance of each species (of Pattern 1 carbonized) in selected site types for the Roman period. 214
5.2.1i: The social distribution of carbonized Pattern 1 species in the early medieval period. 215
5.2.1j: The social distribution of carbonized Pattern 1 species in the medieval period. 216
5.2.1k: Approximate abundance of medieval carbonized lentil records in selected site types. 217
5.2.2a: The social distribution of waterlogged Pattern 2 species in the Roman period. 218
5.2.2b: Approximate abundance of each species (of Pattern 2 waterlogged) in selected site types for the Roman period. 219
5.2.2c: The social distribution of waterlogged Pattern 2 species in the early medieval period. 220
5.2.2d: Approximate abundance of each species (of Pattern 2 waterlogged) in selected site types for the early medieval period. 221
5.2.2e: The social distribution of waterlogged Pattern 2 species in the medieval period. 222
5.2.2f: Approximate abundance of each species (of Pattern 2 waterlogged) in selected site types for the medieval period. 223
5.2.2g: The social distribution of carbonized grape remains per time period. 224
5.2.2h: Approximate abundance of carbonized grape in selected site types for the Roman, early medieval and medieval period. 225
5.2.3a: The social distribution of waterlogged Pattern 3 species in the Roman period. 226
5.2.3b: The social distribution of waterlogged Pattern 3 species in the early medieval period. 227
5.2.3c: Approximate abundance of waterlogged hemp and turnip in selected site types for the early medieval period. 228
5.2.3d: The social distribution of waterlogged Pattern 3 species in the medieval period. 229

5.2.3e: Approximate abundance of the most common species (of Pattern 3 waterlogged) in selected site types for the medieval period. 230
5.2.3f: Approximate abundance of some rarer species (of Pattern 3 waterlogged) in selected site types for the medieval period. 231
5.2.4a: The social distribution of waterlogged Pattern 4 species in the Roman period. 232
5.2.4b: The social distribution of waterlogged Pattern 4 species in the early medieval period. 233
5.2.4c: The social distribution of waterlogged Pattern 4 species in the medieval period. 234
5.2.4d: Approximate abundance of waterlogged dill in selected site types for the Roman, early medieval and medieval period. 235
5.3.1a: Distribution of waterlogged records in the Roman period. 236
5.3.1b: Bio-geographical distribution of waterlogged records in the Roman period. 237
5.3.1c: Distribution of carbonized records in the Roman period. 238
5.3.1d: Bio-geographical distribution of carbonized records in the Roman period. 239
5.3.1e: Distribution of waterlogged records in the early medieval period. 240
5.3.1f: Bio-geographical distribution of waterlogged records in the early medieval period. 241
5.3.1g: Distribution of carbonized records in the early medieval period. 242
5.3.1h: Bio-geographical distribution of carbonized records in the early medieval period. 243
5.3.1i: Distribution of waterlogged records in the medieval period. 244
5.3.1j: Bio-geographical distribution of waterlogged records in the medieval period. 245
5.3.1k: Distribution of carbonized records in the medieval period. 246
5.3.1l: Bio-geographical distribution of carbonized records in the medieval period. 247
5.3.2a: Distribution of waterlogged oregano, olive and summer savory in the Roman period. 248
5.3.2b: Distribution of waterlogged coriander and celery in the Roman period. 249
5.3.2c: Distribution of waterlogged peach, bottle-gourd and melon in the Roman period. 250
5.3.2d: Distribution of waterlogged pine nut in the Roman period. 251
5.3.2e: Distribution of waterlogged celery and peach in the early medieval period. 252
5.3.2f: Distribution of waterlogged summer savory and coriander in the early medieval period. 253
5.3.2g: Distribution of waterlogged celery and coriander in the medieval period. 254
5.3.2h: Distribution of waterlogged peach in the medieval period. 255
5.3.2i: Distribution of carbonized walnut and lentil in the Roman period. 256
5.3.2j: Distribution of carbonized date, pine nut, garlic and peach in the Roman period. 257
5.3.2k: Distribution of carbonized oregano in the Roman period. 258
5.3.2l: Distribution of carbonized walnut and lentil in the early medieval period. 259
5.3.2m: Distribution of carbonized walnut and lentil in the medieval period. 260
5.3.3a: Distribution of waterlogged grape and cherry in the Roman period. 261

5.3.3b:	Distribution of waterlogged apple and opium poppy in the Roman period.	262
5.3.3c:	Distribution of waterlogged cherry and apple in the early medieval period.	263
5.3.3d:	Distribution of waterlogged cherry and apple in the medieval period.	264
5.3.3e:	Distribution of waterlogged grape in the medieval period.	265
5.3.3f:	Distribution of carbonized grape in the medieval period.	266
5.3.3g:	Distribution of waterlogged opium poppy and fig in the medieval period.	267
5.3.4a:	Distribution of waterlogged hemp, black mustard and pear in the Roman period.	268
5.3.4b:	Distribution of waterlogged turnip in the Roman period.	269
5.3.4c:	Distribution of waterlogged hemp, black mustard and pear in the early medieval period.	270
5.3.4d:	Distribution of waterlogged turnip in the early medieval period.	271
5.3.4e:	Distribution of waterlogged hemp, black mustard and pear in the medieval period.	272
5.3.4f:	Distribution of waterlogged turnip in the medieval period.	273
5.3.4g:	Distribution of waterlogged caraway, cabbage, fennel and mulberry in the Roman period.	274
5.3.4h:	Distribution of waterlogged medlar in the medieval period.	275
5.3.4i:	Distribution of waterlogged cabbage and fennel in the medieval period.	276
5.3.4j:	Distribution of waterlogged buckwheat and mulberry in the medieval period.	277
5.3.5a:	Distribution of waterlogged dill in the Roman period.	278
5.3.5b:	Distribution of waterlogged dill in the early medieval period.	279
5.3.5c:	Distribution of waterlogged dill in the medieval period.	280
5.3.5d:	Distribution of waterlogged horehound, cucumber, almond and white mustard in the Roman period.	281
5.3.5e:	Distribution of waterlogged horehound in the early medieval period.	282
5.3.5f:	Distribution of waterlogged horehound, cucumber, almond and white mustard in the medieval period.	283
6.1a:	CA of the overall waterlogged data: record distribution according to chronological period.	285
6.1b:	CA of the overall waterlogged data: species distribution.	285
6.1c:	CA of the overall carbonized data: record distribution according to chronological period.	286
6.1d:	CA of the overall carbonized data: species distribution according to food types.	286
6.1e:	CA of the overall carbonized data: site type distribution.	287
6.1f:	CA of the overall carbonized data: record (codes) distribution.	287
6.2a:	CA of the Roman waterlogged data: species distribution according to food types.	288
6.2b:	CA of the Roman waterlogged data: site type distribution.	288
6.2c:	CA of the Roman waterlogged data: record (codes) distribution.	289
6.2d:	CA of the Roman waterlogged data: species distribution according to	

	chronological patterns.	290
6.2e:	CA of the Roman carbonized data: species distribution according to food types.	290
6.2f:	CA of the Roman carbonized data: site type distribution.	291
6.2g:	CA of the Roman carbonized data: record (codes) distribution.	291
6.3a:	CA of the early medieval waterlogged data: species distribution according to food types.	292
6.3b:	CA of the early medieval waterlogged data: site type distribution.	292
6.3c:	CA of the early medieval waterlogged data: record (codes) distribution.	293
6.3d:	CA of the early medieval carbonized data: species distribution according to food types.	294
6.3e:	CA of the early medieval carbonized data: site type distribution.	294
6.3f:	CA of the early medieval carbonized data: record (codes) distribution.	295
6.4a:	CA of the medieval waterlogged data: species distribution according to food types.	296
6.4b:	CA of the medieval waterlogged data: species distribution according to chronological pattern.	296
6.4c:	CA of the medieval waterlogged data: site type distribution.	297
6.4d:	CA of the medieval waterlogged data: record (codes) distribution.	297
6.4e:	CA of the medieval carbonized data: species distribution according to food types.	298
6.4f:	CA of the medieval carbonized data: site type distribution.	298
6.4g:	CA of the medieval carbonized data: record (codes) distribution.	299

LIST OF TABLES

3.1:	List of the recorded species and their origins.	302
4.1:	The number of records and sites with exotics in each country by broad time period.	306
4.2:	The number of detailed site types with exotics per country during the Roman period.	307
4.3:	The number of detailed site types with exotics per country during the early medieval period.	308
4.4:	The number of detailed site types with exotics per country during the medieval period.	309
4.5:	Number of records with exotics, by time period.	310
4.6:	List of species not present in the dataset.	312
4.7:	Species frequency in the Roman period.	313
4.8:	Species found only or predominantly in the Roman period.	314
4.9:	Species frequency in the early medieval period.	314
4.10:	Species frequency in the medieval period.	315
4.11:	Species found only or predominantly in the medieval period.	316
4.12:	Number of occurrences of each species, by mode of preservation.	317
5.1a:	Number of waterlogged and carbonized records per time period.	320
5.1b:	Summary of the waterlogged archaeobotanical evidence and their pattern of occurrence in time.	320
5.2a:	Distribution of waterlogged exotic food plants in the various Roman site types.	321
5.2b:	Distribution of carbonized exotic food plants in the various Roman site types.	321
5.2c:	Distribution of waterlogged exotic food plants in the early medieval site types.	322
5.2d:	Distribution of carbonized exotic food plants in the early medieval site types.	322
5.2e:	Distribution of waterlogged exotic food plants in the medieval site types.	323
5.2f:	Distribution of carbonized exotic food plants in the medieval site types.	323
5.2g:	Waterlogged and carbonized species present in Roman ceremonial contexts.	324
5.4a:	Pattern 1, waterlogged species divided in sub-groups according to their social distribution.	325
5.4b:	Pattern 1, carbonized species divided in sub-groups according to their social distribution.	325
5.4c:	Pattern 2 species divided in sub-groups according to their social distribution.	326
5.4d:	Pattern 3 species divided in sub-groups according to their social distribution.	326
5.4e:	Pattern 4 - species divided in sub-groups according to their social distribution.	327
7.1:	Findspots of condiments in Roman ceremonial records according to modern-day geopolitical borders (all modes of preservation).	329

Acknowledgements

First and foremost I would like to thank Professor Marijke van der Veen for entrusting me with carrying out of this project. This thesis would have never been possible without the support, advice, encouragement and teaching of both Professor Marijke van der Veen and Dr Neil Christie, who have been always there for me despite their work load.

For the financial support I am grateful to NERC (grant NER/A/S/2003/00336 awarded to Professor Marijke van der Veen), The Alexander S. Onassis Public Benefit Foundation (scholarship F-ZA 057/2004-2005), and The A.G. Leventis Foundation; also, to the School of Archaeology and Ancient History, University of Leicester, which generously covered costs of conference attendance.

This thesis owes a great deal to the collective effort of the archaeobotanical community; the following people generously provided their data and never failed to reply to my constant enquiries for more details: Natàlia Alonso, Almuth Alsleben, Laurent Bouby, Anne Bouchette, Otto Brinkkemper, Christoph Brombacher, Ramon Buxó, Gill Campbell, Wendy Carruthers, Astrid Caseldine, Mike Charles, Brigitte Cooremans, Anne Davies, Frédérique Durand, John Giorgi, James Greig, Allan Hall, Tim Holden, Jacqui Huntley, Stefanie Jacomet, Sabine Karg, Margarethe König, Angela Kreuz, Helmut Kroll, Christine Laurent, Philippe Marinval, Veronique Matterne, Lieselotte Meersschaert, Jennifer Miller, Lisa Moffett, Angela Monckton, Peter Murphy, Reinder Neef, Ruth Pelling, Leonor Peña-Chocarro, Bénédicte Pradat, David Earle Robinson, Mark Robinson, Manfred Rösch, Marie-Pierre Ruas, Chris Stevens, Hans-Peter Stika, Vanessa Straker, Scott Timpany, Patricia Vandorpe, Julian Wiethold and Lydia Zapata.

I would specifically like to thank Dr Otto Brinkkemper for welcoming me to Amersfoort and kindly giving me access to the Dutch National Database (RADAR); Dr Allan Hall for providing an updated version of the ABCD database and many more articles; John Giorgi and Anne Davies for their help in the Museum of London; Dr Gill Campbell for her advice during my visit to the archaeobotanical archive of English Heritage in Portsmouth; Dr Sabine Karg for her generous sharing of information in Copenhagen prior to publishing her research; Dr Philippe Marinval for all his help and hospitality in Toulouse; Dr Almuth Alsleben for accommodating me during my first trip to Kiel and helping me with the data collection; and, most of all, Dr Helmut Kroll and Dr Julian Wiethold for their warm hospitality, friendship and for taking the time to share their knowledge, and help with my endless questions. Here, I would also like to express my many thanks to Professor Glynis Jones and Dr Mike Charles for introducing and guiding me during my first years in archaeobotany, and to Dr Paul Halstead and Professor Kostas Kotsakis for supporting me and urging me to pursue my future in archaeobotany.

I am indebted to Professor David Mattingly, Dr Simon James and Dr Jeremy Taylor for their enthusiasm and help with the historical aspect of my thesis; also, to Dr Dave Edwards for always being resourceful, providing ideas and articles; and to Dr Richard Thomas for sharing with me articles and discussing ideas. Many thanks are due to Alex Moseley and Nevin Moledina for their advice and help during the database construction.

I cannot thank enough my very good friends Dimitris Kourkoulis for being there when I needed him and his excellent co-operation and ingenuity in constructing the 'Seeds-Bridge' to transfer information between databases; and Hector Orengo for introducing me to the world of GIS but, most importantly, for never failing to help and support me even in the most difficult of the times. A big thank to the 'gang' from the lab, Alistair Hill, Alison Cox, Julie-Anne Bouchard-Perron and Jacob Morales for accompanying me in my endeavours from France to the depths of the University library, for sharing endless cups of coffee, and for making my PhD experience beautiful.

Enormous and infinite thanks are due to my parents for their constant encouragement and selfless giving, and also to the rest of the family, Timis and Prokopis; to Sterios Tsioumanis with whom I shared many beautiful, intense and full moments of life; Georgia Kotzamani, the other half 'sporaki', who has always been there with her positive attitude and her big smile; Holly Parton with her great sense of humour and her great heart; Efrossyni Boutsikas, my companion and 'doctor' in Leicester, for standing by me in both good and bad times; Huw Barton for his always great ideas; Petra Kopp and Denis Sami for making life in Leicester interesting and fun; an additional special thanks to Petra for helping with German translations; Giorgos Mihalis and Takis Grigoriou, my 'brothers'; Derek Hamilton for all his great help with graphics, his enormous patience and good humour; and last but not least I want to thank the 'video lupum' team and the 'supergirls', Xenia Aidonopoulou, Eleni Nalbanti, Dimitra Somitakou, Stella Stavrinodaki and Maria Vassiliou for sharing so

many adventures with me, going through life hand in hand, always sticking for each other and pointing at the important things in life.

VOLUME I

Chapter 1
Introduction

Food is a biological necessity, but at the same time it has a strong socio-cultural dimension. Accordingly, the choice of food can convey messages about the social standing of a person within a group, and can become an indicator of his/her social and cultural identity. Based on this premise, the present research seeks to bring together and analyse archaeobotanical data on exotic food plants from north-western and western Europe between the Roman and medieval periods. This study constitutes the first part of a wider ongoing research project directed by Prof. Marijke van der Veen on “Long-Distance Trade and Agricultural Development” at the University of Leicester. The aim is to seek a thorough understanding of the dispersal histories of these exotics and, through this, contribute to our understanding of the changing social, economic and cultural structures of the area under study.

The term ‘exotic’, naturally, is a relative one, depending strongly on the geographical and chronological points of reference employed. Thus, exotic plants are defined here as those food plants that are not native in at least part of the study area (north-western and western Europe) and were largely absent in at least the northern part of the region during the pre-Roman or medieval period. Some species, therefore, may already have been staples in part of the region but since they were practically absent in other, northern parts prior to these periods they are still defined as ‘exotics’ for the purposes of this research. Also included are those food plants, which although already present, appear to have been introduced, or only widely cultivated, in (part of) the study region during or after the Roman period. Excluded are food plants from the Americas that were introduced into Europe after 1492. It should be noted that, although the species examined are referred to as ‘food’ plants, many of these had also medicinal value; the two concepts were not necessarily separate in the past.

The food plants under consideration can be grouped into three general categories:

i. Plant species from the circum-Mediterranean region imported into northern Europe during the Roman period (*ca*. 100 BC-AD 500), such as olives, figs, almonds, dill, coriander and summer savory.
ii. Plants from India imported during the Roman period, such as black pepper and rice.
iii. Plants from Africa and Asia (mainly from the south and south-east) imported during the medieval period (*ca*. AD 500-1500), such as melegueta pepper (from west Africa) and cardamom (south Asia).

Of particular importance is the choice of the time span covered, as the Roman period was the first major instance when a particularly high variety of new species were introduced into northern Europe since the Neolithic. This was largely the result of sizeable changing socio-political and economic realities in this area, which started to operate within a much wider and cohesive system under the Roman Empire. In this context, the development of an efficient inland transport network with the construction of roads and the opening up of canals, and most significantly the extension of maritime trade, paved the way, along with easier access and control over the acquired provinces, for intensification in trade activities both within and outside the confines of the Empire. Equally, during medieval times, the increases in trade networks, such as the emergence of the Hanseatic League in the north and contacts with the Arabic world in the south, led to a new wave of food plant introductions in the study zone.

The core of this thesis is the analysis of archaeobotanical data, examining the interactive links between humans and the 'silent' world of plants through time and space. This approach seeks to offer an alternative angle to the study of food, which is largely based on historical writings and interpretations. Useful as these latter sources indisputably are, they still leave many questions open; they are often selective, and the information they offer is based on contemporary knowledge of the world and its myths. Archaeology, as Dietler (2007: 221) aptly phrased it, "*does offer at least a potential means of interrogating the material record of the lives of those whose voices have not been recorded*".

In the field of archaeobotany, the focus of study was initially confined to the realms of the economy and the environment. Methodological concerns were of primary importance too, and, indeed, great advances were made towards the understanding of the nature of the plant assemblages, filtering out the copious taphonomic and cultural parameters that have been actively involved in their formation (e.g. Dennell 1977; Hillman 1981; Van der Veen and Fieller 1982; Jones 1987, 1992; Hubbard and Al Azm 1990; Behre and Jacomet 1991; Jones and Halstead 1995; Van der Veen *et al.* 2007). It is only relatively recently that an increased appreciation of the role of plants and animals within cultural systems has been developed, largely influenced by anthropological and sociological food studies (e.g. Douglas 1984; Appadurai 1988; Mennell 1996). As Sherratt (1991: 221) has pertinently observed, "*People don't eat species, they eat meals*", thereby underlining the importance of food and how it actively participates in shaping the fabric of human societies by playing a significant role not just in economy, but also in social structure, religion and the moulding of ideologies.

In this context, exotic food plants are a promising tool in the investigations of the role of food in society, constituting an effective means of communication that can be used to define social relations. This is particularly true, as many of these exotics – at least initially – would have been considered luxuries (Van der Veen 2003a: 418), and therefore, they could have been used as indicators of status differences and/or cultural affinities. Thus, there is much scope to explore any luxury associations of exotics and the possible underlying reasons for these. Moreover, since the status of exotics can change through time (Van der Veen 2003a: 409-410), their chronological and social analysis holds the potential to elucidate issues related to processes of socio-economic change.

A limited number of archaeobotanical studies on exotics has been conducted so far for the Roman and medieval periods. The majority of these studies focus on individual sites and only a few have employed a large-scale approach to observe broader patterns. A key example of the latter is the groundbreaking study by Bakels and Jacomet (2003) in which they studied access to a selected group of luxury food plants in central Europe during the Roman period. The present thesis endeavours to build on this study and expand it, by using a slightly larger geographical region and a longer time period.

The main aim of this thesis, and the larger project of which it is a part, is to highlight the importance of food in past societies and to explore the dispersal histories of a large number of exotic food species that were introduced and imported into Europe in the Roman and medieval periods (*ca.* 100 BC-AD 1500), in the knowledge that these dispersal histories not only reflect socio-economic change during the periods examined, but that the food plants themselves were actively used to bring about such changes. The work will consist of three stages: firstly, the sourcing of all available archaeobotanical records for exotic food plants in the study area. This is a particularly challenging task, as a rapidly increasing amount of archaeobotanical information has been collected during the last forty years in a substantial volume of both published and unpublished reports dispersed across Europe, which are not always easily accessible. Therefore, as there is no other record combining this information together with detailed chronological and contextual data, it is the aim of this research to render available a large dataset, which will allow new interpretations to be achieved. For this purpose a database has been constructed in order to compile all the data in a uniform format. Secondly, the identification of chronological and geographical dispersal patterns for each of the food plants under study and the determination of who had access to these species; and thirdly, the provision of a preliminary interpretation and discussion of the emerging patterns, placing these in their historical context.

Individual objectives are to:

- Identify which exotic food plants are attested archaeobotanically in the study area between the Roman and the medieval periods,
- Record the number of occurrences of each species by mode of preservation,
- Identify the distinct periods of introduction and/or expansion of use of the various exotics,
- Determine the chronological dispersal pattern for each species,
- Monitor access to exotics by different groups of the population, whether urban/rural, high/low social status, military/civilian and secular/religious,
- Determine whether access to these food plants changed over time, and
- Monitor the geographical dispersal of the species in consideration and identify potential regional differences.

Crucial questions that will be asked are: Which species became integrated into local diets and agricultural/horticultural regimes in the area and period under study? How strong and uniform was their integration? What happened to species that could not grow in the part of Europe under study? Which species remained rare and can their restricted access be explained by status differences? What were the responses to new food plants? And, ultimately, is there any evidence that their consumption was used as instrument in the creation of social and/or cultural identities?

The thesis is structured as follows: Chapter 2 gives the research context, discussing the roles of food in society and reviewing the relevant archaeological work conducted so far; Chapter 3 outlines the methodology devised for this research, detailing what data were collected for this thesis as against the larger research project; Chapter 4 presents the results as currently available for the Roman and medieval periods across the study area; Chapter 5 provides a univariate analysis of the temporal, social and geographical dispersal of the food plants by preservation mode; Chapter 6 provides a multivariate analysis of the data also by preservation mode; in Chapter 7 the results of the analyses are discussed by broad chronological period; and finally, in Chapter 8 general conclusions are drawn and suggestions for future research are given.

Chapter 2
Research Background:
Perceptions of Food and its Roles in Contemporary Research

In environmental archaeology, after successfully establishing the research bases to understand how assemblages of biological remains are formed, there is now a conscious move to study not only economic aspects of food production, subsistence and agricultural systems, but also the social and cultural dimension of food consumption. This new interest has drawn upon many influential anthropological, sociological and historical studies that have already explored the subject of food, thereby providing a rich reservoir of theoretical and empirical background to the archaeologist. Along this line of enquiry, the present thesis is concerned with the dispersal of exotic food plants and aims to investigate differential patterns in the processes of adoption and integration of new species into local diets. Such studies, especially focusing on a large regional scale, are still relatively limited in archaeobotany but those that have occurred will be explored here. In order to set the research background, this chapter begins with a brief discussion on why food is important to study (section 2.1). Then follows a review of current archaeological studies of food, in particular those focusing on social status (section 2.2), cultural differences (section 2.3) and ritual/religion (section 2.4). Within the framework of this thesis these are the key areas identified as influencing differential access to food plants. Within these themes, emphasis is placed mostly on various food species dispersal studies, particularly for the Roman and medieval periods, as these have direct relevance to the thesis. The discussion briefly mentions how interest in archaeology turned to these issues and then investigates the ways food studies have been applied towards these directions. The chapter concludes with a discussion of the potential of using exotics in contemporary archaeobotanical studies (section 2.5).

2.1 Why Study Food: Its Cultural and Social Dimensions

The range of edible food items providing the necessary substances that the body requires to maintain its complex functions and satisfy the feeling of hunger, is very broad. Nonetheless, leaving aside cases of crises such as famine, there is always a deviation between what is actually edible from a biological/physiological perspective, and what is *considered* to be edible. For instance, while in many Asian countries grilled locusts are regarded as an everyday delicacy, in contemporary Europe locusts are classified as crop pests and the notion that they could be served in restaurants or bought on the street as a snack, is inconceivable.

Numerous examples of food taboos, preferences and avoidances may be found in anthropological and historical analyses (e.g. Simoons 1961; Harris 1986; Hattox 1996; Soler 1997, 1999; Garnsey 1999), manifesting the range of choices humans make and how these are part of a group's identity. Different groups of people impose their own dietary laws. This is explicitly illustrated in the domain of religion, where Jews abstain from eating pork, Hindus do not consume beef, and Christians use only wheat bread for their rites. Scholliers (2001), in his critical evaluation of the significance of food as a contributing factor to group identity, offers the example of the visit of Mehmed effendi, an Ottoman ambassador to France, in the early 18th century. Mehmed effendi secretly indulged in drinking wine, and condoned his son's wine drinking in public, while, at the same time, forbade his servants to do so in accordance with the Muslim laws. This led Scholliers (2001: 5) to question "*the strength of norms with regard to food classification*". However, in my view, this example does not contradict the importance of food and drink in identity formation. In reality, attention must be paid to the different scales that the researchers deal with. In order to explore the identity of a group, one must look at the overall, established trends within a *group* of people. Exceptions do exist within groups and certainly should not be ignored, as these very exceptions could contribute to changes and innovations. At the same time, exceptions should be placed and examined in their actual context. The ambassador and his son, in Scholliers' example, may not have consumed wine when at home, for example, where their socio-cultural setting would not accept such an attitude. Regardless of this last assertion, one should still examine whether their lenient attitude towards wine drinking indicates that status differences operated above religious rules, shifting the emphasis towards another side of our fragmentary identities, which are constructed, according to contemporary thinking, by a plurality of social parameters (e.g. Sarup 1996; Bradley 1997).

Rejection of, or preference to, certain food items has also been explained by invoking sensory-aesthetic reasons. However, whilst individual tastes play a part in the choice of food, these too can be culturally dictated. Bakels *et al.* (1997) note that few people actually feel pleasure in their palate when trying beer or coffee for the first time, but soon "*acquire a taste*" for these drinks, in order to convey social messages such as being an adult. Rozin and Fallon (1986: 64-65) concur, suggesting that people learn to tolerate even irritating tastes like chilli pepper most likely because of their social dimension. As Mennell (1996: 6) effectively states, crediting the contribution of structuralist approaches in the anthropology of food, "*taste is culturally shaped and socially controlled*". In fact, much research has been invested in the sensory and physiological influences on behaviour, corroborating the social context as an impartial component in food choices (e.g. Conner and Armitage 2002).

As yet, there is no universally accepted explanation on the subject of food choices and, according to Fernández-Armesto (2001: 37), there will not be one, as, in his words, "*meanings ascribed to foods are, like all meanings, agreed conventions about usage: ultimately they are arbitrary*" – thereby shifting the emphasis to the dipole inclusion-exclusion that the study of food predilections and avoidances involves. His assertion at first glance is appealing. However, I believe that collective formulas are always bound to have flaws, and culture-specific explanations, filtered through a space-time prism, hold a much greater potential to explain people's actions and perceptions. In addition, it seems to me that, even if we accept Fernández-Armesto's (2001: 37) analysis that foods which have been ruled out acquire an active role in defining the identity of a group by means of opposition to others, one should look beyond that. It is not just the exclusions that ought to be considered: the specific group rules regarding attitudes to food included within their diet are equally important to explain why the same food items are consumed in different ways among various groups, or why different groups attach distinct meanings to the foods they consume. Furthermore, a series of different factors seems more likely to be operating in every individual case, an amalgamation of which results in the formulation of specific food choices.

Mennell's developmental approach follows a similar line of reasoning. Mennell (1992, 1996) criticised structuralist approaches as being static, looking for a fixed, social grammar and overlooking the historicity of human social behaviour. Influenced by the writings of the sociologist Norbert Elias, he surmised that the structure should be sought in the "processes of change" within a society (1996: 15). Mennell accepted the 'patterned' aspect of culture but only in combination with its other attributes on which anthropologists agree, being cumulative, learned and shared and, thus, transmitted. His case study was centred on the eating habits in England and France from the Middle Ages to the present. Based on various written resources like recipe books, Mennell tried to explain how cuisine, culinary tastes and attitudes developed following distinct trails in the two countries. He did so by delineating the differential development of urbanisation and the evolution of notions of social superiority or inferiority, and patriotism or cosmopolitanism, adhered to the eating habits in England and France, stressing cultural developmental specificity.

Furthermore, reservations on the central role of food in social identity formation were expressed by a few researchers, such as Warde (1997), whose standpoint, as summarised by Scholliers (2001: 9), is that people are concerned only about "*sufficient, affordable and familiar food*". Warde determines that identity is mainly achieved through social learning, while the contribution of commodities such as food is only minor, creating identities that are "*shallow, their significance being exaggerated*" (1997: 203). Scholliers (2001), evaluating Warde's contribution, agrees that food should be viewed as a rather flexible factor that could have a more or less prominent role in identity formation according to circumstance. Yet he points out that "*social demarcation and identification are present in 'simple', 'self-evident' and 'unconscious' matters*", such as food consumption, which is "*relevant to people's identity even if they themselves pay little attention to it*" (Scholliers 2001: 9-10).

Sharing Scholliers's standpoint, I believe that in every human action there is always a choice involved, whether 'unconscious' or not. Choice is both 'to choose' and 'not to choose'. In my view, there is no true hierarchy in all the various modes people employ to define themselves. Diverse factors interplay and become conspicuous according to the context. Food is thus not an inferior or superior means in identity building. Its potential, nevertheless, in the *investigation* of identity formation is certainly strong, being one of the most promising tools anthropologists, archaeologists and other scholars can employ to gain insights into aspects of identity. This is so, because food, being a necessity for the physical survival of every human being, is always there. Every day, choices regarding the food and drink one has to consume, their combinations and their preparation method have to be made, choices that are confined within specific environmental, economic and cultural settings. External factors such as geography and season do play a part, often dictating the available resources, even though this aspect is ever diminishing with the development of modern urbanisation, markets, trade and food preservation technology. Yet, as this discussion so far shows, not everything that is available becomes part of the diet. Even Warde (1997), when referring to “sufficient, affordable and familiar food”, is using a phraseology that mirrors the triptych biology-economy-culture, highlighting how tightly woven the various factors involved in food choice are.

Finally, it could be further argued that the importance of food as a social identity signifier may actually be strengthened because of the subtle, often ‘unconscious’ nature of choices related to the diet. This is best illustrated in the example given by Atkins and Bowler (2001: 273-274) in their short discussion on food and identity. The two scholars draw upon modern studies on immigrants in North America, and observe that people of the first generation show reluctance to change their traditional/familiar food habits, even if certain foods are not easy to obtain. Even in second and third generations, where the level of assimilation is high, certain dishes still find a place in their menu. Diet, Atkins and Bowler assert, is one of the last things to change even after the language of origin is relinquished. The strong ties with what is familiar, what is part of a person’s historical trajectory, associated with a real or imaginary place and time, permit ample space to the researcher to employ food as a means to investigate identity, social and cultural issues.

2.2 Food, Status and Social Relations

Food has been identified as a social event by numerous scholars (e.g. Douglas 1997; Appadurai 1981; Bell and Valentine 1997; Counihan and Van Esterik 1997) and accordingly has been employed in the investigation of social roles and relations. Mennell’s (1996, 1992) introduction of the term ‘culinary culture’, referring to cuisine and at the same time to all “*the attitudes that are brought to cooking and eating*” (1992: 278), exemplifies this trend. Within this framework, social status – defined by Ashby (2002) as “*perceived position within a community*” – and class differences have typically attracted the attention of scholars in the field of food research. Goody’s classic work *Cooking, Cuisine and Class* (1982) investigated how cooking is interconnected with class and production systems and argued that highly differentiated cuisine only develops in highly stratified societies with differentiated access to technology and resources. The diversified culinary habits within hierarchical societies constitute a common ground and have thus formed a point of entry for archaeological research in the detection and appreciation of social stratification. In such societies, as Van der Veen (2003a: 415) remarks, conspicuous food consumption – manifested in the quantity and/or quality of the dishes – is an everyday event in high status households or sites, resulting in the display of social differences on a regular basis. Several methods have been employed in archaeology to identify status differences, but here attention is drawn on actual food remains and emphasis is placed on food dispersal studies.

Social differences may be reflected through the diversity, quantity, and quality of food items included in the everyday diet. De Hingh and Bakels (1996: 119) suggest that differences in food preparation may be also used, as for instance, by comparing kitchen refuse – although, to my knowledge, this has not been applied in practice. Archaeologically, the association of status with the quantity of food available is very hard to identify. In terms of food quality, the clearest indicators of status differences are the luxuries, defined by Van der Veen, after Berry (1994), as "*those foods that are widely desired because they offer a refinement or qualitative improvement of a basic food and a means of distinction because they are not yet widely attained*" (2003a: 420).

Pursuing this line of research, certain plant and animal species have been employed as status indicators. Archaeozoologically, Grant (2002), reviewing Roman and medieval bone assemblages from southern Britain, indicated how pigs could be employed to define status. In particular, she showed that higher proportions of pig bones were associated with wealthy or important sites such as castles, palaces and religious establishments. Unlike other domesticated animals, pigs, apart from manure, provide no secondary products or services and therefore, Grant argues, only the well-off could afford to feed and eat them, rendering pork meat a luxury. However, De Hingh and Bakels (1996: 118) draw attention to the fact that using specific food items as status indicators is not always straightforward; they refer, for instance, to the wide availability of fig in late medieval Lübeck despite its status as an import. In a recent study for Roman central Europe by Bakels and Jacomet (2003), fig also appeared to be common and the two researchers questioned its luxury status. In effect, in order to attribute a value to a given species, contextualised analyses are necessary, such as examining its association with other species/material culture and the nature of the sites and structures from where it is retrieved. The study by Murphy *et al*. (2000) at the Late Romano-British farm in Great Holts, Essex, aptly demonstrated how the combination of the study of animal and plant remains, in terms both of the species present and their diversity, was crucial in pointing to the rather well-off state of the inhabitants who were able to obtain imported species such as olives, and to participate in hunting activities, thereby assuming a high-status life-style.

Moreover, an area where the quantity, quality and diversity of food items are examined all together in order to identify the interplay of social relations is the feast. Feasts are relatively easy to detect archaeologically because of the large quantities of associated material, their sometimes distinctive nature – as, for example, the case of exotic items – and the often distinctive setting where they take place (Hayden 2001: 47). Hamilakis (1998), for instance, reviewed the evidence from the Bronze Age Aegean and identified several contexts of mortuary feasting, in accordance with the animal remains, pottery and other artefacts associated with eating and drinking, and certain architectural features, such as platforms and 'altars'. He then explored the consumption of food and drink in such contexts and linked those to the generation of remembering and forgetting, tightly interwoven in the creation of an arena where competing elites negotiated power over an intense emotional experience. Moving to an American context, political consolidation through the projection of the idea of the polity and community bonding was thought to be the ultimate aim to be achieved through feasting in pre-Columbian Cahokia in Mississippi. In this case, feasting was identified due to the presence of high quantities of rare species (e.g. swan), or species associated with wealthier assemblages, of non-food plants like tobacco and the variety, the size, the quality, and the quantity of the ceramics (Pauketat *et al.* 2002). The examples cited are only a sample of the research related to feasting. Although such studies are useful, one must bear in mind that feasts are, exceptional occasions, not part of the everyday routine, and, as such, apart from cases when certain locations or more or less permanent structures are dedicated to them, their traces might otherwise have been erased.

Spatial analysis of food remains can add further depth to their interpretation and has been successfully employed to frame and accommodate discussions on social differences in past societies. A good example illustrating how the examination of site distribution of animal bones and their cut marks may provide useful insights into social groupings, is Stokes' (2000) research at the Roman fort of South Shields (England). Bone remains were retrieved from the barracks occupied by auxiliary soldiers and from the house of the commandant. The roughness of the butchery marks hinted at an intention to produce joints of uniform size, regardless of the animal anatomy, for the bulk of the army. However, the bone assemblage from the commandant's house included deer and more birds (but fewer sheep and pigs), as well as a selection of better cuts from cattle. Interestingly, the observed spatial variability between various contexts also raised suggestions of differences in ethnic and cultural make-up, and even of a variability in the degree of tolerance regarding cleaning by various officers (Stokes 2000).

Whilst acknowledging the potential of these studies, Driver (2004), in his research of a medieval property in Southampton (England), points out the biases that could be introduced by different waste disposal practices and highlights the importance of considering taphonomic factors in interpretations. An interesting case study demonstrating the limitations of the use of the spatial distribution of food plants in detecting social differences is that by De Hingh and Bakels (1996), who looked at the plant remains of an early medieval manor house and its associated peasant village in Serris-Les Ruelles (France). In contrast to bone assemblages that were distinct in the two contexts, with the manor house having, for instance, more pig bones, no differences emerged regarding the plant remains; no food imports were identified and it was suggested that peasants would have produced both for the lord and themselves. The two researchers concluded that, in terms of plant-based food, there was probably no wide enough spatial and economic distance between the lord and the peasants to allow for the identification of status differences. This study reflects a broader problem encountered in intra-site investigations, where organic remains are usually retrieved from collective features containing the discarded residues of several households or of all the inhabitants of a house, thus restricting the potential for meaningful readings of the social structure.

The increasing number of food studies, particularly in northern European countries, has led over the years to broader syntheses of the evidence in order to understand local and regional patterns. A number of such studies focus on large urban centres. Pigière *et al.* (2004), for instance, compared archaeozoological evidence with historical sources for late medieval noble and urban households at the city of Namur (Belgium) and illustrated how status differences were indeed reflected in diet: the nobility consumed more large game, probably due to their hunting privileges, and marine fish brought through long-distance trade. Much research on the social dimension of food has been also carried out across the medieval town of Freiburg (southern Germany) and the Hanseatic towns of Lübeck and Braunschweig where certain food imports, such as cardamom and black pepper, were strongly associated with the higher social class living quarters (e.g. Hellwig 1990; Alsleben 1991, 2007; Sillmann 2002).

Larger scale research and, to my knowledge, one of the first attempts to employ site classifications for the study of food remains dispersal (also employed in this thesis), was conducted by Groenman-van Waateringe (1994). Elaborating on earlier research on archaeozoological and archaeobotanical data from various sites from the AD 6th to 16th century in The Netherlands, she questioned differences between castles, rural, pre-urban, urban and monastic sites in terms of consumption patterns. The results were only preliminary and the conclusions drawn were, accordingly, very tentative. Nevertheless, the overall picture suggested a variety in the diet of the nobility and of the inhabitants of monastic sites. Imported species were seemingly absent in rural and pre-urban sites, which had the poorest food spectrum overall. An insight into urbanisation processes was further attempted stressing the impact of a market economy, but thorough insights into social stratification were largely prevented by the restricted dataset.

More refined chronological and social/spatial resolution in the study of food item dispersal has been gradually employed in an attempt to obtain a better understanding of the observed patterns. One such case study is the work by Matterne (2003), who examined the dispersal of food plant remains across 39 Gallo-Roman sites from Picardie and Île-de-France by three broad periods, namely Late Iron Age (2nd-1st century BC), Early Roman (1st-3rd century AD) and Late Roman (3rd-4th century AD), and identified the introduction and import of a number of fruits and garden species in the beginning of the Roman period in northern France. By interrogating the social distribution of these species, she was able to illustrate the strong association of these new fruits with urban contexts, even compared to rural elite sites which primarily focused on cereal cultivation. The evidence on which this research was based is relatively limited (for example only four elite rural sites were included in the analysis), but they provide a basis upon which future studies can build, stressing also the potential of this approach.

A few more studies stand out as key examples of socially-oriented approaches to food and status. In archaeozoology, of particular interest is the work by Thomas (2007a) who studied the distribution of bone remains in numerous medieval sites in England. In his examination, Thomas categorized the sites into castle, ecclesiastical, manorial, rural and urban, and divided the study period into early (late 11th-12th

century), mid (13^{th}-14^{th} century) and late medieval/early modern (15^{th}-early 16^{th} century). The results showed that there was a levelling of meat consumption in the post-Black Death period and, contrary to previous research, indicated that the diet of the aristocracy changed; during the late medieval period the elite increasingly came to rely on wild birds, attributing to these a high status, to maintain a distance from the lower classes.

In archaeobotany, two studies are of particular importance. The first one is the HANSA network project, founded in 2001, which is a collaboration between archaeobotanists for the study of late medieval northern and central Europe, focusing on countries around the North Sea and the Baltic that were involved in the trading activities of the Hanse (Karg 2007b). Through an examination of the diet, differential access to food items emerged, particularly with the introduction of exotic spices through the Hanseatic merchants and the food preferences of new colonists. The archaeobotanical data indicated a greater variety of fruits, herbs and exotic spices in the latrines of the richer households, also supported by written sources. Spatial differences were also noted, as for instance, a greater diversity of spices in northern Germany and northern Poland in comparison to Scandinavian countries that were seemingly more conservative in the integration of new food plants. Overall, the HANSA network members (2007) suggest that Hanseatic trade had a significant impact on the towns, with imported food plants permeating and changing dietary habits in the north. Data on rural contexts were generally lacking from the project, but by having compiled an extensive database in a standardized format, more in-depth examinations of social contexts are feasible in the future.

Finally, the study by Bakels and Jacomet (2003) can be considered as seminal in archaeobotanical research by setting an exemplary methodology for the examination of differential access to food plants. Their study has largely developed from the archaeobotanical research in the early Roman site of Vindonissa (Switzerland) that later became an important legionary base (Jacomet *et al*. 2002; Jacomet 2003). In order to understand the character of the early phases of this site a compilation of food plants from 49 largely contemporaneous military, civilian and some rural sites in central Europe was made and compared with those recovered from Vindonissa. The results highlighted the important role of the military in the introduction of new plant taxa and hinted at the possible presence of an elite in Vindonissa although the overall character of the site was rather ordinary (Jacomet *et al*. 2002; Jacomet 2003). Using and expanding this database, Bakels and Jacomet (2003), elaborated their methodology in order to trace the distribution of a total of twenty waterlogged and carbonized plant species in Roman central Europe. They chose food plants that were practically absent in the periods prior to Roman expansion and included species that could grow in the study area and others that were true imports as their cultivation is largely restricted in these environments. These species were defined by Bakels and Jacomet (2003: 542) as luxuries, at least at the very start of the Roman occupation and they were divided into three groups according to the frequency of their presence. In order to identify periods of change, they divided the Roman period into four phases: A (AD 1-50 but including the Augustan period); B (AD 50-100); C (AD 100-250); and D (AD 250-400). Moreover, the various sites where these species were encountered (all within the boundaries of the Empire) were classified as military, civilian with obvious military influence (e.g. *vici* and *canabae*), civilian-urban, *villae rusticae*, and other rural sites (settlements of indigenous people). By studying the number of new species in each site type by phase of occupation the study demonstrates that those food plants that could be grown locally, such as walnut, apple, pear, plum and cherries, were initially found mostly in military sites, but after the consolidation of the Roman occupation they became widespread, losing their exclusive status. By contrast, the plant taxa that had to be imported remained scarce, absent from rural settlements, and they were, thus, interpreted as true luxuries with the possible exception of two species, namely date and pine, which were found to be associated with religious contexts. Thus, this study allowed a significant insight into the ‘Roman way of life’ and its impact in parts of the northern provinces. Effectively, the present thesis is following but particularly expanding upon this model of research in order to offer new perspectives on aspects of social complexity and human culture through time, looking at more species over a wider spatial and temporal scale and employing a more detailed site classification (see Chapter 3).

2.3 Food and Cultural Differences

Another important aspect of relevance to this research is the employment of food as a means to distinguish cultural differences. This applies mostly to the part of the thesis on the Roman period, as the expansion of the Roman Empire led to a significant – and highly visible archaeologically – movement of new peoples to the north that triggered new contacts and interactions between people with different cultural backgrounds.

The exploration of cultural identity in past societies, before the development of modern states, has drawn upon many anthropological and sociological studies on ‘ethnic’ identity in recent history. In this field, initially, research interest expanded with the increasing understanding of the dynamics involved in the shaping of multi-ethnic societies. Perceptions of ethnicity as a “*slowly dissolving artefact*” (Laroche *et al*. 1998: 201) gradually gave way to the appreciation of the diversity of multicultural elements within societies supported by an accumulation of evidence, pointing to more complex forms of social adaptation by various ethnic groups (Laroche *et al*. 1998; see also in relation to food, Appadurai 1988 and Hardyment 1995). In an attempt to describe the concept of ‘ethnic’ identity, various factors have been taken into account, with language, religious affiliation, participation in collective social activities, endogamy, traditional music and celebrations, and, of course, food being the most commonly accepted ones (e.g. Laroche *et al*. 1998; Johnson 2004). The association of certain dishes with different countries is a well-established practice that does not only statically demarcate ethnic boundaries but can also be widely employed in symbolic power displays. When the war in Iraq broke out in 2003, the economic interests of the United States of America were in confrontation with those of many European countries, such as France, and resulted in the creation of two groups: one in favour of the war and one against it. During this period of tension, it was even suggested by a few Americans that the ‘French fries’ should be renamed ‘freedom fries’ (see *The Guardian*, 25 March 2003), as a marker of disdain for the French opposition. This rather extreme example demonstrates how food and language may in fact be employed to wield power, and create feelings of exclusion and group segregation; at the same time it illustrates the strong link between the concepts of food and ethnic/cultural identity.

Various ethnographic, historical and anthropological studies have contributed to the analysis of the ethnic identity formation, as well as of the assimilation of minority ethnic groups into dominant ones, describing the interaction and adjustment of one group to another and how the influences are often bi-directional (e.g. Katona-Apte 1976 investigating the Marathi community in India through feasting and fasting; Goode *et al*. 1984 and Poe 2001 examining Italian-American food habits; Jansen 2001 focusing on French Algeria and the construction of identities through bread and wine). In this respect, research on colonialism, defined most appropriately by Dietler (2007: 220) as “*the projects and practices of control deployed in interactions between societies linked in assymetrical relations of power and the processes of social and cultural transformation resulting from those practices*”, has offered significant theoretical background towards an understanding of these practices and processes and also of the role of material culture, including food (e.g. Said 1993; Dietler and Hayden 2001; Gosden 2004; Dietler 2007).

Many archaeological attempts on the exploration of the contact between different cultures through food have been particularly successful in discarding old concepts of impermeable boundaries – cultural or geographical – as transmitted not least by many historical sources. One of the most well-known studies exploring issues of cultural identity is the work by Deetz (1996). His analysis of artefacts found all along the eastern North American coast, where plantation slavery was established from the early 18th century, in combination with the study of dwelling and eating practices, showed the varied influences of European, African and Native American cultures in all these aspects of everyday life. Deetz thereby provided a fresh and alternative insight, countering older ideas which sustained the loss of cultural identity of enslaved Africans. This investigation of African-American archaeology stands to date as a fine demonstration of how 'small things', including food, may be employed to illuminate aspects of cultural identity.

Following this line of research, and of particular interest to this thesis is the study of the influence exerted by the expansion of the Roman Empire. King (1999), for instance, examined animal bone reports from various Roman provinces, and found that regional diet patterns persisted, while Roman influence was mainly expressed through adoption of dietary habits from different provinces, facilitated by their connection to the Empire. In Britain, for example, King observed a pattern that showed high cattle and pig consumption predominantly in military, legionary and urban sites, and he believes this diet derived from Gaul and Germany through the influence of the Roman army. Willcox (1977), reviewing the plant remains from several Roman sites in London, reported a number of exotics such as peach and olive, and alluded to the theme of Roman influence. Similarly, Wiethold (2003) studied plant remains from Roman central-eastern France, aiming to trace Roman influences on local agricultural systems. His results, although based on relatively few data, hint at a two-way interaction between Romans and native people: Romans seemingly adopted aspects from the already well established Iron Age agricultural system but, at the same time, they promoted (largely through Roman administration and infrastructure) the development and spread of viticulture, the cultivation of fruit trees and the growth of horticulture, which combined to effect prominent dietary changes in the region (Wiethold 2003: 277-279). This type of interaction between

Celts and Romans in terms of food plants was also observed in the early Roman site at Vindonissa, Switzerland (Jacomet *et al*. 2002; Jacomet 2003).

Moreover, in The Netherlands, excavations at the Iron Age and Roman settlement at Oss-Ussen allowed the study of archaeobotanical and archaeozoological remains alongside various culinary equipment (Bakels *et al*. 1997). Changes in dietary customs for part of the native people were observed and interpreted as an indication of closer affiliations with the Romans. The clustered presence of exotic species introduced by Romans, such as chicken, and certain kitchen herbs, in addition to typical Roman table ware, like the numerous plates for eating, and the *mortaria*, led the authors to assume that Roman influence was possibly channelled through 'converted' locals or settled army veterans or by way of exchanges between the local elite and the invaders. Noticeably, the authors were cautious to suggest that the negative evidence in the rest of the settlement did not necessarily mirror a rejection of the Roman element, as local food might have been served or consumed in a Roman manner. In order to fully appreciate diet and how food was appropriated, Hawkes (2002: 46) argues how important it is to consider all types of foods (staple and exceptional, plant and animal products) and drinks, and contextualise them by studying associated materials and structures, such as dishes, vessels, pots, hearths and even buildings.

A different angle – that of food production in relation to agricultural practices – was adopted by the researchers involved in the interdisciplinary 'Romanisation Project' (Kreuz 1999, 2004). Multiple lines of evidence, including analysis of micro- and macro-remains of organic origin, were followed to investigate farming methods and to detect any Roman influences in central Europe, north of the Alps. The results, despite the disparities, exposed a number of differences between Roman, Germanic and Celtic sites – changes in the use of woodland, variations in the size of animals and the types of species, with only Roman sites presenting garden/exotic crops, etc. – that were further attributed to a variation in the degree of the Roman impact, partly depending on the presence or absence of the Roman army (Kreuz 1999, 2004).

Finally, attention should be drawn to the flexibility ingrained in the notion of 'ethnic/cultural food'. New food items in an area may be widely adopted for a number of reasons, such as their nutritional value, their optimal agricultural potential, such as being hardy or producing high yields, and their gradual blending with traditional foods and culinary manners. This could result in the *nativisation* of these foods – that is, a change in perception of these items from being exotic/foreign to being part of the local cuisine. This transition is not automatic or, usually, rapid. A fairly recent historical example to illustrate the point is the case of the potato. This traditional Andean crop reached Europe towards the end of the 16th century, where it was initially poorly regarded (Salaman 1949); gradually, however, the potato became accepted and incorporated into the diets of millions of people. In places like Ireland and Britain, it indeed soon became one of the basic cooking ingredients of the 'traditional' diet due to its minimal technological investment needs, and the rising prices for meat and cereal during the mid-eighteenth century (Leach 1999). Particularly interesting is also the study by Mansfield (2003) on the 'de- and re-contextualisation' of products, that is, their transformation from exotic to familiar foods. Using as a case study the so-called 'imitation crab' (a mixed fish paste) industry, Mansfield showed how this traditionally Japanese product entered European and American markets by being promoted as both a luxury and a traditional food. The luxury status was advocated by stressing the addition of certain fishes like lobster, and the traditional status by disassociating it with Japan through the advertisement of American industry's superiority, by its trading under local brand names, and by its mixing with familiar foods. Turning back to the archaeological research, one should thus be particularly cautious to investigate the alternative case, where a group of people does not really accept another culture but transforms *selected* aspects of this culture to make it conform to local regimes.

Thus, food can operate consciously or sub-consciously in a multifaceted manner, in many directions. Food may, therefore, contribute to the creation of an artificial haven, where the familiar acquires particular importance and becomes interconnected to cultural and ethnic identities. Such notions balance on a thin line between resistance to a total assimilation by another ethnic/cultural group on the one hand, and precarious conceptions of ethnic/cultural pride, easily manipulated in games of power acquisition, on the other. Equally, food may play a part in embracing 'others', leading to a blend of different cultures, or, alternatively, be employed in power relations to create dependencies and exclusions.

2.4 Food, Ritual and Religion

Religious and ritual matters have always been important to human culture, inculcating ideas, readings and directions about the past, present and future. Tightly woven into personal and social issues, their practices would inevitably be related with food, the most basic requirement for the body's sustenance, and partially through that, would aim to become instruments of control. As a consequence, the study of food, diet and religion has intrigued numerous scholars, aspiring to unfold the multifaceted ways with which people understand, use and practise their religious beliefs as members of a group.

Religion was practised and expressed very differently in the Roman and medieval worlds, both of which are core to this particular study. In the former, the religious system prescribed rituals rather than beliefs, placing great value on practice (Scheid 2003: 173). Roman religion, however, was not a rigid and inclusive system, but it differed across both the large timespan and space that the Empire covered, according to the multiple understandings of what it meant to be 'Roman' (Jones 1987: 814-5; Scheid 2003: 1-2). The potential in these studies is ample, and, indeed, the number of archaeological studies on 'ritual food' in funeral, ceremonial and sacrificial Roman contexts is increasing. Lauwerier (2002) investigated the prospects of the archaeological identification of the symbolic character of animals using evidence from the Roman period in The Netherlands, and highlighted the importance of the contextualisation of the material. Accordingly, he made recommendations for the retrieval and examination of food remnants from both inhumation and cremation graves and from contexts of mortuary feasting in order to detect funeral food, and drew attention to temples and building offerings to assess the significance of animal symbolism. Gumerman (1997), in a more general study, further suggested that spatial investigation of waste disposal across a site may help in distinguishing ceremonial from everyday refuse according to their distinct location, manner of disposition and actual content.

Several archaeozoological studies have been conducted looking at animal offerings as meat was typically the food of sacrifice in antiquity. In Rome, for instance, sacrificial meat was reserved for the elite and only the residues reached the market (Jameson 1988; Garnsey 1999: 123-4). This, according to Garnsey (1999: 122-3), was due to its relative scarcity in the Mediterranean diet, as grass and fodder, on which animal raising depends, can be in short supply in Mediterranean environments. Illustrative is the work of Lentacker *et al*. (2004) who examined archaeozoological data from mithraea in Europe, using as their main study site the temple in Tienen (Belgium). Their research helped identify the use of high gastronomic value ingredients and the symbolic meaning for certain species, such as the cock, in the

Mithras cult. Particularly interesting is also King's (2005) synthesis of faunal remains from Roman temples in Britain that suggested a connection between individual cults and the selection of species for sacrifice and offering. In the same study, King further highlighted the use of domestic stock rather than wild animals in Romano-Celtic temples.

In terms of plants, relevant research has focused on the symbolic value of certain vegetative offerings and foods in burials, temples, altars and other ceremonial contexts. Numerous case studies (e.g. Marinval 1993, 2001, 2004; Petrucci-Bavaud and Jacomet 1997; Petrucci-Bavaud *et al*. 2000; Robinson 2002; Zach 2002; Matterne and Derreumaux 2007) have identified a wide range of food plants associated with such contexts. Seasonal fruits and flowers have been identified as offerings in burials (e.g. Mercuri 2005: 140), but certain species appear to be more recurrent. Pine cone and nut, and date, for instance, have been traditionally related to Roman rituals. Of these, more discussion has been centred on pine. Kislev (1988) and Wallace (unpublished) have provided overviews of the pine presence and established its strong association with Roman ceremonial practices; Kislev (1988: 78) mentions that ripe cones could be hung to open and shed their seeds as symbols of plenty or fertility; similarly, Wallace (unpublished) argues that pine cone, rather than having an association with a specific deity, is a wider symbol of fertility and resurrection, supported by its occurrence in numerous offerings for different gods and goddesses – albeit, to my current knowledge, most of them oriental (see, for example, Zach 2002).

One of the best studies of ceremonial customs in the Roman period is the interdisciplinary research on cremations in Vindonissa (Switzerland), part of which was the examination of archaeobotanical data (Hintermann 2000). A thorough analysis of the variety of plant remains, including many exotic imports such as date, fig and olive, showed no link between the species and the age, sex or status of the deceased, but it confirmed significant changes/additions in the types of food plant offerings during the period of the graveyard use (Petrucci-Bavaud *et al*. 2000). Much work has also been conducted by Marinval and Bouby (e.g. Marinval 2004; Bouby and Marinval 2004) on reviewing the archaeobotany of Roman ceremonial contexts, mostly in France, but also in other provinces. These studies demonstrated how local produce was used in ceremonial contexts, with the implication that insights into contemporary economic and agricultural regimes can be anticipated; associations of certain food items, such as fruits and exotic species, with 'Romanized' customs were also suggested, contributing to debates on social change.

The early medieval period saw a fuller role of Christianity and a new political balance. Together with new religious structures and beliefs, novel forms of practices developed, such as monasticism. The monastery is in fact one of the most obvious focus of study related to food and archaeology. Harlow and Smith (2001), for instance, taking archaeobotanical evidence from three different monastic sites in late antique Egypt and comparing it with documentary information, discovered a large variety of food crops available, including several fruits, condiments and, to a lesser extent, nuts and vegetables, possibly due to the lower chances of preservation of the latter. This evidence suggested a possible alternative picture to the "*bland and frugal diet*" (2001: 763) described in the texts, but also, arguably, gave support to the self-sufficient character that monasteries aimed to acquire, also supported by Groenman-van Waateringe's (1994) study. Archaeozoological studies have also contributed to the study of monastic diet regimes. For example, Grant (1988), looked at bone remains from various sites of medieval England and indicated that from the 10th century on an additional source of meat, namely freshwater fish, became available to certain social groups, concentrated in monastic sites and castles. Grant also associated the increase in the availability of wild animal resources of fish and birds with trends in religious dietary regulations, such as those of St Benedict's Rule proscribing quadrupeds (see also Ervynck 2004: 218-9).

More light is shed on monastic diet by the analysis of skeletal remains from cemeteries. In particular, cases of DISH disease (Diffuse Idiopathic Skeletal Hyperostosis) – often associated with obesity and the development of diabetes – have been recorded from several monastic cemeteries or graves, pointing towards very adequate quantities of a variety of food items for consumption (Roberts and Manchester 2001: 120-121). Stable isotope analysis has been also employed, as by Polet and Katzenberg (2003), who reconstructed the largely meat and fish-based diet of a coastal medieval monastic community in Belgium. Naturally, dietary differences should be expected in monasteries of different orders, different places and periods of time as written sources reveal, as well as in the hierarchy within an abbey (e.g. Van Winter 1986; Grimm 1996; Ervynck 2004: 216-220). Likewise, the fact that most monasteries provided hospitality and even shelter to lay persons should be taken into account, a fact which shows that the monastic communities were heterogeneous and therefore, divergences in the dietary regime – not always detectable archaeologically – must have been common.

Even though the ritual aspect of food is not the main focus of the present thesis, ceremonial/religious contexts are looked at in an attempt to assess their association with exotic food plants within their contemporary social framework. The inclusion of such sites was further considered very important in order to explain the possible occurrence of exotic or rare species in contexts not directly associated with status, allowing some more insights into the different operating layers within a social structure. This has been also noted by Bakels and Jacomet (2003) who suggest that the ritual association of date and pine in Roman central Europe shows that these do not necessarily represent luxuries despite their relative rarity and their status as imports.

2.5 Exotics and their Potential in Archaeobotanical Research

The material on which this thesis is based is exotic food plants. Their study is a relatively new and very promising method of investigation and thus interpretation, and here their potential will be explored.

In archaeobotany, exotic plants constitute the most easily identifiable category of food items associated with luxury consumption (Palmer and Van der Veen 2002). Evidence for an astonishing variety of exotic spices and other food plants brought from distant Asian locations during the Roman and the Islamic periods comes from archaeobotanical studies in the ancient ports of Berenike (Cappers 2003) and Myos Hormos (Van der Veen 2003b, 2004) on the Red Sea coast of Egypt. As Roman and medieval long-distance trade was a costly, slow and often perilous affair, so, many (long-distance) imported exotics had a particularly high value, as contemporary historical sources duly attest (Miller 1969; Garnsey 1999: 122; Milton 1999; Fernández-Armesto 2001: 126-134; Dalby 2002). In northern European contexts, studies on the chronological distribution of food plants, aiming to identify overall dietary changes through extensive time periods, recognise both the Roman and medieval periods as important for the introduction of new exotic plant taxa, which further attracted interest in understanding the processes of their changing status, consumption and integration into diet. Such exotics include not only imports from distant destinations, but also from Mediterranean Europe. Greig (1983), in his review of the distribution of food plants in northern Europe from the Neolithic to the end of the 19th century, was one of the first to signify the extensive array of supplementary food plants, such as fruits, vegetables and spices, that appear in the north with Rome. He then observed a change in the diet for the early medieval period during which there is emphasis towards cereals, and a further increase in the variety of fruits, nuts and other food plants with the development of towns and trade later in the medieval period. This pattern was also identified by Rösch (1998), who compiled a dataset of more than 100 archaeobotanical investigations in south-western Germany from the Neolithic period to modern times.

The often high value of new exotic food plants in combination with the fact that these were not indispensable items for the diet of the local people, offering rather a qualitative differentiation to their everyday gastronomy, points to the luxury status of many of them, at least in the early stages of their introduction. Restricted access to luxury food items is thus expected and, as a consequence, there is much scope to use these as indicators of status differences, marking a borderline between various groups and reflecting class divisions, social ambitions and so on (Palmer and Van der Veen 2002). Moreover, as Douglas and Isherwood (1996: 108) argue in their study on the consumption of goods, by studying the rich, a measure against which wealth and consumption can be compared across the whole social spectrum is obtainable. Exotics, normally aimed (at least initially) for elite consumption, constitute thus an excellent tool to understand and provide insights into those higher social levels; their permeation into lower social levels allows then interpretations against contemporary elite standards.

The relevance of using exotic species in the study of the lower levels of the social structure can be further anticipated. Hawkes (2002), using Roman Britain as a case study, suggested that when investigating the native rural poor in past societies, cultural inertia and innate conservatism should be taken into account, as the transmission of ideas, with the lack of means of mass communication, would have been difficult. Hawkes argues that, in the case of food, ordinary, poor women, not actively involved in politics, would have been in charge of its preparation, being the agents for continuation of practices that they had learnt from older women. She concludes that what should be expected is continuity and instead we should seek to explain change. Indeed, the study of the social distribution of exotics can identify such changes and contribute to debates on their meaning through the detection of the processes that led to these changes.

Exotics can be further employed to investigate sentiments of neophilia and neophobia – to borrow the terms from Visser (1991: 42-43) – referring to the 'love' and 'fear of the new', respectively, towards food and diet, interpreted as ultimately reflecting attitudes of acceptance or rejection of the 'other'. Thus, it could be argued that in some cases exotics might have been treated simply as something different, extrinsic to one culture. Integrating partly or fully, or rejecting the foreign products does not solely signal individual tastes but reflects also cultural affinities, certain preconceptions and, in the longer term, the evolution of human relations and economic and political choices within a particular context, justifying the use of the exotics in such matters.

It is important to stress here that the status of a species as a 'luxury' is not static, but it may change with time (Berry, 1994: 17-19) according to a series of factors, ranging from a change in attitudes to technological advancements, that may lead to an increase in availability. Examples of products which have undergone status transition are numerous, including sugar, coffee, tea and chocolate. Sugar, for instance, entered the Mediterranean with the Arabs and became more popular with the Crusades (Galloway 2000). The industry was initially labour-intensive and small-scale, contributing to the maintenance of sugar's luxury status. However, in the 16th century the industry was gradually transferred to the Americas, where the abundance of land and fuel resources permitted an increase in production, which further created a large labour demand. In order to satisfy this demand, indigenous populations were employed but gradually the industry turned to Africa and the slave trade. The rise in the activities led also to a corresponding increase in the availability of sugar, and from the middle of the 18th century its popularity increased via a complex social web, its price gradually fell; after 1850 sugar lost its luxury status (Mintz 1985, 1997; Galloway 2000; Dalby 2002: 26-29). Thus, to return to our discussion, the identification of status transitions of various species through time holds great potential to illuminate the very processes that led to this change and to unfold the nature and the norms of the changing societies.

One of the first endeavours in archaeobotany to understand changes in the status of new food plants during the Roman and medieval periods was made by Dickson (1994), who analysed the evidence for garden plants from 56 sites in Britain, aiming to trace their change from imports to locally grown produce. For the Roman period she classified the various sites into fort, *colonia*/town and farm/villa but for the medieval period most of the data derived from towns. Nevertheless, whilst some chronological refinement was attempted for the medieval period, the Roman phase was considered as a whole. The research posed more questions than answers, highlighting the difficulty to distinguish between collected, cultivated and imported plants, but it did set some lines of enquiry for future work. The process of change in the luxury status of exotic plant taxa, however, is best illustrated in the most socially-centred archaeobotanical research on the spatial and temporal distribution of food plants so far, carried out by Bakels and Jacomet (2003). Their study, focusing on central Europe during the Roman period (see section 2.2), aptly demonstrates how those exotics that could be locally cultivated gradually lost their status to become incorporated into local agricultural and horticultural regimes, while true luxuries disappeared with the collapse of the Roman Empire. This process of changing status of various species is also central to this thesis, which expands upon the methodological example set by the study of Bakels and Jacomet (2003).

A final important aspect that is relevant to the study of exotics should be mentioned. As the meaning of 'exotics' varies within different social circumstances and in different periods of time, their acquisition and use might best be understood in the context of 'discrepant consumerism', as described by Fincham (2002). Based on Said's (1993) concept of 'discrepant experience' to suggest that a person's perspective of the world is dependant on its position within it, Fincham (2002) argues that the perspective of material culture 'consumption' will differ according to the identity of the consumer. Thus, for example, following the same rationale that Fincham uses to describe the discrepant consumption of a Samian bowl, in the case of exotic food plants, a Roman soldier may use a certain condiment because it creates a familiar 'taste of home', whereas a member of the local elite may acquire this condiment to identify with the new authority in order to gain political advantages.

A fuller study of exotics within a broad time framework and with a refined social classification of the available sites, therefore, has the potential to filter out the various layers contributing to their dispersal, and provide a better understanding of exotics as active agents in shaping past societies. The following chapter will outline the methodology employed to study the dispersal of exotics in order`to provide the basis for answering the questions posed by this research.

CHAPTER 3
Methodology

In this chapter the methodology devised to explore the issues of the introduction and dispersal of exotic food plants is outlined, setting the historic framework and the cultural location for this study. The chapter begins with information on the data collection procedure, followed by the choice of region, time period, site type classification, sampling assessment and selection of species; then the terminology used and the database are described; finally, the methods of analysis are delineated.

3.1 Data Collection

As indicated in Chapter 1, this thesis is part of a larger research project directed by Prof. Marijke van der Veen, concerning the role of imported and introduced food plants in Roman and medieval Europe. It is the intention to collect information from all sites that have produced archaeobotanical data. During the early stages of this work it became clear that the dataset is not only very large, but that, contra to expectation, virtually no national databases exist, so that most of the information needs to be extracted from individual reports. It was thus decided to limit the scope of this thesis, to ensure that it could be completed within the three years. Thus, data collection is here focused on those sites that contained one or more of the exotics (as identified in Chapter 1) and the analysis is concentrated on the three broad chronological periods (Roman, early medieval and medieval). The remaining data will be collected during a subsequent stage of the project, after this thesis is completed, and the more detailed chronological analysis will also be conducted then. Here the broad patterning will be identified, thus providing the information needed to select where more detailed analyses are best concentrated in the future.

The methodology of using presence as the main analytical tool has, of course, been employed in several large-scale and socially focused investigations, including archaeobotanical ones. Bakels and Jacomet (2003) used it in their seminal study of twenty food plants in part of Central Europe during the Roman period, which provided useful insights into their status and social access. It has also been successfully applied in other archaeological studies looking at the social distribution of artefacts, such as the case-studies of nail-cleaners, brooches and lamps in Roman Britain, conducted by Hella Eckardt (2000, 2005), who identified very distinct patterning for these objects and offered a number of convincing explanatory models. All these studies have demonstrated the potential of this contextual approach in analysing large datasets and identifying broad patterns.

The advantage of this methodology is that by depending on positive evidence, it avoids assumptions based on the absence of species, which is not always a reliable parameter, and which could be the result of a variety of reasons, such as limited excavation, insufficient sampling and failure of recovery. In the context of this thesis, the recording of the presence of exotics can provide a solid basis for meeting its objectives (see Chapter 1) by compiling an extensive dataset and allowing identification of the broad chronological patterning of individual species. The employment of a series of analytical methods (see section 3.9 below) allows the effective comparison of the social access to the various exotics and the assessment of their relative role and importance among this group of food plants; it also offers some preliminary suggestions on how much ingrained exotics were into local culinary cultures and economies. Once the larger project is completed and data from all remaining sites (i.e. those without exotics) have been collected, the results of the present research will be placed in their wider context, facilitating the identification of biases in the available archaeobotanical datasets which can then be used to modify the patterns found.

In practice, the collection of the data was carried out through extensive bibliographical research, liaison with archaeobotanists, and visits to various institutions in north and west Europe. Contacts were made for each country (see section 3.2) separately and information of mainly published - but also some unpublished - archaeobotanical data was gathered in the form of offprints, excel spreadsheets and Access databases. In two instances national databases were made available, one for Britain (ABCD, Tomlinson and Hall 1996; Allan Hall kindly provided an updated version) and one for The Netherlands (RADAR, Van Haaster and Brinkkemper 1995). Moreover, many archaeobotanists kindly filled in specially designed forms (see Appendix I) providing relevant information for sites they had studied. Finally, in order to locate any additional reports, the bibliographical data as listed annually in the journals of *Vegetation History and Archaeobotany* since 1992 (including publications since 1989), *Kulturpflanze* since 1968 (including publications since 1965), and *Jahreschrift für Mitteldeutsche Vorgeschichte* of the year 1971 (including data for the year 1968) were consulted, as well as, the on-line database (http://www.archaeobotany.de/database.html) compiled by Dr. Kroll, covering literature on archaeological remains of cultivated plants published between 1981 and 2004. A full list of the people contacted for each country is provided in Appendix II. Secondary data are recorded as provided by the reports and the databases; no re-examination of any actual botanical material was attempted, rendering this study reliant on published/written identifications.

3.2 Study Area

The focus of this study is north-western and western Europe. Thus, information was gathered from Andorra, Belgium, Britain, Denmark, France, Germany, Liechtenstein, Luxemburg, Spain, The Netherlands and Switzerland (Figure 3.1). Portugal and Ireland were excluded from the investigation, as no archaeobotanical reports were available from the former and access to the reports could not be arranged in time in the case of the latter.

The selection of the study area was based on a series of factors. Firstly, the area includes regions both within and outside the borders of the Roman Empire, thus allowing me scope to trace and assess any possible interactions. Secondly, it provides a focus largely on the western Christian world, following its history from Imperial Roman to medieval times. Lastly, extending from the Mediterranean to the Baltic, it encompasses a wide range of environmental conditions to allow for comparisons to be made.

3.3 Time Periods

Information was recorded for the Roman, early medieval and medieval periods, covering a range of almost 1600 years (*ca.* 100 BC – AD 1500). The selection of this historic time span was based on the fact that the Roman and medieval periods constitute the two major phases of introductions of new plant species into the northern part of Europe since the Neolithic. During these periods, technological innovations and evolving political situations contributed to the continuous movement of people and the establishment of large urban units, which also led to expansion of trade routes; the circulation of staple and mass-produced products between places separated by long distances was facilitated, allowing the inflow/outflow, among others, of exotic species. The study period is not extended after AD 1500, after which date new species from the Americas began to be introduced into Europe; this would, accordingly, require a different set of species and an extended time span to be considered, which falls outside the scope of the present thesis.

The large time span of the study was considered important in order to trace the introduction of these exotics and follow their trajectories of development, as food histories require a relatively long time to evolve (see, for example, Atkins and Bowler 2001: 273-274). For the purposes of data collection, multi-period sites were recorded according to the time division in each report, noting their start and end date, as separate records. Then, on the basis of this dating evidence, the record was assigned a broad chronological period (Roman, early medieval, medieval), and a more specific sub-phase, as defined below (for the brief chronological description the following sources were consulted: McEvedy 1967: 76-92; McEvedy 1980: 24-90; James 2001: 59-108; Vale 2001: 276-323; Whitton 2001: 109-164; Neil Christie, pers. comm.). In cases where the dating evidence ran over two different phases, the site was classified under the phase that covered the majority of its time span. Both the broader and the more detailed chronological categories are an attempt to accommodate the best wider division for all countries considered, acknowledging, nevertheless, the historical individuality of each. The sub-periods were defined as follows:

A. Roman (*ca.* 100 BC-AD 500)

1. ***Early (R1):*** 100 BC–AD 100, but including all sites for which the earliest dating evidence lies within the 1st century AD and spans up to the 2nd century AD due to difficulties in pottery dating refinement.
2. ***Middle (R2):*** AD 101-300.
3. ***Late (R3):*** AD 301-500, but including all sites that are dated as 3rd to 4th century.
4. ***Roman unclassified (R0):*** This category includes all sites for which the dating evidence made it impossible to allocate them securely into one of the phases above.

This is the period of the Roman conquest, consolidation and expansion; the silk route opens, and trade with India, after the discovery of the monsoons, starts to proliferate.

This period also includes the decline phase during which communication with the northern parts of the Empire deteriorates and various Germanic tribes increasingly break over the Roman frontier.

B. Early medieval (*ca.* AD 500-950)

1. ***Early (EM1):*** AD 500-750, but including all sites dated to AD 400 and spanning up to AD 600.
2. ***Late (EM2):*** AD 751-950, but including all 10th century sites.
3. ***Early medieval unclassified (EM0):*** This includes sites that could not be classified securely into one of the phases above.

The early medieval period sees the emergence of new kingdoms, the spread of Christianity and the appearance of monasteries. Trade continues with the establishment of trading centres (*wics*); north Europe becomes the political and economic centre of activity, while political instability prevails for most part of the period. Towards the later part of this phase the Arabs expand their territories in the south and conquer Spain. Note that although the early medieval time span is seemingly shorter compared to the other two periods, by including sites dated to AD 400-600 and all the 10th century sites, it becomes more or less equal to the Roman and medieval time spans.

C. Medieval (*ca.* AD 950-1500)

1. ***Early (M1):*** AD 950-1100, but including all sites for which the dating evidence extends from the end of 9th century AD up to the 11th century AD.
2. ***Middle (M2):*** AD 1101-1350.
3. ***Late (M3):*** AD 1351-1500, but including sites whose start date lies within the 14th century AD and spanning up to AD 1600, as they largely belong to the late medieval world.
4. ***Medieval unclassified (M0):*** Includes sites the dating evidence of which did not allow their secure classification into one of the phases above.

In this period old structures give way to new socio-political regimes, with the expansion of the Normans and the German Empire, which becomes the strongest state in Christendom. New trade routes open in the north whereas Venetians and Genoese dominate the Mediterranean trade. Stability in the borders of the various western European countries is gradually accomplished while the secular state steadily gains more power over the Church towards the latter half of the Middle Ages.

For the purposes of the current research only the broader chronological divisions (**Roman**, **early medieval**, **medieval**) have been employed in order to identify the general patterning, but more detailed dating evidence is highlighted when appropriate. A full, detailed chronological analysis will be conducted as part of the wider project, once all the data are collected. Although the overall time span covered by the three periods is not precisely equal, it should not create an appreciable bias because the data analysis is based on proportions (see Chapters 5 and 6) with each period largely being examined separately.

3.4 Site Type Classification

In order to monitor patterns in the use of and access to exotics, the sites (for a detailed definition see section 3.7 below) were classified into a series of units. Whilst still broad, this classification is more detailed than has previously been applied in archaeobotanical studies (*cf*. Greig 1991; Dickson 1994; Groenman-van Waateringe 1994; Bakels and Jacomet 2003). This level of detail was considered necessary because it allows more contextual information to be incorporated, such as the distinction between secular and ceremonial/religious contexts, and thus helps identify any potential differences in the social distribution of food plants (see Table 3.1). As different forms of socio-political organisation were in existence in the Roman and the medieval worlds, a distinct set of categories was employed for each time period as outlined below, while acknowledging that the Roman/early medieval/medieval division is artificial and will vary in each region.

For the Roman to late antique period (100 BC–AD 500) the following site divisions and subdivisions were adopted:

A. Rural

a. **lesser**, referring to individual agrarian units such as farmsteads and hamlets
b. **nucleated**, referring to villages, encompassing a cluster of houses, often including buildings or features not related to agriculture. *Oppida* are also included in this particular site type, but an indication of their actual character is made next to the site name
c. **elite**, such as villas and high status farmhouses.

B. Town

a. **major town**, including the higher levels of towns, i.e. *coloniae, municipia* and c*ivitas capitals,* and
b. **minor town**, referring to small towns, which might be a *statio*, *mansio* (or road station) that developed more urban features.

C. Military

a. **intramural**, embracing all types of forts, regardless of status or size, and
b. **extramural**, referring to *canabae* and *vici*, i.e. the extramural settlements.

D. Ceremonial

a. **temples/shrines**
b. **burials**, including both inhumations and cremations.

E. Other

a. **industrial**, that is sites where some sort of industrial activity alone has been identified
b. **shipwreck**.

In the case of the early medieval (AD 500-950) and medieval periods (AD 950-1500) the following categorisations for sites were followed:

A. Secular Rural

a. **lesser**, referring to small agrarian units such as farmsteads and hamlets
b. **village**, which refers to larger agrarian units
c. **elite**, that refers to manors, moated sites, palaces and rural castles.

B. Secular Urban

a. **major town**, which refers to a pre-existing town adjacent to or combining a castle; often it will have a Roman foundation or at least a pre-AD 1000 foundation
b. **minor town**, which refers to a new foundation attached to a castle or a monastic site, often a market town
c. **castle**, contiguous to an urban centre.

C. Religious

a. **urban monastery**
b. **rural monastery**
c. **cemetery/burial**.

D. Other

a. **trading centre**, referring to gateway communities, usually of the 7th to 10th centuries, such as '*wics*' and *emporia*. Pre/proto-urban communities
b. **industrial**, that is sites where predominantly industrial activity has been identified
c. **shipwreck**.

One of the greatest challenges in research concerned with social distribution is the site classification process. While some sites can fit indisputably into a certain category, such as Roman London being labelled as a major town, others are more difficult to categorize. A series of problems are inherent in any process of classification. In some cases the limited excavation area may prohibit a full understanding of the extent and function of a site. This is particularly relevant to the distinction between rural lesser and rural nucleated/villages. To tackle this problem, the intermediate category 'rural non-elite' has been employed for those sites where information was unclear. Note however that if a site changed function within a time period (e.g. from military to urban), then two different records were created for each site type describing its different functions.

In the case of the Roman data more problems arise when an attempt is made to classify *civitas capitals* as major or minor towns and to distinguish between rural nucleated sites and minor towns. In this study, *civitas capitals* were grouped together with major towns, as they were planned since their foundation (Wacher 1997: 19-20), which suggests some clear Roman control, at least during their inception. In contrast, most small towns developed in a more haphazard manner mainly around route-centres or along main roads (Burnham and Wacher 1990: 4). Their role involved provisioning of some sort of services and facilities, such as industries and periodic or permanent markets that could serve travellers and, also, their surrounding countryside. Small towns in turn were often dependant on larger towns for administration and provisioning of goods. The variety of such settlements would create a continuum of sites, at the lower end of which sites with more agricultural functions are found, thus blurring the dividing line between small towns and villages (Burnham and Wacher 1990: 1-6, 43-50). Again, limited excavation could influence the classification but as the dataset is large enough, potential biases are expected to be balanced out. Also, the use of multivariate statistics (see section 3.9.2), that allow the examination of the behaviour of the various settlements in relation to the presence of exotics, can be used in order to identify those records that deviate from the general profile observed for their respective site type category.

In terms of the early medieval urban data, after the collapse of the Roman Empire, many towns ceased to exist, whereas others, new or old ones, became part of newly emerging socio-political and economic realities. In the period between *ca.* AD 300 and 800 in particular, towns underwent a series of changes in terms of their forms and functions to become more inward-looking units, characterised by religious buildings and defensive walls, although their actual role and their relation with their hinterland varied locally, and is a continuous matter of debate (e.g. Christie and Loseby 1996: 1-3, Wickham 2005: 591-692). As the character of some towns (particularly those that witnessed a continuity from earlier establishments), in terms of the activities carried out by their population, often resemble agricultural communities (Neil Christie, pers. comm.), minor towns in the present research refer largely to new foundations attached to castles or monastic sites.

For all unclear site type classifications in any time period, local archaeologists and archaeobotanists were also consulted as to how best to categorize them according to their particular socio-economic setting. A final difficulty in the site classification process needs to be addressed: the variability in terms of status within a given site type, such as within a major town. Such differences (e.g. low status, elite, merchants/tradesmen) are not always identifiable but, in order to best tackle this problem, when relevant information on the actual context was available, a comment was added to the record to aid in the interpretation of the results.

3.5 Sampling and Contextual Assessment

In order to gain an overview of the overall quality of the archaeobotanical data available for each site, the number of samples collected and analysed and their retrieval method (flotation/water-sieving or hand-picking) were recorded. The number of samples can be an indicator of how systematic and thus representative the sampling strategy was at each site; further, the sample collection method affects considerably the type of the archaeobotanical remains retrieved, with hand-picked material representing only the bigger, clearly visible items, whereas flotation and water-sieving offer a much higher chance of encountering plant parts of all categories.

In addition, an important aspect in the archaeobotanical investigation is the actual deposits – hearths, latrines and so on – from where the samples were retrieved, as these often determine the type of archaeobotanical material preserved. Therefore, it was decided that a general note of the types of deposits (archaeobotanical contexts) would be made when available, although these referred to the whole record (see terminology in section 3.7) and not to each sample. The reason is that the aim of this present research is a large-scale, inter-site analysis and, accordingly, more detailed sample-by-sample examination for each individual site was identified as both unrealistic, in view of the time scale, and outside the scope of this current research. For the same reason the volume of each sample was not recorded.

3.6 The Species

3.6.1 Selection of Taxa

All species (with the exception of the extremely rare ones) as known from historical resources and/or archaeobotanical reports to fit the definition of 'exotic' (see Chapter 1) were chosen in order to be monitored for the purposes of this research, resulting in a total of one hundred and eleven species. The selected species, taking into account the existing Roman and medieval affiliations and trade routes, were plants originating from the broader Mediterranean area, Asia and Africa. Using such a large number of plant taxa was considered to be particularly useful, as it could provide more opportunities to trace exotics, which are rarer compared to staples. The final dataset included both species that could not grow in the study area due to environmental constraints and, therefore, had to be imported, and species that, once introduced, would have the potential to be cultivated if such an option was desired. Moreover, some of the species were already staples in the southern and/ or central part of the study region but were introduced much later into its northern part, according to the definition provided in Chapter 1. Such an example is lentil, which although widespread in the Continent during prehistory, is practically absent prior to the Roman conquest in Britain. A complete list of the selected species, organised under the categories of condiments, fruits, vegetables, pulses, nuts, cereals, and oil-producing, is shown in Table 3.1, together with their place of origin. The sources consulted in order to identify the place of origin of the chosen species were Zeven and de Wet (1982), Smartt and Simmonds (1995), Küster (2000), Vaughan and Geissler (2000), Zohary and Hopf (2000), and Prance and Nesbitt (2005).

3.6.2 Quantification

The underlying rationale of the data collection was to create a uniform and systematic data record of exotic species that could provide comparable information. Therefore, in order to reach this aim, only the presence of the exotic plant species was recorded and no attempt was made to include any actual numbers or percentages. This was necessary because of the great variability of the quantification methods employed in the archaeobotanical analyses with not all reports offering numerical information. In addition, as the volume and the number of the archaeobotanical samples vary among the different sites, and in some instances are not even recorded/published, the incorporation of the counts of each species could potentially distort the overall picture. Nevertheless, a note was made of whether information on species absolute numbers was available in the report, in case future analysis is required.

3.6.3 Accuracy of Identification

The degree of certainty with which the various species were identified was recorded to distinguish the securely identified exotics, and also to incorporate the tentatively identified ones, denoted, in the archaeobotanical terminology, usually with the code ‘cf’. The inclusion of this parameter was based on the fact that, according to the taphonomic distortions exhibited, and the degree of the experience of the various archaeobotanists and the quality of the reference collections to which they had access, the identification level of the plant remains may be highly variable. Therefore, monitoring the presence of the less securely identified specimens of these rarer species has the potential to increase the actual dataset significantly. At the same time, the considerable volume of data, collated to provide general patterns, could partly compensate for the less accurately identified species and, in some cases, even establish their occurrence.

3.6.4 Preservation

In European contexts four main modes of preservation occur: carbonisation, waterlogging, mineralization, and impressions on pottery and mud-bricks. Due to the differential effects of these four processes on the archaeobotanical material, with each one favouring the preservation of different plant parts or different species (e.g. Dennell 1976; Willerding 1991), it was considered imperative to record this parameter to further filter out this taphonomic factor. When a species was encountered in a site in more than one preservation mode then all different modes were recorded. It is important to note here that since a species could occur in more than one preservation mode, in the analysis of the results according to the preservation mode, the total number of occurrences of a species could potentially be higher than the number produced when only its presence in a site is taken into account.

3.7 Terminology

Three main terms are used throughout this research, namely ‘site’, ‘record’, and ‘occurrence’, which are defined as follows:

Site – This refers to an excavation as categorised in section 3.4. In cases where an excavation contained relevant information from multiple contexts that fell across several site type categories, then these were classified as separate sites. For instance, if an excavation has been carried out in a Roman town and relevant archaeobotanical evidence existed from the urban settlement and from a temple within that settlement, then the settlement and the temple were recorded separately, representing two sites. Also, large settlements, such as particularly large towns or important military forts that might have hosted several excavations in different areas can be represented by multiple ‘sites’. The implication is a potential inflation of the number of certain site types (e.g. major towns). Nevertheless, this inflation was considered justified on the grounds of the large size of these site types: the material from multiple excavations from different parts of a city, for example, was considered to be more representative when compared to other sites with a more restricted area; also, the presence of the species in the multiple excavations of a certain place could be used as an indication of their abundance.

Record – This refers to a site as divided chronologically according to the broad time period categories, namely Roman, early medieval, medieval. Thus, for example, if a major town site contained relevant archaeobotanical information from the Roman and the medieval period then it would represent two distinct records. Moreover, if further archaeobotanical information was available from a temple within the Roman town, this would constitute as mentioned above a separate, second site, but also a third record.

Occurrence – This refers to the incidence of a species in a certain mode of preservation. For instance, if fig occurs in both a waterlogged and carbonized state in a given Roman temple, it would represent one record, but also two distinct occurrences, one for each preservation mode.

3.8 The Database

The data collected were brought together in a uniform database format in order to allow their analysis. The selected software package was Microsoft Office Access 2003, which allows flexibility in terms of data management and, at the same time, is widely available and user-friendly. Furthermore, since most databases accessed to provide the relevant information for the various countries were built using Microsoft Office Access, the filtering and transferring of the data between the same computer programmes were easier and reliable.

In order to manipulate the large amount of the information, a relational database, that is a series of inter-linked tables, was constructed, as indicated in Figure 3.2. All the data were entered and stored in forms, examples of which can be found in Figures 3.3 and 3.4. The entry of the information into the database took three separate steps. Firstly, the data were entered as they occurred in the literature and databases. This resulted in a total of 1002 bibliographical forms and 1846 records. As some of the records represented duplicates (the data in various databases, such as the national database of The Netherlands and England, enter data by feature type rather than just by site type), these duplications were subsequently removed, in order that each record referred to the data from one particular site type and phase of occupation. This resulted in a reduction of the number of records to 1675 and 995 bibliographical references. For the purposes of this thesis a third database was constructed, grouping the records by broad chronological period (Roman, early medieval, medieval), i.e. combining records that represented different phases within each broad period. This resulted in a database of 1447 records and 990 bibliographical references. It is this latter database that is used in this thesis, though, where appropriate or necessary, some reference will be made to chronological patterning by sub-phase. Note that the reduction of bibliographical records was the result of multiple reports existing that referred to different periods of the same site, and these references were put together in the same entry; this was necessary because the database was designed so that a bibliographical record could relate to many site record entries but not the other way round (see Figure 3.2).

3.9 Methods of Analysis

The actual production and analysis of the results were first accomplished using a combination of Microsoft Access and Excel. In Access a number of queries were performed that brought together in a compact form relevant parts of the information gathered, in accordance with the research questions. This information was then transferred to Excel for the production of summary charts and tables for use in other computer programmes as described in the following sections.

3.9.1 Univariate Analysis

This first analysis is species-oriented and focuses on the examination of one variable at a time, in order to investigate firstly, the proportional presence of a species in the different periods and, secondly, the relative proportion of each site type where a species occurs by time period. Moreover, the proportion of each site type in the whole dataset by time period is examined in order to assess whether there are biases towards certain site types. Finally, an assessment of the relative proportion of each species in the different site types by time period, gives some first indications on the extent of integration of different food plants into local diet and agricultural regimes.

The second analytical tool employed was ESRI®'s ArcGIS 9.2, a Geographic Information System (GIS), which can be defined as "*an integrated set of computer-based techniques for the storage, manipulation, analysis and display of spatial, often map-based data*" (Gillings 2001: 672). Here it has been used in order to display the geographical distribution of records and species on a series of thematic maps (Chapter 5). Their spatial representation is important in order to identify regional variations and to filter out any potential environmental parameters that may have influenced the results, particularly since two contrasting agricultural regimes and economies, namely those of Mediterranean and temperate Europe, are both included in the dataset. Also, plotting the geographical distribution of records can eliminate the effect of multiple records from the same broader place (e.g. London or Cologne), as the map scale allows the depiction of the latter only once; therefore, this analysis helps discern whether only a few or a variety of places are chiefly responsible for the occurrence of a species in a certain site type.

3.9.2 Multivariate Analysis

In order to both supplement and provide an alternative means to test the validity of the emerged patterns, Correspondence Analysis (programmes CANOCO and CANODRAW, Ter Braak and Smilauer 2000) is used in Chapter 6. Correspondence Analysis (CA) is a relatively recent ordination technique that has proven to be the most appropriate and effective for archaeological data analysis, such as counts or presence/absence of nominal categories (Baxter 1994: 100; Shennan 1997: 308). This technique has frequently been employed in sample-by-sample archaeobotanical analysis (e.g. Jones 1991) but here it is used to display patterns on a large scale, record-by-record basis. Being a multivariate technique, it allows the analysis of all variables simultaneously, and therefore, it can be used in order to carry out full inter-record and inter-site type analyses. This type of analysis provides an additional means to distinguish any potential associations between species and sites (e.g. a certain town) or areas (e.g. a certain region/country). Finally, CA has the further advantage that allows examining how tight various groups are (for example urban/rural/etc.) or whether there are any potential outliers. A brief description, in line with the instructions by Baxter (1994: 100-139), Shennan (1997: 308-360) and Ter Braak and Šmilauer (2002), of how CA operates and how it has been applied in this particular case is provided below to form a basis for the interpretation of the produced charts and should be consulted for a full understanding of Chapter 6.

Application and Interpretative Description of Correspondence Analysis

The data are firstly summarised in Excel spreadsheets, where rows correspond to individual records and columns correspond to species. The presence of each species is indicated with one (1) and its absence with zero (0). After appropriate formatting of the tables, such as the use of abbreviations, the data are transferred to the CANOCO 4.5 package (Ter Braak and Smilauer 2002) where they are translated as proportions in order to create comparable profiles for each row and column. Thus, a double calculation is carried out to provide the proportion of each species in each row (record) and the proportion of the various records where a species (column) occurs. Importantly in CA, the statistics involved take into account the actual size of an assemblage; thus, for instance, records with a larger variety of species or many common species have more weight or 'mass', according to the relevant terminology (Shennan 1997: 313), and exert a greater influence on the statistical outcome. Rare species or particularly poor records can be unrepresentative and thus create 'noise', obscuring rather than enhancing any potential patterning in the dataset (Jones 1984: 48-49; Jones 1991: 67-68). In order to reduce this bias, particularly rare species and records with very few species are excluded from the analysis.

The decision on the cut-off point of the records is not an easy affair; in archaeobotanical contexts relevant research has been carried out only for counts, providing suggestions on the minimum number of plant parts a sample should contain to provide statistically significant results (Van der Veen and Fieller 1982). Here, as the data are in presence/absence format, a series of CA tests was carried out for each individual dataset to establish the minimum number of species that a record should contain in order to reduce the effect of outliers. The cut-off point was records with five species but where the dataset was exceptionally small this number was reduced to three species. In terms of species, the presence of each one in 5% or 10% of samples (or, in this case, records) is a usual cut-off point in ecological and archaeobotanical studies (Jones 1991: 68). Here again, CA tests were carried out for each dataset to choose the appropriate margin of species inclusion. A 5% cut-off point was found to be adequate, while in some cases, species occurring between 5 and 10% of the records, but still creating some noise, were downweighted so that their behaviour could be identified without them skewing the analysis. The actual records and species cut-off levels that have been employed are indicated for each analysis separately.

The statistical results are displayed visually as two-dimensional scattergrams using CANODRAW Version 4 (Ter Braak and Smilauer 2002). These plots are made of two axes that are crossed at a point which represents the average profile; as a result, the position of a variable (e.g. a record or species) on the plot indicates its deviation from this average. In terms of species, the distance between them on the plot shows how similar or different these are in terms of their relative abundance across the records. Likewise, the distance between records indicates their difference in terms of their species composition. When interpreting the correspondent species and records plots, records present at a certain area of the plot can be explained as having a higher proportion of the species clustered at the same area of their equivalent plot. In applying such an interpretation attention should be paid to the scaling of the axes of the various plots to be the same.

The accuracy of these results can normally be indicated by the value of the inertia for each axis of the plot, which is defined by Cool and Baxter (1999: 78) as "*describing how much variation in the data is explained by each axis*". Thus, the higher the combined inertia of the two axes, the more accurate the scattergram in accordance to the variables in use. The inertia can be calculated from the statistical output of the ordination analyses as given by the Log view of the CANOCO package; it can also be calculated for individual rows and/or columns in order to identify which particular sites or species contribute the most for the inertia accounted for by each axis (Baxter 1994: 114-118; Shennan 1997: 324-327). Nevertheless, since in this study we are dealing with presence/absence data, the value of inertia for each axis is likely to be low (Ter Braak and Smilauer 2002: 123). However, Ter Braak and Smilauer (2002: 123) maintain that, in this case, the ordination diagram can still be informative. Here, the axes contributing most to the inertia will be used for plotting the CA results, even if all values are low; these results can then be compared with those obtained from the analysis in Chapter 5 to assess consistency of results.

Finally, as hinted earlier, CANOCO and CANODRAW allow data to be classified and displayed in groups, which is particularly useful for the present study due to the extensive dataset employed. Thus, the individual records for each time period are grouped together according to their site type, while the species are also grouped according to both the food category to which they belong (fruit, condiment, etc.) and their chronological pattern (see section 5.1).

CHAPTER 4
Results

This chapter presents the data collected and contained in the database. The data are described in four separate sections: the number and type of site records for each period; their geographical distribution; the range and abundance of exotic food plants found; and their mode of preservation. In the first three sections (4.1-4.3) the overall pattern is outlined, with a detailed description of the results for each time period. The section on preservation (4.4) focuses on the whole dataset and, hence, all time periods are considered together. Biases in the database are identified here and the species selected for further analysis are discussed (section 4.5). In the final section (4.6), all main patterns observed are drawn together and summarised.

4.1 The Records

A total of 1447 records were included in the current study. These are distributed between the different time periods as follows (for more details see Addendum):

Roman – 617

Early medieval – 199

Medieval – 601

Unclassified – 30

Here the number and type of site are discussed by period, in order to identify the prevailing pattern in each and to trace any potential changes. Any records with very broad dating evidence, namely those that could not be attributed to a specific period, were necessarily excluded from the analysis.

4.1.1 Roman

The majority of records containing one or more exotic species in this period are rural (Figure 4.1a); they represent more than one third of the total number of Roman records. These are followed by towns, then military and, finally, ceremonial records. Exotics were also reported from a small number of industrial sites and shipwrecks. When the more detailed site typology is examined (Figure 4.1b) the overall picture becomes slightly different, as major towns appear to be the site type where exotics occur most frequently. Within the rural category most records are, surprisingly, non-elite records and, in particular, rural lesser sites, that is to say, individual farmsteads or hamlets. Rural lesser records with exotics come second after major towns. It is noteworthy that their number is even higher than that of military intramural and extramural records with exotic food plants. In terms of ceremonial contexts, most species have been recorded from burials. Finally, no substantial distinction, in terms of the presence of exotics, can be made between military intramural and extramural records.

4.1.2 Early Medieval

During the Early Middle Ages a marked difference exists between rural and all other types of site, with the former having the highest number of exotic species (Figure 4.1c). Urban centres with one or more of the species examined follow, but their total number is less than half of the number of rural records. In this period trading centres form a distinct site type category, for which a few records of exotics are available. In the more detailed analysis of site type (Figure 4.1d), the high number of non-elite records with exotic species is noteworthy once again. Exotic species are encountered in decreasing order in terms of numbers of records, in villages, major towns, rural lesser, and trading centres; all other site types with these food plants are very few. Overall, the instances of exotics are much lower than during the Roman or the medieval period; their total number is only a third of those for the Roman and the medieval phases respectively. It must be noted, however, that this number does not reflect the actual archaeobotanical studies for the period, but the number of archaeobotanical reports where exotic species have been identified.

The case of Britain, even though not representative of all countries, may provide some useful insights. For the collection of the British data it was possible to compile a list of all available archaeobotanical reports, and the reports were accessed in libraries, archives, and databases. This list contains 592 reports of the Roman period, 259 early medieval and 270 medieval. When these numbers are compared with the actual number of records included in the study, it appears that, roughly, 1/3 of the Roman, 1/5 of the early medieval, and 1/2 of the medieval reports contained at least one exotic species. Taking into account the fact that the total number of British early medieval reports available was more or less the same as that for the medieval period, the low number of records with exotics in the early medieval period appears to be real, and not to be an artefact of archaeobotanical sampling strategies. While this refers to the British data only it is here assumed that a similar pattern occurred in the other countries (this will be assessed in detail as part of the wider project, at a future date). Although there was no systematic recording of site type when no exotics were encountered, the overall impression is that many archaeobotanical studies of this period concerned rural non-elite sites, rather than major towns. Even for the characteristic trading centres, only a relatively small number of reports were available. The difficulty of locating archaeobotanical information from such a large region within the time limits of a PhD meant that only sites with exotics were recorded (see section 3.1). Therefore, while the lower number of early medieval reports must be treated with caution, it may well reflect a genuine, reduced presence of the species under consideration. Even so, further care should be taken, as another contributing factor to their reduced visibility may be related to the domination of rural records during this period: most of the species examined have higher chances of recovery in waterlogged environments (see section 4.4), which are usually typical of deep deposits, most frequently encountered in urban rather than rural contexts.

4.1.3 Medieval

The overall picture of species distribution in medieval records is very different to that observed in the two previous periods (Figures 4.1e and 4.1f). Urban centres, major and minor, dominate in numbers. It must be remembered that the definition of 'urban' during this period broadens to include a new feature in the built environment, namely the castle, around which many smaller towns are created and expanded. Archaeological interest in these site types has resulted in the recovery of various exotics. Turning to the other site types, monasteries become well established in the medieval period, and archaeobotanical studies in these contexts show the regular presence of exotics. Rural records, when compared with urban ones, seem few, but considering their absolute numbers they are still numerous. There is no marked difference between rural non-elite and elite records in terms of their numbers in this dataset.

4.2 Geographical Distribution

In order to examine the overall data in terms of their distribution across space and to provide a first assessment of the state of archaeobotanical research in the study area, the total number of archaeobotanical records per country was examined (Table 4.1). Noticeably, the bulk of the data comes from four countries in the north-western part of Europe: Britain, Germany, The Netherlands, and France. Denmark, Switzerland and Belgium are represented by far fewer archaeobotanical records. Spain shows a remarkably low number of archaeobotanical records with exotics in all three time periods considered. In addition, a few records are available from Andorra, Liechtenstein, and Luxembourg, the small number of which is to be expected, given the size of these countries. Moreover, when considering the density of sites as the total number of sites per km^2, it becomes apparent that the Dutch dataset is the most plentiful, and those for France and Spain are the sparsest. Thus, the overall dataset concerns mostly the temperate part of the study area while the few southern records derive largely from southern France and northern Spain (see Figures 4.2a, 4.2b and 4.2c).

These trends reflect, to a large extent, the state of archaeobotanical research in the various countries: the prominent contrast between the north and south of the study area illustrates the slower establishment in the southern European countries of archaeobotanical research as a standard practice. This is especially true for historical periods for which research is heavily restricted to prominent architecture and historical sources, failing to exploit a series of types of evidence that could allow a more holistic insight into the past. Similarly, in other countries, such as Switzerland, archaeobotanical research is very much localised; the excavation strategies are particularly heterogeneous and do not always include bio-archaeological investigations. Therefore, archaeobotanical data are only available from certain regions in accordance with the research interests of individual laboratories/archaeobotanists (Stefanie Jacomet pers. comm.). The same holds true for the archaeobotanical work in France where the majority of the data derive from specific regions (see section 4.2.1). In addition, the lack of data from certain parts of the study area could be due to inaccessibility of many archaeobotanical reports because they are not systematically published, as is particularly the case of many rescue excavation reports. The prominence of the Dutch data can be partly attributed to the systematic collection of all the available archaeobotanical records in a detailed central national database that is being continuously updated. To a lesser degree this is matched in Britain, where the use of archaeological and archaeobotanical databases is common practice, allowing easy access to relevant information and published reports. Nevertheless, taphonomic reasons have also an impact on the observed pattern; the rare occurrence of waterlogged seed assemblages in Mediterranean environments, such as in Spain and southern France, creates a bias against the recovery of most species in consideration (see section 4.4).

4.2.1 The Roman Period

The spatial distribution of Roman records shows how these are fairly evenly distributed in all countries, with the exception of Spain, for which very few records are available (Figure 4.2a, Table 4.2). In Germany, the vast majority of records come from the southern and western regions that lay within the Roman frontiers. A similar picture is observed in Britain where almost all archaeobotanical records come from England, dispersed across the landscape up to Antonine Wall.

In terms of site types, some comment ought to be made in regards to Britain and France. As mentioned in section 4.1.1, rural records dominate the Roman landscape, followed by towns and military records, the latter of which are mainly found close to the frontier areas. Contrary to this trend, in Britain there is a higher number of urban records and fewer rural ones (Table 4.2). Nevertheless, this seems to be an artificial patterning as the higher number of towns is the result of the numerous excavations from London that account for almost half of the urban records in Roman Britain; in fact of the 71 urban Roman records in Britain, 32 derive from London. Furthermore, strikingly, more than half of the ceremonial records with exotics can be traced to France, which is largely dictated by the research interests of individual archaeobotanists (Philippe Marinval and Laurent Bouby). Most of the other site types in France cluster in the north-eastern part of the country, a region extensively studied by Veronique Matterne.

4.2.2 The Early Medieval Period

The early medieval distribution is considerably different (Figure 4.2b, Table 4.3), as most of the records are confined towards the northern and north-eastern part of the study area. A high density of records is observed in The Netherlands, but in the other countries records are rather sparse. In France there is a lack of evidence for the western and the middle part of the country, while in Switzerland the few records available all come from its northernmost zones. On the other hand, the German records, when compared with those from the Roman era, are more widespread across the modern-day boundary of the country. Finally, considering the various site types, they seem to follow the same pattern across the whole study region and no association between certain site types and countries can be observed, although in the southern regions there are fewer records for major towns.

4.2.3 The Medieval Period

In the medieval period the number of records with exotics increases again (Figure 4.2c, Table 4.4). The records are fairly well distributed across all countries, but with Spain again being the only exception, represented by remarkably few records. The distinctive feature of this phase is the prominence of exotics in urban contexts. This is a general trend that can be observed across the whole study region, apart from France, where almost three times more archaeobotanical records report exotic plants from rural rather than urban contexts. A possible explanation could be the relatively low number of medieval records available from France, especially taking into account the actual size of the country; conceivably, the French patterning may just reflect the research interests of individual archaeobotanists.

4.3 The Food Plants

Of the 111 exotic species that were selected for recording (see Table 3.1), 77 were found in one or more of the three time periods considered here (Table 4.5). These were grouped according to their frequency as follows:

1. Rare, being present in fewer than 10 records in a given time period,
2. Low frequency, present in more than 10 records in a given time period and up to a 100 records in all periods together,
3. Common, monitored in 101 or more records.

This grouping should be treated as a general delineation of the results; it will be refined later for each time period.

4.3.1 Absent and Rare Food Plants

Thirty-four species, listed in Table 4.6, were not attested archaeobotanically in any of the sites considered here. Another 33 species (Table 4.5) were rare, occurring only in a few records. Many factors may have contributed to the scarcity of these species and these are explored here:

Taphonomy

Not all plants or plant parts are equally well preserved. Seeds are usually the hardiest parts of a plant, and therefore, most likely to be preserved. In contrast, species such as ginger (*Zingiber officinale*), which is the only spice that is propagated by splitting the root and not by seed (Dalby 2002: 21), and sycamore fig (*Ficus sycomorus*) that produces seedless fruits (Prance and Nesbitt 2005: 84), have fewer chances of survival. Leaves, roots and stalks, as Dennell (1976) first pointed out, are soft tissues that disintegrate more easily compared to other hardier parts of the plant. In European soils, where desiccation occurs only under exceptional conditions (e.g. Ernst and Jacomet 2005; Akeret and Kühn 2008), the preservation of species that are selected for their leaves or root is, therefore, not favoured. This is also the case for globe artichoke (*Cynara cardunculus*), the by-products of which (flower bracts) have equally reduced chances of preservation. Other examples are liquorice (*Glycyrrhiza glabra*), galangal (*Alpinia galangal*) and elecampane (*Inula helenium*), which are all valued for their root, as well as laurel (*Laurus nobilis*), whose strongly aromatic leaf and essential oil are used for culinary purposes, and saffron (*Crocus sativus*), made from the dried stigmata of the purple saffron crocus (Dalby 2002: 138). Other species included in the 'rare' category, the preservation of which is not favoured by the taphonomic conditions as it is their leaf or other soft part that is being used, are onion (*Allium cepa*), horseradish (*Armoracia rusticana*), borage (*Borago officinalis*), rocket (*Eruca sativa*), alexanders (*Smyrnium olusatrum*), basil (*Ocimum basilicum*), marjoram (*Origanum majorana*), caper (*Capparis spinosa*), balm (*Melissa officinalis*), rosemary (*Rosmarinus officinalis*), lettuce (*Lacyuca sativa*), chervil (*Anthriscus cerefolium*), sage (*Salvia officinalis*), leek (*Allium porrum*), thyme (*Thymus vulgaris*), and rue (*Ruta graveolens*). Finally, it is interesting to note that many of the absent species were true exotics in the sense that they could not be cultivated in northern Europe and, therefore, had to be imported; in these cases, when the by-product of the plant was traded, i.e. crystallised syrup from sugar cane (*Saccharum officinarum*), this may leave almost no traces in the archaeobotanical record.

Specialised use and context

Another reason that may account for the absence of some species is a potentially specialised use that would limit their presence to certain contexts, or that would not render them particularly desirable for long-distance trade. Carob (*Ceratonia siliqua*), for instance, widespread in the Mediterranean basin, was often used here as feed for livestock. Later, in medieval times, due to its uniform seed size, it was also used as a standard weight by jewellers, hence the word 'carat' for measuring precious stones

(Kiple and Ornelas 2000: 1746). The conspicuous absence of carob could then be attributed to its primary role as animal fodder, in which case alternative sources of feed would be available, and there would be no need for expensive imports. Alternatively, its absence could be due to a process and use not favourable for ubiquitous survival in archaeological contexts: as a measuring unit, carob would be restricted to certain contexts, not associated with food processing and, thus, not easily retrieved using bio-archaeological sampling strategies.

Late additions

Historical records suggest that some of the species under consideration were incorporated into northern European food history rather late, namely from the end of the 15th century onwards. Their inclusion here was intended to target early occurrences but, in this case, the archaeobotanical evidence appears to be in agreement with historical sources. Such is the case for Sichuan pepper (*Zanthoxylum piperitum*), coconut (*Cocos nucifera*), and star anise (*Illicium verum*), the latter of which does not even appear in the early Chinese literature (Dalby 2002: 81). Artichoke was cultivated in the Mediterranean region and it was a highly prized vegetable in the Roman world, but there are no references for its cultivation in northern Europe until much later (Prance and Nesbitt 2005: 119). Liquorice and the citrus fruits became available in Europe in the late medieval period and their cultivation was restricted to the southern parts of the continent. In terms of the archaeobotanical information from southern Europe, a combination of the very few records available and of preservation in these areas mainly being carbonization, might explain their absence from past plant assemblages, along with other species such as aubergine (*Solanum melongena*) and carob, which were also established in the area by the Middle Ages (Prance and Nesbitt 2005: 118; 178). Other species included here are soybean (*Glycine max*), curry leaf (*Murraya koenigii*), sumac (*Rhus coriaria*), ajowan (*Trachyspermum ammi*), tamarind (*Tamarindus indica*), clary sage (*Salvia sclarea*), terebinth (*Pistacia terebinthus*), mastic tree (*Pistacia atlantica*), mung (*Vigna radiate*) and black-eyed bean (*Vigna unguiculata*), which were practically unknown to north-western European culinary practice and habits until the post-medieval period.

Accessibility and economic value

Some species, according to historical sources, were very rare and highly prized throughout the study period. The complete absence (or presence in only a few records) of such expensive and widely sought-after species may be accidental, as their rarity would minimise their chances of preservation, while their importance would reduce wastage. A typical example is nutmeg (*Myristica fragrans*), alongside clove (*Syzygium aromaticum*) and cinnamon (*Cinnamomum verum*), which were already known in the West under Rome, but remained until the end of the medieval period very rare and expensive. Equally rare was cassia (*Cinnamomum aromaticum*), although its price in late medieval times was not as high as that of cinnamon (Prance and Nesbitt 2005: 160-161).

Cultural preferences and diverse perceptions

Cultural preferences and perceptions are important factors that can potentially influence the adoption or rejection of certain species. This is particularly the case for condiments, as their distinct flavour and aroma can significantly affect the culinary experience. An example, in accordance with historical sources, is the case of turmeric (*Curcuma longa*), which, even though it was known during the Roman period, was considered as a second class plant since, although it produced a yellow dye, it did not have the aroma of saffron and, thus, it was never taken up by Europeans until relatively recently (Dalby 2002: 96). In the same vein, it is indicative that some species are found exclusively or primarily in a certain time period: despite their low numbers, lupine (*Lupinus albus*) and thyme are mainly encountered during the Roman period, while cardamom (*Elettaria cardamomum*), chervil (*Anthriscus cerefolium*), apricot (*Armeniaca vulgaris*) and pomegranate (*Punica granatum*) are mostly present in medieval contexts. Whether this is coincidental or suggestive of changing trade routes and culinary preferences is hard to conclude due to the rarity of all aforementioned species. A better understanding can be achieved when the more common species are considered.

4.3.2 Distribution of Species over Time

Naturally, the various species are not all equally distributed in the three chronological periods of study; some species occur only in a certain time period, whereas the distribution of most exotics oscillates between the Roman, early medieval and medieval period (Table 4.5). Each phase will now be treated separately in order to detect trends and patterns within each.

4.3.2.1 The Roman Period

Sixty-six exotic species were present in the Roman period. Species that were encountered in fewer than 10 records were classified as rare, those that were present in more than 10 and up to 100 records were classified as 'low frequency', and those found in more than 100 records were classified as 'common'. Table 4.7 lists these exotics according to their frequency, organised on the basis of their food category; from this it appears that, in terms of food types, the most recurrent encounters are fruits and condiments, followed by vegetables. Of all species present in the dataset some are solely (highlighted in bold) or strongly associated with the Roman period (Table 4.8). Onion – though tentatively identified as such (*Allium* cf. *cepa*) – cumin (*Cuminum cyminum*), sesame (*Sesamum indicum*), pistachio (*Pistacia vera*) and wild plum (*Prunus damascena*) were recorded only in Roman contexts albeit very scarcely, with one record each. Date (*Phoenix dactylifera*), pine nut (*Pinus pinea*), olive (*Olea europea*) and oregano (*Origanum vulgare*) predominate in this period, constituting 70% or more of the total number of instances of a given species in all time periods; the same holds true for the rarer bottle-gourd (*Lagenaria siceraria*), melon (*Cucumis melo*), garlic (*Allium sativum*) and thyme. Finally, coriander (*Coriandrum sativum*) and lentil (*Lens culinaris*), although relatively frequent in the medieval period seem more connected with the Roman period, being among the most commonly encountered species of the period.

4.3.2.2 The Early Medieval Period

During this phase, only 43 species were present but none appears specifically linked with this time period (Table 4.5). Moreover, their overall frequency is significantly low compared to both the Roman and medieval periods; it is indicative that even the four most commonly occurring species – celery (*Apium graveolens*), lentil, grape (*Vitis vinifera*) and apple (*Malus* sp.) – have been monitored in less than 100 records (Table 4.5). The only new food plant is buckwheat (*Fagopyrum esculentum*), which occurs exclusively in Dommelen-Kerkakkers, a village in The Netherlands. However, its early occurrence here could be deceptive, as the possibility exists that the buckwheat retrieved from the early medieval levels was residual, given the multiple phases of this site extending up to the end of the 10^{th} century AD. For this period, species occurring in up to 10 records were classified as rare, those present in 11 to 30 records were allocated to the low frequency category, and those present in more than 30 records were classified as common (Table 4.9). This classification highlights once again the low occurrence of the species examined during this period and also that fruits constitute the most frequent food type category.

4.3.2.3 The Medieval Period

In the medieval period the list of exotics increases again to include a total of 70 species. Table 4.10 groups the species, in their respective food groups, as rare (being present in 1 to 10 records), low frequency (present in 11 to 100 records), and common (present in more than 100 records). Fruits are the most widespread, while numerous condiments are commonly distributed in medieval contexts. Interestingly, this period sees the number of fruit records increase, but the range of fruit species remains more or less the same: 18, 13 and 17 different fruit species occur in the Roman, early medieval and medieval phases respectively. Nine species, namely horseradish, borage, rocket, Spanish vetchling (*Lathyrus clymenum*), nutmeg, sorghum (*Sorghum bicolor*), cardamom, chervil and melegueta pepper (*Aframomum melegueta*) are attested in the dataset for the first time now, while buckwheat may be also added to this list (Table 4.11). Apart from buckwheat and melegueta pepper all other species are very rare, encountered in fewer than ten records; melegueta pepper is not commonly distributed, but its presence is more marked with 16 instances. Regarding species that predominate during the medieval period, it seems that a variety of fruits, condiments, cereals and vegetables, already present in the previous periods, now become more conspicuous: medlar (*Mespilus germanica*), mulberry (*Morus nigra*), parsley (*Petroselinum crispum*), caraway (*Carum carvi*) and fennel (*Foeniculum vulgare*) are such examples (Table 4.11).

4.4 Mode of Preservation

The 77 exotic species are preserved mainly through three different ways: waterlogging, carbonization, and mineralization. Each of these preservation modes presupposes a different set of conditions that can affect differently the various plants or plant parts, thereby playing an important role in the formation of archaeobotanical assemblages. This research, being based on such an extensive dataset, allows an overview of the effect of preservation on archaeobotanical findings of the past thirty or more years, with an emphasis on condiments, fruits and vegetables. The overall dataset will be discussed and a closer examination of the relations between the various species and their dominant mode of preservation is then attempted.

The overall results (Table 4.12, Figure 4.3) reveal that waterlogging was the principal mode of preservation. Four species, namely *Eruca sativa, Cuminum cyminum, Borago officinalis*, and *Allium cepa*, have been retrieved only in waterlogged conditions. Most of the remaining species that are typically recovered in such environments belong to the fruit, condiment, vegetable and oil-producing plants category. Interestingly, of the three cereals examined, rice (*Oryza sativa*) and buckwheat were mainly preserved by waterlogging, whereas sorghum was exclusively recovered in a carbonized state. Rice and especially sorghum were rare finds, and thus it is difficult to establish an association with the preservation mode. Buckwheat, a pseudo-cereal that belongs to the Polygonaceae family, has been encountered frequently in medieval North-West Europe; its prominence in waterlogged environments contrasts with the pattern observed for most cereals, such as wheat and barley (see, for example, Willerding 1971), which may be partly due to its different methods of processing prior to consumption. Moreover, taphonomic factors may be responsible for its waterlogged prevalence, as buckwheat seeds (or in reality achenes) decompose very quickly and totally when in contact with fire (Wiethold 2007).

The next most common mode of preservation is carbonization. Apart from sorghum some rarer species, occurring in fewer than ten records, namely chickpea (*Cicer arietinum*), Spanish vetchling, lupine, sesame and pistachio, have been encountered solely in such a state. Even though their rarity would render their association with carbonization precarious, it is interesting to note that the list contains only pulses, a cereal, a nut and an oil-producing plant. Turning to the more common species, three species can be almost exclusively associated with carbonization, with more than 75% carbonized occurrences: date, lentil and grass pea (*Lathyrus sativus*); pine nut and olive were also encountered frequently in a charred state (51% and 42% of occurrences respectively) but not exclusively. The association of date with carbonized rather than waterlogged conditions, as identified for the majority of fruits, is likely to be related to its specialised use in certain (ceremonial) contexts, and the same is also true for the carbonized occurrences of pine nut (see sections 5.2.5 and 6.2.2).

Far fewer species were preserved by mineralization. This is a rather infrequent mode of preservation that occurs when diluted minerals surround the seed as a protective crust and gradually replace its organic content to create a mineralised copy of the whole or part of the seed (Green 1979: 282-3; Melendis 1988: 15). Mineralization usually takes place when the organic remains are significantly decayed, the conditions are periodically waterlogged and a source of soluble minerals, such as domestic waste, is available (Carruthers 2000: 75-84; McCobb and Briggs 2001: 939;

Jacomet 2003: 179-181). The most frequent minerals replacing seeds include potash, followed by gypsum, calcium carbonate and calcium phosphate (McCobb and Briggs 2001: 930). Experiments have shown that both the structural features and the chemical composition of the seed coat dictate the extent of mineralization of a species (McCobb *et al*. 2003). Of the species examined in this research, only evergreen pistachio (*Pistacia lentiscus*) was encountered exclusively in mineralised form, but since this was only a single occurrence, no association between the species and this preservation mode can be established. The plants most frequently encountered in this preservation mode – also supported by the results of the present research – are fruits, being often retrieved from cesspits and garderobes, the micro-environment of which can allow the development of mineralised conditions as some mineralising agents such as calcium phosphate may originate from human faecal material (Green 1979: 281; Green 1984; McCobb *et al*. 2003: 1269).

The last form of preservation considered comprises impressions on pottery or mudbrick. In this case only one occurrence of lentil was recorded and, therefore, the paucity of evidence does not allow the consideration of this preservation mode.

The overall results regarding the preservation of the various species are in agreement with many studies that have highlighted the fact that different types of species survive in distinct preservation modes according to their qualities, their various uses and the processing stages they have to go through to be prepared for consumption/usage. Fruits, condiments, vegetables and oil-producing plants normally would not need to come into contact with fire as part of their processing or use, as opposed to cereals for example, and therefore, their carbonized remains are usually few (e.g. Willerding 1971, 1991). Furthermore, such plant types in contact with fire have fewer chances to survive due to their oil content (Wiethold 2003: 270) and their soft tissues, but they do preserve well in waterlogged conditions. In contrast, archaeobotanical observations have shown that pulses, after cereals, are indeed the most likely category of plants to be preserved by carbonization, due to the association of fire with certain stages of their processing, from cooking preparation to disposal (e.g. Willerding 1971; Wiethold 2003: 270); for instance, accidental spillages on the hearth during cooking might have resulted in the preservation of charred pulses. Finally, it should be noted that the differential preservation of species has a further effect: since certain types of species are mostly found in waterlogged conditions, which are frequently encountered in deep urban deposits, some biases may be introduced in their social distribution. Nonetheless, by examining and comparing species of the same preservation mode, the same bias will apply to all of them and to all time periods, and therefore, their comparison can still provide useful insights into their patterning.

4.5 Data Selection for Detailed Analysis

All species for which an adequate amount of information is available, that is species classified as common and low frequency (Table 4.5), are included in the more detailed analyses. Some of these species are often difficult to be identified with accuracy to species level. The most prominent examples included in this dataset are sweet and sour cherry (*Prunus avium/cerasus*), apple and pear (*Malus/Pyrus* sp.), melon and cucumber (*Cucumis* sp.), and the various cabbages, including turnip (*Brassica* sp.). Sweet and sour cherry records (*Prunus avium*, *Prunus cerasus* and *Prunus avium/cerasus*) were indeed combined due to the difficulty in distinguishing their stones archaeobotanically. However, in the case of the remaining three pair of plants it was decided that each species should be examined separately and the intermediate categories *Malus/Pyrus* sp. and *Brassica* sp. were thus excluded from the analysis. The reason for this decision is that, although sweet and sour cherry were particularly similar in their occurrences, some differences in the patterning of the remaining species during the recording process were detected. In addition, as the size of the present dataset is particularly large, it may overshadow the inconsistencies in the identification skills of individual archaeobotanists and possibly allow an actual patterning to emerge. By relying on the identifications given in the reports, it is therefore hoped that any potential differences between these species can be identified and explored, acknowledging, however, that the results should be treated with caution and must be subject to re-evaluation as archaeobotanical research progresses.

Overall, a total of 42 species are examined in the final analysis. A brief overview of these species is presented here, organized by food type. This is taken largely from collective studies on plant species, including Smartt and Simmonds 1995; Vaugan and Geissler 2000; Zohary and Hopf 2000; Dalby 2002; and Prance and Nesbitt 2005. Relevant information from individual site studies is also included when available.

Condiments

Coriander, fennel, summer savory (*Satureja hortensis*), parsley and dill (*Anethum graveolens*) are native to the Mediterranean region. Black mustard (*Brassica nigra*) originates in Asia Minor and the Middle East and from there spread to become naturalised in Europe. Similarly, white mustard (*Sinapis alba*), having originated most probably from the eastern Mediterranean, is a temperate zone condiment. Celery and caraway are present all over Europe: wild varieties of the former grow in moist coastal places, while the latter is adapted to cooler climates. Horehound (*Marrubium vulgare*) and oregano are native to Europe but the latter proliferates particularly in the mountainous areas of the Mediterranean. Black pepper (*Piper nigrum*) became very popular during the early Roman Empire and knowledge of the monsoon winds facilitated its trade from South-East Asia. It was highly valued by the Romans, and the Caesars treated it as a currency; by the medieval period it was one of the commonest oriental spices, accompanying many rich meals (Dalby 2000: 90-94).

All these condiments were known to the Romans for their culinary and/or medicinal uses. Coriander was, in fact, one of the most popular condiments in the Roman cuisine, mentioned in 18% of the recipes cited by Apicius (Cool 2006: 66). It was used for both its leaf and its seed and demand was so high that it was extensively cultivated in Egypt and other places. There is also textual evidence that later, *ca*. AD 800, Charlemagne ordered the cultivation of coriander in his Frankish Empire (Prance and Nesbitt 2005: 162). Fennel, dill and celery were valued both for their green leaves and seeds; parsley, summer savory, oregano and horehound were popular for their leaves; caraway, black and white mustard were grown predominantly for their seeds although their leaf is also edible; black pepper was used for its seed, whole or ground. The final condiment included in the analysis is melegueta pepper, thought to have appeared in Europe as an import from West Africa during the late medieval period when it was often used as a substitute to black pepper (Prance and Nesbitt 2005: 165).

Fruits

Olive, fig (*Ficus carica*), grape and date were the 'founder' crops of Old World horticulture (Zohary and Hopf 2000: 145). Olive and fig are typical Mediterranean fruit trees but fig can also grow in subtropical and warm temperate areas. Grape thrives in Mediterranean environments but it can tolerate cool and humid conditions, and as a result, its cultivation is also successful in areas of western and central Europe. In contrast, date, preferring dry, hot areas of the sub-tropics, cannot grow in North-West

Europe, and therefore, represents an import from areas such as North Africa. Peach (*Persica vulgaris*) and quince (*Cydonia oblonga*) arrive in the Mediterranean rather late, during Classical times. None of the two fruits grow wild in Europe; however, peach can grow in warm temperate regions and quince, although it needs sufficiently hot summers, is frost-hardy. Melon grows in warm and dry areas and can be cultivated in the field in the Mediterranean and in France as far north as the Loire.

Pear (*Pyrus* sp.), apple, cherry, plum (*Prunus domestica*) and damson (*Prunus domestica* subsp. *insititia*) are different in that they are cool temperate fruit crops. Wild forms of cherry, apple, and pear are present in temperate Europe (e.g. Bakels and Jacomet 2003: 554-5, Van der Veen *et al.* 2007: 205); current thought, however, is that the Romans introduced their domesticated forms into northern Europe. Archaeobotanically, on the basis of morphological criteria of their seed, it is not always possible to distinguish the different varieties of some of these fruits. Thus, apple has been used as a collective term for both *Malus sylvestris* and *Malus domestica*; pear refers both to *Pyrus pyraster* and to *Pyrus communis*. The last two fruits included in the analyses are mulberry and medlar. The former was known to the Greeks and Romans by the late 1st millennium BC (Vaughan and Geissler 1999: 100) and it can be successfully cultivated in areas with Mediterranean and mild temperate climates (Gerasopoulos and Stavroulakis 1997: 261); medlar can be naturalized in temperate Europe.

Vegetables

Six species were common enough to be included in the analysis of the results, namely cabbage (*Brassica oleracea*), turnip (*Brassica rapa*), rape (*Brassica napus*), cucumber (*Cucumis sativus*), bottle-gourd and garlic. Cabbage grows in the Mediterranean but is also particularly well adapted to the cool temperate conditions of North-West Europe. Its cultivation and use, as well as its different varieties, were known and described in many historical texts from the Classical period (Theophrastus, Cato, Pliny) to the Middle Ages (Hildegard, Albertus Magnus) (Hodgkin 1995: 76-82). Different types of cabbage are thought to have been developed in medieval Germany from where they spread to other parts of Europe (Prance and Nesbitt 2005: 115). Turnip also grows well in temperate Europe and is used for its root, leaf and seed, which is source of oil. Current thought holds that the cultivation of this species for its oilseed started in Europe in the late medieval period; nevertheless, its use as a vegetable was probably a much earlier phenomenon going back to the Roman period (McNaughton 1995: 62-8). Rape is similar-looking to turnip and is an important oilseed plant in temperate regions, although its root and leaf are also used. Its cultivation probably started in the Middle Ages but its history is rather obscure. Cucumber, originating from India (Zohary and Hopf 2000: 195), is quite different as it needs warm-temperate conditions for its growth. According to written testimonies, cucumber was cultivated by both the Greeks and Romans. Similarly, bottle-gourd is an annual species that can be cultivated in tropical and warm-temperate regions. Lastly, garlic was very popular in the Greek and Roman world and, as Prance and Nesbitt (2005: 104) state, "*The Romans used it to strengthen laborers and to make their soldiers more courageous*".

Nuts

Of the three nuts examined, pine tree grows throughout the northern Mediterranean, almond (*Amygdalus communis*) thrives best in warm Mediterranean environments, and walnut (*Juglans regia*) can grow in cool areas in both the Mediterranean and temperate Europe.

Oil-producing seeds

Two species belong to this group, namely opium poppy (*Papaver somniferum*) and hemp (*Cannabis sativa*). Opium poppy requires a temperate environment for its growth and is likely to have been firstly domesticated in the western Mediterranean. Some alternative views have been expressed by Hnila (2005) who proposed an early knowledge and use of opium poppy in Anatolia. Archaeobotanical evidence of *Papaver setigerum* – believed to be the wild progenitor of cultivated poppy – from an early Neolithic well at the coast of Israel also support a wider distribution of this wild type in the Neolithic period (Kislev *et al*. 2004). In Europe there is substantial archaeobotanical evidence suggesting that it was already in use in the Neolithic period (e.g. Merlin 2003: 310-11, Jacomet 2006, 2007, 2008). Apart from its oil, opium poppy is used for its seeds, which are consumed roasted or as seasoning for loaves (Dalby 2000: 135) and for its psychoactive qualities as a drug. Hemp can grow both in temperate and tropical climates and is used for its oil, fibre, psychoactive qualities, and as animal feed.

Pulses

Two pulses are included in the analysis: lentil and grass pea. Lentil has been frequently found in archaeobotanical assemblages in south and central Europe, often accompanying cereals and other pulses, since the prehistoric period (Zohary and Hopf 2000: 94-101). Grass pea is only a drought-resistant minor crop of traditional

Mediterranean agriculture which is used both as an animal feed and in the human diet. For the latter, grass pea requires special treatment in water, as it contains a toxin that can cause lathyrism, a crippling neurological disorder (Zohary and Hopf 2000: 119).

Cereals

This food category contains rice and buckwheat. Rice cultivation requires abundant water which partly accounts for its slow westward spread compared to other crops. In southern Europe, rice cultivation started only in the medieval period, although it was traded at least since the Roman period (Prance and Nesbitt 2005: 56). Zohary and Hopf (2000: 91) report that rice was grown in the Po valley in Italy under Rome, although without citing evidence. The second 'cereal' considered, buckwheat, is very well adapted to cold climates and poor, light soils; this pseudo-cereal is thought to have reached temperate Europe as late as the medieval period. Campbell (1995: 410-411) mentions that buckwheat was actually introduced firstly to Germany in the early 15th century from where it later spread to other European countries.

4.6 Summary and Concluding Remarks

The description of the distribution of the exotic food plants across the various site types allows the delineation of some intriguing patterns in all three broad chronological periods. The first important observation is the significantly reduced number of species found in early medieval contexts. This applies both to the range of different species and the number of records of each food plant. Rural records with exotics are the most numerous in both Roman and early medieval phases, while for the medieval period the trend is reversed as urban centres become the main contexts where exotics are found. Nevertheless, the more detailed analysis of the site types shows that, in both the Roman and medieval periods, major towns were the site type with the highest records of exotics, and only in the early medieval period were most of these species found in villages. The majority of sites are located in four countries, namely Britain, Germany, The Netherlands, and France. Enough information is also available from the remaining countries with the exception of Spain, which provided very few records. Across this socio-political landscape, distinct distribution patterns emerge in each time period; individual research interests on certain time periods and site types may have played a role in the observed distribution of exotics, but the dataset, being particularly large, permits the outlining of general trends for every time period.

In terms of the actual species, a distinct, wide set of exotics predominates in the Roman and medieval phases, while no exclusive associations emerge between any of the species examined and the early medieval period. Fruits, followed by condiments, is the most frequent food category in all three periods, but different species within these groups are associated with each period. For instance, summer savory, and coriander are more ubiquitous in Roman contexts while cereals and condiments, such as parsley and fennel, have more records in the medieval period. Waterlogging is the main preservation mode, although some associations can be suggested between certain species and carbonization. As differential preservation could affect the types of species present, it becomes imperative to compare species with the same chances of retrieval in order to be consistent and avoid biases owed to taphonomic inconsistencies. Thus, in the following two Chapters (5 and 6), the analyses will be carried out separately for waterlogged and carbonized material; the occurrences of species in other preservation modes were very few, and thus, they will not be considered any further. Only species classified as ‘common’ and ‘low frequency’ will be examined. All trends and patterns identified here will be analysed in detail in order to explore the various factors that contributed to the formation and distribution of exotic plant assemblages in each time period.

CHAPTER 5
Univariate Analysis
Chronological, Social and Spatial Distributions

In this chapter, the 'behaviour' of the selected food plants is examined, separately for the waterlogged and the carbonized data. Three separate aspects are considered: firstly, the chronological dispersal histories of each species, that is their abundance in each of the broad time periods. Secondly, the distribution of the species across the different site types is analysed to determine whether certain species are exclusively available at certain site types only and whether this changes across period. Finally, the geographical distribution of each species is plotted on a series of maps to assess any regional patterning in their availability. Note that ceremonial records are examined separately due to their distinct character (see section 5.2.5).

5.1 Chronological Distribution

The first step involves identifying the total number of records that produced evidence separately for waterlogged and carbonized food plants per time period (Table 5.1a). In terms of the waterlogged data more medieval records are present in the dataset; the number of Roman records is roughly equivalent to 3/4 of the medieval ones but the early medieval records are significantly fewer. The picture is altered when the carbonized evidence is considered, since, Roman records dominate the dataset, whereas early medieval and medieval records constitute merely a 1/3 and 2/3 of the Roman total respectively. This unequal representation of the three periods for both preservation modes needs to be taken into account when the relative proportion of each species is calculated for the delineation of its temporal dispersal. Comparison will be easiest between the Roman and medieval periods, especially for the waterlogged remains, whereas comparisons with the early medieval phase are necessarily less secure.

In order to identify the chronological distribution of the selected species, line charts have been produced, where the number of records with a particular species is expressed as a proportion of the total number of records, by period and mode of preservation. The results show that the occurrence of the plant taxa chosen for more detailed analysis varies through time, producing four distinct groups or patterns (see summary in Table 5.1b):

Pattern 1: Decrease

Seven waterlogged species decrease over time (Figure 5.1a), namely coriander, celery, summer savory, oregano, peach, olive, and pine nut. Of these, celery, oregano and pine nut see a constant decrease from the Roman to medieval period, although celery remains fairly frequent throughout. A significant drop is observed for all the remaining species after the Roman period, but later, in the medieval phase, their relative occurrence slightly recovers. Finally, two of the less common waterlogged species not included in the chart, melon and bottle-gourd, can be added to this group; these were retrieved mostly from Roman contexts and their later occurrence is particularly scarce.

Carbonized species that belong to this pattern are lentil, date, and walnut (Figure 5.1b). Noticeably, despite the drop in the occurrence of lentil, it remains relatively common during both the early medieval and medieval periods, whereas date is only present in the Roman period. Walnut, in contrast, although frequently encountered in carbonized mode, is more strongly associated with waterlogged preservation, in which it presents a different distribution pattern (see below). Olive, pine nut, peach and oregano portray more or less the same decreasing pattern in both preservation modes and were therefore omitted from Figure 5.1b. Almond and garlic being particularly rare were also omitted from the chart, becoming absent or very scarce after the end of the Roman period.

Pattern 2: Increase (a)

Pattern 2 includes species that are relatively common throughout the study period but become significantly widespread in the medieval period (Figure 5.1c). Species included in this group are fig, apple, grape, sweet/sour cherry, damson, plum, walnut, and opium poppy. These species occur in more than 20% of all Roman records, and despite their subsequent decline (with the exception of fig), they can be still considered relatively common occurring in more than 10% of all early medieval records. In the medieval period their presence becomes even more substantial. This is particularly so for fig, apple, grape and sweet/sour cherry, which occur in more than 50% of all medieval records while all remaining species (apart from plum) occur in 35% or more of all such records. The carbonized evidence indicates that, among the few species with a substantial number of carbonized occurrences, only grape follows this trend, although the increase observed between the Roman and medieval period is much more moderate, in a range of less than 2%. However, given the far lower absolute numbers of early medieval and medieval carbonized grape records, this increase may be insignificant. Then it becomes apparent that grape, similar to the other species that belong to this pattern, were common throughout. Also, these results indicate that the significant increase observed in the medieval period for the waterlogged species may be partly associated with the proliferation of waterlogged contexts in the numerous urban excavations. This will be discussed more fully when considering the social access to these food plants (section 5.2). The deviation in the waterlogged and carbonized pattern in the case of walnut may be treated similarly, but conclusions can be drawn only after its social access in each time period is considered.

Pattern 3: Increase (b)

This group of waterlogged species comprises hemp, pear, black mustard, turnip, fennel, mulberry, medlar, buckwheat, caraway, parsley, and cabbage (Figure 5.1d). These species can be generally considered rather rare in both the Roman and early medieval periods but their presence by the end of the study period is increased. They all occur in less than 15% of all Roman records and, apart from hemp and turnip, their occurrence declines to less than 10% of all early medieval records. In the medieval period, although more frequent compared to previous periods, they all occur in less than 35% of all medieval records with exotics. Four of these species, namely pear, hemp, black mustard and turnip, are more common compared to other Pattern 3 species; however, they are still included in this group because they are far less common compared to Pattern 2 species in the Roman period when quantified by absolute numbers or percentages. Note that waterlogged specimens of buckwheat are associated solely with the medieval period. In addition, rape, quince, black pepper, melegueta pepper and rice are part of this group of species. Although not frequent and hence not included in the chart, they all have been retrieved mainly from medieval contexts. None of these species has been found in early medieval records, while rape, quince, and black pepper were identified in only a handful of Roman excavations. Of the carbonized remains, only grass pea may be added to this group, though this is very scarce overall.

Pattern 4: Stable

A few waterlogged species appear to occur in more or less constant levels in the Roman and medieval periods (Figure 5.1e). The most typical species of this group is dill, which is fairly common in Roman and medieval phases, occurring in each in slightly more than 25% of all records. A drop is observed in the early medieval phase, which should be interpreted in the context of the overall lower number of records of the period with the selected food plants. Thus, given that dill occurs in more than 10% of all early medieval records, it can be classified among the more frequent species of the period. Of the remaining plant taxa, horehound, cucumber, white mustard, and almond are particularly infrequent in both Roman and medieval contexts, occurring in less than 5% of all records in either period – see horehound and cucumber displayed on Figure 5.1e. In the early medieval phase, horehound, even if seemingly more common, is still relatively rare, being present in less than 10 records, whilst the remaining three species are barely attested, with almond and white mustard being completely absent from the early medieval dataset. The waterlogged pattern identified for almond is different to its carbonized one, but in both cases the evidence available is very limited.

5.2 Social Access

Here the distribution of each species across the different site types is considered to gain an impression of who had or gained access to which food plants. Pie charts illustrate the relative proportions of the various site types with waterlogged or carbonized data for each time period (Figures 5.2a-f); and summary tables for each preservation mode and time period list the total number of records of each site type with at least one of the species under study, the total number of food plants present, as well as the average, median and maximum number of species (Tables 5.2a-f). The inclusion of the median, the middle point in a series of numbers, is important because the mean value may be skewed by outliers, that is, records with unusually high or low numbers of species.

Roman

During the Roman period waterlogged food plants are present almost equally in rural, urban, and military contexts, but in remarkably fewer ceremonial ones (Figure 5.2a). Table 5.2a indicates that major towns are the highest occurring site type and the one with the greatest variety of the selected food plants. Military extramural records follow closely in terms of variety; in fact the average and median number of species at military extramural records is the highest. However, as the maximum parameter indicates, this may have been slightly influenced by the effect of a single record, very rich in plant remains, namely Oedenburg Biesheim/Kunheim (e.g. Jacomet *et al.* 2005), an extensively excavated and systematically sampled site in France. Furthermore, despite their high numbers, rural lesser records show a reduced variety of food plants; noticeably, the maximum number of species in these records corresponds to the average number of species in the *vici/canabae*. Military intramural records, minor towns and nucleated settlements show a similar picture overall, followed by rural elite records. Few ceremonial records are included in the Roman waterlogged dataset with rather limited species diversity. Finally, few data are available from exclusively industrial records and shipwrecks, and are only added here as an indication.

The fewer carbonized food plants have been also retrieved from a variety of site types (Figure 5.2b), but, in this case, rural records are the most numerous, followed closely by ceremonial and urban contexts, while military records (disregarding the one industrial record) are the least profuse. A more detailed synopsis of the Roman carbonized data is presented in Table 5.2b, equally highlighting the predominance of carbonized material from burials, followed by major towns. Furthermore, a stable contribution of carbonized data is provided from both elite and non-elite rural contexts. In terms of abundance, most site types have produced a variety of species, perhaps with the exception of minor towns that contain a rather restricted number of food plants. Remarkably, looking at the average and median, it seems that each site type includes only a few species. The highest variety is displayed in ceremonial records and military forts. When the maximum parameter is further considered, then the overall picture is that of several records including a few, but variable food plants. This accords with the relatively low maximum number of species for most site types, which shows that it cannot be the presence of one or two particularly rich records that contribute to the high number of food types, but these must be divided between various records. As a result, and given the rather high variety of species in most site types, fewer carbonized species must be recurrent within each site type.

Early medieval

Early medieval rural records are far more numerous than any other contemporary site type, comprising 52% of all waterlogged records in the dataset (Figure 5.2c). In addition, quite a few towns (30%) have produced archaeobotanical evidence for the food plants examined, whereas trading centres constitute only 13%, and other site types, including religious ones, even less. Moreover, only a few religious records are currently in the dataset, although all include a relatively substantial number of different food plants (Table 5.2c). Villages are the main context and those also display a high diversity of species; in fact, this high diversity is observed for all rural site types. Yet the site type with the highest variety of food plants is major town, also indicated by their high average number of food types; however, as the median suggests, this could be the result of a few such records with a particularly broad range of species, rather than a general picture for most major town records. Minor towns are quite different to their major counterparts and, instead, have a similar species' range to that of trading centres, at least in quantitative terms. A similar average and median number of species to that of major towns is further witnessed in the case of rural elite contexts. Rural lesser records, villages, minor towns and trading centres all behave similarly in terms of the average and median, rarely including more than a few different species. Information from a couple of shipwrecks is also provided, to be treated merely as a reference.

The early medieval carbonized food plants are strongly associated with rural records (Figure 5.2d). Of these, non-elite ones are the most prominent (Table 5.2d); villages in particular are not only the most numerous but also include the highest variety of species. Yet, considering the average, median, and maximum number of species, it appears that all different site types behave more or less in the same way. All records within each category include occasional carbonized remains of different food plants. Even in the case of villages, given the discrepancy between the average and median parameters and taking into account the high maximum parameter, there are seemingly a few rich records while the rest are more similar to those of other site types in terms of species abundance and variety.

Medieval

The waterlogged medieval data (Figure 5.2e) derive from mainly urban contexts (73%); rural records comprise less than one fifth of the dataset (18%), while even fewer data come from religious contexts (8%). Other site types include industrial centres and shipwrecks, which have produced very few data. The breakdown for each individual site type, in terms of total numbers and variety of species (Table 5.2e) shows again the dominance of urban contexts, primarily major but also minor towns, although very little material is available from castles. Major and minor towns display the broadest variety of food plants with a particularly high average number of species per record, supported equally by their median number of species. Similarly, urban monasteries exhibit both a great variety overall and a high average and median number of species per record, highlighting again the strong association between the selected food plants and urban contexts. Relevant rural records are much fewer but still include a rather high diversity of species. Elite rural settlements and villages have almost the same diversity of species in terms of quantity, but elite contexts include, on average, more species per record. The difference in the diversity of species between rural elite sites (including rural castles) and urban castles is rather striking but should be treated with caution as only few archaeobotanical studies of the latter seem to have been conducted (or their data were available) so far. Rural lesser contexts, by contrast, appear poorest in terms of species diversity compared to all the other main site types. Monasteries in rural settings show the same variety of species to rural elite records and villages, having a rather stronger resemblance to the former. The few data available from cemeteries or individual burials demonstrate the presence of various food plants in such contexts.

Carbonized material (Figure 5.2f) has been retrieved from an almost equal number of urban and rural records. Very few religious and an almost insignificant number of industrial centres provided records. Table 5.2f reveals that urban major and minor records are very much alike, being both the most numerous and having the highest species diversity. Medieval rural records are mostly villages, followed by farmsteads/hamlets. However, the slightly fewer rural elite records include essentially the same variety of food plants as villages. In terms of religious contexts, urban monasteries are the best represented; they also record the highest average and median number of species out of all site types, which may suggest that this is where a greater number and kind of the selected food plants may be expected. The high diversity of food types in secular major town contexts and villages is more likely to be the result of the presence of a variety of species divided between records. In contrast, a few particularly rich rural elite records and minor towns may have added to the increased species diversity in these site types.

Next, the social distribution of the food plants will be assessed, grouping species by their chronological pattern, with special consideration given to ceremonial records as the prevalent mode of preservation differs in these contexts. Bar charts help show the relative proportion of each site type where a certain species occurs. In addition, the proportion of records of each species in individual site types is plotted by preservation mode. This second type of chart provides a first approximation of the abundance of the various species in each site type; however, only when all records with archaeobotanical data have been collected can these results be fully assessed.

5.2.1 Pattern 1: Decrease

Waterlogged data

Considering first the waterlogged Roman evidence, what immediately becomes apparent is that none of the seven species that exhibit a decline appears exclusively linked with a particular type of site (Figure 5.2.1a). Note that melon and bottle-gourd records are few, and hence not depicted on the chart, but they too are present in a variety of contexts. In terms of Roman military records, the food plants occur in more or less equal proportions for intramural and extramural contexts, if tending towards the latter. The only exception is pine nut, which is exclusively associated with intramural contexts. Regarding urban occurrences, all species are present in both major and minor towns, but a significant difference occurs in the relative proportion of almost all species between the two types of urban contexts. More specifically, their presence in major towns is far more pronounced than in minor centres and indeed in any other site type, except perhaps intramural and/or extramural military records. Species strongly associated with major towns are olive and pine nut. A greater variation exists for Roman rural records. Olive (and also melon) has the least rural occurrences - all in elite records - in relation to the other site types, while pine nut is the species with proportionally the most occurrences in rural elite records compared to any other species. Furthermore, Figure 5.2.1b gives a first indication of how common these species are within the dataset: although without all the records with archaeobotanical material no certain conclusions can be drawn, it is significant that, perhaps with the exception of coriander and celery, Pattern 1 species are particularly scarce in rural lesser records; in addition all species occur in comparable proportions of the major and minor towns included in the dataset.

In the early medieval period only celery remains relatively common, while the other eight species occur in fewer than ten records. Celery (Figures 5.2.1c and d) occurs in a variety of site types, if becoming more widespread in villages, and it is attested also in some trading centres. The rarity of the rest of the species renders any attempt at discerning patterns rather problematic: coriander and summer savory, although rare, behave very much like celery, but they are mostly associated with major towns; peach seems to have a rather random dispersal pattern; olive, melon, pine nut, and bottle-gourd had only one early medieval occurrence, olive in a major town, melon in a shipwreck and the last two in burials; and oregano was present in two villages and a shipwreck.

In the medieval period olive, melon, pine nut, bottle-gourd, and oregano are negligible, occurring in fewer than ten records, and are thus not included in the social distribution chart; they are all associated with urban contexts apart from bottle-gourd that was found in a single village dated to this period. Celery remains relatively widespread in all urban contexts, but with less than ten occurrences in rural – mainly elite – records (Figure 5.2.1e). Summer savory and coriander are likewise strongly associated with urban records, having few rural occurrences in both elite and non-elite contexts (two and four respectively). More distinctive is peach, encountered almost equally in a relatively considerable number of rural elite records (1/4 of its records) and major or minor towns. The rural elite association of peach may be strengthened even more by its presence in some rural monasteries. Moreover, when the proportions of these species in the various site types are examined (apart from celery), their relative rarity in the dataset (Figure 5.2.1f) is highlighted and it becomes even more evident when compared with the higher proportion, particularly in towns, of other species (see Figure 5.2.2f below).

Carbonized data

The carbonized evidence also largely belongs to this decreasing pattern, but with a very different social distribution. During the Roman period, striking is the strong association of most of these species, namely garlic, date, olive, pine nut, and peach, with burials (Figure 5.2.1g). Walnut and lentil (the two most common species) occur in all site types. Only oregano is lacking in ceremonial records and, despite its low numbers, an association with rural, particularly non-elite records, may be implied. Finally, almond, one of the least frequent species, and thus not included in the chart, has been retrieved only in burials and in a single major town context. The assessment of the frequency of these species in the carbonized dataset further shows how lentil seems prevalent in all site types and highlights both the association of date with ceremonial contexts and the higher proportion of pine nut in temples/shrines compared to burials (Figure 5.2.1h).

In the early medieval period only lentil remains widespread but is encountered mostly in non-elite rural contexts (Figure 5.2.1i). There are too few early medieval carbonized records of any site type to allow the production of meaningful charts for the assessment of the ubiquity of lentil. Carbonized specimens of walnut become rare and its few occurrences present a similar picture to that of lentil. Date and garlic are absent from early medieval contexts and all the remaining species are present in fewer than five records, but are all associated with villages.

In the medieval period carbonized lentil and, to a lesser degree, walnut, are the most abundant species (Figure 5.2.1j). Lentil occurs in approximately the same number of rural (mostly non-elite) and urban records. Noticeably, its proportion in rural nucleated and lesser records is comparable and even slightly higher than that in towns (Figure 5.2.1k). Walnut, likewise, is present equally in rural and urban records, but its rural occurrences indicate a stronger correlation with elite contexts. The remaining, particularly rare, carbonized species have been recorded in rural non-elite and/or urban contexts apart from pine nut that was encountered merely in one rural elite record from France; carbonized date and almond are completely absent.

5.2.2 Pattern 2: Increase (a)

Waterlogged data

All eight species of this group occur in a variety of Roman site types (Figure 5.2.2a). Fig has proportionally the most military (both intramural and extramural) and the least rural (mainly nucleated) occurrences compared to all other species of the group (see also Figure 5.2.2b). Regarding rural records, all species occur in a roughly similar proportion of elite and either lesser or nucleated records, with walnut having the most elite occurrences. Interestingly, although all these species occur in far fewer minor than major towns, when the proportion of each site type with a species is considered (Figure 5.2.2b) it seems that they are both similarly represented, similar to Pattern 1 food plants; in addition, regarding rural records, all species are present at various proportions in the available nucleated and/or elite records, but in a significantly lower proportion of the rural lesser ones.

The distribution of the eight species in the early medieval period becomes more significant in major towns and villages (Figure 5.2.2c). Walnut is the most highly associated species with rural records, and has the most rural elite occurrences; the few occurrences of fig are mostly associated with trading centres and, to a lesser extent, with major towns. None of these species is particularly ubiquitous, with the exception of apple, which comes from the large majority of major town records, and, to a far lesser extent, cherry, damson, grape and opium poppy in the same site type (Figure 5.2.2d). It should be also noted that the relatively high frequency of some of these plant taxa in some site types like trading centres, is largely an artefact of the few such records existing in the dataset (see Table 5.2c).

In the medieval period the social distribution of the species alters completely, as all food plants are found predominantly in all types of urban contexts (Figure 5.2.2e). Their rural occurrences are very much restricted and are mainly associated with elite contexts, except for opium poppy, present in an equal proportion of elite contexts, villages and rural monasteries. The general picture of a restricted presence of 'exotic' food plants in rural records is possibly accentuated or even created by the substantially large amount of data available from urban deposits. A better insight may be obtained by examining the frequency of the species in the individual site types (Figure 5.2.2f). This shows how, despite the fewer rural records, all species were found in a substantial proportion of rural elite records (apart from opium poppy) and rural monasteries; in contrast, only apple, and to a much lesser extent cherry and grape, are significant in rural non-elite contexts.

Carbonized data

Only grape exhibits this increasing chronological pattern, in the same vein as its waterlogged remains (Figure 5.2.2g). Nonetheless, its social distribution is rather different: in the Roman period, carbonized grape remains are encountered mostly in burials; the picture changes in the early medieval period during which grape is mainly associated with rural non-elite contexts; finally, in the medieval period, it is equally distributed between all types of urban and rural contexts. Its frequency in the dataset shows that indeed grape occurs at a rather high proportion of Roman burials, at more or less the same levels of early medieval rural non-elite records and major towns, and in a higher proportion of medieval rural elite records compared to other site types of the same period (Figure 5.2.2h).

5.2.3 Pattern 3: Increase (b)

Waterlogged data

Food plants from this group also occur in a variety of different Roman contexts (Figure 5.2.3a). Most species show a stronger connection with either military and/or urban records and it is only turnip that appears more prominent in rural, notably non-elite, records, followed by black mustard. Turnip is additionally present in a few military records, but is very rare in urban contexts. Mulberry is largely associated with major towns and cabbage, although particularly rare, with military records. Other species of this group with fewer than ten occurrences are rape, so far recovered only from a military fort and a villa, quince and medlar recovered only in towns, and parsley and black pepper, which occur in a few but variable records. Noticeably, even the most common of these species occur in a small proportion of the records of each site type (hence not depicted on a chart); two possible exceptions are turnip, present in roughly between 20 and 25% of rural lesser and of nucleated records, and also of both types of military contexts, and pear, which is more common compared to other species.

Most species of this group were merely occasional finds after Rome. Hemp and turnip are the most abundant and are primarily associated with rural non-elite records (Figure 5.2.3.b). In the dataset, turnip (Figure 5.2.3c) occurs in about a fourth of the records of each type of rural non-elite site types and major towns while its high proportion in rural elite records should be treated with caution as this dataset is particularly small (see Table 5.2c); hemp is present in a higher proportion of rural lesser records while its minor town occurrences although seemingly abundant, are in reality few. Of the remaining species, pear resembles hemp and turnip, while black mustard has the strongest rural association of all species (Figure 5.2.3b). Medlar, fennel, mulberry and caraway are too rare to infer patterns, but overall they seem to match the more common species.

In the medieval period, similar to Pattern 2 species, all food plants were found predominantly in urban centres (Figure 5.2.3d). Two of the rarer species, rice and quince, are exclusively urban. In fact, all of the species in the list, apart from quince and melegueta pepper, have been encountered in urban monasteries, albeit in a smaller proportion compared to the secular urban centres. The proportion of rural occurrences, and particularly of rural lesser ones, is very low for all food plants; most of the species, especially the more frequent ones, are present in rural elite settlements in a higher proportion to non-elite ones. Species within this group with relatively more rural records are black mustard, hemp, turnip and pear.

In order to investigate further the behaviour of these species in the dataset two more charts have been produced. Of the most common species of the group (Figure

5.2.3e), apart from pear, which is found in a proportionately greater number of towns, the occurrence of black mustard, turnip and hemp in rural records is more or less comparable to that in towns and urban monasteries. The remaining species occur in fewer than ten rural contexts and thus only their urban occurrences are further examined (Figure 5.2.3f); all these species are rather infrequent in all urban contexts, perhaps with the exception of mulberry and fennel.

Carbonized data

Carbonized species displaying this pattern include only grass pea, which is nevertheless quite rare; its social distribution is similar throughout the whole study period, mainly associated with rural non-elite records.

5.2.4 Pattern 4: Stable

Of the few species of this group, in the Roman period (Figure 5.2.4a), dill is mostly present in military and urban contexts. For the most infrequent species, a stronger urban association is evident in the case of white mustard and cucumber; the few occurrences of almond are mostly distributed among military and urban records; finally, horehound has been found in various site types but mostly in military extramural contexts.

Dill remains common in towns, mainly major ones, of the early medieval period, but occurs also in some rural contexts (Figure 5.2.4b). The remaining species are too rare to be included in the chart: the few horehound occurrences are equally present in urban and rural records, cucumber is found in a single small town, while no waterlogged almond and white mustard records exist.

The urban association of dill becomes more prominent in the medieval period during which its few – less than ten – rural occurrences are restricted mainly to elite records; similarly the few instances of the remaining four species derive largely from urban contexts (Figure 5.2.4c).

Finally, examining the proportion of dill (the only common Pattern 4 species) across the various site types and time periods (Figure 5.2.4d), it is only in the Roman period that this occurs in a relatively higher proportion of rural (nucleated) records, while in both the early medieval and medieval periods its occurrence in rural records is negligible; note that during the Roman period dill is present also in a relatively higher proportion of military records.

5.2.5 Ceremonial Contexts

Ceremonial records refer mainly to the Roman period. In the two medieval periods the few non-secular contexts include monasteries, which, although religious in character, often involved a mixture of secular and ceremonial activities within their premises. In reality, monasteries were operating as self-sufficient communities or were in close contact with secular sites, as in the case of those situated within major towns.

Focusing thus on the Roman data, it is remarkable that a very low proportion of the waterlogged occurrences of all species are present in ceremonial contexts (Figures 5.2.1a, 5.2.2a, 5.2.3a, and 5.2.4a). An explanation could be the limited number of ceremonial records, in comparison with most other site types, with waterlogged food plants that have been included in the research database (Table 5.2a). This could be further attributed to either fewer excavations of such contexts or to the limited presence of non-staple waterlogged food plants in such records, or to a combination of the two. This could be partly tested by examining the quality of the available data: eighteen different waterlogged species were retrieved from either burials or temple/shrines, listed in Table 5.2g, including mainly fruits but also some condiments, nuts and oil producing plants. Most species were encountered only in the occasional ceremonial record; however, despite their low numbers, fig, apple, damson, pear, grape, sweet/sour cherry, and walnut, were still found in more than 20% of all ceremonial records with waterlogged material. It is also significant that some of the species listed in Table 5.2g, such as almond and black mustard, occur in ceremonial contexts although they are particularly rare during the Roman period.

A closer association with ceremonial records is observed in the case of the carbonized Roman remains (Figures 5.2.1g and h, and 5.2.2g and h). In order to gain a better insight into the ceremonial data, the list of all carbonized species encountered in Roman burials and temples/shrines is collated with the waterlogged ones in Table 5.2g: twenty seven carbonized species are present in such contexts, nine more than in the waterlogged species' list. Apart from hemp, fennel and mulberry, all the other waterlogged species were encountered also in a carbonized mode; of the carbonized data, garlic, fig, walnut, lentil, olive, peach, date, pine nut, and grape seem to be relatively frequent, with ten or more records each in ceremonial contexts. The higher presence of carbonized species in burials fits with the nature of this site type, often involving funerary pyres with food offerings;

therefore, its further interpretation (Chapter 7) will be based mostly on this set of carbonized data.

5.3 Geographical Distribution

What of the social distribution of the selected food plants? Can we identify any potential associations between species and certain cultural areas? First, the overall distribution of the records in each time period and preservation mode is displayed on maps produced by ArcGIS 9.2; these will be used as a reference throughout the following sections. Then, the geographical distribution of each group of plants according to their decreasing, increasing (a) and (b), or stable pattern, as identified in section 5.1, is illustrated in a series of maps in order to facilitate their analysis. Where possible, an attempt has been made to group together on the same map species that exhibit generally similar distribution patterns. Note that Spain produced very few records, those principally from its northern part, and thus for representation reasons it is mostly left out of the maps, but in cases where relevant records exist a separate 'window' is added to indicate their distribution.

5.3.1 Record Distribution

Roman

The Roman distribution shows, that despite the substantially higher number of major towns in the dataset (Table 5.2a), the data must be inflated by the multiple excavations in most towns as overall there is an even amount of rural, urban, and military records that provide evidence for the selected food plants (Figure 5.3.1a). Military records concentrate on the border zones of both north and east of the study zone. Only a few, mostly rural, records lie beyond these, in Germanic or Nordic space. In the area of modern Britain, both the northernmost and westernmost records that produced the selected food plants relate to military forts and *vici/canabae*. On the whole, there is a concentration of various settlements in close proximity to military contexts, especially along the continental *limes*, and a good scattering of records in the northern provinces. A gap of settlements visible in modern south-central France could be explained partly by the presence of the Massif Central mountain range and the remote character of the area in relation to major trade routes. Similarly, at the other side of the Rhone, the presence of the Alps may partly dictate the absence of records in the southern part of modern day Switzerland. Most importantly, however, this pattern is created by the general absence of archaeobotanical studies or the unavailability of relevant data from this part of Switzerland (Stefanie Jacomet pers. comm). Moreover, it is interesting to note that many records are on coastal areas or in close proximity to the main river routes, particularly the Rhine. Regarding the southern boundaries of the study area, no waterlogged record with any of the selected food plants exists below 41.61^{o} latitude (north part of modern-day Spain). The bio-geographical distribution (Figure 5.3.1b) shows that only a couple of towns, rural elite records and shipwrecks, lie in the Mediterranean zone. All other records are almost equally distributed in the Continental and Atlantic zones.

The distribution of the carbonized remains shows a comparably wide distribution of records within the Roman borders, although a few, mainly rural records outside the borders also exist (Figure 5.3.1c). However, closer inspection indicates cluster areas or patterns of certain records. The most prominent cluster is that of burials in the areas of modern-day south France and the middle part of the north-eastern continental *limes*. In Britain all rural records are distributed in the south and eastern parts, whereas the few inland northern records are mostly military contexts and towns. A particularly high concentration of all site types is observed along the Rhine frontier and near other major rivers such as the Seine and Thames. Furthermore, the bio-geographical distribution shows a fairly similar dispersal in the Atlantic and Continental zones, although the majority of ceremonial records are located in the Continental part (Figure 5.3.1d). A few records, most of them ceremonial, are also present in the northern part of the Mediterranean zone.

Early medieval

During the early medieval period, the distribution patterning of the waterlogged data changes significantly (Map 5.3.1e). A ‘shift’ in emphasis towards the broader area around the North Sea is evident, with a relatively high concentration of records along, or relatively near, the northern coast of the Continent and the south-eastern part of Britain. More records occur in the north-eastern parts of the study area, at least compared to Roman ones, always in relation to the total number of records in each period. At the same time, their southern extent has dramatically shrunk. It is indicative that the record occupying the southern limit of the early medieval distribution, a rural village, lies at 47.24^{o} latitude. Many records are still found in close proximity to major rivers, including the Danube, Rhine and Seine. In terms of site types, as observed for the Roman period, the actual number of major towns is inflated due to multiple excavations from the same place, resulting in fewer towns providing a fairly large variety of species. Rural villages, on the other hand, are undeniably the most common site type, being dispersed across the limits of the study area. Furthermore, most early medieval records are concentrated in the Atlantic bio-geographical zone, followed by fewer records in Continental regions; no evidence exists from the Mediterranean zone (Figure 5.3.1f).

The spatial distribution of the carbonized data is fairly similar, with rural non-elite records dominating the early medieval landscape, but this time reaching further to the south (Figure 5.3.1g). Some association with coastal areas and river basins can be observed for many records. The bio-geographical distribution (Figure 5.3.1h) indicates the presence of a number of records both in the Atlantic and Continental zones, and some in the Mediterranean area; additionally, one record is located in the high-altitude Alpine zone.

Medieval

The pattern changes once again in the geographical dispersal of the medieval waterlogged evidence (Figure 5.3.1i). The general trend of a shift towards the north-eastern and eastern part of the study area observed in the early medieval dispersal pattern persists, and is even strengthened. A particularly high density of records, as identified in section 4.2, can be discerned in the area of modern-day Netherlands. More records appear in Britain, although here, contrary to the pattern observed on the Continent, rural non-elite records are almost non-existent. Likewise, rural non-elite records in the eastern part of the study area are rare. The south-west extension of medieval records is limited, with merely two shipwrecks marking its westernmost and southernmost parts and only a handful of records within these boundaries. One of these shipwrecks represents the only record with relevant data from the Mediterranean zone, while the remaining records are divided between the Atlantic and Continental bio-geographical regions (Figure 5.3.1j). Interestingly, during this period there are two records in particularly high altitudes, within the Alpine zone. Moreover, a close association between many contexts and major rivers and their tributaries is again visible (Figure 5.3.1i). The overall picture of the medieval site type distribution, even after eliminating the effect of multiple excavations from the same urban contexts, is still that of an extensive presence of towns, alongside a notable presence of rural elite records.

Likewise, the geographical dispersal of the carbonized evidence indicates the prominence of towns, especially towards the north and north-east part of the study area (Figure 5.3.1k). The reverse pattern can be observed for the few rural records, mostly limited to the central part of the study area, and quite rare in the eastern and northern regions. Many records occur at coastal areas or in close proximity to rivers. Their bio-geographical distribution is fairly equally divided between the Atlantic and Continental zones, both in terms of the number and the type of sites (Figure 5.3.1l). In the Mediterranean zone only a few records, chiefly villages, exist, and, lastly, merely one rural elite site is located in the Alpine zone.

5.3.2 Pattern 1: Decrease

The geographical distribution of the nine waterlogged species strongly associated with the Roman period varies. For olive and summer savory an introduction to North-West Europe must have largely come via the *limes*, while an increase in the use of oregano can be also observed in the same area (Figure 5.3.2a); significantly, most of the rural records of these three species are in close proximity to military and urban contexts along these borders. In Britain, their relatively few occurrences are mainly from major strategic settlements, such as London and York, and from military forts. Archaeobotanical evidence for these species is otherwise scant. The dispersal of olive is somewhat different as additional evidence is present in most of the Mediterranean and southern records existing in the Roman dataset.

Coriander and celery occurrences are highly concentrated along the eastern and northern frontiers, but are also present across most of the northern study area (Figure 5.3.2b). Notably, both do occur in a few rural records north of the *limes*. The southern, Mediterranean area, on the other hand, lacks waterlogged archaeobotanical data for either coriander or celery. Of peach, bottle-gourd and melon only the first is common, but all three see an almost complete absence from records in Roman Britain – only peach has been found on one occasion in London, at New Fresh Wharf (Willcox 1977) (Figure 5.3.2c). This contrasts with a more extensive diffusion within and along the Roman Rhine border, extending to some of the southern records with waterlogged evidence. The few finds of melon and bottle-gourd derive from eastern military contexts and other nearby settlements, while a couple more come from the southern (melon) and the western parts (bottle-gourd) of the study area.

Finally, pine nut is distinctive as its spatial dissemination does not coincide with that of any other waterlogged species of this group (Figure 5.3.2d). Its distribution is not associated with the frontier zones; instead it clusters in mainly southern Britain and it has some more dispersed occurrences in France. Its northern limits are two military forts along Hadrian's Wall and its southern ones three towns at around 43^{o} latitude.

In the early medieval period only celery remains relatively common (Figure 5.3.2e), which is still found in rural records (mostly villages) along the North Sea coast and in a few other records at the northern and eastern study zones. Peach is rare and does not cross the Channel (Figure 5.3.2e). Coriander and summer savory (Figure 5.3.2f) are the only species, along with celery, that persist after Roman control in Britain, notably in some important trading centres, such as York and Hamwic (Anglo-Saxon Southampton). On the Continent, both species are found in a few select records within the former Roman frontiers. Oregano, pine nut, olive, melon, and bottle gourd have only been found occasionally during this period (thus are not depicted on a map) and none in northern records.

Two maps illustrate the medieval spatial dispersal of the main species, which show a striking association with major rivers and coastal areas. Figure 5.3.2g shows the spatial distribution of celery and coriander, now with a more prominent northern and north-eastern orientation, as their presence in the easternmost parts of modern-day Germany and as far up as Denmark confirms. In Britain, both species occur mainly towards the south and east. Summer savory and oregano, although less frequent, both follow roughly the same dispersal pattern delineated by coriander and celery. In contrast, peach (Figure 5.3.2h) is present across a slightly larger part of the medieval study area. As pine nut, olive, melon, and bottle-gourd remain particularly rare in the medieval period their geographical dispersal is not presented on a map. It should be noted, however, that olive, melon and pine nut are present in few northern urban contexts, whilst bottle-gourd occurs in a single village in south France.

Regarding the carbonized data, the two most abundant Roman species, lentil and walnut, have a similar geographical distribution (Figure 5.3.2i). Lentil is particularly widespread on the Continent, largely near and within the Empire's frontiers and in many of the burials clustering in the centre and south of modern-day France. In Britain, it is only present in a couple of military contexts in the west and a few more records in the south-east. Walnut displays the same overall spatial pattern. Olive, not plotted on the map, is similar, found in the same cluster of burials in the south but only in a few other places within the Roman borders. Peach, garlic, pine nut, date (Figure 5.3.2j) and almond are predominantly associated with the group of ceremonial records in the south and south-east; they were also encountered in military and other records along the *limes*, particularly peach, but only pine nut and date are found across the Channel. Finally, oregano is the only species that has no association with ceremonial records during the Roman period, having been recorded only from contexts that lie either near or outside the Rhine *limes* (Figure 5.3.2k).

The early medieval distribution of carbonized lentil remains largely the same, being more common on the Continent, where it extends to include rural records in the eastern part of the study area; carbonized walnut in the same period is present only in some southern and western records (Figure 5.3.2l).

The medieval distribution of carbonized lentil and walnut is plotted on Figure 5.3.2m, with lentil maintaining its early medieval dispersal pattern, while walnut acquires a spatial distribution similar to lentil, being now extended to some more eastern records. Thus, the overall picture is that of a wide dispersal of the two species across a large part of the study area. In Britain both species are restricted to the south, where only walnut occurs in rural records. The limited evidence for the remaining species (not plotted on the map) is all concentrated mainly in the southern and south-western part of the Continent, with only garlic being present in a couple of urban British contexts.

5.3.3 Pattern 2: Increase (a)

The geographical distribution of the waterlogged food plants of this group reveals two main patterns during the Roman phase, which do not, however, differ greatly. Grape, sweet/sour cherry, plum, walnut, followed by damson and fig are omnipresent in the whole area covered within the Roman borders, extending to military contexts in northern England and to the most southerly records that provided waterlogged archaeobotanical material. Note that in the western part of the study area damson and fig are found mostly in towns. Indicative of this first pattern is the spatial distribution of grape and sweet/sour cherry (Figure 5.3.3a). A picture of widespread distribution in the Roman provinces is also observed for the carbonized remains of grape, which further occur in numerous ceremonial contexts in modern-day France and along the *limes* (*cf*. the Roman dispersal of carbonized lentil in Figure 5.3.2i). The second pattern, observed in the case of apple and opium poppy, is that of an extensive distribution, albeit with a conspicuous absence from records in modern day southern France and Spain (Figure 5.3.3b). On the Continent, opium poppy is mainly found along the borders, but apple has a wider distribution.

In the early medieval period what food plants are present occur in a few records at their former northern extent, but apple, opium poppy, sweet/sour cherry, and damson also appear in a few records further to the north-east of the study area (for an example see Figure 5.3.3c). The early medieval remains of carbonized grape exhibit a similar dispersal pattern, with the only difference being its extended presence in rural records in the Mediterranean sector.

The overall picture differs in the middle Ages when almost all waterlogged species are commonly found in nearly every part of the study area where waterlogged evidence is available. The dispersal of apple and sweet/sour cherry (Figure 5.3.3d) is suggestive also of the pattern observed for plum, damson and walnut. Grape, in contrast with all other species, is absent from the modern-day Danish peninsula (Figure 5.3.3e); in terms of carbonized instances (Figure 5.3.3f), no records from the eastern parts are visible but it does have a more prominent presence in mainly rural records of modern-day France. The dispersal patterns of waterlogged opium poppy and fig are also slightly different as both species are ubiquitous except in the (admittedly few) south-western waterlogged contexts (Figure 5.3.3g).

5.3.4 Pattern 3: Increase (b)

Among the fourteen waterlogged species in this group, only pear, hemp, black mustard, and turnip are relatively better attested in the Roman period. The Roman dispersal of the first three species indicates that they are common along the Rhine borders, but with a few western and northern records (Figure 5.3.4a). The dispersal of turnip is examined separately (Figure 5.3.4b) in order to highlight its prominence in rural records along the same borders and military contexts. In the early medieval period (Figure 5.3.4c) pear, hemp and black mustard change course slightly: the few finds of pear and black mustard are present mostly in middle altitudes, whereas hemp is more frequent, particularly in the northern and eastern areas; additionally, turnip (Figure 5.3.4d) occurs mainly in north-eastern rural records. In the medieval period (Figures 5.3.4e and f), all four species are common across north-eastern towns of the study area. In Britain, the occurrence of hemp, black mustard, and turnip is extended, but pear remains rare, being encountered merely in a couple major towns. Interestingly, the expansion of turnip, contrary to previous periods, relates chiefly to urban records; in Britain, for instance, it has been recorded only in eastern urban contexts of both secular and religious nature.

The remaining food plants, when present in the Roman period, are either rare or low in frequency. The four most indicative - mulberry, fennel, caraway and cabbage - are plotted on Figure 5.3.4g, occurring mainly in military and urban contexts along or near the *limes*. In Britain, their presence is limited and caraway in particular has no records. Parsley offers a similar dispersal pattern while, of the remaining species, quince and medlar were only occasional finds on the Continent, rape in Britain, and black pepper was scarcely present, occurring in few records across the whole area. In the early medieval period all these species are particularly rare with fewer than five occurrences – too few to infer a spatial pattern. Nevertheless, it should be mentioned that all of them occur exclusively on the Continent apart from fennel, which was also found in the two major Anglo-Saxon centres, London and York.

The expanded occurrence of these plants in the Middle Ages follows the general pattern observed so far: that of a north-eastern spread. Medlar (Figure 5.3.4h) occurs in some of the most southerly rural records that produced waterlogged data for this period but not in particularly high latitudes. Fennel and cabbage (Figure 5.3.4i) acquire a similar distribution to that of hemp, becoming widespread across northern and north-eastern towns. The spatial dispersal of another six species - mulberry, parsley, black pepper, buckwheat, caraway, and rice - has a more marked north-eastern pattern as, apart from a few occurrences of mulberry and parsley in east Britain, no medieval evidence for these species exists elsewhere. Figure 5.3.4j shows the dispersal pattern of buckwheat and mulberry to indicate this pattern. Finally, the rare medieval occurrences of quince, rape, and melegueta pepper (not plotted on the map), may fit broadly in this north-eastern pattern.

Carbonized species with similar chronological patterning include only grass pea. Although no map has been produced for its dispersal, some relevant comments can be made: in the Roman period, grass pea has been identified in a cluster of records in the area of modern-day north France and in a single record in the south (in Spain) while, later in the early medieval and medieval periods, it occurs in some, mainly rural non-elite, southern and, to a lesser extent, central contexts in France and (in the early medieval period) Spain and Andorra.

5.3.5 Pattern 4: Stable

The geographical distribution of dill (Figures 5.3.5a, b and c) produces the same pattern as celery and, to a lesser extent, coriander. Thus, dill occurs in many Roman military contexts along the eastern and northern frontiers, at nearby sites and at the occasional records outside the *limes*. In the early medieval period a shift towards the north and north-east is witnessed, which acquires its full extent during the medieval period when, like celery, dill becomes very common in related urban contexts.

Regarding the remaining four rare species, horehound and white mustard in the Roman period are restricted mainly to a few records along the Rhine frontier and to a couple of major towns in Britain; almond and cucumber have roughly the same distribution but are also encountered in a few records in the south and west part of the study area respectively (Figure 5.3.5d). In the early medieval period only horehound remains evident, mainly in some villages dispersed in the same area as its Roman occurrences and two major towns in Britain (Figure 5.3.5e). Finally, all four species are present later, in medieval north-eastern towns, religious contexts, and a couple of rural elite records with cucumber being absent from Britain (Figure 5.3.5f).

5.4 Summary

Three main levels of analysis have thus been employed in this Chapter in order to understand the behaviour of the selected food plants. The waterlogged evidence forms the bulk of the analysis but further significant insights come from the analysis of the carbonized remains, particularly in Roman contexts.

Four distinct chronological patterns are identifiable: fourteen species decrease by the end of the study period; eight species are relatively common but increase further in the medieval period; another seventeen species are quite rare but increase significantly in the medieval period; and, finally, five species occur at the same levels in both Roman and medieval periods. The species in each of these four groups were then analysed in terms of their site type distribution, which shows the emergence of very distinct patterns in each period of study.

In the Roman period ‘exotic’ food plants are almost equally distributed between rural, urban, and military records, as witnessed by the waterlogged evidence, which constitute the prevalent, and therefore, the most reliable preservation mode upon which the analysis is based. This picture changes after Rome when a higher number of rural records reveal evidence for the selected food plants, while more significant differences are observed in the medieval period during which an urban dominance becomes evident. Naturally, variations of the social distribution of individual species do occur. Ceremonial records refer mainly to the Roman phase and are more closely associated with carbonized species whilst only some waterlogged fruits and nuts appear to be relatively frequent in such contexts. However, the geographical analysis of the food plants, in groups according to their four chronological patterns, indicates that although some species have the same social access pattern, they follow rather different dispersal routes. Below, a brief summary description of the overall behaviour of each species is provided for every chronological pattern (see also Tables 5.4a, 5.4b, 5.4c, 5.4d and 5.4e).

Pattern 1 (Decreasing species)

Waterlogged coriander, celery, and, to a lesser extent, peach are the most common species of this group in the Roman period, and they are widespread across the provinces, even though peach does not reach the northern parts. They are found more or less equally in all site types, but they occur in a comparatively higher proportion of military, urban and rural nucleated records existing in the dataset. In the early medieval period the three species are present in fewer records, mainly villages and towns following their previous Roman range, even though celery and peach are also dispersed further to the east. In the medieval period, an expansion of the three species in urban centres and a significant shift towards the north-eastern part of the study area are witnessed. Summer savory is also rather abundant in the Roman period, and together with oregano, olive, melon, and bottle-gourd is recorded mostly in areas near the Rhine *limes*; they all become merely occasional finds in the early medieval period. In the medieval period only summer savory slightly recovers, mainly in urban contexts. Oregano and olive are only present in a few towns in the north of the study area, and melon and bottle-gourd in some records in the south. Pine nut occurs almost exclusively in western Roman records, mainly urban, military and rural elite, and has a single occurrence in each of the early medieval and medieval periods.

Additionally, nine carbonized species are mostly associated with Roman contexts. Except for oregano, which is mainly present in rural records, all species are significantly related to ceremonial records of south-central Europe. This trend is less accentuated for lentil and walnut, which were found in a variety of site types across the whole Roman territory, but with fewer records from Britain. In the early medieval period all species still present occur mainly in rural non-elite records. None of the species is present in the northernmost parts of the study area in this period, with only lentil being the most widely dispersed. Lentil and walnut are the most common medieval species, recorded in both secular urban and rural records, largely within the same geographical extent as their early medieval occurrences, with lentil forming quite a high proportion of rural non-elite records. These two species are the only ones that were found in some northern areas during the medieval phase.

Comparing the data of the two preservation modes, it appears that waterlogged plant remains are scattered in a variety of contexts whereas carbonized food plants are more closely associated with Roman ceremonial records and only two of them, namely lentil and walnut, display a more general spatial and temporal distribution.

Pattern 2 (Common species that increase in the medieval period)

Waterlogged opium poppy and apple are recorded in all secular Roman site types in the north and north-east part of the Roman provinces. Damson and fig are found in the same area and in some more towns in the western part of the study area. The remaining species, namely walnut, grape (both waterlogged and carbonized), sweet/sour cherry, and plum, are widespread in all site types in various proportions across the whole, mainly northern, area within the Roman borders. All species seem less frequent in rural lesser records, apart from opium poppy, which has a largely comparable presence in all site types. In the early medieval period only opium poppy, apple, grape and damson are relatively frequent in rural non-elite and urban records in the north and north-eastern areas, and cherry in towns of the same area. Carbonized grape is rather common, particularly in southern rural records. All species become common again in the medieval period across mainly urban records of the central and northern part of the study area. However, opium poppy and fig are scarce in the western areas as is grape in the far north-east. During the same period all eight species, despite their dominance in urban centres, occur in relatively high proportions of rural, but mostly elite, records included in the dataset.

Pattern 3 (Relatively rare species that increase in the medieval period)

Pear, black mustard, hemp, and turnip are the most common waterlogged species of the Roman group. All species, including the rare ones, are more prevalent in military and/or major urban records along the north and north-east frontier zones. Waterlogged turnip and carbonized grass pea are the only exceptions, being present in rural and military records of the same area and central rural records respectively. Few species occur in the early medieval phase; waterlogged hemp and turnip are mainly dispersed at northern and north-eastern rural, mostly non-elite, records, and pear and black mustard are more restricted to rural non-elite records in the central parts of the study area. In the later Middle Ages all species become more frequent, especially in north-eastern towns. Carbonized grass pea, and waterlogged turnip, hemp, black mustard and pear, are also present at relatively more rural records of the period.

Pattern 4 (Stable species)

Five waterlogged species fall in this category, with dill by far the most frequent. They are found mainly in Roman military and/or urban records along the *limes*, while dill is slightly more widespread within the borders. In the early medieval period only dill has a more significant presence, mostly in towns. Subsequently, dill is prevalent in north-eastern towns of the study area and the same pattern is also observed for the fewer occurrences of the remaining species.

Clearly, therefore, interesting and varied results emerge from the above analyses. However, in the following chapter a different analytical tool will be applied in order to provide an additional, independent approach to the data. The results of the two analytical methods will then be compared and discussed in Chapter 7.

CHAPTER 6
Multivariate Analysis

In this Chapter a different type of analysis is attempted, using the multivariate technique Correspondence Analysis (CA). Whilst in Chapter 5 each species was considered separately, here, all variables are analysed together, and therefore, associations between various species and also between species and site types and/or records can be identified (see section 3.9.2). The data are examined first as a whole and then according to their temporal division, in order to detect any trends and to cross check the results with those obtained in Chapter 5. Only the two predominant sets of material are analysed, namely waterlogged and carbonized, albeit separately. In all cases it is the first two axes that have been plotted on the figures (chosen from a number of axes provided by the CANODRAW package), as these contribute most to the total inertia, which indicates the accuracy of the results (see section 3.9.2). Where the records are denoted by a number, it corresponds to that in the Addendum, indicating the name and other details of the records (also including their interim bibliographical references).

6.1 The Overall Data

6.1.1 Waterlogged Data

The first analysis concerns all waterlogged data together. To reduce the effect of rare variables, only records containing at least five or more of the species under consideration and species occurring in at least 5% of all records are included in the dataset; this results in 378 active samples (records) and 23 species. Axis 1 contributes 11.3% and axis 2 10.2% to the inertia.

The CA plot for the period distribution (Figure 6.1a) shows a separation between Roman and medieval records, despite some overlap; the fewer early medieval records, however, show no particular clustering, displaying a rather similar behaviour to both Roman and medieval records. When the species distribution is considered (Figure 6.1b), certain associations between species and time periods become evident, with coriander, summer savory, peach, celery, and dill being more associated with the Roman period, and species towards the bottom part, such as buckwheat, fennel, mulberry and so on, having a stronger link with the medieval period. Species near the cross point of the two axes are common in all periods. These results thus accord with those in section 5.1. Further analysis on food and site types is carried out for each individual period separately (see below).

6.1.2 Carbonized Data

The carbonized dataset is smaller; the analysis includes records with evidence for three or more species and species that occur in at least 5% of all records. The total number of records is 147 and of species 24. The inertia accounted for by axes 1 and 2 is 11.7% and 9.2% respectively.

The CA for this dataset indicates some differentiation between the Roman and the two later phases (Figure 6.1c): although there is an overlap between the three, only Roman records occupy the bottom right and half of the bottom left part of the plot. Consulting the species and site type distribution on the CA plots (Figures 6.1d and e respectively) it becomes evident that the group of Roman records that stands out consists of burials and temples/shrines and is associated with food plants, such as fig, date, garlic, pine nut, and almond (see also section 5.2.5). Furthermore, as in the case of the waterlogged data, carbonized coriander and celery seem to be more linked to the Roman period.

Grass pea is the only outlier on the species plot (Figure 6.1d). This legume has been found in all three time periods (Figure 6.1c), mostly in rural records, both elite and non-elite (Figure 6.1e). However, its position as an outlier may be explained by its presence in a selection of sites (records) in modern-day France, Spain, and Andorra (Figure 6.1f) – as also identified in section 5.3.4. Furthermore, closer examination of the food types indicates that condiments and oil-producing plants co-occur, while fruits, nuts, and pulses form a separate group (Figure 6.1d). This patterning seems associated more with site type than period (compare with Figures 6.1c and 6.1e).

Fruits, nuts and pulses have a stronger correlation with rural lesser and ceremonial records, while condiments and oil-producing plants are more linked to minor towns and Roman military records. A better insight into all these emerging patterns can be obtained by examining each period separately. The elimination of the species outlier (grass pea) did not result in any significantly different scattering of the data and, thus, will not be discussed.

6.2 The Roman Period

6.2.1 Waterlogged Data

For the CA of the waterlogged Roman data all records with less than five species and all species that occur in less than 5% of all Roman records have been excluded. Moreover, in order to make the dataset more robust, all species that are present in between 5-10% of all Roman records have been downweighted; this means that they are still included in the analysis and plotted on the charts, but their influence on the distribution of the variables is much reduced. Downweighted species are white mustard, horehound, bottle-gourd, cucumber, melon, caraway and almond. In total, 133 records and 30 species are included in the analysis. Axes 1 and 2 are responsible for 14.2% and 8.8% of the total inertia respectively.

On the species distribution plot (Figure 6.2a), a distinction between fruits and condiments becomes apparent, with the former being largely distributed across the lower right part of the plot and the latter across its left side. The two oil-producing plants, opium poppy and hemp, behave in a similar manner to the condiments, while the nuts are closer to the fruits. There are only a few vegetables and these do not cluster strongly. Lentil, the only pulse in this analysis, is plotted nearer to the condiments. Noticeably, mulberry is different to all other species, as is pine nut, to a lesser extent.

The site type and record plots (Figures 6.2b and c respectively) show that major towns are scattered throughout the plot indicating the large variety of species encountered in such contexts. Interestingly, all major town records on the top right part of the plot correspond to London, highlighting the frequency of mulberry in this particular urban context (compare Figures 6.2a and c). Most minor towns are located towards the bottom right of the plot and they are associated with fruits and nuts. A closer examination of the species indicates that most of them belong to Pattern 2 and a few to Pattern 1 distribution (Figure 6.2d) as identified in section 5.1; the former refers to species that are common in the Roman period and remain as such throughout the study period; while the Pattern 1 species are mostly associated with the Roman period.

More clustering can be observed for the extramural and intramural military records combined together: they mostly lie on the left part of the plot (Figure 6.2b), and particularly towards its bottom left quadrant, which hints at an association between these site types and condiments. Furthermore, some of the more infrequent species during this period (Pattern 3, section 5.1) seem to be also associated with military records (compare Figures 6.2b and d).

Rural records appear rather scattered across the plot without straightforward associations, as seems particularly true for nucleated records. Rural lesser records lie almost exclusively at the bottom half of the plot (Figure 6.2b), and associated with many of the common species in the Roman period. A possible distinction can be drawn for rural elite records, many of which lie towards the bottom right quarter of the plot, suggesting a strong link with fruits and nuts (Figure 6.2a).

Only few ceremonial records include a significant number of waterlogged species, which is most likely the reason for their low visibility in the CA; a better insight into these site types can be obtained by examining the carbonized data.

Finally, some more elaboration is possible regarding individual species. Pine nut seems related more to some towns, particularly major ones, and to a lesser extent, to rural elite contexts. A similar pattern can be observed for olive but, in this case, some connection can be also discerned with the southern parts of the study area. In addition, a rather stronger presence in southern records and records in present day France can be observed for almond and peach (Figure 6.2c).

6.2.2 Carbonized Data

The carbonized Roman dataset contains records with three or more of the monitored species, and species occurring in 5% of all records of the period, which resulted in 91 records and 21 species. The variance explained by axis 1 and 2 is 13.2% and 10.9% respectively.

The analysis indicates an overall patterning similar to that observed for the entire carbonized dataset (section 6.1.2), which is easily explained by the fact that most of the carbonised data derive from Roman contexts. Some distinction in terms of the different food plants present in certain site types can be advanced comparing the species (Figure 6.2e) and record (Figures 6.2f and g) plots. Towns and rural elite records exhibit no strong patterning but the remaining site types show some clusters. In particular, most military records lie towards the upper left part of the plot, where most condiments and opium poppy are clustered (Figure 6.2e). Rural lesser records form a tighter cluster towards the bottom part of the plot, suggesting an association with some of the most common species of the period, such as lentil, walnut, apple, cherry, plum, and damson. Finally, carbonized garlic, fig, peach, pine nut, date, and almond have the strongest association with ceremonial contexts (contrast Figures 6.2e and f). Other relatively common fruits, nuts, pulses, and condiments of the Roman period are also present in burials, as in a variety of other site types.

6.3 The Early Medieval Period

6.3.1 Waterlogged Data

As the early medieval dataset is smaller than the others, the cut-off point used here is records with three or more species; this allows the inclusion of trading centres, which have only a small variety of the recorded species. Species that occur in 5% or more of the records left are used for the analysis while species that occur between 5 and 10% of the records, namely oregano and medlar, have been downweighted. This resulted in a dataset of 39 records and 20 species. Axes 1 and 2 correspond to 15.5% and 12.5% of the total inertia respectively.

Some distinction between fruits and condiments is once again evident in the species plot (Figure 6.3a). Most fruits lie towards the top right part of the plot while most condiments are located towards the lower and left part of the plot. Oil-producing plants are closer to condiments and the single nut included behaves similar to fruits. Interestingly, fig displays a rather distinct pattern compared to the other fruits, located symmetrically opposite to them on the plot.

The CA of the site types does not separate them into unambiguous groupings (Figure 6.3b). Major towns and villages are the most common site types and are widely scattered across the plot. A closer examination identifies some possible, but not explicit, trends. Trading centres lie at the bottom half of the plot, mostly at the left quadrant, which may suggest a stronger connection between this site type and some condiments and oil-producing plants. Fewer towns occur at the bottom right quarter of the plot; contrasting the respective area in the species chart (Figure 6.3a), it could be suggested that black mustard is less associated with urban contexts, found predominantly in rural records, as also observed in section 5.2.3. The CA of the records (Figure 6.3c) may provide some more insights into the differentiation of fruits and nuts from condiments and oil-producing species, as some tentative association of the fruit and nut group with slightly more records towards the south-western extent of the early medieval dataset can be observed.

6.3.2 Carbonized Data

The carbonized early medieval data are very poor and the application of CA provides only some limited information. The dataset is based on 18 records with three or more species, and 18 species occurring in 5% or more of all records. Black mustard was identified as an outlier and has been excluded from the final CA. The inertia accounted for by axes 1 and 2 is 20.3% and 15.4% respectively.

The species plot (Figure 6.3d) suggests that vegetables, oil-producing plants, and condiments cluster near the right and top right corner separate from the fruits, nuts, and pulses. Moreover, the two pulses are found only at the top part of the plot, while almost all fruits are present in the bottom left quadrant. When the site types are considered, CA shows that most carbonized early medieval data derive from rural records – mostly villages – and no association between certain site types and species is visible (Figure 6.3e). Thus, any possible explanation should be sought in the qualities of the individual records rather than in certain site types. Resorting, thus, to the records plot (Figure 6.3f) a distinction is possible between north and south. Grass pea, olive, peach, and almond are positively correlated to southern records, whereas the group of condiments, vegetables and oil-producing plants is the most significantly associated with northern records. Carbonized apple and plum are more frequent in northern records too, but other fruits, such as fig, cherry, grape, damson, pear, as well as walnut exhibit a less clear-cut association.

6.4 The Medieval Period

6.4.1 Waterlogged Data

Here only records with five or more species and species occurring in 5% or more of all records left are included. Furthermore, species occurring in 5 to 10% of all records, namely melegueta pepper, cucumber, lentil, horehound, rice, black pepper, and white mustard, have been downweighted to avoid further noise. Overall, the waterlogged medieval dataset for the CA analysis is based on 237 records and 31 species. Axes 1 and 2 explain 11.1% and 8.6% respectively of the total inertia.

The resulting species distribution (Figure 6.4a) shows, once again, a general differentiation between fruits and condiments. Vegetables, oil-producing plants, and the single pulse, namely lentil, are located near the condiments, while the one nut – walnut – lies close to the fruit group. Interestingly, when the various food plants are grouped into their chronological patterns as identified in section 5.1 (Figure 6.4b), the main distinction is between species that have been classified into Patterns 2 and 3, that is, species common throughout, from the Roman until the end of the medieval period but with a more pronounced presence during the latter, and species that appeared or became relatively common only during the medieval period. Black mustard, a Pattern 3 species, is an exception, exhibiting a similar behaviour to Pattern 2 species, almost all of which are fruits. Finally, it must be pointed out that fruits (except mulberry and medlar) or Pattern 2 species form a more solid group compared to condiments, located closer to the origin.

The site type and record plots (Figures 6.4c and d respectively) illustrates the overwhelming presence of towns, both major and minor ones, in every part of the plot; the fewer urban monasteries are also scattered across the plot among the towns. However, a pattern does seem to emerge when the rural records are examined: all types of rural records, including rural monasteries, are concentrated towards the top right quadrant of the plot, with just three records lying outside this area. Considering first the main body of rural records, an association can possibly be established between rural contexts and the most common of the fruits and nuts throughout the study period (Pattern 2). Additionally, other links can be claimed for rural records and vegetables, particularly with cabbage and turnip, and also with hemp and horehound. This trend is more significant for the few rural lesser and non-elite records, which lie near the vertical axis but closer to the top left quadrant. Besides horehound, the only other condiment with a more prominent rural connection is black mustard. Rural elite records do not form a tight cluster but, when comparing the species and record plots, a stronger connection with peach becomes apparent, providing a possible explanation for the position of this fruit as an outlier (Figures 6.4a and c).

The three rural records that do not conform to the general rural patterning, located at the bottom half of the plot (Figures 6.4c and d), are two nearby elite records, namely Wachtendonk and Brüggen, Germany, not far from the river Rhine and from Cologne, and a rural monastery, Ename gastenkwartier, situated near the town of Ghent, Belgium. Their proximity to major towns may play a role in the presence of certain rare species. Moreover, the two elite records are dated to the 14th century or later, and include, among other food plants, buckwheat, which is generally a late occurrence. The data from the monastery come from the middle and late medieval period and include a rich variety of fruits from both Pattern 2 and 3 and condiments, including melegueta pepper, which is also a late comer.

The site type plot (Figure 6.4c) provides a further suggestion for the distribution of mulberry and medlar at a distance from all the other fruits on the species plot, as they seem to be present predominantly in urban contexts. If some rural association can be further hypothesised for these species, it can be only with elite records. Finally, most of the rarer species during this period (Pattern 1, Figure 6.4b) and most condiments (Figure 6.4a) are chiefly linked with urban contexts. Caution should be taken in the interpretation of lentil, as it is rarely preserved in waterlogged conditions and its distribution may not be reliable. Another CA for the waterlogged medieval data after the deletion of the outlier species (cabbage, horehound and peach) provided no further insights into the resulting patterning and, therefore, will not be discussed.

6.4.2 Carbonized data

This dataset is based on 34 records with three or more food plants, and 18 species present in 5% or more of all medieval records. The inertia accounted for by axis 1 is 16.2%, and 13.3% by axis 2.

The species distribution (Figure 6.4e) indicates that some weak patterning may be discerned. The arrangement of the species shows no distinct clusters, except that the oil-producing plants and the one vegetable are grouped separate from the fruits, nuts and pulses. A distinction between fruits and condiments, observed in most other datasets, cannot be advanced here. The site type plot (Figure 6.4f) offers no explanation regarding the species patterning; rather, each site type includes a variety of food types. However, the individual records plot (Figure 6.4g) shows that celery, opium poppy, turnip – similar to the carbonized early medieval data – and, in addition, hemp are strongly associated with northern records. Grass pea, on the other hand, appears more frequently in south and central modern-day France, similar to its early medieval period distribution. The remaining species are present in a mixture of northern and southern records, urban and rural contexts.

6.5 Summary

The application of Correspondence Analysis has indicated patterning in the data that was also apparent when the variables were studied individually (Chapter 5). This suggests that the results appear to produce meaningful information, despite the low inertia values of the axes, which means that only a small proportion of the variation in the data is explained by each axis (see section 3.9.2). Going one step further, CA allowed some new associations to be observed and further explanations for the emerging patterns to be suggested. A general distinction between the Roman and medieval data can be stressed, which followed different trajectories for the waterlogged and carbonized material. In the case of the waterlogged data, for all time periods, a further distinction was drawn largely between condiments/oil-producing plants and fruits, which was broadly attributed to their distinct associations with certain site types and species of certain chronological patterning, as identified in Chapter 5. Trends in the early medieval waterlogged data were less clear-cut, and explanations are more focused on individual rather than groups of species. Finally, the carbonized data of each period were comparable to the waterlogged data of the corresponding period, yet revealed additional associations between predominantly carbonized species and certain site types. This is particularly true for the substantial dataset of the Roman period, for which an association between ceremonial records and a distinct group of species, including date and pine nut, was identified; most of the species encountered in early medieval and medieval contexts were preserved predominantly in waterlogged conditions and, therefore, the carbonized data analysis for these two periods is only tentative. A division between carbonized condiments/oil-producing plants and fruits is visible only for the Roman and early medieval phases, being more related to certain site types and/or geographical areas. The carbonized medieval data allow some insights into links between certain species and geographical areas, but suggest no strong association between certain site types and species or food types. The following chapter will allow us to bring the results of the analyses together into an explanatory framework, which will then provide the springboard for assessing the research questions posed at the outset of this thesis (Chapter 1).

CHAPTER 7
Discussion

The data analyses undertaken demonstrate significant differences in the social and geographical dispersal pattern of the species under consideration in each time period. These emerging patterns are discussed here, bringing together all the results, in order to identify and explain the role of the new food plants in these periods and the route of their dissemination. The discussion focuses on the northern part of the study area as the available data from the southern parts proved insufficient to provide a comprehensive picture. The interpretations are chiefly based on the waterlogged evidence. Carbonized evidence is additionally discussed in the case of certain contexts (Roman ceremonial records) where it was the main mode of preservation of the archaeobotanical material.

7.1 Taphonomic and Other Biases in the Overall Results

Before interpreting the results it is important to consider whether the increase in the visibility of any of the species under consideration is related to a change in the preferences of their edible part consumed. This is very difficult to determine archaeobotanically; in the case of condiments, however, the overall similar extent of species that were typically consumed either in the form of leaves (such as parsley) or seeds (such as caraway) in any period of time, may suggest that in such a large-scale research review the social bias can overshadow preservation biases. Turning to historical evidence there is no clear-cut indication for the exclusive use of a specific part of most of these condiments. Fennel is an interesting example, as there are many references for the use of its seed during the medieval period against witchcraft (Prance and Nesbitt 2005: 214) and an appetite suppressant, while its leaf and bulb are also mentioned in medieval cookbooks (e.g. Redon *et al*. 1998: 73-75). Could the increase in fennel occurrences reflect an increase in the use of its seed, in contrast with the Roman period when it was valued mostly for its leaves (Kiple and Ornelas 2000: 1773)? Its strong association with the Roman military and the resemblance of its geographical dispersal along the *limes* to other rare condiments can be interpreted as a failure to significantly increase its popularity among local populations; if indeed fennel had been more popular, then a wider distribution pattern could be expected to emerge, as at least in the case of summer savory. Therefore, by combining all the evidence, even if certain biases regarding the edible part preferred existed in different time periods, the general patterns appear to be reliable, if with a possible deviation in terms of scale.

However, taphonomic reasons, in combination with differential contextual uses, seem to have resulted in the reduced medieval occurrence of another species: garlic. In the Roman period garlic was employed in ceremonial practices (see section 7.2.3), and as a result, it was mainly preserved in a carbonized state. In contrast, fewer medieval garlic records exist in the study area, and these are all carbonized and in secular urban contexts. Nonetheless, documentary sources indicate that by then garlic had become an integral part of the southern European diet and that it was known to both north and west (Kiple and Ornelas 2000: 1776). In Britain, for example, there are descriptions in medieval poems of peasants' staple diet which include garlic (Hammond 2005: 27). Thus, its overall less prominent chances of survival and identification in combination with its apparent absence from specialised contexts after the Roman period may have inhibited a more widespread visibility.

Furthermore, as mentioned in section 4.5, particular attention should be paid in the interpretation of the dispersal of certain groups of species, such as apple and pear, melon and cucumber, and turnip and cabbages, due to the difficulties in their distinction. Although each species has been considered separately and the results suggested a rather distinct occurrence for each one, these should be considered only tentative.

Two final biases need to be mentioned: the predominance of urban contexts in the medieval and, to a lesser extent, in the Roman period, and the gaps in the geographical distribution of the species, as illustrated in Figures 5.3.1a-l. Regarding the former, these results may largely reflect the strong association of most species with waterlogged deposits; these are more likely to be present in sites where a deep stratigraphy has been formed, which is typical of towns. Therefore, a bias against the occurrence of these species in rural sites may occur, which may also partly account for the overall fewer early medieval records (but see section 4.1.2). Finally, the geographical distribution of the 'exotics' matches to an extent the research interests of individual archaeobotanists and/or laboratories, as is particularly the case for the Roman carbonized material (see section 4.2). In addition, the differences in the methodologies employed on the various excavations, ranging from the number of samples taken, the mode of sample collection and processing, and the size of the sieves chosen for flotation/water-sieving to the nature of the project (rescue versus a longer-term systematic excavation), can add further biases to the recovery and visibility of the archaeobotanical remains. Therefore, at this stage, the presence of the examined species can be more significant than their absence, and consequently, regional gaps in the dataset should be treated sceptically. With the completion of the larger project, when all the remaining archaeobotanical data will be gathered, a better approximation of the 'gaps' in the dataset will be obtained, and the results will be refined accordingly.

7.2 The Roman 'Culinary Map'

7.2.1 New Food Plants: Access and Distribution

From the early stages of Roman control a wide array of food plants are present in the northern provinces. Good evidence exists that some of these species, such as coriander (Wiethold 2003: 277), celery and dill (Zohary and Hopf 2000: 206; Jacomet 2006: 81, 2007: 245) preceded Roman expansion north and west, according to relevant finds in central Europe (see also Kreuz 2004). Nonetheless, their availability increased significantly with Roman settlement, to the degree that gardening of species like herbs and vegetables became characteristic of the Roman period (e.g. Greig 1983; Bakels and Jacomet 2003: 542; Wiethold 2003: 277). This research shows that most species have been found in a variety of site types. Major towns were certainly widely supplied with a large array of food items as was the army, but rural settlements also included many of the new food plants, demonstrating the interconnectedness of the social structures through tight links between the rural and urban sector. We can understand better the process of dispersal of the various species by examining below the behaviour of the most commonly encountered food plants of the period.

Coriander, celery, dill, and summer savory were the most widely available condiments of the Roman period. Their substantial presence in military contexts and in major urban centres testifies to an extensive trade network for their provision along with other products, such as wine and olive oil from the south. Furthermore, at least the first two condiments occur in many rural contexts, which hints at local cultivation, triggered by their increased popularity; conceivably, this is the reason why these are the most recurrent condiments in the rural lesser records of this research (Figure 5.2.1b). Noticeably, many of the rural records with condiments lie in close proximity to forts or towns that would have triggered the demand for these species; however, coriander and celery in particular are also found in some more distant rural, and not necessarily elite, contexts. The narrower spatial distribution of summer savory can be explained by the almost exclusive use of its leaf or stem, which would leave fewer archaeobotanical traces.

A large variety of fruits and nuts also enriched the diet in the northern provinces, particularly with the development and adoption of new tree management techniques, such as grafting, that allowed for the expansion of arboriculture. Characteristic is cherry, which was collected in the wild already in prehistoric contexts in the study area but current thought holds that its domesticated form was likely the result of grafting, as practised by both Greeks and Romans (Prance and Nesbitt 2005:85-6; Vaughan and Geissler 1999: 52, 62, 72; Zohary and Hopf 2000: 171-182). The fewer and sparser cherry seeds and fruits retrieved from pre-Roman northern contexts can be an additional indication that the Roman expansion was responsible for its domestication (e.g. Pollmann *et al*. 2005: 1471); its presence in a significant number of military sites, *coloniae* and *civitas capitals* further highlights its strong Roman association. However, this familiarity with cherry may have been the trigger for the adoption of new exploitation methods by locals and the increased, quick incorporation of this fruit into the staple diet compared to other fruits and/or nuts. Its wide dispersion and its presence in quite a few Roman rural records (many of these elite) may indicate its cultivation and extensive use within the framework of a changing culinary culture.

The case of plum, damson and walnut more or less matches this: their extensive presence implies cultivation introduced by the Romans, although some evidence from prehistoric contexts does exist (Ruas 1996: 98; Zohary and Hopf 2000: 180-1, 189). Transfer of knowledge of grafting to the northern provinces seems to have facilitated the widespread diffusion of various fruit- and nut-bearing trees that could be managed in a similar way to other locally available species, such as cherry, as their demand largely increased to supply the military and the urban populace. Noticeably, early Roman records of walnut derive from various military and urban contexts but only from one rural settlement, namely Oss-Ussen Westerveld in The Netherlands (Bakels *et al*. 1997); such early instances could refer mostly to the import of the nut, alongside the movement of the army (and the elite). Later walnut spread across these northern provinces, according to its frequent finds, to become most likely locally cultivated (see also Jacomet 2003: 216-217), while its presence in a quite significant number of rural elite contexts possibly demonstrates that walnut was highly-valued.

Wild forms of apple and pear do occur naturally in North-West Europe but their dispersal history is somewhat different, as they are both largely absent from all the southern records with waterlogged deposits in the dataset. Indeed, the closer association in the multivariate analysis of waterlogged apple and pear with condiments (Figures 6.2a) must be the product of their spatial – rather than their social – distribution that, in contrast to the other common fruits, does not extend as far south. This absence from the south is difficult to understand as written sources suggest that many apple varieties were widely cultivated in the western Mediterranean during the Roman period (e.g. Alonso 2005: 350-2) and even exported from Spain along with other foodstuff (Parker 1973: 362). Cool (2006: 123), basing her research on Roman Britain, argues that apple/pear seeds are more common in kitchen waste deposits than in cesspits and speculates that their core was not being consumed. To examine whether a similar reasoning can be applied in the case of the apple and pear scarcity in the south, the actual context of the waterlogged fruit find-spots in the southern records of the dataset must be considered. Although contextual information was not always available, only few cesspits are included in the records from the southern areas. In fact, most cherry and other common fruit records come from wells, which presumably represent food waste, and where, according to Cool, apple/pear would have equal chances of preservation to other fruits. Furthermore, no bias has been observed regarding cesspits for any of the fruits across the whole study area, including Britain, and there is no great difference in the number of apple/pear and other common fruit records from such deposits, which contradicts Cool's evidence. Interestingly, Pliny (NH, XV.15) mentions an apple that bears no seeds: "*The remaining varieties have received their name from various circumstances – the apple*[s] *known as…the "spadonium" of the Belgæ is so nicknamed from the total absence of pips*". However, this being a single variety among many others, would not justify a general absence from such an extensive region. A more plausible explanation may be related to taphonomic issues: fruit stones and seeds are more common in waterlogged deposits; therefore, in the southern records, where the predominant mode of preservation is carbonization, the recovery of fruits is a rarer phenomenon. Considering the carbonized data, some apple records do appear from lower latitudes and indeed in a similar number of records as other fruits; only grape and fig are conspicuously more common. Noticeably, the waterlogged records of southern France and Spain are very few and predominantly come from towns, thus not necessarily reflecting the agricultural practices and consumption patterns of the broader area.

More needs to be said of pear, since this fruit is very rare in Roman Britain yet on the Continent is strongly associated with the *limes* zone (Figure 5.3.4a). In Britain there are currently just three pear records, one from Carlisle, an early Roman military site, and two from rural records of the late Roman period. Thus, although wild pear occurs naturally in the temperate zone, its extensive exploitation and consumption seem to be more related to the army, without wider adoption – a situation more conspicuous in Britain. However, these results should be treated with caution as the often difficult distinction of pear from apple may have played a role, inhibiting a potentially broader archaeobotanical visibility.

Grape and fig are also typically present in a variety of contexts. Grape would have been imported to the northern provinces both in a dried form, as raisins, and fresh, preserved in jars (Cool 2006: 122). In the southern parts of the study area it could also have been locally cultivated. However, there is growing evidence for viticulture further north: in Britain, pollen and structural evidence from Wollaston in the Nene Valley, Northamptonshire, suggest a substantial area covered by vineyards around many farmsteads dated to the 1st to the 4th centuries AD (Brown and Meadows 2000); additionally, many structures interpreted as wine-presses (nine are included currently in the dataset) have been unearthed in the Rheinland-Pfalz area in Germany, around the Moselle, including carbonized remains of grape – all dating from the mid-3rd century onwards (e.g. König 1992, 1995 and pers. comm.). Grape is certainly connected with Roman expansion and at least in some areas it was introduced into cultivation by local farmers. The carbonized data (Figure 5.2.2g and h) testify further to the occurrence of the fruit in a fair number of both elite and non-elite rural records. In contrast to the results of Bakels and Jacomet for Roman central Europe (2003: 555) suggesting a similar distribution of grape to that of peach, in this study, grape does not seem restricted to the southern areas and indeed it has been recorded from some rural and urban records further to the north (*cf*. Figures 5.3.2c and 5.3.3a). Its popularity in the northern provinces is hard to judge; while wine, an important by-product of the fruit with good preservation/long-term storing capacity (Dietler 2007: 233), may not have replaced beer and mead – both attested long before and during the Roman conquest (Van der Veen 1989; Vencl 1994: 303-10) – the fruit does appear to be quite widespread.

Fig has a particularly pronounced association with major towns; in addition, it has the most military and the least rural records compared to all other common Roman fruits (Figure 5.2.2a). Its dispersal is probably explained by the status of the fruit being an import in the central and northern zones, most probably in a dried form, as fig can hardly produce a ripe fruit in these areas. Thus, its limited presence in northern rural records is not surprising, with most of them lying near military and major urban settlements. In the few waterlogged records available from the southern areas fig is indeed present, occurring locally and forming an integral part of the diet according to historical sources. Typically, in Roman Italy, fig ranked among the staples and was used in combination with various other foods and spices (Bakels and Jacomet 2003: 554).Thus, although common during this period, fig is strongly linked with Roman culinary culture. Since dry figs are easily transported they may have been largely imported for the provision of the army, particularly in the first stages of Rome's expansion north, and for the town dwellers – hence their abundance. Later on, people in nearby settlements may have become familiarised with fig and acquired a taste for this fruit with strong 'Roman' connotations. Fig may have been a staple for the Romans who moved to the north, but, for local populations, even if it became easier to access in places like urban centres and thus possibly lost its exclusive status, fig must have been a clear indicator of Roman foodways.

Other common species present in all types of secular contexts of the period are peach, opium poppy and lentil, for which, however, more distinct regional patterns were identifiable.

7.2.2 The Role of the Army

As seen, the dispersal of many of the new species can be related to the movement of the army. Indeed, the results of this research show that a great diversity of species was used by the Roman army but only some of the most popular spread outside the military confines. Noteworthy are the cases of some of the rarer condiments of the period, such as fennel and parsley. In addition to their military occurrences, their urban instances derive almost exclusively from the major towns of London, York and Xanten, all of which were initially important legionary bases. Similar is the distribution of horehound and oregano; even the two minor town occurrences of the former are in Straubing-Azlburg (Küster 1995), a harbour on the Danube, and Eschenz (Roman Tasgetium, Pollmann 2003), an important crossroads situated above the Rhine Falls, both of which have the maximum number of recorded species and which formed prime locations for the trade and transport of goods. Oregano is present mainly in the Rhine *limes* zone and in Britain is confined mainly to York, London and their vicinities.

Of particular interest is black pepper, which is especially rare in archaeobotanical records of North-West Europe, retrieved mainly from contexts with a particularly high diversity of newly introduced species. Its rarity stands in contrast with its popularity in Rome and Italy where large quantities were imported from Malabar, India, in exchange of gold and silver (Dalby 2002: 88-94) and stored in special warehouses (*horrea piperaria*). Black pepper was well-known, mentioned frequently in Apicius' *De re coquinaria*, but at the same time it was quite expensive, albeit cheaper than long and white pepper. Thus Pliny the Elder reports: "*...its price* [long pepper] *is fifteen denarii per pound, while that of white pepper is seven and of black four*". In the same passage Pliny complains that "*It is quite surprising that the use of black pepper has come so much into fashion, seeing that in other substances which we use, it is sometimes their sweetness, and sometimes their appearance that has attracted our notice; whereas pepper has nothing in it that can plead as a recommendation to either fruit or berry, its only desirable quality being a certain pungency; and yet it is for this that we import it all the way from India! Who was the first to make trial of it as an article of food? And who, I wonder, was the man that was not content to prepare himself by hunger only for the satisfying of a greedy appetite?*" (NH 12.14). Accordingly, pepper, being an expensive luxury in Rome itself, would likely be available only to a few privileged people in the northern provinces. This can be also supported, for instance, by the recovery of black pepper from the early/middle Roman *vicus* of Oedenburg, France (Jacomet and Schibler 2001; Jacomet *et al.* 2005) and from the centurion's latrine in the military fort of Oberaden, Germany (Kučan 1992). Interestingly, however, it is attested in the Vindolanda tablets in a transaction of varied items by a soldier not of high rank (Bowman and Thomas 1994: 135-8). Could this suggest that pepper was more common in the north-west than the archaeobotanical evidence indicates? Alternatively, it could have been distributed in a ground form rather than as a seed, in which case its archaeobotanical traces would be lost. Some support for this hypothesis is provided by pepper grinders such as those recovered from the 5th century Hoxne hoard in Britain (Cool 2006: 64), although this is an elite assemblage. Yet in a large-scale study such as this one, if pepper was indeed more common, more seed records would be expected, especially if the grinding was taking place piecemeal as suggested by the actual presence of the grinders, rather than imported in ground form.

Condiments are not the only type of species with a strong military association. Another example is turnip, the only one of the vegetables examined that appears to be relatively common under Rome or at least in archaeobotanical terms. Relying on the identifications as provided in the archaeobotanical reports, turnip's occurrences are divided almost exclusively between rural and military records, which, in most cases, are in strikingly close association (Figure 5.2.3a and section 5.3.4). Following the results of the present study, turnip appears to be an important army food, with its extensive use being triggered by the army's presence in the northern provinces. Locally available wild turnip might have been exploited and taken up to cultivation rather than imported varieties. The presence of – most likely – the wild form of turnip in Neolithic and Bronze Age central Europe was advocated by Reiner *et al*. (1995), based on archaeobotanical evidence (see also Jacomet *et* al. 1989; Jacomet 2006: 81; Zohary and Hopf 2000: 200). However, there is currently no evidence for the widespread diffusion of turnip amongst local populations, although, admittedly, consumption of its root or leaf would leave few archaeobotanical traces. Note that Lepetz *et al*. (2002: 82) include turnip in their summary for the cultivated plants of northern France only from the period between the 1st and 3rd century AD, although there is no more information regarding the sites or their references. In addition, regarding cabbage, although its occurrence is more restricted (Figures 5.2.3a and 5.3.4g), the overall patterning is similar to that of turnip, being associated with the *limes* area. Due to the often problematic distinction between the two species, it is therefore possible that a strong military association refers to both species.

Noteworthy is lentil, which, as well as being widespread in various site types on the Continent, appears to be an important part of the army diet, according to its constant occurrence in military contexts (Figures 5.2.1g and h, and 5.3.2i). Davies (1971: 132) actually suggests that lentils together with beans were the most common 'vegetables' of the Roman military diet. Such popularity was probably facilitated by the local availability of the species and its use already prior to the Roman period (Zohary and

Hopf 2000: 98-101), while its demand by the army especially might have triggered both fuller local cultivation and trade.

Significantly, perhaps, the Rhine frontier sees the greatest species diversity, in military and various other records in their vicinities. In this highly militarised zone, diffusion of food plants associated with the Roman culinary culture is evident. Within the context of a more elaborate cuisine, species that could be locally cultivated and supplied, and others such as poppy, turnip and caraway that grow naturally in the northern parts of Europe and probably already locally known, became more widespread in this area, most likely due to the incentive provided by the army demand. Military land was often leased to civilians to cultivate and provide for the army (Davies 1971: 123), and this could have played a part in familiarizing local people with new tastes. The example of caraway is interesting as it is found only in a few military and nearby rural and urban settlements with a high diversity of new species, in close proximity to the Rhine *limes*, but almost exclusively in modern-day Germany. A plausible explanation could be that within the framework of an increased demand for spices by the military and the introduction of a more varied cuisine to the new provinces, caraway, with its anise-like flavour, being locally known, was probably easy to access by locals; its availability may have further provided an incentive for its growth for regional trade. Caraway's failure to expand beyond this area may signify that, unlike coriander for instance, it was not considered one of the regular ingredients in Roman cuisine, holding instead a rather more regional appeal.

The militarized zone of the north of England has a more restricted variety of food plants and these do not seem to be widely incorporated into local practices. In most cases, the new food items were used by the Roman army, although this seemingly does not act as an agent for their dissemination to local populations. The distance in the relations between the army and native people in this area is also attested by the very few references to Britons in the Vindolanda tablets, which implies a perception of the natives as 'others', and the very distinct material culture, even between *vici* and native rural settlements (Mattingly 2004: 15-16). Moreover, the settlement pattern of these northern areas was dominated by military sites and farms (Greene 1986: 126), which, in the absence of an extensive market system as formulated in nucleated settlements or towns, seem largely self-sufficient; regular supplies for the army of foods, such as dried figs, and personal orders of the soldiers may have contributed to the variety of the military diet while local people may have had fewer opportunities of contact with the new food plants and less incentive for their production.

Comparing the Rhine *limes* and the north of Britain, two observations can be made: firstly, the common ground is an overall enriched and varied diet that can be postulated for the army, including not only locally available produce but other staple and sometimes luxury items imported from distant places. This picture of a diverse military diet is in accordance with other studies, such as those by Davies (1971) and Dickson (1989) who identified a wide range of food items and a balanced diet for the military (for a review of the recent evidence see Thomas and Stallibrass 2008). This picture also implies state provision of at least part of the army diet, highlighting the large scale of state operations. In addition, the fact that soldiers were rather well paid and looked after by the state (Mattingly 2006: 166) would further allow for individual tastes and personal transactions to add to the military culinary regime. Secondly, the role of the army in the introduction and/or establishment of new food plants in the northern provinces varies. James (1999) has underlined the need for a conceptualization of the Roman army as a complex social entity, forming a self-conscious community with its own customs that aimed both at the physical and social individual and resulted in a ‘military identity’, which nevertheless, allowed ample space for regional diversification. Thus, a regional discrepancy in the role of army is not really surprising. It is possible that the presence of the Rhine itself and its tributaries could have contributed to the easier access of imports and their later dissemination. At the same time, the higher presence of local people (Germanic) into the army stationed along the Rhine *limes* could have facilitated the interaction with local communities, as civilians would not perceive soldiers as completely different peoples; thus, food customs could have spread both ways, between civilians and the army. The adoption of the cultivation and consequently the consumption of a variety of new plant species by local people in many rural settlements along the *limes* zone as triggered by army demand, further shows that an elite is not always necessary to act as an intermediary for the acquisition of a ‘Romanized’ taste through processes such as emulation, but economic reasons may have a strong impact too.

7.2.3 Ceremonial Contexts

Whilst the range of food plants in ceremonial records of the period is fairly wide (section 5.2.5), a stronger association can be observed with certain species, mostly fruits and nuts (Figures 6.2e and f). In reality, all common fruit finds are present in ceremonial records. In contrast, condiments are rarely found, comprising mainly coriander, followed by a few records of celery and black mustard (Table 7.1). Both celery and black mustard can occur naturally in the study area, and, therefore, unless they are accidental intrusions, they represent offerings from local produce as introduced/expanded probably by the Romans.

To examine this hypothesis it is necessary to interrogate the individual records. Starting with black mustard, its two occurrences in Britain (Bishopsgate, London, Giorgi 2003) and Denmark (Fuglsøgård Mose, Karg and Harild unpublished data), are identified only as *Brassica cf. nigra*, while the one record from north France (Faulquemont, Marinval 2004) refers just to one seed. Regarding celery, in France the two occurrences in Lyon and the one in La Calade, Provence are not certain identifications while only one seed of celery was identified in Les Ribières, Bessines (Marinval 2004). Furthermore, the single record of fennel from Germany (Planig, Bad Kreuznach, König 1997) also refers to a single seed, the identification of which is uncertain, and horehound and marjoram represent two and one seed respectively. In contrast to these, occurrences of coriander are generally more numerous and well-identified. Therefore, substantial evidence for a ritual association can be claimed only for coriander, which was one of the most widespread Roman-period food plants. It should be noted that all but one (La Calade, Provence, Marinval 2004) coriander records from France derive largely from central areas, where the species has been attested also in a few waterlogged environments, and could have been locally cultivated.

Effectively, part of the local produce may have been largely preferred for ritual purposes whereas some more expensive and harder-to-acquire imports, such as spices and flavourings, in the northern parts of the study area seem to have been reserved mostly for consumption in the secular domain. This accords with the situation observed in France and Italy for which Bouby and Marinval (2004) and Matterne and Derreumaux (2007) respectively suggested that ceremonial offerings reflect local agricultural traditions. This may be related to practice during Roman funerary rituals celebrated in the necropolis, in front of the tomb, which involved, apart from burning offerings on a pyre, the consumption of foods as part of funeral meals shared by the family of the deceased at the grave (Jones 1987: 813-814; Scheid 2003: 167-170).

Interestingly, three species, namely garlic, date, and pine nut, have the highest proportion in ceremonial records, with the last two representing imports. Furthermore, date and garlic are almost exclusively associated with this type of site, and particularly with burials (Figure 5.2.1g). Garlic does not preserve well as the part of the plant that is not consumed decays very easily and, even when preserved, is usually not easily identifiable. Therefore, a much wider distribution of garlic cannot be completely excluded; its occurrence in a few rural elite records, such as in the cellar of a Roman villa in southern Germany (Stika 1996) and the military fort in Neuss, Germany (Knörzer 1970) may hint at its broader association with Roman culinary customs. In ceremonial contexts garlic might have been used for its strong perfume and, having many cloves in one bulb, it may have been employed as a ritual symbol, perhaps of fertility, in the same vein as other plants with multiple seeds, such as pomegranate and opium poppy (e.g. Jacomet *et al*. 2002: 85; Hnila 2005: 322).

Date contrasts with garlic in being more frequent, possibly as it features a hard stone with good chances of preservation. Its association with ceremonial records in southern (e.g. Marinval 1993) and central Europe (Bakels and Jacomet 2003) is well-recorded. Bakels and Jacomet (2003: 553) suggested that, being a fairly rare import, date may have been an important part of certain ceremonies rather than a luxury. Some support is provided by the archaeobotanical study of the burials in Vindonissa, Switzerland, in which multivariate analysis showed no significant association between dates and the social status, age or sex of the deceased (Petrucci-Bavaud 2000). Nevertheless, evidence from a Gallo-Roman cemetery at Faulquemont, Moselle, France, showed that date was found only in a tomb that contained gold and other valuable objects, indicating the high status of the deceased (Preiss *et al*. 2005). More contextual analyses are imperative in order to establish the actual status of date. I would argue, however, that a concurrent luxury and ritual connotation of the fruit is possible; its occurrences in a few major town and rural elite (but no rural lesser/nucleated and minor town) contexts provide further support for this hypothesis.

Another line of evidence that may further elucidate the status of dates is their containers. Peacock and Williams (1986: 109), in their guide to various Roman amphorae, argue that the principal content of Class 12 'carrot amphora', manufactured in a desert environment and found mostly in the north-western parts of the Empire, was possibly dates. Cool (2006: 124), examining the evidence for the import of dates and other palm fruits to Roman Britain, advocates that the small size of this carrot amphora may reflect the status of these fruits as a delicacy. However, she further maintains that despite this and the rarity of both the fruits and their containers in civilian contexts, they were common in military diet according to the substantial proportion of carrot amphorae in a few 1st century forts (Cool 2006: 125). Yet, Tomlin's (1992) review of the carrot amphora notes the discovery of a *titulus* *pictus* from Carlisle, indicating that it contained doum palm fruits growing in Egypt. Tomlin suggests that this type of container would have carried various preserved fruits, including figs, dates, olives, as well as doum palm fruits. In addition, the present research does not support a widespread consumption of the fruit by the army; as mentioned above, date stones are fairly easy to identify and retrieve, even with the naked eye, and therefore, if they were a common part of the army diet, more specimens can be expected. Interestingly, the data from Orton's Pasture *vicus*, Rocester, Britain (Monckton 2000) – one of the three military records with dates and dating to the middle Roman period – derive from a mixture of contexts including a shrine, which may hint at a ritual association of the date once again. Moreover the 23 date remains from another military record, that of Lion Walk in Colchester, were all retrieved from the centurion’s quarters (Murphy 1984). A more contextual analysis of the forts and *vici/canabae* could clarify the status of the recipients and, perhaps, the types of structure from where the dates and their possible containers were retrieved; in the meantime, the present evidence suggests a fairly exclusive status and a specialised use for the date.

Pine nut, with an almost equal number of waterlogged and carbonized occurrences, has a distinctive social distribution (compare Figures 5.2.1a and g). When carbonized, pine nut mainly occurs in ceremonial contexts, both temple/shrines and burials. Its presence in temples such as those dedicated to Isis – Mogontiacum, Germany (Zach 2002) and Bélo, Spain (Lignereux *et al.* 1997) – signifies the link between this species and certain Roman traditions. In addition to pine finds (both nuts and cones), there are ample representations of the species on altars, tombstones and funerary monuments from areas in modern-day France and Britain (Wallace, unpublished results), and also from Pompeii and Herculaneum (e.g. Robinson 2002; Zach 2002). Markedly, only a weak association of this nut with military zones (particularly the Rhine frontier) emerges, even though it has a significant presence in rural elite and major town records (Figures 5.2.1a and g, 5.3.2d and j). Therefore, a Roman association can be discerned in its dissemination but not directly through the movement of the army; pine nut seems to have been an import, mainly to Roman urban markets. Additional evidence for their import is provided by the ripe, but still closed, pine cones found in a Roman shipwreck in the Mediterranean coast, near Toulon (France) that were being transported all the way from Italy (Kislev 1988: 76). Some suggestions that it was the tree, rather than the nut, that was imported north, based chiefly on its hardiness in temperate climates (Wallace, unpublished), also exist; however, even so, it would have been exploited within a framework of Roman customs and culinary traditions, as indicated by its occurrence in civilian (possibly associated with high status) and ceremonial contexts. It differs from date as the latter may have been reserved largely for funerary pyres and/or meals; also, pine nut appears less frequently in burials than in temples/shrines (Figure 5.2.1h), which may further indicate its differential use/role as a ritual symbol compared to date.

Other nuts are also quite frequent in ceremonial contexts. For example, almond occurrences are few but demonstrate a similar overall pattern to that of pine nut: both waterlogged and carbonized specimens exist in equal numbers, with the former deriving from secular and the latter almost exclusively from ceremonial contexts. Walnut is more widespread compared to both pine nut and almond, having been retrieved in a carbonized state not only from a relatively high proportion of ceremonial contexts (roughly a third of all records – see Figure 5.2.1g), but also from all other site types. Some evidence for other nuts, not included in this dataset, used as offerings are further available (e.g. hazelnut – see Bouby and Marinval 2004). The more limited presence of waterlogged pine nut and almond in secular contexts may be related to their overall rarity in comparison with walnut, which was probably locally available in the northern provinces. The use of relatively rare imports, such as pine nut and almond, in ceremonial contexts of the north could be, thus, treated as symbols of economic status and/or recognition/embracing of Roman traditions.

It should be further noted that Roman religion was founded on ritual rather than on dogma, and although procedures varied across the provinces and, also according to context (Scheid 2003: 167, 174), general rules on ritual items may have been deeply interwoven into practice and widely established. Scheid (2003: 81) mentions, for example, a text (*De verborum significatione)* preserved by Festus who provides a list of acceptable food offerings in an unclear context. In the present research, data collection involved only a certain range of species, and, therefore, it is likely that a bias was created towards those ceremonial records with influences by Roman practices, at least for the northern part of the study area. A complete overview regarding ceremonial records is impossible without the inclusion of all species, but nonetheless, some general trends and associations could be delineated: local differences are to be expected, but those who chose to acquire a 'Roman' identity, as expressed in certain ceremonial and ritual contexts, seem to have employed local food plants produced within the context of culinary diversification brought by the

Roman way of life; those who could afford them acquired for ceremonial use specific items, such as date and pine nut, according these a high symbolic value.

7.2.4 Regional Variations

The dispersal of the new food plants shows how these are strongly identified with the expansion of the Roman Empire (its army and towns), as hardly any of these have been recorded outside its frontiers. Those that do are mostly species that can occur naturally in north-western Europe, such as celery and possibly oregano; few other finds, such as that of coriander in the rural native settlement in Klötze, Germany (Leineweber and Willerding 2000), are dated to the late Roman period and could indicate some trade/movement of people and goods as part of the changing socio-political structures in the area during that period. In addition, a number of regional differences within the Roman borders emerge. Among the more pronounced ones is that between Roman Britain and the Continent, with the range of food plants present in the former being comparatively limited. An example of this situation is the dispersal of peach, which, although found in a variety of contexts, refers almost fully to the Continent, with only one record from Britain, specifically from London (section 5.3.2), representing an import. On the Continent, it is fairly widespread, with a quite significant presence in rural elite records, although a military connection, given its extensive presence along the *limes*, is also apparent. Similarly, (carbonized) lentil is present in numerous contexts on the Continent but in Britain it gathers only in selected sites towards the south-east, mainly centred on London, and in some military contexts, implying its status as an import.

Equally, illuminating is black mustard, which is fairly evenly distributed across all site types, although its dispersal route does not strongly correlate with the frontier, being present (relative to other equally rare condiments) in a high number of rural non-elite records. Numerical evidence indicates that black mustard occurred in substantial quantities in many rural records alongside various other condiments and typical Roman food plants (e.g. Marinval *et al.* 2002), which excludes its occurrence as a contaminant of other species. Yet a stronger military association for black mustard is observed in Britain where the great majority of records derive from military contexts and from towns such as London, York and also Lincoln – all initially important legionary bases. In contrast, on the Continent, most black mustard finds are reported from rural contexts. Thus, it seems that this condiment was introduced to Britain by the army, whether through preferences of regional commanders or merely through the availability of its supplies in the main urban depots. In contrast, on the Continent it has a less direct connection with the Roman expansion, and it might have been locally available in largely non-elite settlements (minor towns and rural nucleated and lesser records) – despite which, according to the archaeobotanical evidence, it did not become popular and widespread, while if it was cultivated, this probably took place on a small/local scale.

Within Britain the most significant differences lie between its northern parts and the south and south-east, with the latter having a greater range of the species examined – perhaps partly reflecting the higher degree of archaeobotanical research in this area (Van der Veen *et al*. 2007). Additionally, in the southern areas, a dense hierarchical settlement pattern was present where the degree of urbanisation was higher (Greene 1986: 122, 126; on distribution of villas, see Jones and Mattingly 1993: 241); therefore, it is possible that the wider market/trade network and the proximity of sites rendered access to new food plants in and from rural contexts easier. Noticeably, however, even in the south of Britain the most widespread species were those that could be cultivated locally, such as coriander, apples and cherries, whereas imports, such as peach, olive, and fennel, reached very few settlements, let alone rural ones. Thus, the degree of adoption of Roman food plants in Britain seems to be more restricted compared to at least some parts of the Continent. The reasons behind this are complex but it is possible that the more favourable environments for the cultivation of certain species (e.g. peach) in parts of the Continent rendered their dispersal easier or even cheaper, contributing to the greater variety of food plants there. Moreover, one could hypothesise that since most trade in Britain was accomplished through middlemen in Gaul rather than directly from the Mediterranean (Jones and Mattingly 1993: 201), a picture more similar to northern France in terms of imports can be expected, as indeed reflected in the more restricted range of imported condiments in both these areas. The links between Gaul and Britain can possibly be witnessed by the distribution of pine nut, which although almost absent from the Rhine frontier, is present in secular and religious contexts of both these areas (see Figures 5.3.2d and j). King (1999) also observed a more Gallic/German meat consumption pattern in British military and major urban contexts, which became more widespread only during the late Roman period, highlighting the connection of the two areas.

A great variety of species, however, did reach *certain* parts of Britain, as attested by finds for instance in London and York, which suggests that many exotic imports were reserved for the military (both sites were initially important legionary bases) and the elite, and kept exclusive by their high cost and imported/luxury status. The closer affinity of some of the rarer species with select sites in Roman Britain is best exemplified with the case of mulberry. Seeds of this fruit have been recovered mostly from towns (Figure 5.2.3a), the bulk of which are from civilian contexts in London (see Figures 6.2a and c). Willcox (1977: 279) and Cool (2006: 122) suggest that instances of mulberry in Roman Britain are indicative of the introduction of the tree rather than the fruit, as this species needs to be fully ripe before consumption and it is particularly prone to damage. Alternatively, dried mulberries could have been imported. Within the wider study area, an indication for actual tree growing comes from southern France, where anthracological evidence showed the presence of fragments of charcoal from mulberry in a 4th century AD deposit in Lunel-Viel (Ruas 1996: 99). Nevertheless, whatever the form of introduction, mulberry remains a rare species. Indeed, in terms of urban contexts, apart from London, it occurs only in York and Cologne. Its few rural records are all on the Continent; interestingly, the two rural nucleated findspots lie near the Rhine, in close proximity to two military contexts. A third, elite context, is also located near the Rhine, close to the *colonia* of Cologne. When other modes of preservation are considered only a few more carbonized and mineralised mulberry finds emerge, mostly from military and major town records, while in terms of rural records evidence comes only from a rural elite site in France (Lestagnac, Ruas and Bouby 2003). Ruas (1996: 99) mentions one further record of mulberry from a well in Corseul, a *civitas* capital in the north-west. Thus, overall, some connection with the military can be postulated but its availability in London may hint at some elite urban market.

More differences emerge when comparing the northern and southern parts of the study area. In the south the predominant mode of preservation is carbonization and consequently fewer deposits provided evidence for the plant species in question; most records derive from ceremonial contexts (in central and south France) and a few urban deposits – hence the restricted visibility of many condiments. Despite the limited information the plentiful ceremonial records do provide some indications on the local foodways. Bouby and Marinval (2004) maintain that a higher degree of 'Romanization' is reflected via the ceremonial customs of Mediterranean France and the Rhone valley on the basis of the higher frequency of Mediterranean or exotic species, and bread or pastry. These species include almond, pine, walnut, olive, fig, celery, garlic, coriander and date. With the exception of date, all these species occur naturally in the Mediterranean, and, therefore, I would suggest that in this area it is very difficult to distinguish between a local and a Roman cuisine as most products are common. So, is it yet again another instance where locally available food plants become incorporated into ceremonial rituals? And could the occurrences of date be associated with higher status individuals both in the south and the north? Noticeably, in the study conducted by Bouby and Marinval (2004), most of the Rhone valley records are from Lyon, a major Roman town, and only two of them come from other sites, which are situated low on the Rhone and *within* the Mediterranean zone (see Bouby and Marinval 2004: 78 [Fig.1] and *cf.* Figure 5.3.1d). The expressions of identity are in reality complex processes and a more contextualized analysis of the various ceremonial records would be necessary to allow fuller insights into the various levels of social identity. In the north of France, some typical species of the Roman cuisine, such as coriander, are present as well as a variety of other species – mostly fruits – but true imports and the overall range of condiments are more limited. Again an explanation may be related to the existence of fewer towns in northern Gaul (Greene 1986: 120), which may have played a role in this more restricted availability of imports and the emphasis on species that could be grown in the countryside.

Two species strongly associated with the Roman period, that exhibit distinct behaviour in the northern and southern areas are peach and olive. Beginning with peach and considering the rare occurrence of waterlogged seed assemblages in the southern part of the study region creates a bias against the recovery of most fruits, its abundant records (compared to other species) from southern contexts could hint at its local cultivation in these more favourable habitats. Bakels and Jacomet's (2003: 554) study of Roman central Europe recommends that peach should be classified as an import in the north as only two records of the fruit are from northern military sites. The present dataset, which is more extensive, accords with this hypothesis. Additional finds of peach exist in the north, including those from the river port of Pommeroeul in Belgium (*cf.* Bakels and Jacomet 2003: 554). These new records, nonetheless, are mostly from military contexts and major towns; it is perhaps indicative that from north of 49.6 degrees of latitude only one rural – in fact elite – record includes peach (Figure 5.3.2c). When compared to other common fruits of the period, peach indeed has the fewest rural records in the northern part of the study area.

Olive records derive principally from major towns with a concentration in two distinct areas: the southern part of the study area and the Rhine frontier (Figure 5.3.2a). Similar to peach, the fact that olive is commonly found in the south highlights its strong association with this region and reflects its important role (and that of its derivatives) in everyday diet and life (see also Foxhall 2007). This interpretation is supported by the increased production and commercialization of olive oil and olives in parts of the Mediterranean, with Baetica, Spain, being a typical example, and the widespread consumption of the fruit as attested in contemporary texts (Mattingly 1988; Brun 2003: 144-6). In the northern provinces, olive is an import and is associated with military records and major towns such as London, York, Xanten, and Cologne. Olive imports in the northern provinces were already in operation during the very early stages of Roman expansion, tied in part to a movement into the area of people from a different culinary tradition. Its absence from rural non-elite records would seem to confirm its exotic status, whereas occasional finds in rural elite records suggests either luxury status for the fruit or simply a Roman style cuisine. The seemingly restricted olive records, albeit frequently in large quantities, contrasts sharply with the ample ceramic evidence (amphorae) for the importation of olive oil (e.g. Remesal Rodríguez 1998: 187, 198; Jones and Mattingly 1993: 196-7). A full consideration of this difference is outside the scope of this research, but an answer may be sought along the lines of the distinct uses of the two products, since the oil, apart from food, was used also for body-care and lighting (Mattingly 1988: 33). As soon as Roman control deteriorates, detailed dating evidence show that olive declines drastically. Overall, therefore, the archaeobotanical data reveal how this fruit did not become part of the staple diet in the north and in fact from the 3rd century AD onwards became a rarity; due in large part to climate, olives could not easily be established beyond the Mediterranean region.

Finally, regional variations are also observed for the western and eastern part of the area within the Roman frontier on the Continent. These are best exemplified with the case of opium poppy. This species is already attested in prehistoric contexts (Zohary and Hopf 2000: 137) but during the Roman period, although present in an equal proportion of military, urban, and rural records (Figure 5.2.2a), on the Continent it appears to be mostly associated with the *limes* area (Figure 5.3.3b). In France, opium poppy records are scant but a similar pattern may be also advocated for the pre-Roman periods; it has been attested archaeobotanically in Neolithic, Bronze Age and Iron Age sites (Ruas 1992a, Bakels 1999a), but, even in these earlier sites, it does not seem particularly common (see, for example, the review by Ruas and Marinval 1991). The reasons behind the uneven distribution of a plant already known and grown in the area are hard to define. Taphonomic reasons may be suggested but a quite substantial number of both urban and rural records have been examined for

France (Table 4.2), while both the waterlogged and carbonized evidence for Roman France show the same overall picture. Another hypothesis links to the actual use of poppy: with the increase in popularity of olive and olive oil, and the oleiculture in the southern parts of France since the 3rd century BC (Preiss *et al*. 2005: 370), it is possible that with the Roman development of trade routes olive oil superseded opium poppy oil in this area. In the forts along the *limes*, where a more straightforward association can be assumed, opium poppy may have been employed mostly for its narcotic/medicinal qualities, since Greek and Roman authors knew it as a pain-killer and soporific, and/or it may have been used in the classical recipe of sprinkling its dried seed on loafs, and as a dessert mixed with honey (Andrews 1952; Dalby 2002: 135). Thus, the significant occurrence of poppy in the Roman period, at least in some parts of the study area, may relate to an increase in the popularity of a different mode of use. Certainly, the ready presence of the plant in North-West Europe seems to have contributed to its considerable occurrence also in a fair number of rural records.

7.2.5 The Role and Impact of the Roman Empire: A Comment

On the whole, the distribution of the new species shows, in agreement with the results obtained by Bakels and Jacomet (2003: 555), how some (but not all) species that could be locally cultivated appear to be the most widespread, being present in a variety of site types, while rare imports are mostly confined to military contexts and/or major towns. The important role of urban elite in the dispersal of the new species can also be attested in the differential frequency of these in major and minor towns, with the latter having a more similar 'behaviour' to rural records (see, for example, Figures 5.2.1a and 5.2.2a).

Furthermore, the present research, based on a larger dataset compared to that used by Bakels and Jacomet (2003), indicates the occurrence of more finds of some of the rarer Roman species, such as black pepper and almond, in occasional rural non-elite records of northern Europe. This suggests some flexibility in the movement of certain goods, such as luxury food items, at least on the Continent; in Britain rare imports appear less disseminated to rural contexts, which accords with Burnham and Wacher's claim (1990: 50) that "*luxury items were only available in the larger population centres where demand was greater*". Significantly, however, many of the rural sites, and almost all of those that include rare imports, are situated in close proximity to Roman forts and towns, and mostly in the *limes* zone. New food items indeed reached some local people but, generally, it can be hypothesised that greater dietary changes were the result of economic incentives, as, for example, the cultivation of species to provide for the demand in nearby sites, and/or socio-political motives to gain power or benefits by associating with a visible, newly established elite. More remote rural sites with imported food plants are relatively scarce, hinting at a rather limited degree of intrusion of ‘exotics’ into native foodways, which, as Hawkes (2002) argues, are generally conservative and resistant to change. A better understanding of the extent of incorporation of these new species into local culinary regimes will be, nevertheless, obtained after collecting data from all sites with the completion of the larger project.

Thus, overall, some central socio-economic organization by Rome, as expressed by the significant role of the army and the elite, can be discerned, acting as a vehicle for change and innovation. The vicinity of many sites to major rivers and sea ports further shows that Roman investment in expanding new routes was also responsible for diffusion of products and ideas. Nevertheless, we need note how the expansion of the Roman Empire did not result in a uniform and widespread adoption of all these food plants, but rather a variety of responses can be observed within the different regional and social realms. These observations fit in the notion of ‘discrepant experience’ as applied by Mattingly (1997, 2004) who suggested that it would be more profitable of thinking in plural terms of identities, material cultures and so on, as a whole array of reactions from emulation to resistance would have been employed to construct different versions of Roman and/or non-Roman identities (Mattingly 2004: 22).

7.3 The Early Medieval Phase

7.3.1 A Different Culinary Regime

During the early medieval period, as discussed in section 4.1.2, a much reduced number of relevant records prevails. Although the archaeology of this period was until relatively recently poorly documented (e.g. Christie 2004: 4-5), there are some indications that the trend observed is indeed not an artefact of fewer sites excavated. Keeping in mind, that the visibility of many species may be reduced due to the fewer waterlogged deposits available from the numerous rural records (see sections 4.1.2 and 7.1) the patterns of food consumption during this period can be delineated.

The overall picture emerging is one of a reduced variety of all those food plants that enriched the culinary map of North-West Europe as a result of their introduction or intensified exploitation during the Roman period. It is important to stress though, that in reality this general decrease may have started during the late Roman period, as more detailed dating evidence indicates. Additionally, no new food plants seem to appear during the early medieval period in the study area. Species that occur naturally in North-West Europe, such as black mustard, celery and horehound remained present and used to some extent when other condiments disappeared from the culinary map, most likely within the framework of an overall reduction in food imports during this period. Black mustard stayed more or less at the same levels as in the previous period (Figure 5.1d) but with a distribution mainly limited to rural non-elite records (Figure 5.2.3b) – which could imply local cultivation of the species, as a possible continuation of previously established practices. Horehound is different in that it is the only species where relative proportion is the highest compared to both the preceding and the following time periods; and yet its actual number of occurrences is only seven. Thus, although a significant increase in horehound emerges after the Roman period, this is largely an artefact of the overall low number of the species recorded subsequently: horehound is still quite rare but more visible compared to other species and particularly condiments of the period.

In the same vein, other condiments, fruits, nuts, and vegetables that were largely integrated into local cultivation under Rome continued to be exploited. Apple is the most frequent species, showing an increase in its occurrence from Roman times, as does turnip (Figures 5.1c and d). Cherry, grape, damson, dill and walnut also remain fairly common, despite the relative drop in their occurrence after the Roman period. All these species, with the exception of dill, have been encountered in trading centres, which is indicative of their significance as trading goods, but most importantly, they are present in a more or less equal number of major towns and non-elite rural records (Figures 5.2.2c and 5.2.3b). These results hint at a rather well established cultivation of at least apple in the area and suggest their continued – if reduced – contribution to local culinary regimes. It should be noted that in the case of grape, most of the rural occurrences come from France and, when considering its comparatively substantial carbonized data, many of them lie in the Mediterranean south. Thus, it can be postulated that grape cultivation had become an integral part of southern and other favourable parts of the study area. In the north, supplies of fresh or dried grape were available mostly in towns and a few other select records. This may suggest that during the previous (Roman) period its cultivation in the northern provinces was restricted in scale, as it largely failed to remain established. Dill, the most common condiment of the early medieval period (together with celery), differs in being more strongly associated with urban contexts (Figure 5.2.4b) and, therefore, seems to be one of the first condiments associated with the newly emerging towns – a process completed in the next phase.

In fact most records of these rather common food plants are dated to the mid-8th century AD or later. This trend may partly relate to the emergence of proto-urban communities and the consequent availability of more urban contexts with waterlogged deposits, as also reflected in the dataset. Whether this is an indication of an actual rise in the circulation of these species or simply an increase in deposits that improve their visibility cannot be easily clarified. Contrasting these species with lentil, which is predominantly preserved by carbonization, can shed more light on this issue: the relative abundance of lentil throughout the early medieval period may indicate that the reduced scale of exploitation observed for many species is partly an artefact of the dominance of deposits unfavourable for their preservation. Whatever the actual situation, it is perhaps more important that the types of food plants that became more conspicuous were still those that were previously established in parts or the whole of the study area and/or were present locally even prior to Roman conquest.

Of the typical ‘Roman’ food plants, coriander sees a dramatic reduction during this period. Its presence in a few major towns and trading centres possibly indicates a continuum in its supply, albeit on a smaller scale. As the dataset currently stands, the only other record where waterlogged coriander was found is a rural elite manor, in Serris-Les Ruelles, France, and its associated non-elite quarters (de Hingh and Bakels 1996), which further demonstrates the restriction of coriander to fewer select or privileged records. In the same vein, summer savory, oregano, olive, peach and pine nut are only rare early medieval finds as with medlar, mulberry, fennel and caraway, while date, parsley, black pepper, and white mustard are not visible at all archaeobotanically, possibly suggesting a failure to gain popularity outside the strictly military or religious/Roman context.

Quite distinctive is the social distribution of fig: this fruit is found in a higher proportion of trading centres than any other species of the period. When its spatial distribution is considered, it appears narrow, with more than half of its records deriving from London, leaving only a few other dispersed occurrences of the fruit across the study area – York, Cologne, a village contemporary and in close proximity to the town of

Duisburg, Germany, another village in the same broader area, and a burial in south Germany. These occurrences imply some trade of the fruit, but centred mainly on towns. Noticeably, the early medieval dispersal of fig, though very much reduced, appears to occur in areas where it was most abundant during the Roman period.

This reduction in the range of the species recorded and the limited availability of exotic imports can be considered as part of changes witnessed in the area after the breakdown of the Roman Empire. Wickham (2005: 10) points out that the political and economic cohesion of the Empire allowed it to operate on a large scale that was not matched during the early medieval period. Thus, the fragmentation that characterised this latter period seemingly impacted on the movement of many food plants, with a shift on the overall emphasis towards local produce: this inward picture may be the result of the strongly agrarian character of the late and post-Roman world, where the economies were regional or sub-regional and did not depend on structural links with their neighbours (Wickham 2005: 819-24, Esmonde Cleary 1989: 200). Species that did not occur naturally or were not taken up in cultivation in the study area were very much limited. Their few occurrences, therefore, should represent luxuries, which, although marginal to economic systems, can still provide useful insights into socio-economic structures. Their restricted availability may be another sign of reduced wealth of those higher in the socio-economic hierarchies, as suggested by Wickham (2005: 255-8), who argues that aristocracies of the post-Roman world between AD 400 and 800 were on the whole poorer, with only two exceptions, namely in medieval Francia and Syria. This instability and the changing fortunes of the wealthy at various moments during the first phase of the early medieval period are also alluded to by many other lines of research: Martin (1997), for instance, studying treasure hoards in western Europe found marked discontinuities and upheavals, particularly in the northernmost parts of the old Roman Empire. An alternative (or even additional) suggestion for the restricted availability of other than staple or locally available food items could be that the elite, in terms of food, turned towards different means of wealth display that would not be associated with an elaborate cuisine, such as one related to the fallen Roman elite.

7.3.2 Changes in the Culinary Geography

The culinary geography thus underwent significant changes after Rome. One of the most prominent changes is observed in Britain where most of the examined food plants are limited to a couple of records (mostly trading centres or towns of the later early medieval phase) or cease to exist altogether. Turnip (and/or possibly cabbage) is a typical example, largely failing to expand beyond the military environment and indeed almost disappearing. Similarly, black mustard is absent in early medieval Britain, where previously, under Rome, it was predominantly associated with the military. Therefore, it seems that this condiment almost follows two historical trajectories: in Britain, with the withdrawal of the Roman army and authorities in the early 5th century, it disappears; in contrast, on the Continent this condiment seemingly was already part of local horticultural regimes, most likely acquiring different connotations through time while being integrated into local diets.

This discontinuity is consistent with the picture of a breakdown of Roman practices and economic crisis in 5th century Britain, also seen through the striking collapse of Romano-British ceramic and other large-scale industrial production (Esmonde Cleary 1989: 131-61; Tyers 1996: 78-80; Wickham 2005: 301-26). Furthermore, as Mattingly (2006: 350) argues, many towns collapsed very quickly during the last phase of Roman occupation in Britain; therefore, as the earlier introduction of many exotics was linked with the urban markets, their diminishing fortunes and role was matched by the disappearance of these food plants. At the same time, a declining elite and the economic crisis (Mattingly 2006: 538) would have further hindered the import, at least on a recognisable scale, of exotic food items. However, other species, such as coriander, that seem to have been relatively more widespread in Romano-British culinary culture, also disappear, possibly suggesting a failure of a deep-rooted integration of the Roman foodways. A reverse of the political crisis in Britain only properly started after the mid-6th and stabilised more in the 7th century (Wickham 2005: 340-2), but by then a different socio-cultural framework had emerged, where an elaborate cuisine of Roman style seems to have long disappeared. The argument of a substantial time-lag between the collapse of the Roman Empire and the establishment of the Anglo-Saxon rule has been employed to defend the discontinuity in typical Roman practices (Esmonde Cleary 1989: 161), which could also explain to some extent the disparities in dietary customs.

In northern France and the Rhineland some continuity is observed in reference to species that were already well-established and integrated into local practices, such as certain fruits and nuts; their reduced availability relative to the previous period may be another indication of the more regionally-oriented early medieval economic/market system. The absence of total economic disintegration in Gaul and the retention of a powerful aristocracy as observed by Wickham (2005: 182, 331) is not attested and/or negotiated through food plants such as a wide array of imported condiments; instead, it may have been expressed in quantitative rather than qualitative terms (e.g. with an increased concentration of local agricultural produce within the framework of a subsistence agricultural economy), although the current dataset cannot provide any conclusive information on this matter. Across the Rhine, in addition to fruits and nuts, various condiments that could be cultivated locally are visible, suggesting that some garden cultivation was indeed taking place. In south-western Germany, Rösch (1998: 122), looking at plant macro-remains, identified evidence for small-scale agriculture during the same period, which may further indicate more regional and inward-looking processes and justify the general absence of exotic imports. In both northern France and the Rhineland, the disruptions witnessed since the later 3rd century AD surely contributed to increased difficulties in the access of imports. Later in time, these disruptions might have led to a gradual social restructuring and a distance from a Roman associated elite that would be expressed, among other lines of evidence, through culinary practices.

A north-south differentiation is also noticeable in instances such as pear. This fruit has a rather limited presence in the early medieval world, being absent in Britain and on the far northern areas of the Continent, while additional carbonized pear records from villages located in the Mediterranean zone reinforce the picture of a more southerly distribution for the species. This dispersal largely reflects a failure to establish pear and to integrate it into local diet in the northern provinces in both Roman and early medieval periods. As noted earlier, however, the resemblance of its seeds to those of apple may have contributed partly to its decreased visibility in the north.

Finally, the first evidence for a shift towards the north-eastern zone of the study area becomes apparent as the majority of the species under consideration extend their occurrences beyond the borders of the former Roman Empire. This change can be considered part of a new era, when the exploitation of most food plants seems to have been ‘reinvented’ within a different set of socio-economic structures, such as the advent of proto-urban communities and a transfer of economic and political vitality to the north (e.g. James 2001: 59-60) that fully took shape in the following period. Opium poppy and celery are examples of species displaying this north-eastern shift; for both species most findspots are dated to the middle 8th century onwards, strengthening the concept of a re-emergence of their use within a different sphere of activities towards the north. Taphonomic reasons may also be proposed, but the occurrence of the two species in a fair number of rural records as well as urban contexts implies that these cannot be the sole reason explaining their dispersal. Hemp is also found proportionally in more early medieval than Roman rural records and has an overall increased ‘visibility’; its occurrence in Denmark, where hardly any of the other recorded species occurs, could further indicate hemp’s introduction from the north and its association with the increasing economic affairs in the same area, as the Mediterranean ceased to be the main focus of trading activities.

7.4 Medieval Foodways

7.4.1 Ingredients of a New Cuisine

After a general decline in the visibility of the recorded species, an enhanced variability in north European diet is witnessed that can be pinpointed to the beginning of the 12th century onwards. The cultivation of many food and/or medicinal plants (as the two concepts were often linked together) becomes established while at the same time new imported species appear in the culinary arena and are disseminated across the study area. Yet the emphasis is on a different set of species to that dominant in the Roman period. Typically Mediterranean species were no longer the most conspicuous; rather a combination of species that could be produced locally and others imported from the north, the Mediterranean, and Asia became important, highlighting an expansion in trade routes and an increased circulation of goods. Thus, a more extended regional economic network compared to that in the early medieval period becomes evident.

Condiments constitute a typical example of the new culinary repertoire. The occurrences of most such species increase, with the only exceptions being celery and oregano – both prominent under Rome – and horehound. Of the other typical ‘Roman’ condiments, the presence of summer savory increases only slightly, never to recover to its Roman levels. Coriander becomes fairly well distributed once again, but is by no means the most important condiment of the period. At the same time, a new set of condiments, including black mustard, fennel, caraway, and parsley, becomes conspicuous – at least in archaeobotanical terms – for the first time in North-West Europe. In addition, instances of black pepper slightly increase and a new type of pepper, the so-called melegueta pepper, makes its first appearance in the study area.

Noticeably, there are other food plants typically encountered in Roman contexts, such as olive, date, bottle-gourd and pine nut, which remain almost or completely absent, emphasizing how their consumption and use in the area were ingrained in Roman culinary culture and practices. Peach, like coriander, becomes more conspicuous but does not reach its Roman levels. Other species that saw a significant increase in their occurrence for the first time in the study area include pear, mulberry, medlar, hemp, turnip, cabbage, rape, cucumber and rice. Concrete evidence for the presence of buckwheat, appears only in the Middle Ages (see section 4.3.2.2), and particularly towards the end of this period. This is consistent with historical records that mention the integration of this species, which is tolerant of low-nutrient conditions, into agriculture during the late 14th century (e.g. Van Hoof *et al*. 2006: 406).

Further comment is required regarding hemp. Dörfler (1990: 238-239) suggests that hemp first became conspicuous in the Scandinavian region, Poland, and Britain during the early medieval period and only later, from the 12th century onwards, spread significantly to Germany, Switzerland, The Netherlands, and France. The results of the current research corroborate this, as most hemp finds are dated to the 12th century onwards, with some earlier occurrences available from Britain. Hemp has a wide social distribution, being present in towns as well as in both elite and non-elite rural records (Figures 5.2.3d and e). Thus, this species is quite different in that it was not a direct product of the urban development, but it seems that its cultivation became locally established in many parts of North-West Europe for the exploitation of its various by-products, such as rope, fabrics, and oil.

7.4.2 Urban Elite *versus* Peasantry

The diversification in taste, as manifested through the increased range of food plants made available during the medieval period, in reality appears largely interwoven with urban expansion. Differences between urban and rural records, and also, between elite and non-elite contexts are prominent, as the variety of species recorded increasingly centre on town dwellers and the rural elite, suggesting the emergence of distinct dietary patterns. Effectively, a clearer distinction in the role and function of rural and urban sites, with an increasing merchant sector in the latter, and a greater dichotomy between social strata can be discerned.

Of the species examined with a stronger association with the peasantry are vegetables, such as turnip. This was an important winter food employed to feed both people and livestock, and as Kiple and Ornelas state (2000: 1873), "[turnip] *became a staple of the European poor during the Middle Ages*". Following the general trend of this period and particularly from the 12th century, turnip occurs mainly in towns, being popular in urban gardens, but, as in the previous periods, it has a substantial rural presence, in both elite and non-elite contexts (Figures 5.2.3d and e). The uncomplicated cultivation of turnip even on poor soils and its excellent storing qualities would have contributed to its popularity. Remarkably, the medieval chronicle, 'The Four Seasons of the House of Cerruti', which was compiled in the late 1300s in northern Italy, mentions the many ways to preserve turnips for up to a year (Field 2000: 289, 294, Kiple and Ornelas 2000: 1873). Its dispersal in fact shows that turnip was part of the diet of the whole social spectrum, possibly occupying the position of potato before the new food introductions from the New World.

Documentary evidence also exists for the extensive use of cabbage as part of the food repertoire of medieval peasants (e.g. for England see Hammond 2005: 27, 100). Nevertheless, although the current archaeobotanical data indicate an increase in its occurrences, cabbage still ranks among the rarer species of the period and is mostly recorded in waterlogged urban deposits. The fact that it is valued for its leaf means that it is usually harvested before the seeds develop, thus accounting for its relatively low archaeobotanical presence (Alsleben 2007: 27). Also, as mentioned earlier, the usual absence of deep waterlogged deposits in rural sites may have influenced its low archaeobotanical visibility.

Other 'peasant' food plants include lentil, which, having a very similar dispersal throughout the whole study period, appears well established and an important part of the staple diet across the social spectrum, at least in the central and southern parts of the study area. In contrast, the case of buckwheat seems to be less clear-cut. Wiethold (2007) suggests that in North-West Europe in the late medieval period buckwheat was principally a local crop linked to consumption by the rural poor, with no economic value, which accounted for its absence from tax lists. He further maintains that its additional use as fodder would account for its general absence from kitchen waste in rural sites. It is also likely that the quick destruction of the species when in contact with fire is an additional factor for its scarcity in rural records. However, its fairly substantial presence in medieval urban contexts, as shown in this research, cannot be ignored. I would argue that buckwheat was not intended exclusively for the rural populace and its transport and trade in urban markets had already started before early modern times, either as a cheaper alternative to other cereal-based foods or simply to provide more variation to the urban consumer. The recovery of buckwheat remains from a number of urban cesspits and their frequent association with various other food plants as attested in the present dataset provides evidence towards this direction although, additionally, buckwheat could have been brought to towns for the provision of urban stables (Richard Thomas pers. comm.). Finally, other species with a relatively significant presence in rural records are several fruits. Those records are principally elite, but apple, grape and, to a lesser extent, cherry are also relatively widespread in villages and rural lesser sites (Figure 5.2.2f and h).

Despite the scarcity of condiments in rural contexts, it appears that some cultivation and distribution was encouraged among the peasantry. This seems true for black mustard (Figure 5.2.3d), which was probably favoured to provide a strong flavouring as an alternative to more expensive, imported spices (Dyer 2006: 36). At the same time, its presence in towns is more significant compared to previous periods, possibly within the context of a rise in the demand in urban trade and/or for the supply of a wider range of the urban population.

Commenting further on the diet of the peasantry, some historical sources do accord that most rural householders in North-West Europe had small garden plots, commonly planted with vegetables and fruit trees, to provide part of their diet (e.g. Landsberg 1996: 46; Zeven 2003; Dyer 2006: 29). Normally, these gardens lie adjacent to the house; their produce was exempt from dues (Cortonesi 1999: 271), which could partly account for the lack of substantial historical references to them, in comparison with the much more documented gardens in elite contexts (Zeven 2003: 156; Mennell 1996: 40). However, it is striking that the historical evidence regarding the plants mentioned or depicted in the gardens of both the rural (and also urban) lower rank, invariably include cabbages, onion, garlic, leek, and apple. The archaeobotanical data here do accord with a relatively higher availability of apples in rural non-elite records compared to all other species recorded, but the existing information on the remaining plants is too limited to provide a useful insight. This can be attributed largely to taphonomic reasons as these species do not preserve well in archaeobotanical contexts. Overall, it appears that the peasantry across the study area had a restricted variety of food plants and flavours in their diet; they had access to the most common of the species recorded and only limited access at best to imports or rare and hard-to-grow exotic plants. To what degree feudal ties (Barber 1994: 43; Montanari 1999: 247-8) resulted in tighter control over food resources, allowing peasant farmers in the countryside less scope for diversification and limited access to luxury food items, is uncertain.

An additional factor is the increased specialisation and seasonal pattern of products and financial ebb and flow between countryside and towns that would result only in a brief period of relative affluence of rural farmers after the harvest (Spufford 2002: 94-99). Increasing specialisation in many rural areas was the result of commercial growth, triggered by the urban expansion, that stimulated the demand for certain food- and other products (Dyer 2006: 38). Spufford (2002: 96) maintains that from the 13th century onwards, increased specialisation saw "*the most suitable products for a region tended to become the only products*", as for example the substitution of cereal fields with vineyards in Bordelais and other parts of France and the replacement of many vineyards with cereal fields in England. Such specialised activities often required most of the available time and/or space, leaving little scope for extensive involvement in horticulture (Dyer 2006: 38), which may partly account for the fewer condiments in rural non-elite records.

Social differences naturally existed also within urban contexts. During this period, many new towns (often small) were founded, their markets acting as local economic foci. These attracted peasants who, accustomed to working the land, cultivated plots to provide for themselves (Tannahill 1973: 194). Urban horticulture was in fact a very common phenomenon (e.g. Janssen 1987; van Haaster 1994: 80-81) that was practised by all social ranks (e.g. Zeven 2003: 159), although the rich could afford extra labour (Alsleben 2007: 30) to maintain possibly larger gardens with more variable produce. Dyer (2006: 40), in his historical study on medieval garden produce in England, even concludes that "*horticulture was practised more intensively in town than in the country*". It is therefore conceivable that many of the horticultural goods intended for the town markets were produced within the towns and then disseminated through an urban network. Condiments such as coriander, celery, fennel, caraway and parsley, could be produced locally, in town gardens, even in far northern areas to meet the evident demand at a reduced cost. Caraway, in particular, was also common in the grazing land around medieval towns, and thus could have been a cheap alternative to imported condiments (Küster 2000: 436). The local availability of these species can be considered a contributing factor to their increased visibility.

Certainly, however, a greater variety of food products became available through imports to the urban markets, not least through the increasing role of the various intermediaries, such as the Hanseatic merchants (see, for example, Karg 2007b). It is also striking that many sites, and particularly towns, are situated in close proximity to major rivers and/or sea ports (Figures 5.3.1i and k), being prominent trade locations. The spice trade over long distances, mainly from Asia, involved usually low quantities of the products, but with transport costs defrayed by the high value attached on them (Spufford 2002: 309-315); this could further justify their limited occurrence and their failure to enter the whole spectrum of the social network. Imported spices were popular and characteristic of medieval aristocratic cuisine, and yet members of this elite could often only purchase small quantities of such spices for occasional use (e.g. Dyer 1998b: 62-63). Of these, black pepper ranks among the most common and cheapest Indian spices (but only compared to other imported spices) in medieval Europe (Spufford 2002: 114; Dalby 2002: 92), which could also be the reason that it is one of the few oriental imports attested archaeobotanically. Its low occurrence compared to other locally produced condiments is likely to be further related to efforts to prevent wastage of this relatively limited and luxury item; in addition, the potential use and trade of ground pepper would account for its few archaeobotanical testimonies. The social distribution of black pepper is also suggestive of an exclusive and urban status, as only two rural occurrences are known from villages at Aichtal, Grötzingen in Germany (Manfred Rösch unpublished database) and Raversijde in Belgium (Cooremans 1999b), but as these have the highest variety of species recorded in this site type, they appear rather exceptional. Melegueta pepper, often referred to in medieval documents as ‘grains of paradise’ (Hellwig 1995: 39), is a late addition, occurring only post-Black Death. Similar to black pepper, it has been recorded mostly in towns; in terms of rural records, it was also retrieved from the village of Raversijde (Cooremans 1999b) and from the particularly rich (in terms of the species recorded) rural monastery of Ename (Cooremans 1999a) – also situated in modern-day Belgium. Thus, a rather restricted and exclusive use of melegueta pepper can also be identified, although Alsleben (2007: 28) has suggested that this pepper was cheaper compared to the black variety and was, thus, easier to access.

Condiments and other food/medicinal items were no longer indicators of cultural differences but they basically marked socio-economic divisions, and highlighted how closely the elites now identified with towns – a situation visible, but less prominent under Rome. For example, mulberry and medlar, attested by documentary sources as elite purchases (Hammond 2005: 40), occur typically in medieval urban deposits. Both species do not grow well in northern climates but appropriate sheltered conditions provided within the framework of the urban garden/orchard culture of the

Middle Ages perhaps encouraged their growth and the consumption of their fruits. Fig also needs warmer conditions and although instances of its ripe fruits have been recorded nowadays in some parts of southern Scandinavia (Karg 2007a: 147-148), its large-scale distribution could have only been the result of an extensive trade to satisfy demand. Moreover, its almost complete absence from rural lesser records – there is only one mineralised record from Delfgauw-Zuidpolder in The Netherlands (Smeerdijk and Kooistra 2001) that includes a variety of exceptional food items, and a carbonised record from Beaugency, France (Ruas 1992b) – testifies to its privileged access. Its scarcity in France can be related to the fewer urban contexts investigated archaeobotanically. When its carbonized occurrences are considered more instances of fig emerge in France, hinting at a broader presence than the one illustrated in its current spatial distribution (Figure 5.3.3g).

Other relatively rare species are encountered largely in urban contexts. For instance, cucumber finds increase in the northern areas, where it could grow under sheltered conditions, within the context of diversification in the urban garden produce. Archaeobotanical records of cucumber exist only in the central part of the study area, and, therefore, it can be argued that in places like France or Britain, where its presence is recorded historically since the 9th and 14th century respectively (Kiple and Ornelas 2000: 1765), it did not become widely available and/or popular. Similarly, a slight increase in almond occurrences are observed almost exclusively from urban contexts (Figure 5.2.4c); almond finds in the late medieval shipwreck in Port de la Selva, Spain (Buxó 1989), are indicative of their trade, but almond's overall low level occurrence across the study area suggests that it was a quite rare urban luxury. The use of its by-products, such as its flour and/or milk that are mentioned in medieval recipes (Kiple and Ornelas 2000: 1717), would not leave archaeobotanical traces. If the nuts were being traded without their shell, this would also reduce their archaeobotanical visibility (Stefanie Jacomet pers. comm.). However, whilst its consumption may have been in reality broader, this may have been in fact limited to the wealthier part of the urban population, including the merchant 'class', where trade was more prolific. Küster (2000: 1229) observes for instance that during a period of grain shortage, almond flour was baked together with sugar and the so-called marzipan was invented in the Hanseatic town of Lübeck, but the mere inclusion of sugar, which was a rather expensive commodity (Spufford 2002: 305), hints at a high cost and a product aimed at the elite.

Thus, it can be claimed that even these urban luxuries were essentially consumed only by a small part of the town populace. Texts indicate that it was exactly this north-western European medieval urban elite that mostly owned the town orchards (Zeven 2003: 159). At the same time, strict rules regarding the activities of farmers and posing restrictions to the urban lower rank were in operation (Alsleben 2007: 30), such as the Sumptuary Laws, that could further account for the maintenance of urban economic hierarchy and, within this context, the wider spectrum of exotic food items accessed by the urban elite. In archaeobotanical research, spatial differentiation within towns has been also noted (e.g. Lynch and Paap 1982; Paap 1984; van Haaster 1989), with more and rarer food plants being recorded from the latrines of the wealthier sector (e.g. Alsleben 2007: 30; Hellwig 1997: 111). A characteristic example relates to rice. This rare – at least in archaeobotanical terms – cereal, with no rural records, appears to be an infrequent luxury food item in the prosperous northern towns. When available, more detailed contextual information identifies its high or exclusive status: finds from Göttingen, Germany derive from a high middle class house (Hellwig 1997); in Lübeck, Germany – a well-excavated Hanseatic town – rice has been encountered in the merchants' quarter (Alsleben 1991); finally, across the multiple excavation sites in the German towns of Braunschweig (Hellwig 1990) and Freiburg (Sillmann 2002), the presence of rice proved to be restricted to only a few households. The import of this luxury, according to Spufford (2002: 292), took place in small quantities and was mediated through Italian merchants who bought it from Muslim sources or Christian southern Spain, where its cultivation was already established by the early medieval period (Kiple and Ornelas 2000: 1843), and distributed it as far north as Scandinavia. This northern distribution of rice is attested here by its occurrence in the urban monastery of Sorø in Denmark (Harild unpublished results).

In effect, urban monasteries include a high variety of the species examined (Tables 5.2e and f) and many rare imports, presumably profiting from the extensive market and trade network provided within the urban environment. A general affluence can be also argued for rural monasteries, which present an overall similar picture in terms of the plants studied to rural elite records (Table 5.2e). Documentary evidence further testifies to the presence of vineyards, orchards, and many other types of gardens in monasteries (many of which were aiming to self-sufficiency), and asserts their great contribution to horticulture and to the dissemination of medical and botanical knowledge (Landsberg 1996: 34-44). More thorough insights into monastic diet, however, can be only obtained with a more detailed, contextualised study that will also allow comparisons between the various orders.

It has often been claimed that the medieval elite had a less healthy diet than the lower ranks, consuming fewer vegetables and more meat (Dyer 1998a: 63; Dyer 2006: 40). The higher amount of meat, at least at the earlier phases of the period in the diet of the wealthy, is well-established (e.g. Thomas 2007a); however, the archaeobotanical data do suggest that even if the quantities of vegetables reaching the table of the elite were low, the seemingly higher consumption of a variety of highly valued fruits and herbs might have provided adequate compensation. The elite, owing most of the town orchards (Zeven 2003: 159) for instance, would have access to substantial quantities and a large variety of fruits. Moreover, even though information on the whole spectrum of available fruits is not included in the current research, it can be hypothesised that qualitative differences in the type of fruits existed: the peasantry may have had more access to collected wild fruits from the indigenous flora, such as various berries (see, for example, Karg [2007a: 147] for the important role of collected wild fruits in medieval daily diet in Denmark), as well as to well-established species like apples or cherries. Nevertheless, many other cultivated fruits seem to have been largely a luxury of the elite and the town life, such as peach, all the rural occurrences of which come from elite contexts apart from one, referring to the rather exceptional village site of Raversijde, Belgium (Cooremans 1999b); peach did not become widely available during the medieval period but it certainly carried high status connotations, often being included among the orchard trees of the elite who could invest the labour, time and the effort for their upkeep.

The reliance of the peasantry on gathered fruits can be questioned at least in some areas and time periods: for instance in the late medieval period, historical evidence indicates that natural resources became scant, as wooded areas were reduced and many park reserves were closely controlled by the nobility (for medieval England, see Thomas 2007b), with the implication that the peasantry lost access to both hunting and gathering (Montanari 1999: 248). Therefore, a diversification of the diet in the medieval period can be discerned but this concerned mainly those occupying the higher social levels; lower ranking people would have access to the most common fruits but a greater variety and rarer species were more characteristic of an elite diet. This is not to say that a balanced diet in the modern sense can be assumed for the elite as a whole, as many factors, such as individual preferences, seasonal availability, and the influence of contemporary ideas on diet and medicine, would add to the equation. What is argued here is simply that it is possible that the diet of the elite, when compared to that of the lower ranks, was not as nutritionally disadvantaged as previously thought. It should be noted, however, that the lack of more precise quantitative information on the basis of archaeological material does not allow more thorough elaborations on the subject.

7.4.3 Spatial Distribution: Regional Specialisation or Homogenisation?

The overall geographical dispersal shows that a more prominent presence of most species examined towards the north-eastern parts of the study area – already implied for some during the previous centuries – is now evident. Two factors contributed in particular: the growth of the German Empire that became the strongest state in Christendom during the middle medieval period and which controlled the trade routes in the north; and the emergence of the Hanseatic League at the beginning of the 13th century, which dominated the Baltic-North Sea trade and stimulated urbanisation in the area (see, for example, Karg 2007b; Küster 2000: 1229). Both the Baltic and the Mediterranean trade routes were in operation for the distribution of imports and the 'fuelling' of new ideas and habits, particularly to the ever-increasing towns of North-West Europe.

A gap in the occurrence of many species is observed for modern-day France. This can be attributed largely to the fact that less archaeobotanical work has been carried out on medieval sites. Despite the abundance of towns in France (e.g. Hilton 1992: 4), the overall picture during the data recording process was that only a few have been studied archaeobotanically and, therefore, further evidence is required to provide a more coherent picture. It is indicative that in the on-line database compiled by Dr. Kroll, for publications between 1981 and 2004 (http://www.archaeobotany.de/database.html), only ten reports of medieval French sites are included. Some further elaboration on the geographical dispersal of a few indicative species can provide some insight into the actual patterns observed. Condiments, for instance, are markedly absent from France, with the exception of an occurrence of fennel from the town of Troyes and a possible occurrence of dill from the 15^{th} century Aber Wrac'h shipwreck in Bretagne (Ruas 1992b). When other modes of preservation are considered, the occurrence of a few more condiments becomes visible: black mustard has been found in two records of major towns, namely Cour Napoléon du Louvre, Paris (unknown preservation, Ruas 1992b) and Place Foch, Rouen (mineralised, Matterne 2001); two occurrences of coriander come from the major town of Paris, from the excavations of Cour Carrée of Louvre and Cour Napoléon du Louvre (unknown preservation, Ruas 1992b) and one from the village Le Moulin (mineralised, Bakels 1999b); summer savory also occurs in Place Foch, Rouen (mineralised, Matterne 2001); one more occurrence of fennel exists in the castle of Bourges (mineralised, Ruas 1999); finally, two occurrences of dill come from Place Foch, Rouen (mineralised, Matterne 2001) and the rural elite site Le Castlar, Durfort (carbonised, Ruas 1992b). Therefore, the few available indications do hint at a similar picture to that observed for the rest of North-West Europe: the most common species are those that could be either locally produced or traded from relatively short distances and they are found largely in urban or elite contexts. Quite distinct may be the case of opium poppy, for which only one mineralized record exists in France (Cour Napoléon du Louvre, Paris, Ruas 1992b); according to this archaeobotanical dataset, although always present in France, the use of at least its seed seemingly failed to gain a widespread popularity.

Regional differences also emerge in the dispersal of grass-pea, which seems to be linked with southern France, and grape. The latter became sought after, not least for its employment as wine in the practices of Christianity that became an integral part of the late medieval world (Alsleben 2007: 25). Rural carbonized finds of grape come mostly from France, especially its central and southern parts (Figure 5.3.3f), where the conditions are optimal for its cultivation. In all other rural areas the majority of grape records (both waterlogged and carbonized) come largely from elite sites, while in Britain and Switzerland rural finds derive exclusively from elite contexts: Cowick, Snaith (Hayfield and Greig 1989), Rumney Castle, Cardiff (Williams 1992) and Jennings Yard, Windsor (Carruthers 1993) in Britain, and Burg, Marmorera (Akeret unpublished results) and Riedfluh, Eptingen (Jacomet *et al.* 1988) in Switzerland. Thus, a distinction in its status can be assumed between the southern and northern parts of the study area: in the former, grape was part of a long agricultural tradition and thus easily available or, in some places, even part of the staple diet; further north its status seems more exclusive. Dried grapes or raisins (as well as dried figs and other fruits) can be easily preserved and transported over large distances and their trade is duly recorded in texts such as merchants' notebooks and other accounts from towns in the north like Bruges (Spufford 2002: 113-114). These products were supplied from the Mediterranean, by Venetian traders as others, and their availability in this form may account for their ubiquity in urban deposits (see, for example, Alsleben 2007: 26). Moreover, dried fruits, such as grape and fig, can be stored throughout the year, and this may have contributed to a lower cost and their more widespread distribution compared to fresh fruits with seasonal availability, such as peach and medlar.

Carbonized lentil is similarly more conspicuous in the central and southern parts of the study area (Figure 5.3.2m). Remarkably, its spatial dispersal is very similar throughout the whole study period (compare Figures 5.3.2i, l and m), suggesting an early establishment of the species, particularly in France that has the most rural occurrences, and where it became ingrained in local agricultural regimes and culinary culture. In Britain and northernmost parts of the Continent lentil is relatively rare and mostly associated with urban contexts, seemingly being an import available to the wealthier urban populace. Note, however, that some evidence for an increasing presence of lentil in rural sites of central, eastern and southern England between the later Saxon period and the 13th century exists, interpreted by Chris Stevens (pers. comm.) as local cultivation (2007: 46, note that these results are based on unpublished data and before they become available no further elaboration on the matter is possible).

In the northern parts of the study area, a higher visibility of opium poppy, hemp, and turnip prevails. For instance, in Britain turnip is absent from all southern records and it occurs only in northern/north-eastern towns, suggesting a stronger link with urban garden cultivation, and a possible influence from North Sea regions. The rarity of turnip in France, where it has only one waterlogged occurrence in the rural lesser site of Varois-et-Chaignot, Les Epenottes (Wiethold 2004), may be a possible additional indication that this vegetable was not among the staples in the area, nor is it tied to Norman expansion.

Overall, we can recognise various regional differences and areas of specialised production. A more uniform picture, however, of at least the urban elite diet across the study area becomes apparent. This picture of more uniform dietary habits is also supported by household accounts and cookery books from all over Europe dated to the late medieval period, which display striking similarities despite the call and influence of local produce (Dyer 1998b: 67). The cultivation of herbs and fruits in urban gardens is part of this trend that characterised a newly forming urban culinary culture, distinct, at least in scale, from the previous periods.

7.5 Concluding Remark

Tracing the dispersal histories of numerous food/medicinal plants reveals that their use and consumption were by no means static events. These species were introduced and employed within the context of the continuously changing socio-political realities, acquiring distinct meanings and roles at different historical periods and places. The broad scale of the current research does not allow detailed inferences on how these species were used as instruments in the creation of more localised social and cultural identities, but can still delineate the broad context of their employment. Chapter 8 will provide an overview of these contexts and developments, and offer socio-cultural tie-ins.

CHAPTER 8
Summary and Conclusions

Review of Data and Methods

This research aimed to examine the introduction and importation of numerous exotic food plants into north-western and western Europe during the Roman and medieval periods, in order to establish their dispersal histories and highlight the active role that food played in the processes of socio-economic change in past societies. All available published, plus some unpublished, archaeobotanical records for these exotics in the area and period under study were collected and brought together in a uniform database format. This has created the most extensive dataset with detailed archaeological information currently in existence for exotic food plants, including 990 bibliographical references that correspond to 1447 records organised in three chronological periods, namely Roman, early medieval and medieval, and into site types. Four types of information are included: i) the source of the data (reference, whether published or not, and where/how it was accessed); ii) the type of site (military/urban/rural), its context (secular/ceremonial/religious), status (elite/non-elite), dating and geographical reference; iii) the archaeobotanical sampling technique (flotation/water-sieving/hand-picked and number of samples); and iv) the presence of the species, their mode of preservation and accuracy of identification.

Although efforts were made to collect data across the whole study area, very little information was available for its southern extent (Spain, southern France), and thus the analysis and discussion largely focused on the northern zones. Forty-two species, including condiments, fruits, vegetables, nuts, pulses, cereals and oil-producing plants (preserved mainly by waterlogging, followed by carbonization) occurred in sufficient numbers to provide meaningful information. Two types of analyses were employed to identify their chronological, social and geographical dispersal pattern by preservation mode: the first was univariate and species specific, while the second method was a multivariate technique (Correspondence Analysis) in which all variables were analysed together.

General Results

Both methods indicate that, in the case of waterlogged material, two distinct pictures emerge for the Roman and the medieval periods regarding favoured food plants; the early medieval picture is that of a transitional culinary period, during which the various records had a similar repertoire of species encountered typically in either the Roman or the medieval period. The carbonized data were different in that no significant chronological patterning in the species occurs. Nonetheless, this dataset helped highlight that a certain group of species, such as pine nut, date and garlic, is strongly associated not only with the Roman period in general, but also with a specific site type, the ceremonial, including both burials and temples/shrines. Therefore, the carbonized evidence was used mostly for interpretations regarding this context. It has been also observed that the overall patterning of site distribution in each time period partly reflects the research interests of the various laboratories/individual archaeobotanists, or areas of data availability, as is particularly the case for France, Denmark and Switzerland. As a consequence, for the interpretation of the results, more importance has been placed on the presence of the species and special consideration has been given to the reasons for their absence where necessary. The broad spatial extent covered by the present research and the large amount of data collected, however, are thought to have largely compensated for any potential disparities, allowing a thorough appreciation of the species dispersal.

Comparison with Previous Studies

The general pattern observed in this research for an increased variety of supplementary food plants (e.g. fruits and condiments) in the Roman period, their limited occurrence in early medieval contexts, and a further enhancement in their diversity during the medieval period are in agreement with the trends identified earlier by Greig (1983). Moreover, as stated at the beginning of the thesis, this research is built on the seminal study by Bakels and Jacomet (2003) on Roman central Europe by using a broader spatial and chronological scale. It is important, therefore, to assess how the results are formulated with the inclusion of more data. Note, however, that the two studies cannot be fully compared at this stage, as this thesis has examined the Roman period as a whole, whereas Bakels and Jacomet used a more refined dating, which will be employed as the next step of the larger project (see below). So far the overall results agree that many of the species that could be grown locally were indeed taken up into cultivation. Nevertheless, the results of this thesis indicate a more restricted dispersal of pear, being strongly associated with the army. Interestingly, the examination of a wide variety of species in this research further shows that other species that could potentially be cultivated in the northern provinces, such as fennel and parsley, were not widely incorporated into local horticultural regimes; their use remained more exclusive. Regional differences, in terms of a southern/northern divide, are observed, in agreement with the work by Bakels and Jacomet, although evidence for a more extensive distribution of grape in the north has emerged in this thesis. Finally, the scarcity of true imports is attested by both studies but some differences exist relating to date and pine nut, which are interpreted here as representing both a luxury and a food used in rituals.

Early medieval and medieval data on exotic food plants have been studied on a broad scale for the first time in this thesis. The overall results are in agreement with smaller studies, such as that by Groenman-van Waateringe (1994) for The Netherlands, indicating a more diverse diet for the medieval nobility and for monastic communities compared to the rest of the population. However, the broader geographic scope of this thesis allowed the identification of regional and social patterns across North-West Europe, while offering more thorough insights into the changing use of several species. A summary of the key issues that have emerged in the present thesis is outlined below.

Introduction and Integration of New Plant Species

During the Roman period a wide array of food plants – many of which were important ingredients of what we can term 'Roman' cuisine – were dispersed across the northern provinces. Although some were already present in the area in the late Iron Age, their use became much more widespread with Roman advance; the almost complete absence of any exotic food plant record outside the Empire's frontiers further stresses their association with the expansion of Roman foodways. The military and the major town dwellers appear to be the main agents for the dissemination of the use of many new species. Over the next centuries the consolidation of Roman rule (notably via towns) and the stabilisation of new socio-political structures in the north-west allowed wide contact and exchange of ideas and products with local populations. Numerous food plants were recorded in a variety of military, urban and rural contexts, suggesting the close links that developed between different sectors of society, to support and maintain the socio-economic network during Roman rule.

Many species that could be locally cultivated, including coriander, celery, apple, cherry, plum, damson, grape and walnut, became available in rural contexts, indicating their presence and circulation across the entire social spectrum. These species became incorporated into local practices and diet in many areas, thereby gradually losing their exclusive status. This, however, does not necessarily mean a straightforward incorporation of possible Roman habits as each food item may be used in many different ways and/or preparation/serving methods and could have been 'appropriated', entering local cuisines as another ingredient of established local dishes. Other food plants that were already present at least in parts of the study area, such as black mustard on the Continent, also became more conspicuous in rural sites, very likely being employed for consumption and trade within the framework of a more varied cuisine. Yet the depth of integration of these new food plants into the diet of the northern provinces remains open to discussion, as most rural non-elite records with evidence of these species are strongly clustered near military forts on the Rhine frontier zone and urban centres. Moreover, although present in numerous rural records, many common food plants still occur in a relatively low proportion of rural lesser contexts. Accepting that these contexts represent only a proportion of the total number of such sites excavated with all types of food plants, there are some indications that the new species were not widely and unconditionally adopted. Diet, after all, is deeply interwoven with peoples' everyday customs and is part of their identification with their physical and social environment, and as such any changes are normally very slow.

It is, thus, not surprising that many of these new food plants become very rare in the early medieval period, highlighting that the previous ubiquity of many of these was strongly connected with Roman foodways, economic breadth and extended trade links. While species such as coriander represented a broadening of the culinary horizons of the people in north-western Europe, this refinement in taste was not simply a case of a new ingredient; more importantly it also conveyed messages of social status and changing culinary and cultural manners for those people that chose to employ them. After Rome, no new species were identified and very few exotic imports were recorded even in the towns. Noticeably, even when considering taphonomic biases, it is still remarkable that most of the existing species during the early medieval period are those that were long known locally (either as domesticates or wild varieties) and occurring naturally in North-West Europe, such as apple, celery and black mustard.

A shift in the focus of economic/trading activities towards the north begins to emerge in the early medieval period, and is completed in the following (medieval) period, during which an emphasis on an array of different food plants is observed. The variety of species increases and new ones make their appearance in archaeobotanical assemblages, some of which (e.g. buckwheat) become quickly incorporated into local diets. Those locally produced species that remained visible in the previous period (e.g. apple and black mustard) become even more conspicuous. They appear well-established in rural areas, being integrated into the staple diet of North-West Europe, and are also widely available within towns. Some species that were dominant during the Roman period in a variety of contexts (e.g. coriander) become re-established but, this time, they are by no means the most prominent and they are strongly associated with the urban environment. Effectively, almost all species examined that can be potentially grown in the study area were taken up into cultivation, introducing a new diversification in taste for the town dwellers. The town populace appears to be thus the main agent for an extensification of medieval horticulture and arboriculture. Orchard fruit and nut trees, such as cherry and walnut, also become more frequent in rural areas, although mostly in elite contexts.

Access to Rare or Imported Food Plants

Despite the greater availability of the new food plants on a variety of site types during the Roman period, many species largely remained imports as luxury items for soldiers, people used to a Mediterranean diet and the elite. This is indicated, for instance, by the association of rare imports (e.g. date) with certain, possibly elite, ceremonial contexts and other select sites, and the higher availability of many rare condiments in military contexts and major towns. Many of these species were true imports but others (e.g. fennel), although able to grow in North-West Europe, remained limited mainly along the broader frontier zones. This restricted access to many species highlights the significant role of the elite and central Roman control in the diffusion of new products. With the fall of the Roman Empire and the gradual disintegration of its complex economy, these rare species almost cease to exist and exotic or luxury food plants are not visible, possibly hinting at the declining fortunes of the elite, its increasing distance from the previous (Roman) high social class and the disjointed socio-economic context of the early medieval world. Later, in the Middle Ages, with the urban expansion, both in terms of size and number, a distinctive pattern emerges. Many towns, often strategically situated in major sea ports and rivers, became important trade centres where merchants gathered introducing new foods and tastes. Imports (e.g. rice, black and melegueta pepper) were restricted mainly to the urban elite and so were other species (e.g. mulberry and medlar) that required some more investment in terms of labour and resources for their successful cultivation. A diversity of other cultivated species, such as various herbs and fruits, were more widely available but still exclusive, for the most part, to towns and elite rural contexts. Finally, monasteries also appear to have privileged access to rare imports and a great diversity of food plants, with monastic life seemingly an active agent in the dissemination of knowledge and cultivation of many horticultural and orchard species.

Responses to New Food Plants and their Role in Shaping Social and Cultural Identities

Initially, during the Roman period, people in the northern provinces did not simply adopt new foodways as brought by an invading political and military force; rather, a whole spectrum of responses emerged. These are reflected in regional differences, referring both to various military zones and geographical areas. For example, more interaction in terms of trade and exchange between the army and local populations can be observed along the Rhine frontier compared to the military zone in the north of Britain. More differences surface between the southern and northern parts of the study area. These highlight the fact that although social and cultural differences could largely explain differential access to various food plants, environment did play a role, as the popularity of some species increased in areas where they could be locally cultivated (for instance, peach was more widespread in southern areas). Certain species were also connected to Roman religious practices (e.g. pine nut and date), demonstrating further the existence of various layers in the experience of identity in the Roman world.

Thus, a series of regional and social differences in the adoption of different food plants emerge, highlighting how multiple factors must have combined to allow the dissemination or restriction of certain species. Central Roman control for the supply of the army and major town markets must have been responsible for the introduction and import of a great variety of new food plants. An elite aspiring to identify with the ruling class or to express their wealth and social status used these new exotic food plants, as indicated by the presence in elite records of relatively rare imports, notably pine nut and peach, which hardly ever found their way into other rural contexts. Similarly, some local people, encouraged by economic incentives, adopted, for instance, caraway, turnip and other species cultivation due to a likely increased military/urban demand. Easy access to species due to the location of many sites near military forts and on prime transport routes, as in the case of many sites across the Rhine, the Rhone and also Thames, appears to be another significant factor. Finally, in some cases, such as that of cherry, familiarity with a product led to the quick transfer of knowledge on its management and the intensification of its exploitation.

Later in time, the fragmentation of the Roman Empire and the establishment of new elites seem to have, on the one hand, disrupted large-scale trade activities and, on the other, contributed to a turn towards more localised agricultural/horticultural regimes. I have therefore suggested that, in terms of food plants, quantity rather than quality might have been the means for social differentiation. The contrast in the variety of food plants between the Roman and the early medieval period appears stronger in Britain, where the majority of the new plant species seemingly failed to be established outside the context of Roman culinary culture.

The picture changes completely in the following period, during which the expansion of the dietary variety seems tied to an increasing dichotomy between the urban and rural setting, as much of the urban food plant supplies were produced and disseminated within the urban environment. A qualitative difference in the food plants accessed by the various social sectors becomes evident. Whilst peasants focused on locally available and rather undemanding garden species, the elite had access to a greater diversity and rarer species, adding some support to the idea that the diet of the elite was nutritionally better than previously envisaged. Additionally, despite regional variations (such as the specialisation of grape growing in areas of modern-day France and the stronger association of hemp and turnip with the northern parts of the study area), a greater homogeneity is witnessed across the urban elite diet. The dispersal of the species considered in this thesis shows that these were no longer indicators of cultural differences and identities but mainly marked socio-economic divisions, with many of them being luxuries of urban life and marking an 'urban identity'. This stresses how closely the elites now identified with towns – a situation visible, but arguably less prominent under Rome (or at least in my study zone). Also, it highlights the changing nature of the urban context compared to that of the Roman period, when a tighter bond with the countryside seems to have been active.

The Future of this Research and Further Suggestions

Having identified the potential of food studies, in the future this research can be expanded to provide a more detailed analytical framework and more thorough insights into socio-economic changes. This thesis is only part of a larger research project directed by Prof. Van der Veen and its role was to look at the three broad time periods using records with one or more of the selected species. The next stage of the project, to be conducted by Prof. Van der Veen, will be to collect data from the remaining excavation sites that produced any other type of archaeobotanical material besides exotics. This will permit calculation for each site type of the number of records with exotics as a proportion of the total number of records with food plants, which will provide a more accurate approximation of how widespread the various exotics were. In addition, a chronological refinement on the social and geographical distribution of the recorded species will be applied in order to study their dispersal by phase. The aim will be to identify how gradual the integration of the various species was and what fluctuations existed in their availability over space and time, as for example, contrasting access and use between the early and late Roman period by when urban elite presences had diminished in the western Empire. Such detailed phasing can also distinguish periods of change with a greater resolution, particularly as across such a broad study area a variety of chronological categorisations co-exist. Addition of quantitative data for the species cannot be fully implemented in the next phase of this research as this type of information is not always provided in the reports; however, it may be worthwhile incorporating abundance evidence in the data analysis where these are available as an indication of the potential of this approach. Ultimately, the delineation of the overall patterns in the study region can be used as a guiding framework to contextualise more detailed regional studies.

Finally, as the collection of such an extended dataset indicates, there are significant differences in the sampling strategies, methods of data recording and report writing between archaeobotanists. Therefore, it is recommended here that a common agenda should be set in order to facilitate comparisons and broad use of the growing body of archaeobotanical data. Naturally, such a task can be only achieved through collaboration between academics and field archaeologists within and across the different countries. It is believed that, although every excavation has different research priorities, funding allowances and overall purpose, at least a standard data presentation/report format can allow effective understandings of the evidence and in-depth comparisons to be made. During the recording progress of this thesis, it has been noted for example that most archaeobotanical reports include tables that distinguish the different samples but quite often they do not contain actual information on their context or dating. It is thus suggested that the following information should be included in the archaeobotanical sample tables: the size of sieves used, the volume of each sample, its context, dating, and the preservation mode of the archaeobotanical material. This is particularly important as the sample number given to the soil/archaeobotanical samples during the excavation procedure is usually distinct and does not match specific context numbers. Thus, even looking through the site report sometimes it is impossible to match the sample numbers and find more precise contextual and/or dating information. Similarly, it is necessary to include basic archaeological information that may be potentially 'lost' in large edited volumes or separate publications, such as the type of site and its geo-reference (latitude and longitude). Quantitative information is also lacking in many instances and instead the presence or abundance of species is provided. I would recommend that this type of information should at least be included in a tabulated format as raw data; this is an important resource that can be used in more nuanced and sometimes more thorough data interpretations. Considering, however, that in many instances archaeobotanical along with other type of evidence are integrated together in a final excavation report, I would suggest that a way forward is the investment in the creation of centralised national databases that can be continuously updated and where very detailed, contextualised archaeobotanical data can be stored. Such an example is the database maintained by Otto Brinkemmper for the Netherlands (RADAR, Van Haaster and Brinkkemper 1995), which has significantly contributed to a more accurate picture of archaeobotanical research across the whole country.

Final Remark

In conclusion, my study has demonstrated that food choices are never a simple matter of what is available; rather, they are employed in a network of complex processes in order to sustain both the physical and social individual. The dispersal histories of a large number of exotic species have shown that the status of different food plants can be maintained, lost or re-invented in different socio-economic contexts and through various agents. Thus, it can be claimed that food plants are by no means static and, as such, form crucial guides to charting human and economic impacts and movements. I hope to have demonstrated that archaeobotanical data provide information over and above what was eaten, and can become part of social and cultural historical readings, contributing to contemporary archaeological debates.

Bibliography

Akeret, Ö. And Kühn, M. 2008 Dessicated plant macrofossils from the medieval castle of Marmorera, Switzerland, with a note on the identification of leaves of Cyperaceae. *Environmental Archaeology* 13 (1): 37-50

Alonso, N. 2005. Agriculture and food from the Roman to the Islamic Period in the north-east of the Iberian Peninsula: archaeobotanical studies in the city of Lleida (Catalonia, Spain). *Vegetation History and Archaeobotany* 14: 341-361.

Alsleben, A. 1991. Archäobotanische Untersuchungen in der Hansestadt Lübeck. Landschaftsentwicklung im städtischen Umfeld und Nahrungswirtschaft während des Mittelalters bis in die frühe Neuzeit. *Offa* 48: 329-362.

Alsleben, A. 2007. Food consumption in the Hanseatic towns of Germany. In Karg, S. (ed.), *Medieval Food Traditions in Northern Europe*. Copenhagen: Publications from the National Museum Studies in Archaeology and History 12: 13-37.

Andrews, A.C. 1952. The opium poppy as a food and spice in the Classical period. *Agricultural History* 26: 152-155.

Appadurai, A. 1981. Gastropolitics in Hindu South Asia. *American Ethnologist* 8: 494-511.

Appadurai, A. 1988. How to make a national cuisine: cookbooks in contemporary India. *Comparative Studies in Society and History* 30: 3-24.

Ashby, S.P. 2002. The role of zooarchaeology in the interpretation of socioeconomic status: a discussion with reference to medieval Europe. *Archaeological Review from Cambridge* 18: 37-59.

Atkins, P and Bowler, I. 2001. *Food in Society: Economy, Culture, Geography.* London: Arnold.

Bakels, C. 1999a. Archaeobotanical investigations in the Aisne valley, northern France, from the Neolithic up to the early Middle Ages. *Vegetation History and Archaeobotany* 8: 71-77.

Bakels, C. 1999b. Dury 'Le Moulin' (Somme): étude des restes botaniques. *Revue d'archéologique de Picardie* 1/2: 237-245.

Bakels, C. and Jacomet, S. 2003. Access to luxury foods in Central Europe during the Roman period: the archaeobotanical evidence. *World Archaeology* 34 (3): 542-557.

Bakels, C., Wesselingh, D. and Van Amen, I. 1997. Acquiring a taste: the menu of Iron Age and Roman-period farmers at Oss-Ussen, The Netherlands. *Analecta Prehistorica Leidensia* 29: 193-211.

Barber, M. 1994. *The Two Cities: Medieval Europe, 1050-1320*. London and New York: Routledge.

Baxter, M.J. 1994. *Exploratory Multivariate Analysis in Archaeology*. Edinburgh: Edinburgh University Press.

Behre, K.-E. and Jacomet, S. 1991. The ecological interpretation of archaeobotanical data. In Van Zeist, W., Wasylikowa, K. and Behre, K.-E. (eds.), *Progress in Old World Palaeoethnobotany*. Rotterdam: Balkema: 81–108.

Bell, D. and Valentine, G. 1997. *Consuming Geographies: We are Where We eat*. London: Routledge.

Berry, C.J. 1994. *The Idea of Luxury: A Conceptual and Historical Investigation.* Cambridge: Cambridge University Press.

Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. *Journal of Archaeological Science* 31: 77-86.

Bowman, A.K. and Thomas, J.D. 1994. *The Vindolanda Writing-tablets (Tabulae Vindolandenses II)*. Dorchester: British Museum Press.

Bradley, H. 1997. *Fractured Identities: Changing Patterns of Inequality*. Malden: Polity Press.

Brown, A.G. and Meadows, I. 2000. Roman vineyards in Britain: finds from the Nene Valley and new research. *Antiquity* 74: 491-492.

Brun, J-P. 2003. *Le Vin et l'Huile dans la Méditerranée Antique: Viticulture, Oléiculture et Procédés de Transformation*. Paris: Errance.

Burnham, B.C. and Wacher, J. 1990. *The 'Small Towns' of Roman Britain*. London: Batsford.

Buxó, R. 1989. Estudi de restes carpològiques recuperades a Culip VI. In Nieto, J. (ed.), *Excavacions Arqueològiques Subaquàtiques a Cala Culip I*. Generalitat De Catalunya: Rustega: 311-316.

Campbell, C.G. 1995. Buckwheat, *Fagopyrum esculentum* (Polygonaceae). In Smartt, J. and Simmonds, N.W. (eds.), *Evolution of Crop Plants*. (2nd edition). Harlow: Longman: 409-412.

Cappers, R.T.J. 2003. Exotic imports of the Roman Empire: an exploratory study of potential vegetal products from Asia. In Neumann, K., Butler, A. and Kahlheber, S. (eds.), *Food, Fuel and Fields*. *Progress in African Archaeobotany*. Africa Praehistorica 15. Köln: Heinrich-Barth Institut: 197-206.

Carruthers, W.J. 1993. Plant remains. In Hawkes, J.W. and Heaton, M.J. (eds.), *Jennings Yard, Windsor: A Closed-shaft Garderobe and Associated Medieval Structures*. Salisbury: Wessex Archaeology Report 3: 82-90.

Carruthers, W.J. 2000. The mineralised plant remains. In Lawson, A. and Gingell, C. (eds.), *Potterne 1982-5: Animal Husbandry in Later Prehistoric Wiltshire*. Salisbury: Wessex Archaeology Report 17: 72-84.

Christie, N. 2004. Landscapes of change in Late Antiquity and the Early Middle Ages: themes, directions and problems. In Christie, N. (ed.), *Landscapes of Change: Rural Evolutions in Late Antiquity and the Early Middle Ages*. Ashgate: Aldershot: 1-37.

Christie, N. and Loseby, S.T. 1996. Introduction. In Christie, N. and Loseby, S.T. (eds.), *Towns in Transition: Urban Evolution in Late Antiquity and the Early Middle Ages*. Ashgate: Aldershot: 1-3.

Conner, M. and Armitage, C.J. 2002. *The Social Psychology of Food*. Buckingham, Philadelphia: Open University Press.

Cool, H.E.M. 2006. *Eating and Drinking in Roman Britain*. Cambridge: Cambridge University Press.

Cool, H.E.M. and Baxter, M.J. 1999. Peeling the onion: an approach to comparing vessel glass assemblages. *Journal of Roman Archaeology* 12: 72-100.

Cooremans, B. 1999a. Plantenresten. In Ervynck, A., Cooremans, B. and Van Neer, W. (eds.), De Voedselvoorziening in de Sint-Salvatorsabdij te Ename (Oudenaarde, prov. Oost-Vlaanderen) 4. Een Beer- en Afvalput uit het Gastenkwartier (1350-1450AD). *Archeologie in Vlaanderen* 5: 304-308.

Cooremans, B. 1999b. Plantenresten. In Pieters, M., Bouchet, F., Cooremans, B., Desender, K., Ervynck, A. and Van Neer, W. (eds.), Granaatappels, een Zeeëgel en Rugstreeppadden. Een Greep uit de Inhoud van een Bakstenen Beerput uit het 15de-eeuwse Raversijde (Oostende, prov. West-Vlaanderen). *Archeologie in Vlaanderen* 5: 198-205.

Cortonesi, A. 1999. Self-sufficiency and the market: rural and urban diet in the Middle Ages. In Flandrin, J-L. and Montanari, M. (eds.), *Food: A Culinary History from Antiquity to the Present*. New York: Columbia University Press: 268-274.

Counihan, C. and Van Esterik, P. 1997. Introduction. In Counihan, C. and Van Esterik, P. (eds.), *Food and Culture: A Reader*. London: Routledge: 1-7.

Dalby, A. 2002. *Dangerous Tastes: The Story of Spices*. London: British Museum Press.

Davies, R.W. 1971. The Roman military diet. *Britannia* 2: 122-142.

Deetz, J. 1996. *In Small Things Forgotten: An Archaeology of Early American Life.* (2nd edition). London: Anchor Books.

Dennell, R.W. 1976. The economic importance of plant resources represented on archaeological sites. *Journal of Archaeological Science* 3: 229-247.

Dennell, R.W. 1977. On the problems of studying prehistoric climate and crop agriculture. *Proceedings of the Prehistoric Society* 43: 361-369.

Dickson, C. 1989. The Roman army diet in Britain and Germany. *Archäobotanik. Dissertationes Botanicae* 133: 135-154.

Dickson, C. 1994. Macroscopic fossils of garden plants from British Roman and medieval deposits. In Moe, D., Dickson, J.H. and Jørgensen, P.M. (eds.), *Garden History: Garden Plants, Species, Forms and Varieties from Pompeii to 1800*. (Symposium held at the European University Centre for Cultural Heritage, Ravello, June, 1991). Rixensart: PACT 42: 47-72.

Dietler, M. 2007. Culinary encounters: food, identity, and colonialism. In Twiss, K. (ed.), *The Archaeology of Food and Identity*. Carbondale: Center for Archaeological Investigations Occasional Paper 34: 218-242.

Dietler, M. and Hayden, B. (eds.) 2001. *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics and Power*. Washington D.C. and London: Smithsonian Institution Press.

Dörfler, W. 1990. Die Geschichte des Hanfanbaus in Mitteleuropa aufgrund palynologischer Untersuchungen und von Großrestnach-weisen. *Praehistorische Zeitschrift* 65: 218-244.

Douglas, M. 1984. Standard social uses of food: introduction. In Douglas, M. (ed.), *Food in the Social Order: Studies of Food and Festivities in Three American Communities*. New York: Russell Sage Foundation: 1-39.

Douglas, M. 1997. Deciphering a meal. In Couniham, C. and Van Esterik, P. (eds.), *Food and Culture: A Reader*. London: Routledge: 36-54.

Douglas, M. and Isherwood, B. 1996. *The World of Goods. Towards an Anthropology of Consumption.* (2nd edition). London: Routledge.

Driver, J.C. 2004. Food, status and formation processes: a case study from medieval England. In Jones O'Day, S., Van Neer, W. and Ervynck, A. (eds.), *Behaviour Behind Bones. The Zooarchaeology of Ritual, Religion, Status and Identity*. Oxford: Oxbow Books: 244-251.

Dyer, C. 1998a. Did the peasants really starve in medieval England? In Carlin, M. and Rosenthal, J.T. (eds.), *Food and Eating in Medieval Europe*. London: Hambledon Press: 53-71.

Dyer, C. 1998b. *Standards of Living in the Later Middle Ages: Social Change in England c. 1200-1520*. Cambridge: Cambridge University Press.

Dyer, C.C. 2006. Gardens and garden produce in the Later Middle Ages. In Woolgar, C.M., Serjeantson, D. and Waldron, T. (eds.), *Food in Medieval England*. Oxford: Oxford University Press: 27-40.

Eckardt, H. 2000. Illuminating Roman Britain. In Fincham, G., Harrison, G., Rodgers Holland, R. and Revell, L. (eds.), *TRAC 99. Proceedings of the Ninth Annual Theoretical Roman Archaeology Conference*. Oxford: Oxbow Books: 8-21.

Eckardt, H. 2005. The social distribution of Roman artefacts: the case of nail-cleaners and brooches in Britain. *Journal of Roman Archaeology* 18: 139-160.

Ernst, M. and Jacomet, S. 2005. The value of the archaeobotanical analysis of desiccated plant remains from old buildings: methodological aspects and interpretation of crop weed assemblages. *Vegetation History and Archaeobotany* 15: 45-56.

Ervynck, A. 2004. *Orant, pugnant, laborant*. The diet of the three orders in the feudal society of medieval north-western Europe. In Jones O'Day, S., Van Neer, W. and Ervynck, A. (eds.), *Behaviour behind Bones. The Zooarchaeology of Ritual, Religion, Status and Identity*. Oxford: Oxbow Books: 215-223.

Esmonde Cleary, A. S. 1989. *The Ending of Roman Britain*. London: Batsford.

Fernández-Armesto, F. 2001. *Food: A History*. London: MacMillan.

Field, R.C. 2000. Cruciferous and green leafy vegetables. In Kiple, K.F. and Ornelas, K.C. (eds.), *The Cambridge World History of Food. Volume II*. Cambridge: Cambridge University Press: 288-298.

Fincham, G. 2002. Consumer theory and Roman north Africa: a post-colonial approach to the ancient economy. In Carruthers, M., Van Driel-Murray, C., Gardner, A., Lucas, J., Revell, L. and Swift, E. (eds.), *TRAC 2001. Proceedings of the Eleventh Annual Theoretical Roman Archaeology Conference Glasgow 2001*. Oxford: Oxbow Books: 34-44.

Foxhall, L. 2007. *Olive Cultivation in Ancient Greece: Seeking the Ancient Economy*. Oxford: Oxford University Press.

Galloway, J.H. 2000. Sugar. In Kiple, K.F. and Ornelas, K.C. (eds.), *The Cambridge World History of Food*. Cambridge: Cambridge University Press: 437-449.

Garnsey, P. 1999. *Food and Society in Classical Antiquity*. Cambridge: Cambridge University Press.

Gerasopoulos, D. and Stavroulakis, G. 1997. Quality characteristics of four mulberry (*Morus* sp) cultivars in the area of Chania, Greece. *Journal of the Science of Food and Agriculture* 73 (2): 261-264.

Gillings, M. 2001. Spatial information and archaeology. In Brothwell, D.R. and Pollard, A.M. (eds.), *Handbook of Archaeological Sciences*. Chichester: John Wiley & Sons: 671-683.

Giorgi, J. 2003. Plant remains. In Swift, D. (ed.), *Roman Burials, Medieval Tenements and Suburban Growth: 201 Bishopsgate, City of London*. London: MoLAS 10: 165-170.

Goode, J.G., Curtis, K. and Theophano, J. 1984. Meal formats, meal cycles, and menu negotiation in the maintenance of an Italian-American community. In Douglas, M. (ed.), *Food and the Social Order: Studies of Food and Festivities in Three American Communities*. New York: Russell Sage Foundation: 143-218.

Goody, J. 1982. *Cooking, Cuisine and Class: A Study in Comparative Sociology*. Cambridge: Cambridge University Press.

Gosden, C. 2004. *Archaeology and Colonialism: Cultural Contact from 5000 BC to the Present*. Cambridge: Cambridge University Press.

Grant, A. 1988. Food, Status and Religion in England in the Middle Ages: An Archaeozoological Perspective. *Anthropozoologica*, special number 2: 139-146.

Grant, A. 2002. Food, Status and social hierarchy. In Miracle, P. and Milner, N. (eds.), *Consuming Passions and Patterns of Consumption*. Cambridge: McDonald Institute for Archaeological Research: 17-23.

Green, F.J. 1979. Phosphatic mineralization of seeds from archaeological sites. *Journal of Archaeological Science* 6 (3): 279-284.

Green, F.J. 1984. The archaeological and documentary evidence for plants from the medieval period in England. In Van Zeist, W. and Casparie, W.A. (eds.), *Plants and Ancient Man: Studies in Palaeoethnobotany*. Rotterdam: Balkema: 213-226.

Greene, K. 1986. *The Archaeology of the Roman Economy*. London: Batsford.

Greig, J.R.A. 1983. Plant foods in the past: A review of the evidence from northern Europe. *Journal of Plant Foods* 5: 179-214.

Greig, J.R.A. 1991. The British Isles. In Van Zeist, W., Wasylikowa, K. and Behre, K-E. (eds.), *Progress in Old World Palaeoethnobotany. A Retrospective View on the Occasion of 20 Years of the International Work Group for Palaeoethnobotany*. Rotterdam: Balkema: 299-334.

Grimm, V.E. 1996. *From Feasting to Fasting, the Evolution of a Sin*. London and New York: Routledge.

Groenman-van Waateringe, W. 1994. The menu of different classes in Dutch medieval society. In Hall, A.R. and Kenward, H.K. (eds.), *Urban-Rural Connexions: Perspectives from Environmental* Archaeology. Oxford: Oxbow Books: 147-169.

Gumerman, G. 1997. Food and complex societies. *Journal of Archaeological Method and Theory* 4 (2): 105-139.

Haaster, H. van 1989. Spätmittelalterliche und frühneuzeitliche Pflanzenreste aus der Grabung in der Hunderstrasse 9-17 in Lübeck. *Lübecker Schriften zur Archäologie und Kulturgeschichte* 16: 271-290.

Haaster, H. van 1994. Plant resources and environment in late medieval Lübeck. In Hall, A.R. and Kenward, H.K. (eds.), *Urban-Rural Connexions: Perspectives from Environmental A*rchaeology. Oxford: Oxbow Books: 79-84.

Hamilakis, Y. 1998. Eating the dead: mortuary feasting and the politics of memory in the Aegean Bronze Age societies. In Branigan, K. (ed.), *Cemetery and Society in the Aegean Bronze Age*. Sheffield: Sheffield Academic Press: 115-132.

Hammond, P. 2005. *Food and Feast in Medieval England*. Stroud: Sutton Publishing.

Harild, J. A. unpublished. Nationalmuseet, Naturvidenskabelige Undersøgelser.

Hardyment, C. 1995. *Slice of Life: The British Way of Eating since 1945*. London: BBC Books.

Harlow, M. and Smith, W. 2001. Between fasting and feasting: the literary and archaeobotanical evidence for monastic diet in Late Antique Egypt. *Antiquity* 75: 758-768.

Harris, M. 1986. *Good to Eat: Riddles of Food and Culture*. London: Allen and Unwin.

Hattox, R.S. 1996. *Coffee and Coffeehouses: The Origins of a Social Beverage in the Medieval Near East*. Seattle and London: University of Washington Press.

Hawkes, G. 2002. Wolves' nipples and otters' noses? Rural foodways in Roman Britain. In Carruthers, M., Van Driel-Murray, C., Gardner, A., Lucas, J., Revell, L. and Swift, E. (eds.), *TRAC 2001. Proceedings of the Eleventh Annual Theoretical Roman Archaeology Conference Glasgow 2001*. Oxford: Oxbow Books: 45-50.

Hayden, B. 2001. Fabulous feasts: a prolegomenon to the importance of feasting. In Dietler, M. and Hayden, B. (eds.), *Feasts: Archaeological and Ethnographic Perspectives on Food, Politics and Power*. Washington D.C. and London: Smithsonian Institution Press: 23-64.

Hellwig, M. 1990. *Paläoethnobotanische Untersuchungen an mittelalterlichen und frühneuzeitlichen Pflanzenresten aus Braunschweig*. Berlin, Stuttgart: J. Cramer, Dissertationes Botanicae Band 156.

Hellwig, M. 1995. Paradieskörner Aframomum melegueta (Roscoe) K. Schum. – Ein Gewürz aus Westafrika im frühneuzeitlichen Göttingen. In Kroll, H. and Pasternak, R. (eds.), *Res Archaeobotanicae. International Workgroup for Palaeoethnobotany*. Kiel: Proceedings of the 9th Symposium Kiel 1992: 39-48.

Hellwig, M. 1997. Plant remains from two cesspits (15th and 16th c AD) and a pond (13th c AD) from Göttingen, southern Lower Saxony, Germany. *Vegetation History and Archaeobotany* 6: 105-116.

Hayfield, C. and Greig, J. 1989. Excavation and salvage work on a moated site at Cowick, South Humberside, 1976. *Journal of Yorkshire Archaeology* 61: 41-70.

Hillman, G. 1981. Reconstructing crop husbandry practices from charred remains of crops. In Mercer, R. (ed.), *Farming Practice in British Prehistory*. Edinburgh: Edinburgh University Press: 123-162.

Hingh, A. de and Bakels, C. 1996. Palaeobotanical evidence for social difference? The example of the early medieval domain of Serris-Les Ruelles, France. *Vegetation History and Archaeobotany* 5: 117-120.

Hilton, R.H. 1992. *English and French Towns in Feudal Society. A Comparative Study.* Cambridge: Cambridge University Press.

Hingh, A. de and Bakels, C. 1996. Palaeobotanical evidence for social difference? The example of the early medieval domain of Serris-Les Ruelles, France. *Vegetation History and Archaeobotany* 5: 117-120.

Hintermann, D. (ed.) 2000. *Der Südfriedhof von Vindonissa. Archäologiscge und Naturwissenschaftliche Untersuchungen im Römerzeitlichen Gräberfeld Windisch-Dägerli*. Zürich: Veröffentlichungen der Gesellschaft Pro Vindonissa 17.

Hnila, P. 2005. Some remarks on the opium poppy in ancient Anatolia. In Aslan, R., Blum, S. Kastl, G., Schweizer, F. and Thumm, D. (eds.), *Mauerschau, Festschrift für Manfred Korfmann*. *Volume I*. Remshalden: BAG-Verlag: 315-328.

Hodgkin, T. 1995. Cabbages, kales, etc. *Brassica oleracea* (Cruciferae). In Smartt, J. and Simmonds, N.W. (eds.), *Evolution of Crop Plants*. (2nd edition). Harlow: Longman: 76-82.

Hubbard, R.N.L.B. and Al Azm, A. 1990. Quantifying preservation and distortion in carbonised seeds. *Journal of Archaeological Science* 17: 103-106.

Jacomet, S. 2003. Und zum Dessert Granatapfel – Ergebnisse der archäobotanischen Untersuchungen. In Hagendorn, A., Doppler, H.W., Huber, A., Hüster-Plogmann, H., Jacomet, S., Meyer-Freuler, C., Pfäffli, B. And Schibler, J. (eds.), *Zur Frühzeit von Vindonissa. Auswertung der Holzbauten der Grabung Windisch-Breite 1996-1998.* Brugg: Veröffentlichungen der Gesellschaft Pro Vindonissa 18: 173-229.

Jacomet, S. 2006. Plant economy of the northern Alpine lake dwellings – 3500-2400 cal. BC. *Environmental Archaeology* 11 (1): 65-85.

Jacomet, S. 2007. Neolithic plant economies in the northern alpine foreland from 5500-3500 BC cal. In Colledge, S. and Conolly, J. (eds.), *The Origins and Spread of Domestic Plants in Southwest Asia and Europe*. CA: Walnut Creek: 221-258.

Jacomet, S. 2008. Plant economies and village life in Neolithic lake dwellings at the time of the Alpine Iceman. *Vegetation History and Archaeobotany* on-line first.

Jacomet, S., Brombacher, C. and Dick, M. 1989. *Archäobotanik am Zürichsee. Ackerbau, Sammelwirtschaft und Umwelt von Neolithischen und Bronzezeitlichen Seeufersiedlungen im Raum Zürich. Ergebnisse von Untersuchungen Pflanzlicher Makroreste der Jahre 1979-1988*. Zürich: Züricher Denkmalpflege, Monographien 7.

Jacomet, S., Felice, N. and Füzesi, B. 1988. Verkohlte Samen und Früchte aus der hochmittelalterlichen Grottenburg Riedfluh bei Eptingen, Kanton Baselland (Nordwest-Schweiz). Ein Beitrag zum Speisezettel des Adels im Hochmittelalter. In Degen, P., Albrecht, H., Jacomet, S., Kaufmann, B. and Tauber, J. (eds.), *Die Grottenburg Riedfluh, Eptingen BL. Bericht über die Ausgrabungen 1981–1983*. Olten and Freiburg im Breisgau: Schweizer Beiträge zur Kulturgeschichte und Archäologie des Mittelalters15: 169-243.

Jacomet, S., Kučan, D., Ritter, A., Suter, G. and Hagendorn, A. 2002. *Punica granatum* L. (pomegranates) from early Roman contexts in Vindonissa (Switzerland). *Vegetation History and Archaeobotany* 11: 79-92.

Jacomet, S. and Schibler, J. 2001. Les contributions de l'archéobotanique et de l'archéozoologie à la connaissance de l'agriculture et de l'alimentation du site de Biesheim-Kunheim. In Plouin, S., Reddé, M., Boutanin, C. (eds.), *La Frontière Romaine sur le Rhin Supérieur. A Propos des Fouilles Récentes de Biesheim-Kunheim*. Biesheim : Exposition Présentée au Musée Gallo-Romain de Biesheim, 31 Août au 20 Octobre 2001: 60-69.

Jacomet, S., Schlumbaum, A., Vandorpe, P. and Wick, L. 2005. Plantes indigenes, cultivées et importees. In Reddé, M., Nuber, H.U., Jacomet, S., Schibler, J., Schucany, C. Schwarz, P.-A. And Seitz, G. (eds.), *Oedenburg. Une Agglomération d'Époque Romaine sur le Rhin Supérieur. Fouilles Françaises, Allemandes et Suisses sur les Communes de Biesheim et Kunheim (Haut-Rhin). Gallia* 62 : 252-257.

James, E. 2001. The northern world in the Dark Ages 400-900. In Holmes, G. (ed.), *The Oxford History of Medieval Europe*. Oxford: Oxford University Press: 59-108.

James, S. 1999. The community of the soldiers: a major identity and centre of power in the Roman Empire. In Baker, P., Forcey, C., Jundi, S. and Witcher, R. (eds.), *TRAC 98. Proceedings of the Eighth Annual Theoretical Roman Archaeology Conference*. Oxford: Oxbow: 14-25.

Jameson, M.H. 1988. Sacrifice and animal husbandry in Classical Greece. In Whittaker, C.R. (ed.), *Pastoral Economies in Classical Antiquity*. Cambridge: Cambridge University Press: 87-119.

Jansen, W. 2001. French bread and Algerian wine: conflicting identities in French Algeria. In Scholliers, P. (ed.), *Food, Drink and Identity: Cooking, Eating and Drinking in Europe since the Middle Ages*. Oxford: Berg: 195-218.

Janssen, W. 1987. Mittelalterliche Gartenkultur. Nahrung und Rekreation. In Herrmann, B. (ed.), *Mensch und Umwelt in Mittelalter*. Stuttgart: Deutsche Verlags-Anstalt: 224-243.

Johnson, B.B. 2004. Arguments for testing ethnic identity and acculturation as factors in risk judgments. *Risk Analysis* 24 (5): 1279-1287.

Jones, B. and Mattingly, D. 1993. *An Atlas of Roman Britain*. Oxford: Blackwell.

Jones, G.E.M. 1984. Interpretations of archaeological plant remains: ethnographic models from Greece. In Van Zeist, W. and Casparie, W.A. (eds.), *Plants and Ancient Man: Studies in Palaeoethnobotany*. Rotterdam: Balkema: 43-61.

Jones, G. 1987. A statistical approach to the archaeological identification of crop processing. *Journal of Archaeological Science* 14: 311-323.

Jones, G.E.M. 1991. Numerical analysis in archaeobotany. In Van Zeist, W., Wasylikowa, K. and Behre, K.-E. (eds.), *Progress in Old World Palaeoethnobotany*. Rotterdam: Balkema: 63-80.

Jones, G. 1992. Weed phytosociology and crop husbandry: identifying a contrast between ancient and modern practice. *Review of Palaeobotany and Palynology* 73: 133-143.

Jones, G. and Halstead, P. 1995. Maslins, mixtures and monocrops: on the interpretation of archaeobotanical crop samples of heterogeneous composition. *Journal of Archaeological Science* 22: 103-114.

Jones, R.F.J. 1987. Burial customs of Rome and the provinces. In Wacher, J. (ed.), *The Roman World*. London: Routledge and Kegan Paul: 812-837.

Karg, S. 2007a. Long term dietary traditions: archaeobotanical records from Denmark dated to the Middle Ages and early modern times. In Karg, S. (ed.), *Medieval Food*

Traditions in Northern Europe. Copenhagen: Publications from the National Museum Studies in Archaeology and History 12: 137-153.

Karg, S. (ed.) 2007b. *Medieval Food Traditions in Northern Europe*. Copenhagen: Publications from the National Museum Studies in Archaeology and History 12.

Katona-Apte, J. 1976. Dietary aspects of acculturation: meals, feasts, and fast in a minority community in South Asia. In Arnott, M. (ed.), *Gastronomy: The Anthropology of Food and Food Habits*. The Hague: Mouton: 315-326.

King, A. 1999. Diet in the Roman world: a regional inter-site comparison of the mammal bones. *Journal of Roman Archaeology* 12: 168-202.

King, A. 2005. Animal remains from temples in Roman Britain. *Britannia* 36: 329-369.

Kiple, K.F. and Ornelas, K.C. 2000. A historical dictionary of the world's plant foods. In Kiple, K.F. and Ornelas, K.C. (eds.), *The Cambridge World History of Food. Volume II*. Cambridge: Cambridge University Press: 1711-1886.

Kislev, M.E. 1988. Pinus pinea in agriculture, culture and cult. In Küster, H-J. (ed.), *Der Prähistorische Mensch und seine Umwelt. Festschrift für Udelgard Körber-Grohne zum 65. Geburtstag*. Stuttgart: Konrad Theiss Verlag: 73-79.

Knörzer, K-H. 1970. *Novaesium IV Römerzeitliche Pflanzenfunde aus Neuss*. Berlin: Limesforschungen Band 10.

König, M. 1992. Römerzeitliche Pflanzenfunde aus der Kelteranlage in Piesport-Müstert. Funde und Ausgrabungen im Berzirk Trier 24. *Kurtrierisches Jahrbuch* 32: 32-38.

König, M. 1995. Pflanzenfunde aus römerzeitlichen Kelteranlagen der Mittelmosel. In Gilles, K-L. (ed.), *Neuere Forschungen zum römischen Weinbau an Mosel und Rhein*. Trier: Rheinisches Landesmus Trier: 60-73.

König, M. 1997. Der botanische Inhalt. In Witteyer, M. (ed.), *Alte und Neue Funde der Römerzeit aus Bad Kreuznach-Planig*. Mainz: Mainzer Archäologische Zeitschrift 3: 88-90.

Kreuz, A. 1999. Becoming a Roman farmer: preliminary report on the environmental evidence from the Romanization project. In Creighton, J.D. and Wilson, R.J.A. (eds.), *Roman Germany: Studies in Cultural Interaction*. Journal of Roman Archaeology Supplement Series. Portsmouth: Rhode Island: 71-98.

Kreuz, A. 2004. Landwirtschaft im Umbruch? Archäobotanische Untersuchungen zu den Jahrhunderten um Christi Geburt in Hessen und Mainfranken. *Bericht der Römisch-Germanischen Kommission* 85, 2004: 97-313.

Kučan, D. 1992. Die Pflanzenreste aus dem römischen Militärlager Oberaden. Bodenaltertümer Westfalens 27. In Kühlborn, J.-S. and Von Schnurbein, S. (eds.), *Das Römerlager in Oberaden III. Die Ausgrabungen im Nordwestlichen Lagerbereich und Weitere Baustellenuntersuchungen der Jahre 1962-1988*. Münster: Aschendorff Bodenaltertümer Westfalens: 237-81.

Küster, H. 1995. *Postglaziale Vegetationgeschichte Südbayerns. Geobotanische Studien zur Prähistorischen Landschaftskunde*. Berlin: Akademie Verlag.

Küster, H. 2000. Northern Europe – Germany and surrounding regions. In Kiple, K.F. and Ornelas, K.C. (eds.), *The Cambridge World History of Food*. *Volume II*. Cambridge: Cambridge University Press: 1226-1232.

Küster, H. 2000. Spices and flavorings. In Kiple, K.F. and Ornelas, K. C. (eds.), *The Cambridge World History of Food. Volume I*. Cambridge: Cambridge University Press: 431-437.

Landsberg, S. 1996. *The Medieval Garden*. London: British Museum Press.

Laroche, M., Kim, C. and Tomiuk, M.A. 1998. Italian ethnic identity and its relative impact on the consumption of convenience and traditional foods. *Journal of Consumer Marketing* 15 (2): 125-151.

Lauwerier, R. 2002. Animals as food for soul. In Dobney, K. and O'Connor, T. (eds.), *Bones and the Man: Studies in Honour of Don Brothwell*. Oxford: Oxbow: 63-71.

Leach, H.M. 1999. Food processing technology: its role in inhibiting or promoting change in staple foods. In Gosden, C. and Hather, J. (eds.), *The Prehistory of Food: Appetites for Change*. London: Routledge: 129-138.

Leineweber, R. and Willerding, U. 2000. Ein kaiserzeitlicher Kastenbrunnen aus Klötze, Altmarkkreis Salzwedel: archäologische und paläo-ethnobotanische Befunde. *Jahresschrift für Mitteldeutsche Vorgeschichte* 83: 141-189.

Lentacker, A., Ervynck, A. and Van Neer, W. 2004. Gastronomy or religion? The animal remains from the *mithraeum* at Tienen (Belgium). In Jones O'Day, S., Van Neer, W. and Ervynck, A. (eds.), *Behaviour behind Bones. The Zooarchaeology of Ritual, Religion, Status and Identity*. Oxford: Oxbow Books: 77-94.

Lepetz, S., Matterne, V., Ruas, M.-P. and Yvinec, J.-H. 2002. Culture et élevage en France septentrionale de l'Âge du fer à l'An Mil. Approches carpologique et archéozoologique. In Belmont, A. (ed.), *Autou d'Olivier de Serres. Pratiques Agricoles et Pensée Agronomique, du Néolithique aux Enjeux Actuels.* Rennes: Actes de Colloque International Tenu au Pradel les 27, 28 et 29 Septembre 2000, à la Occasion du Quadricentenaire de la Première Édition du Théâtre d'Agriculture et Mesnage des Champs: 77-108.

Lignereux, Y., Peters, J., Ruas, M-P. and Sillieres, P. 1997. Le culte d'Isis en Bétique. *L'Archéologue* 28: 41-45.

Lynch, A. and Paap, N. 1982. *Untersuchungen an Botanischen Funden aus der Lübecker Innenstadt. Ein Vorbericht*. Bonn: Lübecker Schriften zur Archäologie und Kulturgeschichte 6: 339-36.

Mansfield, B. 2003. "Imitation crab" and the material culture of commodity production. *Cultural Geographies* 10: 176-195.

Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires végétales dans les sépultures gallo-romaines: réflexions préliminaires. In Ferdière, A. (ed.), *Monde des Morts, Monde des Vivants en Gaule Rurale. Actes du Colloque ARCHEA/AGER (Orléans, Conseil Régional, 7–9 Février 1992). 6ème Supplément à la Revue Archéologique du Centre de la France*, Tours: 45–65.

Marinval, Ph. 2001. Offrandes végétales de la nécropole gallo-romaine des Sagnes à Pontarion (Creuse). In Lintz, G. (ed.), *La Nécropole Gallo-Romaine des Sagnes à Pontarion (Creuse)*. Chauvigny: Association des Publications Chauvinoises, Mémoire 20: 191-196.

Marinval, Ph. 2004. Offrandes alimentaires d'origine végétale en contexte funéraire gallo-romaine. Nouveau regard. In Baray, L. (ed.), *Archéologie des Pratiques Funéraires. Approches Critiques. Actes de la Table Ronde des 7-9 Juin 2001 (Glux-en-Glenne, Bibracte).* Glux-en-Glenn: Centre Archéologique Européen: 197-206.

Marinval, Ph., Marechal, D. and Labadie, D. 2002. Arbres fruitiers et cultures jardinées gallo-romaines à Longueil-Sainte-Marie (Oise). *Gallia* 59: 253-271.

Martin, M. 1997. Wealth and treasure in the West, 4th-7th century. In Webster, L. and Brown, M. (eds.), *The Transformation of the Roman World AD 400-900*. London: British Museum Press: 48-65.

Matterne, V. 2001. *Agriculture et Alimentation Végétale durant l'Âge du Fer et l' Époque Gallo-Romaine en France Septentrionale. Archéologie des Plantes et des Animaux 1*. Montagnac: Éditions Monique Mergoil.

Matterne, V. 2003. Nouvelles données carpologiques relatives à la période Gallo-Romaine en régions Picardie et Île-de-France. In *Actualité de la Recherche en Histoire et Archéologie agraires, Actes du colloque international AGER V, septembre 2000. Annales Littéraires, 764. Série 'Environnement, sociétés et archéologie'*, 5. Besançon: Presses Universitaires Franc-Comtoises: 241-268.

Matterne, V. and Derreumaux, M. 19 June 2007. A Franco-Italian investigation of funerary rituals in the Roman world, "les rites et la mort à Pompéi", the plant part: a preliminary report. *Vegetation History and Archaeobotany* 17 (1): 105-112.

Mattingly, D.J. 1988. Oil for export? A comparison of Libyan, Spanish and Tunisian olive oil production in the Roman empire. *Journal of Roman Archaeology* 1: 33-56.

Mattingly, D.J. 1997. Dialogues of power and experience in the Roman Empire. In Mattingly, D.J. (ed.), *Dialogues in Roman Imperialism: Power, Discourse, and*

Discrepant Experience in the Roman Empire. Portsmouth, Rhode Island: Journal of Roman Archaeology Supplement 23: 7-24.

Mattingly, D. 2004. Being Roman: expressing identity in a provincial setting. *Journal of Roman Archaeology* 17: 5-25.

Mattingly, D.J. 2006. *An Imperial Possession: Britain in the Roman Empire, 54 BC – AD 409.* London: Allen Lane.

McCobb, L.M.E. and Briggs, D.E.G. 2001. Preservation of fossil seeds from a 10th century AD cess pit at Coppergate, York. *Journal of Archaeological Science* 28: 929-940.

McCobb, L.M.E., Briggs, D.E.G., Carruthers, W.J. and Evershed, R.P. 2003. Phosphatisation of seeds and roots in a Late Bronze Age deposit at Potterne, Wiltshire, UK. *Journal of Archaeological Science* 30: 1269-1281.

McEvedy, C. 1967. *The Penguin Atlas of Ancient History*. Harmondsworth: Penguin Books.

McEvedy, C. 1980. *The Penguin Atlas of Medieval History*. London: Penguin Books.

McNaughton, I.H. 1995. Turnip and relatives. *Brassica campestris* (Cruciferae). In Smartt, J and Simmonds, N.W. (eds.), *Evolution of Crop Plants*. (2nd edition). Harlow: Longman: 62-68.

(Melendis) Μελέντης, I.K. 1988. *Παλαιοντολογία Ασπόνδυλων*. Θεσσαλονίκη: ΑΠΘ.

Mennell, S. 1992. Divergences and convergences in the development of culinary cultures. In Teuteberg, H.J. (ed.), *European Food History: A Research Review*. Leicester: Leicester University Press: 278-288.

Mennell, S. 1996. *All Manners of Food: Eating and Taste in England and France from the Middle Ages to the Present.* (2nd edition). Oxford: Blackwell.

Mercuri, A.M. 2005. L'analisi pollinica. In Rossignani, M.P., Sannazaro, M. and Legrottaglie, G. (eds.), *La Signora del Sarcofago. Una Sepultura di Rango nella Necropoli dell'Università Cattolica*. Milano: Vita e Pensiero: 137-141.

Merlin, M.D. 2003. Archaeological evidence for the tradition of psychoactive plant use in the Old World. *Economic Botany* 57 (3): 295-323.

Miller, J.I. 1969. *The Spice Trade of the Roman Empire, 29 B.C. to A.D. 641*. Oxford: Clarendon Press.

Milton, G. 1999. *Nathaniel's Nutmeg*. London: Hodder and Stoughton.

Mintz, S.W. 1985. *Sweetness and Power: The Place of Sugar in Modern History*. New York: Viking.

Mintz, S.W. 1997. Time, sugar, and sweetness. In Couniham, C. and Van Esterik, P. (eds.), *Food and Culture: A Reader*. London: Routledge: 357-369.

Monckton, A. 2000. Charred plant remains. In Ferris, I.M., Bevan, L. and Cutler, R. (eds.), *The Excavation of a Romano-British Shrine at Orton's Pasture, Rocester, Staffordshire*. BAR British Series 314. Oxford: Archaeopress: 67-71, 91.

Montanari, M. 1999. Introduction: toward a new dietary balance. In Flandrin, J-L. and Montanari, M. (eds.), *Food: A Culinary History from Antiquity to the Present*. New York: Columbia University Press: 247-250.

Murphy, P. 1984. Carbonised fruits from building 5. In Crummy P. (ed.), *Colchester Archaeological Report 3: Excavations at Lion Walk, Balkerne Lane, and Middleborough, Colchester, Essex*. Colchester: Colchester Archaeological Trust: 40.

Murphy, P., Albarella, U., Germany, M. and Locker, A. 2000. Production, imports and status: biological remains from a Late Roman Farm at Great Holts Farm, Boreham, Essex, UK. *Environmental Archaeology* 5: 35-48.

Paap, N. 1984. *Botanische Analysen in Lübeck - Eine Zwischenbilanz*. Bonn: Lübecker Schriften zur Archäologie und Kulturgeschichte 8: 49-55.

Palmer, C. and Veen, M. van der 2002. Archaeobotany and the social context of food. *Acta Palaeobotanica* 42 (2): 195-202.

Parker, A.J. 1973. The evidence provided by underwater archaeology for Roman trade in the Western Mediterranean. *Marine Archaeology* 23: 361-382.

Pauketat, T.R., Kelly, L.S., Fritz, G.J., Lopinot, N.H., Elias, S. and Hargrave, E. 2002. The residues of feasting and public ritual at early Cahokia. *American Antiquity* 67 (2): 257-279.

Peacock, D.P.S. and Williams, D.F. 1986. *Amphorae and the Roman Economy: An Introductory Guide*. London: Longman.

Petrucci-Bavaud, M. and Jacomet, S. 1997. Zur Interpretation von nahrungsbeigaben in römerzeitlichen Brandgräbern. *Ethnographisch-Archäologische Zeitschrift EAZ* 38: 567-593.

Petrucci-Bavaud, M. Schlumbaum, A. and Jacomet, S. 2000. Samen, Früchte und Fertigprodukte. In Hintermann, D. (ed.), *Der Südfriedhof von Vindonissa. Archäologiscge und Naturwissenschaftliche Untersuchungen im Römerzeitlichen Gräberfeld Windisch-Dägerli*. Zürich: Veröffentlichungen der Gesellschaft Pro Vindonissa 17: 151-159.

Pigière, F., Boone, I., Udrescu, M., Van Neer, W. and Vanpoucke, S. 2004. Status as reflected in food refuse of late medieval noble and urban households at Namur (Belgium). In Jones O'Day, S., Van Neer, W. and Ervynck, A. (eds.), *Behaviour behind Bones. The Zooarchaeology of Ritual, Religion, Status and Identity*. Oxford: Oxbow Books: 233-243.

Pliny the Elder, *The Natural History, Book XV*. *The Natural History of the Fruit-Trees*. (1993, ed. John Bostock, H.T. Riley - onlinebooks@pobox.upenn.edu).

Poe, T.N. 2001. The labour and leisure of food production as a mode of ethnic identity building among Italians in Chicago, 1890-1940. *Rethinking History* 5 (1): 131-148.

Polet, C. and Katzenberg, M.A. 2003. Reconstruction of the diet in a medieval monastic community from the coast of Belgium. *Journal of Archaeological Science* 30: 525-533.

Pollmann, B. 2003. *Archäobotanische Makrorestanalysen und Moleculararchäologische Untersuchungen an Botanischen Funden aus dem Römischen vicusTasgetium (Eschenz/ Kanton Thurgau/ CH)*. Diplomarbeit. Basel: unpublished diploma thesis.

Pollmann, B, Jacomet, S. and Schlumbaum, A. 2005. Morphological and genetic studies of waterlogged Prunus species from the Roman *vicus Tasgetium* (Eschenz, Switzerland). *Journal of Archaeological Science* 32 (10): 1471-1480.

Prance, G. and Nesbitt, M. (eds.) 2005. *The Cultural History of Plants*. New York and London: Routledge.

Preiss, S., Matterne, V. and Latron, F. 2005. An approach to funerary rituals in the Roman provinces: plant remains from a Gallo-Roman cemetery at Faulquemont (Moselle, France). *Vegetation History and Archaeobotany* 14: 362-372.

Redon, O., Sabban, F. and Serventi, S. 1998. *The Medieval Kitchen: Recipes from France and Italy*. Chicago and London: University of Chicago Press.

Reiner, H., Holzner, W. and Ebermann, R. 1995. The development of turnip-type and oilseed-type *Brassica rapa* crops from the wild type in Europe. An overview of botanical, historical and linguistic facts. *9th International Rapeseed Congress, Cambridge, UK, 4-7 July 1995. Rapeseed Today and Tomorrow* 4: 1066-1069.

Remesal Rodríguez, J. 1998. Baetican olive oil and the Roman economy. In Keay, S. (ed.), *The Archaeology of Early Roman Baetica*. Portsmouth and Rhode Island: Journal of Roman Archaeology Supplementary Series 29: 183-199.

Roberts, C. and Manchester, K. 2001. *The Archaeology of Disease*. Stroud: Sutton Publishing.

Robinson, M. 2002. Domestic burnt offerings and sacrifices at Roman and pre-Roman Pompeii, Italy. *Vegetation History and Archaeobotany* 11: 93-99.

Rösch, M. 1998. The history of crops and crop weeds in south-western Germany from the Neolithic period to modern times, as shown by archaeobotanical evidence. *Vegetation History and Archaeobotany* 7: 109-125.

Rozin, P. and Fallon, A. E. 1986. The acquisition of likes and dislikes for food. In Food and Nutrition Board and National Research Council (eds.), *What is America Eating? Proceedings of a Symposium*. Washington, D.C.: National Academy Press: 58-71.

Ruas, M.P. 1992a. Les plantes exploitées en France au Moyen Âge d'après les semences archéologiques. In 12e Journées Internationales d'Histoire de l'Abbaye de Flaran, *Plantes et Cultures Nouvelles en Europe Occidentale au Moyen Âge et à l'Époque Moderne (Septembre 1990)*. Gers: Flaran 12: 9-35.

Ruas, M-P. 1992b. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. *Review of Palaeobotany and Palynology* 73: 301-314.

Ruas, M.-P. 1996. Éléments pour une histoire de la fructiculture en France: données archéobotaniques de l'Antiquité au XVIIe siècle. In Colardelle, M. (ed.), *L' Homme et la Nature au Moyen Age. Actes du V^{e} Congrès International d'Archéologie Médiévale*. Grenoble: Errance: 92-105.

Ruas, M-P 1999. Les restes alimentaires végétaux. In Monnet, C. (ed.), *La Vie Quotidienne dans une Forteresse Royale: La Grosse Tour de Bourges (fin XIIè - milieu XVIIè siècle)*. Monographie 1. Bourges: Editions de la ville de Bourges, Service d' Archéologie Munnicipal: 342-356.

Ruas, M.-P. and Bouby, L. 2003. L'apport de la carpologie: les plantes identifiées à Lestagnac, les débuts de la viticultura. In Petit-Aupèrt, C. and Sillières, P. (eds.), *Lestagnac: Un Chai Gallo-Romain, La Viticulture en Gascogne Antique*. Gers: Centre Patrimonial Départemental, Abbaye de Flaran: 24-29.

Ruas, M.-P. and Marinval, Ph. 1991. Alimentation végétale et agriculture d'après les semences archéologiques (de 9000 avant J.C. au XVe siècle après J.C.). In Guilaine, J. (ed.), *Pour une Archéologie Agraire. À la Croisée des Sciences de l'Homme et de la Nature*. Paris: Armand Colin: 409-439.

Said, E.W. 1993. *Culture and Imperialism.* London: Vintage.

Salaman, R.N. 1949. *The History and Social Influence of the Potato*. Cambridge: Cambridge University Press.

Sarup, M. 1996. *Identity, Culture and the Postmodern World*. Edinburgh: Edinburgh University Press.

Scheid, J. 2003. *An Introduction to Roman Religion*. Edinburgh: Edinburgh University Press.

Scholliers, P. 2001. Meals, food narratives, and sentiments of belonging in past and present. In Scholliers, P. (ed.), *Food, Drink and Identity: Cooking, Eating and Drinking in Europe since the Middle Ages*. Oxford: Berg: 3-22.

Shennan, S. 1997. *Quantifying Archaeology*. (2nd edition). Edinburgh: Edinburgh University Press.

Sherratt, A. 1991. Palaeoethnobotany: from crops to cuisine. In Queiroga, F. and Dinis, A.P. (eds.), *Paleoecologia e Arqueologia II: Trabalhos Dedicados a A.R. Pinto da Silva*. Famalicao: Centro de Estudios Arqueologicos Famalicensesi: 221-236.

Sillmann, M. 2002. Botanische Grossreste mittelalterlicher und frühneuzeitlicher Latrinen und Gruben aus Freiburg im Breisgau. In Galioto, L., Löbbecke, F. and Untermann, M. (eds.), *Das Haus "Zum Roten Basler Stab" (Salzstrasse 20) in Freiburg im Breisgau*. Stuttgart: Forschungen und Berichte der Archäologie des Mittelalters in Baden-Württemberg 25: 623–770.

Simoons, F.J. 1961. *Eat Not This Flesh: Food Avoidance in the Old World*. Madison: The University of Wisconsin Press.

Smartt, J and Simmonds, N.W. (eds.) 1995. *Evolution of Crop Plants*. (2nd edition). Harlow: Longman.

Smeerdijk, D.G. and Kooistra, L.I. 2001. *Palaeo-ecologisch Onderzoek van de Opgravingen in de VINEX-locatie Delfgauw, Gemeente Pijnacker*. BIAXiaal 127. Zaandam: BIAX Consult.

Soler, J. 1997. The semiotics of food in the Bible. In Couniham, C. and Van Esterik, P. (eds.), *Food and Culture: A Reader*. London: Routledge: 55-66.

Soler, J. 1999. Biblical reasons: the dietary rules of the ancient Hebrews. In Flandrin, J-L. and Montanari, M. (eds.), *Food: A Culinary History from Antiquity to the Present*. New York: Columbia University Press: 46-54.

Spufford, P. 2002. *Power and Profit: The Merchant in Medieval Europe*. London: Thames and Hudson.

Stevens, C. 2007. Lentils as climatic indicators? *The Archaeologist* 66: 46.

Stika, H.-P. 1996. *Roemerzeitliche Pflanzenreste aus Baden-Wuerttemberg, Beitraege zur Landwirtschaft, Ernaehrung und Umwelt in den Römischen Provinzen Obergermanien und Raetien*. Stuttgart: Materialhefte zur Archaeologie in Baden-Wuerttemberg 36.

Stokes, P. 2000. A cut above the rest? Officers and men at South Shields Roman fort. In Rowley-Conwy, P. (ed.), *Animal Bones, Human Societies.* Oxford: Oxbow Books: 145-151.

Tannahill, R. 1973. *Food in History*. London: Eyre Methuen.

Ter Braak, C.J.F. and Smilauer, P. 2000. *CANOCO Reference Manual and CanoDraw for Windows User's Guide: Software for Canonical Community Ordination (version 4.5). Microcomputer Power*. New York: Ithaca.

The HANSA Network Members 2007. Synthesis and a mission for the future. In Karg, S. (ed.), *Medieval Food Traditions in Northern Europe*. Copenhagen: Publications from the National Museum Studies in Archaeology and History 12: 181-190.

Thomas, R. 2007a. Maintaining social boundaries through the consumption of food in medieval England. In Twiss, K. (ed.), *The Archaeology of Food and Identity*. Carbondale: Center for Archaeological Investigations Occasional Paper 34: 130-151.

Thomas, R. 2007b. Chasing the ideal? Ritualism, pragmatism and the later medieval hunt. In Plukowski, A. (ed.), *Breaking and Shaping Beastly Bodies: Animals as Material Culture in the Middle Ages*. Oxford: Oxbow: 125-148.

Thomas, R. and Stallibrass, S. (2008) For starters: producing and supplying food to the army in the Roman north-west provinces. In Stallibrass, S. and Thomas, R. (eds.), *Feeding the Roman Army: The Archaeology of Production and Supply in the North-West Roman Provinces*. Oxbow: Oxford.

Tomlin, R.S.O. 1992. The Roman 'carrot' amphora and its Egyptian provenance. *Journal of Egyptian Archaeology* 78: 307-312.

Tomlinson, P. and Hall, A. 1996. A review of the archaeological evidence for food plants from the British Isles: an example of the use of the ArchaeoBotanical Computer Database (ABCD). *Internet Archaeology* 1. (http://intarch.ac.uk/journal/issue1/tomlinson_index.html)

Tyers, P. 1996. *Roman Pottery in Britain*. London: Batsford.

Vale, M. 2001. The civilization of courts and cities in the north, 1200-1500. In Holmes, G. (ed.), *The Oxford History of Medieval Europe*. Oxford: Oxford University Press: 276-323.

Van Haaster, H. and Brinkkemper, O. 1995. RADAR, a relational archaeobotanical database for advanced research. *Vegetation History and Archaeobotany* 4: 117-125.

Van Hoof, T.B., Bunnik, F.P.M., Waucomont, J.G.M., Kürschner, W.M. and Visscher, H. 2006. Forest re-growth on medieval farmland after the Black Death pandemic – Implications for atmospheric CO^2 levels. *Palaeogeography, Palaeoclimatology, Palaeoecology* 237 (2-4): 396-409.

Vaugan, J.G. and Geissler, C.A. 2000. *The New Oxford Book of Food Plants*. Oxford: Oxford University Press.

Veen, M. van der 1989. Charred grain assemblages from Roman-Period corn driers in Britain. *The Archaeological Journal* 146: 302-319.

Veen, M. van der 2003a. When is food a luxury? *World Archaeology* 34 (3): 405-427.

Veen, M. van der 2003b. Trade and diet at Roman and medieval Quseir al Qadim, Egypt. A preliminary report. In Neumann, K., Butler, A. and Kahlheber, S. (eds.), *Food, Fuel and Fields*. (Progress in African Archaeobotany. Africa Praehistorica 15). Köln: Heinrich-Barth Institut: 207-212.

Veen, M. van der 2004. The merchants' diet: food remains from Roman and medieval Quseir al-Qadim. In Lunde, P. and Porter, A. (eds.), *Trade and Travel in the Red Sea Region*. *Proceedings of Red Sea Project I*. Oxford: Archaeopress: BAR International Series 1269: 123-130.

Veen, M. van der and Fieller, N. 1982. Sampling seeds. *Journal of Archaeological Science* 9: 287-298.

Veen, M. van der, Livarda, A. and Hill, A. 2007. The archaeobotany of Roman Britain: current state and identification of research priorities. *Britannia* 38: 181-210.

Vencl, S. 1994. The archaeology of thirst. *Journal of European Archaeology* 2(2): 299-326.

Visser, M. 1991. *The Rituals of Dinner: The Origins, Evolution, Eccentricities, and Meaning of Table Manners*. London: Viking.

Wacher, J. 1995. *The Towns of Roman Britain*. (2nd edition). London: Batsford.

Wallace, C. unpublished. Cones of the Mediterranean stone pine in Roman Britain: changing contexts and connotations?

Warde, A. 1997. *Consumption, Food and Taste: Culinary Antinomies and Commodity Culture*. London: SAGE Publications.

Whitton, D. 2001. The society of Northern Europe in the High Middle Ages, 900-1200. In Holmes, G. (ed.), *The Oxford History of Medieval Europe*. Oxford: Oxford University Press: 109-164.

Wickham, C. 2005. *Framing the Early Middle Ages: Europe and the Mediterranean 400-800*. Oxford: Oxford University Press.

Wiethold, J. 2003. How to trace the 'Romanisation' of central Gaul by archaeobotanical analysis? - Some considerations on new archaeobotanical results from France Centre-Est. In *Actualité de la Recherche en Histoire et Archéologie agraires, Actes du colloque international AGER V, septembre 2000*. *Annales Littéraires, 764. Série 'Environnement, sociétés et archéologie'*, 5. Besançon: Presses Universitaires Franc-Comtoises: 269-282.

Wiethold, J. 2004. Restes de plantes détrempées et carbonisées de puits et de autres structures gallo-romaines et médievales. In Card, Ch. (ed.), *Varois-et-Chaignot, Les Epenottes.* Dijon: Rapport Final de Fouilles (D.F.S.), Février – Mai 2002: 179-199.

Wiethold, J. 2007. The history of Buckwheat (*Fagopyrum esculentum* Moench.) in northwestern Europe: the archaeobotanical and historical evidence – a critical review. In Bieniek, A. (ed.), *14th Symposium of the International Work Group for Palaeoethnobotany, 17-23 June 2007, Kraków, Poland: Programme and Abstracts*. Kraków: W. Szafer Institute of Botany: 29.

Willcox, G.H. 1977. Exotic plants from Roman waterlogged sites in London. *Journal of Archaeological Science* 4: 269-282.

Willerding, U. 1971. Methodische Probleme bei der Untersuchng und Auswertung von Pflanzenfunden in vor- und frühgeschichtlichen Siedlungen. *Nachrichten aus Niedersachsens Urgeschichte* 40: 180-198.

Willerding, U. 1991. Präsenz, Erhaltung und Repräsentanz von Pflanzenresten in archäologischem Fundgut (Presence, preservation and representation of archaeological plant remains). In Zeist, W. van, Wasylikowa, K. and Behre, K-E. (eds.), *Progress in Old World Palaeoethnobotany: A Retrospective View on the Occasion of 20 Years of the International Work Group for Palaeoethnobotany*. Rotterdam: Balkema: 25-51.

Williams, D. 1992. Plant macrofossil remains. In Lightfoot, K.W.B. (ed.), *Rumney Castle, a Ringwork and Manorial Centre in South Glamorgan*. *Medieval Archaeology* 36: 155-6.

Winter, J.M van 1986. Obligatory fasts and voluntary ascetism in the Middle Ages. In Fenton, A. and Kisbán, E. (eds.), *Food in Change: Eating Habits from the Middle Ages to the Present Day*. Glasgow: John Donald Publishers: 161-166.

Zach, B. 2002. Vegetable offerings on the Roman sacrificial site in Mainz, Germany – short report on the first results. *Vegetation History and Archaeobotany* 11: 101-106.

Zeven, A.C. 2003. The history of the medieval vegetable garden of the common man and woman: the poorness of descriptions and pictures. In Knüpffer, H. and Ochsmann, J. (eds.), *Rudolf Mansfeld and Plant Genetic Resources. Proceedings of a Symposium Dedicated to the 100th Birthday of Rudolf Mansfeld, Gatersleben, Germany, 8-9 October 2001.* Gatersleben: Zentralstelle fur Agrardokumentation und -information (ZADI): 155-166.

Zeven, A.C. and Wet, J.M.J de 1982. *Dictionary of Cultivated Plants and their Regions of Diversity: Excluding most Ornamentals, Forest Trees and Lower Plants*. (2nd edition). Wageningen: Centre for Agricultural Publishing and Documentation.

Zohary, D. and Hopf, M. 2000. *Domestication of Plants in the Old World: The Origin and Spread of Cultivated Plants in West Asia, Europe and the Nile Valley*. (3rd edition). Oxford: Oxford University Press.

Web-pages consulted

http://www.guardian.co.uk/comment/story/0,,921193,00.html The Guardian: 25 March 2003 (consulted 22/05/2005).

http://www.archaeobotany.de/database.html Dr. Kroll's database (last consulted 4/02/2008).

http://ads.ahds.ac.uk/catalogue/resources.html?eab_eh_2004 Hall, A. 2004. Environmental Archaeology Bibliography.

APPENDICES

APPENDIX I

Form designed for the data collection

Leicester University - Introduction & Dispersal of Exotic Food Plants c. 100 BC – AD 1500
Alexandra Livarda / Marijke van der Veen

Research Data Sheet: Luxury Foods

Full bibliographical reference:

Name of site:

City/Town:

Province:

Country:

Latitude:

Longitude:

Type of site (tick):

Roman (including Late Antique)

Rural	lesser (farmstead, hamlet)
	nucleated (village)
	elite (villa)
Urban	town, major (colonia, municipium, civitas capitals)
	town, minor
Military	intramural
	extramural (vicus)
Ceremonial	burial (inhumation/cremation)
	temples, shrines
Other	*specify*

Early Medieval and Medieval Periods

Secular Rural	lesser (hamlet,farmstead)
	village
	elite (manor,moated site,palace,castle)
Secular Urban	town, major
	town, minor
	town, status uncertain
	castle
Religious	monastery, urban
	monastery, rural
	cemetery/burial
Various	trading-centre
	industrial site
Other	*specify*

If the site is Roman, specify (tick):

Roman Empire:

Within / Outside

Sample type (tick):

Flotation/ Hand-picked

No. of samples:

Quantification: Y/N

Context:

Comments:

Period Description:

Start Date (BC/AD):

End Date (BC/AD):

Name of person who completed this form:

Form designed for the data collection (continued)

Leicester University - Introduction & Dispersal of Exotic Food Plants c. 100 BC – AD 1500 Alexandra Livarda / Marijke van der Veen							
List of Species	**Common name**	*id level	Preservation mode				
			carbon	**waterl**	**minera**	**dessicat**	**impres**
Aframomum melegueta	melegueta pepper						
Allium cepa	onion						
Allium porrum	leek						
Allium sativum	garlic						
Alpinia galanga	galangal						
Amomum subulatum	black/false cardamom						
Amygdalus communis / Prunus amygdalus	almond						
Anethum graveolens	dill						
Anthriscus cerefolium	chervil						
Apium graveolens	celery						
Armeniaca vulgaris	apricot						
Armoracia rusticana	horseradish						
Borago officinalis	borage						
Brassica nigra	black mustard						
Brassica rapa	turnip						
Brassica oleraceae/napus	cabbages/rape seed						
Cannabis sativa	hemp						
Capparis spinosa	caper						
Carum carvi	caraway						
Ceratonia siliqua	carob						
Cicer arietinum	chickpea						
Cinnamommum aromaticum	cassia						
Cinnamommum verum	cinnamon						
Citrullus lanatus	water-melon						
Citrus limon	lemon						
Citrus medica	citron						
Citrus sinensis	orange						
Cocos nucifera	coconut						
Coriandrum sativum	coriander						
Crocus sativus	saffron						
Cucumis melo	melon						
Cucumis sativus	cucumber						
Cuminum cyminum	cumin						
Curcuma longa	turmeric						
Cydonia oblonga (vulgaris?)	quince						
Cynara cardunculus	cardoon						
Cynara scolymus	globe artichoke						
Elettaria cardamomum	cardamom						
Eruca sativa	rocket						
Fagopyrum esculentum	buckwheat						
Ficus carica	fig						
Ficus sycomorus	sycamore fig						
Foeniculum vulgare	fennel						
Glycine max	soybean						
Glycyrrhiza glabra	liquorice						
Illicium verum	star anise						
Inula helenium	elecampane						
Juglans regia	walnut						
Lactuca sativa	lettuce						
Lagenaria siceraria	bottle-gourd						
Lathyrus clymenum	sweet pea						
Lathyrus sativus	grasspea						
Laurus nobilis	bay leaf						
Lens esculentum	lentil						
Levisticum officinale	lovage						
Lupinus albus	lupin						
Malus sp.	apple						
Mangifera indica	mango						

Form designed for the data collection (continued)

Leicester University - Introduction & Dispersal of Exotic Food Plants c. 100 BC – AD 1500
Alexandra Livarda / Marijke van der Veen

	Common name	*id level	Preservation mode				
			carbon	**waterl**	**minera**	**dessicat**	**impres**
Marrubium vulgare	horehound						
Melissa officinalis	balm						
Mespilus germanica	medlar						
Morus nigra	mulberry						
Murraya koenigii	curry leaf						
Myristica fragrans	nutmeg						
Nigella sativa	black cumin						
Ocimum basilicum	basil						
Olea europea	olive						
Origanum majorana	marjoram						
Origanum vulgare	oregano						
Oryza sativa	rice						
Papaver somniferum	oppium poppy						
Persica vulgaris / Prunus persica	peach						
Petroselinum crispum	parsley						
Phoenix dactylifera	date						
Pimpinella anisum	aniseed						
Pinus pinea	pine						
Piper nigrum	black pepper						
Pistacia atlantica	Mt. Atlas mastic tree						
Pistacia lentiscus	evergreen pistache						
Pistacia terebinthus	terebinth						
Pistacia vera	pistachio						
Prunus avium	sweet cherry						
Prunus cerasus	sour cherry						
Prunus damascena	damson						
Prunus domestica	plum cultivar						
Prunus domestica ssp. *insititia*	wild plum/bullace						
Punica granatum	pomegranate						
Pyrus sp.	pear						
Rhus coriaria (coriacea)	sumac						
Rosmarinus officinalis	rosemary						
Ruta graveolens	rue						
Saccharum officinalis	sugarcane						
Salvia officinalis	sage						
Salvia sclarea	clary sage						
Satureja hortensis/ Clinopodium hortensis	summer savory						
Sesamum indicum	sesame						
Sinapis alba	white mustard						
Smyrnium olusatrum	alexanders						
Solanum melongena	aubergine						
Sorghum bicolor	sorghum						
Syzygium aromaticum	clove						
Tamarindus indica	tamarind						
Thymus vulgaris	thyme						
Trachyspermum ammi	ajowan						
Trigonella foenum-graecum	fenugreek						
Vigna radiata	mung bean						
Vigna unguiculata	black-eye bean						
Vitis vinifera	grape						
Zanthoxylum piperitum	sichuan pepper						
Zingiber officinale	Ginger						
OTHER (please add)							

* Id level = how secure the identification is (cf, species, genus)

Form designed for the data collection (continued)

Leicester University- Introduction & Dispersal of Exotic Food Plants
Alexandra Livarda / Marijke van der Veen

Completion of form

Each form should cover a unique data set. Therefore, one publication may generate multiple forms. For example:

- if the data come from a military fort and its vicus, please use a separate form for each;
- if the data come from occupation in a town and from a castle within that town, please use a separate form for each;
- if the occupation of a site spans more than one phase, please use a separate form for each.

Type of site – explanations for problematic categories

Roman period, including Late Antique

Rural nucleated	village (i.e. more than a few houses, often including buildings or features not related to agriculture)
Major towns	the higher level of towns, i.e. colonia, municipium, civitas capitals
Minor towns	here we mean small towns, they might be a statio, mansio or road station which develops more urban features
Military intramural	refers to all military sites, regardless of status or size
Military extramural	refers to just a vicus

Early Medieval and Medieval periods

Major town	this refers to a pre-existing town which has a castle inserted within or adjacent to it (for the most part it will have a Roman foundation or at least a pre AD1000 foundation)
Minor Town	this refers to a new foundation attached to a castle or monastic site, often a market town (a borough – holding a legal market)
Town uncertain	not clear whether minor or major town
Trading centre	usually 7th-10th century; gateway communities, 'wics', emporia, that is: pre/proto-urban communities
Castle	urban, if in a town but included within 'secular, rural, elite' if in countryside

Quantification	Asks whether the seeds were counted in absolute numbers
No. of Samples	Asks for number of samples for the assemblage as a whole, not the number in which the species occurs.

Period Description
Here we would like you to give us the clearest possible description available (i.e. as is in the publication), for example:
Late Iron Age/Roman, Early Roman, early 1st to late 2nd century AD, Late Roman, Saxon, Merovingian, Carolingian, Viking, Arab, Christian, Norman, Visigothic, Abbasid, 12th century, High Medieval, etc.

Begin Date/End Date
Please be as precise as you can. This is the info we will use in the database!

If you have any questions, please email us: al124@leicester.ac.uk or mvdv1@leicester.ac.uk

Species
Give number of seeds identified for each mode of preservation (if not quantified, enter a 'x')
Any species you think may be worth adding: please do so under '*other'*.

Last, but not least – thank you very much for your help!

APPENDIX II

The following people kindly provided data for the project either by completing forms (see Appendix I), sending unpublished reports or offprints, excel spreadsheets and/or Access databases. The information is listed by country. Institutions visited and details on national databases are also given.

Belgium

Brigitte Cooremans, Christine Laurent and Lieselotte Meersschaert.

Britain

Gill Campbell, Wendy Carruthers, Astrid Caseldine, Mike Charles, Anne Davies, John Giorgi, James Greig, Allan Hall, Tim Holden, Jacquie Huntley, Jennifer Miller, Lisa Moffett, Angela Monckton, Peter Murphy, Ruth Pelling, Mark Robinson, Vanessa Straker and Scott Timpany.

ABCD database (Tomlinson and Hall 1996; Allan Hall kindly provided an updated version).
EAB database (Hall 2004).
English Heritage, Portsmouth – Fort Cumberland (Environmental Studies).
MoLAS archive, Museum of London (Specialist Services).

Denmark

Sabine Karg and David Earl Robinson.

The National Museum of Denmark, Copenhagen.

France

Laurent Bouby, Anne Bouchette, Frédérique Durand, Philippe Marinval, Veronique Matterne, Bénédicte Pradat and Marie-Pierre Ruas.

Centre d'Anthropologie, Université Paul Sabatier, Toulouse.

Germany and Luxemburg

Almuth Alsleben, Margarethe König, Angela Kreuz, Helmut Kroll, Reinder Neef, Manfred Rösch, Hans-Peter Stika, Edeltraud Tafel and Julian Wiethold.

Institut für Ur- und Frühgeschichte, Christian-Albrechts-Universität zu Kiel.

The Netherlands

Otto Brinkkemper.

RADAR database (Van Haaster and Brinkkemper 1995; Otto Brinkkemper kindly provided a digital copy of this database).

RACM, Amersfoort.

Spain and Andorra

Natàlia Alonso, Ramon Buxó, Leonor Peña-Chocarro and Lydia Zapata.

Switzerland

Christoph Brombacher, Stefanie Jacomet and Patricia Vandorpe.

Other

Data for Belgium, Britain, France, Germany, Luxemburg, Switzerland and The Netherlands were also retrieved from the 'Romanization project' (Prof. Marijke van der Veen, personal archive – data originally compiled by Dr. Helmut Kroll and Dr. Angela Kreuz).

INTRODUCTION AND DISPERSAL OF EXOTIC FOOD PLANTS INTO EUROPE DURING THE ROMAN AND MEDIEVAL PERIODS (Volume II)

Thesis submitted for the degree of
Doctor of Philosophy
at the University of Leicester

by

Alexandra Livarda

School of Archaeology and Ancient History
University of Leicester

June 2008

Introduction and dispersal of exotic food plants into Europe during the Roman and medieval periods

Alexandra Livarda

Abstract

This thesis examines the introduction and importation of numerous exotic food plants into north-western and western Europe during the Roman and medieval periods. It constitutes the first part of a wider, ongoing research project directed by Prof. Van der Veen on "Long-Distance Trade and Agricultural Development". The aim is to establish the dispersal histories of these exotics and highlight the active role of food in processes of socio-economic change in past societies.

Relevant data were collected from all available archaeobotanical records in the area and period under study, and brought together in a uniform database format. Information was gathered on the species presence, mode of preservation and accuracy of identification. Sites are classified by period (Roman/early medieval/medieval), type (urban/rural/military), status (elite/non-elite) and context (secular/ceremonial/religious). Two types of analyses are employed to identify the chronological, social and geographical dispersal of the most common (forty-two) species: a species-specific, and a multivariate technique (Correspondence Analysis). Results indicate the emergence of very distinct dispersal patterns for each period and for the various species. In the Roman period numerous new food plants become available in different contexts. Many species that could be locally cultivated become incorporated into local diet, particularly near the Rhine frontier, while rarer species are limited to military, major urban and elite sites. In the following period most exotics disappear, indicating a turn towards more local dietary and agricultural regimes and highlighting the disjointed socio-economic context of the early medieval world. A shift in activities northwards is observed during the medieval period when the diversity of species increases again. Different food plants become prominent but most are associated with towns and the urban elite, marking socio-economic divisions.

This study advances understanding of the changing nature of the exotic status of many species, and reveals these as crucial guides to charting human and economic impacts and movements.

For my parents, Sofia and Tasos Livardas

"This vegetable world, which to us appears so placid, so resigned, in which all seems acquiescence, silence, obedience, meditation, is, on the contrary, that in which the revolt against destiny is the most vehement and the most stubborn…If it be difficult to discover among the great laws that oppress us that which weighs heaviest upon our shoulders, in the case of the plant there is no doubt: it is the law that condemns it to immobility from its birth to its death. Therefore it knows better than we, who disseminate our efforts, against what first to rise in rebellion. And the energy of its fixed idea, mounting from the darkness of the roots to become organized and full-blown in the light of the flower, is an incomparable spectacle. It exerts itself wholly with one object: to escape above from the fatality below, to evade, to transgress the heavy and sombre law, to set itself free, to shatter the narrow sphere, to invent or invoke wings, to escape as far as it can, to conquer the space in which destiny encloses it, to approach another kingdom, to penetrate into a moving and active world….The flower sets man a prodigious example of insubmission, courage, perseverance and ingenuity. If we had applied to the removal of various necessities that crush us…one half of the energy displayed by any little flower in our gardens, we may well believe that our lot would be very different from what it is"

Maurice Maeterlinck

The Intelligence of the Flowers 1907 (pp. 10-13)

(translation into English by Alexander Teixeira de Mattos 2001,
University Press of the Pacific, Honolulu, Hawaii)

CONTENTS

List of Figures ix
List of Tables xiv
Acknowledgements xv

VOLUME I

CHAPTER 1: Introduction **2**

CHAPTER 2: Research Background: Perceptions of Food and its Roles in Contemporary Research **7**

2.1 Why Study Food: Its Cultural and Social Dimensions 8
2.2 Food, Status and Social Relations 11
2.3 Food and Cultural Differences 17
2.4 Food, Ritual and Religion 21
2.5 Exotics and their Potential in Archaeobotanical Research 25

CHAPTER 3: Methodology **29**

3.1 Data Collection 29
3.2 Study Area 31
3.3 Time Periods 31
3.4 Site Type Classification 34
3.5 Sampling and Contextual Assessment 37
3.6 The Species 37
3.6.1 Selection of Taxa 37
3.6.2 Quantification 38
3.6.3 Accuracy of Identification 38
3.6.4 Preservation 39
3.7 Terminology 39
3.8 The Database 40
3.9 Methods of Analysis 41
3.9.1 Univariate Analysis 41
3.9.2 Multivariate Analysis 42

CHAPTER 4: Results **45**
4.1 The Records 45
4.1.1 Roman 46
4.1.2 Early Medieval 46
4.1.3 Medieval 47
4.2 Geographical Distribution 48
4.2.1 The Roman Period 49
4.2.2 The Early Medieval Period 49
4.2.3 The Medieval Period 50
4.3 The Food Plants 50
4.3.1 Absent and Rare Food Plants 50
4.3.2 Distribution of Species over Time 53
4.3.2.1 The Roman Period 53
4.3.2.2 The Early Medieval Period 54
4.3.2.3 The Medieval Period 55
4.4 Mode of Preservation 55
4.5 Data Selection for Detailed Analysis 58
4.6 Summary and Concluding Remarks 62

CHAPTER 5: Univariate Analysis: Chronological, Social and Spatial Distributions **64**
5.1 Chronological Distribution 64
5.2 Social Access 67
5.2.1 Pattern 1: Decrease 71
5.2.2 Pattern 2: Increase (a) 73
5.2.3 Pattern 3: Increase (b) 74
5.2.4 Pattern 4: Stable 76
5.2.5 Ceremonial Contexts 77
5.3 Geographical Distribution 78
5.3.1 Record Distribution 78
5.3.2 Pattern 1: Decrease 81
5.3.3 Pattern 2: Increase (a) 83
5.3.4 Pattern 3: Increase (b) 84
5.3.5 Pattern 4: Stable 85
5.4 Summary 86

CHAPTER 6: Multivariate Analysis **90**
6.1 The Overall Data 90
6.1.1 Waterlogged Data 90
6.1.2 Carbonized Data 91
6.2 The Roman Period 92
6.2.1 Waterlogged Data 92
6.2.2 Carbonized Data 93
6.3 The Early Medieval Period 94
6.3.1 Waterlogged Data 94
6.3.2 Carbonized Data 95
6.4 The Medieval Period 96
6.4.1 Waterlogged Data 96
6.4.2 Carbonized data 97
6.5 Summary 98

CHAPTER 7: Discussion **100**
7.1 Taphonomic and Other Biases in the Overall Results 100
7.2 The Roman 'Culinary Map' 102
7.2.1 New Food Plants: Access and Distribution 102
7.2.2 The Role of the Army 106
7.2.3 Ceremonial Contexts 110
7.2.4 Regional Variations 115
7.2.5 The Role and Impact of the Roman Empire: A Comment 120
7.3 The Early Medieval Phase 121
7.3.1 A Different Culinary Regime 121
7.3.2 Changes in the Culinary Geography 124
7.4 Medieval Foodways 127
7.4.1 Ingredients of a New Cuisine 127
7.4.2 Urban Elite versus Peasantry 128
7.4.3 Spatial Distribution: Regional Specialisation or Homogenisation? 136
7.5 Concluding Remark 139

CHAPTER 8: Summary and Conclusions **140**

BIBLIOGRAPHY **149**

APPENDICES **177**

APPENDIX I 178

APPENDIX II 182

Addendum: One CD-R containing an excel file with the sites used in this thesis (including record codes) and their bibliographical references

VOLUME II

FIGURES **185**

Chapter 3 186

Chapter 4 190

Chapter 5 198

Chapter 6 284

TABLES **300**

Chapter 3 301

Chapter 4 305

Chapter 5 319

Chapter 7 328

LIST OF FIGURES

3.1:	The geographical area of study.	187
3.2:	The database design.	188
3.3:	Access form where the report details are stored.	189
3.4:	Access form where the record specific information is stored.	189
4.1a:	Number of Roman records with exotics, by broad site category.	191
4.1b:	Number of Roman records with exotics, by detailed site type.	191
4.1c:	Number of early medieval records with exotics, by broad site category.	192
4.1d:	Number of early medieval records with exotics, by detailed site type.	192
4.1e:	Number of medieval records with exotics, by broad site category.	193
4.1f:	Number of medieval records with exotics, by detailed site type.	193
4.2a:	Geographical distribution of the Roman records.	194
4.2b:	Geographical distribution of the early medieval records.	195
4.2c:	Geographical distribution of the medieval records.	196
4.3:	Relative proportion of preservation mode of species with >20 occurrences.	197
5.1a:	Pattern 1, waterlogged species which decrease after the Roman period, plotted as the percentage of records with a particular species, by broad period (waterlogged records only).	199
5.1b:	Pattern 1, carbonized species which decrease after the Roman period, plotted as the percentage of records with a particular species, by broad period (carbonized records only).	200
5.1c:	Pattern 2, common waterlogged species which increase further in the medieval period, plotted as the percentage of records with a particular species, by broad period (waterlogged records only).	201
5.1d:	Pattern 3, waterlogged species which increase in the medieval period, plotted as the percentage of records with a particular species, by broad period (waterlogged records only).	202
5.1e:	Pattern 4, waterlogged species which remain relatively stable, plotted as the percentage of records with a particular species, by broad period (waterlogged records only).	203
5.2a:	The relative proportion of the various site types with waterlogged food plants in the Roman period.	204
5.2b:	The relative proportion of the various site types with carbonized food plants in the Roman period.	204
5.2c:	The relative proportion of the various site types with waterlogged food plants in the early medieval period.	205
5.2d:	The relative proportion of the various site types with carbonized food plants in the early medieval period.	205
5.2e:	The relative proportion of the various site types with waterlogged food	

plants in the medieval period. 206
5.2f: The relative proportion of the various site types with carbonized food plants in the medieval period. 206
5.2.1a: The social distribution of waterlogged Pattern 1 species in the Roman period. 207
5.2.1b: Approximate abundance of each species (of Pattern 1 waterlogged) in selected site types for the Roman period. 208
5.2.1c: The social distribution of waterlogged celery (Pattern 1) in the early medieval period. 209
5.2.1d: Approximate abundance of early medieval waterlogged celery records in selected site types. 210
5.2.1e: The social distribution of waterlogged Pattern 1 species in the medieval period. 211
5.2.1f: Approximate abundance of waterlogged celery, coriander, peach and summer savory in selected site types for the medieval period. 212
5.2.1g: The social distribution of carbonized Pattern 1 species in the Roman period. 213
5.2.1h: Approximate abundance of each species (of Pattern 1 carbonized) in selected site types for the Roman period. 214
5.2.1i: The social distribution of carbonized Pattern 1 species in the early medieval period. 215
5.2.1j: The social distribution of carbonized Pattern 1 species in the medieval period. 216
5.2.1k: Approximate abundance of medieval carbonized lentil records in selected site types. 217
5.2.2a: The social distribution of waterlogged Pattern 2 species in the Roman period. 218
5.2.2b: Approximate abundance of each species (of Pattern 2 waterlogged) in selected site types for the Roman period. 219
5.2.2c: The social distribution of waterlogged Pattern 2 species in the early medieval period. 220
5.2.2d: Approximate abundance of each species (of Pattern 2 waterlogged) in selected site types for the early medieval period. 221
5.2.2e: The social distribution of waterlogged Pattern 2 species in the medieval period. 222
5.2.2f: Approximate abundance of each species (of Pattern 2 waterlogged) in selected site types for the medieval period. 223
5.2.2g: The social distribution of carbonized grape remains per time period. 224
5.2.2h: Approximate abundance of carbonized grape in selected site types for the Roman, early medieval and medieval period. 225
5.2.3a: The social distribution of waterlogged Pattern 3 species in the Roman period. 226
5.2.3b: The social distribution of waterlogged Pattern 3 species in the early medieval period. 227
5.2.3c: Approximate abundance of waterlogged hemp and turnip in selected site types for the early medieval period. 228
5.2.3d: The social distribution of waterlogged Pattern 3 species in the medieval period. 229

5.2.3e: Approximate abundance of the most common species (of Pattern 3 waterlogged) in selected site types for the medieval period. 230
5.2.3f: Approximate abundance of some rarer species (of Pattern 3 waterlogged) in selected site types for the medieval period. 231
5.2.4a: The social distribution of waterlogged Pattern 4 species in the Roman period. 232
5.2.4b: The social distribution of waterlogged Pattern 4 species in the early medieval period. 233
5.2.4c: The social distribution of waterlogged Pattern 4 species in the medieval period. 234
5.2.4d: Approximate abundance of waterlogged dill in selected site types for the Roman, early medieval and medieval period. 235
5.3.1a: Distribution of waterlogged records in the Roman period. 236
5.3.1b: Bio-geographical distribution of waterlogged records in the Roman period. 237
5.3.1c: Distribution of carbonized records in the Roman period. 238
5.3.1d: Bio-geographical distribution of carbonized records in the Roman period. 239
5.3.1e: Distribution of waterlogged records in the early medieval period. 240
5.3.1f: Bio-geographical distribution of waterlogged records in the early medieval period. 241
5.3.1g: Distribution of carbonized records in the early medieval period. 242
5.3.1h: Bio-geographical distribution of carbonized records in the early medieval period. 243
5.3.1i: Distribution of waterlogged records in the medieval period. 244
5.3.1j: Bio-geographical distribution of waterlogged records in the medieval period. 245
5.3.1k: Distribution of carbonized records in the medieval period. 246
5.3.1l: Bio-geographical distribution of carbonized records in the medieval period. 247
5.3.2a: Distribution of waterlogged oregano, olive and summer savory in the Roman period. 248
5.3.2b: Distribution of waterlogged coriander and celery in the Roman period. 249
5.3.2c: Distribution of waterlogged peach, bottle-gourd and melon in the Roman period. 250
5.3.2d: Distribution of waterlogged pine nut in the Roman period. 251
5.3.2e: Distribution of waterlogged celery and peach in the early medieval period. 252
5.3.2f: Distribution of waterlogged summer savory and coriander in the early medieval period. 253
5.3.2g: Distribution of waterlogged celery and coriander in the medieval period. 254
5.3.2h: Distribution of waterlogged peach in the medieval period. 255
5.3.2i: Distribution of carbonized walnut and lentil in the Roman period. 256
5.3.2j: Distribution of carbonized date, pine nut, garlic and peach in the Roman period. 257
5.3.2k: Distribution of carbonized oregano in the Roman period. 258
5.3.2l: Distribution of carbonized walnut and lentil in the early medieval period. 259
5.3.2m: Distribution of carbonized walnut and lentil in the medieval period. 260
5.3.3a: Distribution of waterlogged grape and cherry in the Roman period. 261

5.3.3b: Distribution of waterlogged apple and opium poppy in the Roman period. 262
5.3.3c: Distribution of waterlogged cherry and apple in the early medieval period. 263
5.3.3d: Distribution of waterlogged cherry and apple in the medieval period. 264
5.3.3e: Distribution of waterlogged grape in the medieval period. 265
5.3.3f: Distribution of carbonized grape in the medieval period. 266
5.3.3g: Distribution of waterlogged opium poppy and fig in the medieval period. 267
5.3.4a: Distribution of waterlogged hemp, black mustard and pear in the Roman period. 268
5.3.4b: Distribution of waterlogged turnip in the Roman period. 269
5.3.4c: Distribution of waterlogged hemp, black mustard and pear in the early medieval period. 270
5.3.4d: Distribution of waterlogged turnip in the early medieval period. 271
5.3.4e: Distribution of waterlogged hemp, black mustard and pear in the medieval period. 272
5.3.4f: Distribution of waterlogged turnip in the medieval period. 273
5.3.4g: Distribution of waterlogged caraway, cabbage, fennel and mulberry in the Roman period. 274
5.3.4h: Distribution of waterlogged medlar in the medieval period. 275
5.3.4i: Distribution of waterlogged cabbage and fennel in the medieval period. 276
5.3.4j: Distribution of waterlogged buckwheat and mulberry in the medieval period. 277
5.3.5a: Distribution of waterlogged dill in the Roman period. 278
5.3.5b: Distribution of waterlogged dill in the early medieval period. 279
5.3.5c: Distribution of waterlogged dill in the medieval period. 280
5.3.5d: Distribution of waterlogged horehound, cucumber, almond and white mustard in the Roman period. 281
5.3.5e: Distribution of waterlogged horehound in the early medieval period. 282
5.3.5f: Distribution of waterlogged horehound, cucumber, almond and white mustard in the medieval period. 283
6.1a: CA of the overall waterlogged data: record distribution according to chronological period. 285
6.1b: CA of the overall waterlogged data: species distribution. 285
6.1c: CA of the overall carbonized data: record distribution according to chronological period. 286
6.1d: CA of the overall carbonized data: species distribution according to food types. 286
6.1e: CA of the overall carbonized data: site type distribution. 287
6.1f: CA of the overall carbonized data: record (codes) distribution. 287
6.2a: CA of the Roman waterlogged data: species distribution according to food types. 288
6.2b: CA of the Roman waterlogged data: site type distribution. 288
6.2c: CA of the Roman waterlogged data: record (codes) distribution. 289
6.2d: CA of the Roman waterlogged data: species distribution according to

	chronological patterns.	290
6.2e:	CA of the Roman carbonized data: species distribution according to food types.	290
6.2f:	CA of the Roman carbonized data: site type distribution.	291
6.2g:	CA of the Roman carbonized data: record (codes) distribution.	291
6.3a:	CA of the early medieval waterlogged data: species distribution according to food types.	292
6.3b:	CA of the early medieval waterlogged data: site type distribution.	292
6.3c:	CA of the early medieval waterlogged data: record (codes) distribution.	293
6.3d:	CA of the early medieval carbonized data: species distribution according to food types.	294
6.3e:	CA of the early medieval carbonized data: site type distribution.	294
6.3f:	CA of the early medieval carbonized data: record (codes) distribution.	295
6.4a:	CA of the medieval waterlogged data: species distribution according to food types.	296
6.4b:	CA of the medieval waterlogged data: species distribution according to chronological pattern.	296
6.4c:	CA of the medieval waterlogged data: site type distribution.	297
6.4d:	CA of the medieval waterlogged data: record (codes) distribution.	297
6.4e:	CA of the medieval carbonized data: species distribution according to food types.	298
6.4f:	CA of the medieval carbonized data: site type distribution.	298
6.4g:	CA of the medieval carbonized data: record (codes) distribution.	299

LIST OF TABLES

3.1:	List of the recorded species and their origins.	302
4.1:	The number of records and sites with exotics in each country by broad time period.	306
4.2:	The number of detailed site types with exotics per country during the Roman period.	307
4.3:	The number of detailed site types with exotics per country during the early medieval period.	308
4.4:	The number of detailed site types with exotics per country during the medieval period.	309
4.5:	Number of records with exotics, by time period.	310
4.6:	List of species not present in the dataset.	312
4.7:	Species frequency in the Roman period.	313
4.8:	Species found only or predominantly in the Roman period.	314
4.9:	Species frequency in the early medieval period.	314
4.10:	Species frequency in the medieval period.	315
4.11:	Species found only or predominantly in the medieval period.	316
4.12:	Number of occurrences of each species, by mode of preservation.	317
5.1a:	Number of waterlogged and carbonized records per time period.	320
5.1b:	Summary of the waterlogged archaeobotanical evidence and their pattern of occurrence in time.	320
5.2a:	Distribution of waterlogged exotic food plants in the various Roman site types.	321
5.2b:	Distribution of carbonized exotic food plants in the various Roman site types.	321
5.2c:	Distribution of waterlogged exotic food plants in the early medieval site types.	322
5.2d:	Distribution of carbonized exotic food plants in the early medieval site types.	322
5.2e:	Distribution of waterlogged exotic food plants in the medieval site types.	323
5.2f:	Distribution of carbonized exotic food plants in the medieval site types.	323
5.2g:	Waterlogged and carbonized species present in Roman ceremonial contexts.	324
5.4a:	Pattern 1, waterlogged species divided in sub-groups according to their social distribution.	325
5.4b:	Pattern 1, carbonized species divided in sub-groups according to their social distribution.	325
5.4c:	Pattern 2 species divided in sub-groups according to their social distribution.	326
5.4d:	Pattern 3 species divided in sub-groups according to their social distribution.	326
5.4e:	Pattern 4 - species divided in sub-groups according to their social distribution.	327
7.1:	Findspots of condiments in Roman ceremonial records according to modern-day geopolitical borders (all modes of preservation).	329

VOLUME II

FIGURES

Chapter 3

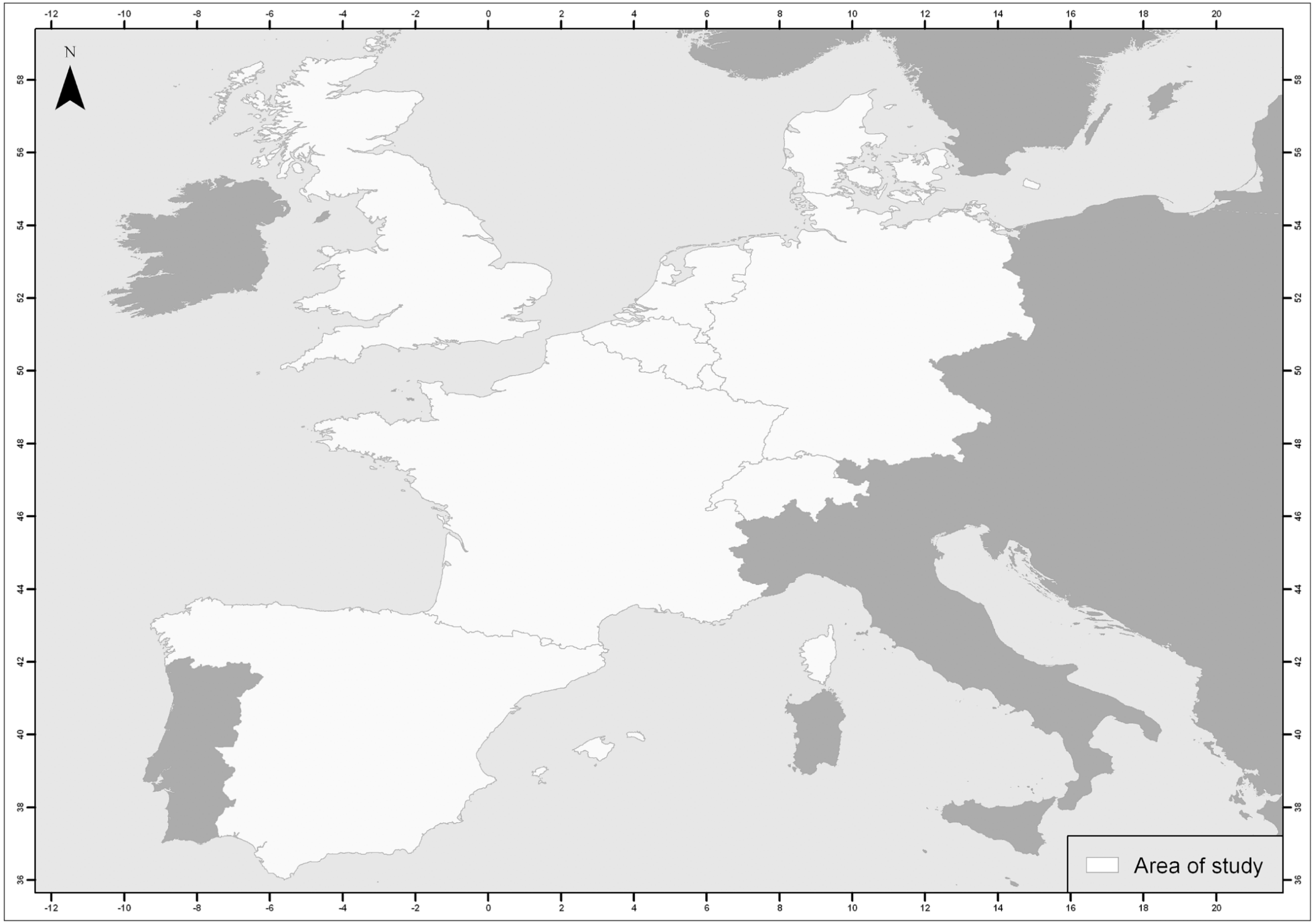

Figure 3.1: The geographical area of study (white area). Image generated by ESRI® ArcGIS© 9.2 GIS.

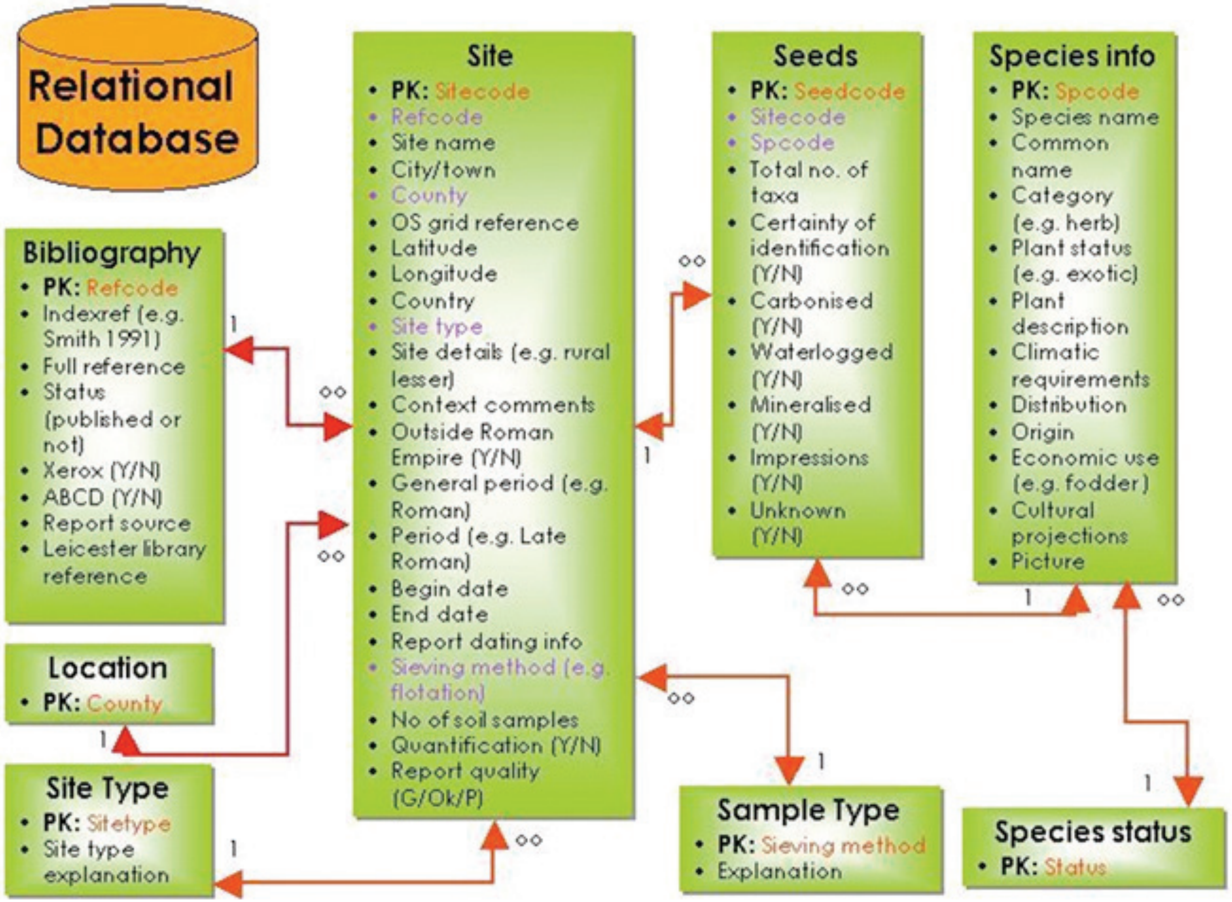

Figure 3.2: The database design. Each box represents a separate table that contains multiple fields. The arrows show which tables are linked together. The symbols 1 and oo next to each arrow indicate the type of relationship between the linked fields of the tables. 1 refers to the linked field with unique entries and oo refers to the related field that can have potentially multiple entries. PK stands for ‘primary key’, which represents a unique entry for the table. Different colours are used to show the common fields of the various tables.

Figure 3.3: Access form where the report details are stored.

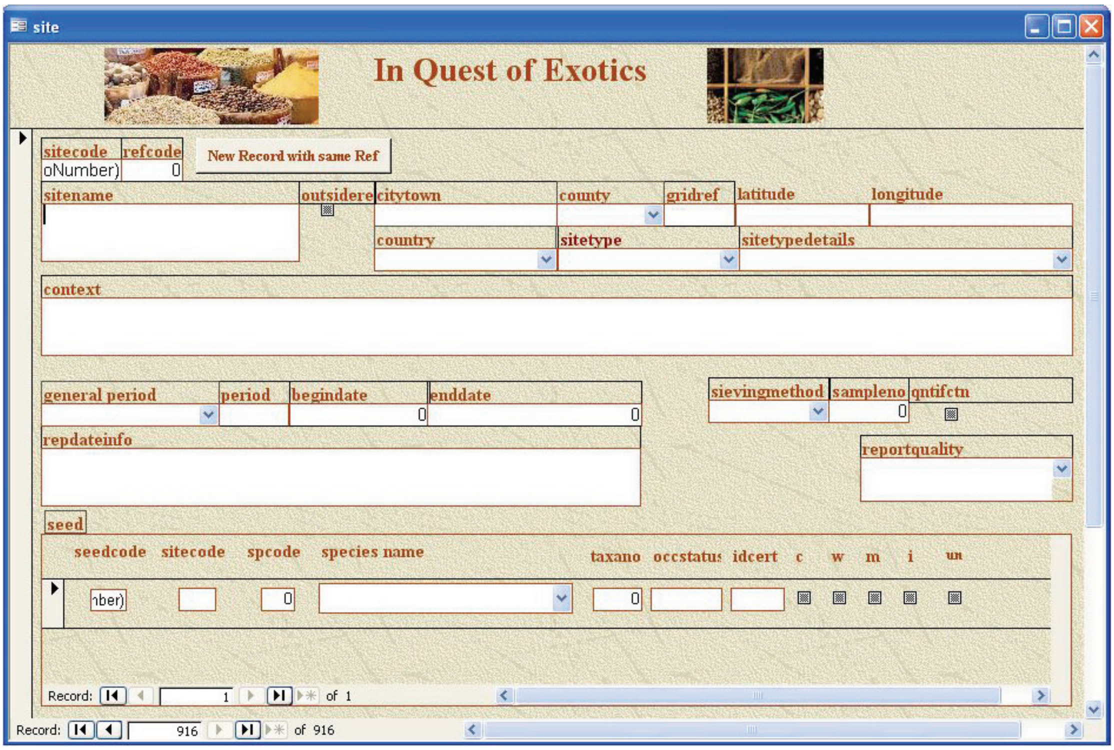

Figure 3.4: Access form where the record specific information is stored.

Chapter 4

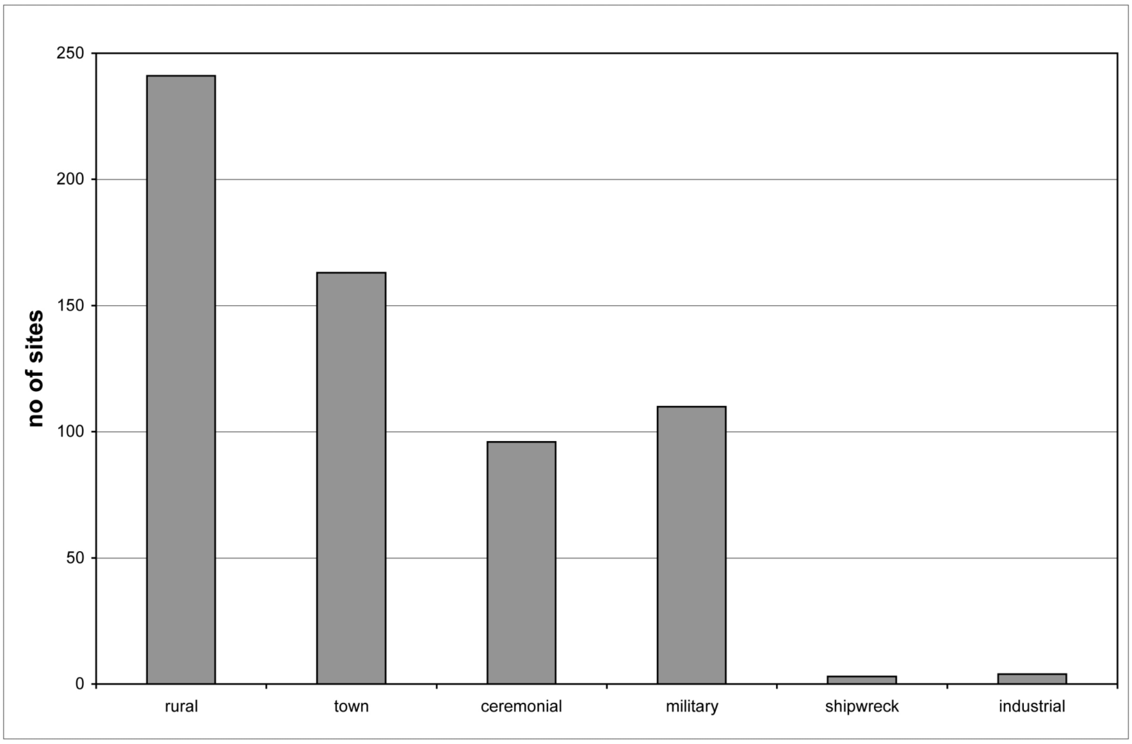

Figure 4.1a: Number of Roman records with exotics, by broad site category.

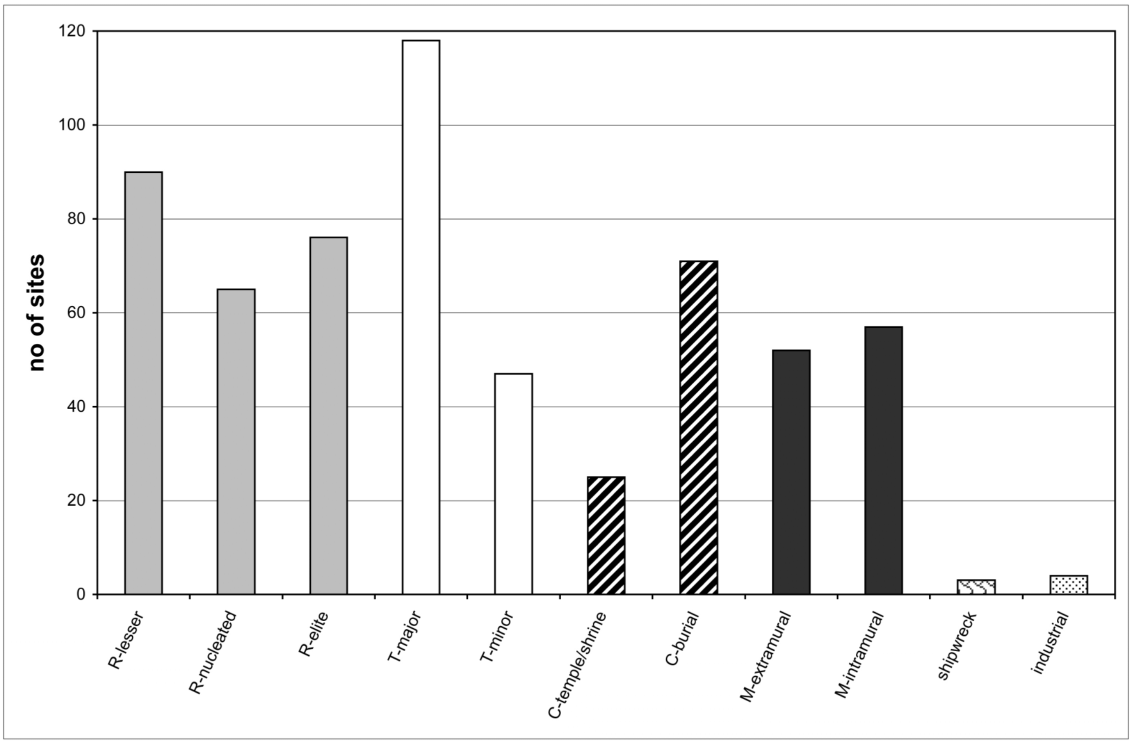

Figure 4.1b: Number of Roman records with exotics, by detailed site type (R=rural, T=town, C=ceremonial, M=military).

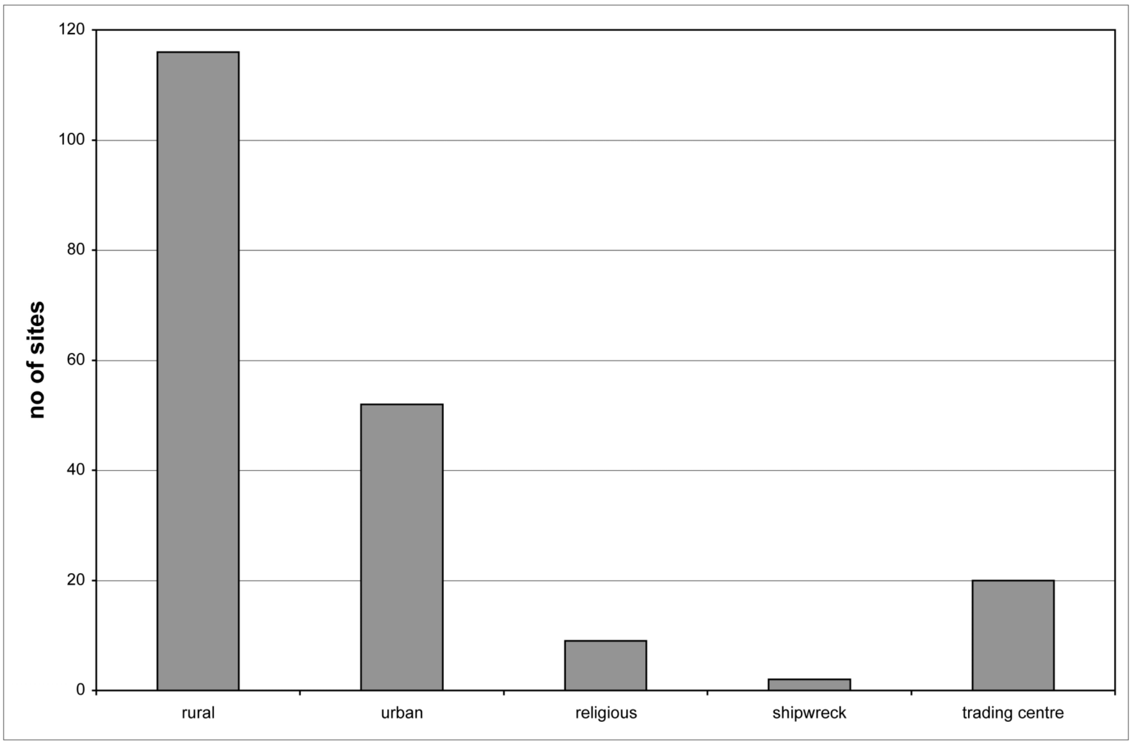

Figure 4.1c: Number of early medieval records with exotics, by broad site category.

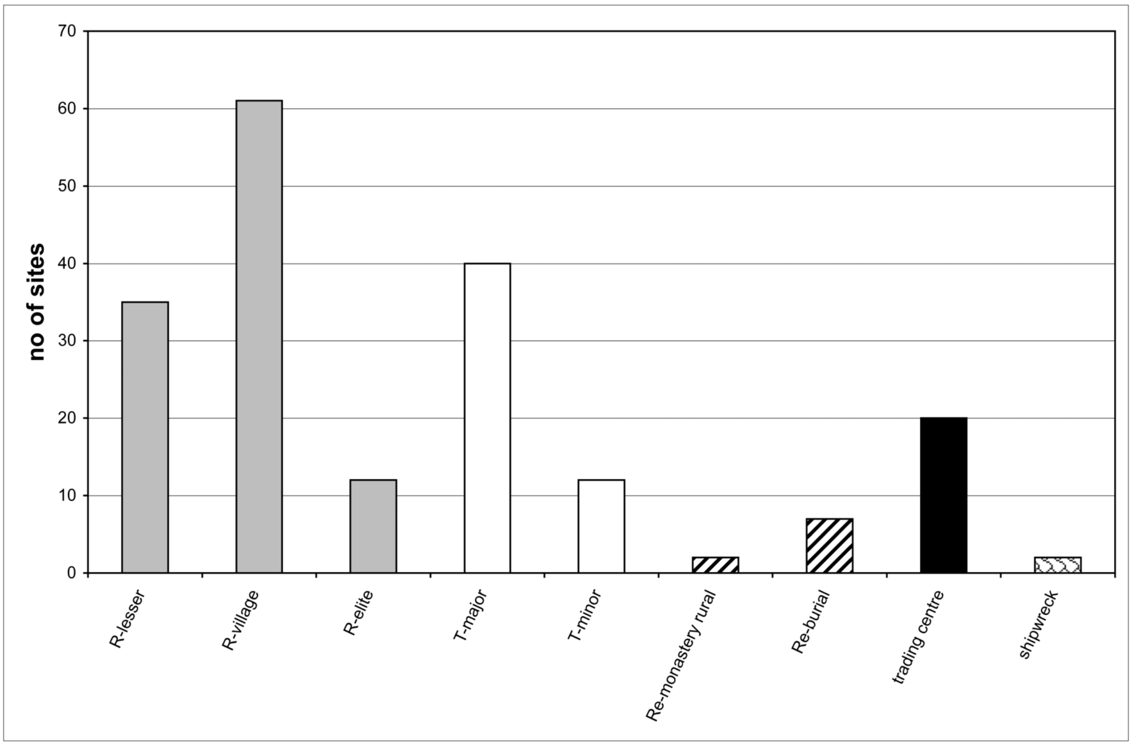

Figure 4.1d: Number of early medieval records with exotics, by detailed site type (R=rural, T=town, Re=religious).

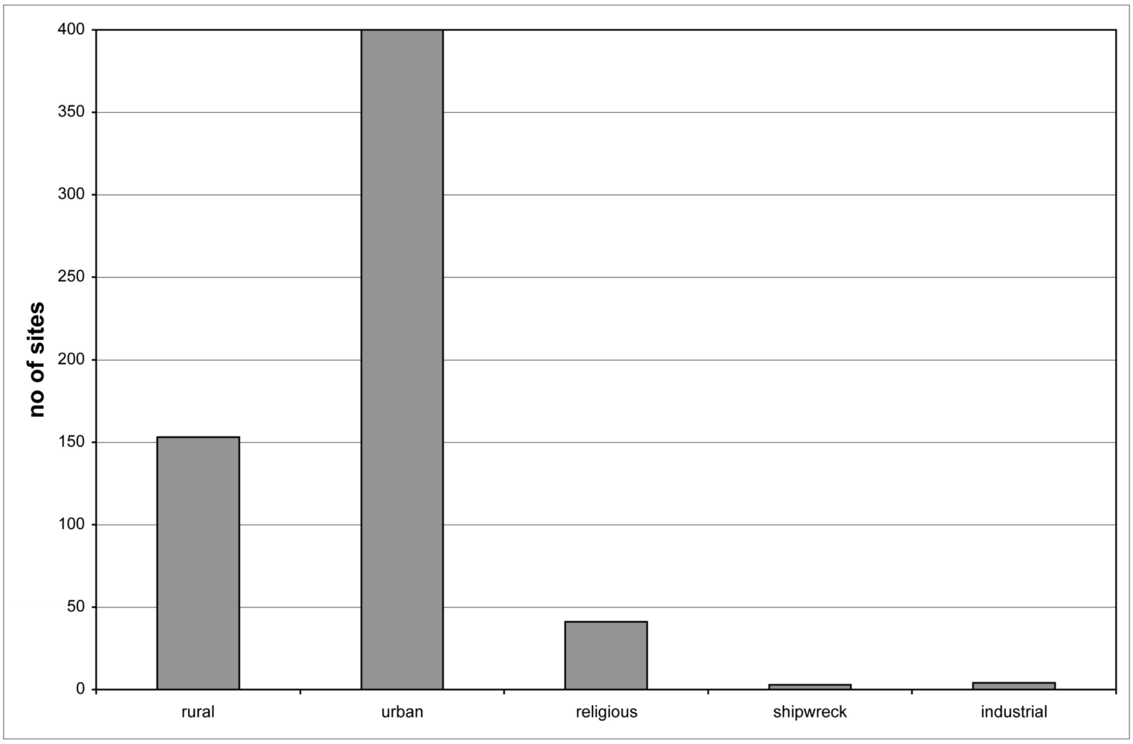

Figure 4.1e: Number of medieval records with exotics, by broad site category.

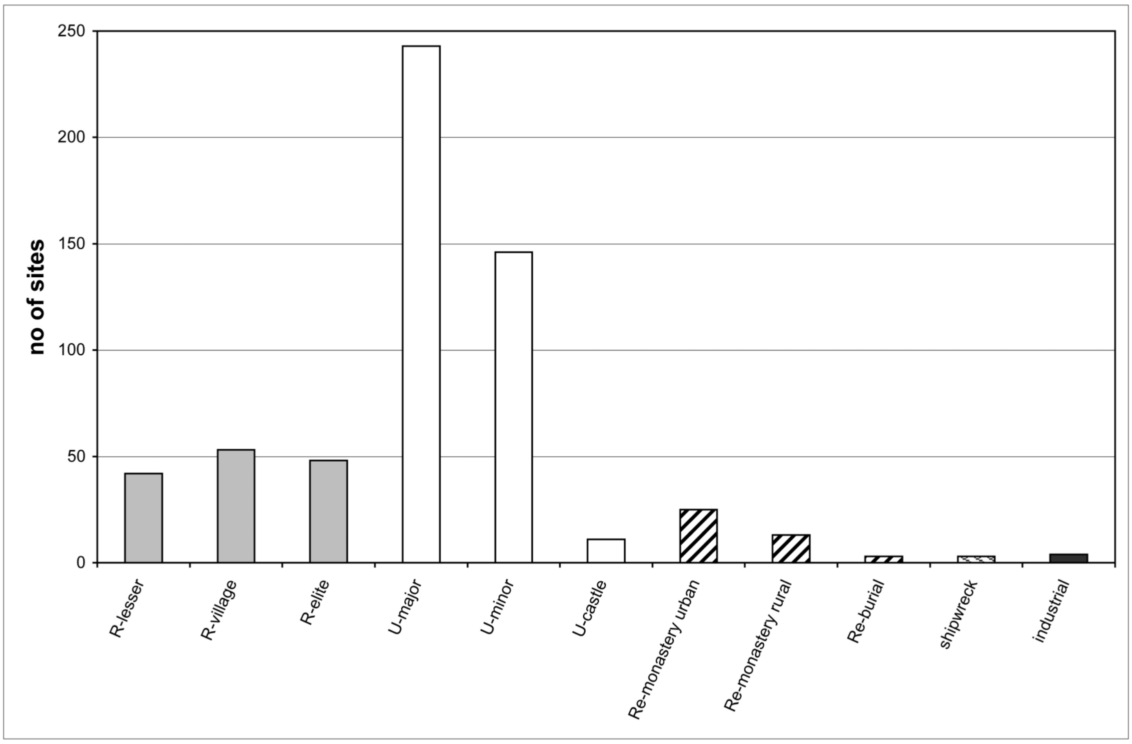

Figure 4.1f: Number of medieval records with exotics, by detailed site type (R=rural, U=urban, Re=religious)

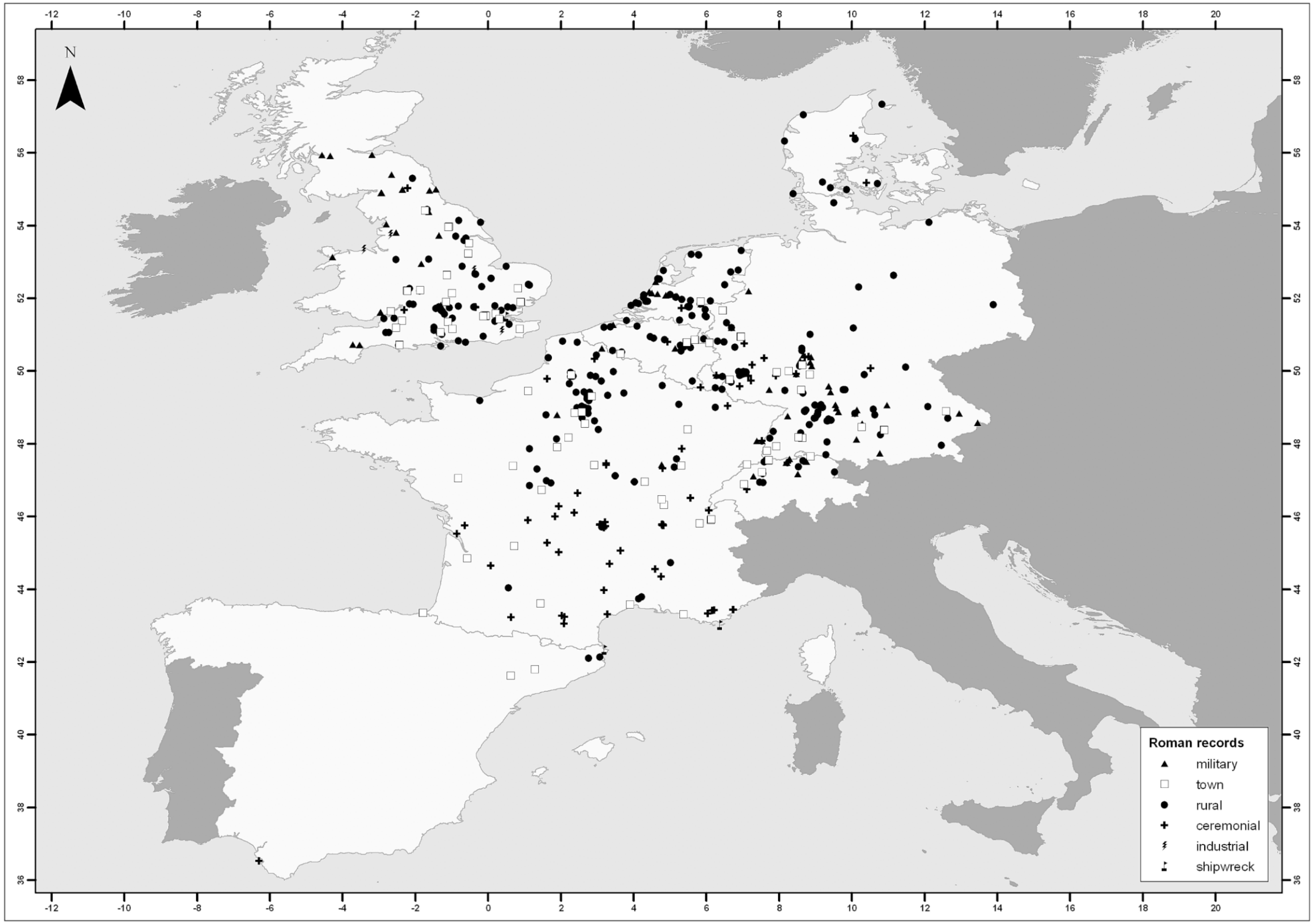

Figure 4.2a: Geographical distribution of the Roman records.

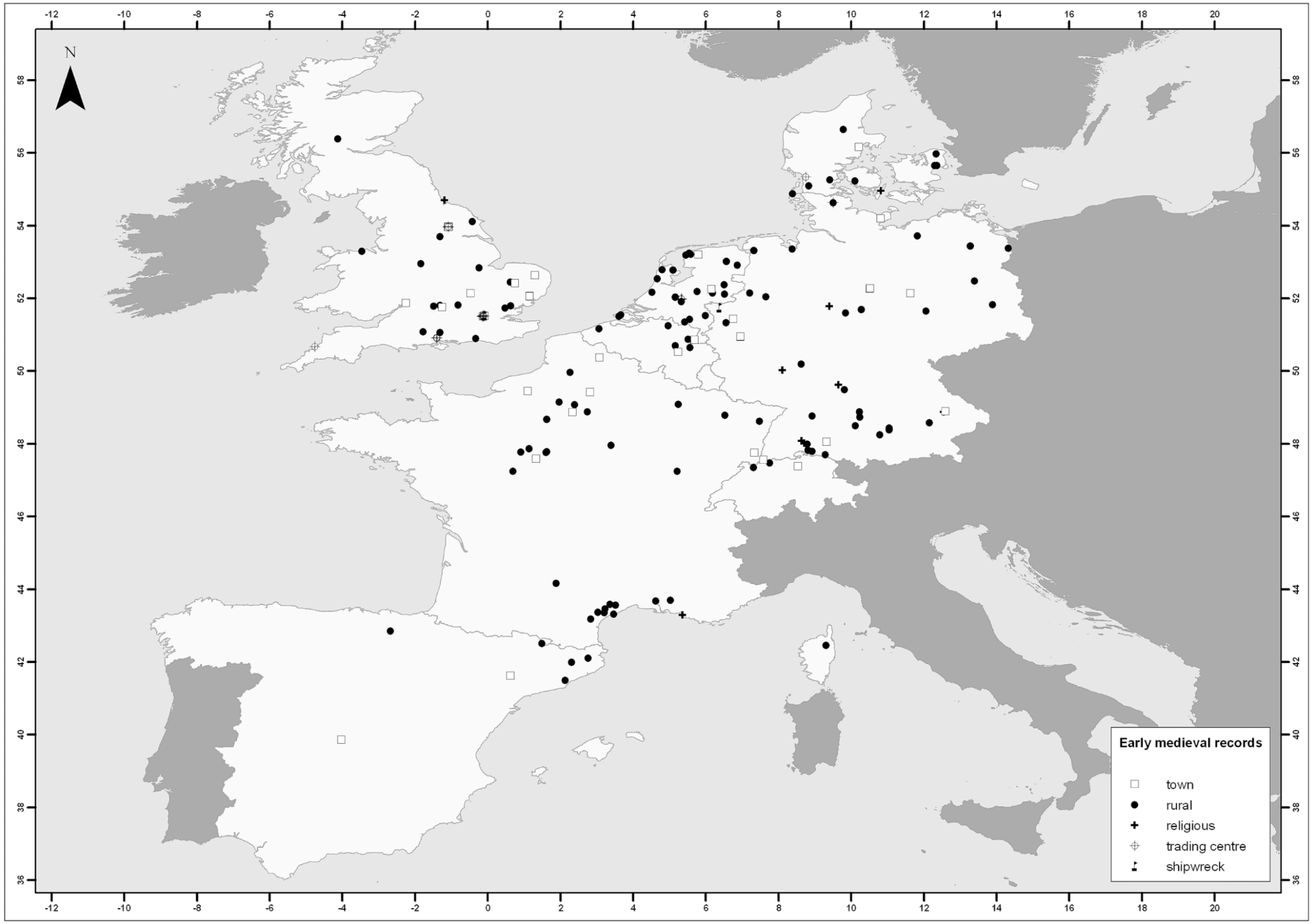

Figure 4.2b: Geographical distribution of the early medieval records.

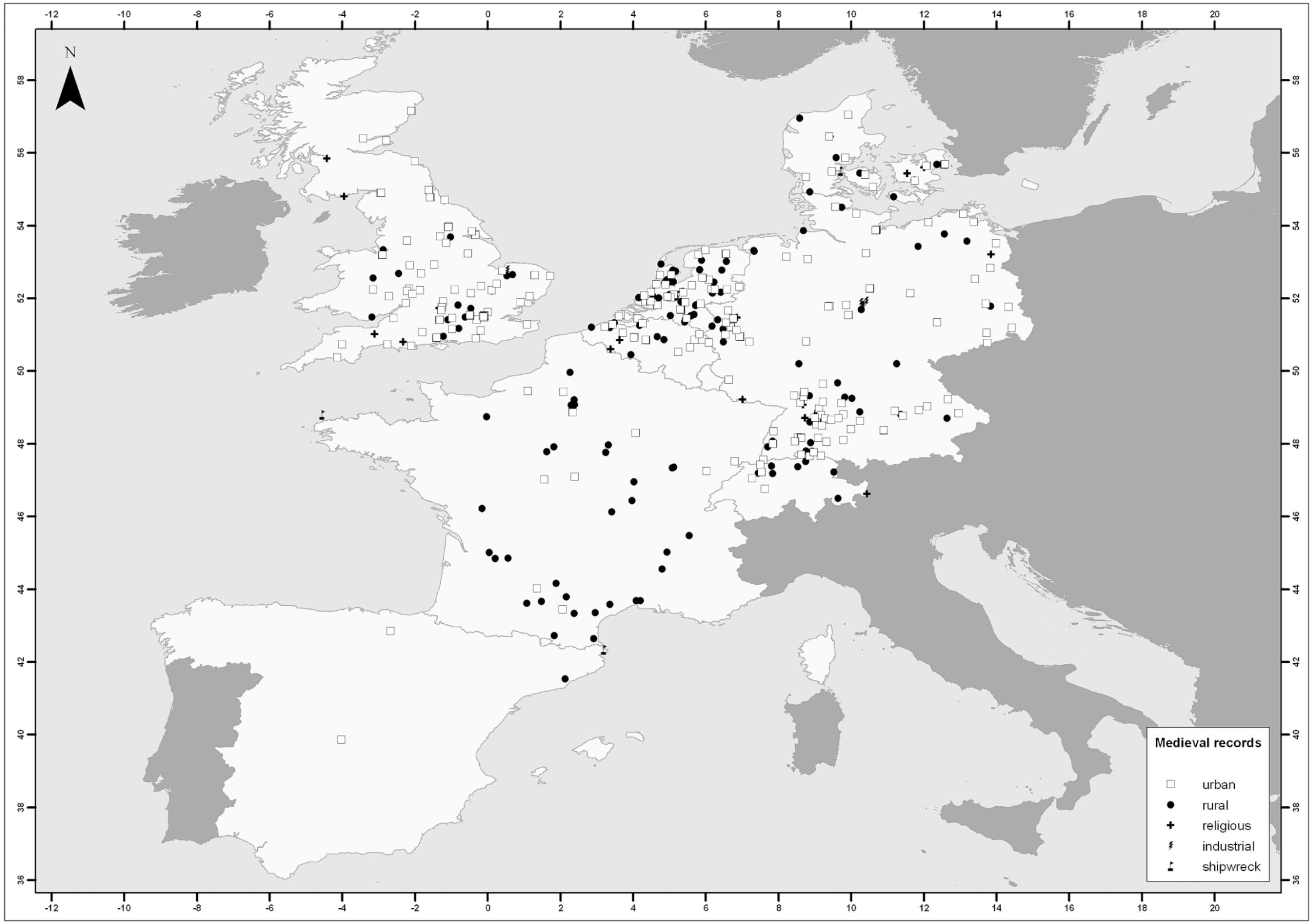

Figure 4.2c: Geographical distribution of the medieval records.

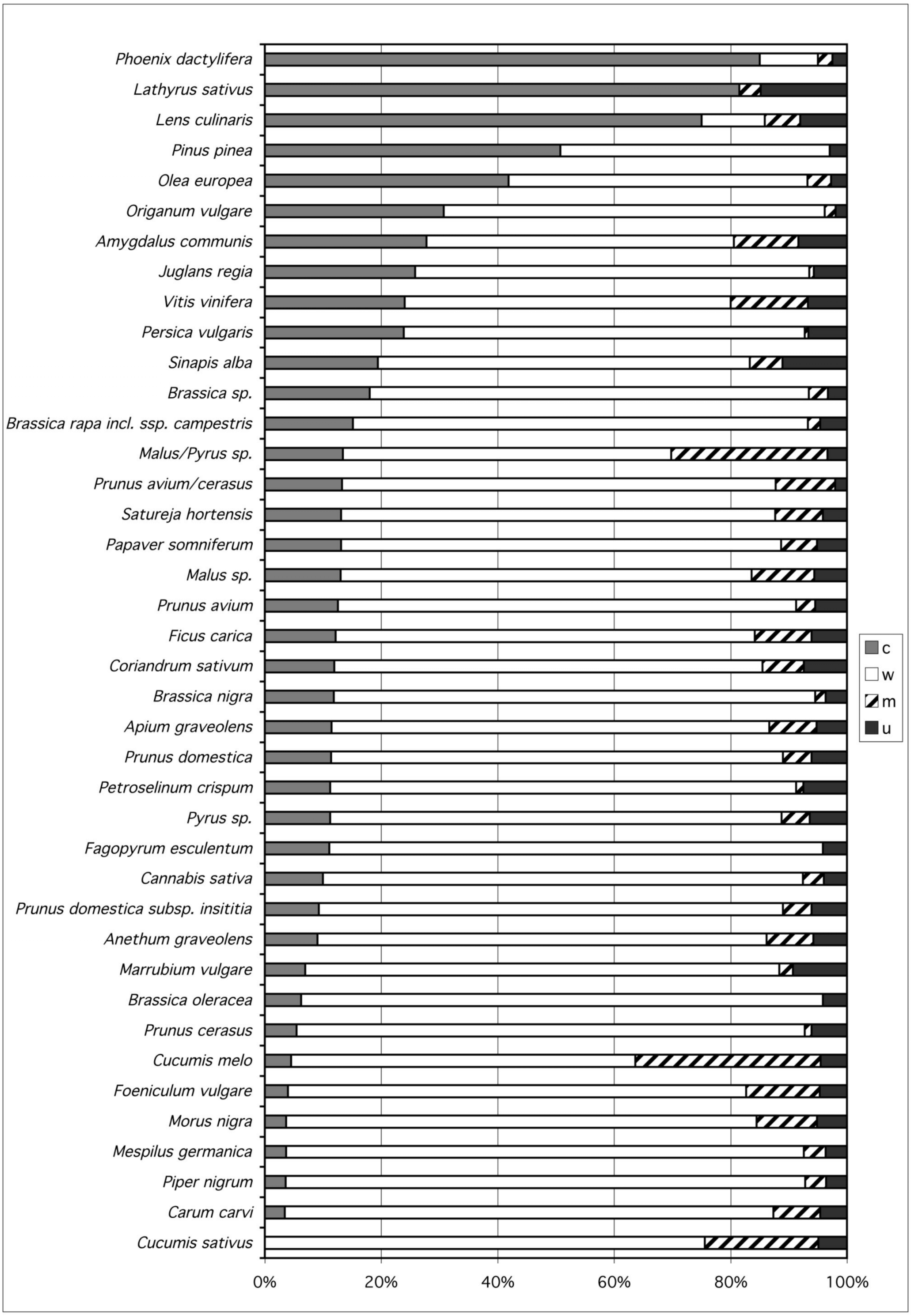

Figure 4.3: Relative proportion of preservation mode of species with >20 occurrences (c=carbonised, w=waterlogged, m=mineralised, u=unknown).

Chapter 5

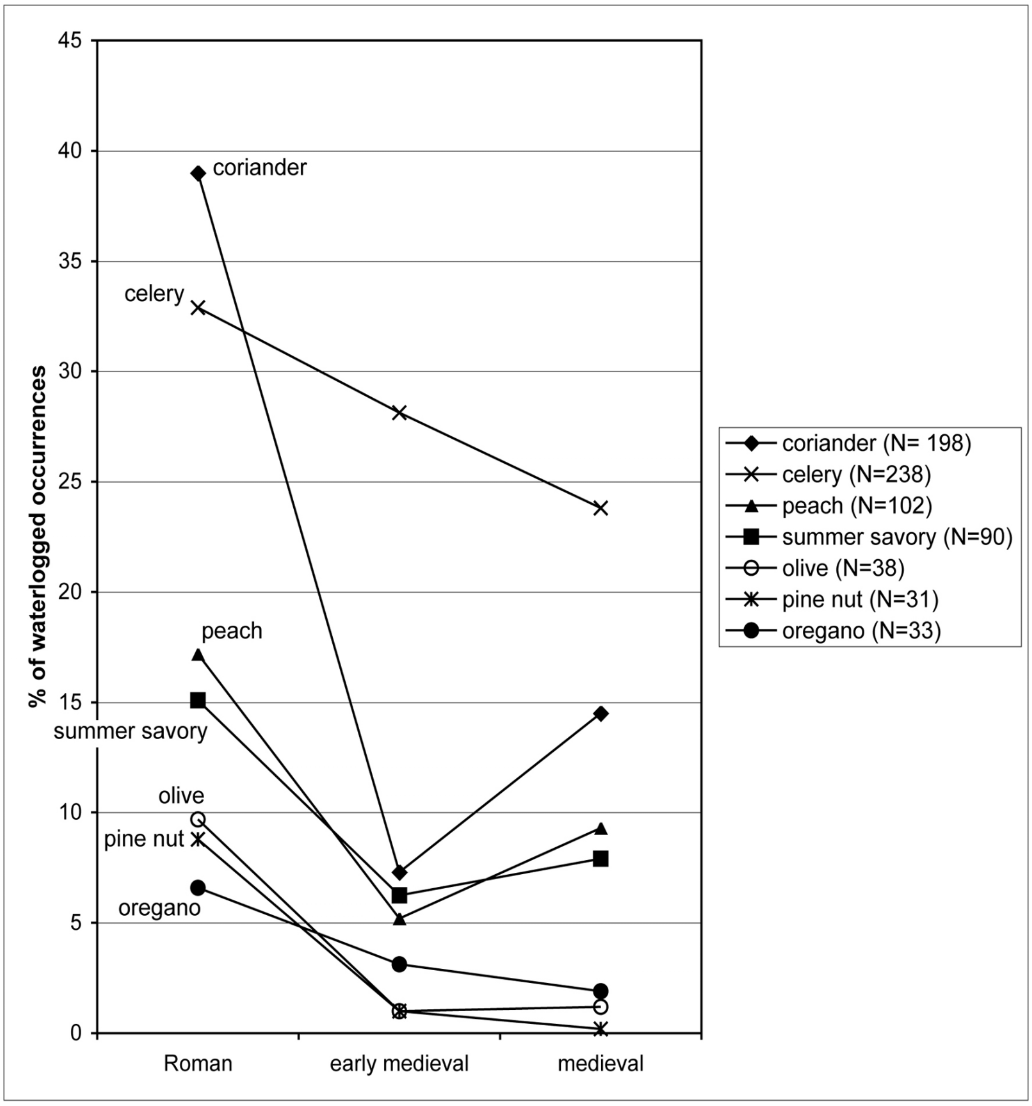

Figure 5.1a: Pattern 1 – waterlogged species which decrease after the Roman period, plotted as the percentage of records with a particular species, by broad period (waterlogged records only). N=the number of occurrences of a species.

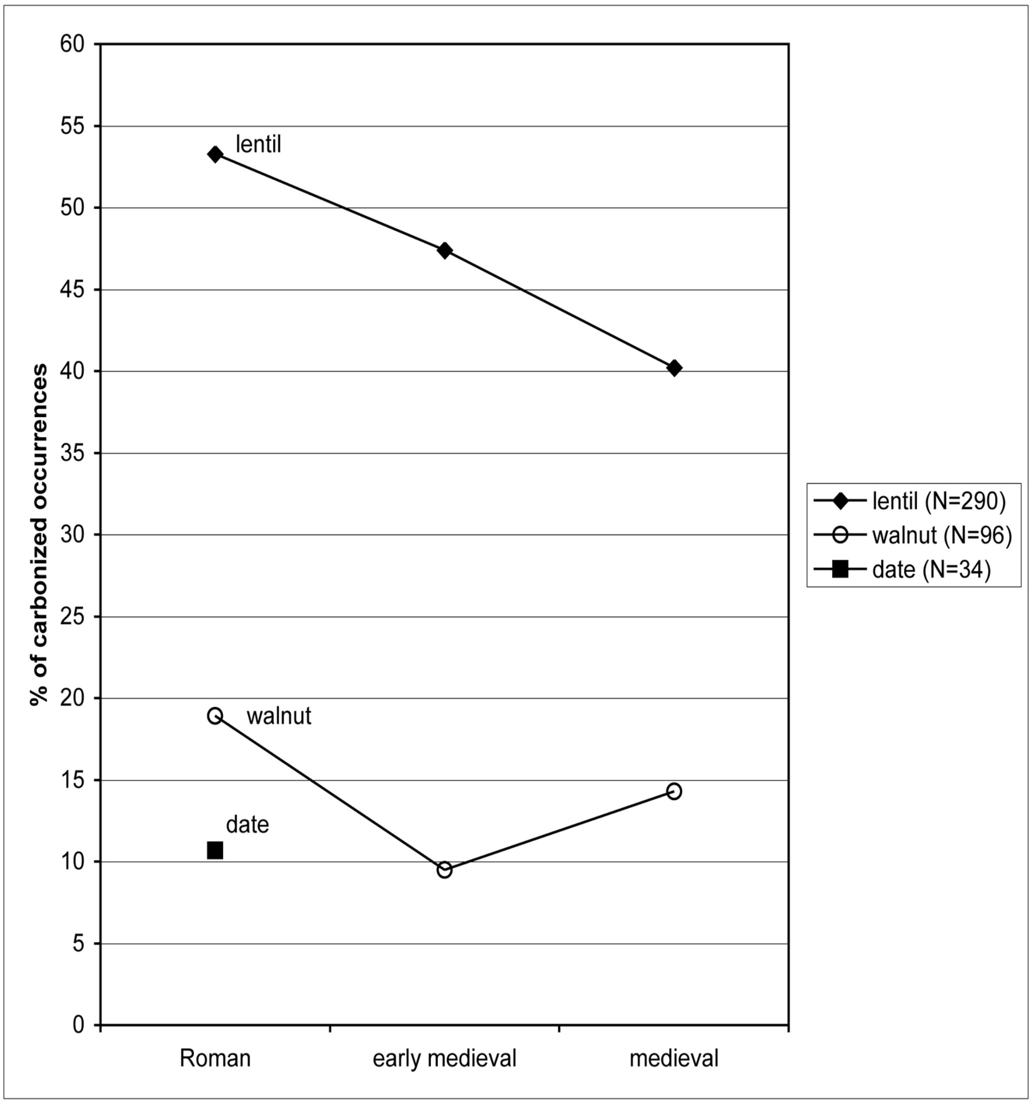

Figure 5.1b: Pattern 1 – carbonized species which decrease after the Roman period, plotted as the percentage of records with a particular species, by broad period (carbonized records only). N=the number of occurrences of a species.

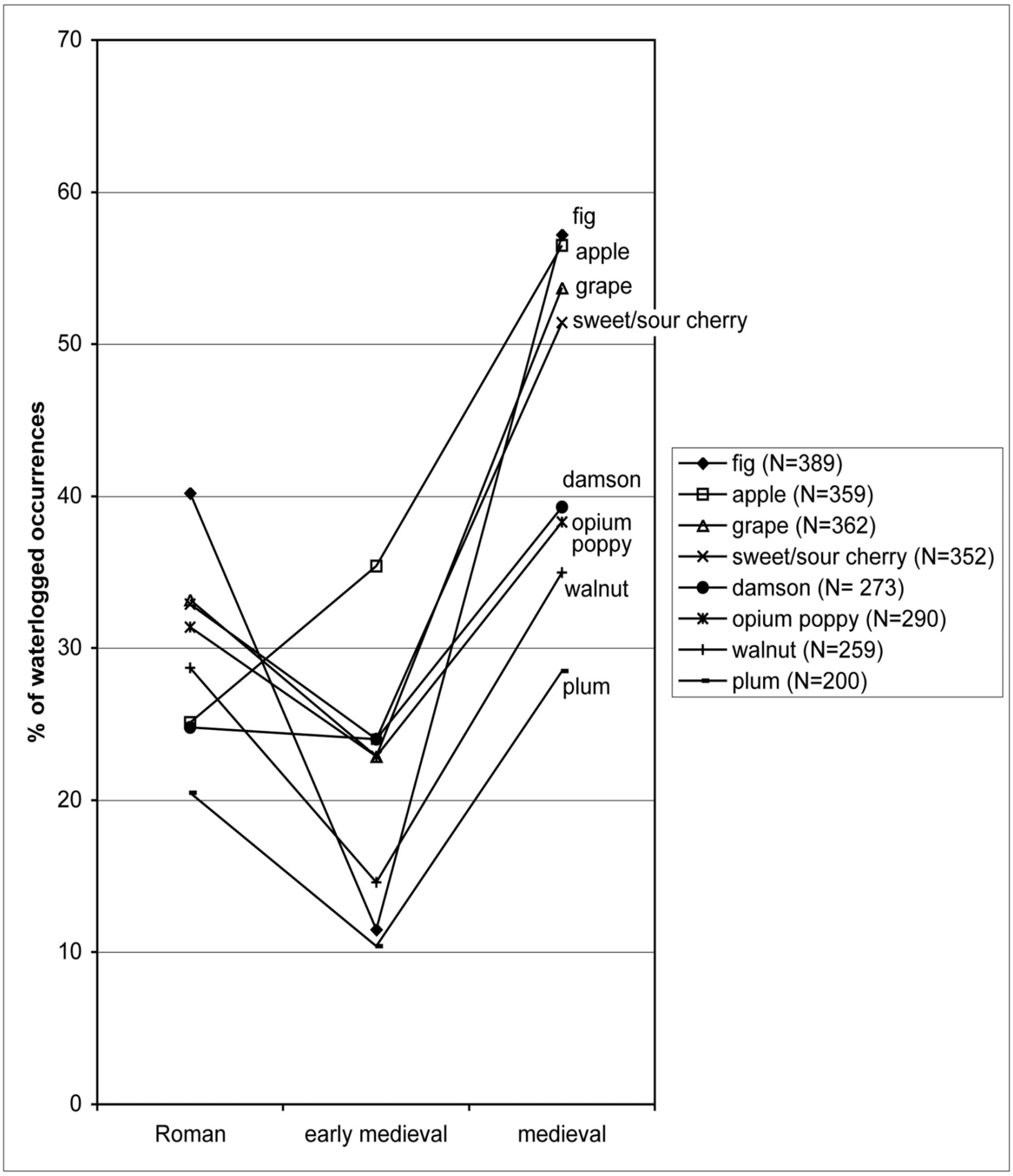

Figure 5.1c: Pattern 2 - common waterlogged species which increase further in the medieval period, plotted as the percentage of records with a particular species, by broad period (waterlogged records only). N=the number of occurrences of a species.

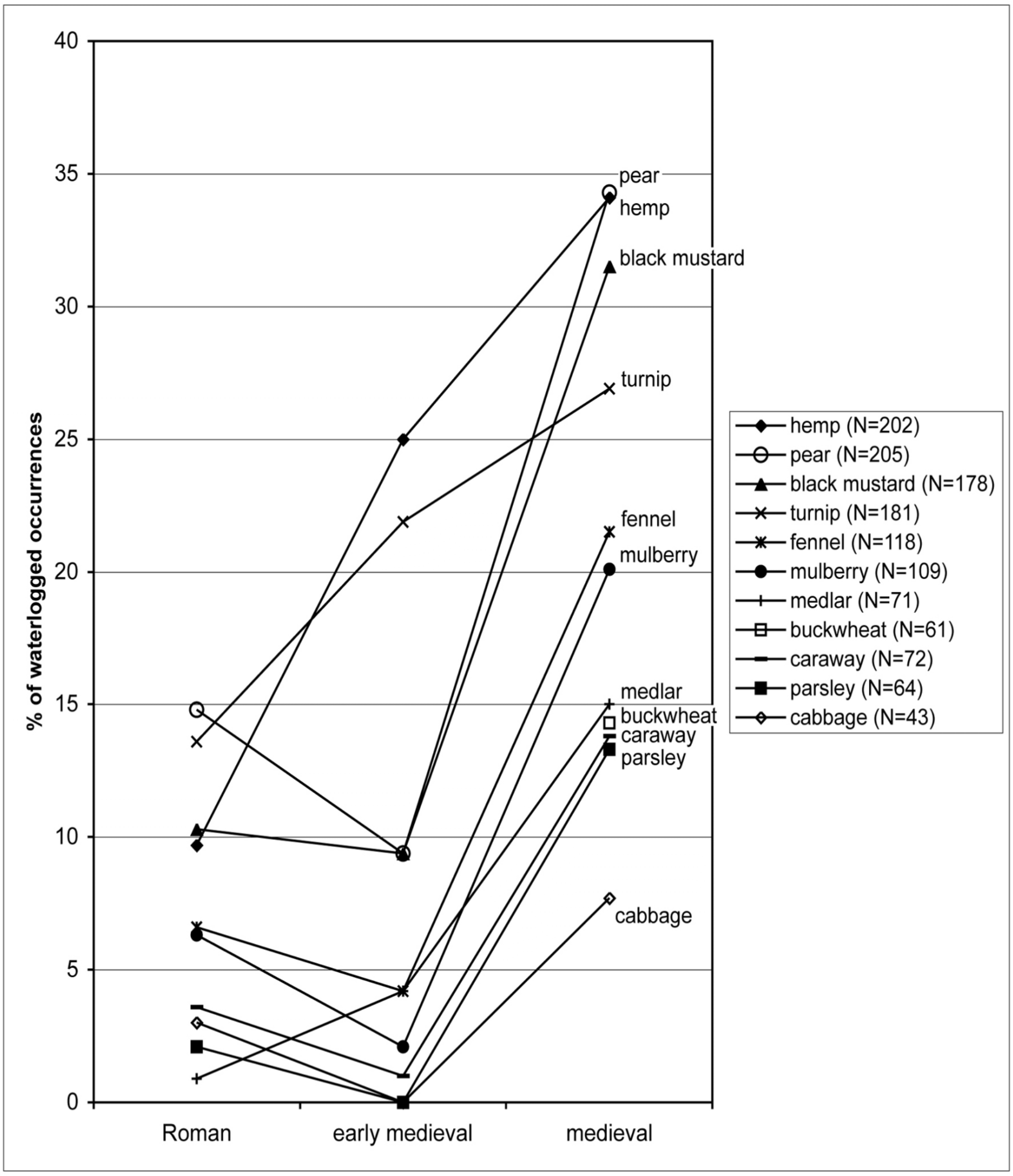

Figure 5.1d: Pattern 3 - waterlogged species which increase in the medieval period, plotted as the percentage of records with a particular species, by broad period (waterlogged records only). N=the number of occurrences of a species.

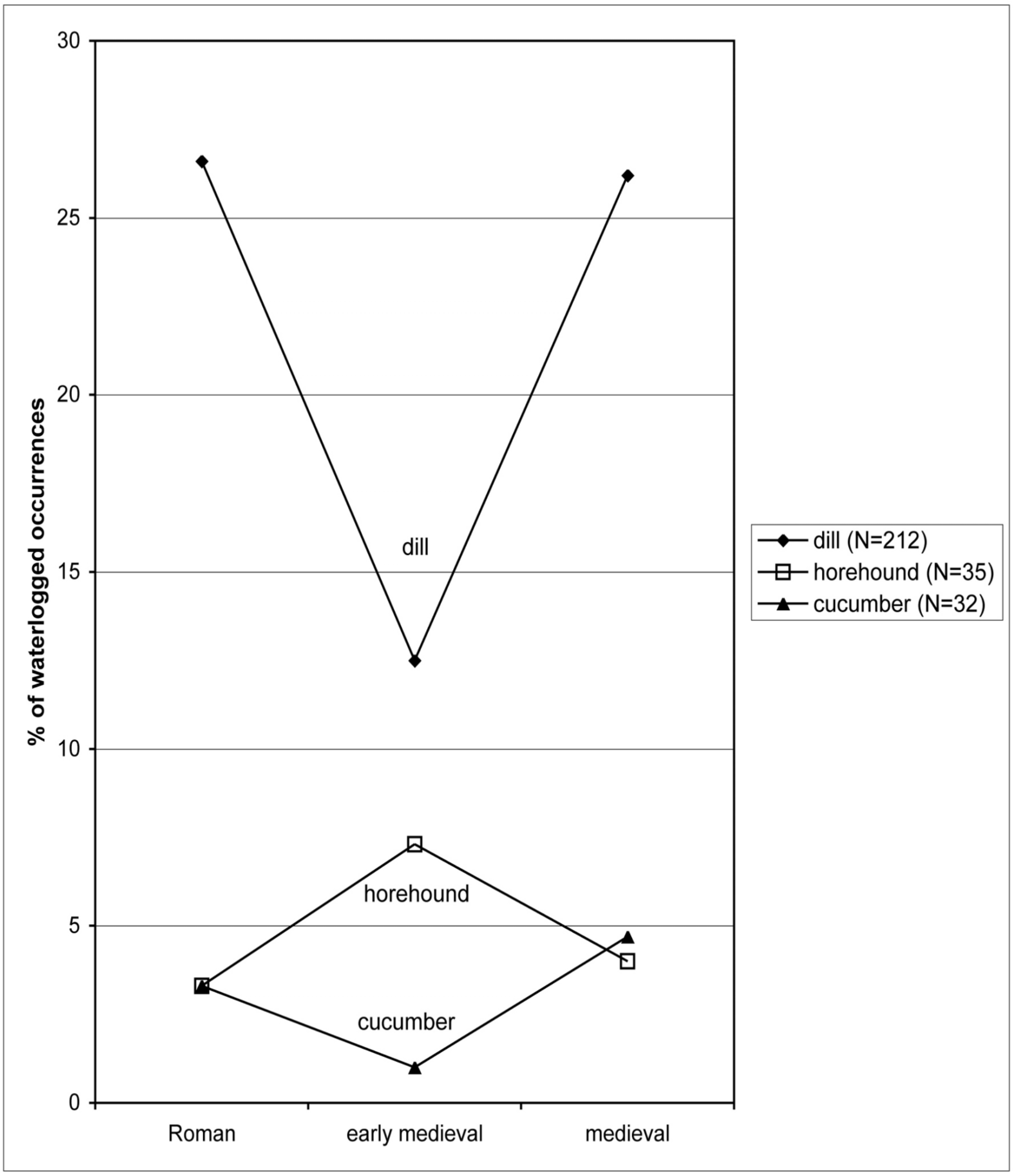

Figure 5.1e: Pattern 4 - waterlogged species which remain relatively stable, plotted as the percentage of records with a particular species, by broad period (waterlogged records only). N=the number of occurrences of a species.

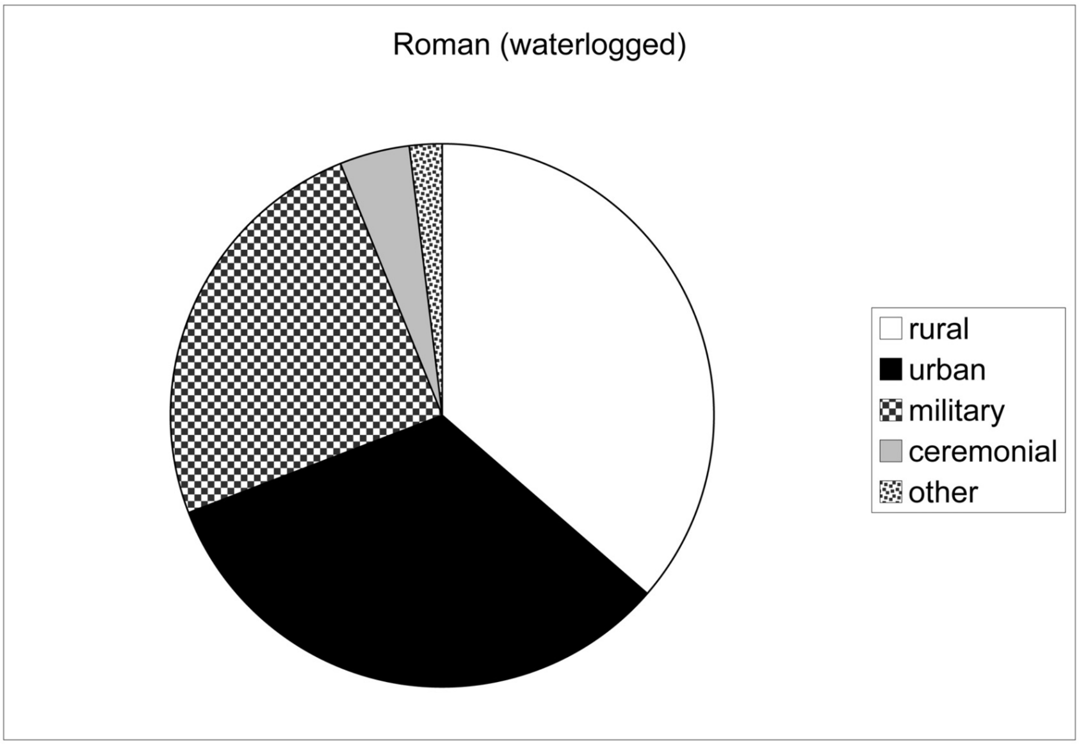

Figure 5.2a: The relative proportion of the various site types (N=331) with waterlogged food plants in the Roman period.

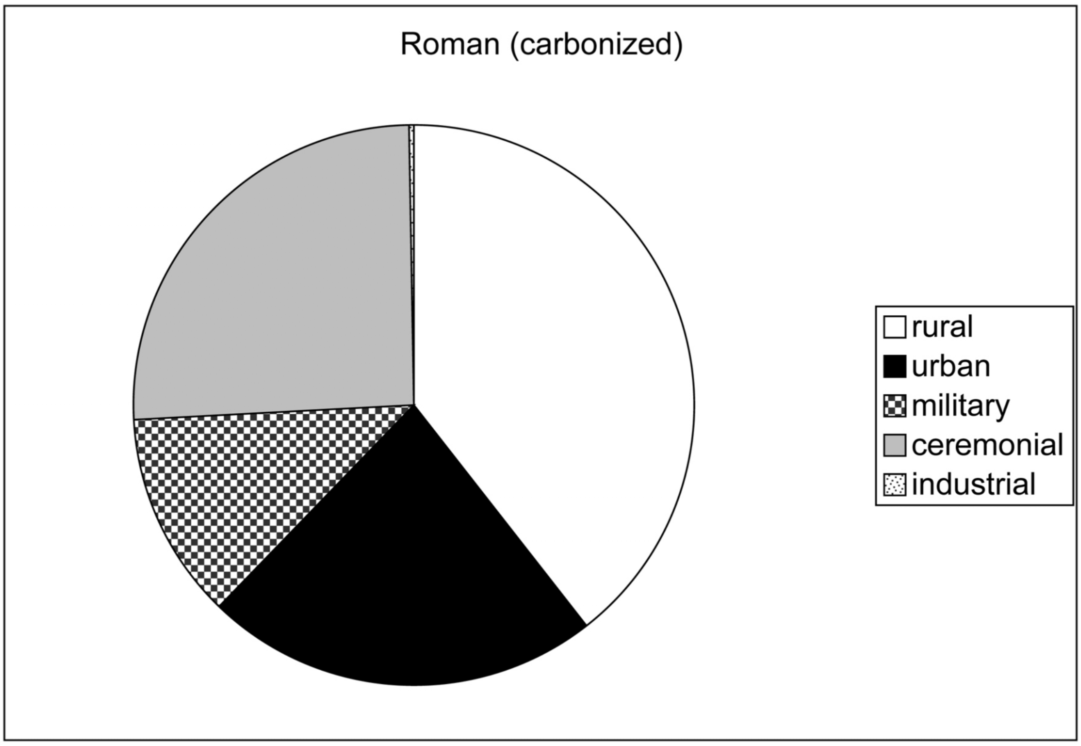

Figure 5.2b: The relative proportion of the various site types (N=317) with carbonized food plants in the Roman period.

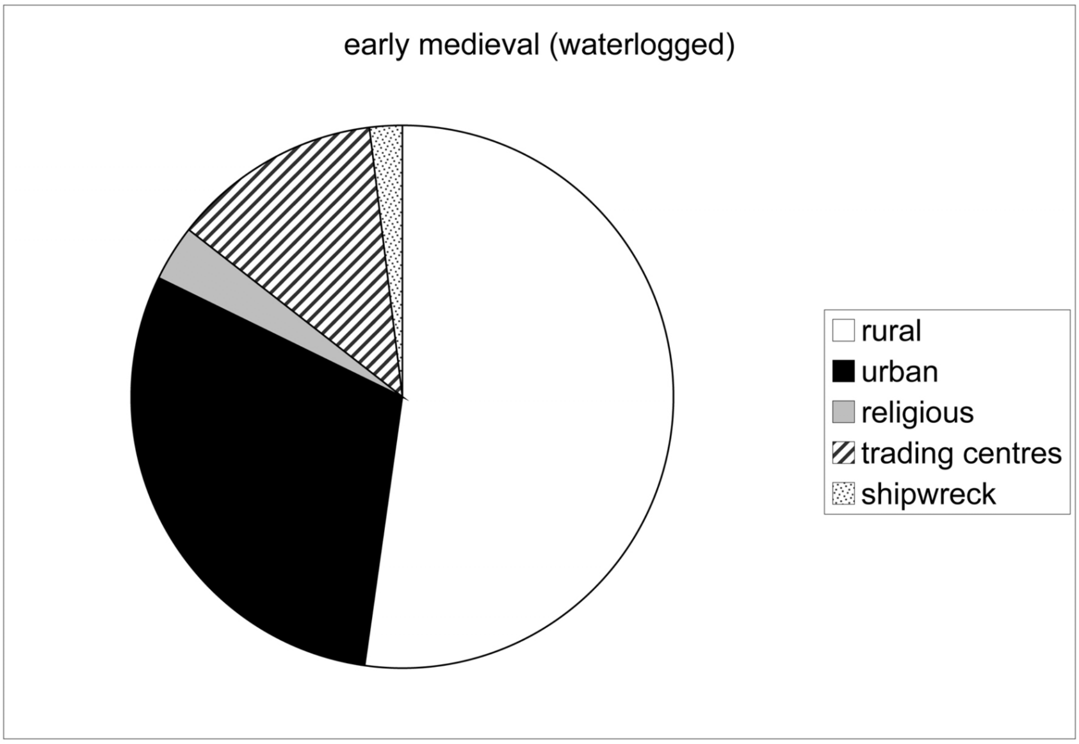

Figure 5.2c: The relative proportion of the various site types (N=96) with waterlogged food plants in the early medieval period.

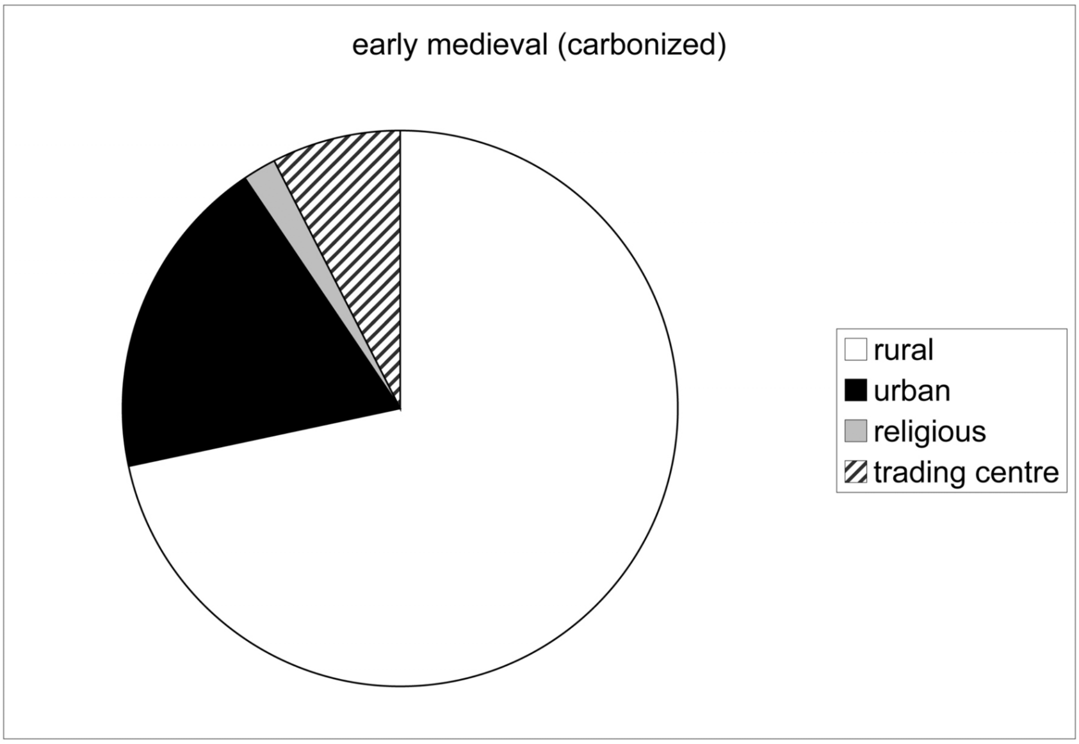

Figure 5.2d: The relative proportion of the various site types (N=95) with carbonized food plants in the early medieval period.

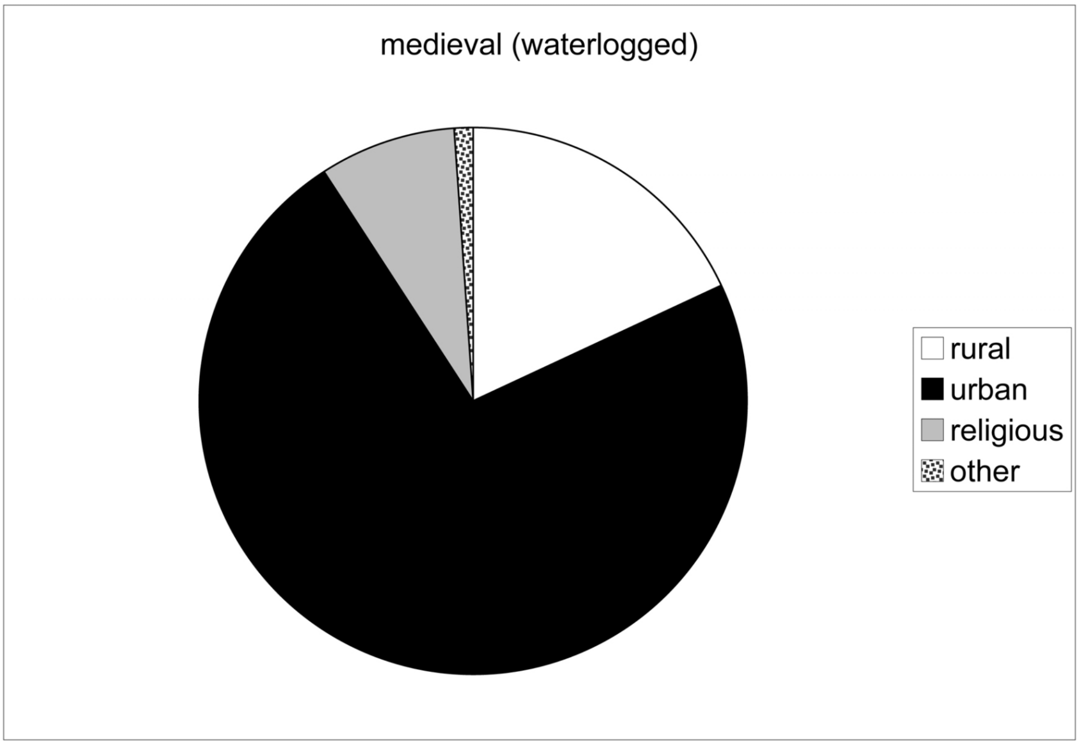

Figure 5.2e: The relative proportion of the various site types (N=428) with waterlogged food plants in the medieval period.

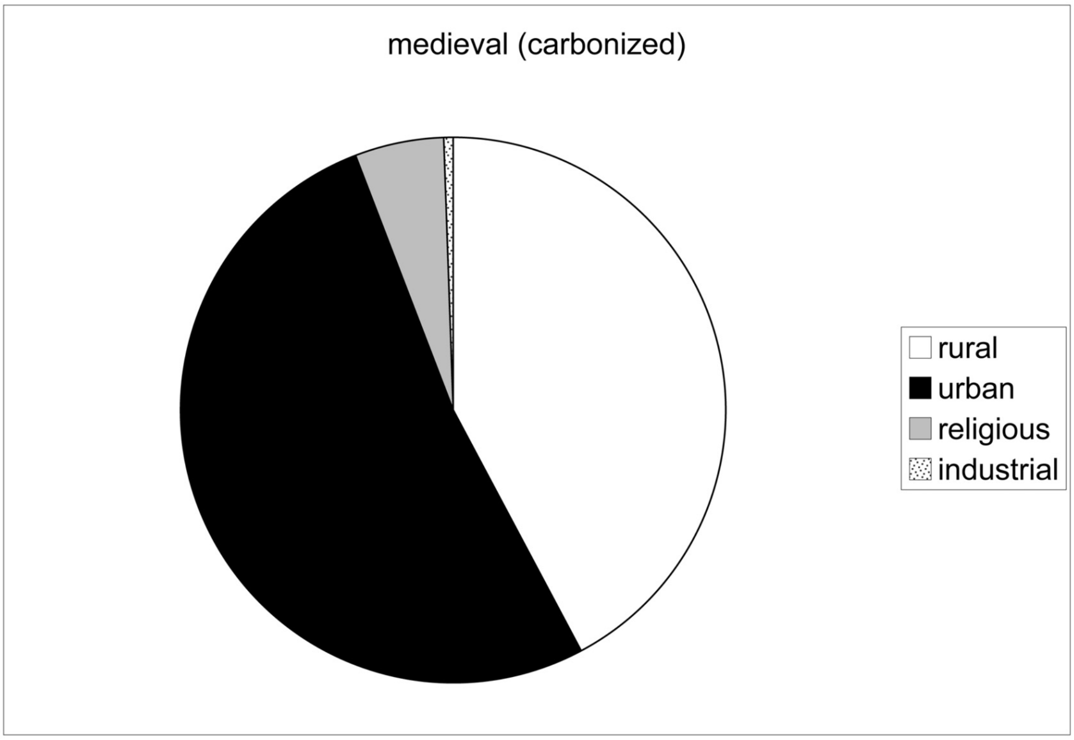

Figure 5.2f: The relative proportion of the various site types (N=189) with carbonized food plants in the medieval period.

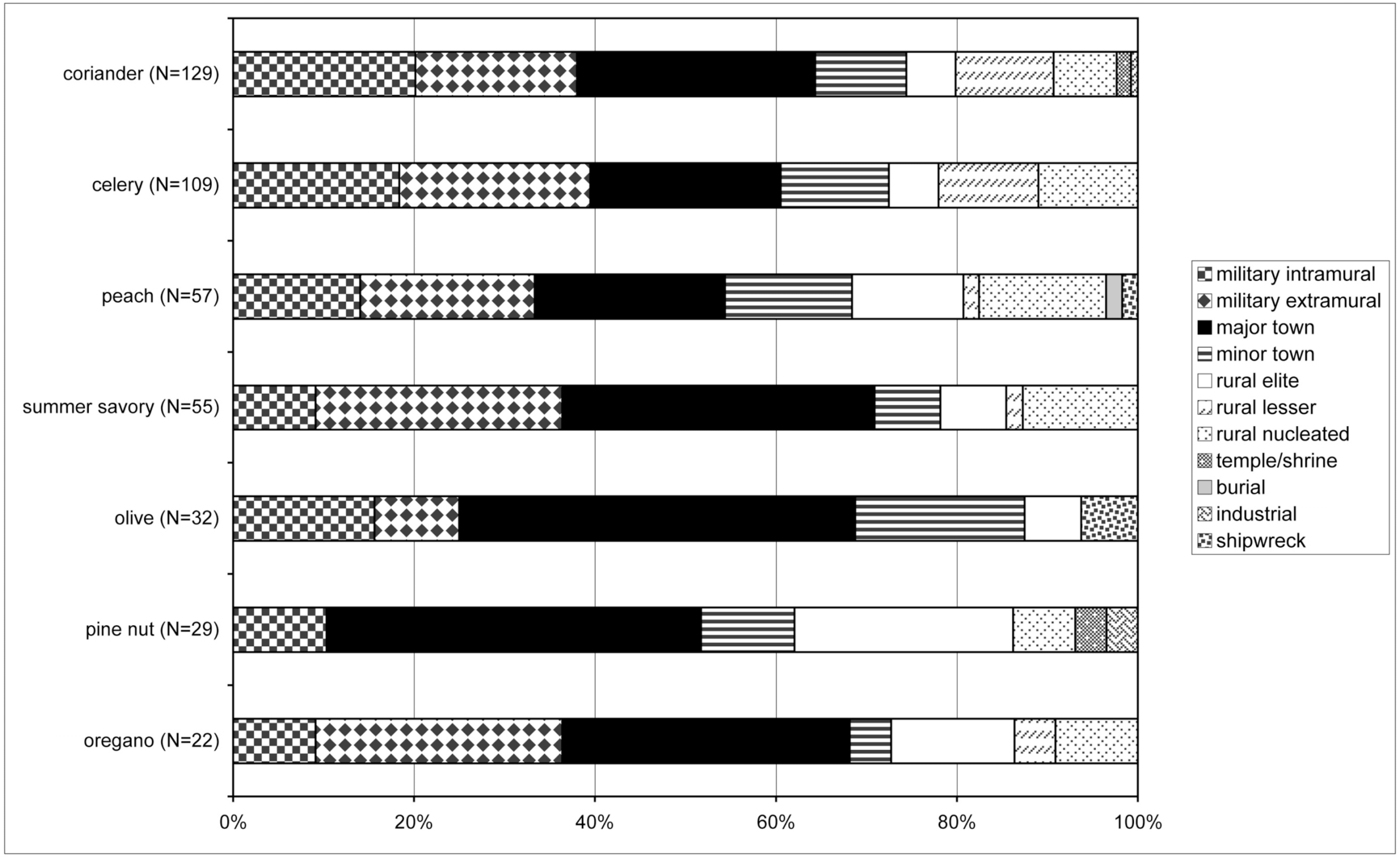

Figure 5.2.1a: The social distribution of waterlogged Pattern 1 species in the Roman period (N=the number of records where a species occurs).

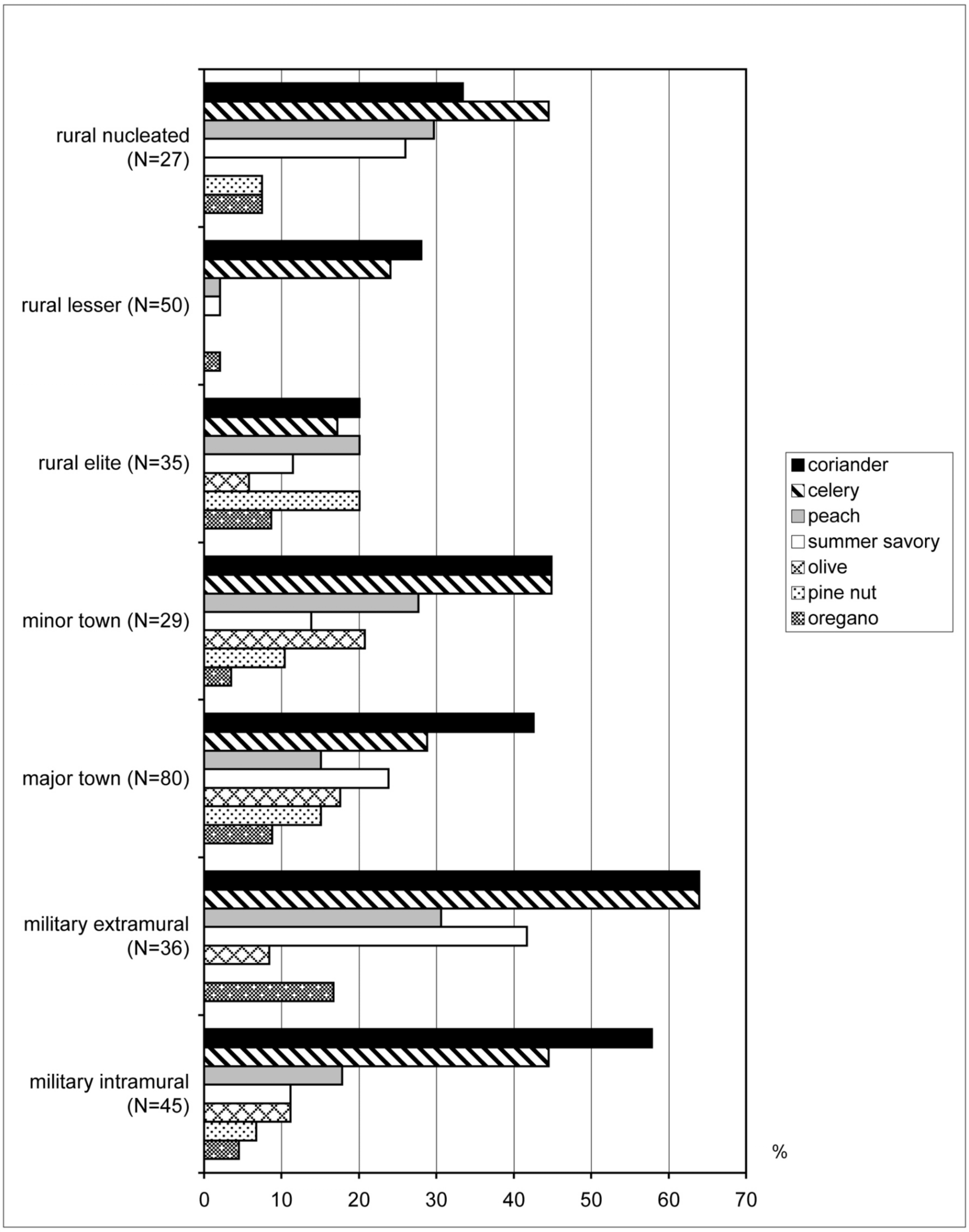

Figure 5.2.1b: Approximate abundance of each species (of Pattern 1 waterlogged) in selected site types for the Roman period (N=the number of Roman waterlogged records for each site type).

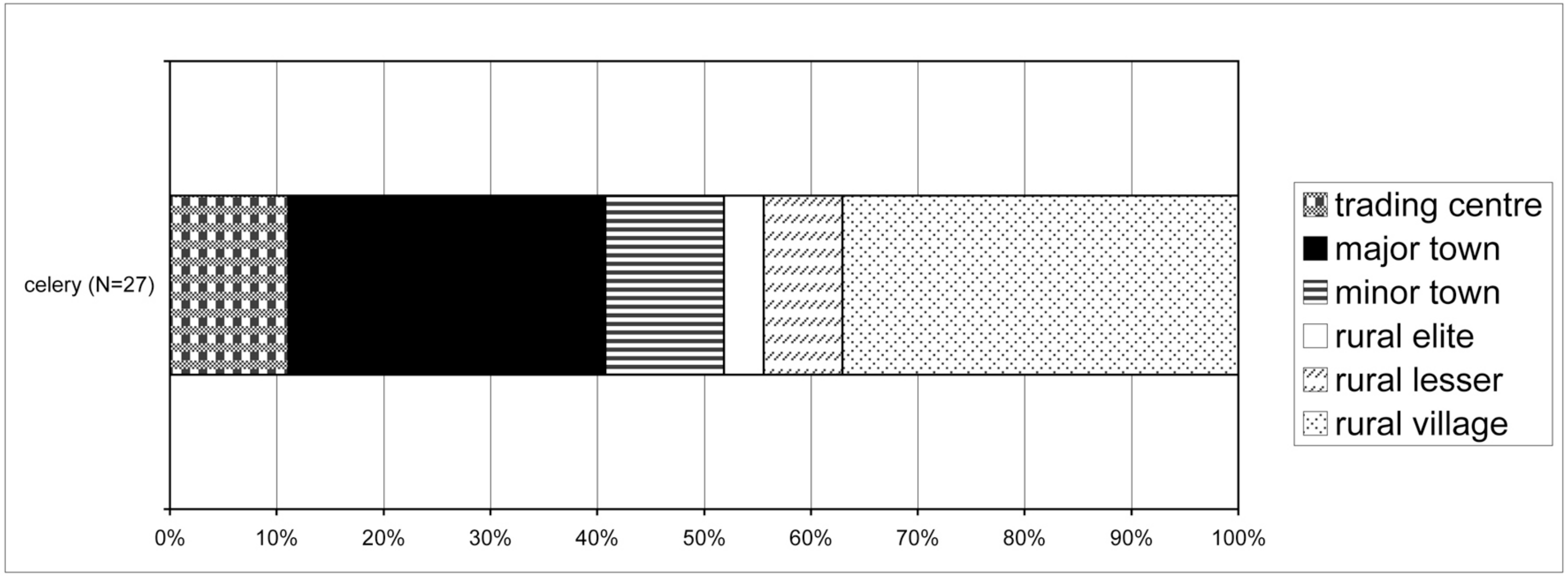

Figure 5.2.1c: The social distribution of waterlogged celery (Pattern 1) in the early medieval period (N=the number of records where celery occurs).

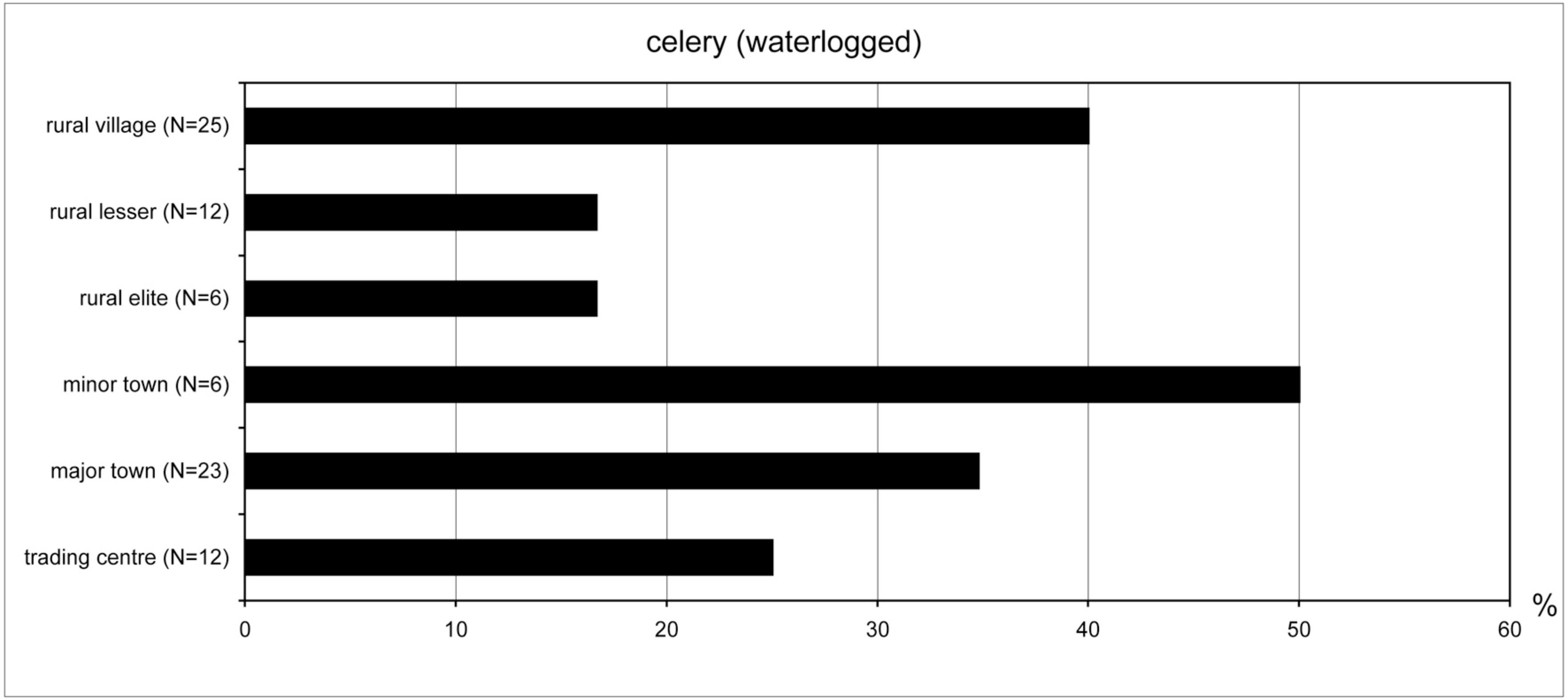

Figure 5.2.1d: Approximate abundance of early medieval waterlogged celery records in selected site types (N=the number of early medieval waterlogged records for each site type).

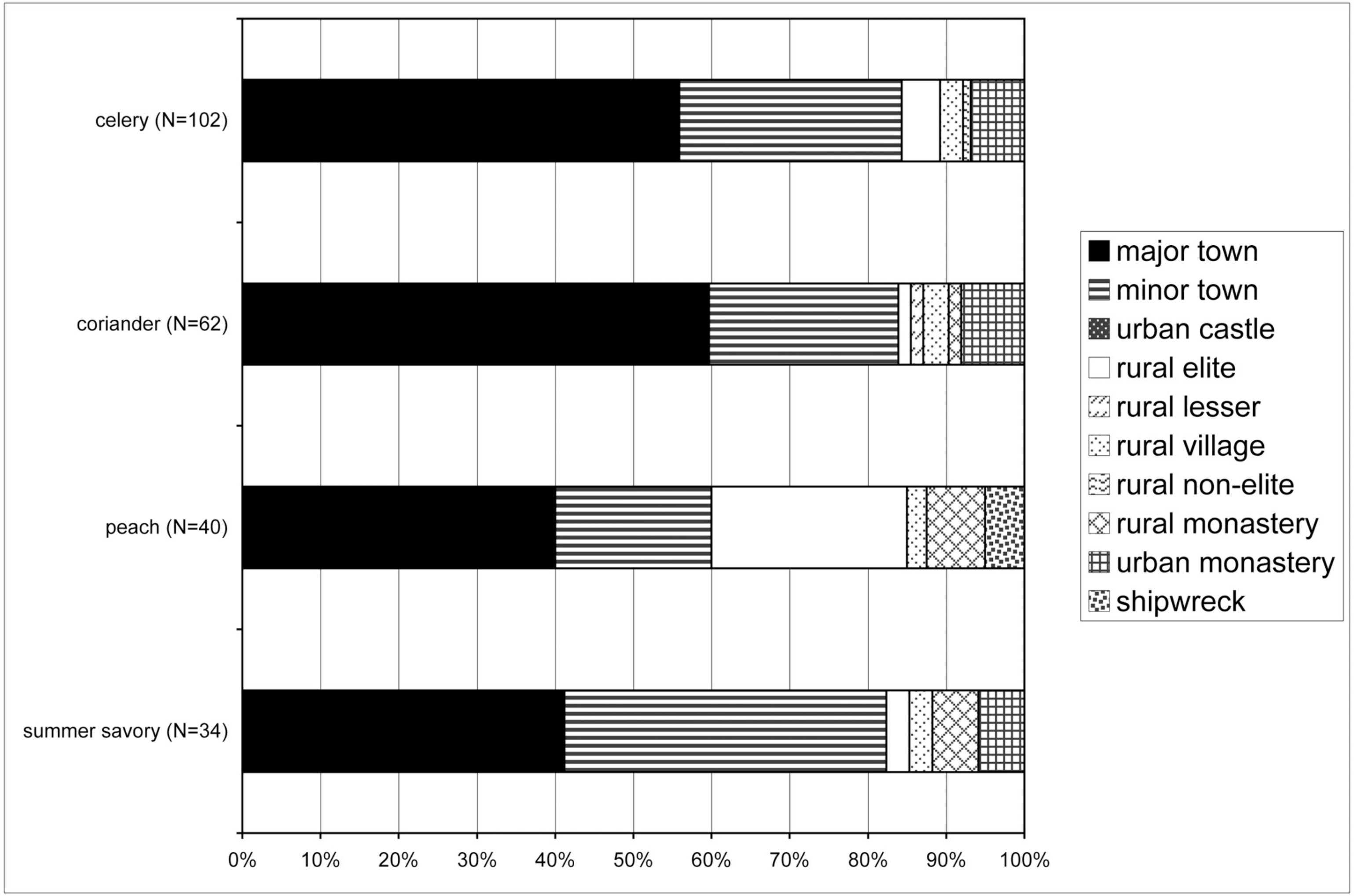

Figure 5.2.1e: The social distribution of waterlogged Pattern 1 species in the medieval period (N=the number of records where a species occurs).

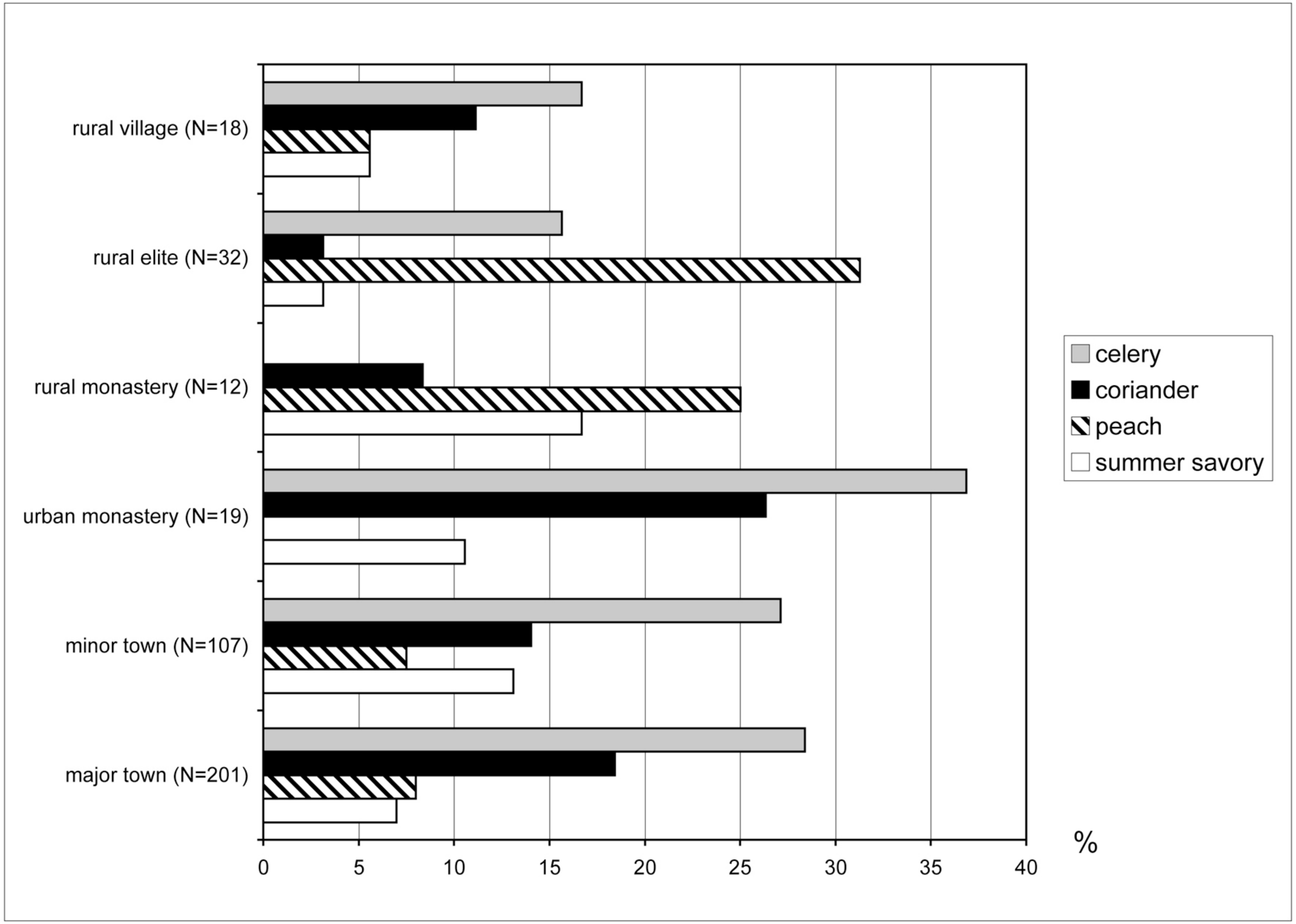

Figure 5.2.1f: Approximate abundance of waterlogged celery, coriander, peach and summer savory in selected site types for the medieval period (N=the number of medieval waterlogged records for each site type).

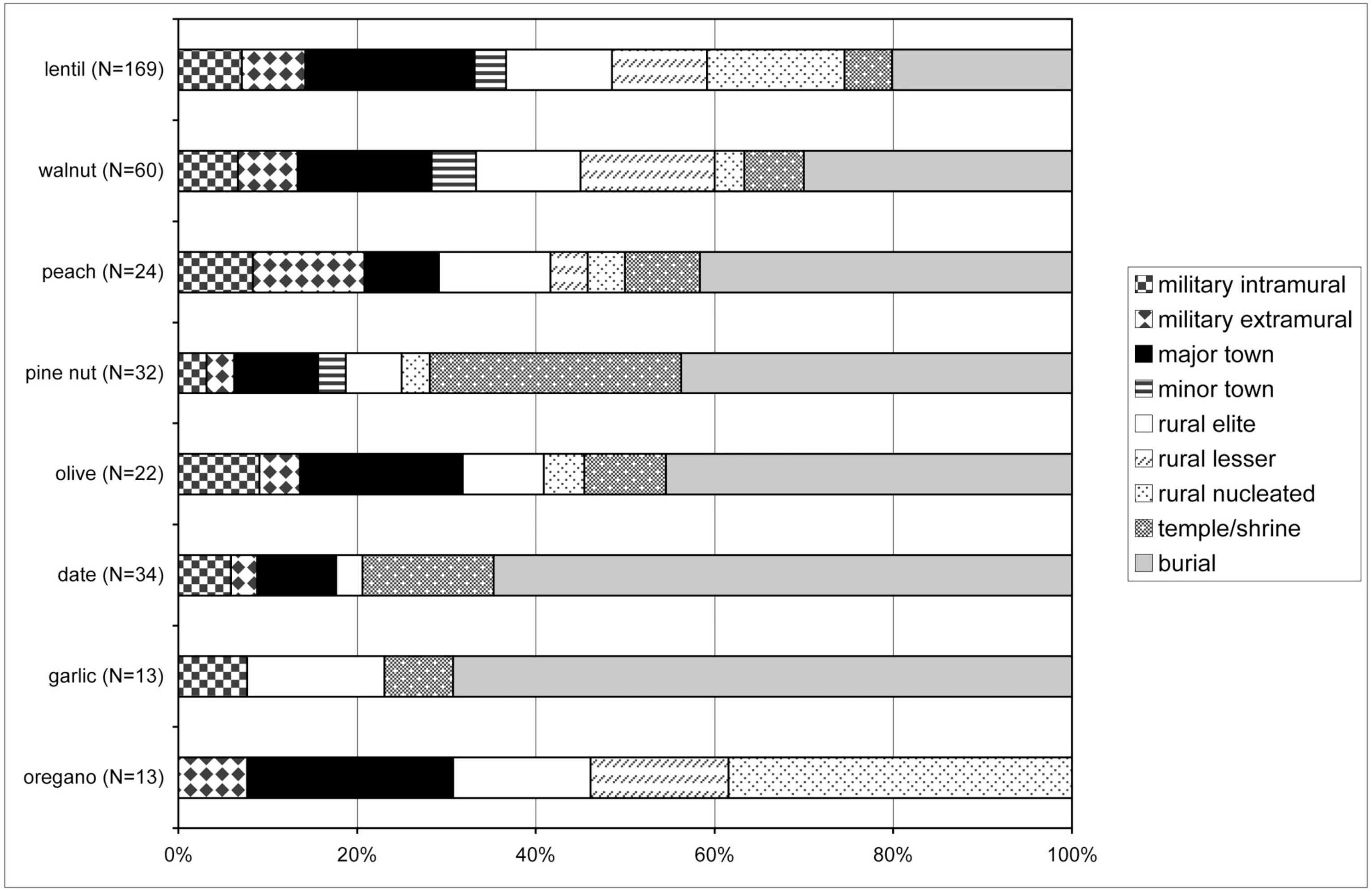

Figure 5.2.1g: The social distribution of carbonized Pattern 1 species in the Roman period (N= the number of records where a species occurs).

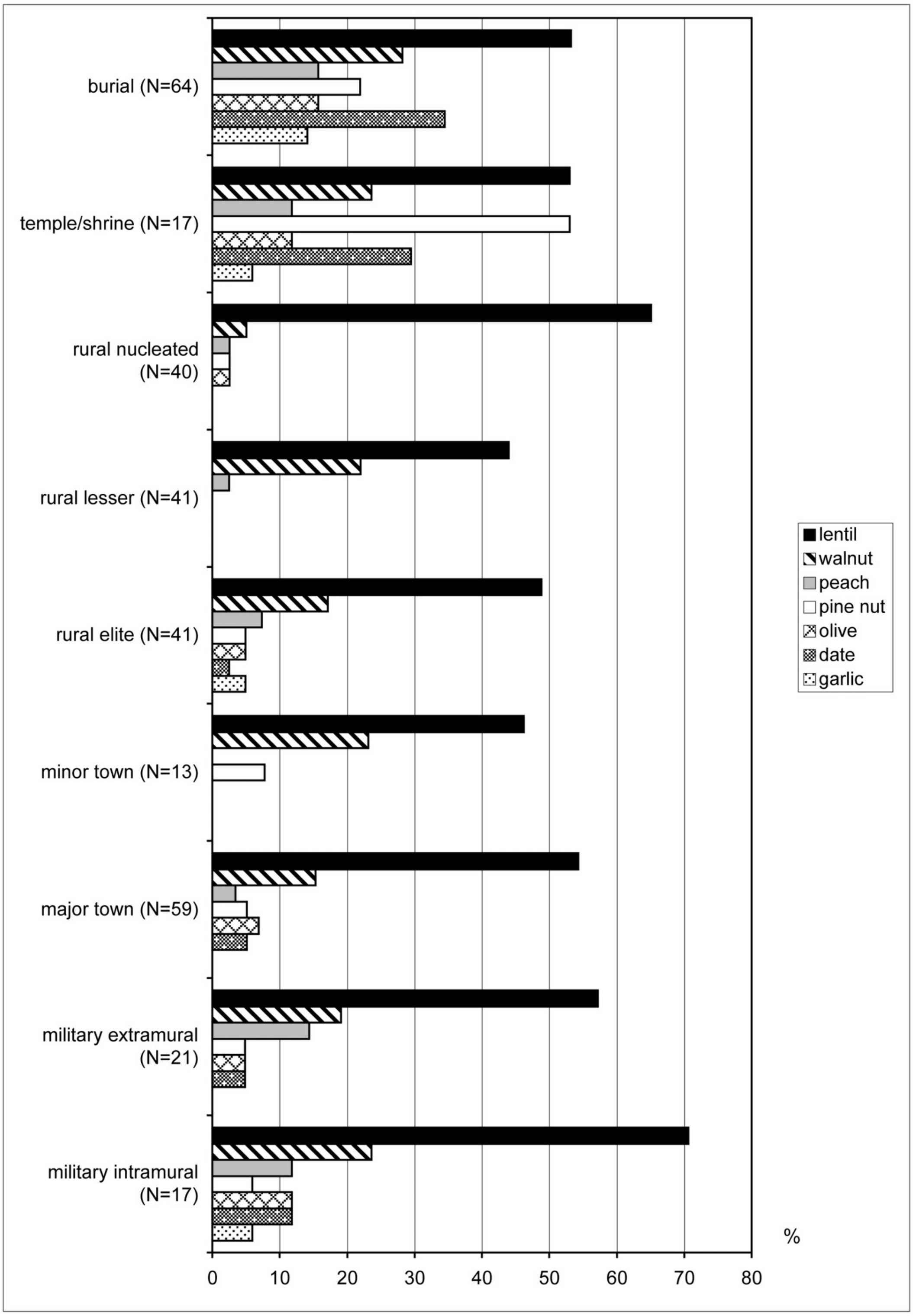

Figure 5.2.1h: Approximate abundance of each species (of Pattern 1 carbonized) in selected site types for the Roman period (N=the number of Roman carbonized records for each site type).

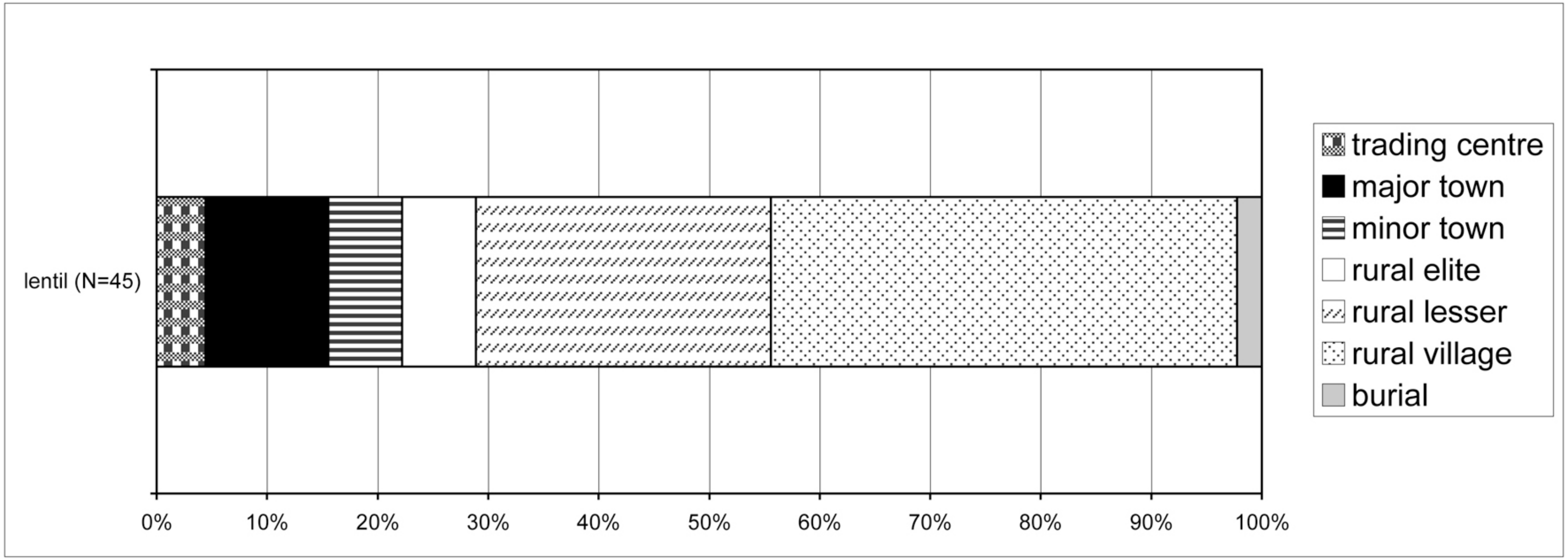

Figure 5.2.1i: The social distribution of carbonized Pattern 1 species in the early medieval period (N=the number of records where a species occurs).

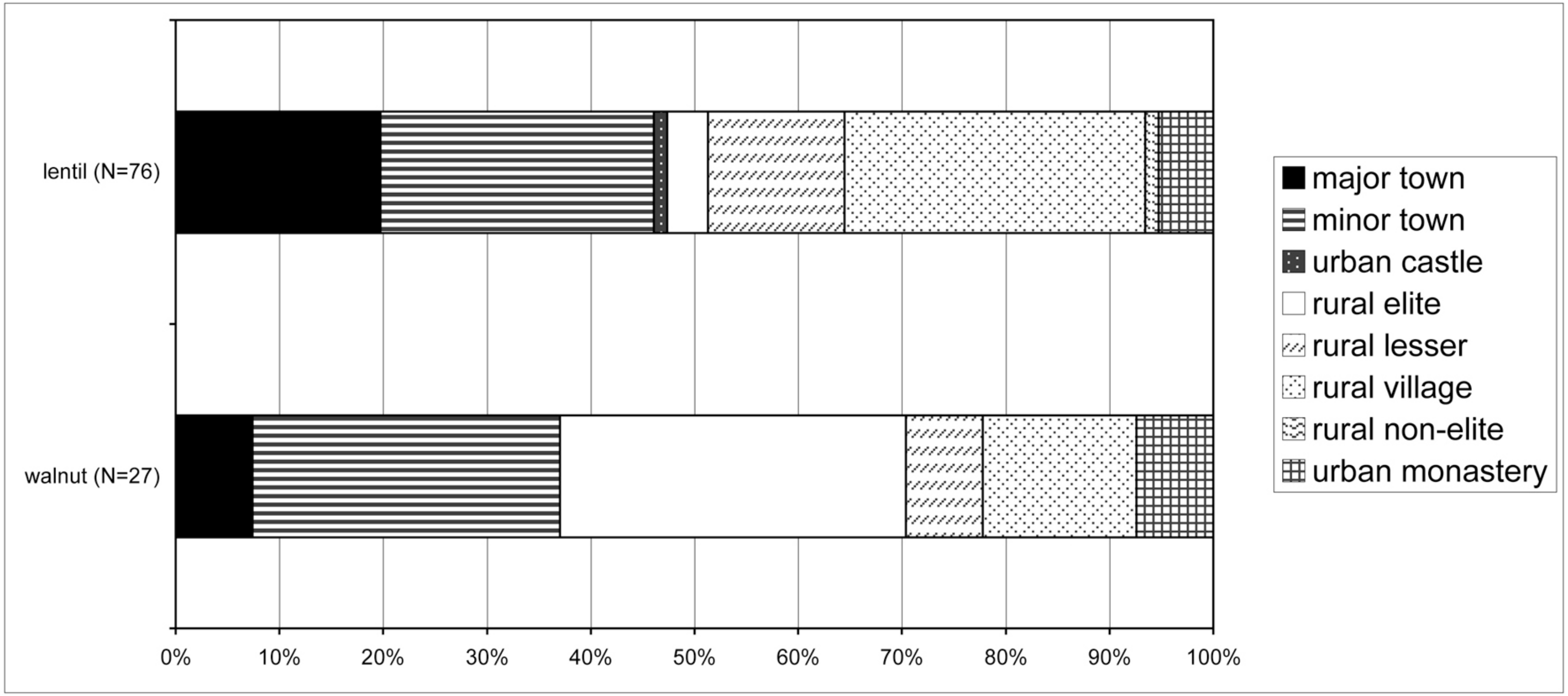

Figure 5.2.1j: The social distribution of carbonized Pattern 1 species in the medieval period (N=the number of records where a species occurs).

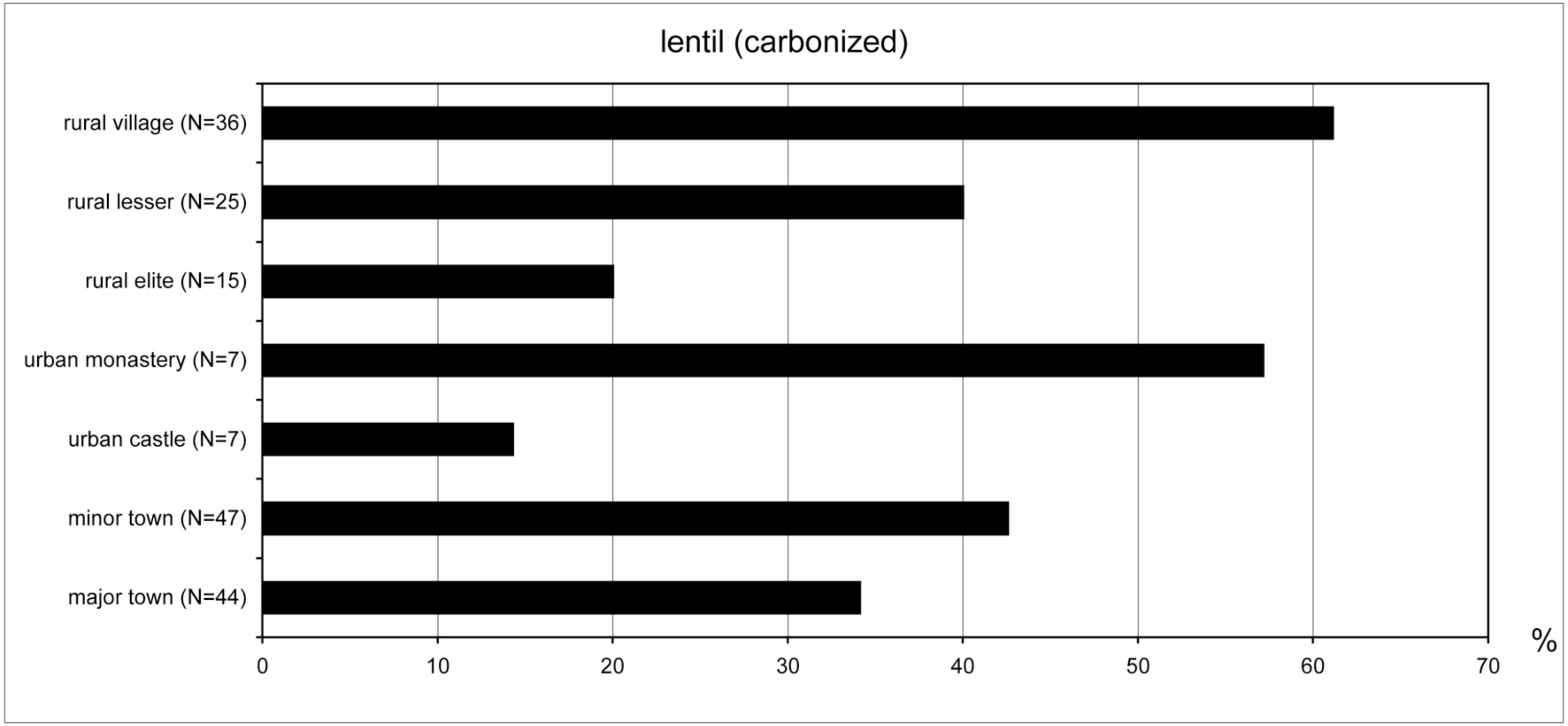

Figure 5.2.1k: Approximate abundance of medieval carbonized lentil records in selected site types (N=the number of medieval carbonized records for each site type).

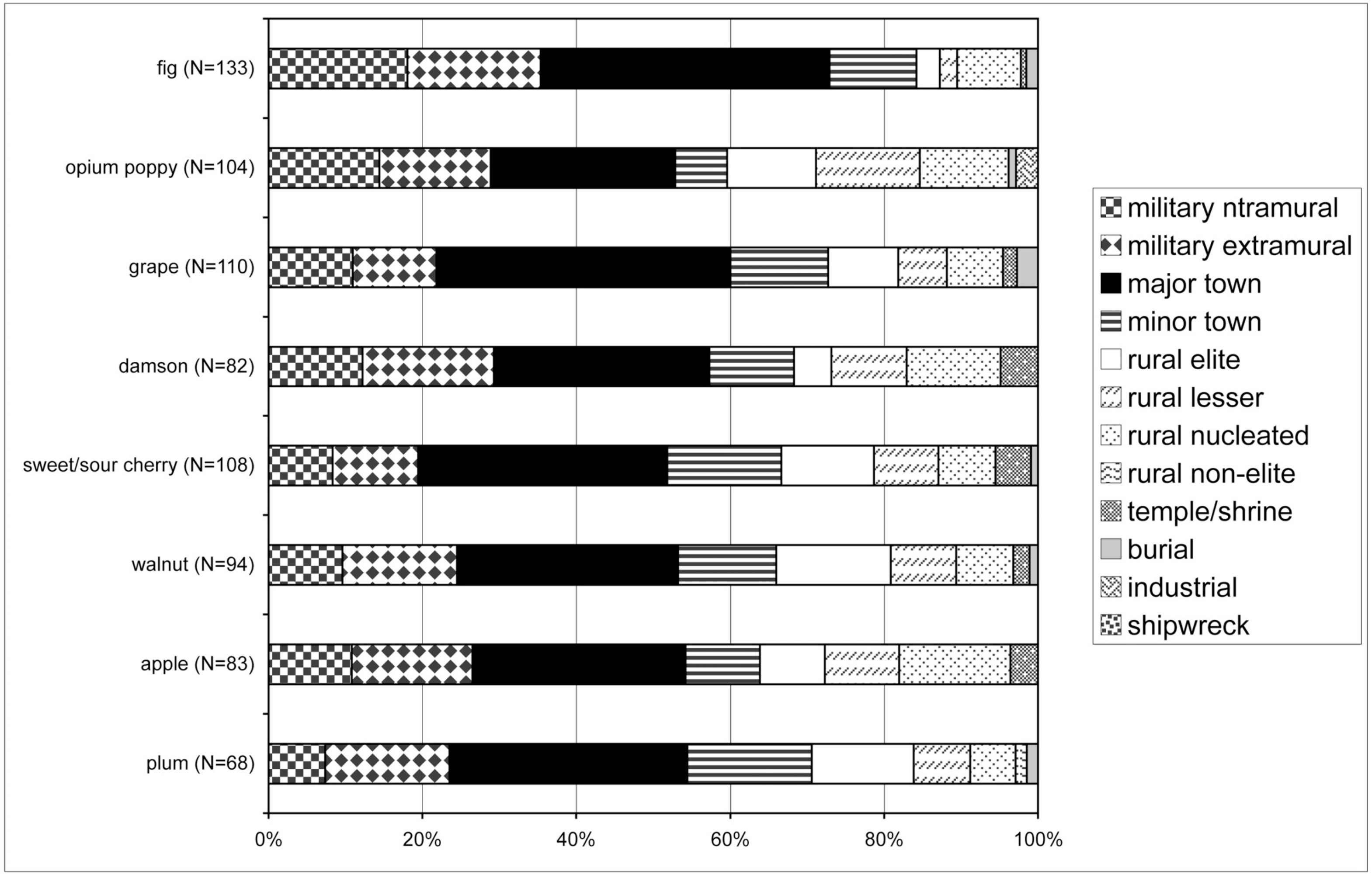

Figure 5.2.2a: The social distribution of waterlogged Pattern 2 species in the Roman period (N=the number of records where a species occurs).

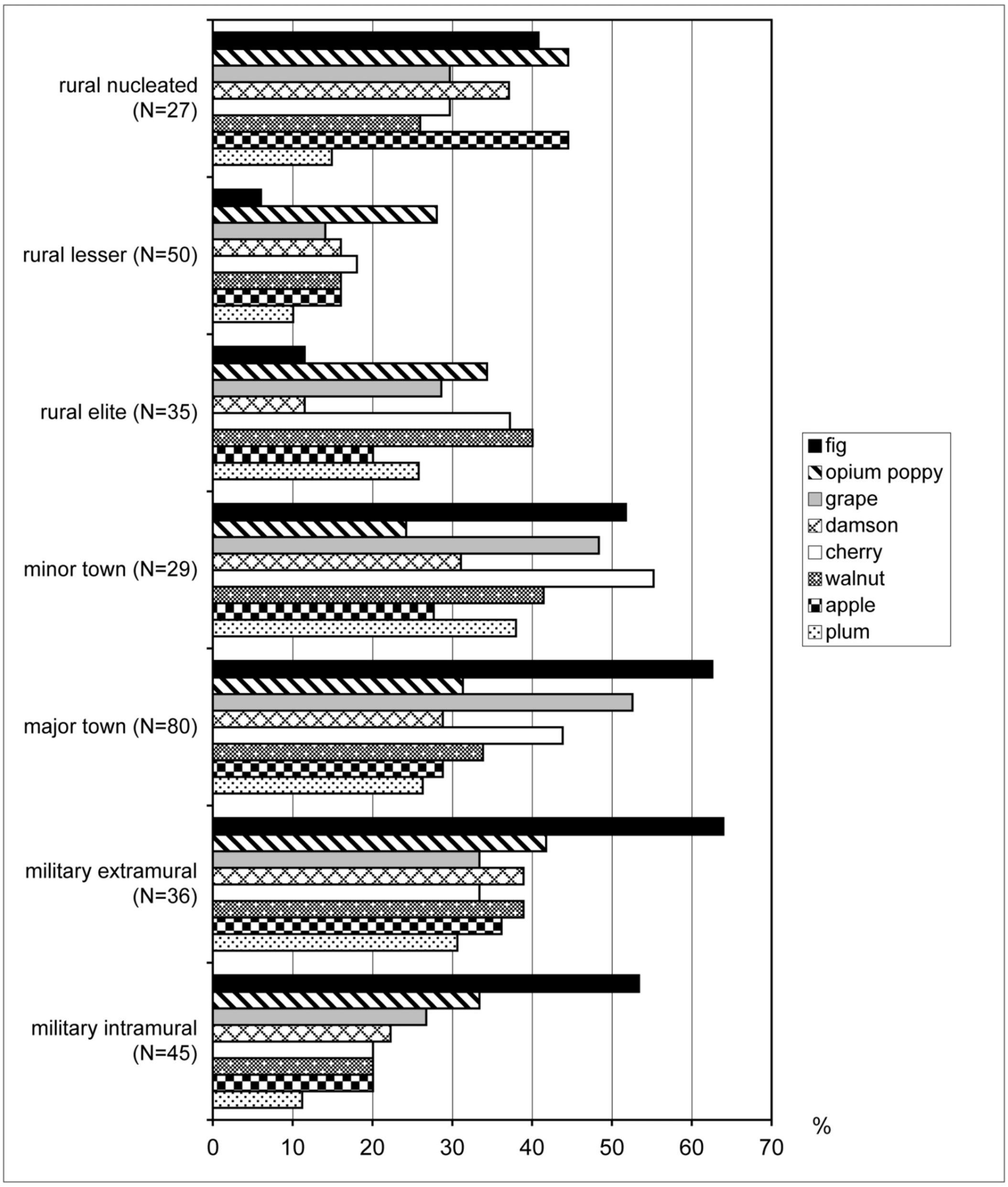

Figure 5.2.2b: Approximate abundance of each species (of Pattern 2 waterlogged) in selected site types for the Roman period (N=the number of Roman waterlogged records for each site type).

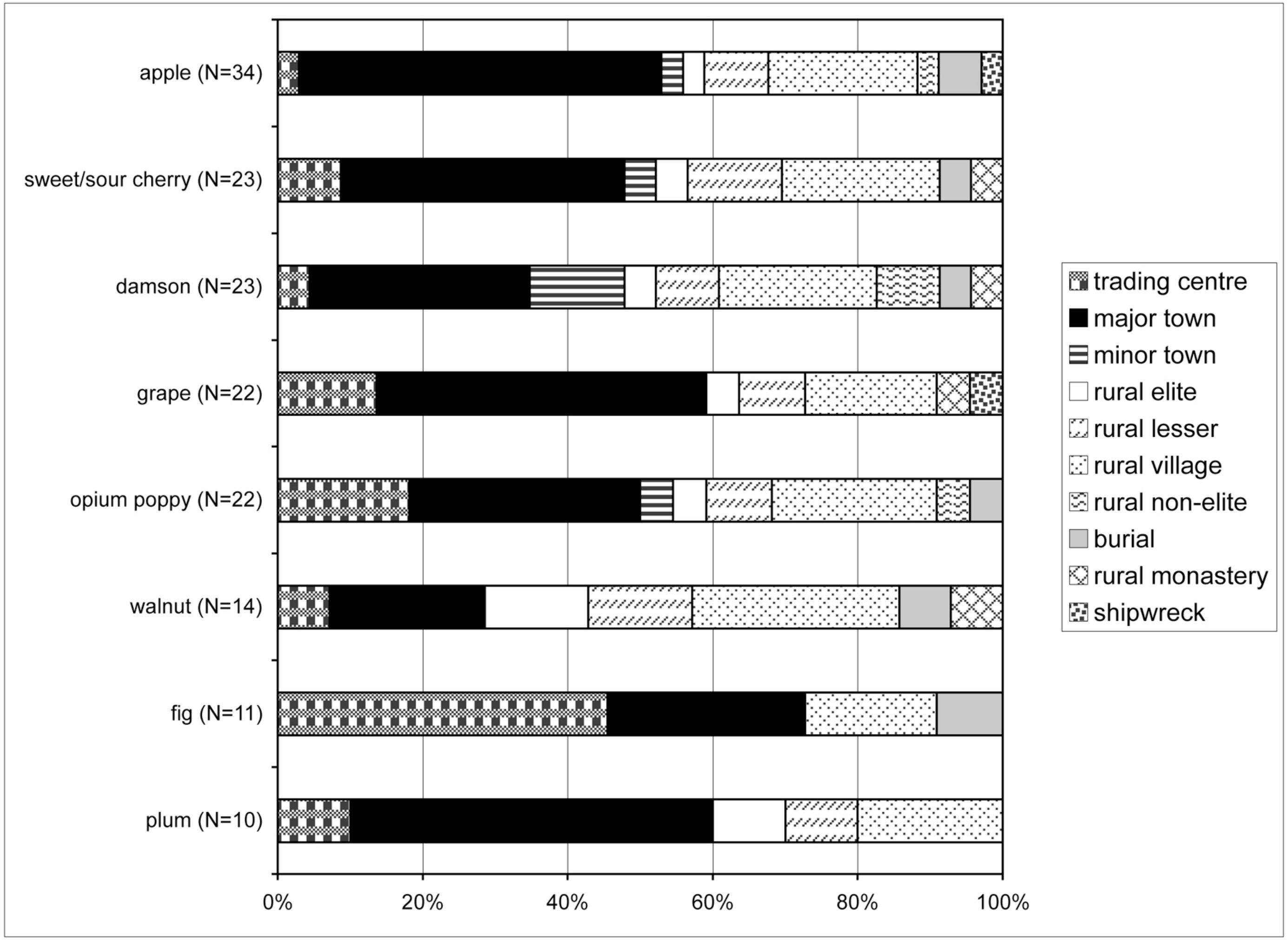

Figure 5.2.2c: The social distribution of waterlogged Pattern 2 species in the early medieval period (N=the number of records where a species occurs).

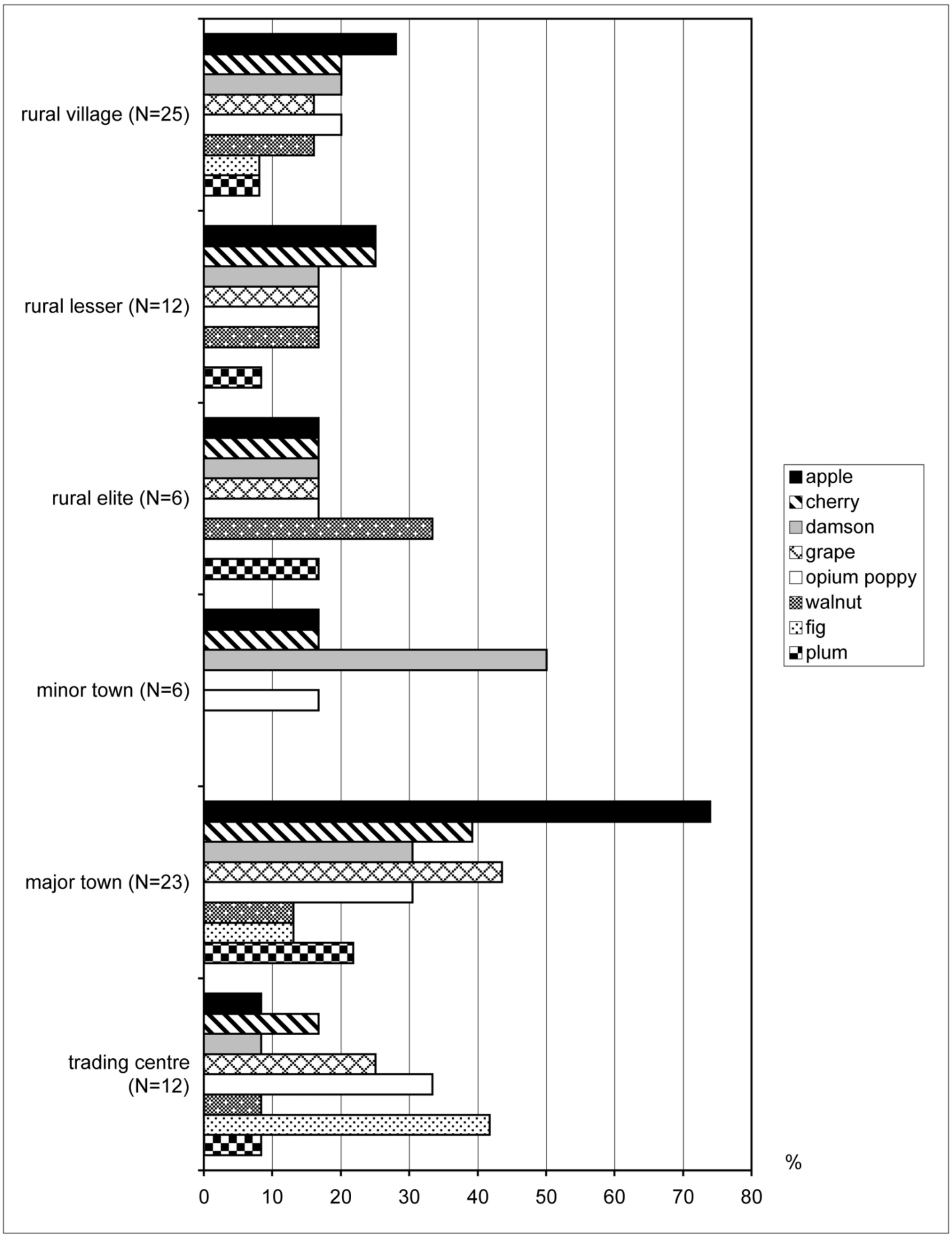

Figure 5.2.2d: Approximate abundance of each species (of Pattern 2 waterlogged) in selected site types for the early medieval period (N=the number of early medieval waterlogged records for each site type).

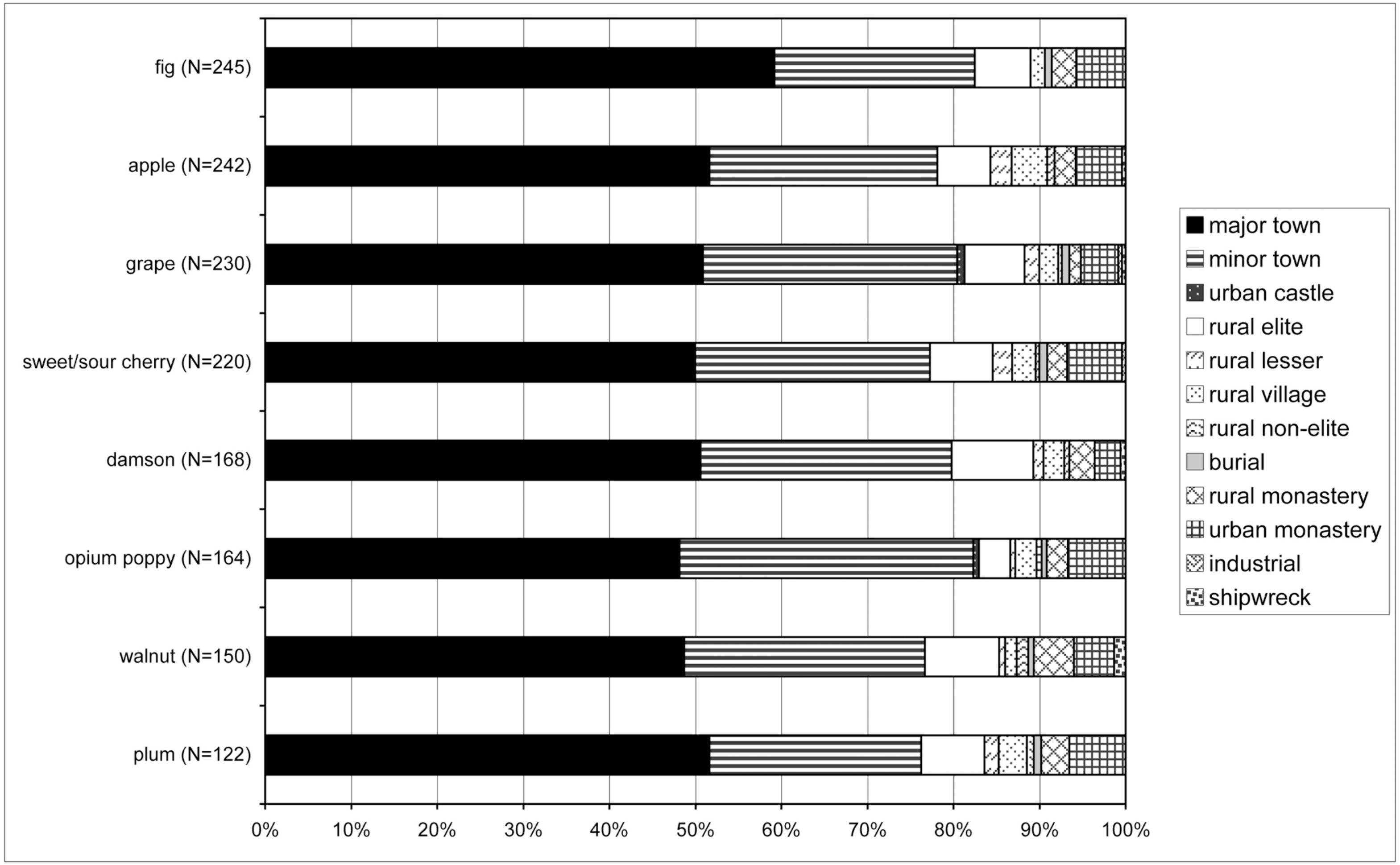

Figure 5.2.2e: The social distribution of waterlogged Pattern 2 species in the medieval period (N=the number of records where a species occurs).

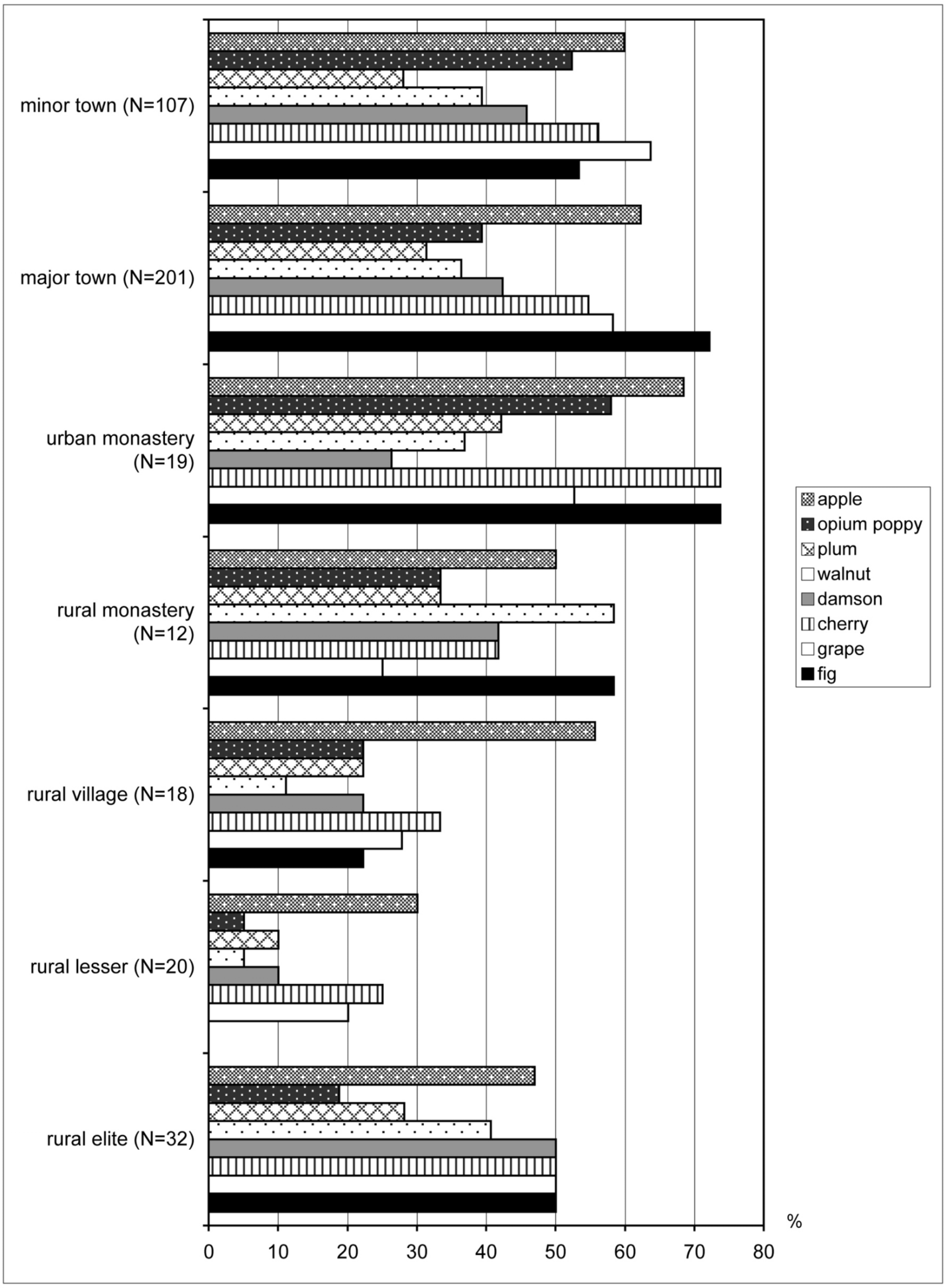

Figure 5.2.2f: Approximate abundance of each species (of Pattern 2 waterlogged) in selected site types for the medieval period (N=the number of medieval waterlogged records for each site type). The number of secular rural records with a particular species is: apple=33, opium poppy=12, plum=16, walnut=18, damson=23, cherry=28, grape=26 and fig=20.

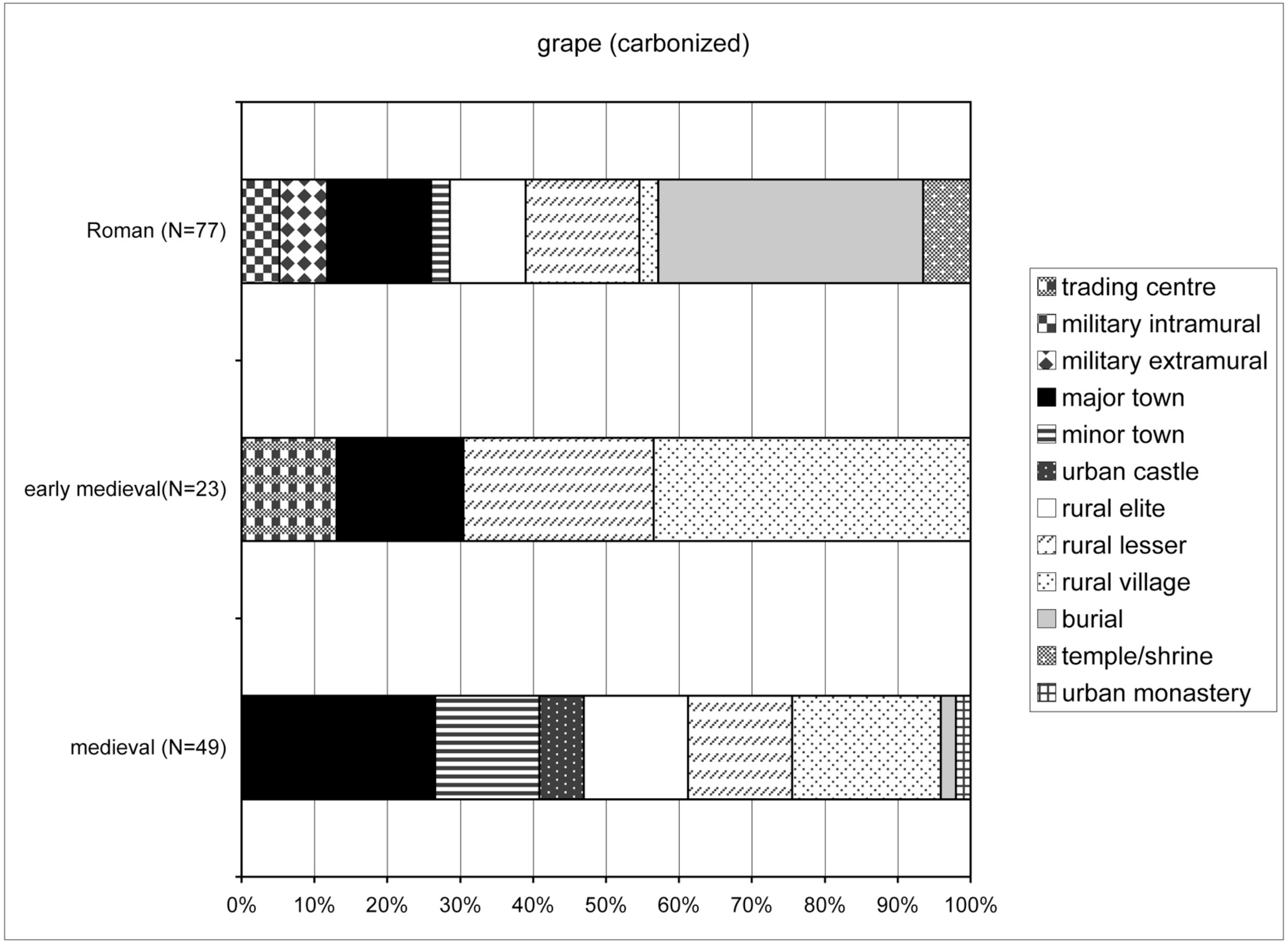

Figure 5.2.2g: The social distribution of carbonized grape remains per time period (N=the number of records with grape).

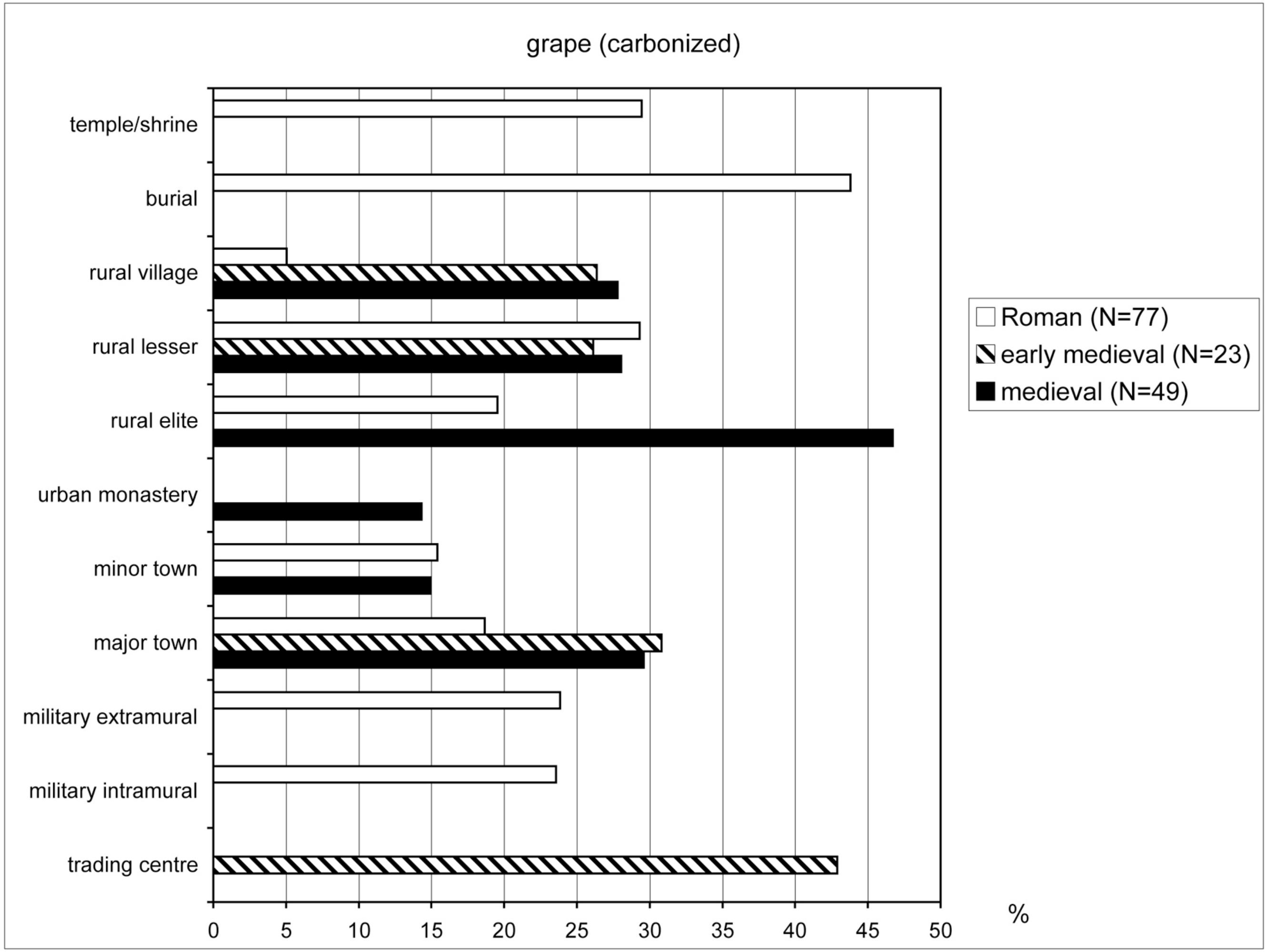

Figure 5.2.2h: Approximate abundance of carbonized grape in selected site types for the Roman, early medieval and medieval period (N=the number of carbonized grape records in each time period).

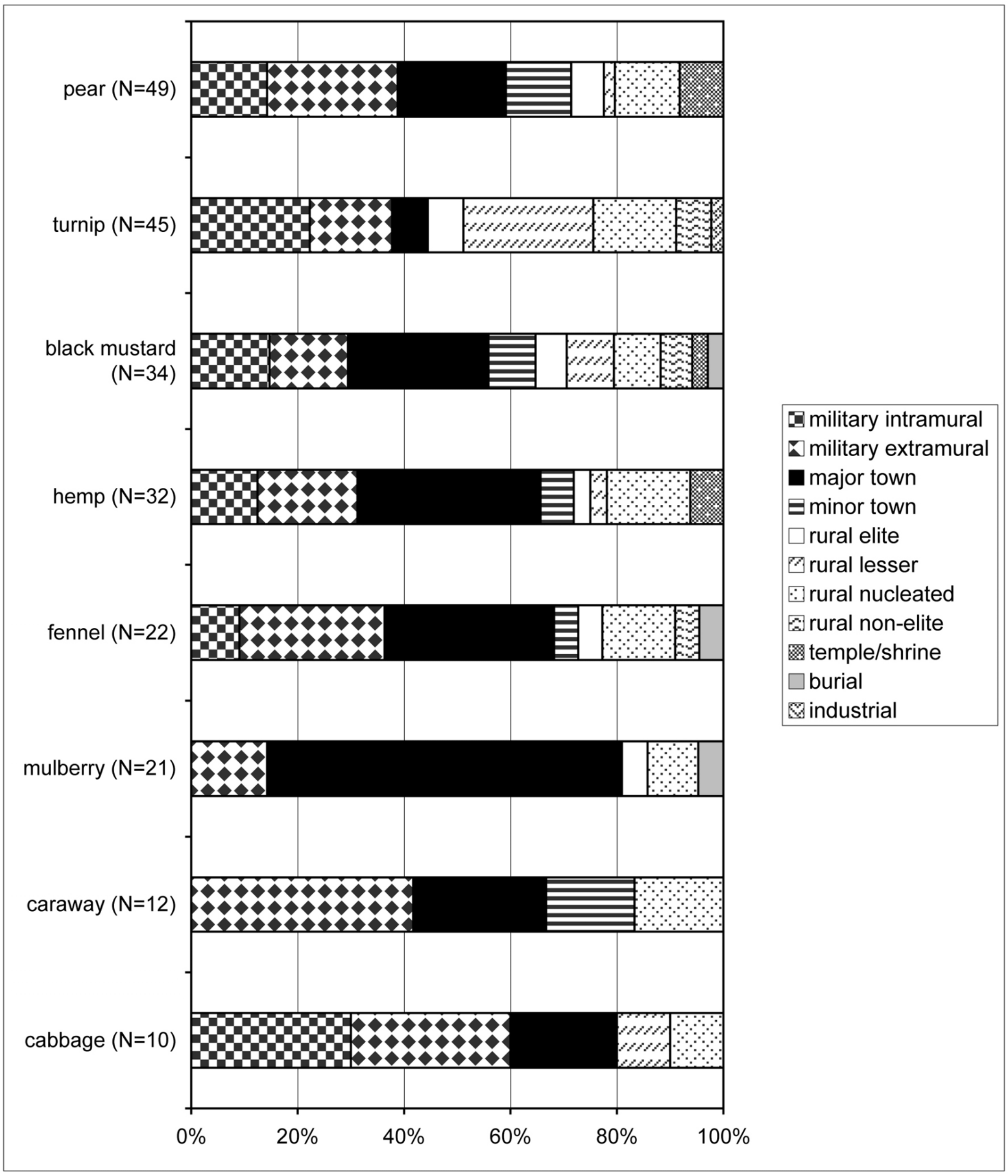

Figure 5.2.3a: The social distribution of waterlogged Pattern 3 species in the Roman period (N=the number of records where a species occurs).

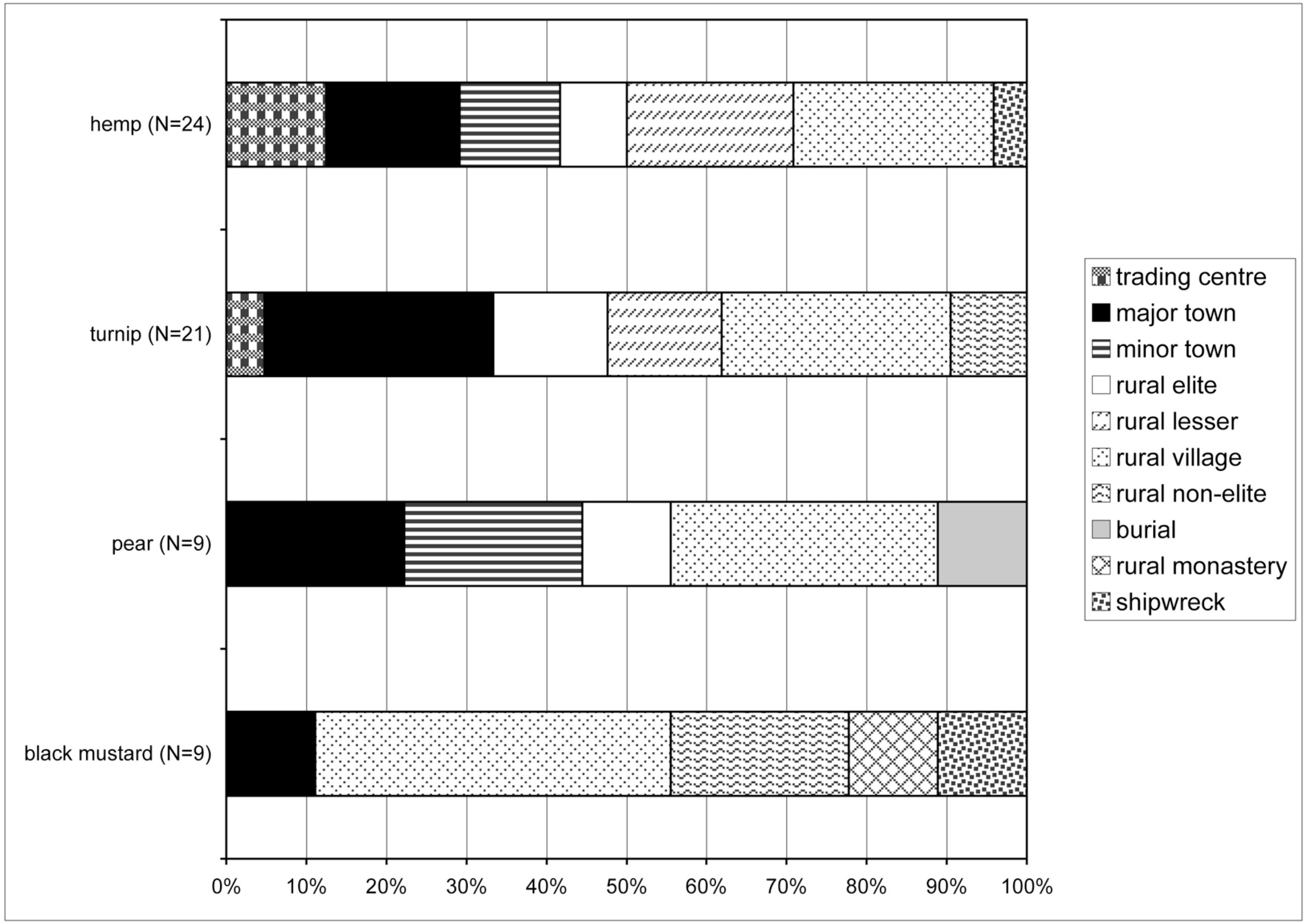

Figure 5.2.3b: The social distribution of waterlogged Pattern 3 species in the early medieval period (N=the number of records where a species occurs). NB the number of records for pear and black mustard is very low and thus not necessarily reliable.

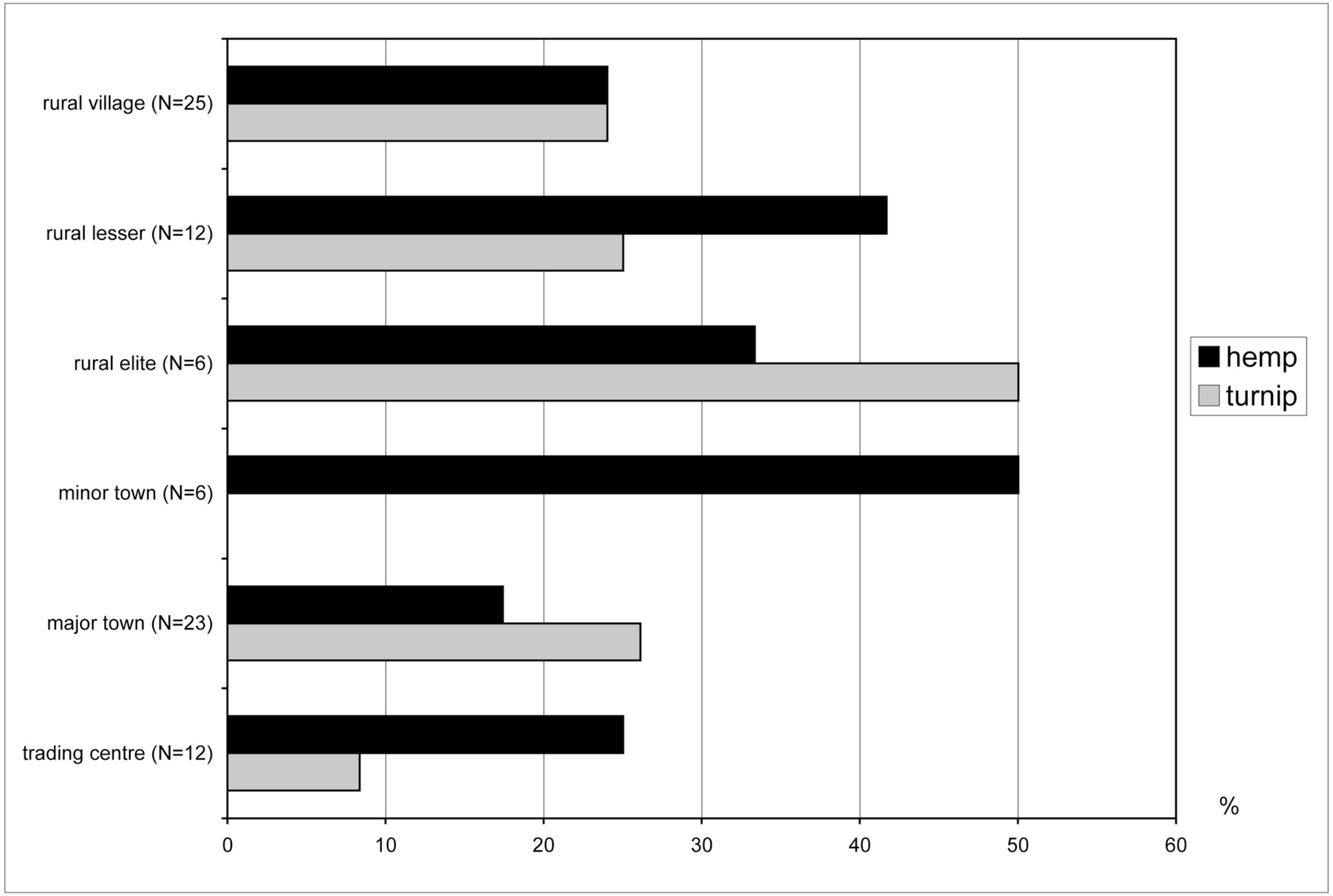

Figure 5.2.3c: Approximate abundance of waterlogged hemp and turnip in selected site types for the early medieval period (N=the number of early medieval waterlogged records for each site type).

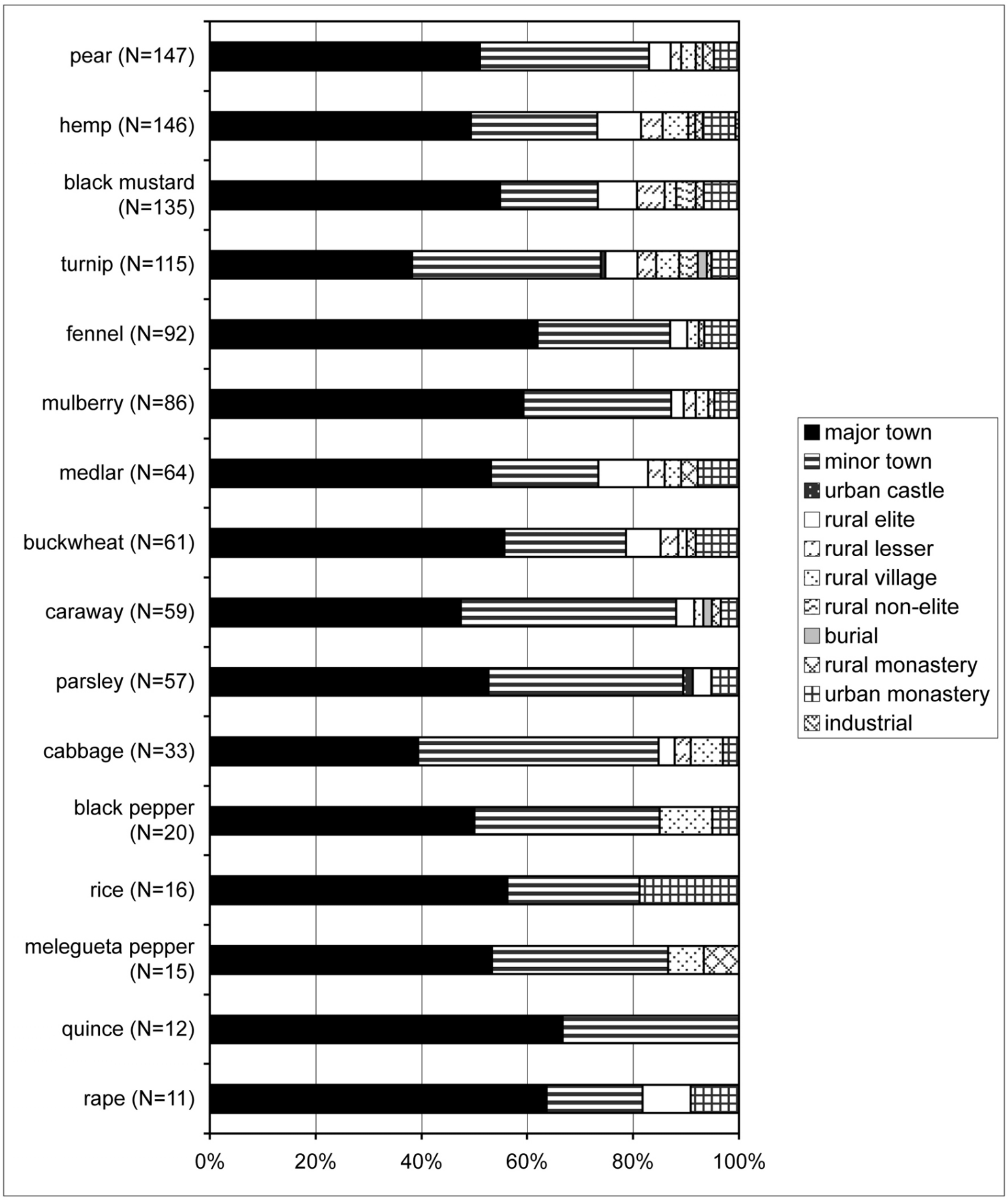

Figure 5.2.3d: The social distribution of waterlogged Pattern 3 species in the medieval period (N=the number of records where a species occurs).

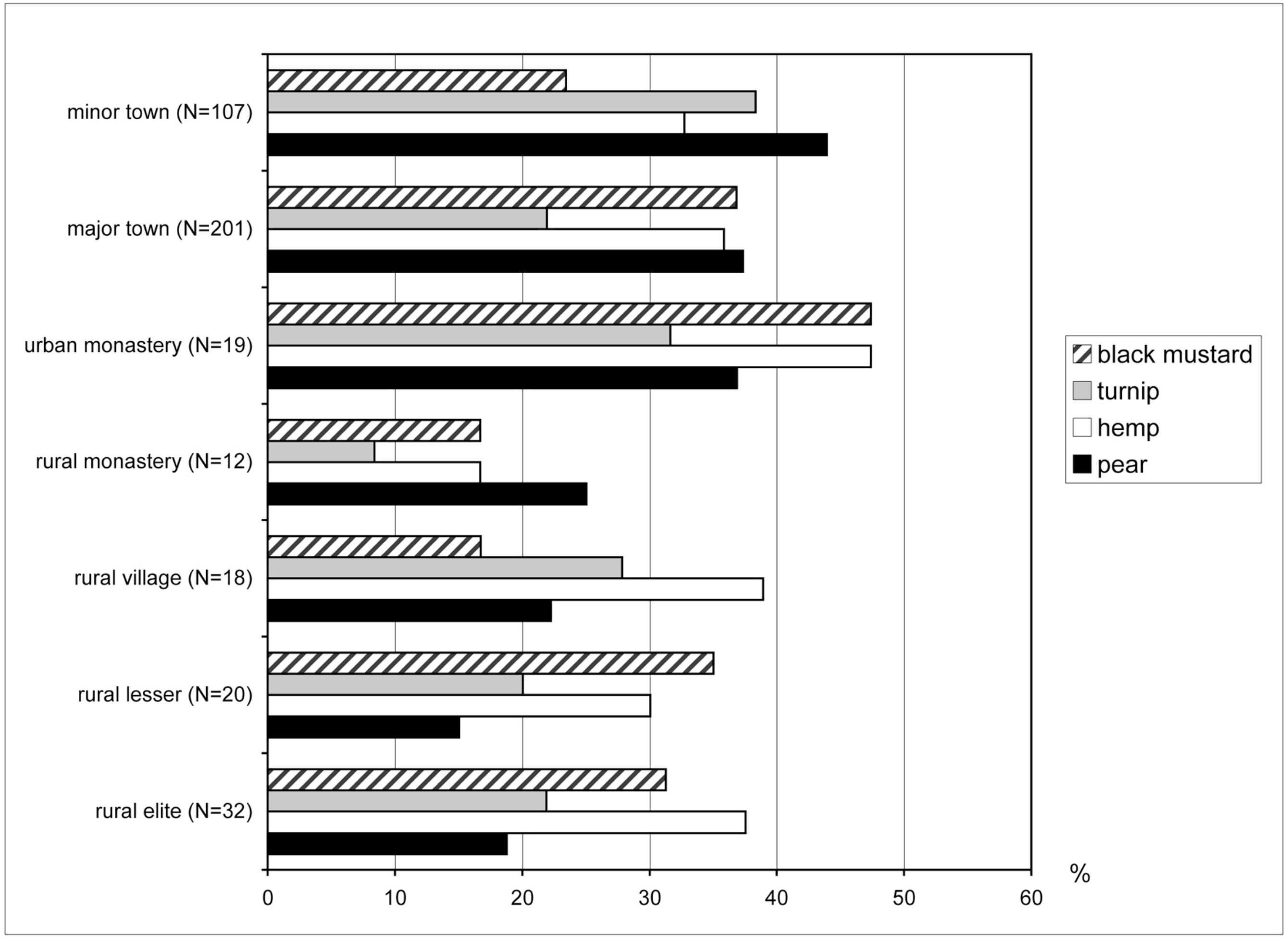

Figure 5.2.3e: Approximate abundance of the most common species (of Pattern 3 waterlogged) in selected site types for the medieval period (N=the number of medieval waterlogged records for each site type). The number of secular rural records with a particular species is: black mustard=25, turnip=20, hemp=27 and pear=15.

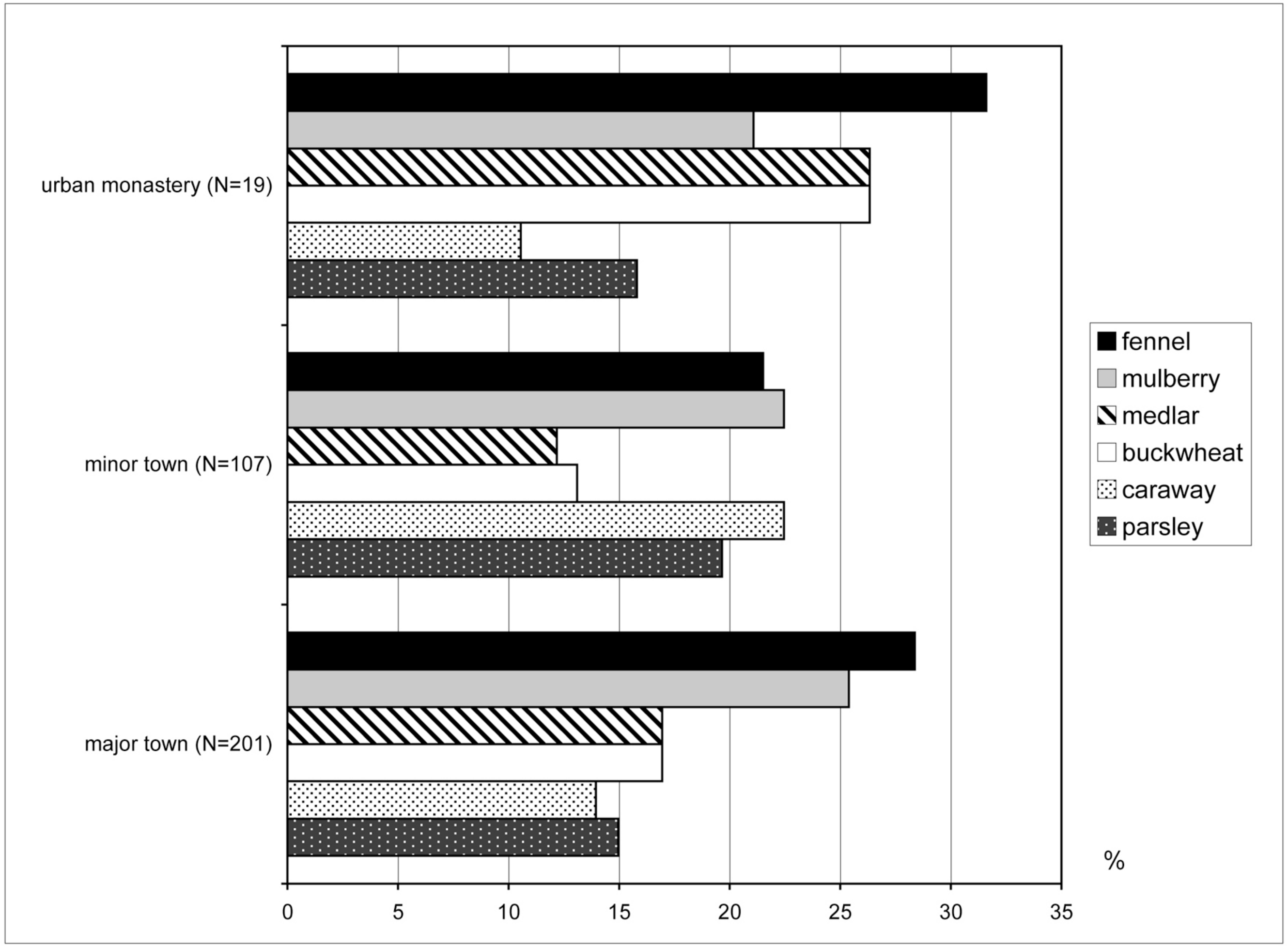

Figure 5.2.3f: Approximate abundance of some rarer species (of Pattern 3 waterlogged) in selected site types for the medieval period (N=the number of medieval waterlogged records for each site type).

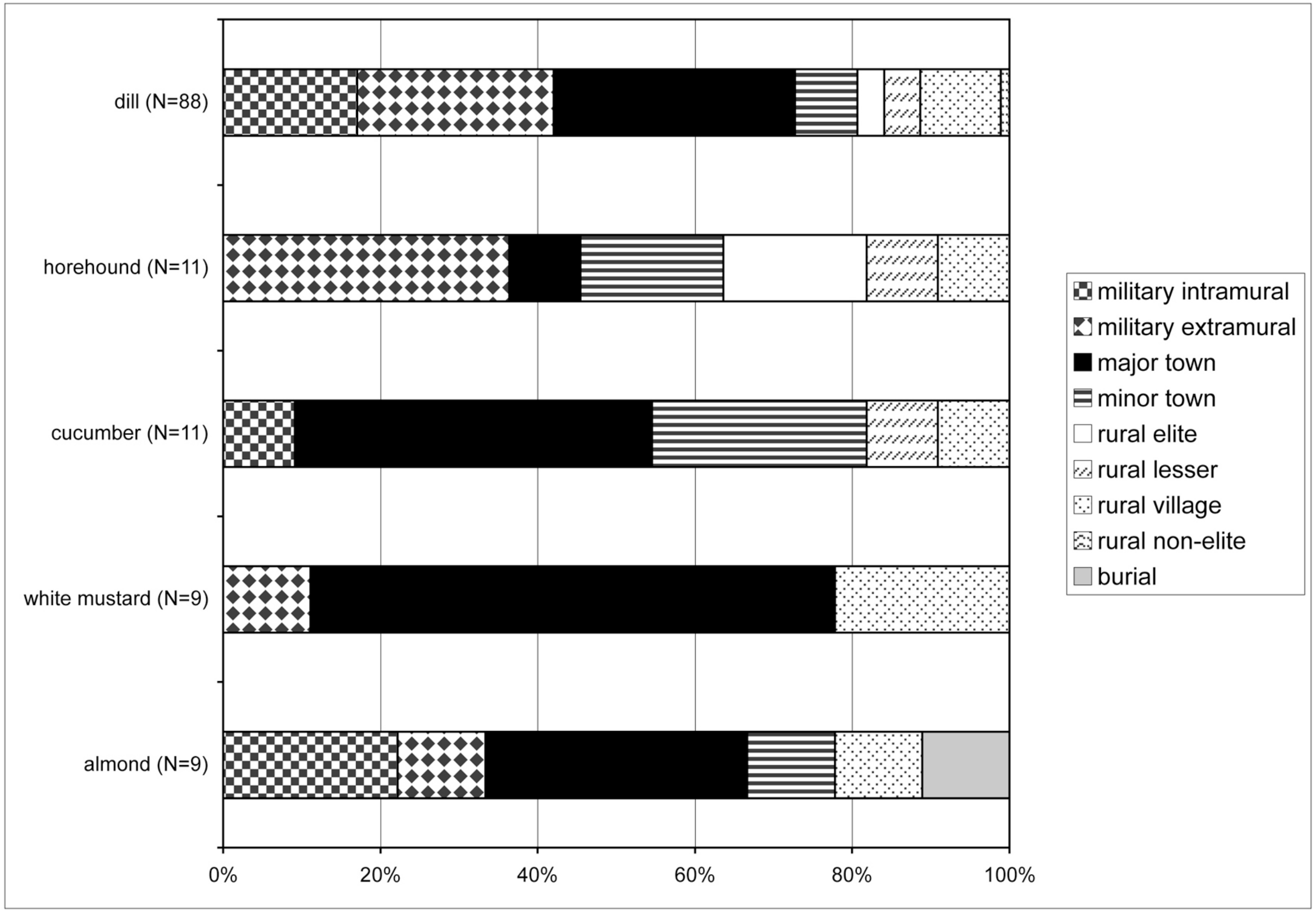

Figure 5.2.4a: The social distribution of waterlogged Pattern 4 species in the Roman period (N=the number of records where a species occurs). NB the number of records for all species except dill is very low and thus not necessarily reliable.

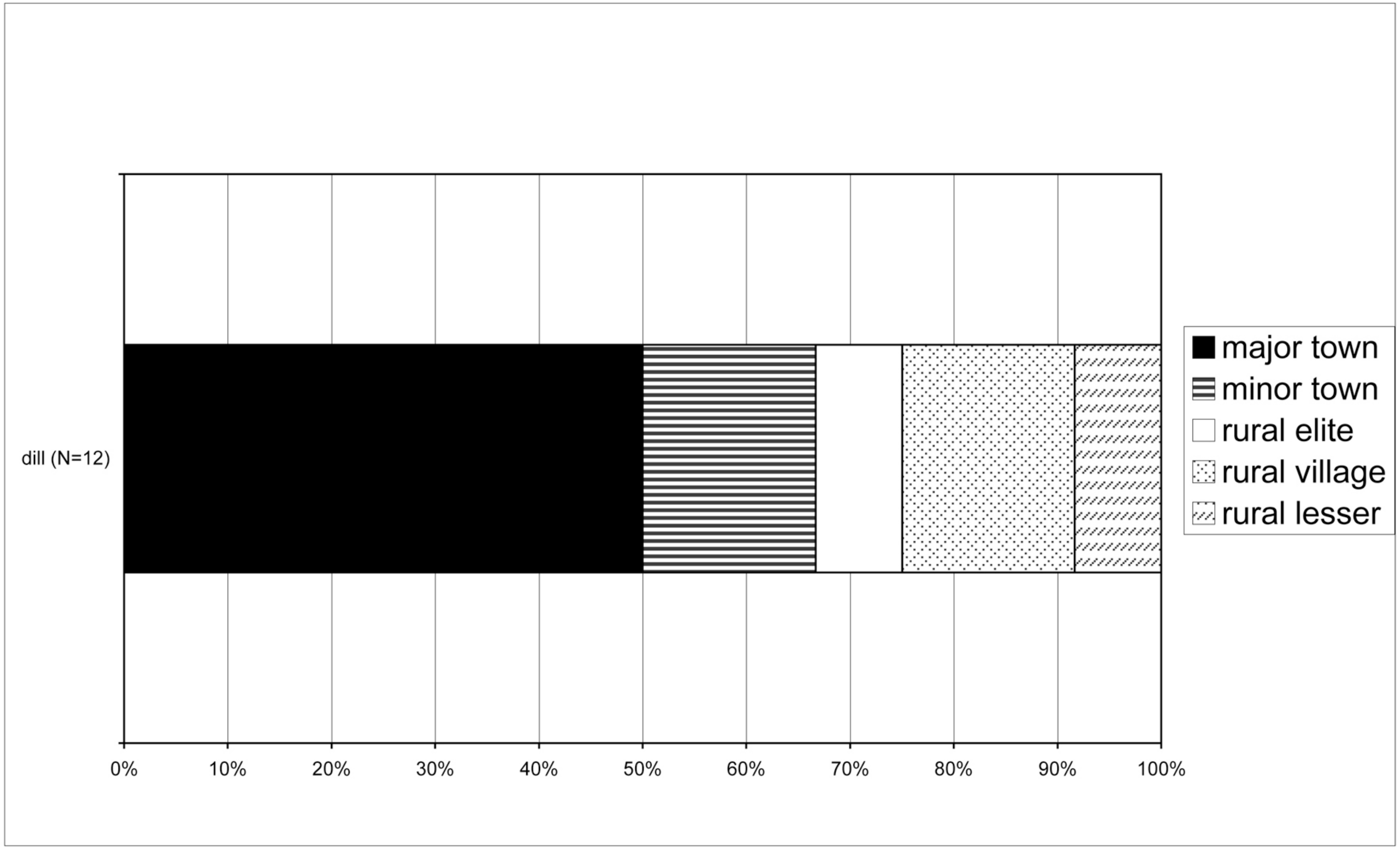

Figure 5.2.4b: The social distribution of waterlogged Pattern 4 species in the early medieval period (N=the number of records where a species occurs).

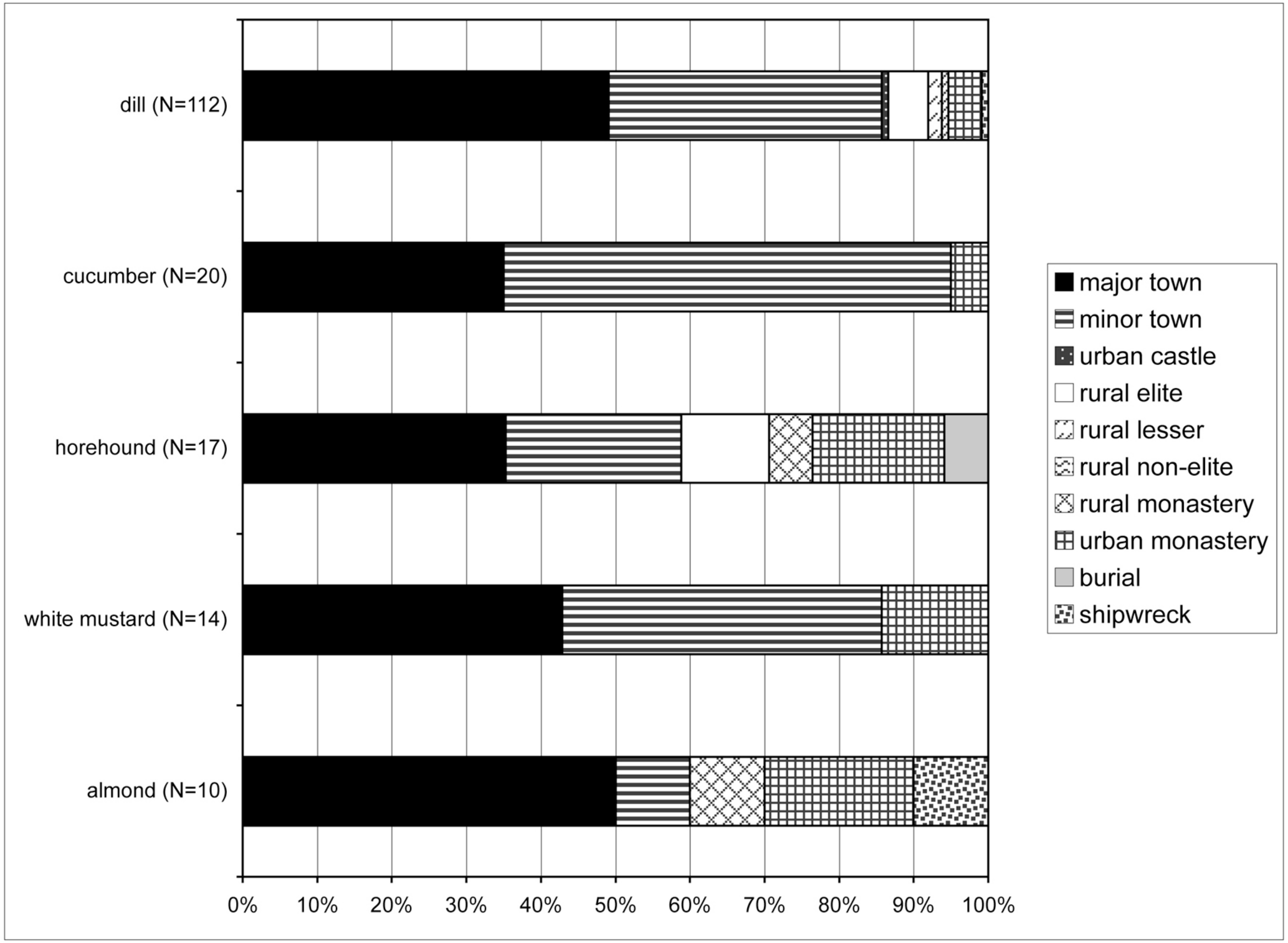

Figure 5.2.4c: The social distribution of waterlogged Pattern 4 species in the medieval period (N=the number of records where a species occurs).

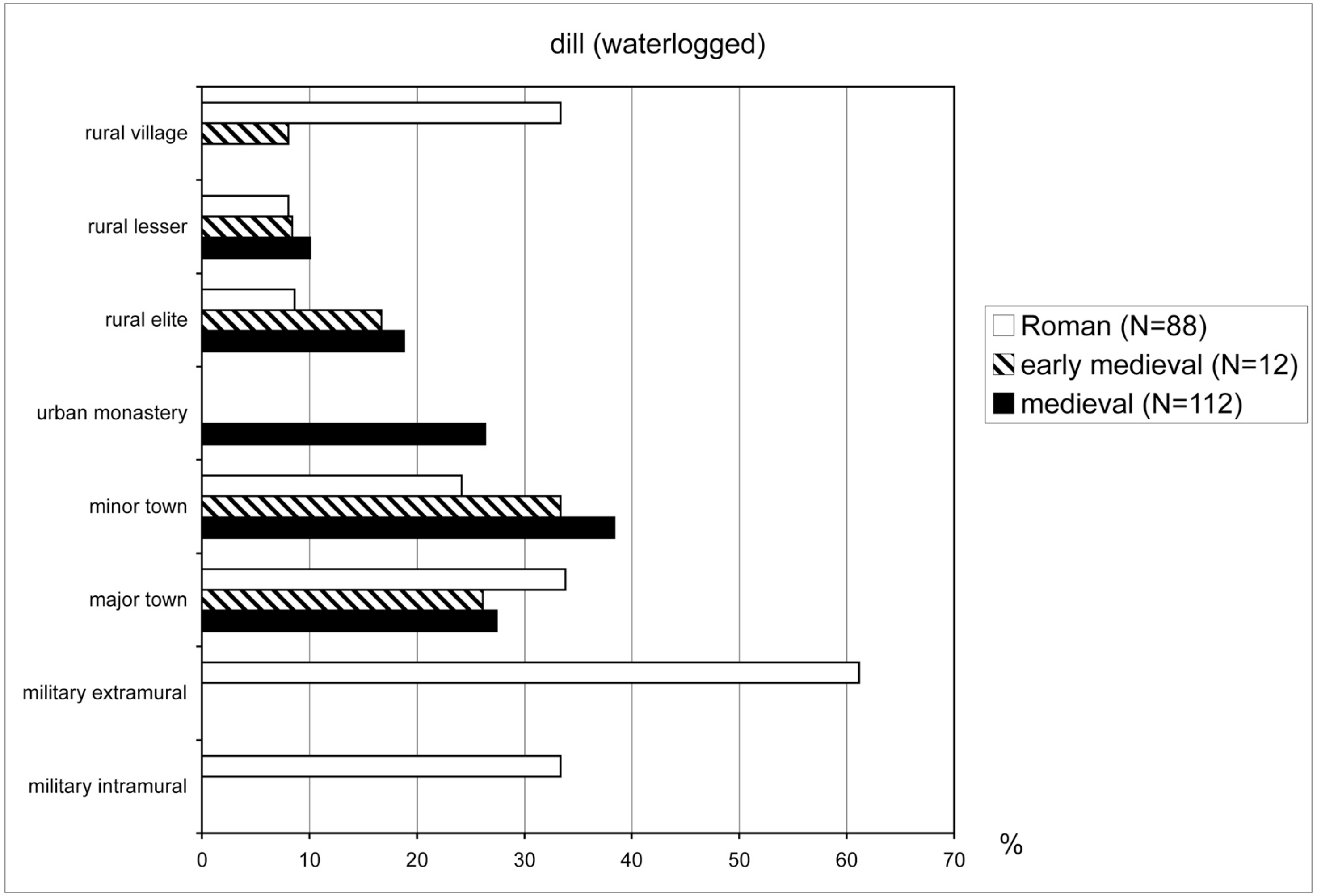

Figure 5.2.4d: Approximate abundance of waterlogged dill in selected site types for the Roman, early medieval and medieval period (N=the number of waterlogged dill records in each time period).

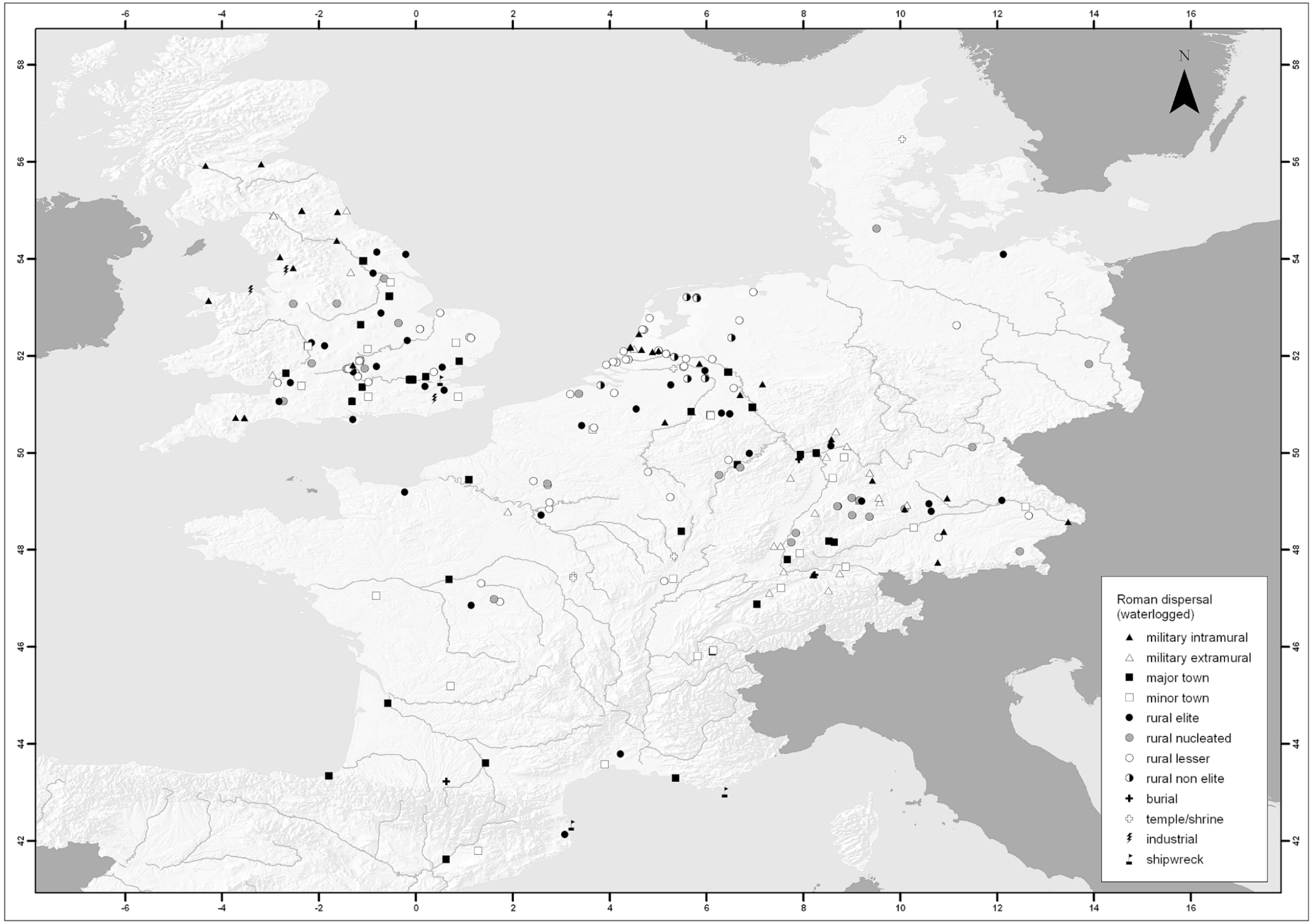

Figure 5.3.1a: Distribution of waterlogged records in the Roman period.

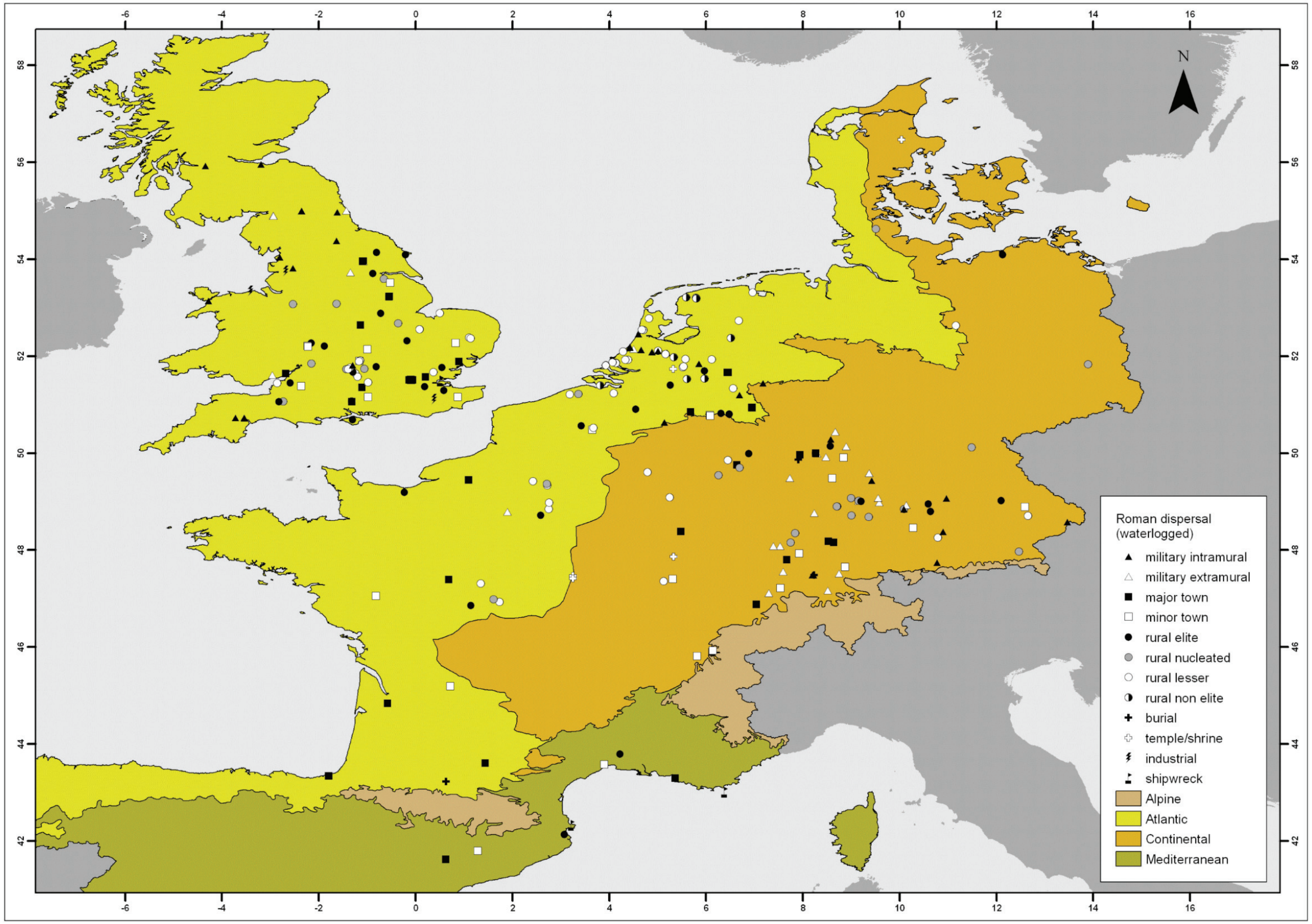

Figure 5.3.1b: Bio-geographical distribution of waterlogged records in the Roman period.

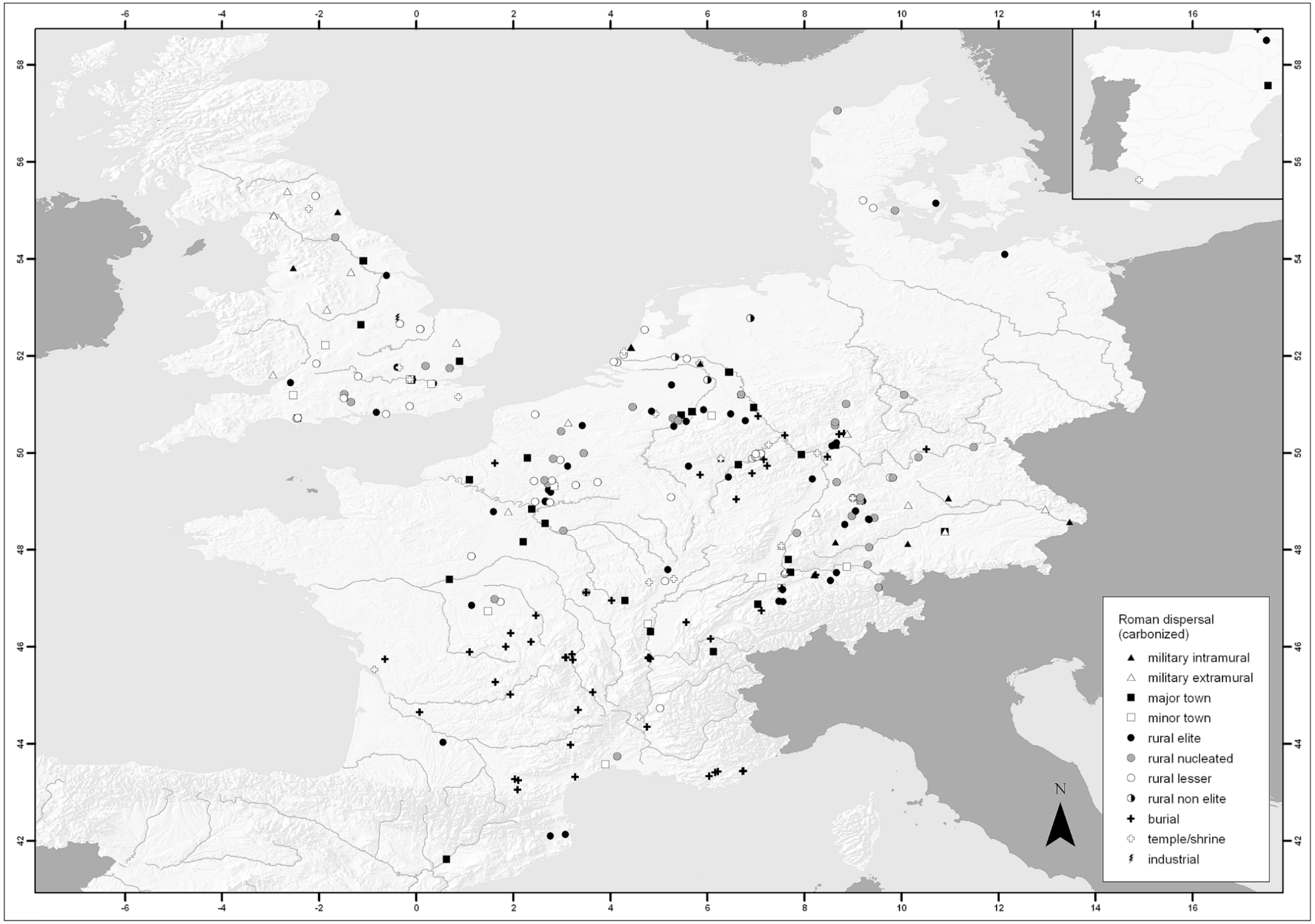

Figure 5.3.1c: Distribution of carbonized records in the Roman period.

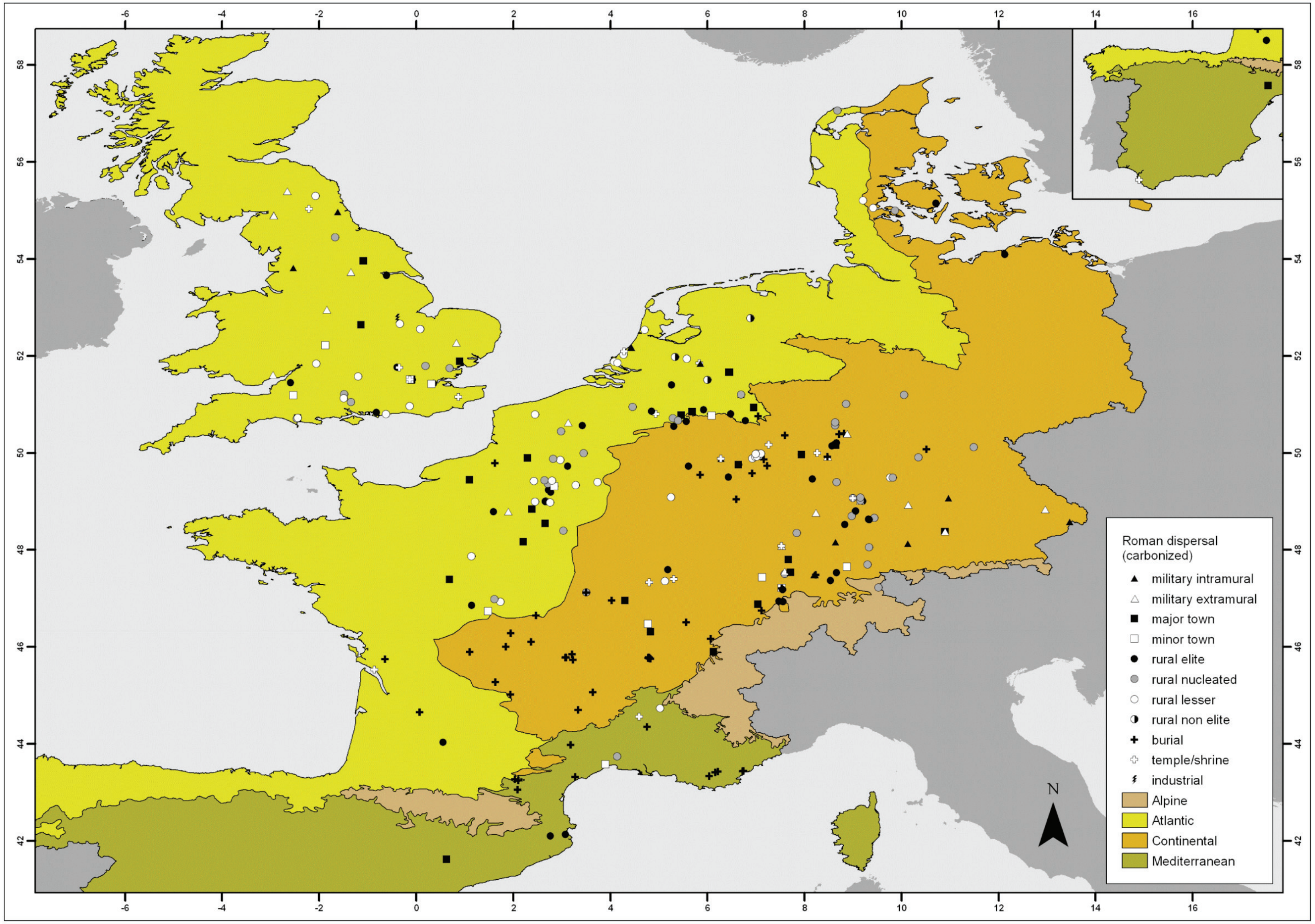

Figure 5.3.1d: Bio-geographical distribution of carbonized records in the Roman period.

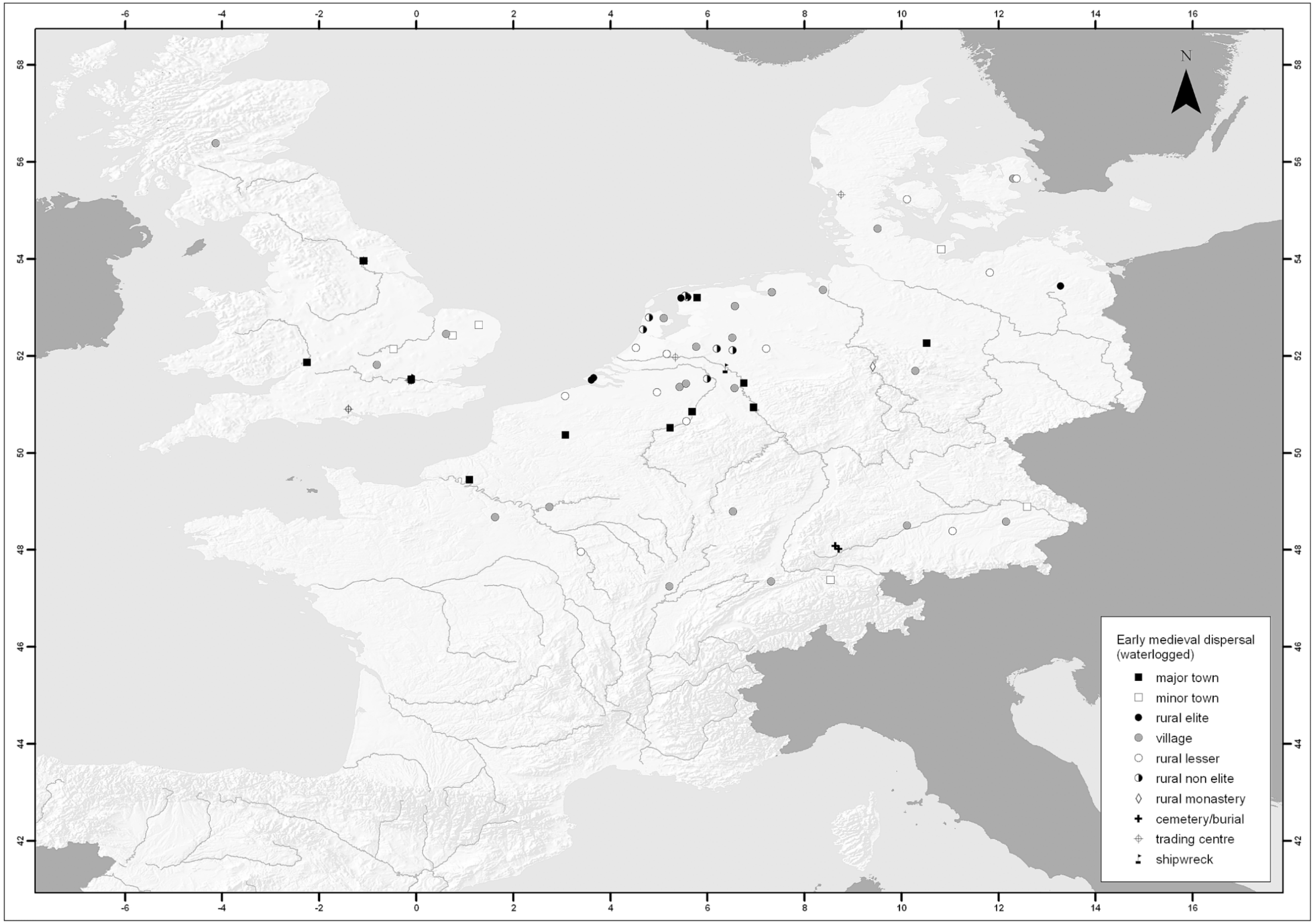

Figure 5.3.1e: Distribution of waterlogged records in the early medieval period.

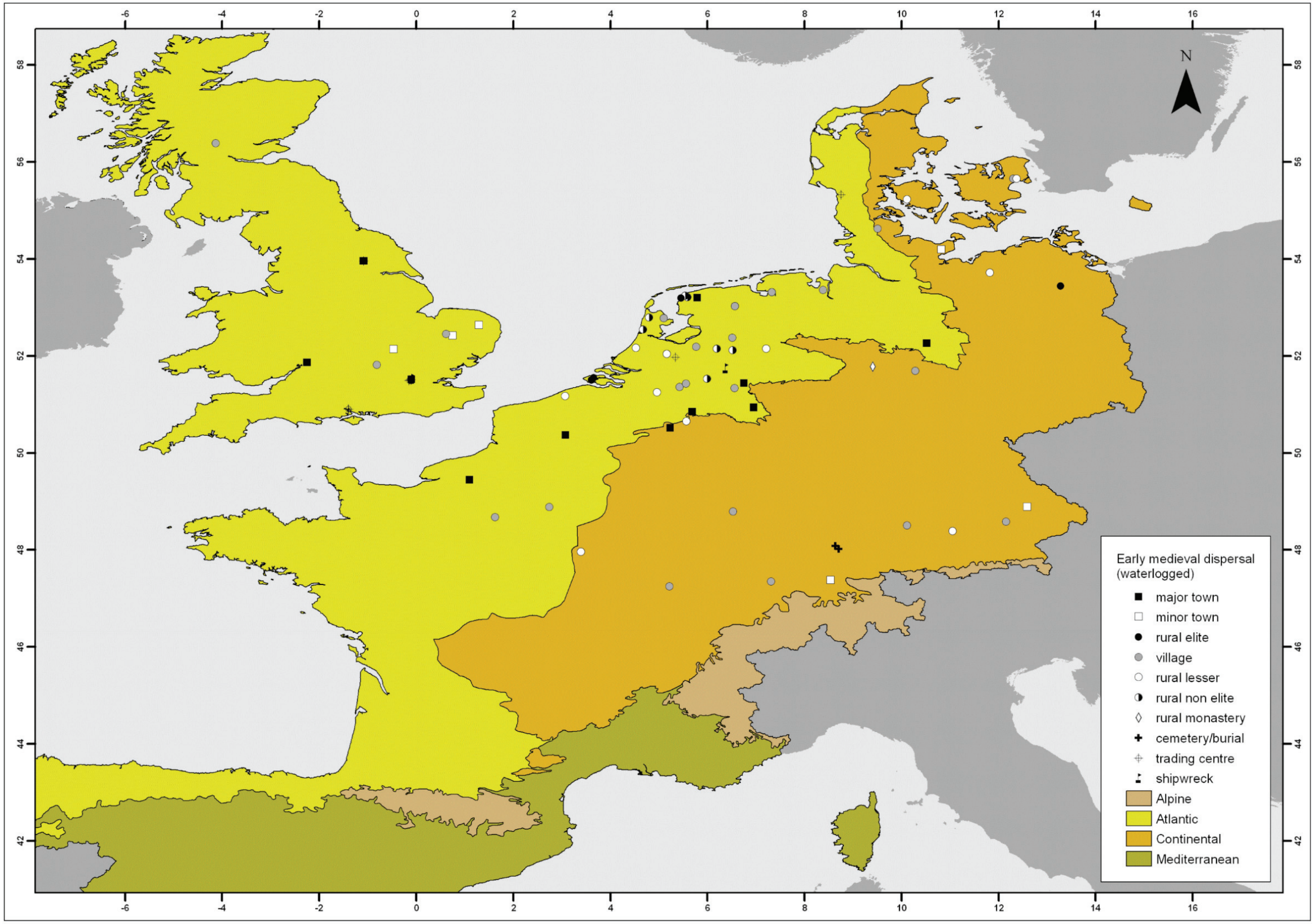

Figure 5.3.1f: Bio-geographical distribution of waterlogged records in the early medieval period.

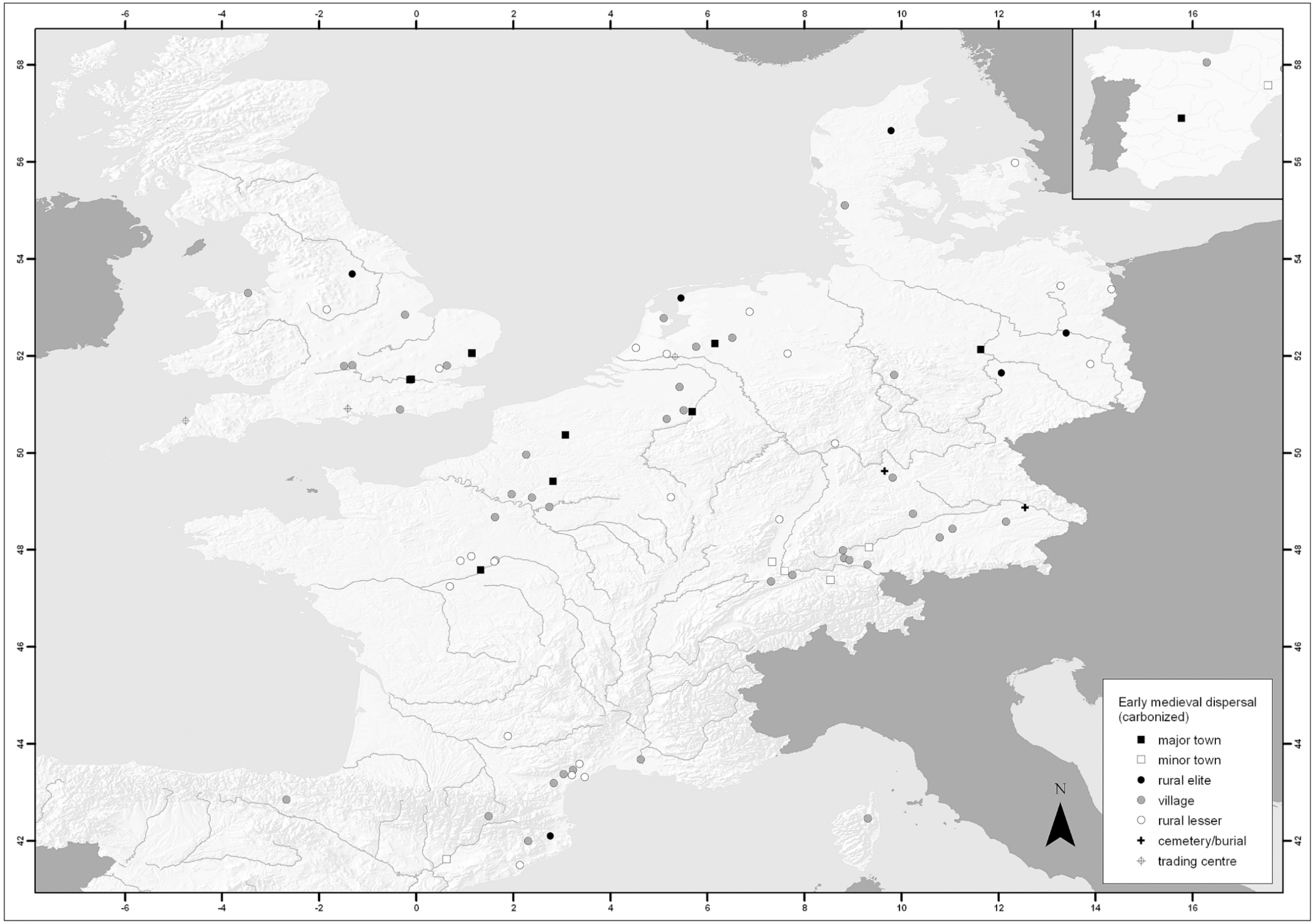

Figure 5.3.1g: Distribution of carbonized records in the early medieval period.

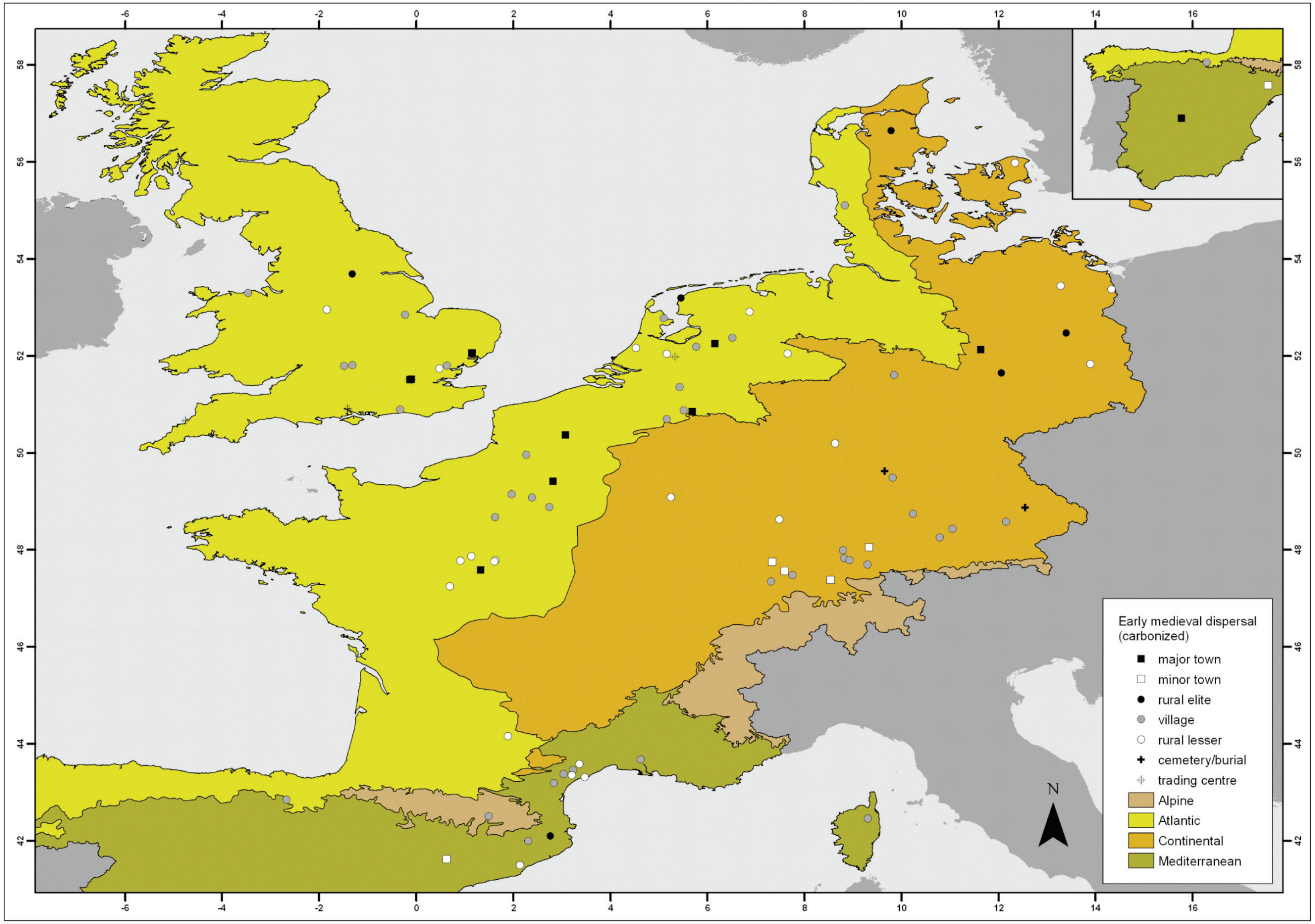

Figure 5.3.1h: Bio-geographical distribution of carbonized records in the early medieval period.

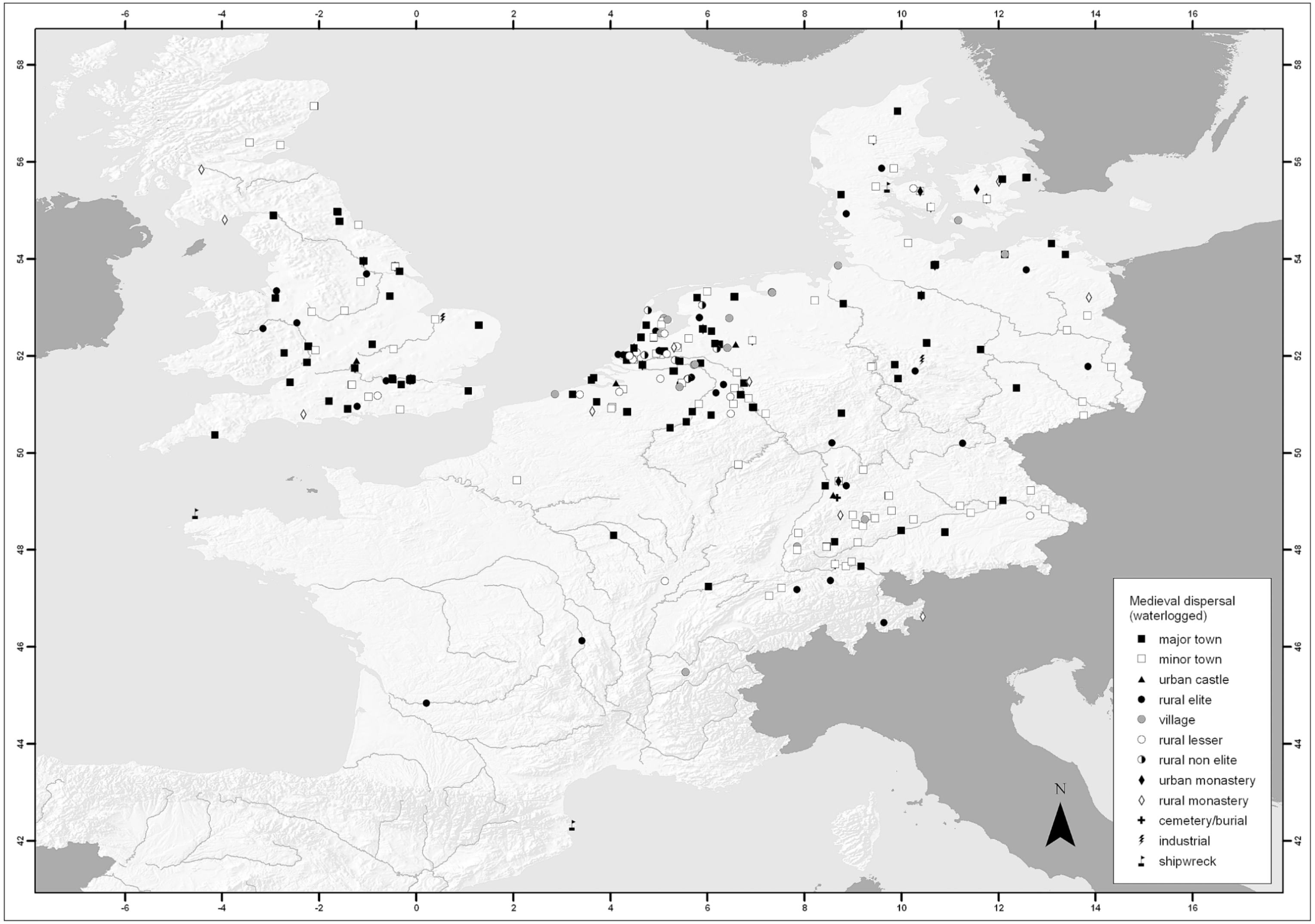

Figure 5.3.1i: Distribution of waterlogged records in the medieval period.

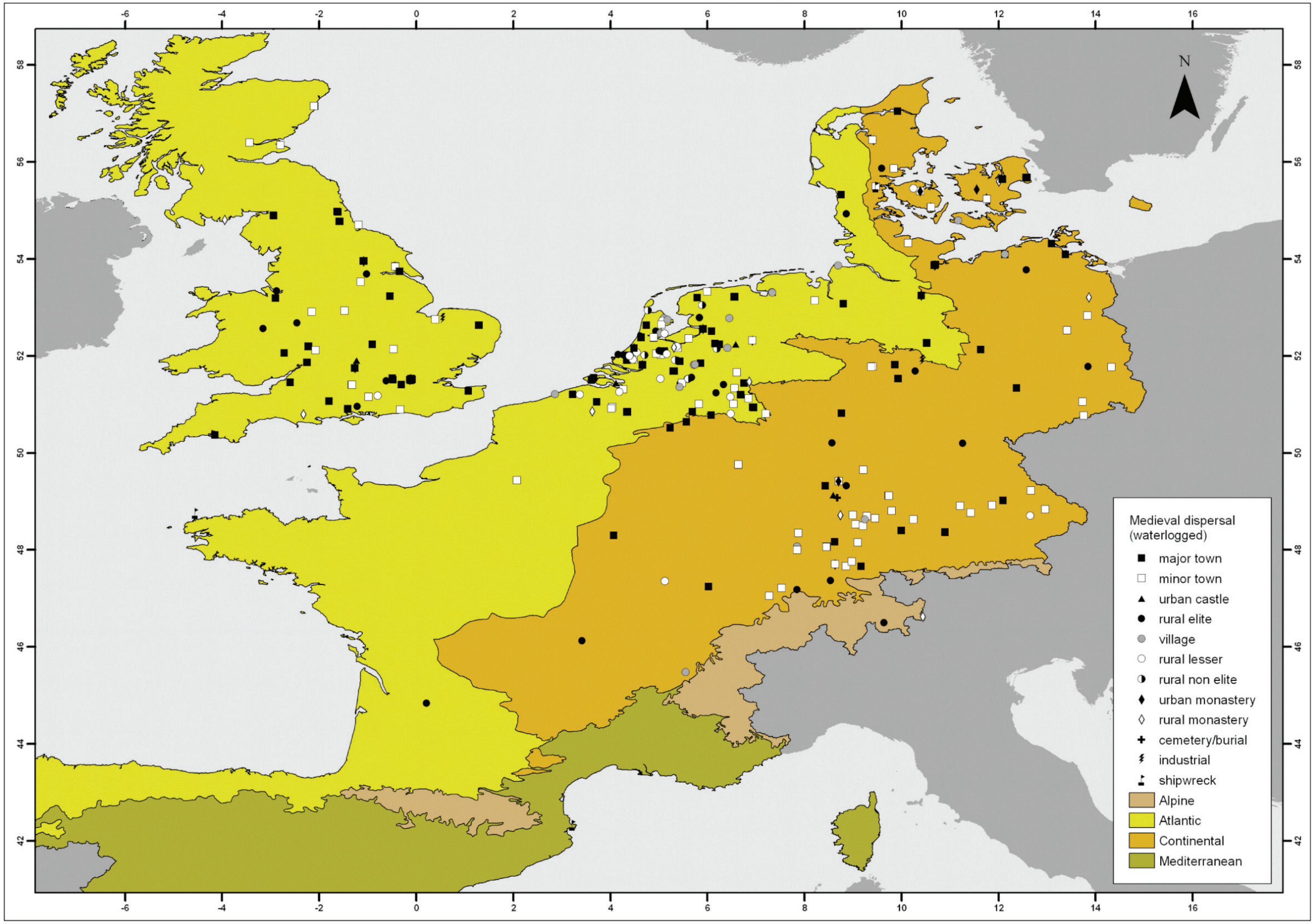

Figure 5.3.1j: Bio-geographical distribution of waterlogged records in the medieval period.

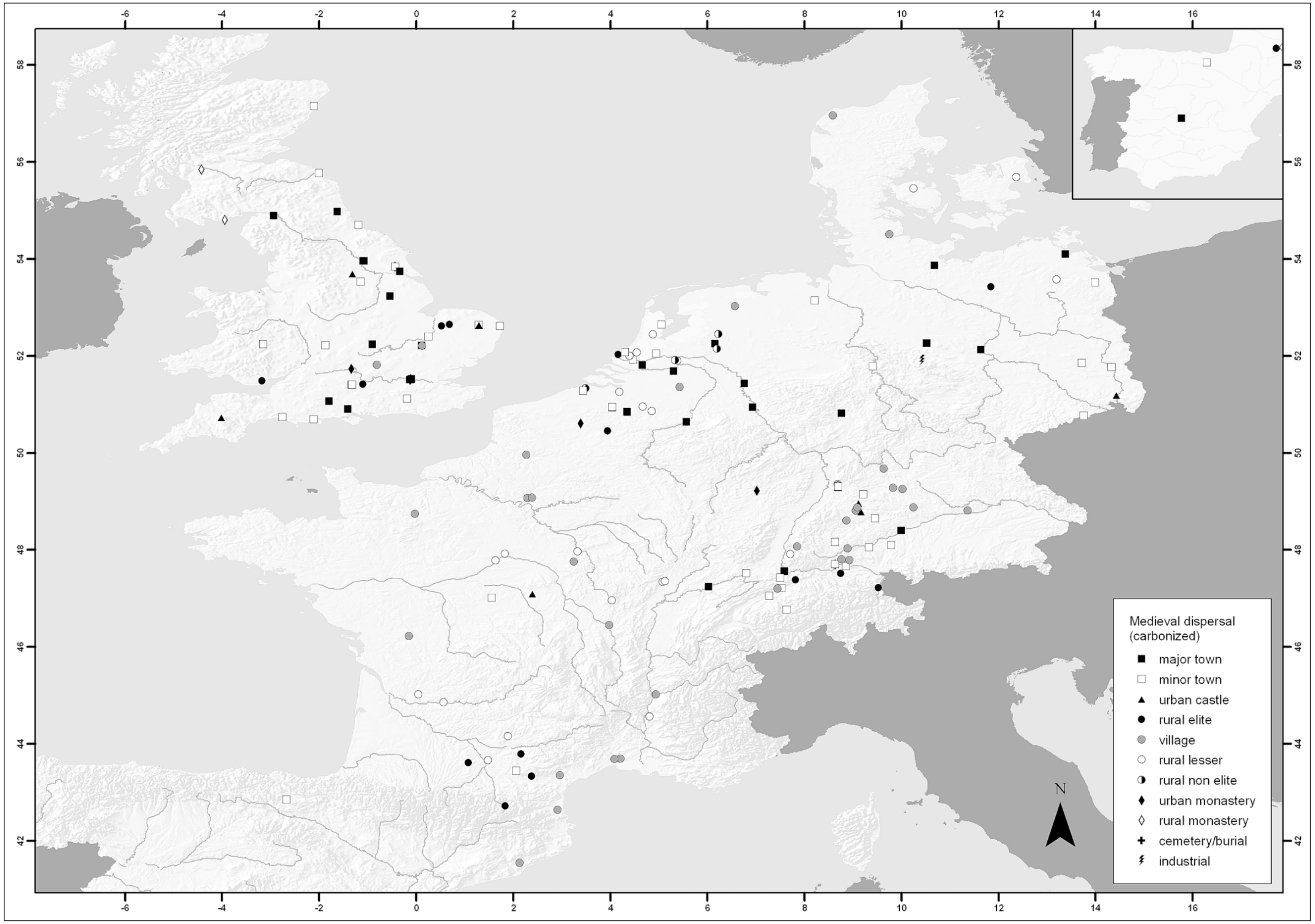

Figure 5.3.1k: Distribution of carbonized records in the medieval period.

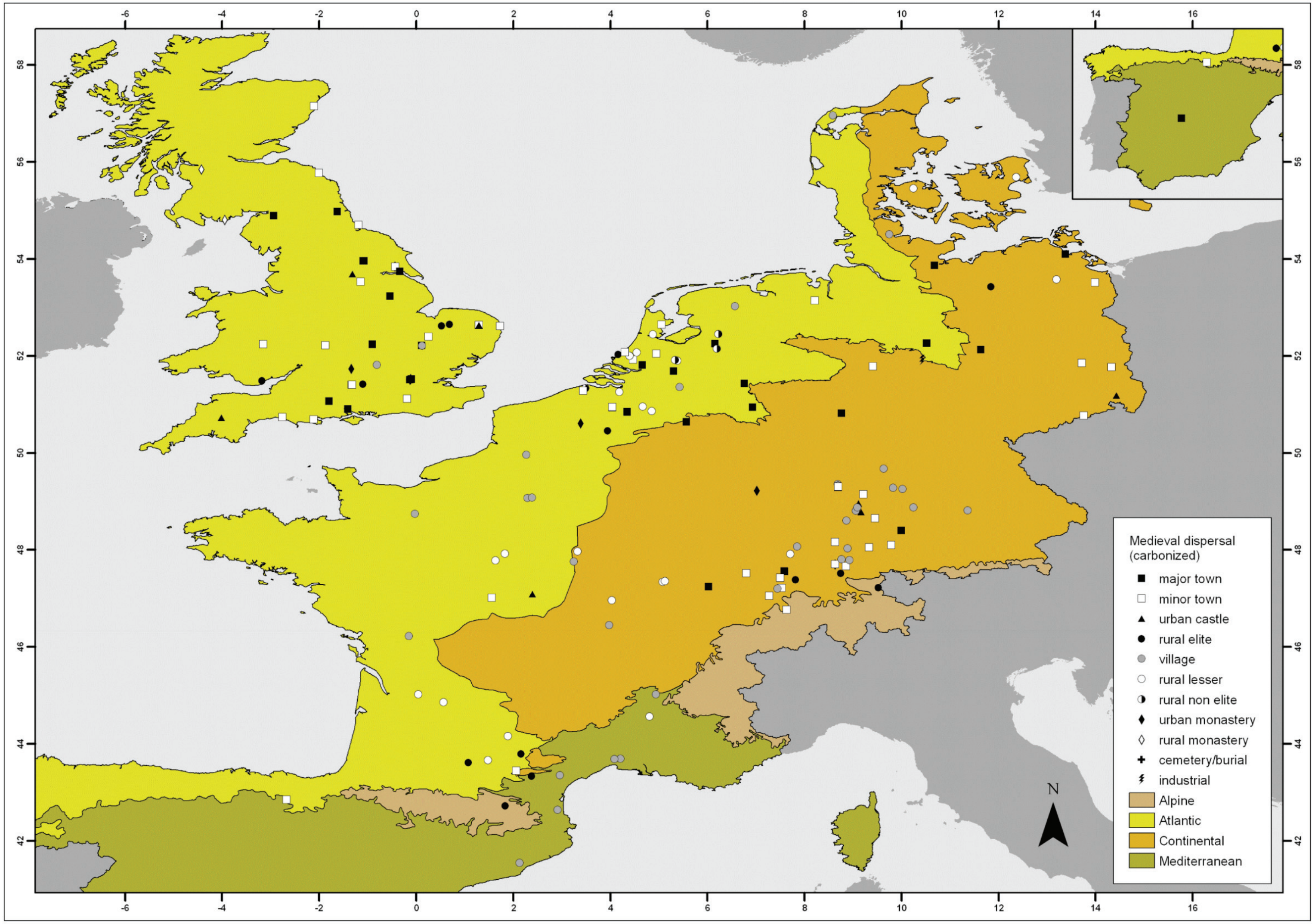

Figure 5.3.1l: Bio-geographical distribution of carbonized records in the medieval period.

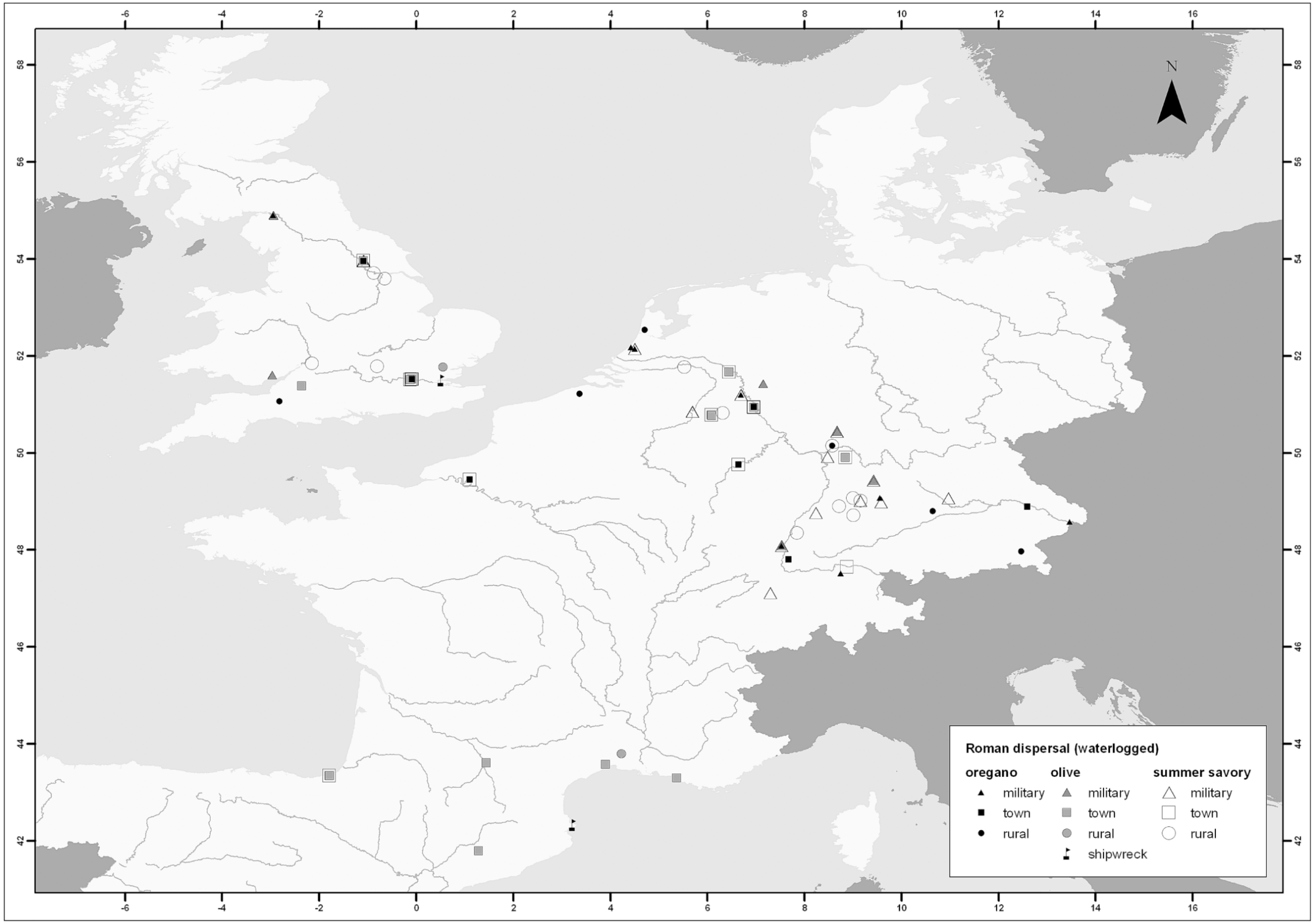

Figure 5.3.2a: Distribution of waterlogged oregano, olive and summer savory in the Roman period.

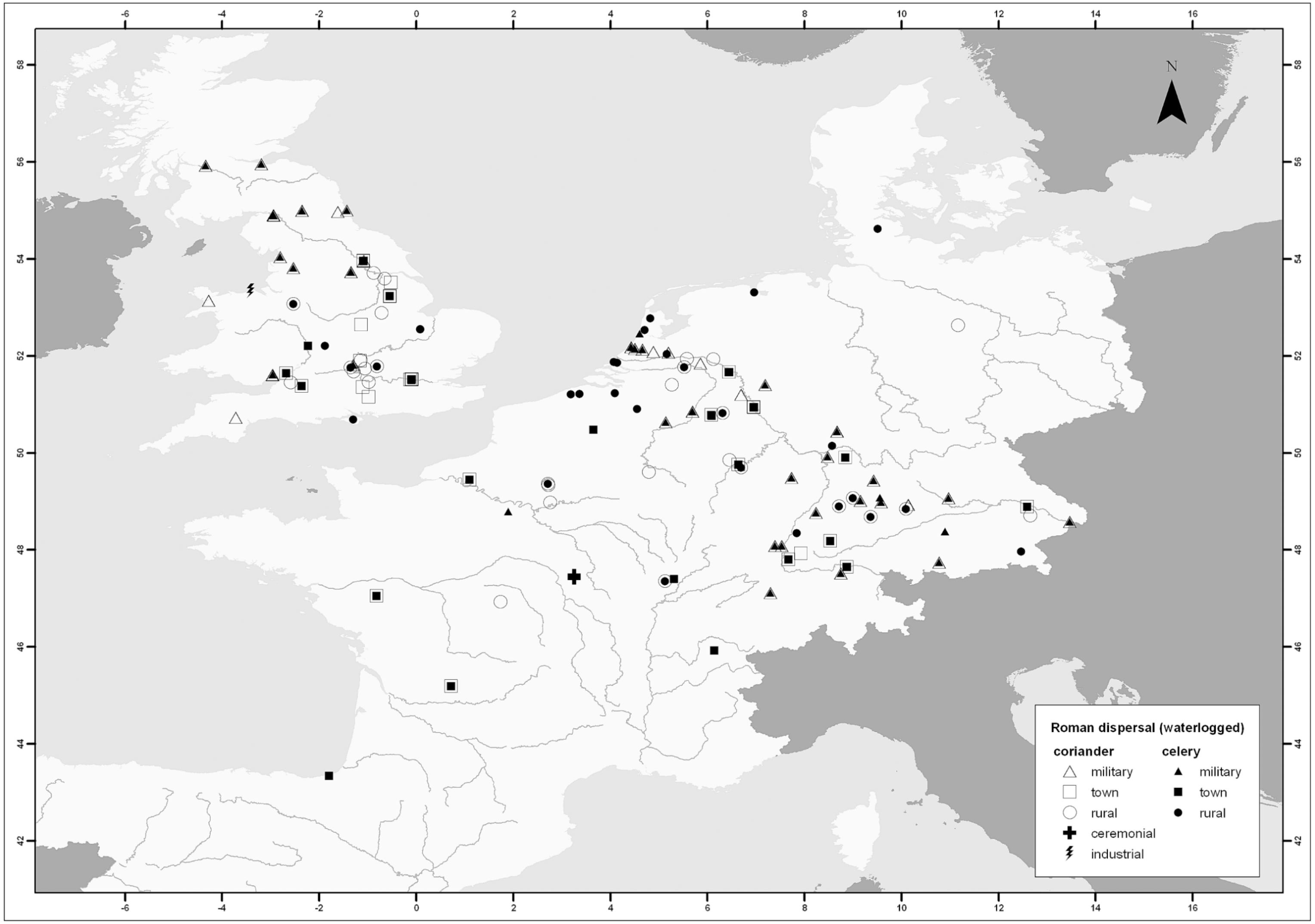

Figure 5.3.2b: Distribution of waterlogged coriander and celery in the Roman period.

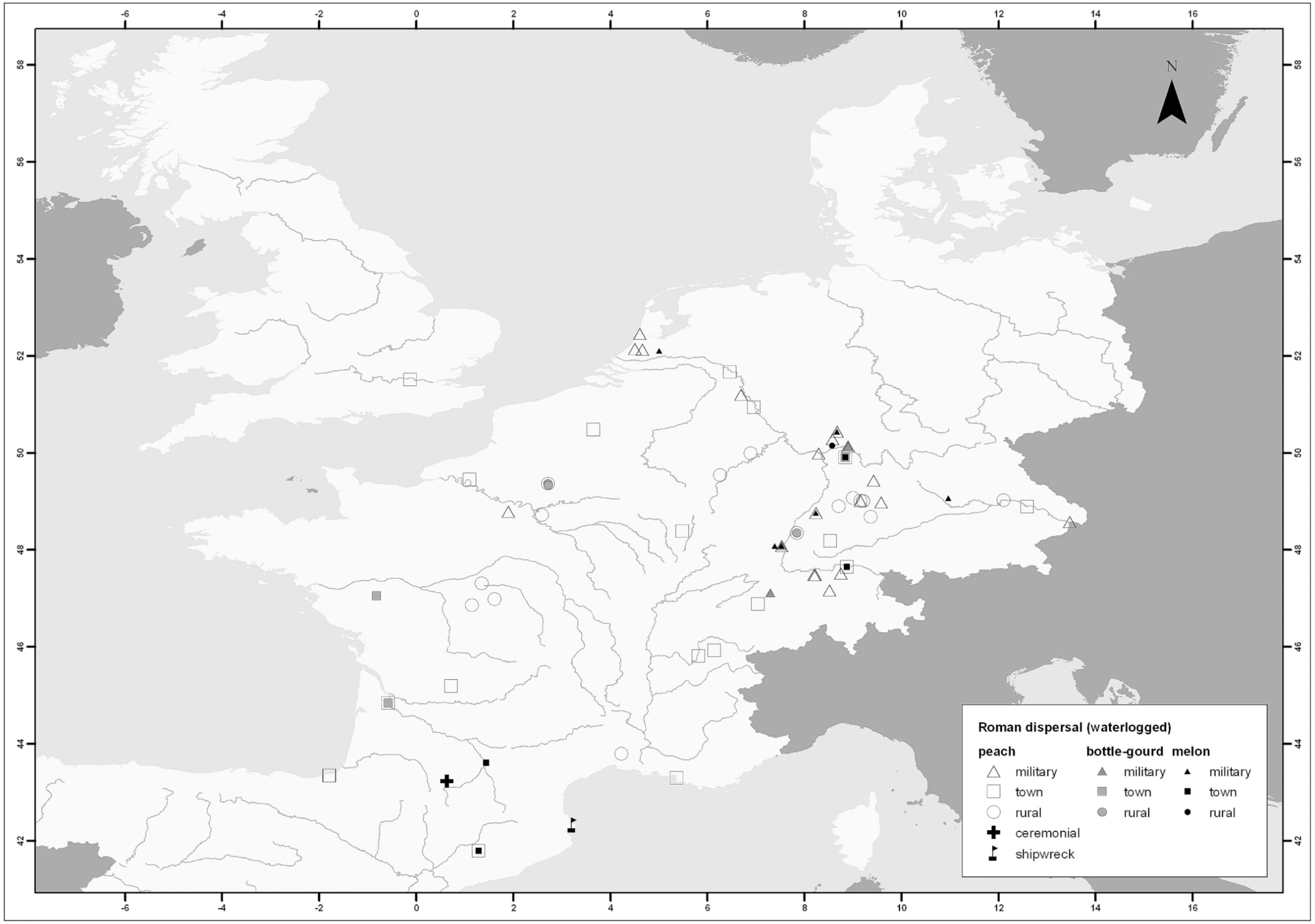

Figure 5.3.2c: Distribution of waterlogged peach, bottle-gourd and melon in the Roman period.

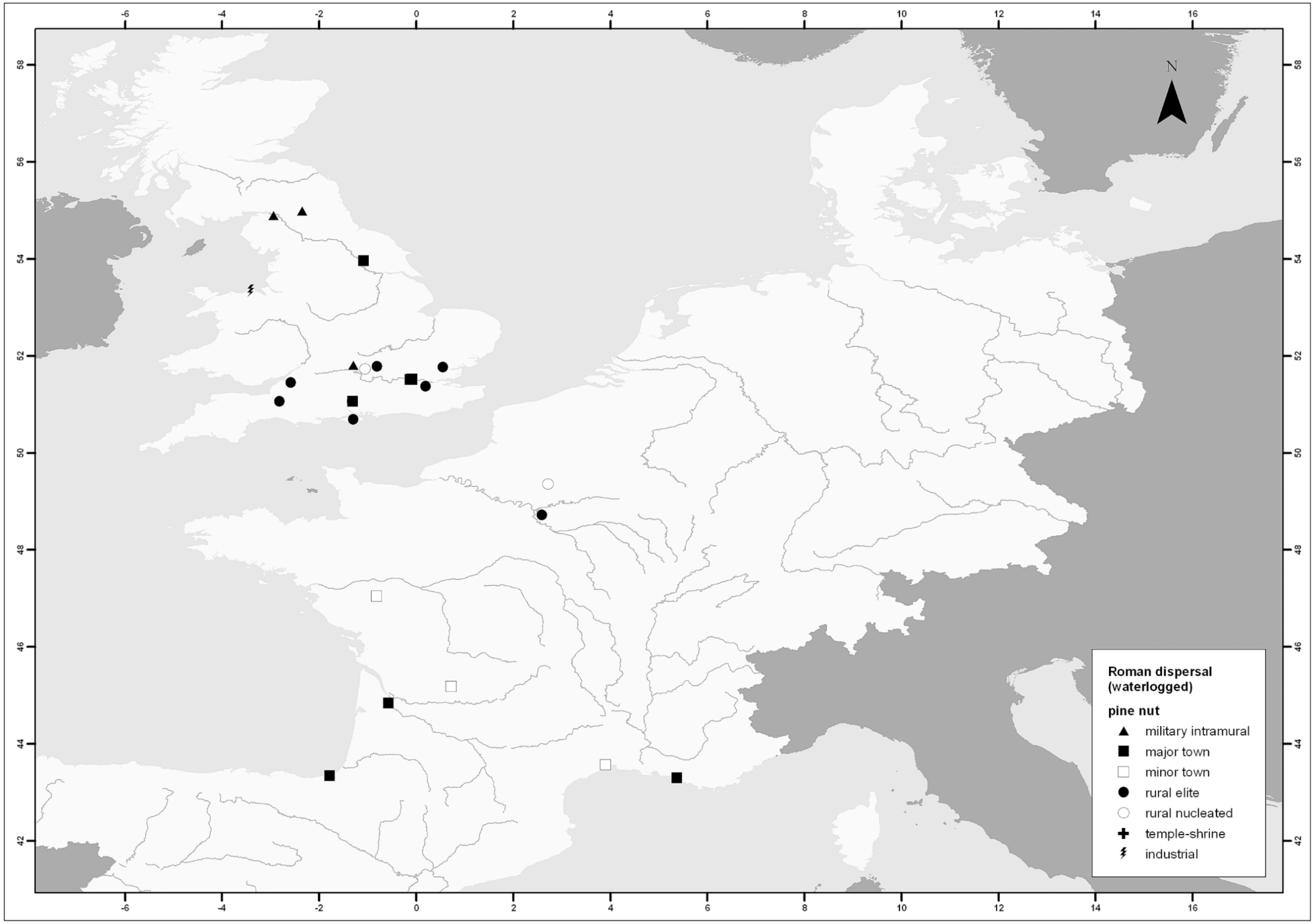

Figure 5.3.2d: Distribution of waterlogged pine nut in the Roman period.

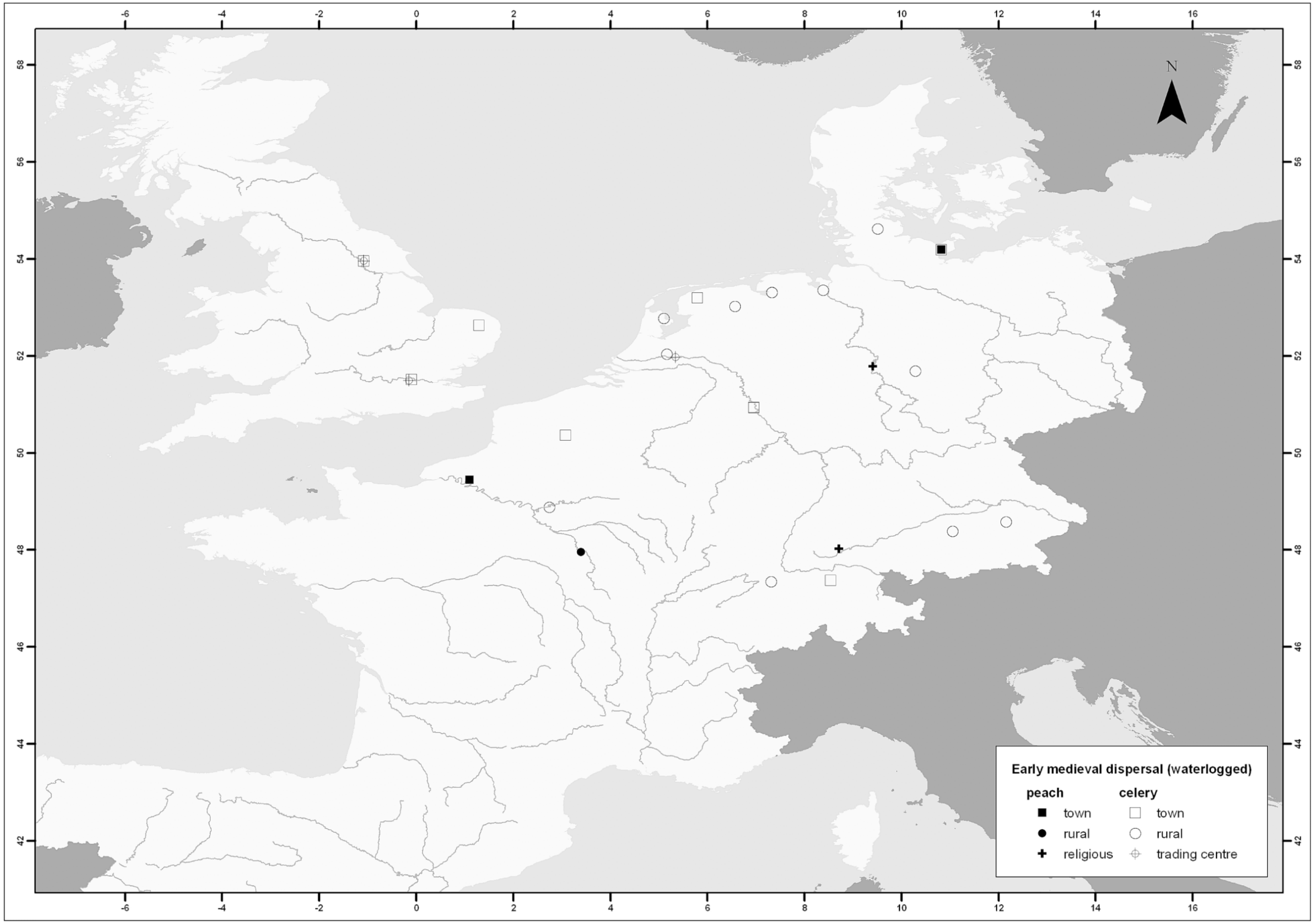

Figure 5.3.2e: Distribution of waterlogged celery and peach in the early medieval period.

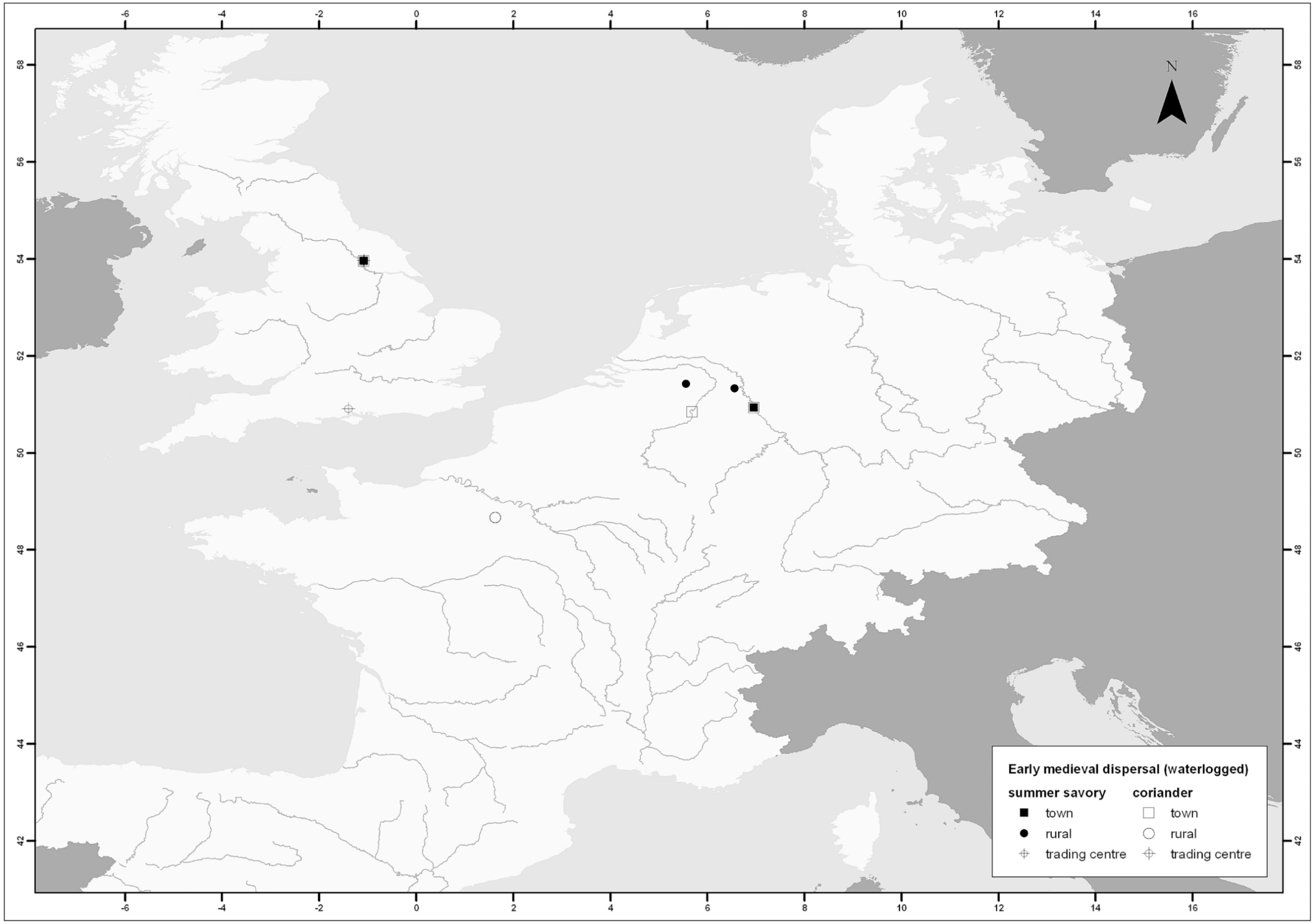

Figure 5.3.2f: Distribution of waterlogged summer savory and coriander in the early medieval period.

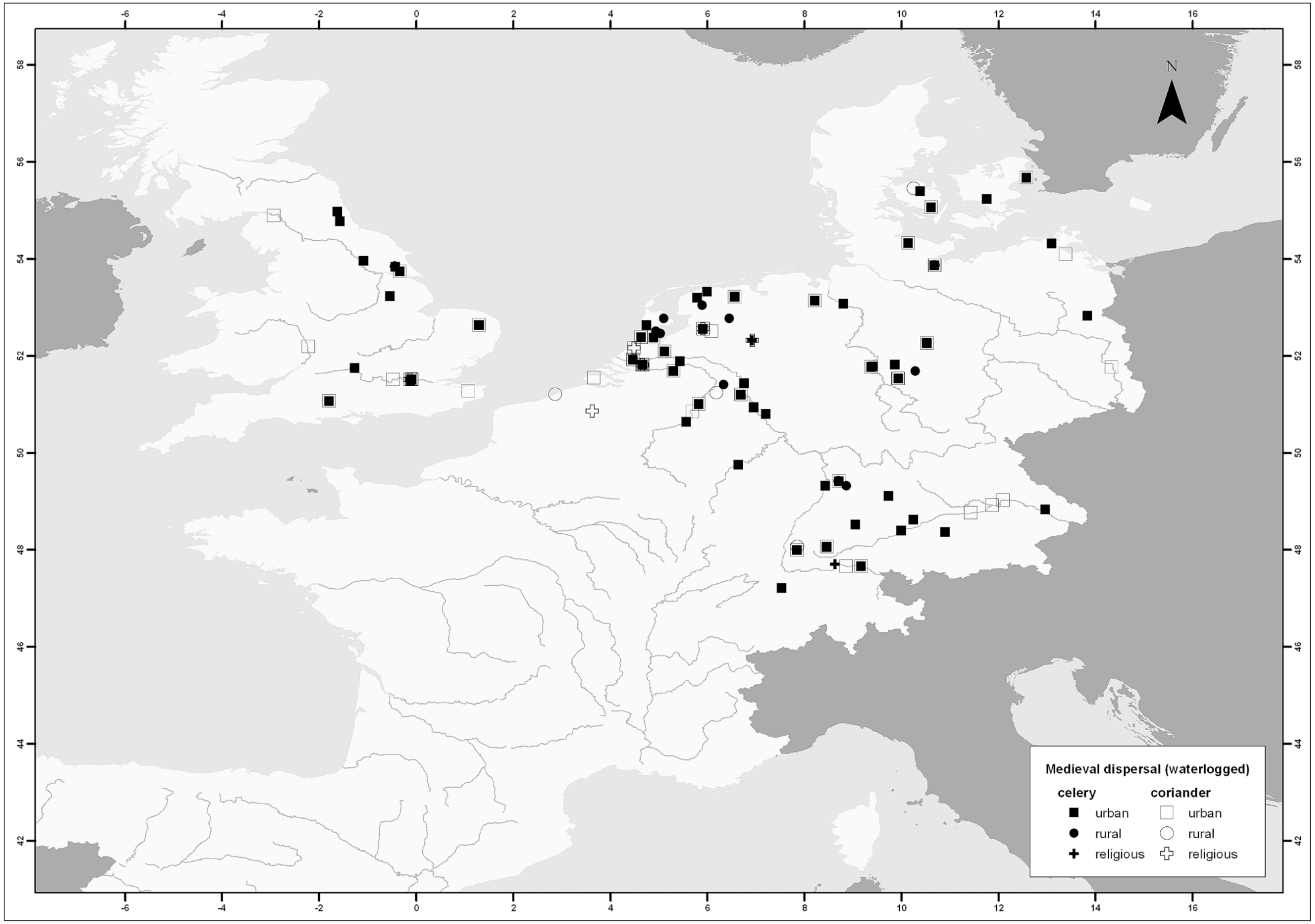

Figure 5.3.2g: Distribution of waterlogged celery and coriander in the medieval period.

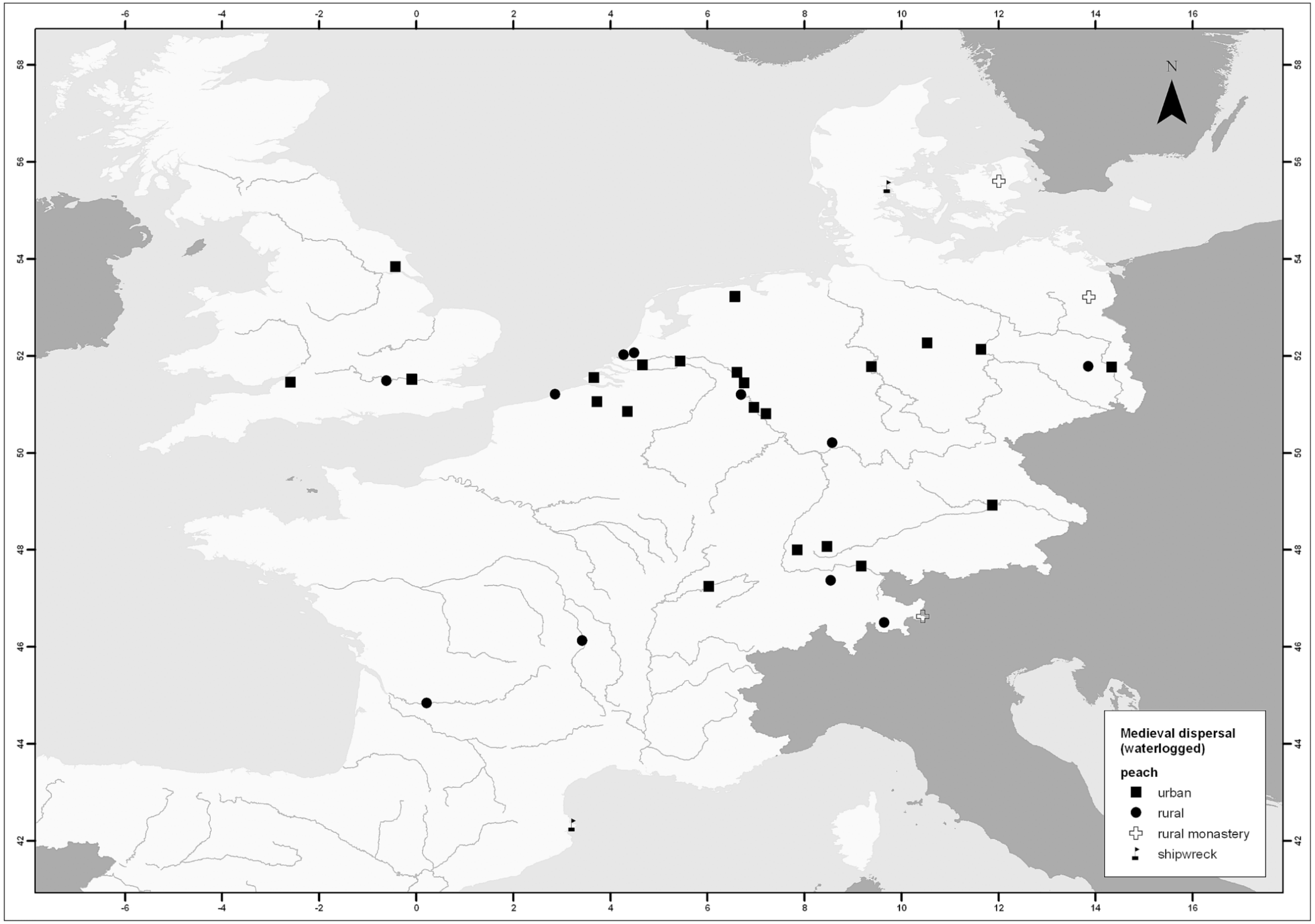

Figure 5.3.2h: Distribution of waterlogged peach in the medieval period.

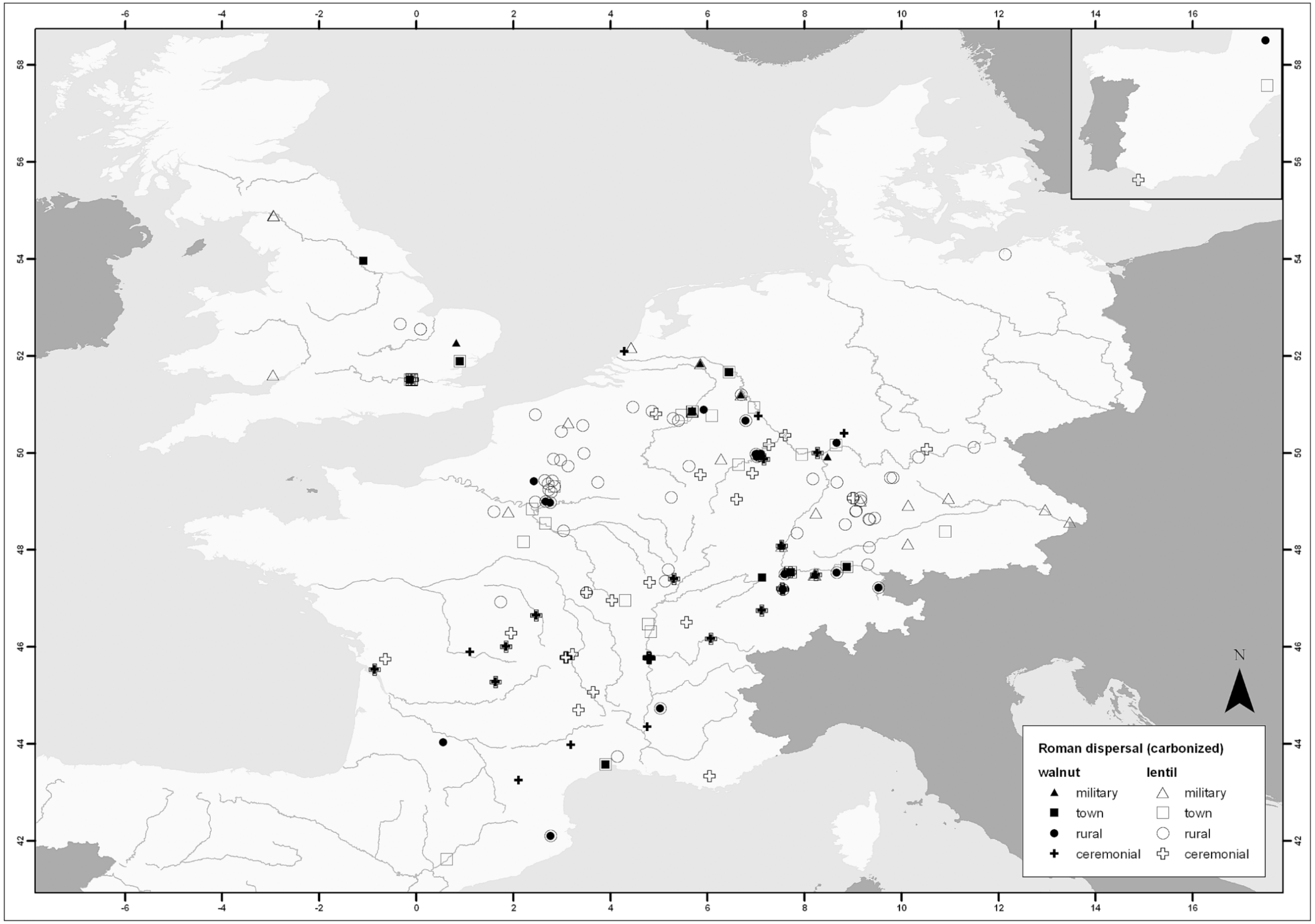

Figure 5.3.2i: Distribution of carbonized walnut and lentil in the Roman period.

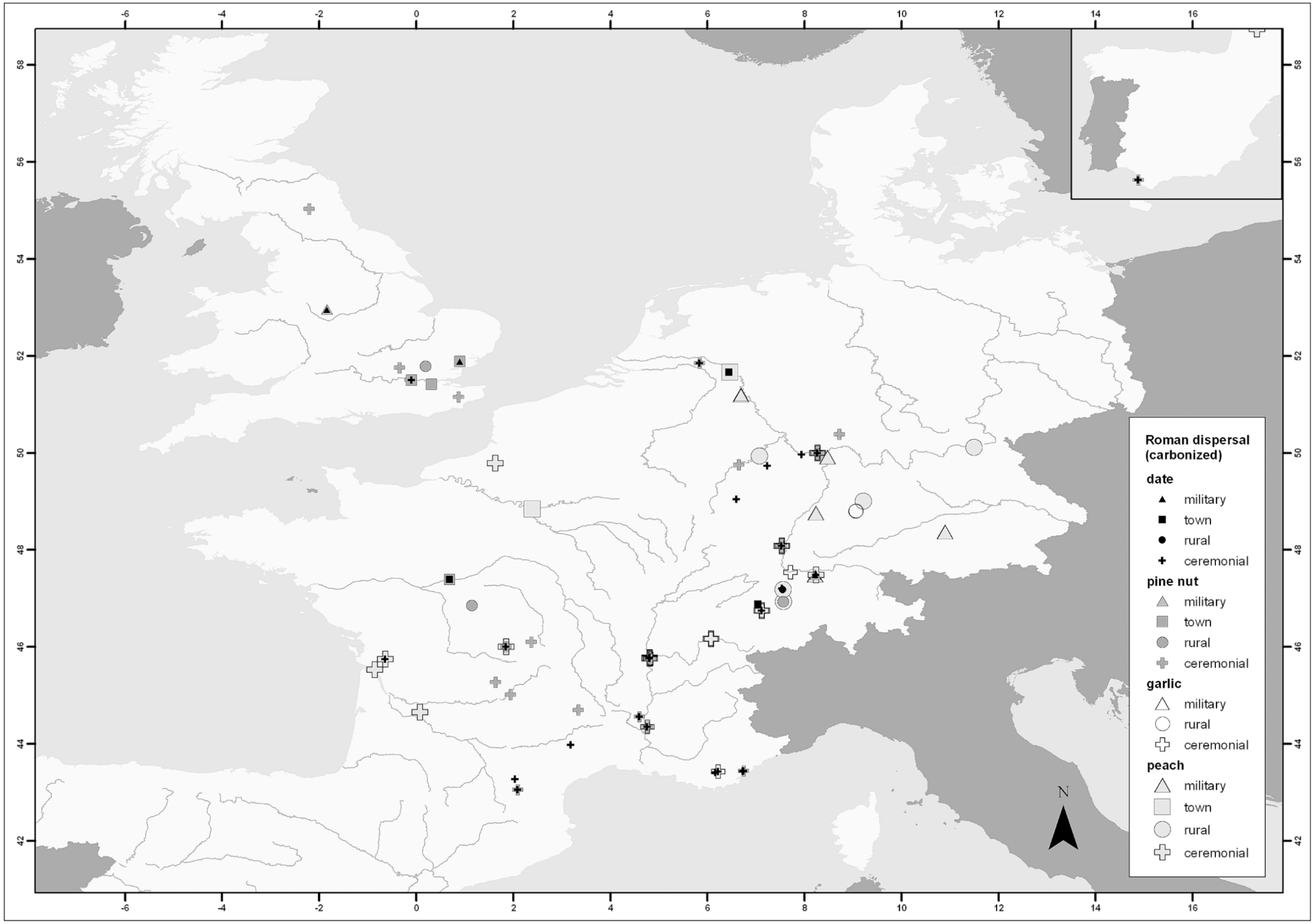

Figure 5.3.2j: Distribution of carbonized date, pine nut, garlic and peach in the Roman period.

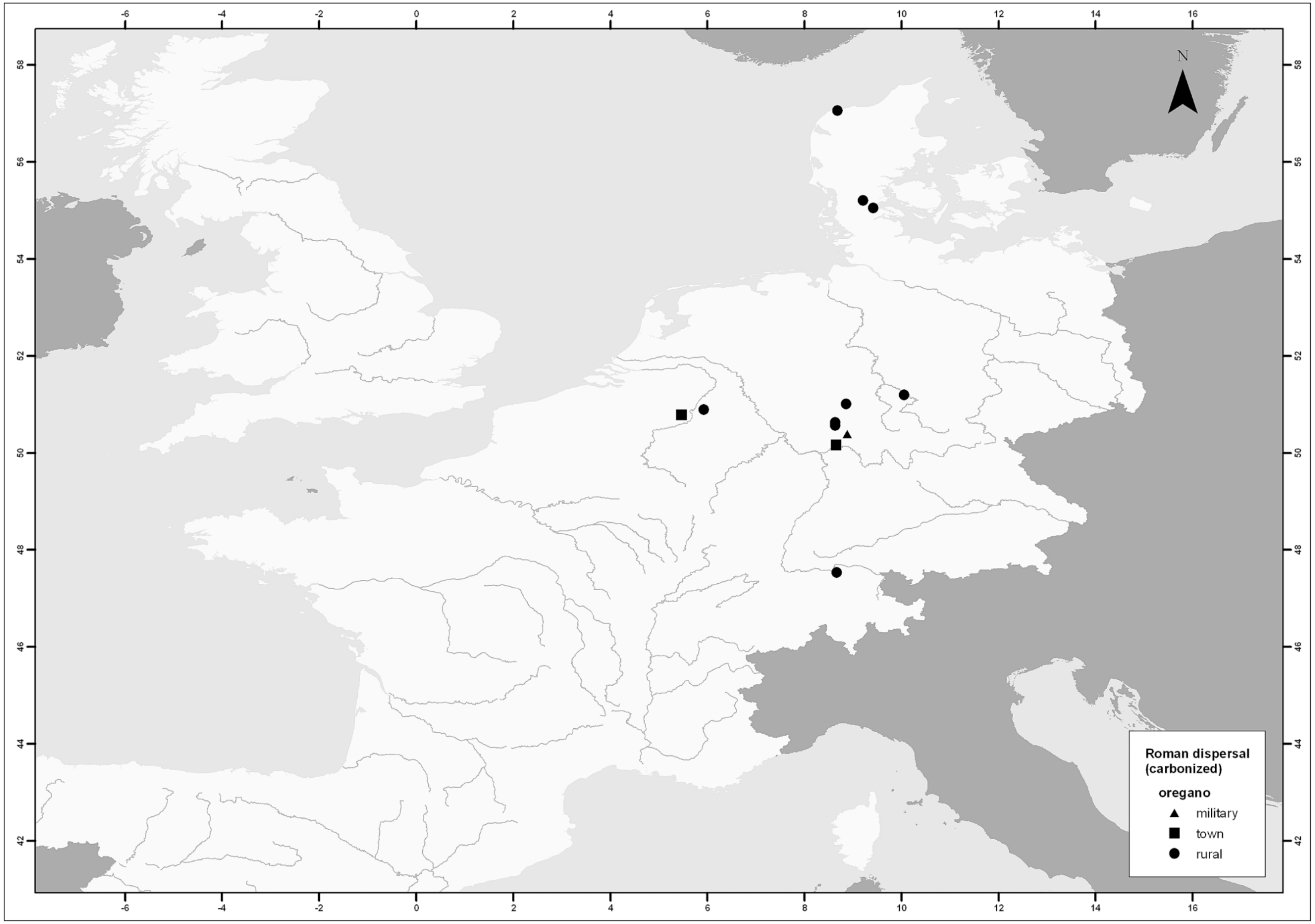

Figure 5.3.2k: Distribution of carbonized oregano in the Roman period.

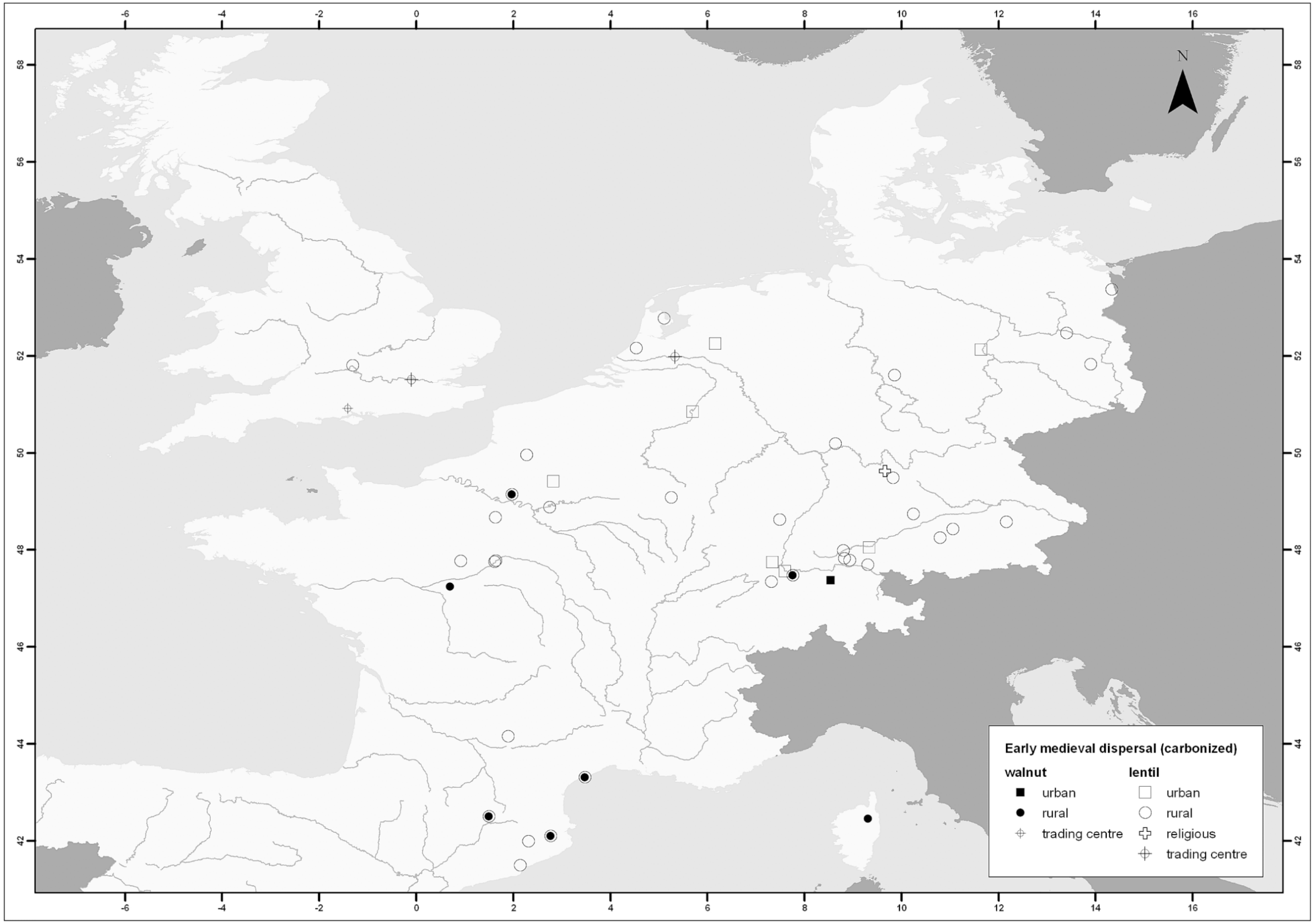

Figure 5.3.2l: Distribution of carbonized walnut and lentil in the early medieval period.

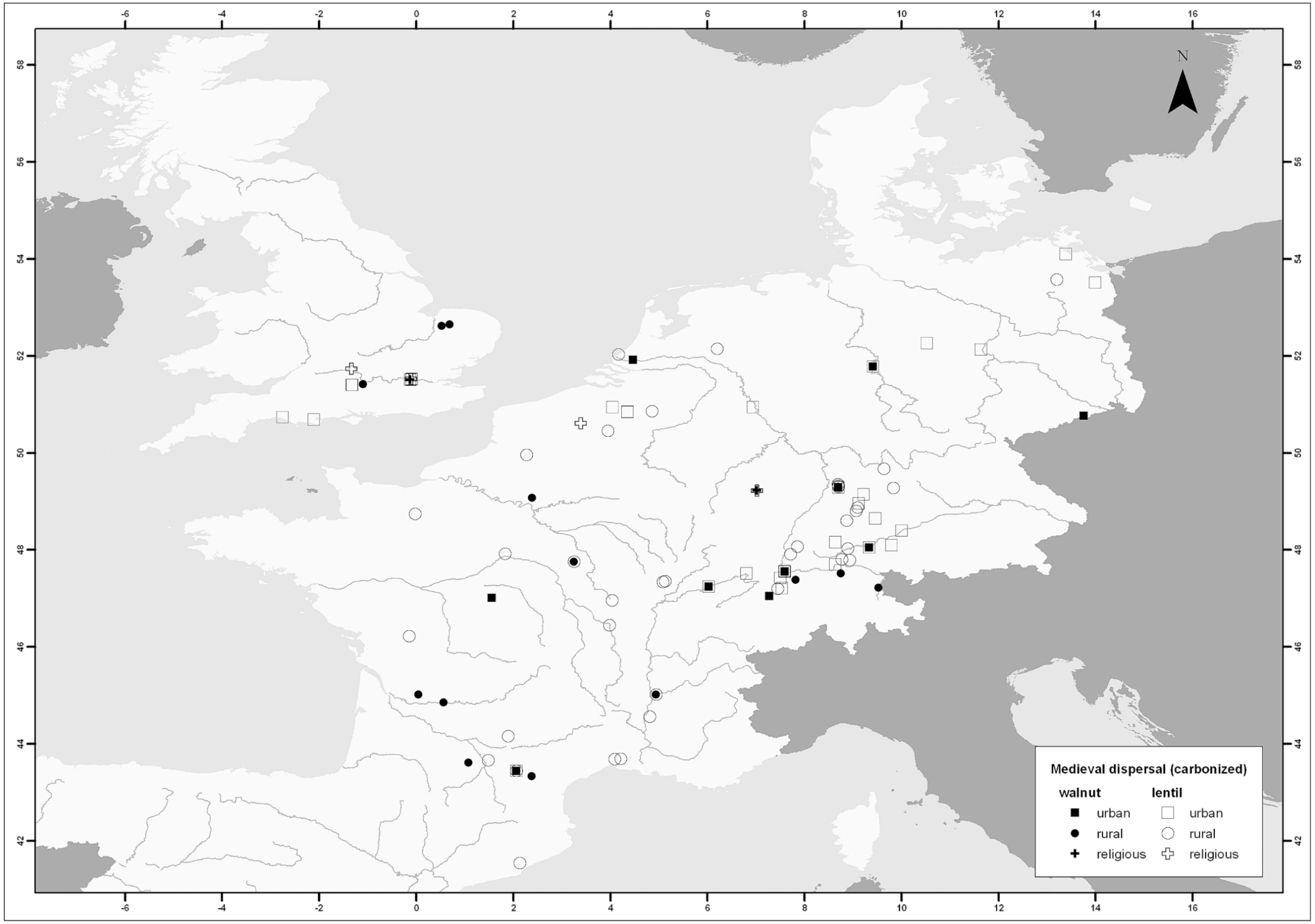

Figure 5.3.2m: Distribution of carbonized walnut and lentil in the medieval period.

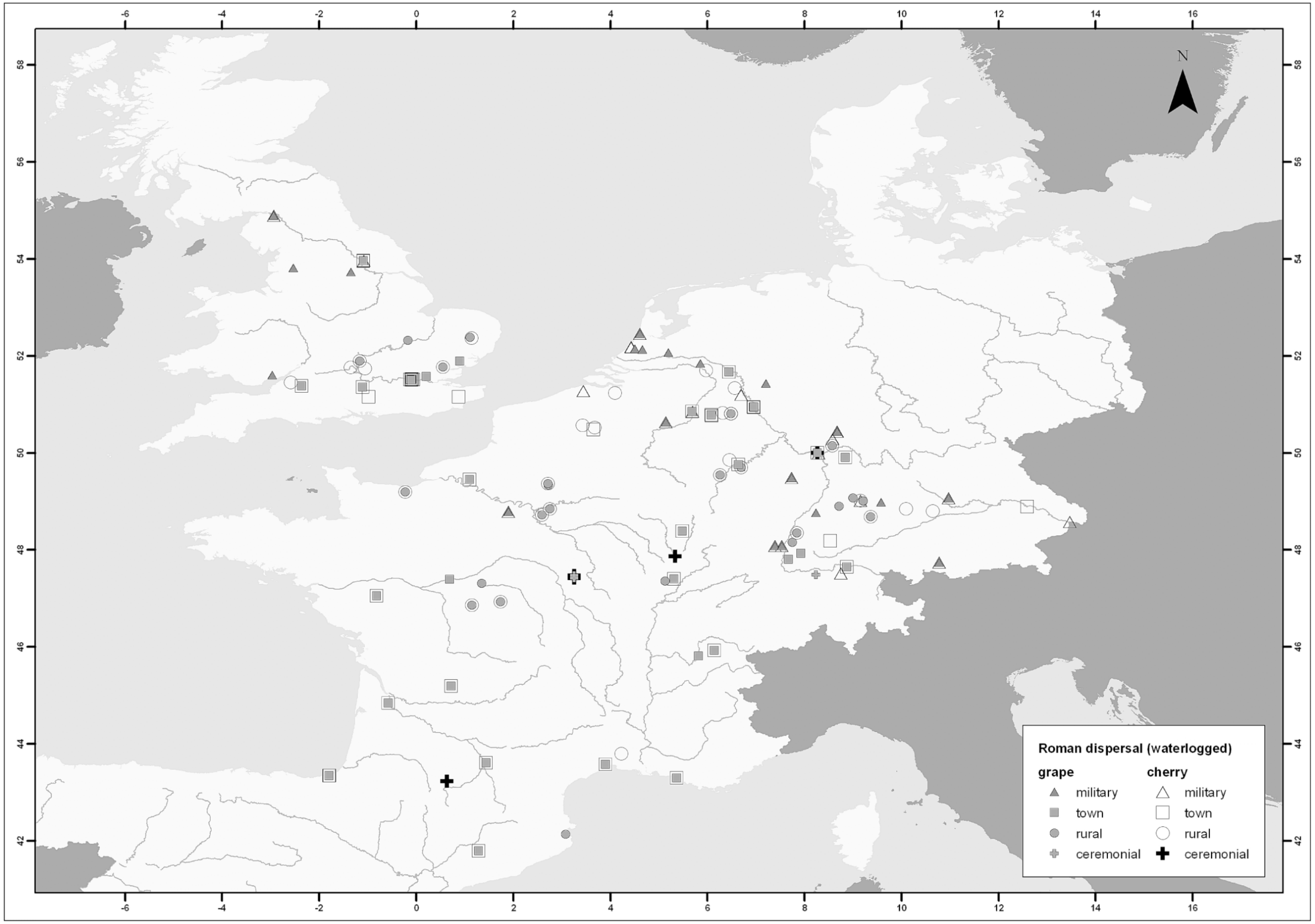

Figure 5.3.3a: Distribution of waterlogged grape and cherry in the Roman period.

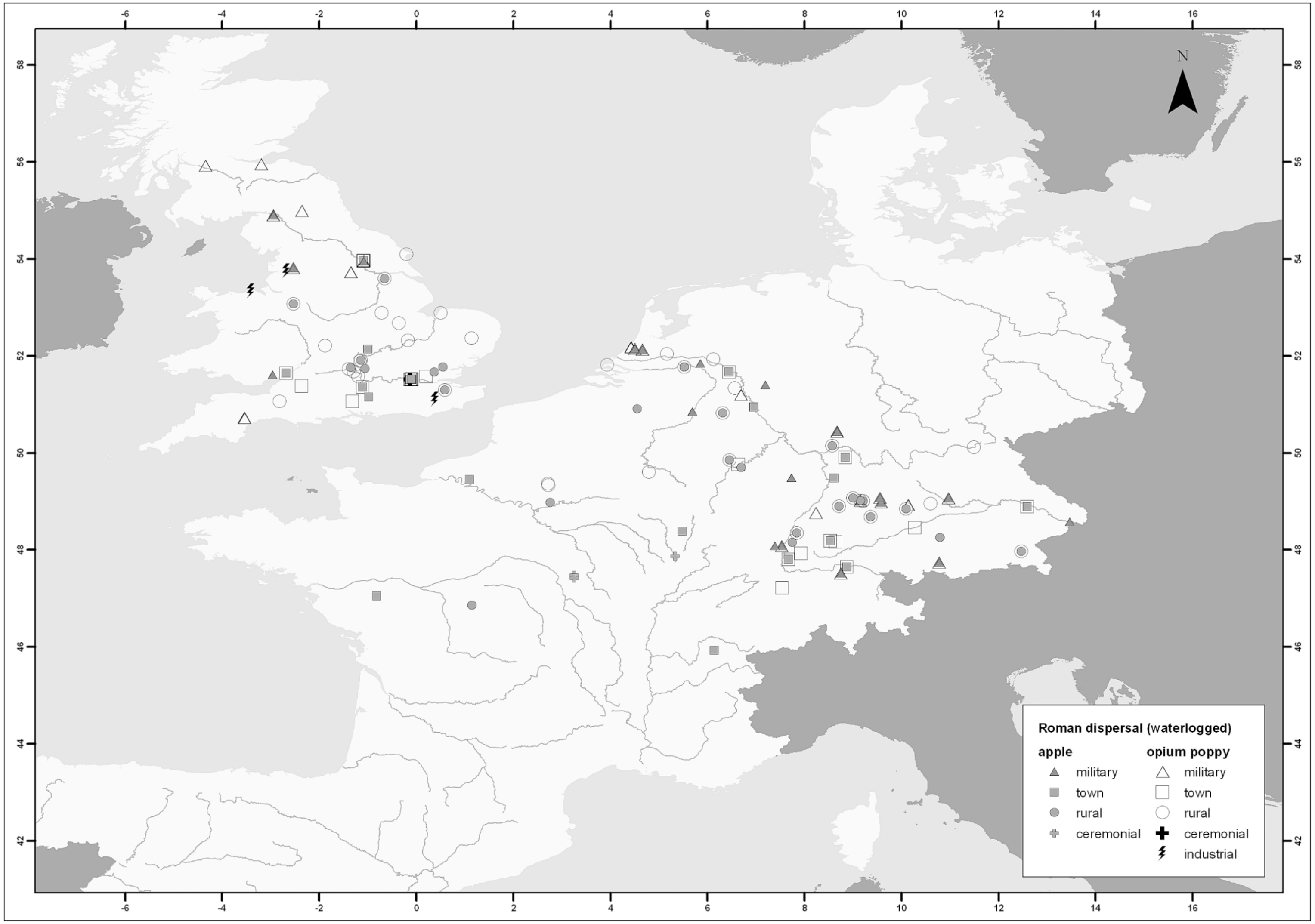

Figure 5.3.3b: Distribution of waterlogged apple and opium poppy in the Roman period.

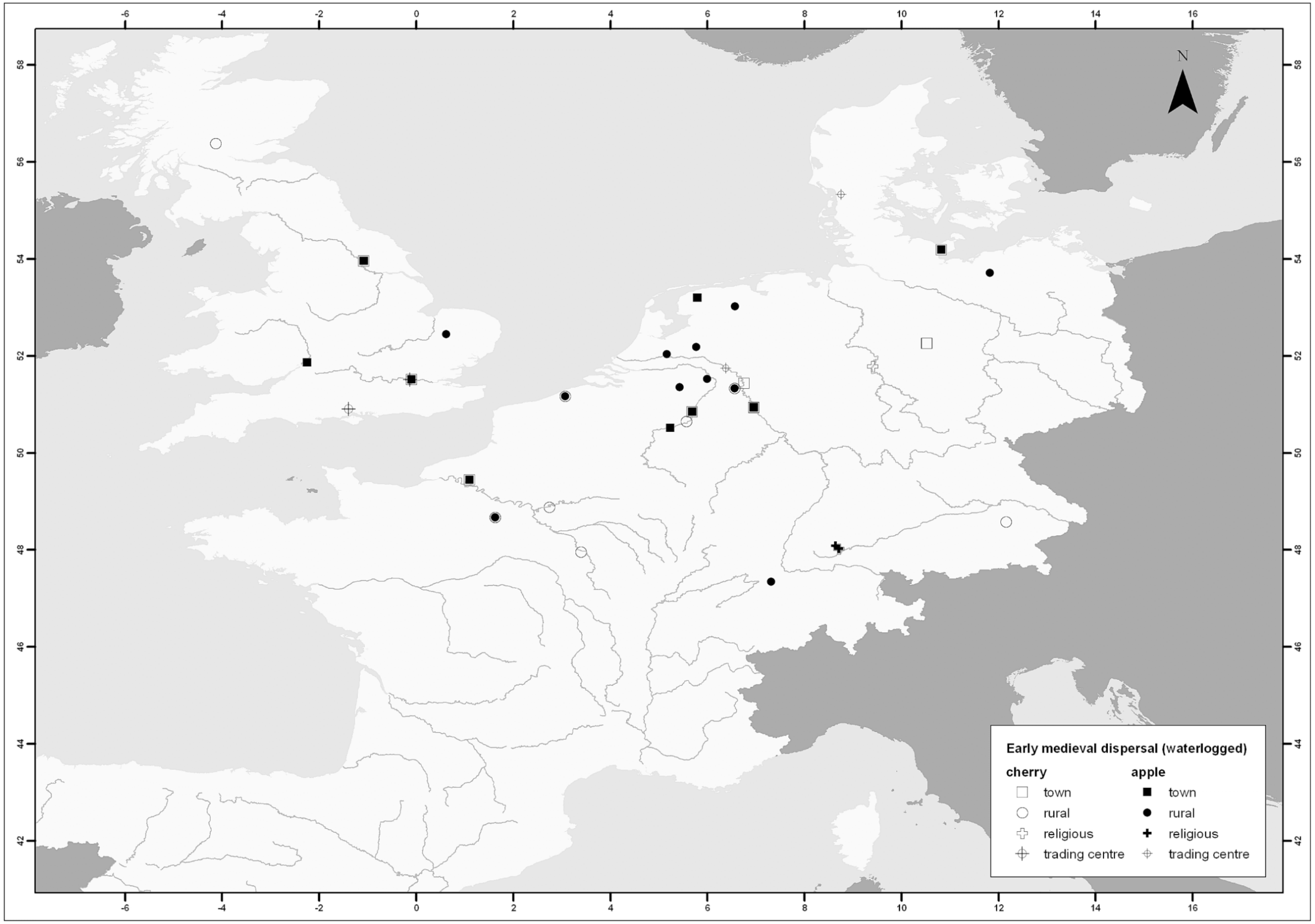

Figure 5.3.3c: Distribution of waterlogged cherry and apple in the early medieval period.

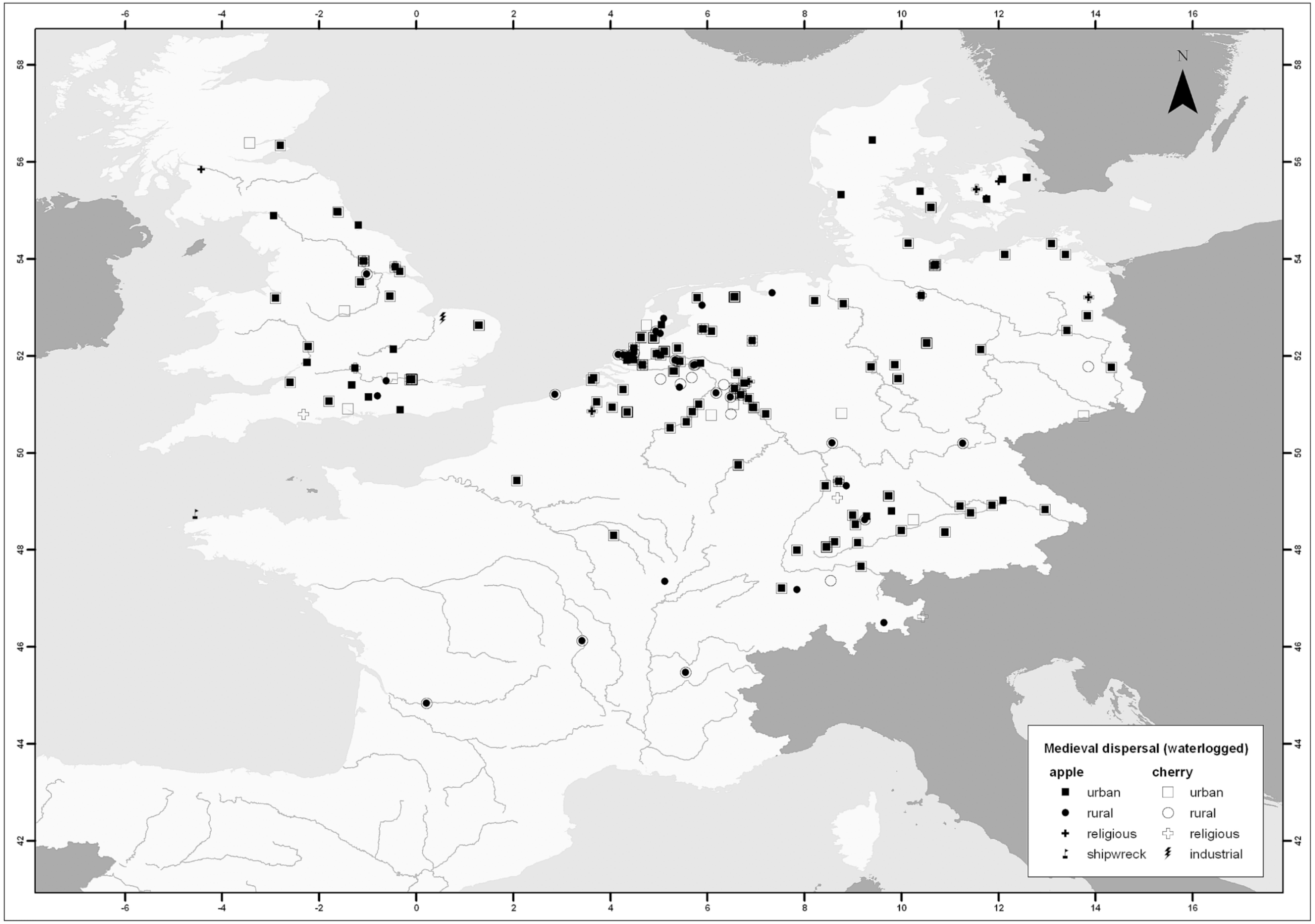

Figure 5.3.3d: Distribution of waterlogged cherry and apple in the medieval period.

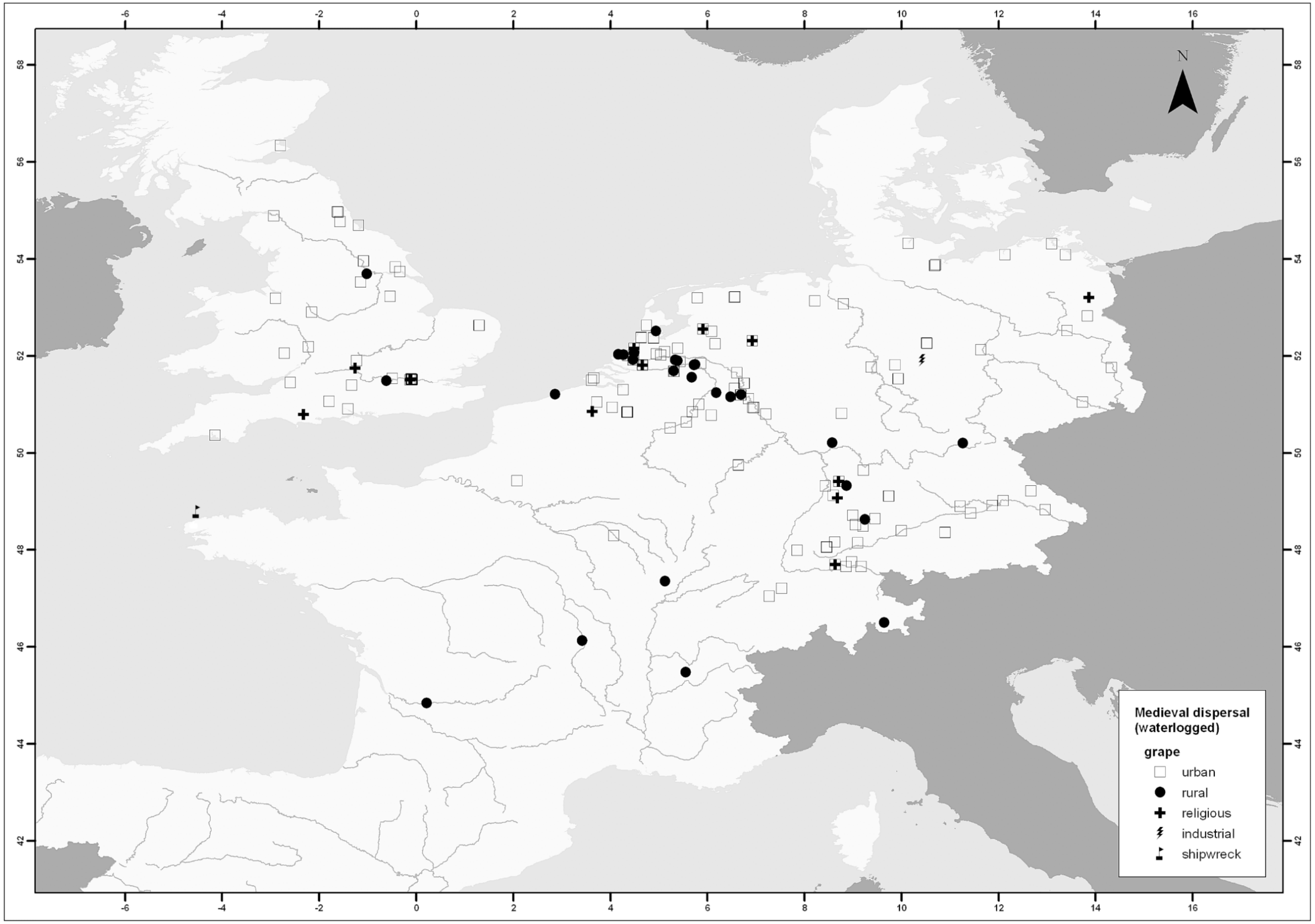

Figure 5.3.3e: Distribution of waterlogged grape in the medieval period.

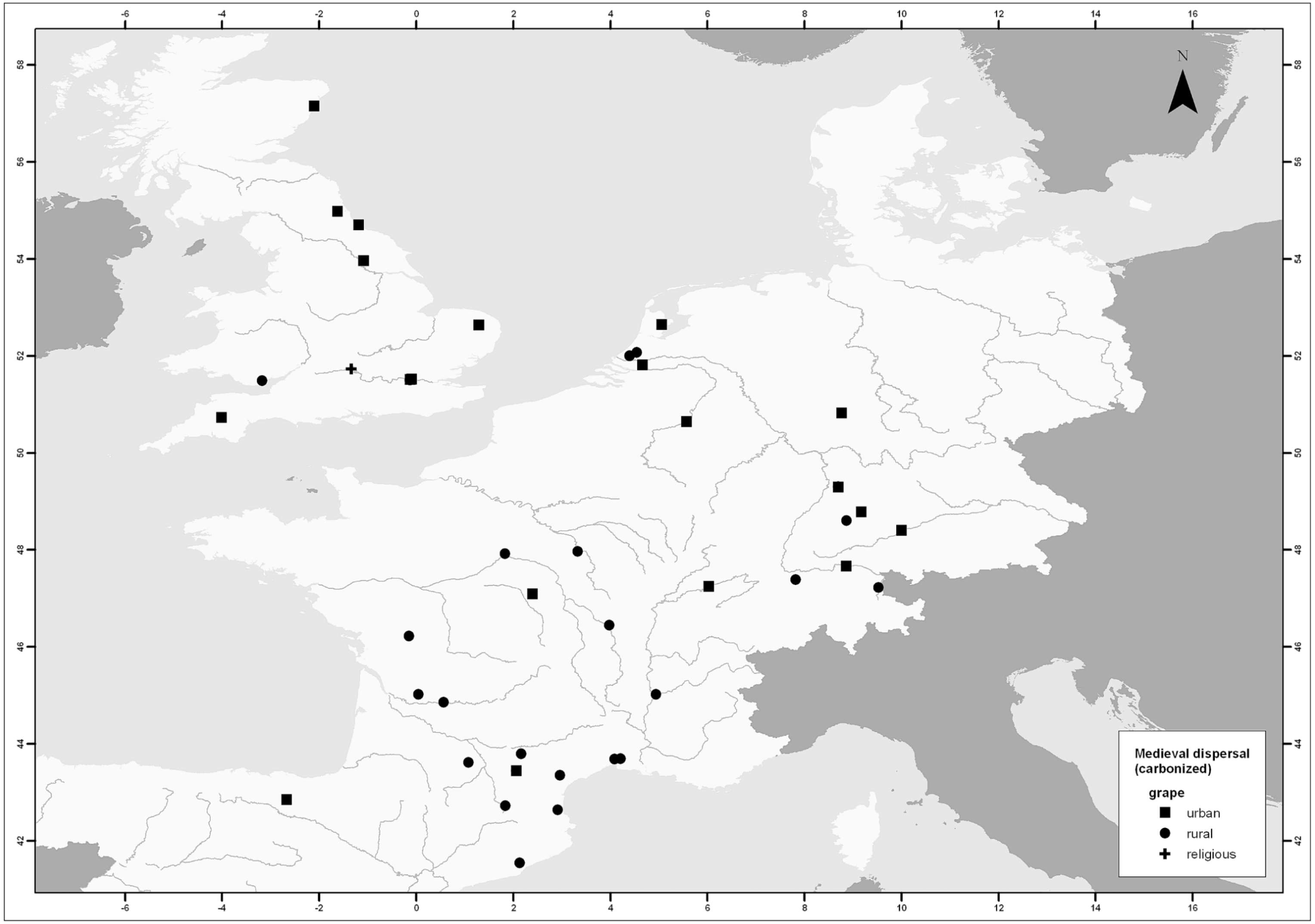

Figure 5.3.3f: Distribution of carbonized grape in the medieval period.

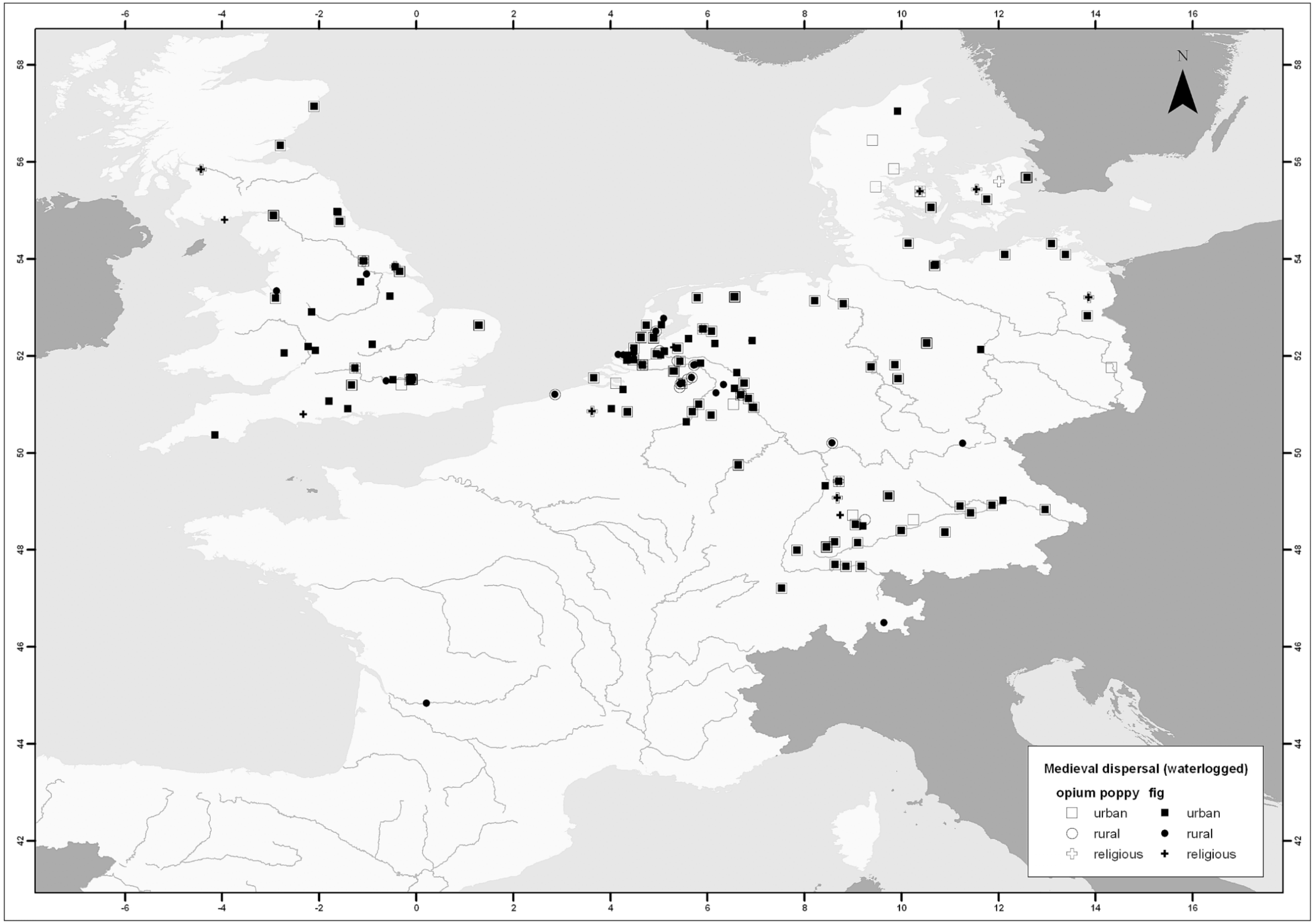

Figure 5.3.3g: Distribution of waterlogged opium poppy and fig in the medieval period.

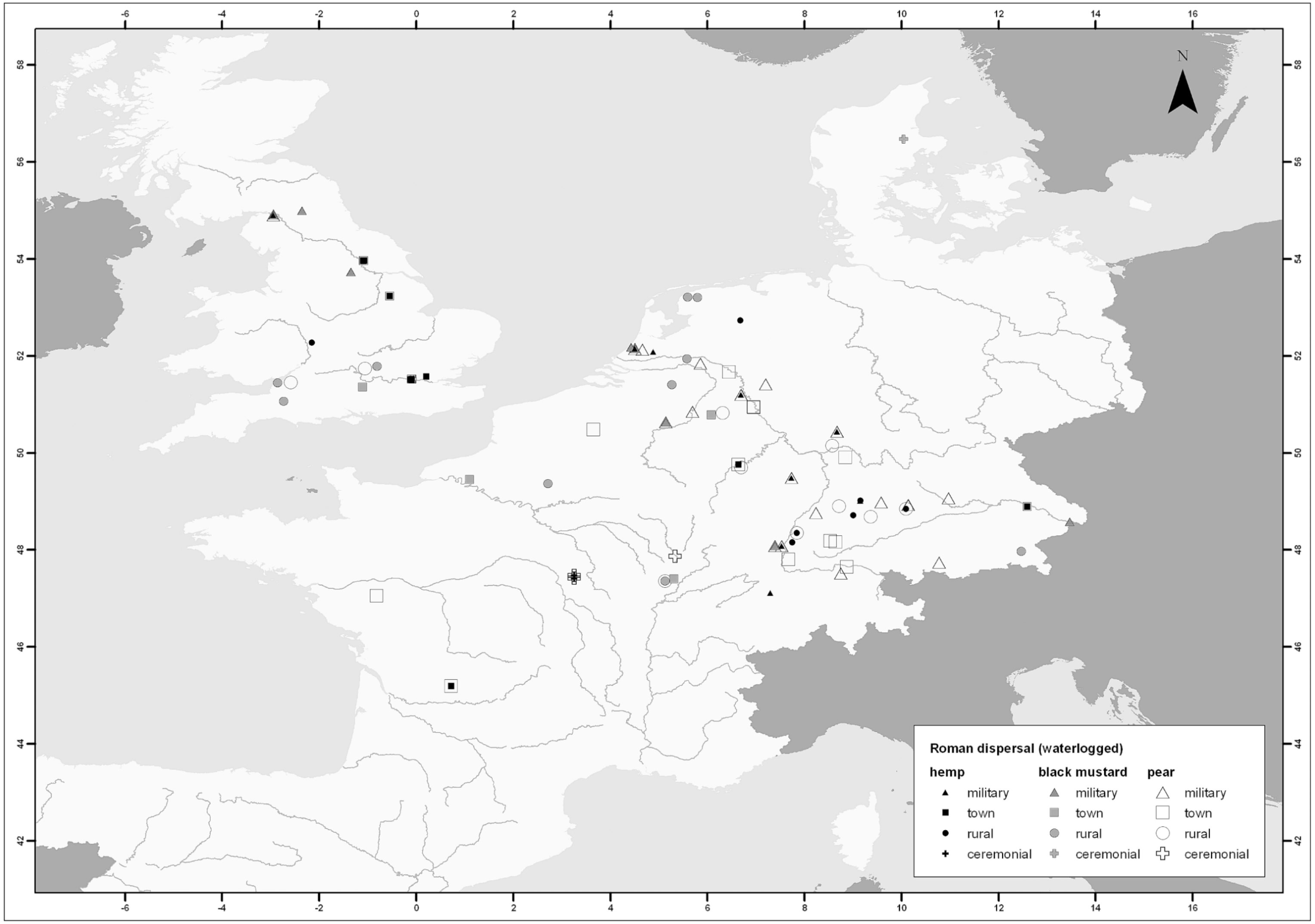

Figure 5.3.4a: Distribution of waterlogged hemp, black mustard and pear in the Roman period.

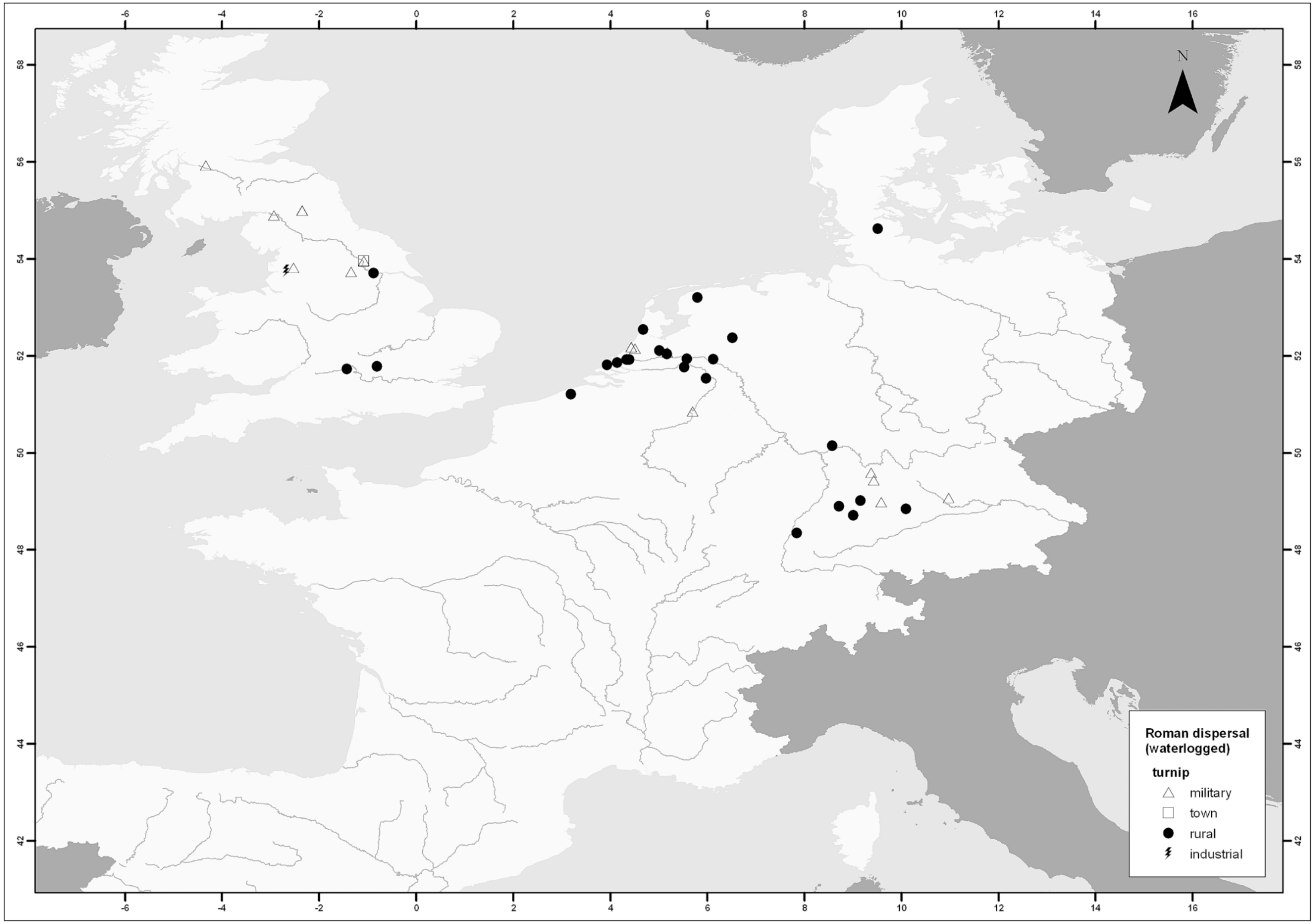

Figure 5.3.4b: Distribution of waterlogged turnip in the Roman period.

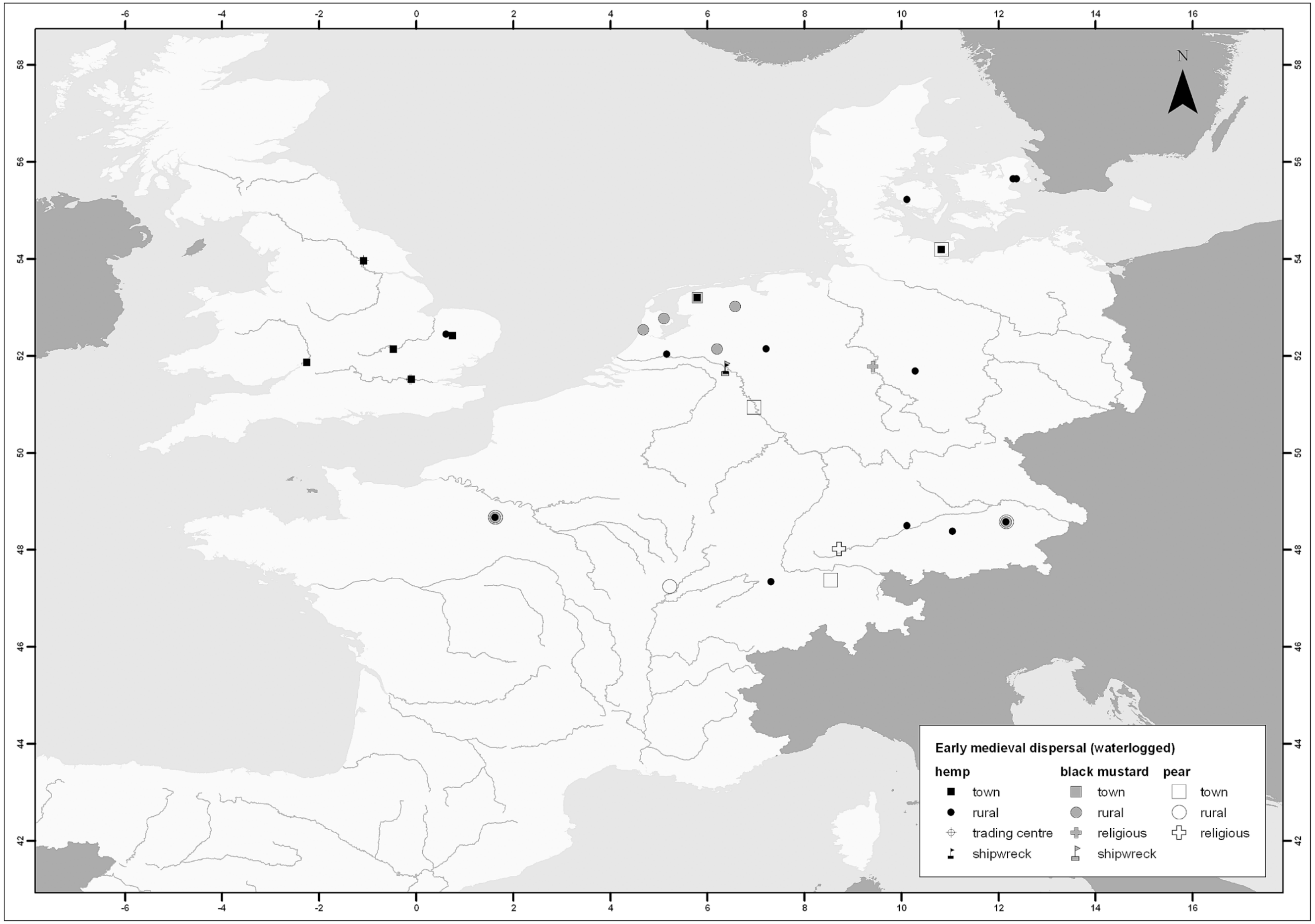

Figure 5.3.4c: Distribution of waterlogged hemp, black mustard and pear in the early medieval period.

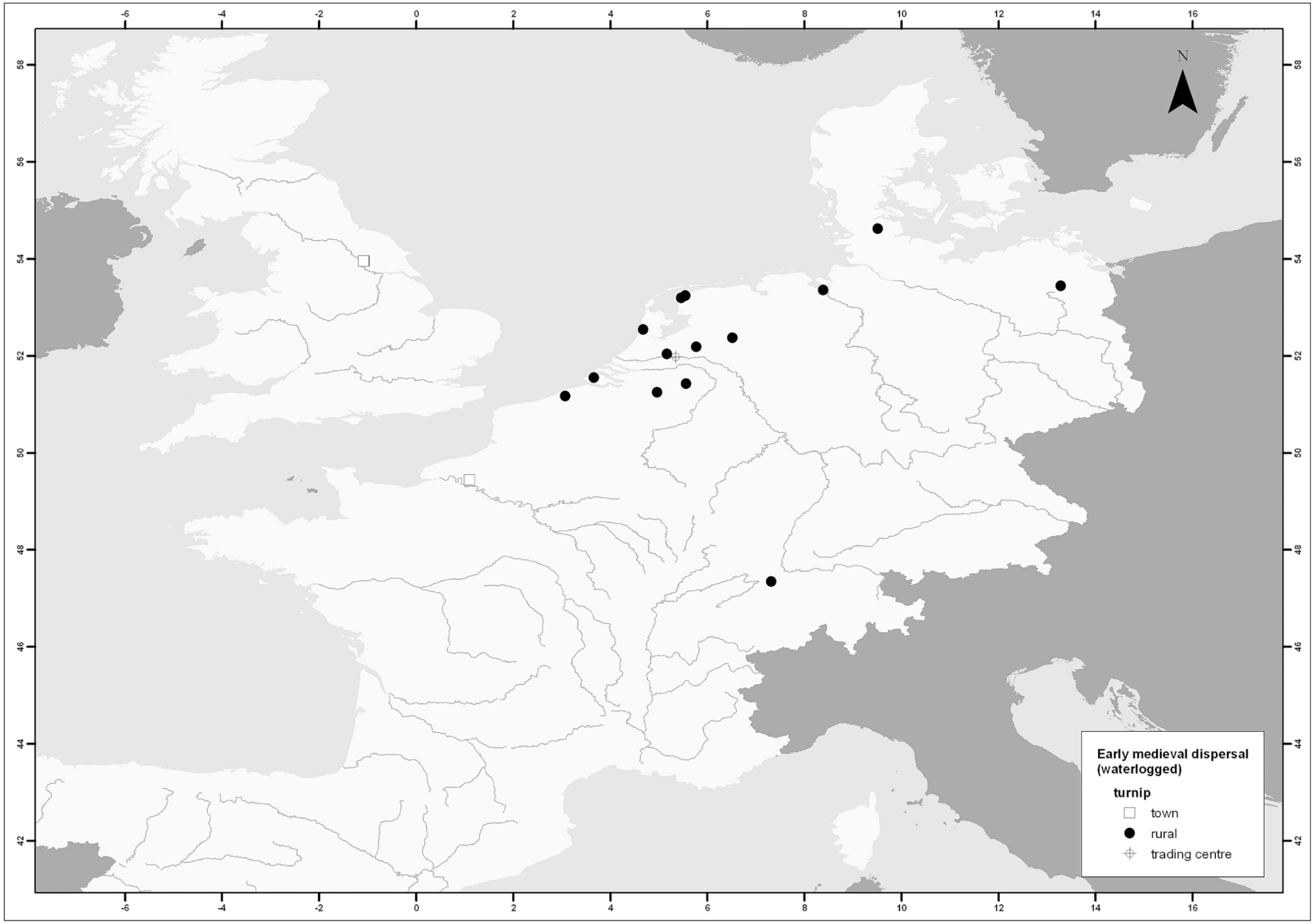

Figure 5.3.4d: Distribution of waterlogged turnip in the early medieval period.

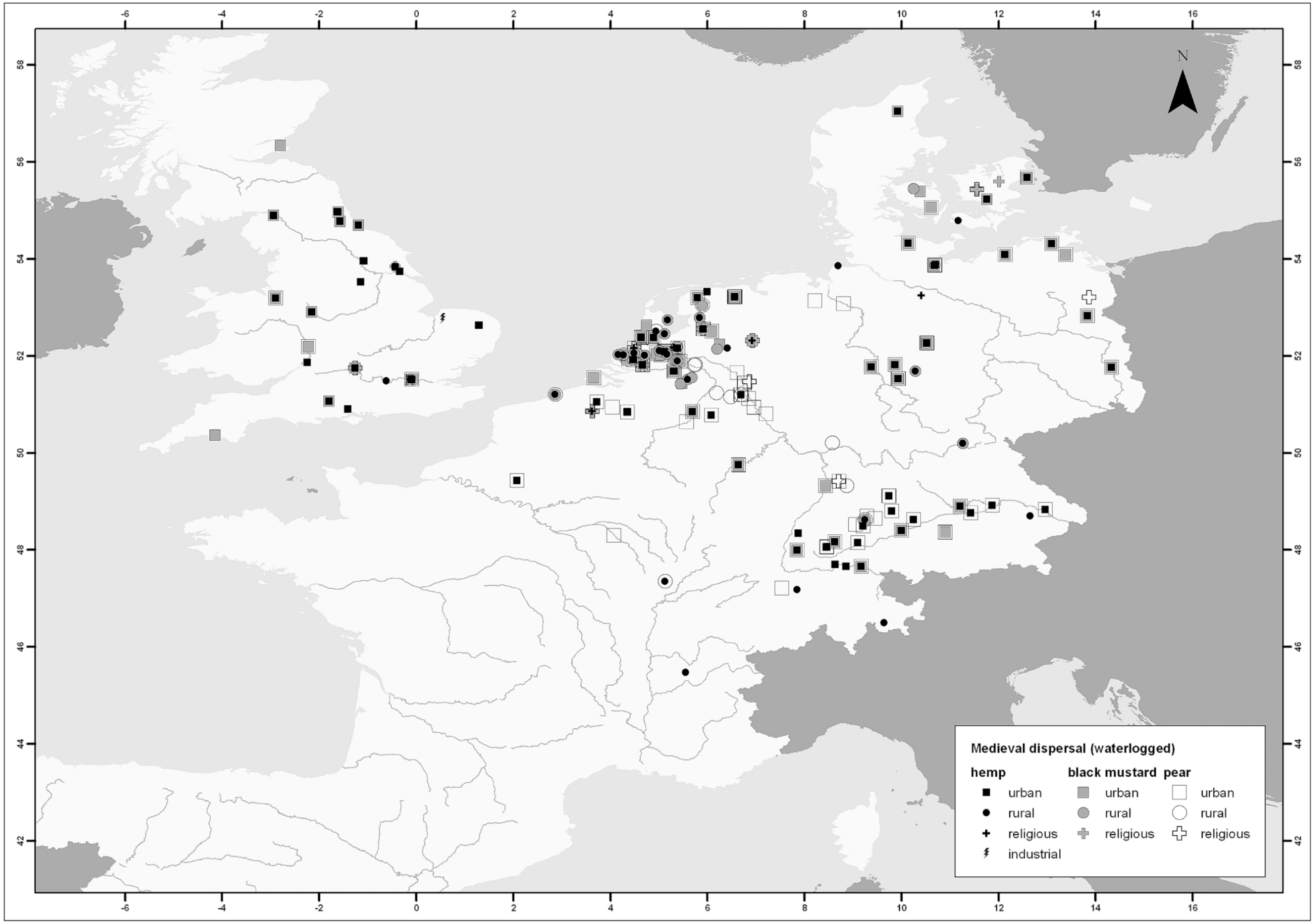

Figure 5.3.4e: Distribution of waterlogged hemp, black mustard and pear in the medieval period.

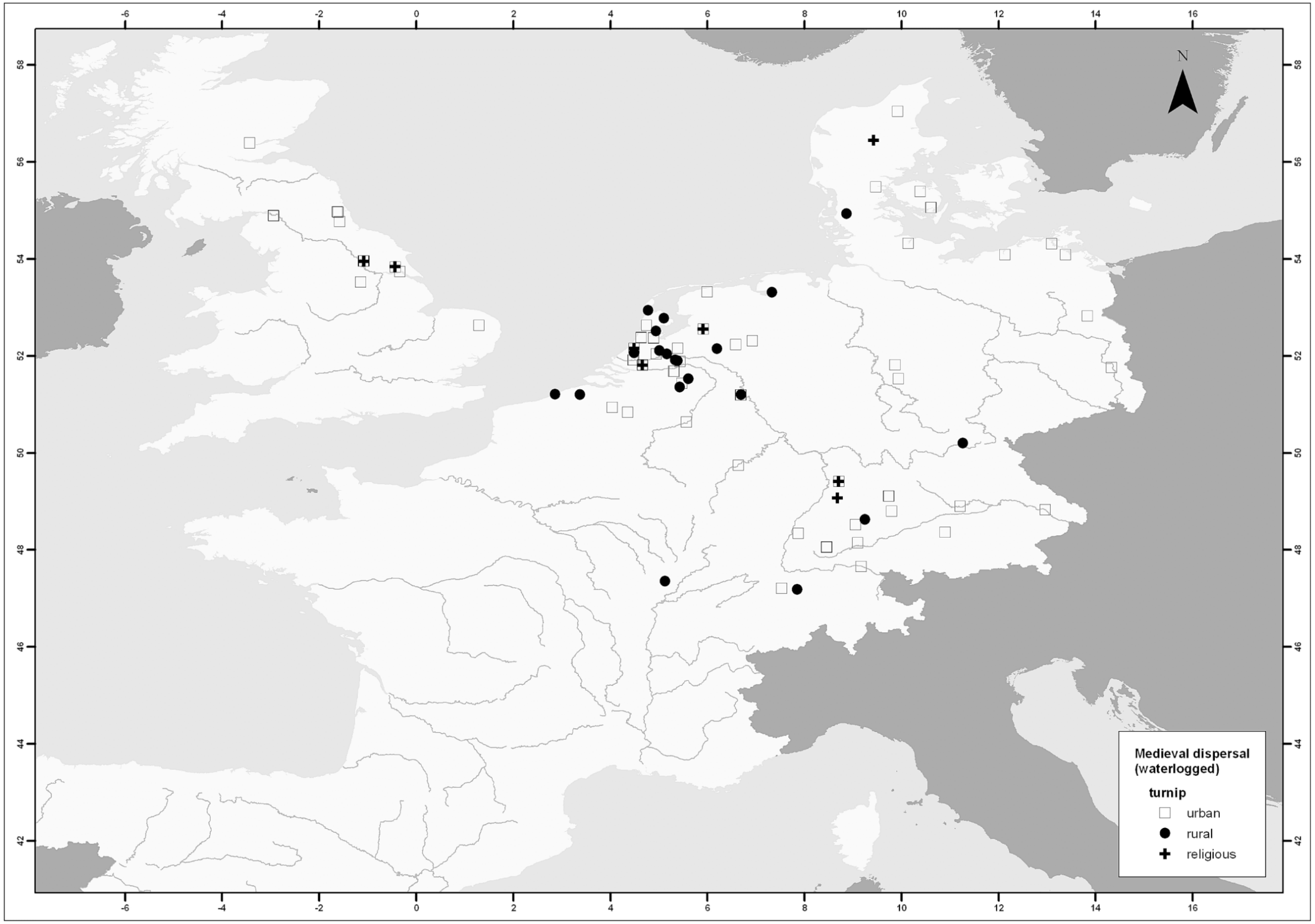

Figure 5.3.4f: Distribution of waterlogged turnip in the medieval period.

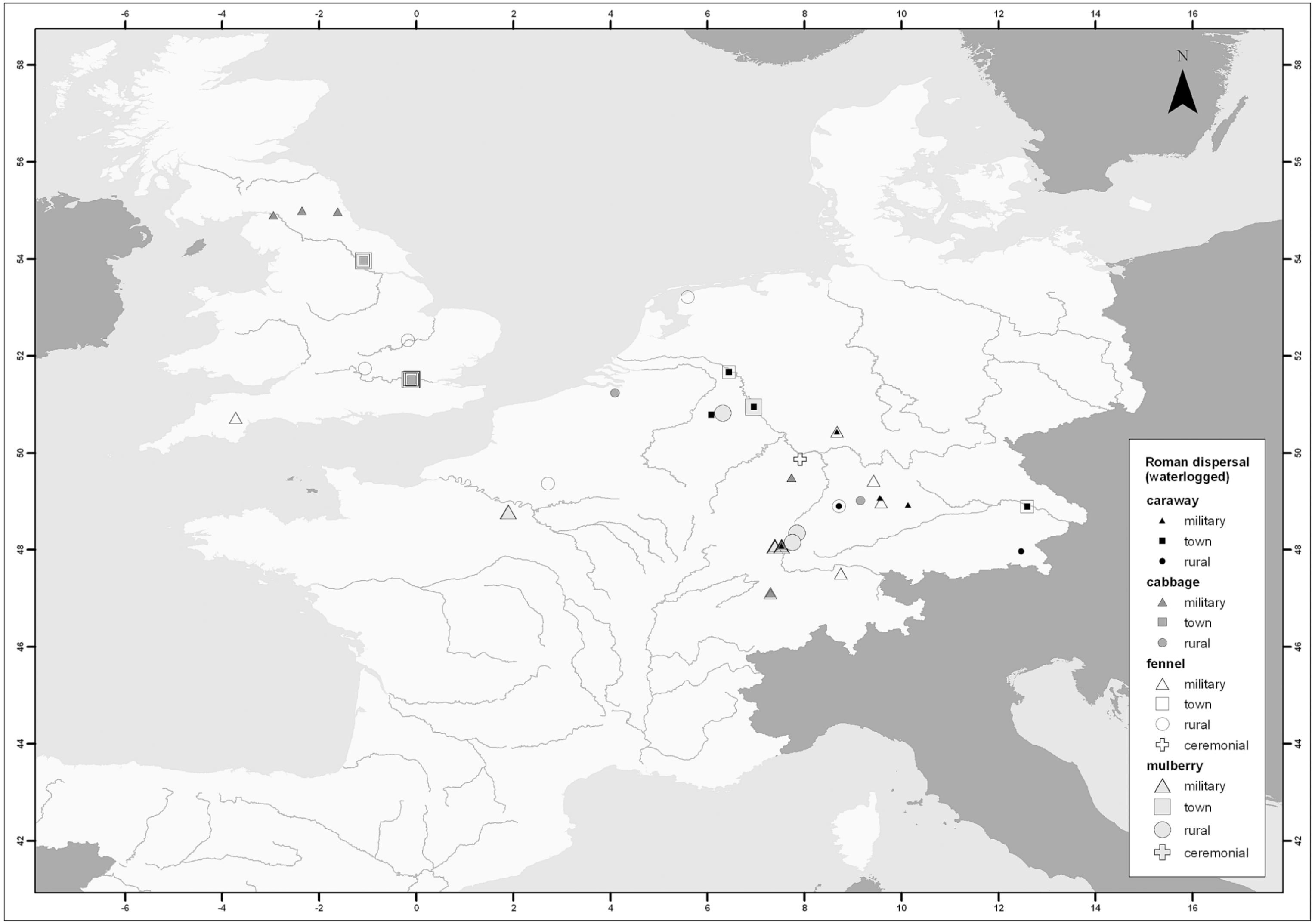

Figure 5.3.4g: Distribution of waterlogged caraway, cabbage, fennel and mulberry in the Roman period.

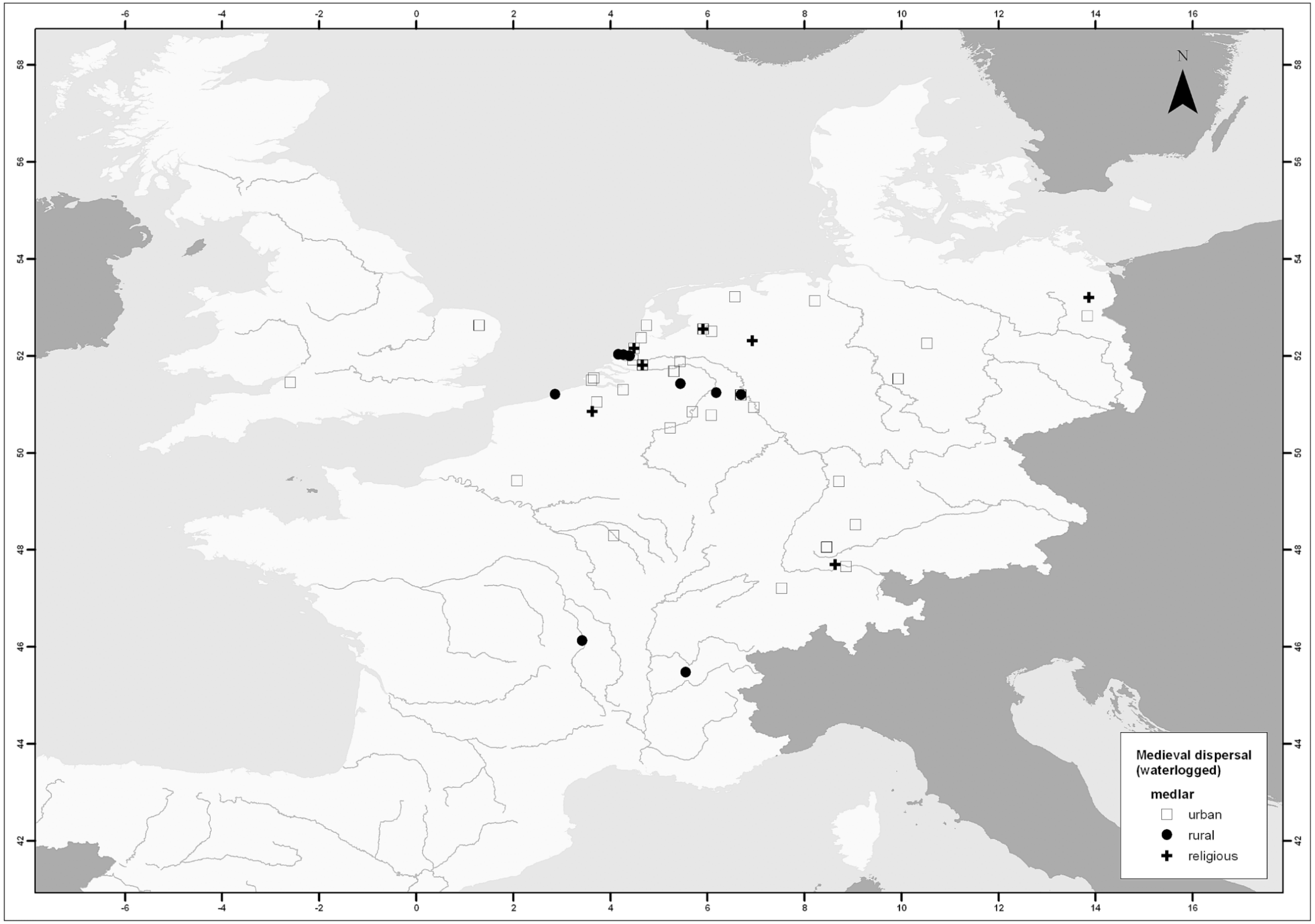

Figure 5.3.4h: Distribution of waterlogged medlar in the medieval period.

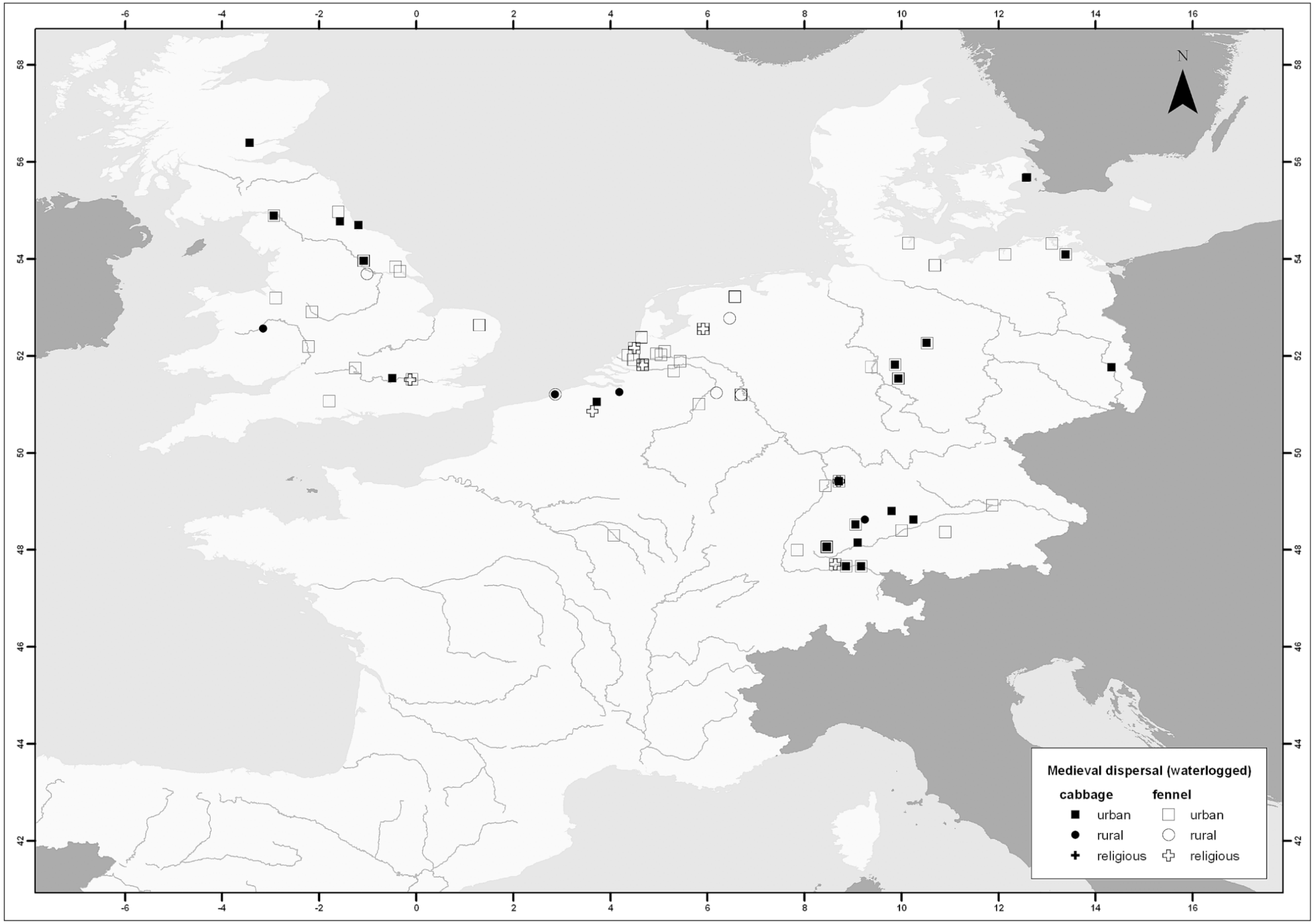

Figure 5.3.4i: Distribution of waterlogged cabbage and fennel in the medieval period.

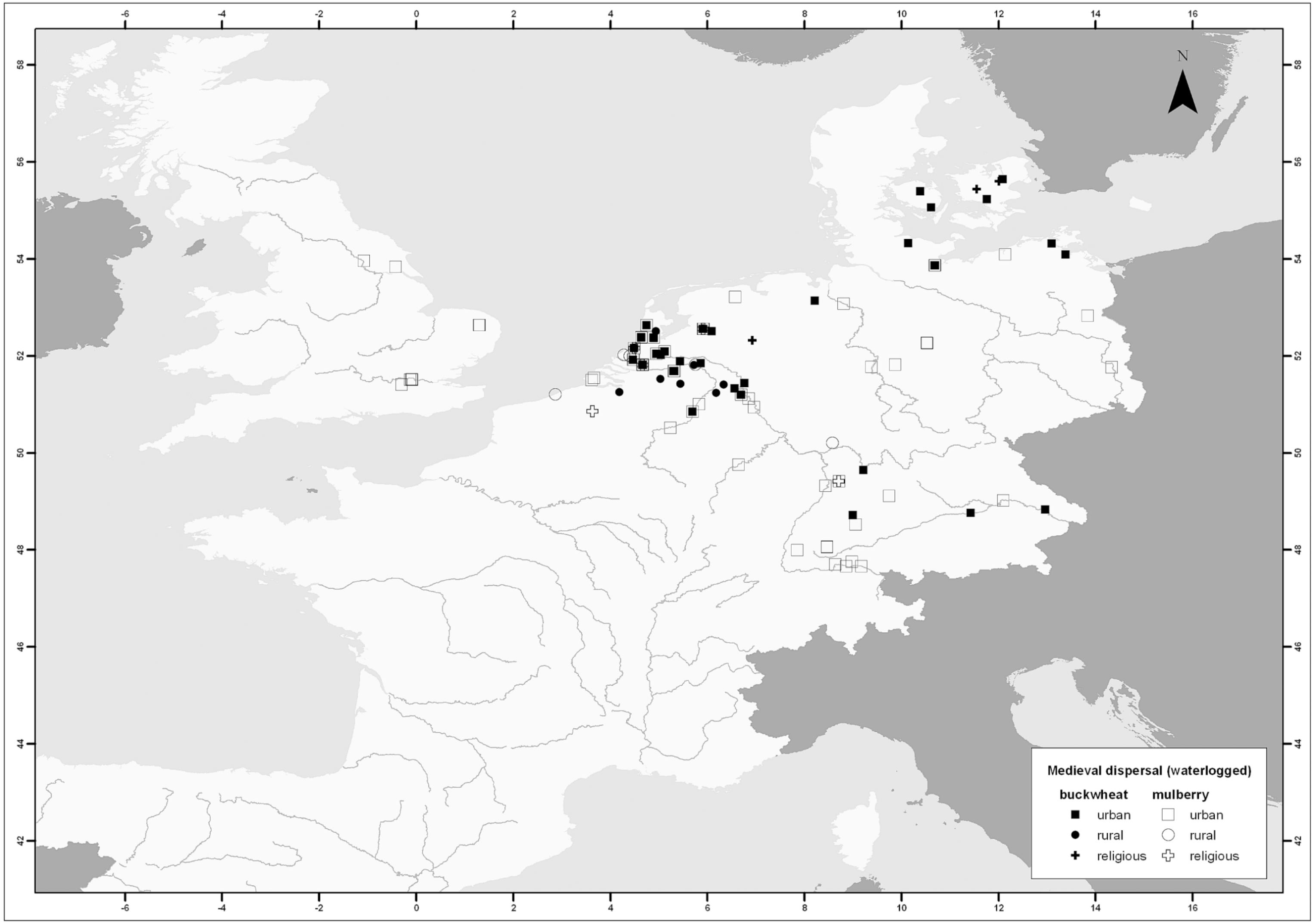

Figure 5.3.4j: Distribution of waterlogged buckwheat and mulberry in the medieval period.

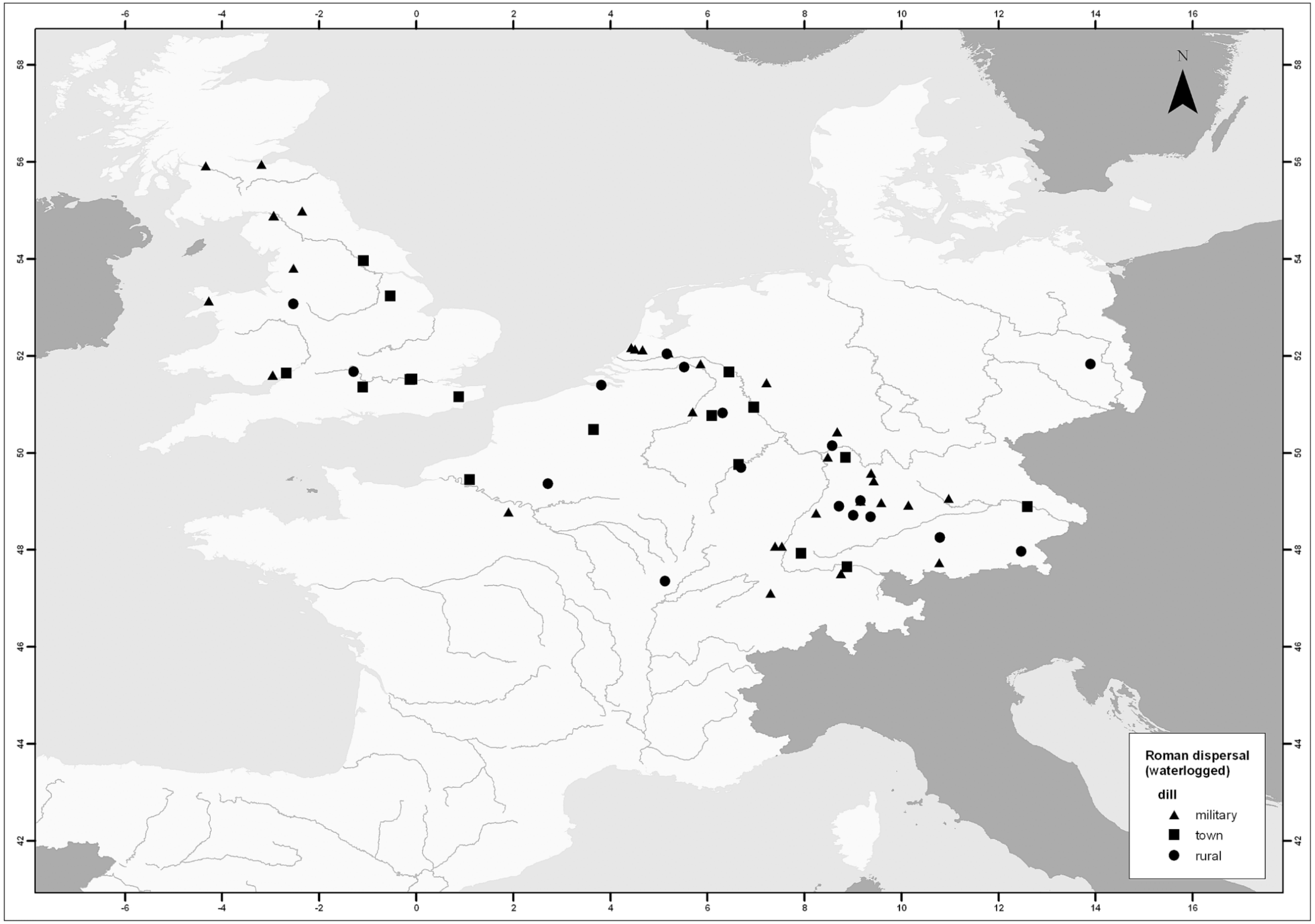

Figure 5.3.5a: Distribution of waterlogged dill in the Roman period.

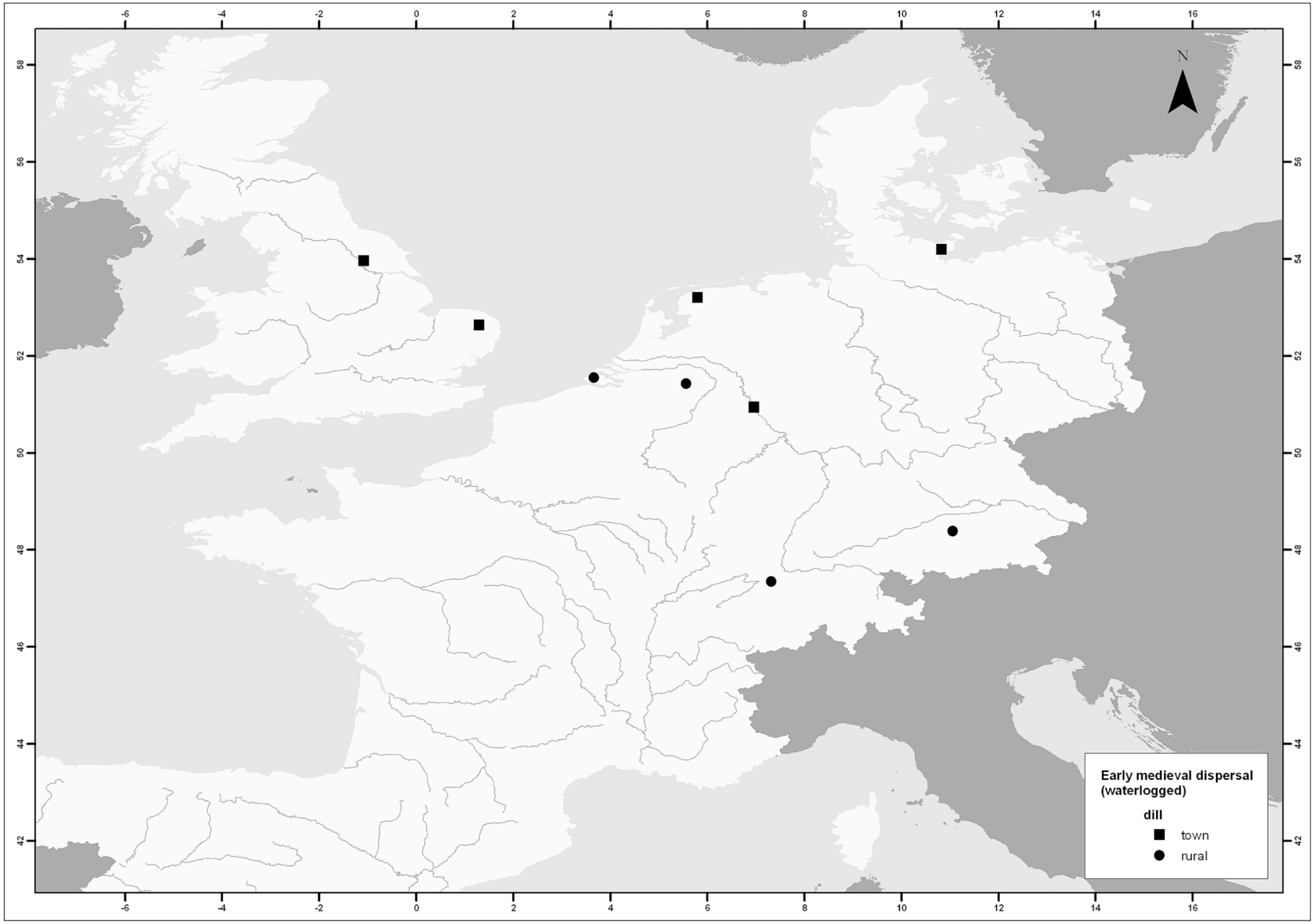

Figure 5.3.5b: Distribution of waterlogged dill in the early medieval period.

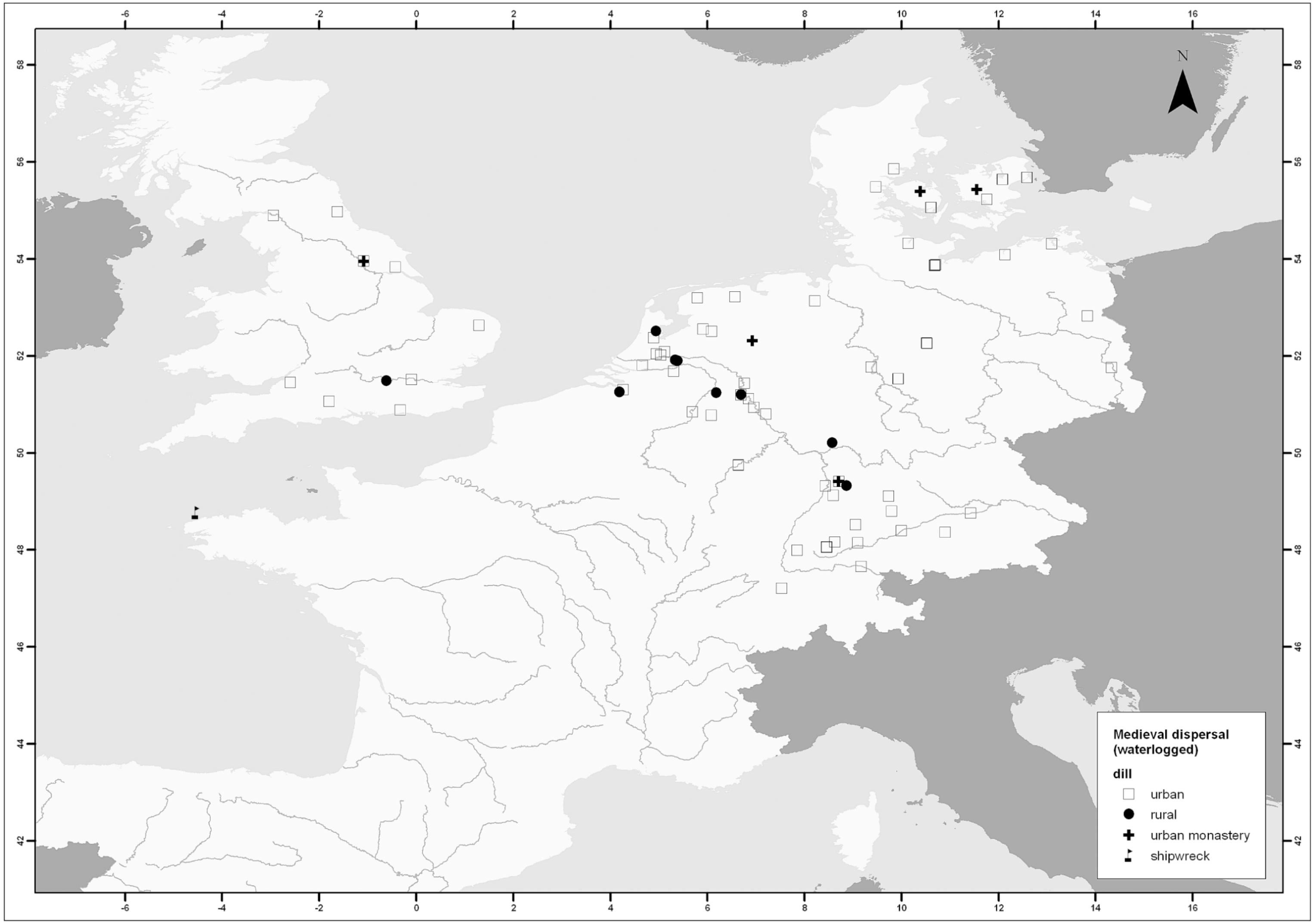

Figure 5.3.5c: Distribution of waterlogged dill in the medieval period.

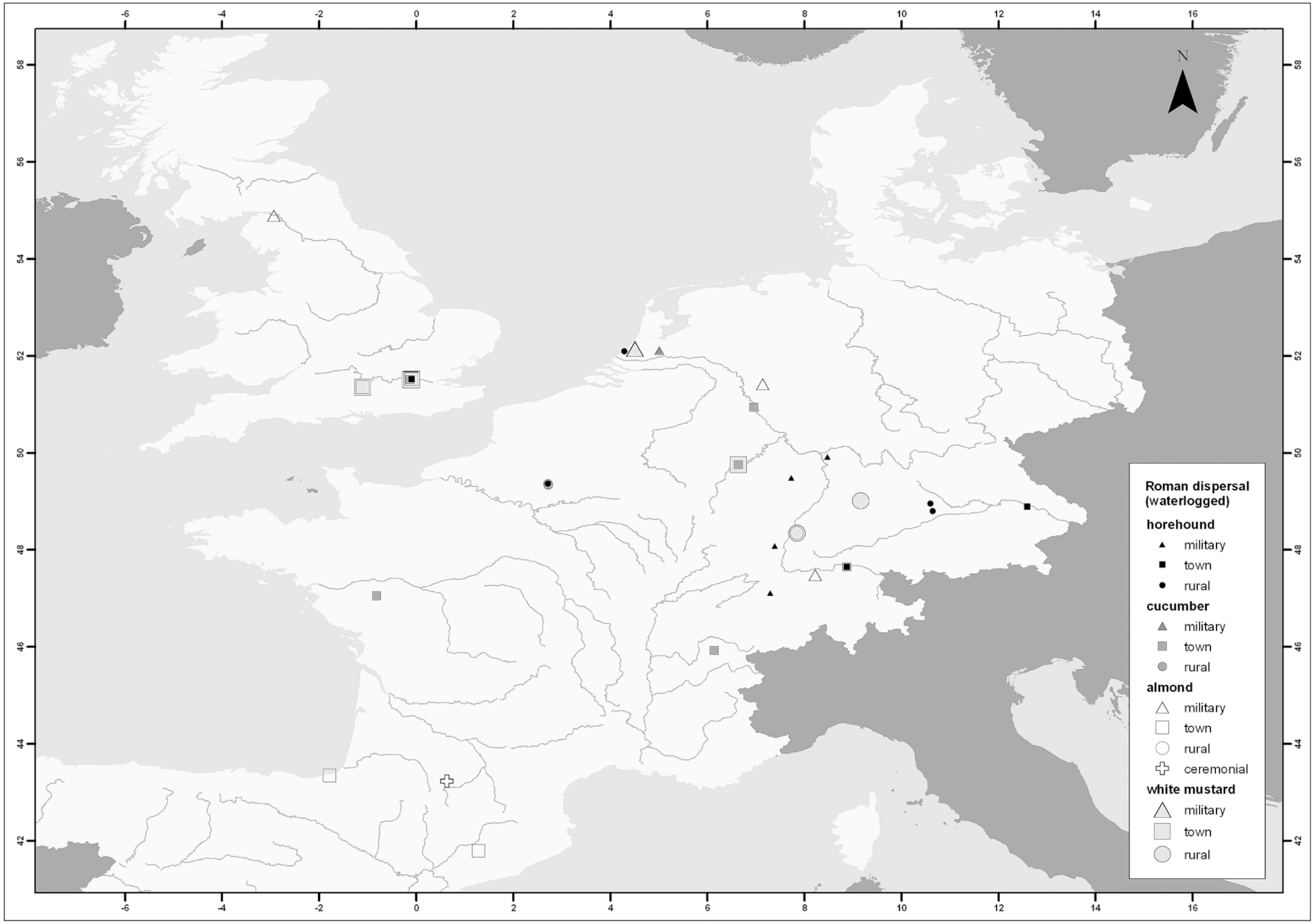

Figure 5.3.5d: Distribution of waterlogged horehound, cucumber, almond and white mustard in the Roman period.

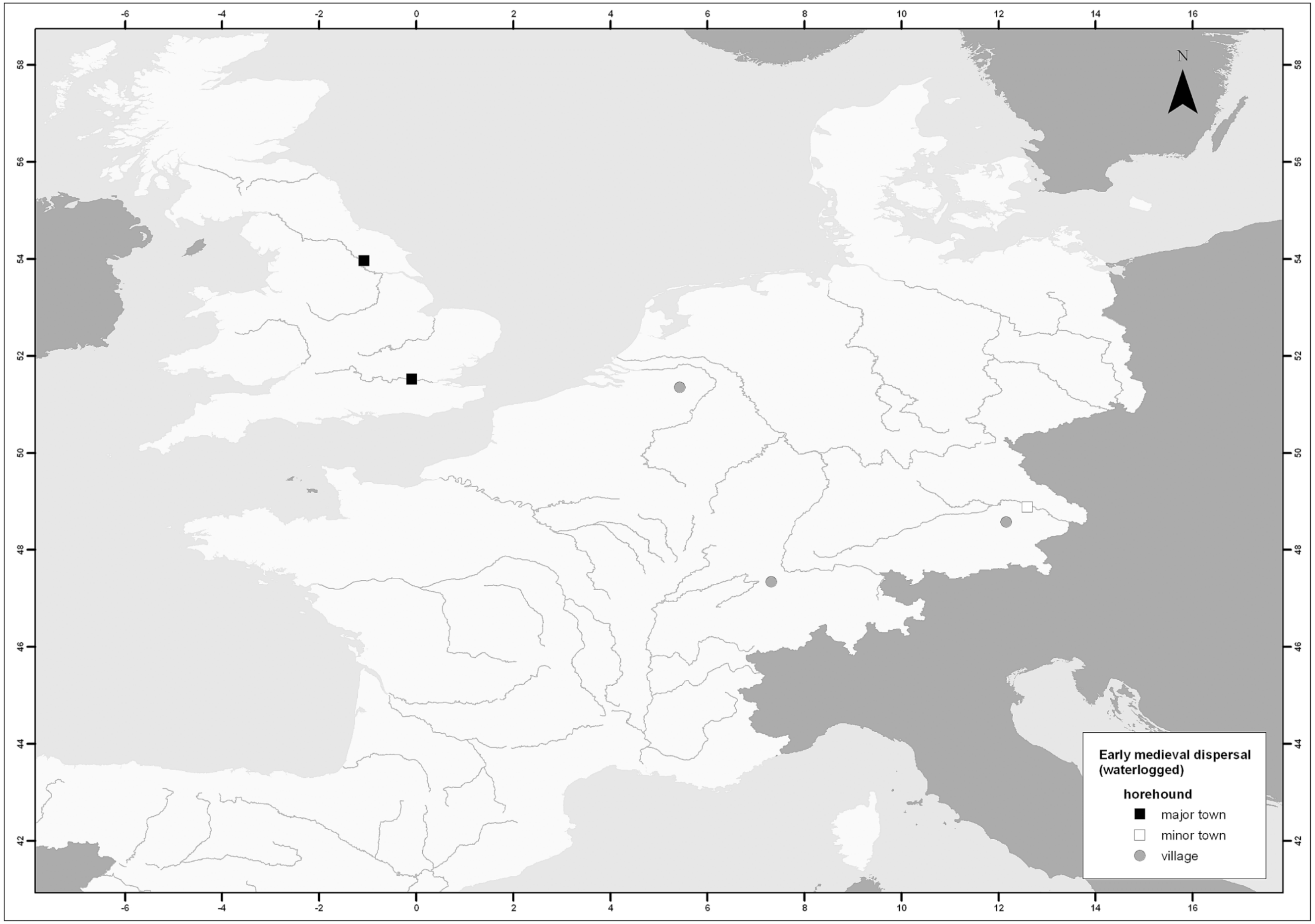

Figure 5.3.5e: Distribution of waterlogged horehound in the early medieval period.

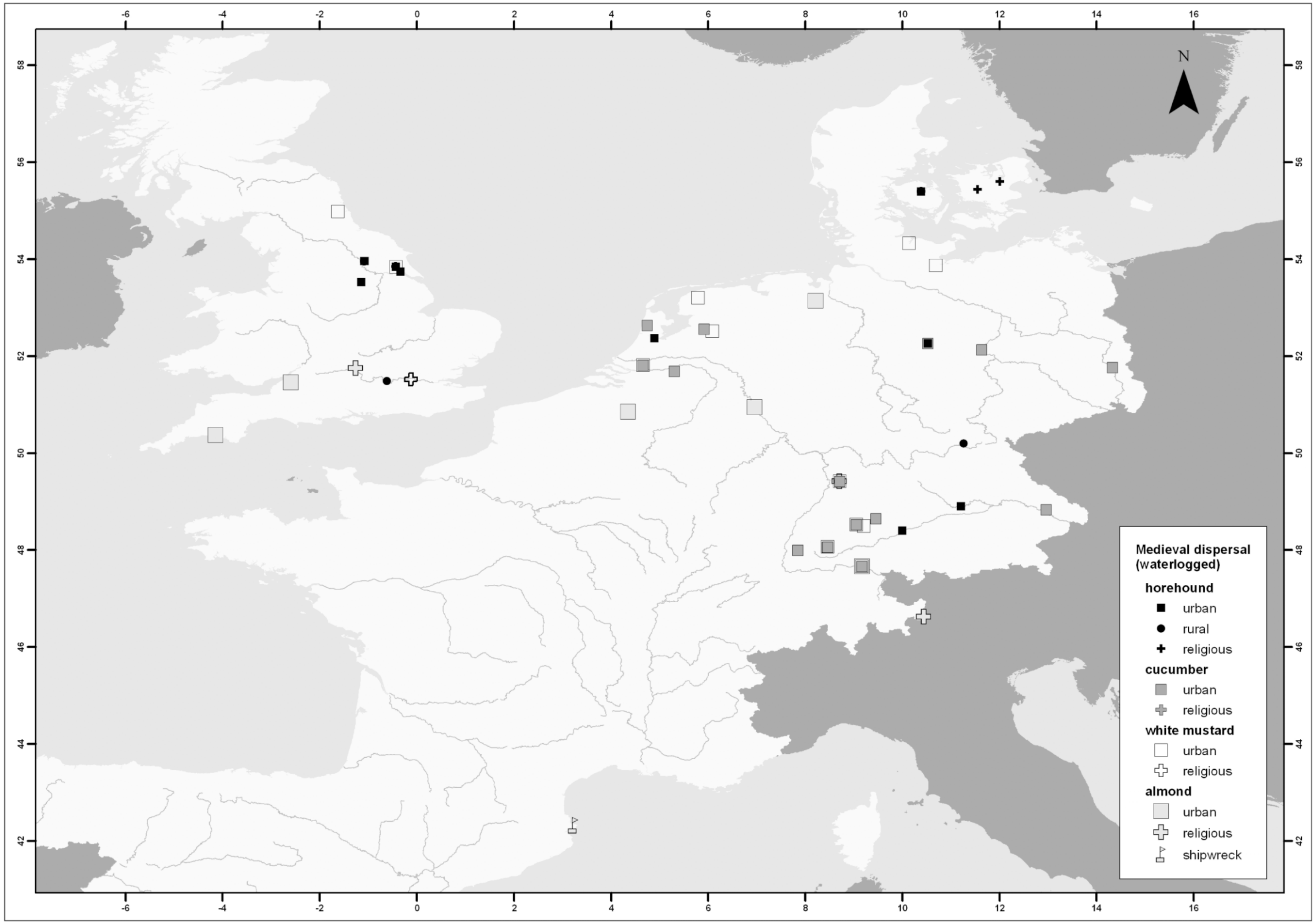

Figure 5.3.5f: Distribution of waterlogged horehound, cucumber, almond and white mustard in the medieval period.

Chapter 6

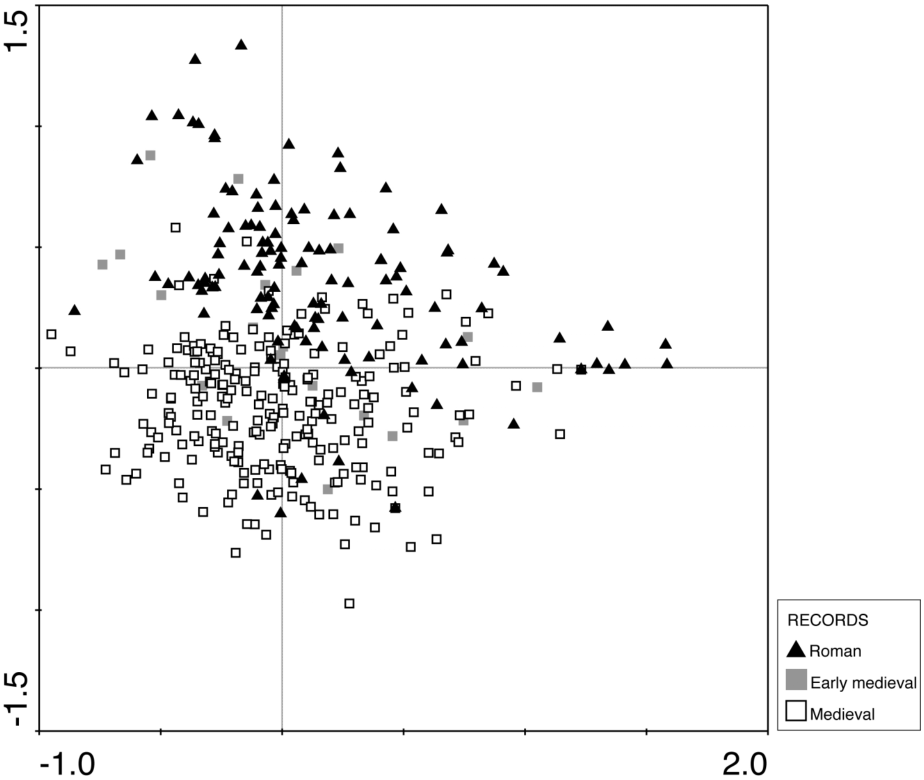

Figure 6.1a: CA of the overall waterlogged data: record distribution according to chronological period.

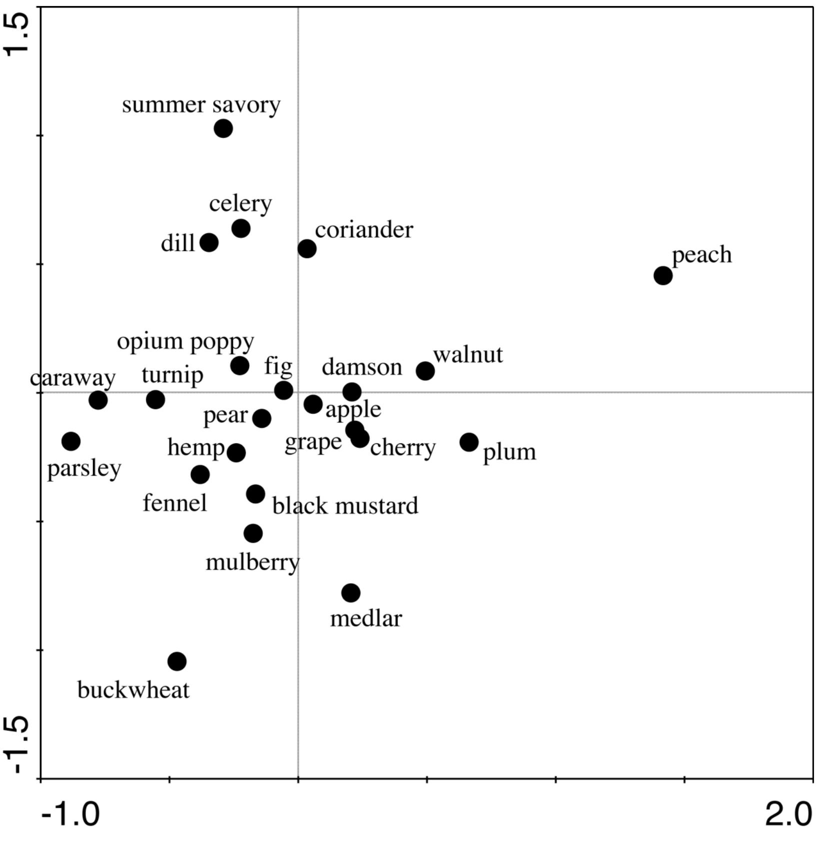

Figure 6.1b: CA of the overall waterlogged data: species distribution.

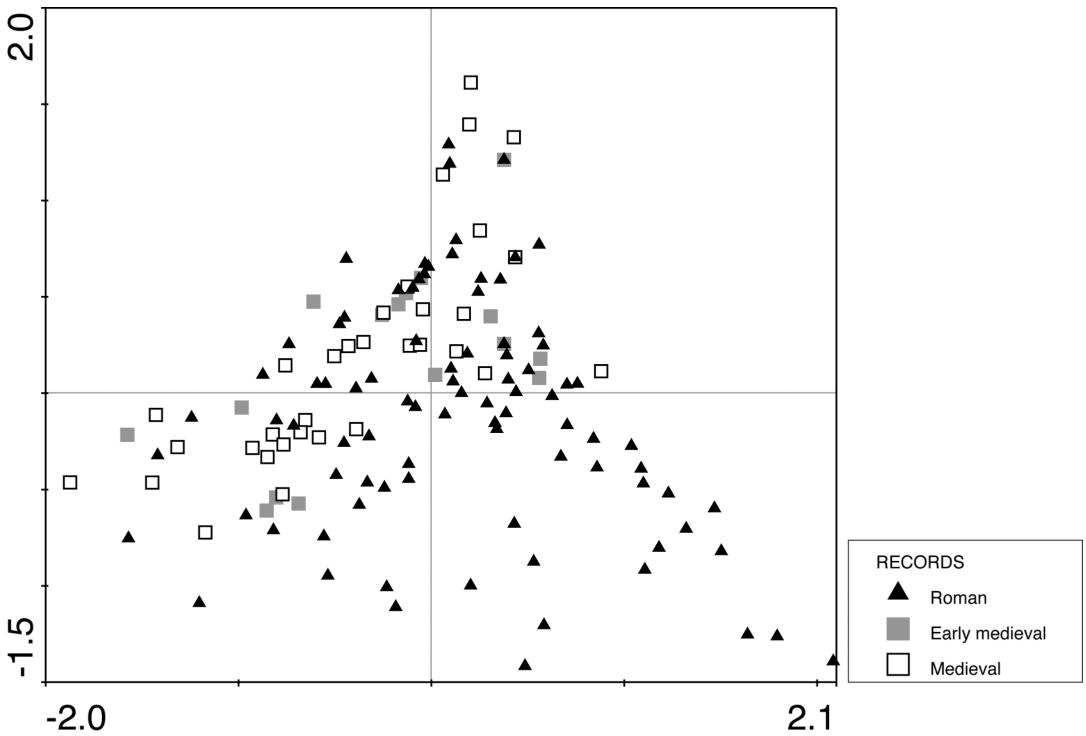

Figure 6.1c: CA of the overall carbonized data: record distribution according to chronological period.

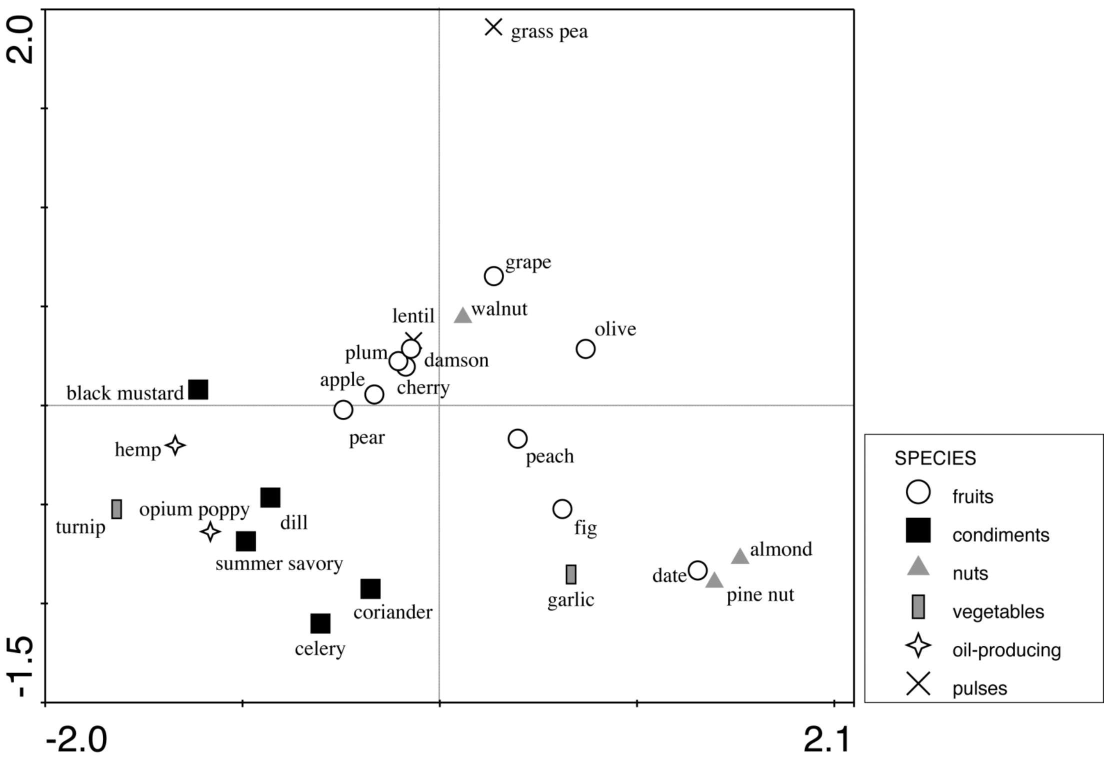

Figure 6.1d: CA of the overall carbonized data: species distribution according to food types.

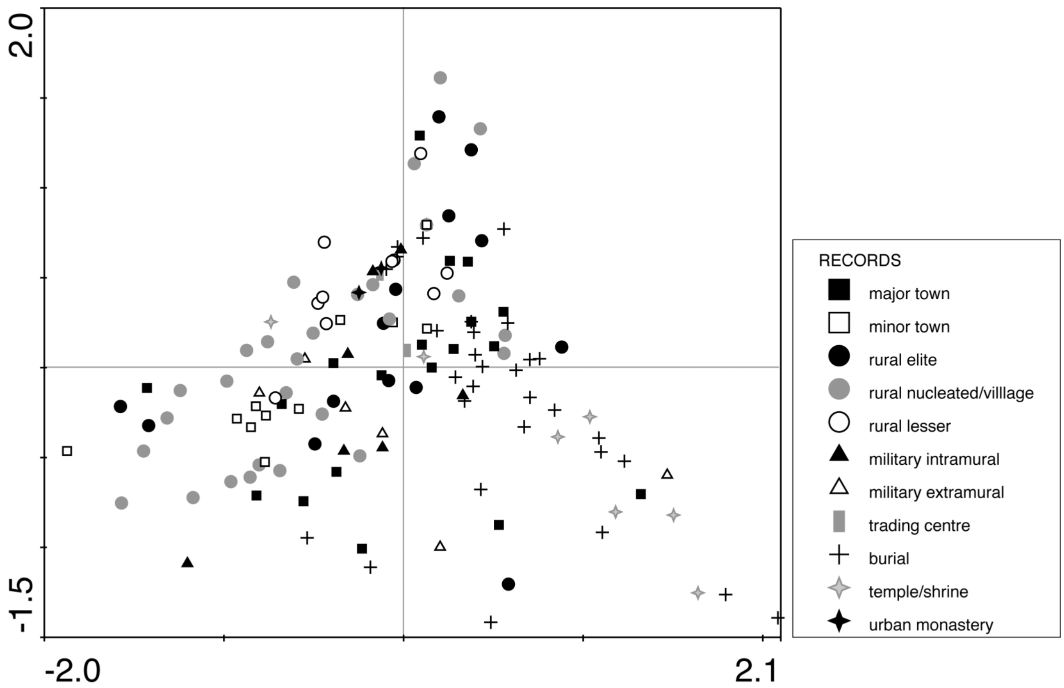

Figure 6.1e: CA of the overall carbonized data: site type distribution.

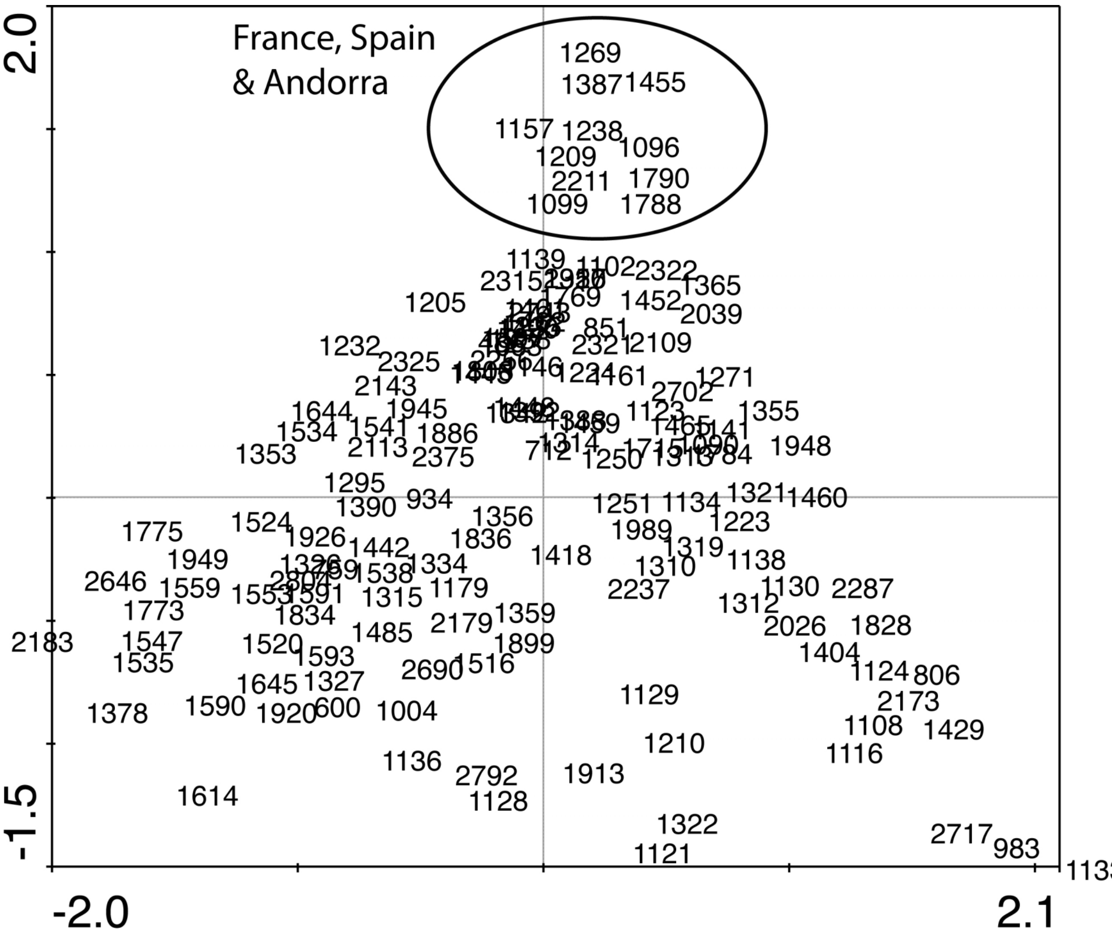

Figure 6.1f: CA of the overall carbonized data: record (codes) distribution.

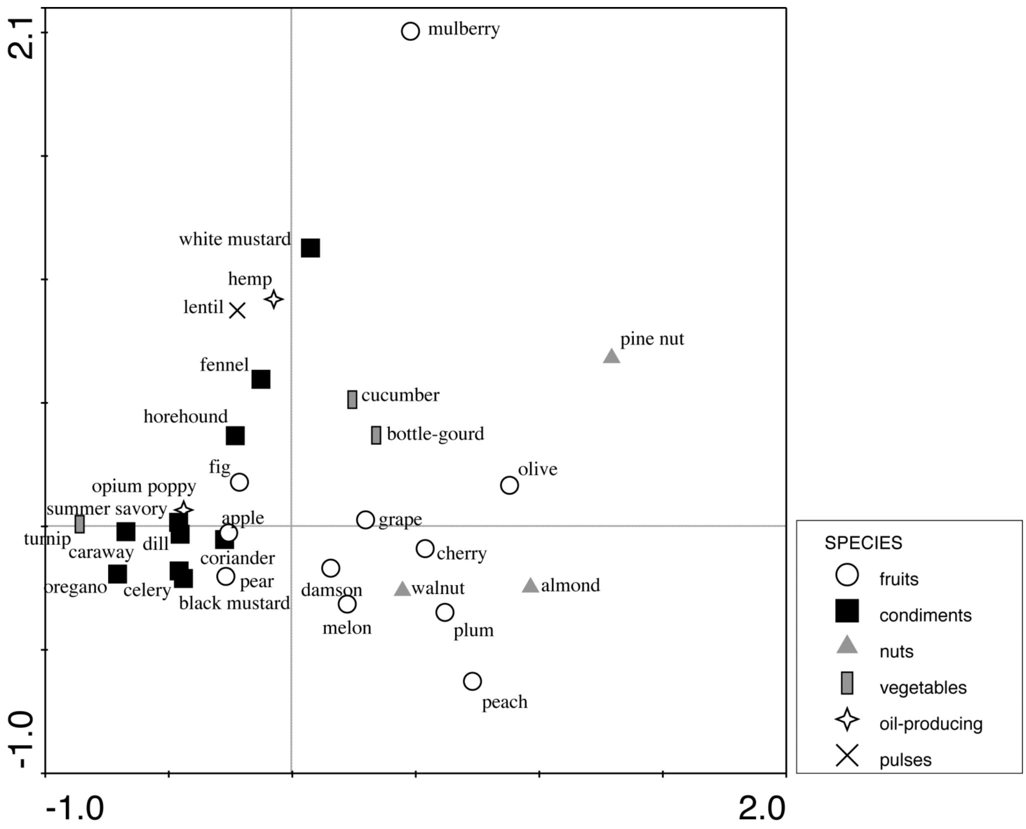

Figure 6.2a: CA of the Roman waterlogged data: species distribution according to food types.

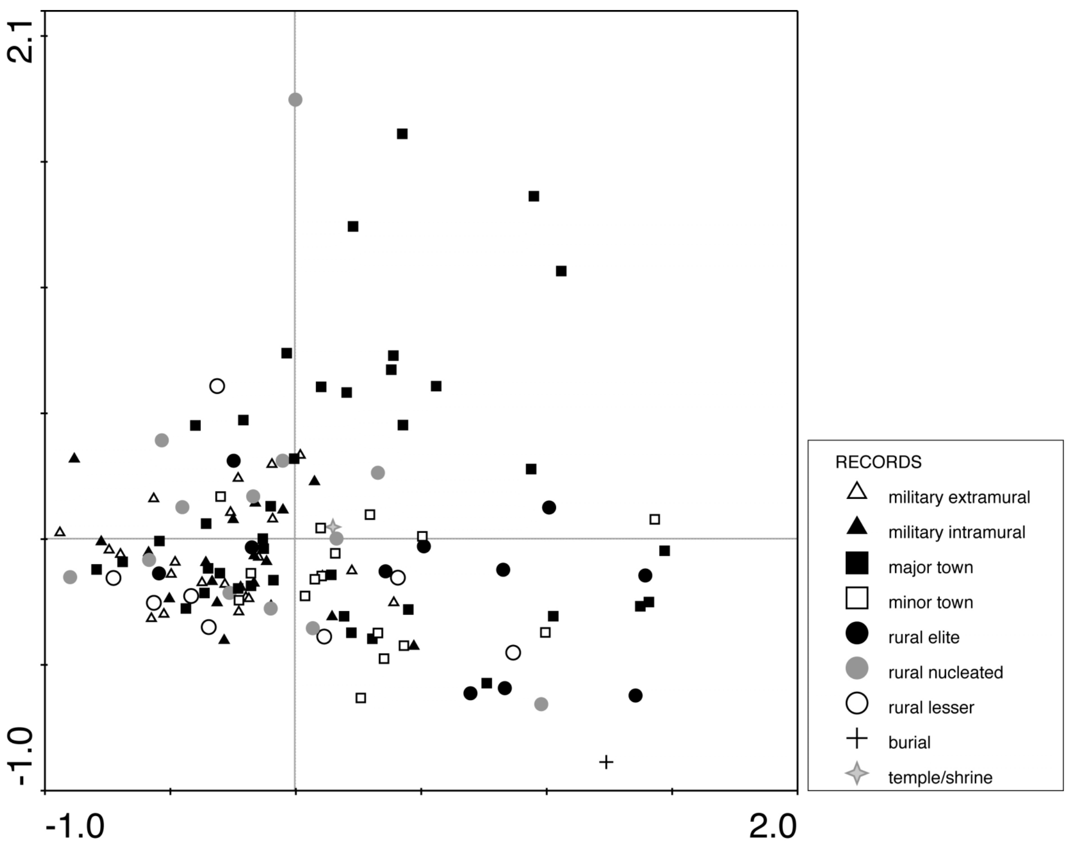

Figure 6.2b: CA of the Roman waterlogged data: site type distribution.

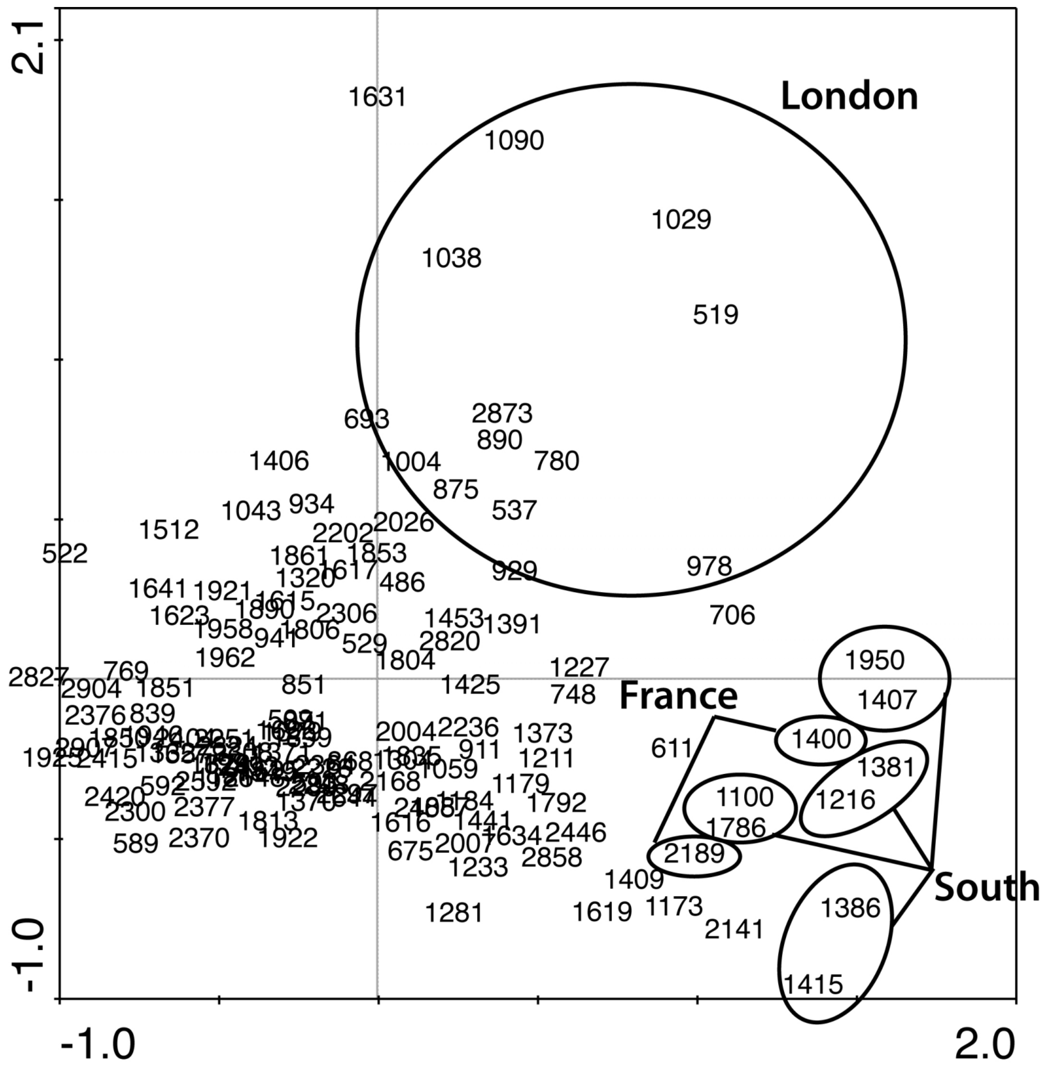

Figure 6.2c: CA of the Roman waterlogged data: record (codes) distribution.

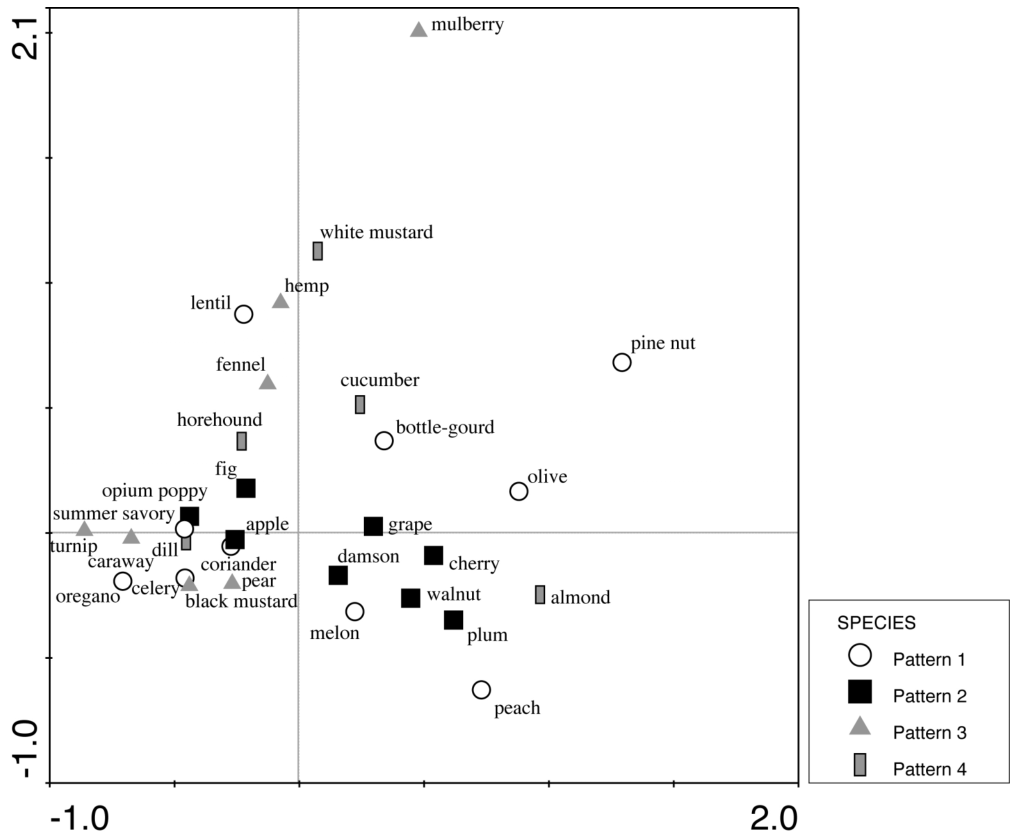

Figure 6.2d: CA of the Roman waterlogged data: species distribution according to chronological patterns.

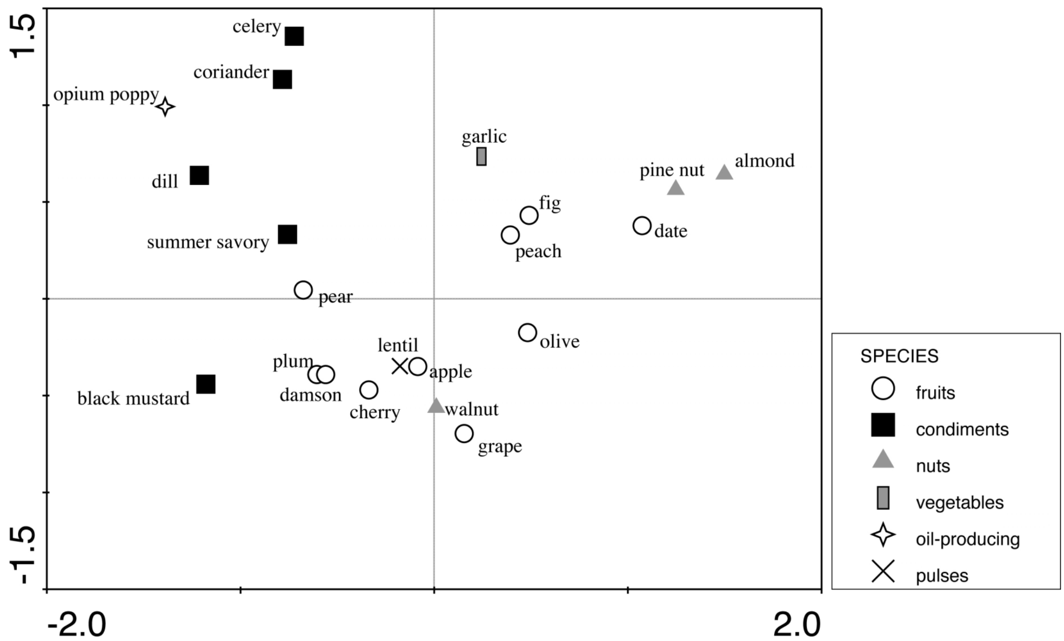

Figure 6.2e: CA of the Roman carbonized data: species distribution according to food types.

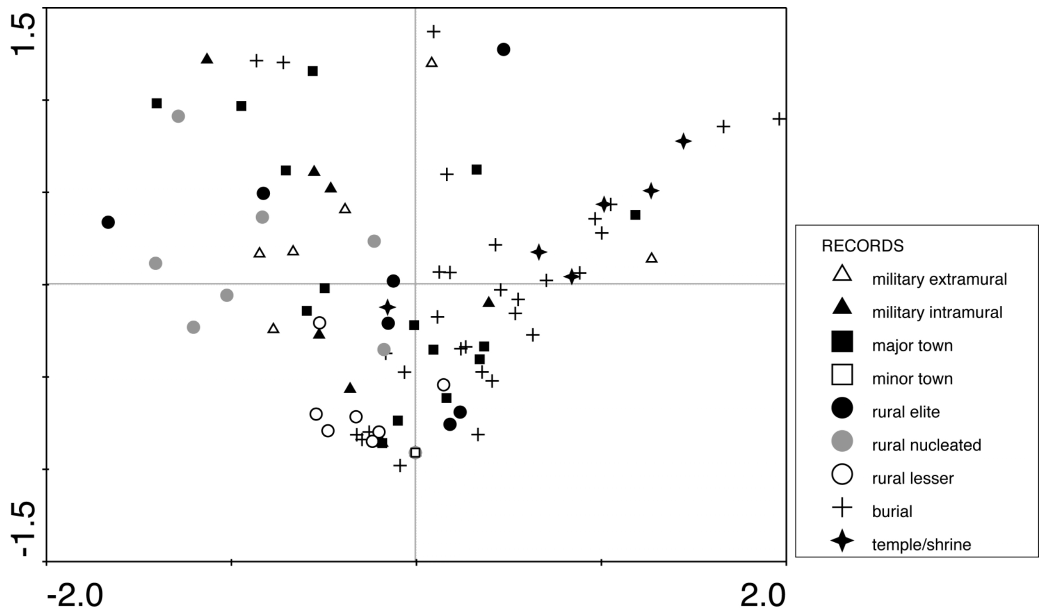

Figure 6.2f: CA of the Roman carbonized data: site type distribution.

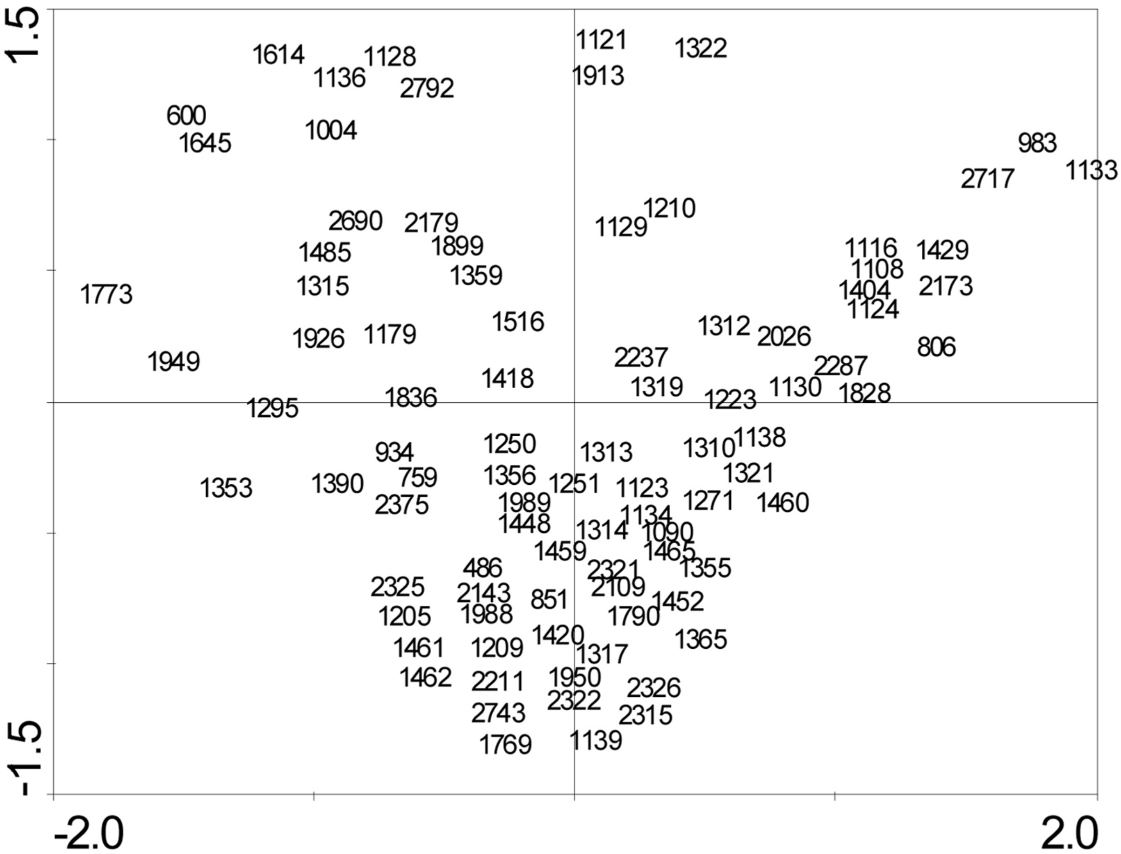

Figure 6.2g: CA of the Roman carbonized data: record (codes) distribution.

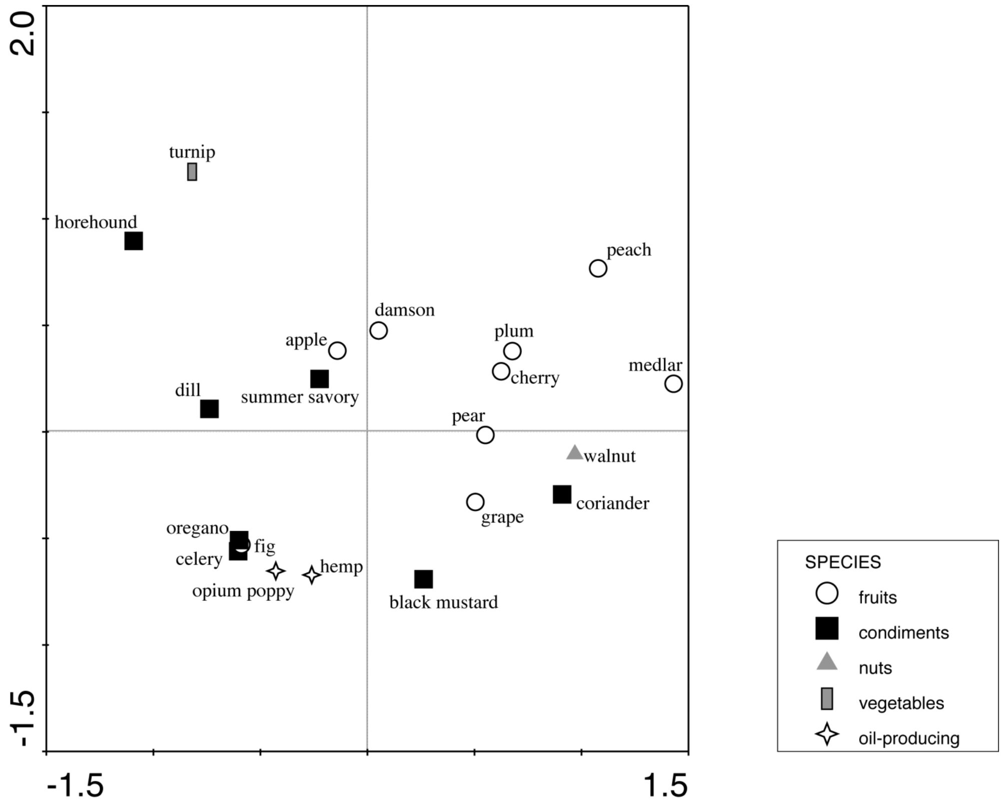

Figure 6.3a: CA of the early medieval waterlogged data: species distribution according to food types.

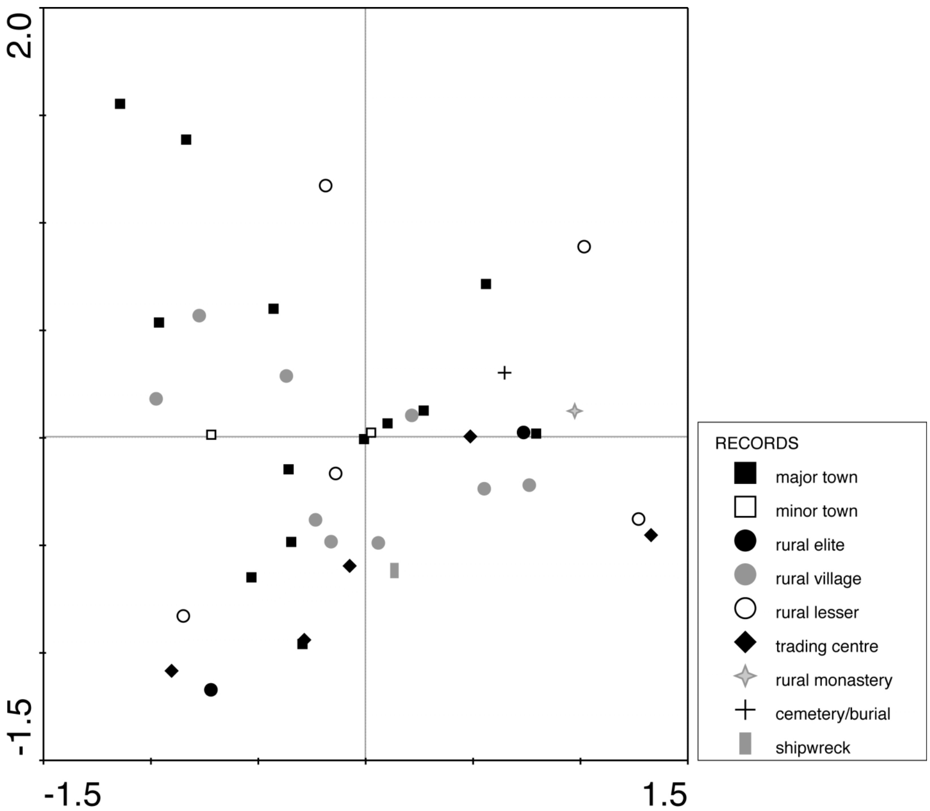

Figure 6.3b: CA of the early medieval waterlogged data: site type distribution.

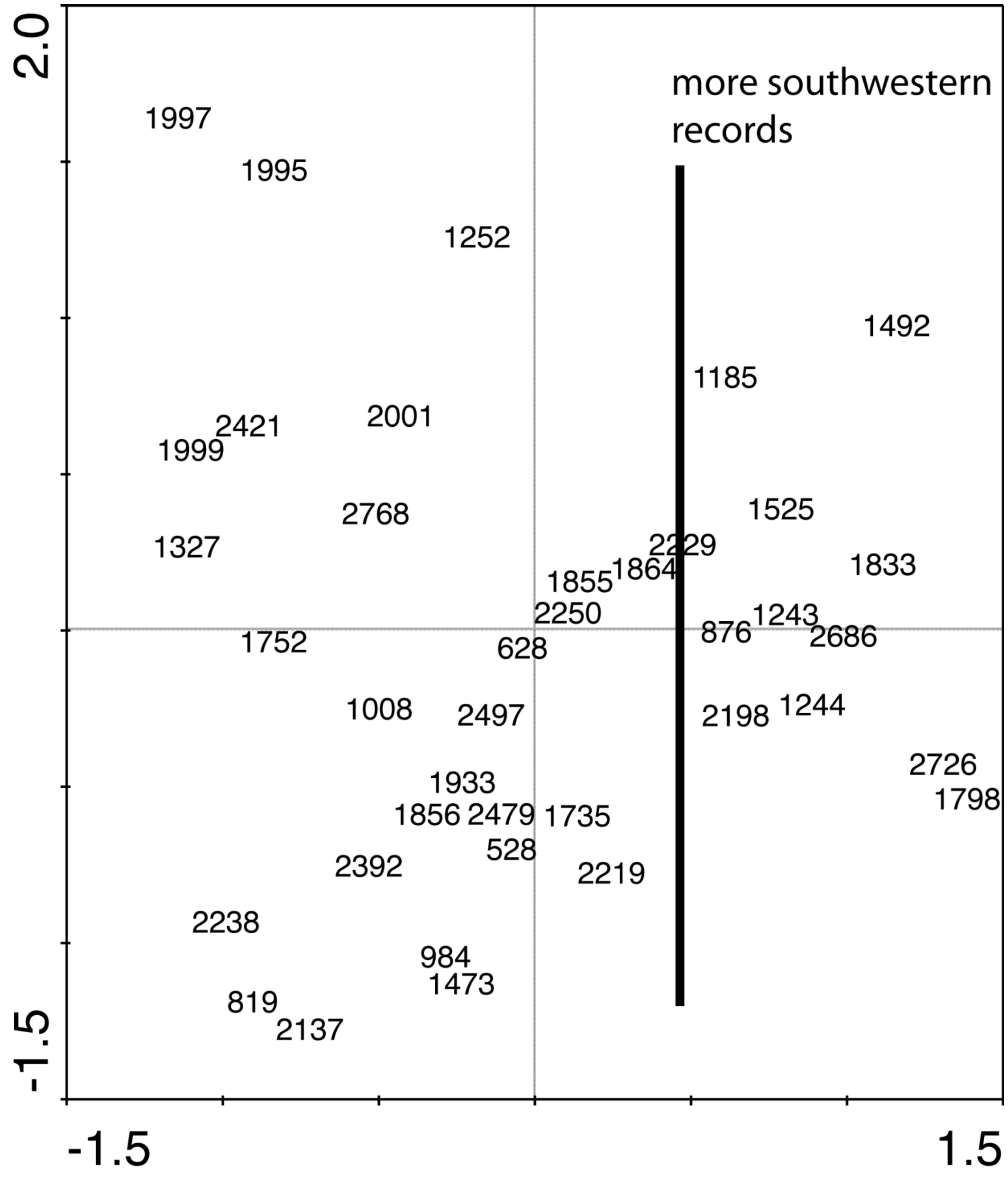

Figure 6.3c: CA of the early medieval waterlogged data: record (codes) distribution.

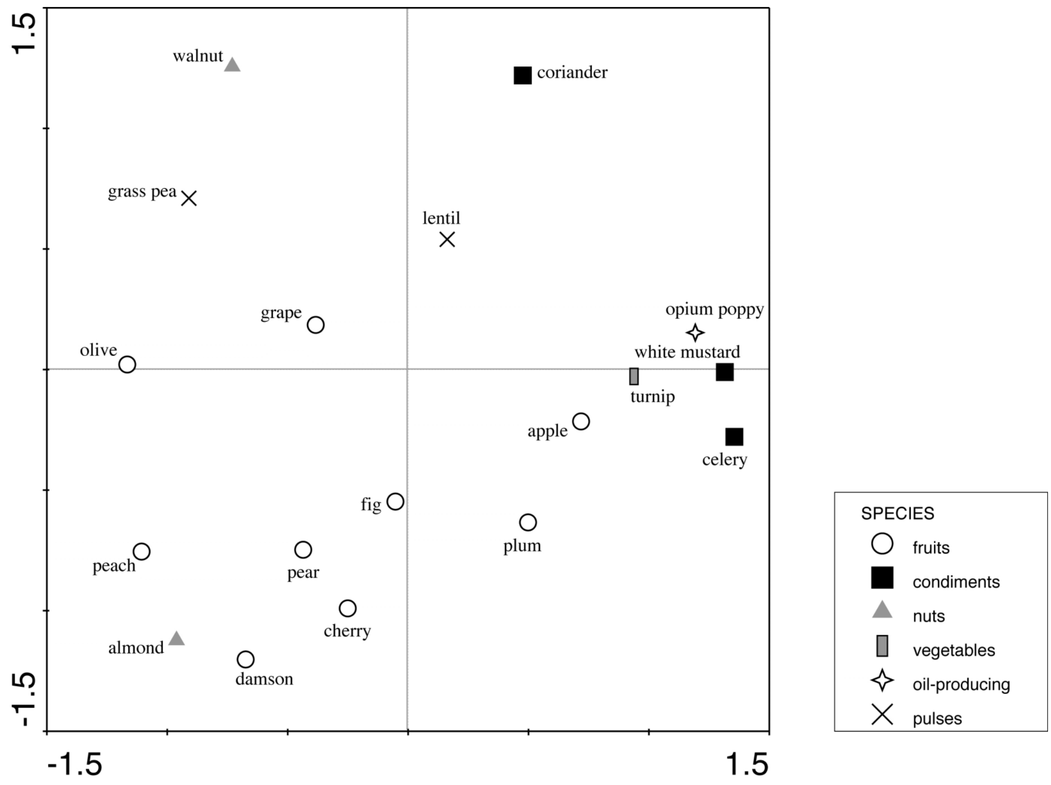

Figure 6.3d: CA of the early medieval carbonized data: species distribution according to food types.

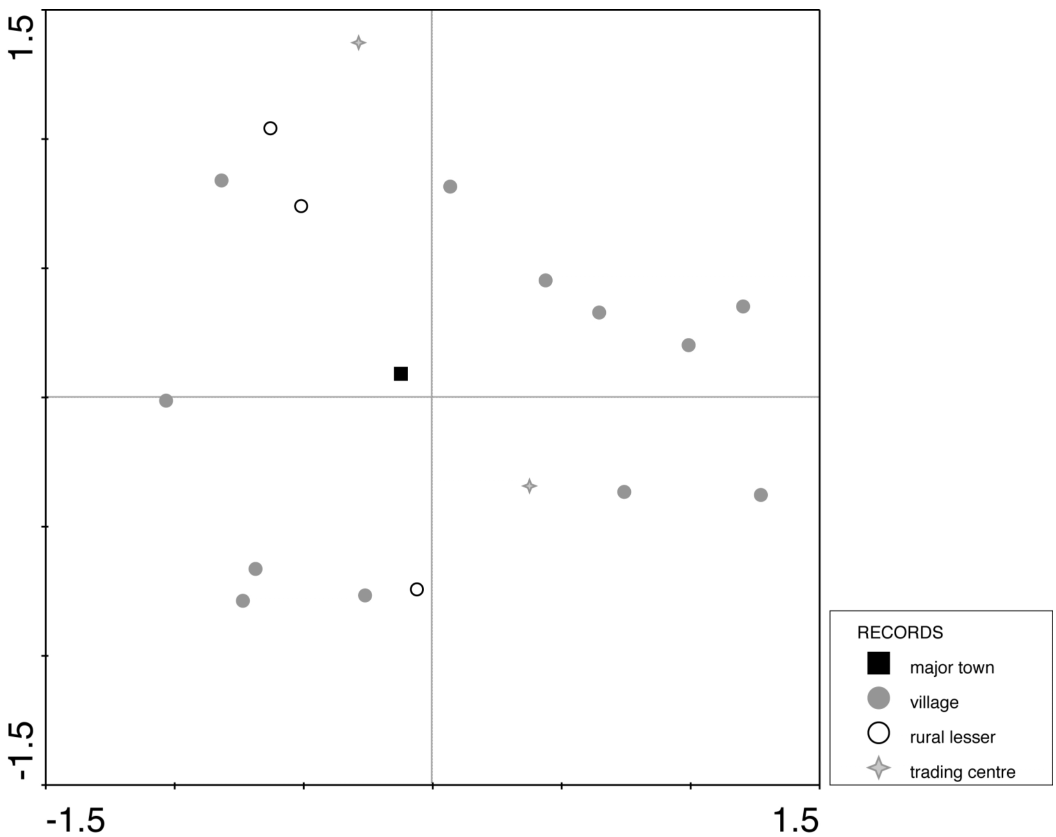

Figure 6.3e: CA of the early medieval carbonized data: site type distribution.

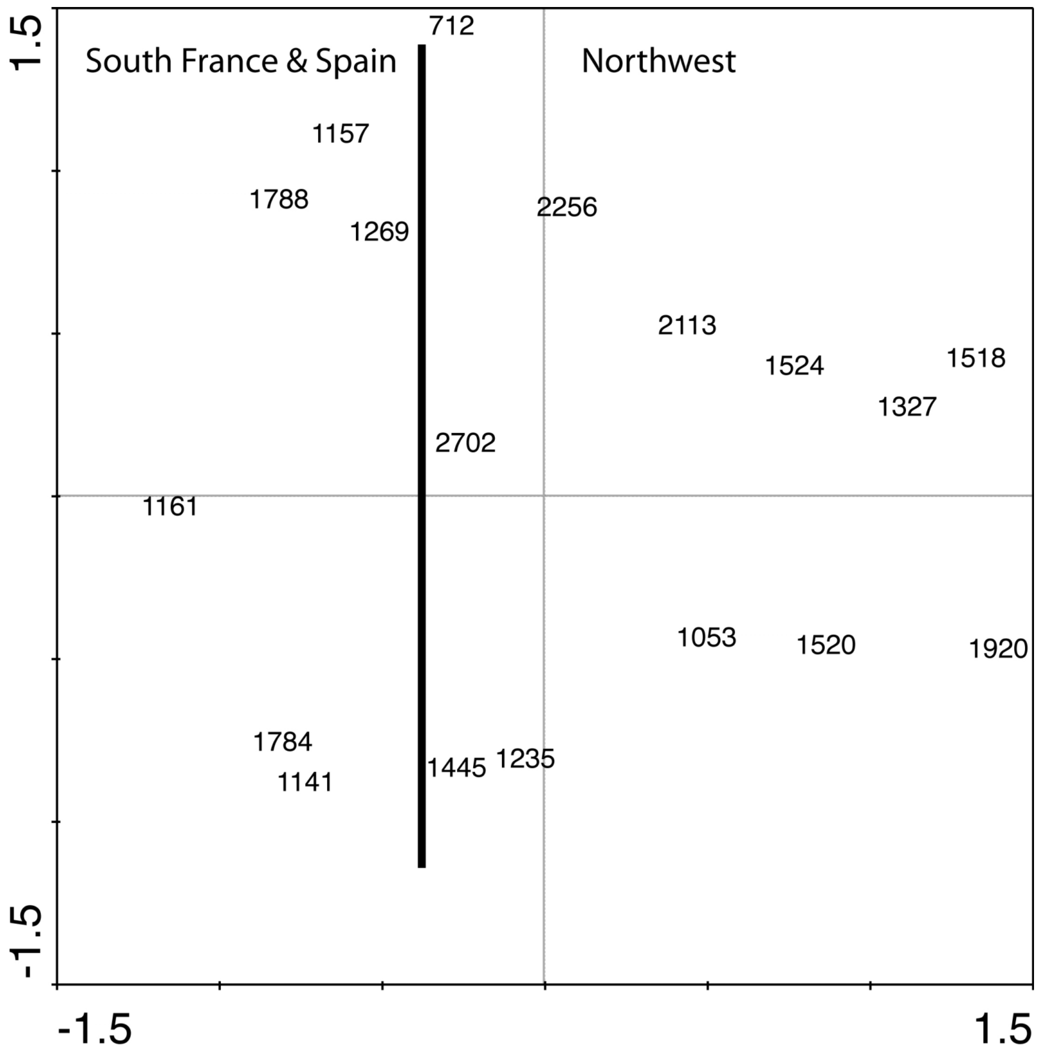

Figure 6.3f: CA of the early medieval carbonized data: record (codes) distribution.

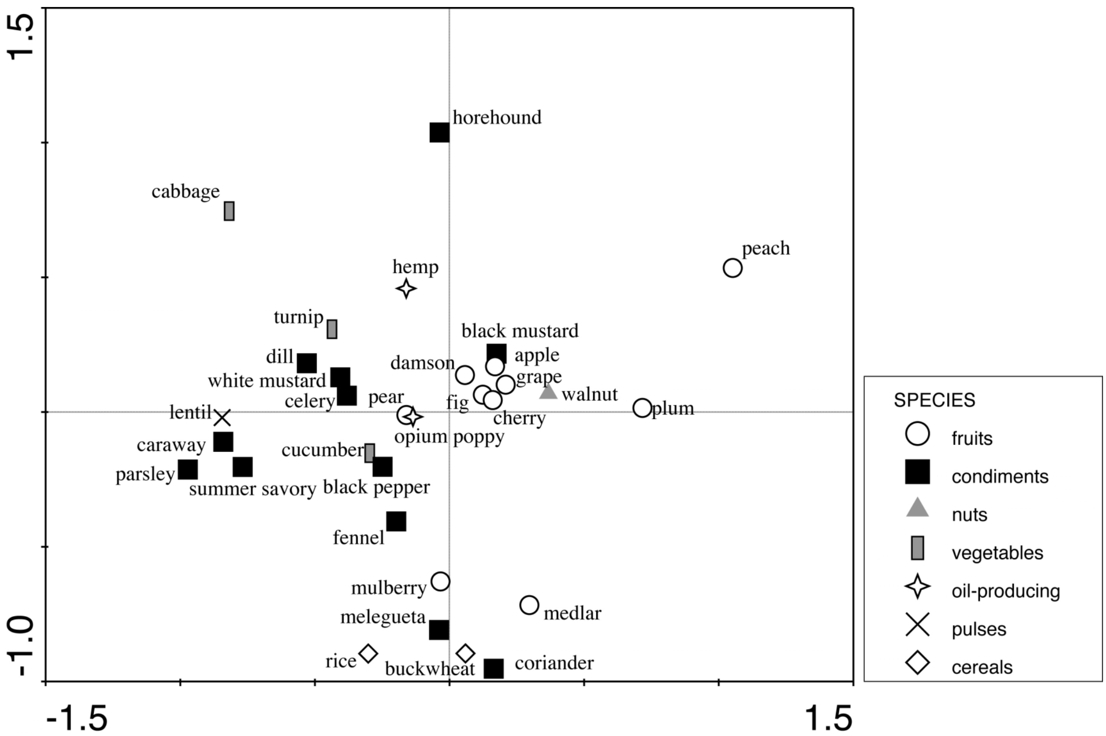

Figure 6.4a: CA of the medieval waterlogged data: species distribution according to food types.

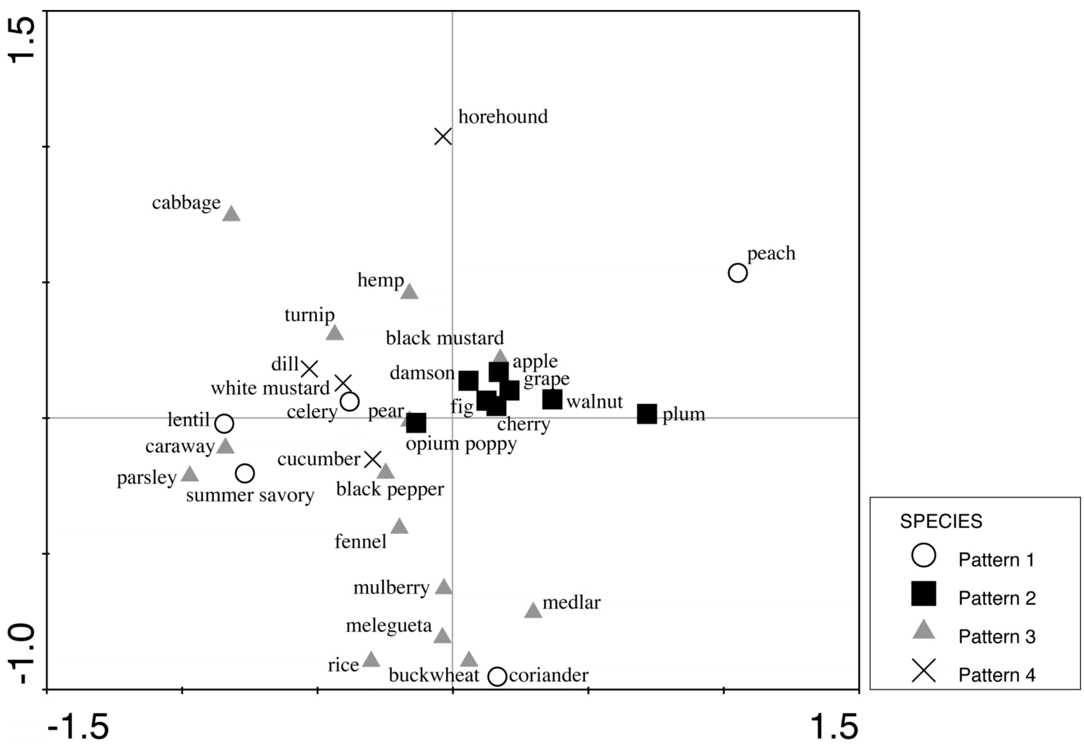

Figure 6.4b: CA of the medieval waterlogged data: species distribution according to chronological pattern.

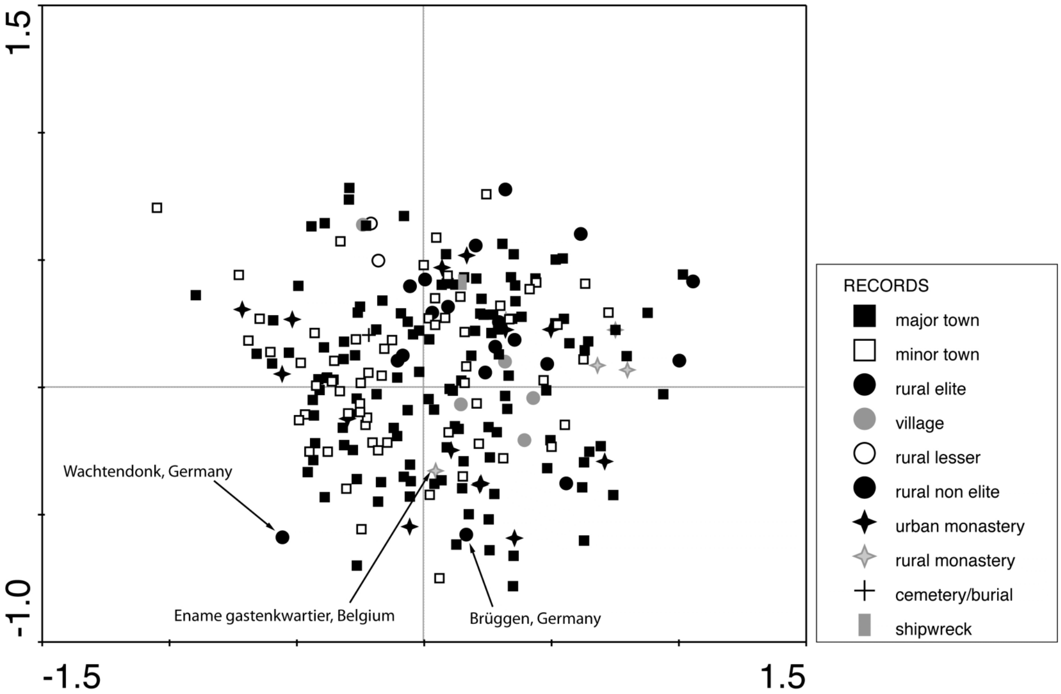

Figure 6.4c: CA of the medieval waterlogged data: site type distribution.

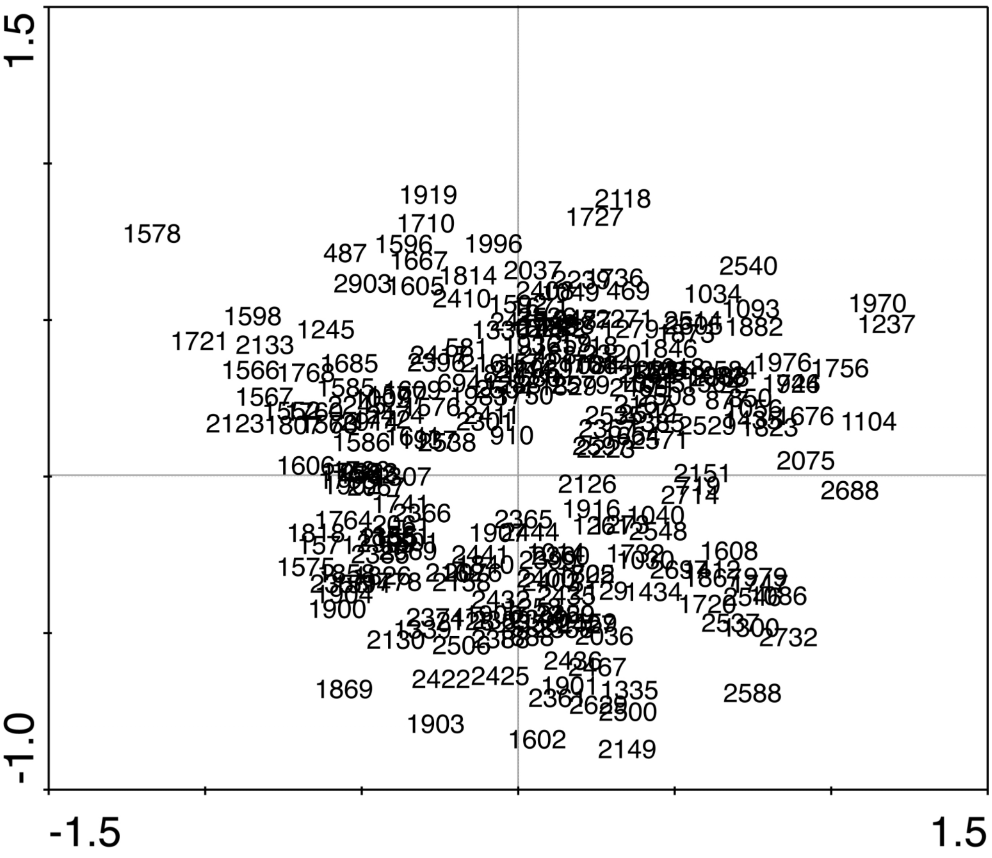

Figure 6.4d: CA of the medieval waterlogged data: record (codes) distribution.

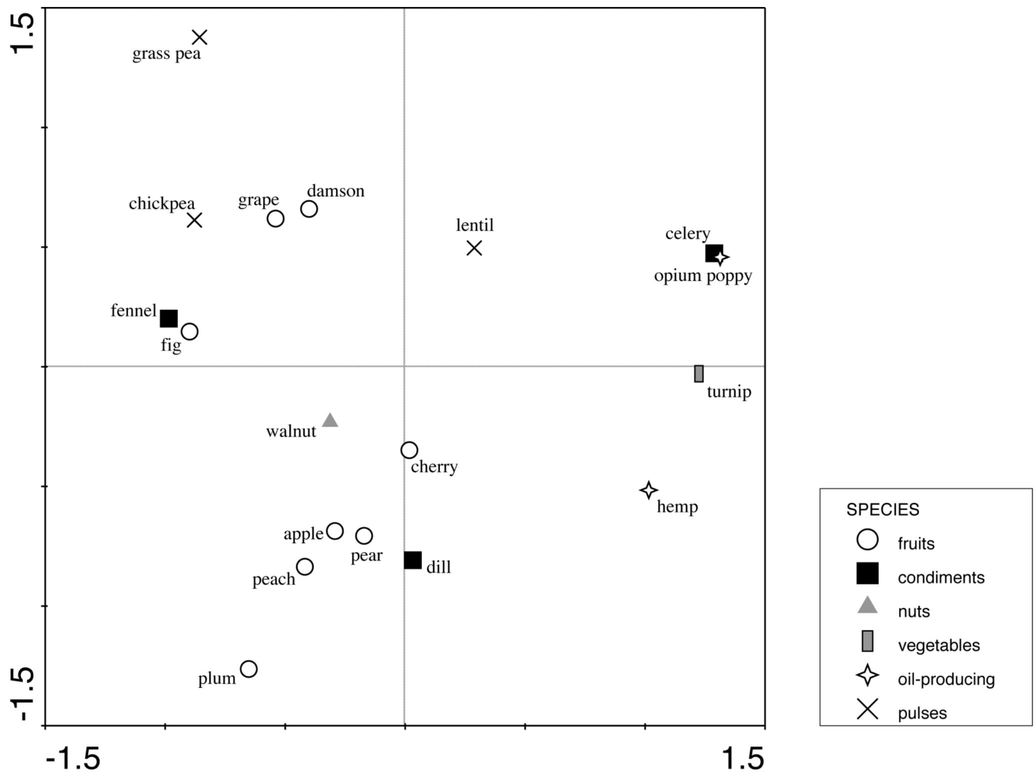

Figure 6.4e: CA of the medieval carbonized data: species distribution according to food types.

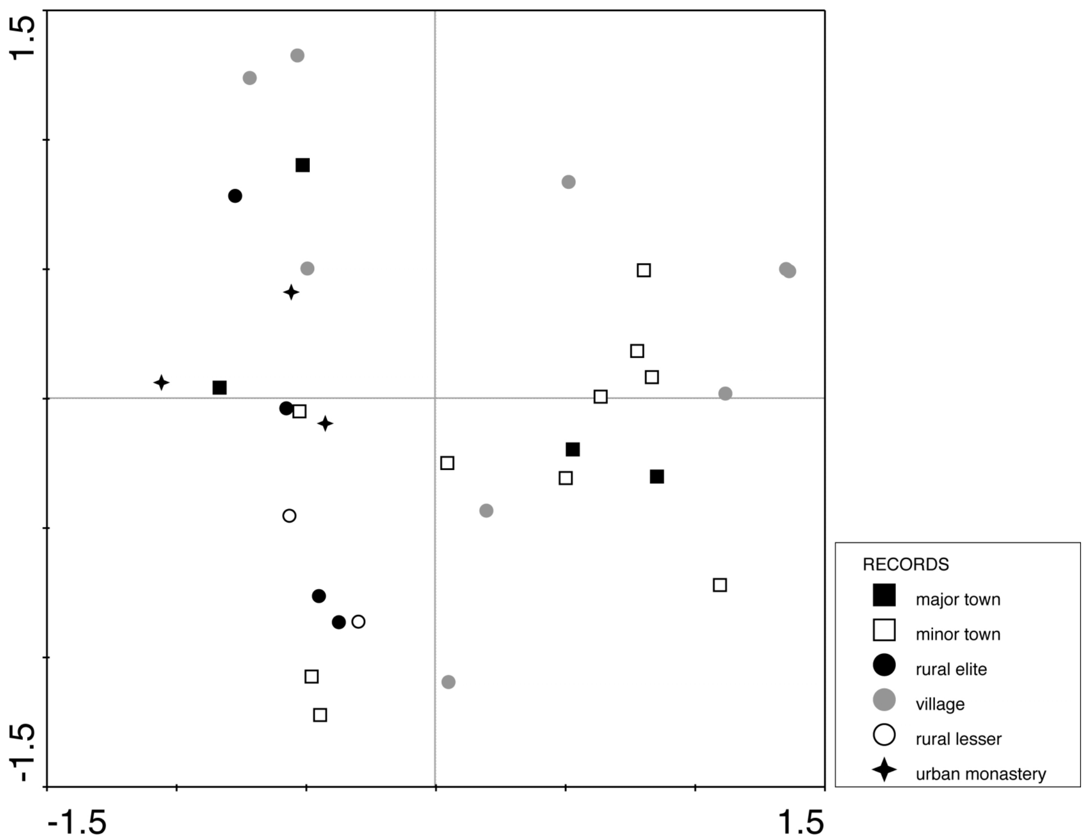

Figure 6.4f: CA of the medieval carbonized data: site type distribution.

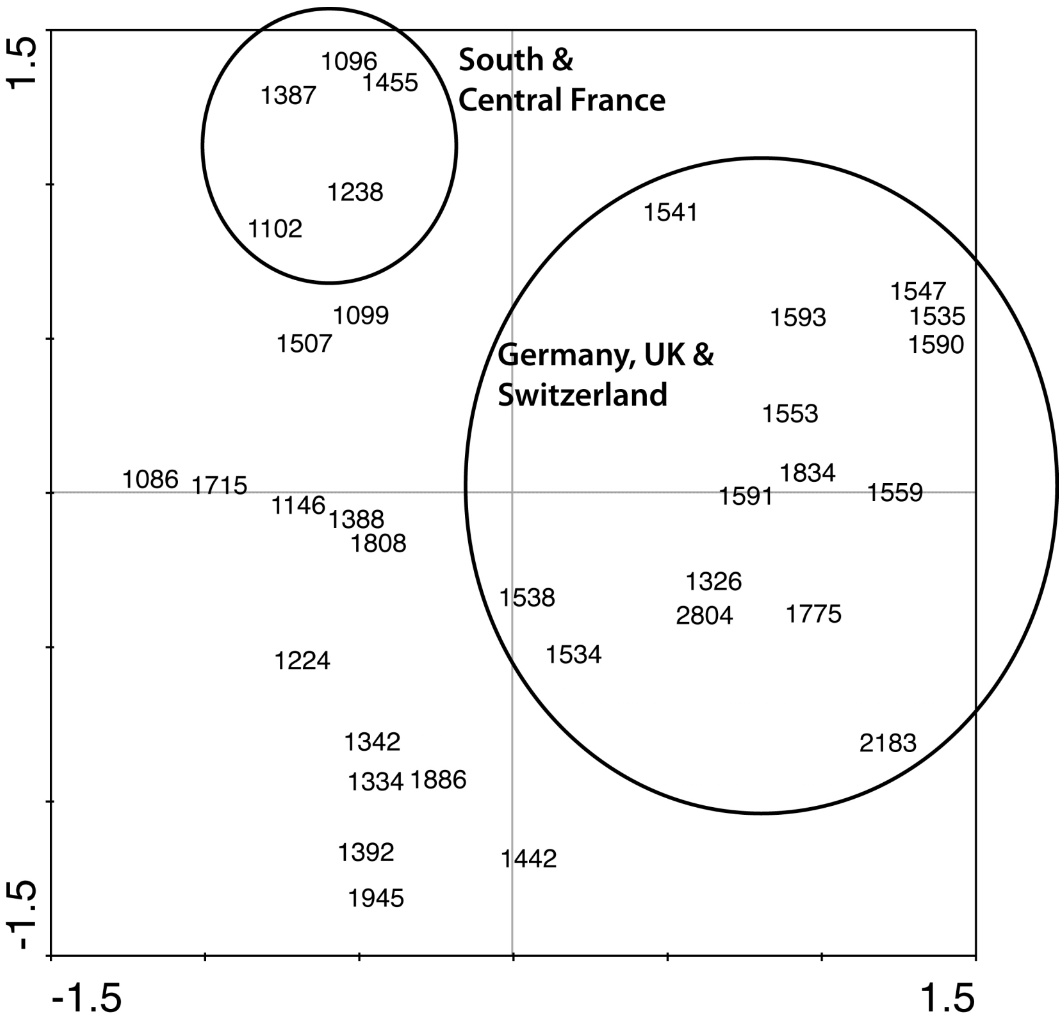

Figure 6.4g: CA of the medieval carbonized data: record (codes) distribution.

TABLES

Chapter 3

List of Species	Common name	Origin
Condiments		
Aframomum melegueta K. Schum.	melegueta pepper	W Africa
Alpinia galanga (L.) Sw.	galangal	SE Asia
Amomum subulatum Roxb.	black cardamom	Himalayas, S China
Anethum graveolens L.	dill	Mediterranean, W Asia
Anthriscus cerefolium (L.) Hoffm.	chervil	SE Europe, W Asia
Apium graveolens L.	celery	W, SW Asia
Armoracia rusticana Gaertn. May. & Scherb.	horseradish	SE Europe, W Asia
Borago officinalis L.	borage	Mediterranean
Brassica nigra (L.) W.D.J. Koch	black mustard	SW Asia
Capparis spinosa L.	caper	Mediterranean, SW Asia
Carum carvi L.	caraway	Europe, SW Asia
Cinnamomum aromaticum Nees	cassia	China
Cinnamomum verum J. Presl	cinnamon	Sri Lanka
Coriandrum sativum L.	coriander	Mediterranean
Crocus sativus L.	saffron	Mediterranean
Cuminum cyminum L.	cumin	E Mediterranean, C Asia
Curcuma longa L.	turmeric	India
Elettaria cardamomum Maton	cardamom	Tropical S Asia
Foeniculum vulgare Mill.	fennel	Mediterranean
Glycyrrhiza glabra L.	liquorice	E Mediterranean
Illicium verum Hook. f.	star anise	SW China
Inula helenium L.	elecampane	SE Europe, Asia
Laurus nobilis L.	bay leaf	Mediterranean, SW Asia
Levisticum officinale W.D.J. Koch	lovage	prob. SW Asia, S Europe
Marrubium vulgare L.	horehound	SW Asia, S, W Europe
Melissa officinalis L.	balm	S Europe
Murraya koenigii (L.) Spreng.	curry leaf	S Himalayas, India
Myristica fragrans Houtt.	nutmeg	Molucca Islands or New Guinea
Nigella sativa L.	black cumin	SW Asia
Ocimum basilicum L.	basil	Tropical Asia and Africa
Origanum majorana L.	marjoram	E Mediterranean
Origanum vulgare L.	oregano	Mediterranean, SW Asia
Petroselinum crispum (Mill.) Nyman	parsley	Mediterranean
Pimpinella anisum L.	aniseed	E Mediterranean
Piper nigrum L.	black pepper	India
Rhus coriaria L.	sumac	Mediterranean, SW Asia
Rosmarinus officinalis L.	rosemary	Mediterranean
Ruta graveolens L.	rue	Mediterranean
Saccharum officinarum L.	sugarcane	SE Asia
Salvia officinalis L.	sage	Mediterranean
Salvia sclarea L.	clary sage	Mediterranean, SW Asia
Satureja hortensis L.	summer savory	Mediterranean
Sinapis alba L.	white mustard	E Mediterranean
Smyrnium olusatrum L.	alexanders	Mediterranean

Table 3.1: List of the recorded species and their origins.

List of Species	Common name	Origin
Syzygium aromaticum (L.) Merr. & L.M. Perry	clove	Molucca Islands
Tamarindus indica L.	tamarind	Tropical Africa
Thymus vulgaris L.	thyme	Mediterranean
Trachyspermum ammi (L.) Sprague	ajowan	NE Africa, SW Asia
Trigonella foenum-graecum L.	fenugreek	SE Europe, W Asia
Zanthoxylum piperitum (L.) DC.	Sichuan pepper	China
Zingiber officinale Roscoe	ginger	S China
Fruits		
Armeniaca vulgaris Lam.	apricot	China
Ceratonia siliqua L.	carob	Mediterranean
Citrullus lanatus (Thunb.) Matssumura & Nakai	watermelon	Tropical S Africa
Citrus limon (L.) Burm. f.	lemon	SE Asia
Citrus medica L.	citron	SE Asia
Citrus sinensis (L.) Osbeck	orange	SE Asia
Cocos nucifera L.	coconut	Asia, tropics
Cucumis melo L.	melon	Africa, SW Asia
Cydonia oblonga P. Miller	quince	SW Asia
Ficus carica L.	fig	SW Asia
Ficus sycomorus L.	sycamore fig	Africa, SW Asia
Malus sp.	apple	C Asia
Mangifera indica L.	mango	India
Mespilus germanica L.	medlar	SW Asia
Morus nigra L.	mulberry	W Asia
Olea europaea L.	olive	Mediterranean
Persica vulgaris P. Miller	peach	China
Phoenix dactylifera L.	date	SW Asia
Prunus avium L.	sweet cherry	Temperate W and C Asia
Prunus cerasus L.	sour cherry	W Asia, E Europe
Prunus damascena L.	wild plum	W Asia
Prunus domestica L.	plum	W Asia, E Europe
Prunus domestica L. ssp.*insititia* (L.) C.K. Schneider	damson	W, C Asia
Punica granatum L.	pomegranate	W Asia
Pyrus sp.	pear	C Asia
Vitis vinifera L.	grape	Mediterranean
Vegetables		
Allium cepa L.	onion	Afghanistan
Allium porrum L.	leek	Mediterranean, SW Asia
Allium sativum L.	garlic	Egypt, SW, C Asia
Brassica napus L.	rape	S Europe
Brassica oleracea L.	cabbage	Mediterranean, SW Europe
Brassica rapa L.	turnip	Mediterranean, E Afghanistan
Brassica sp.	cabbage family	
Cucumis sativus L.	cucumber	Himalayas
Cynara cardunculus L.	artichoke	Mediterranean
Eruca sativa Mill.	rocket	Mediterranean, W Asia
Lactuca sativa L.	lettuce	SW Asia
Lagenaria siceraria (Molina) Standley	bottle-gourd	Tropical Africa
Solanum melongena L.	aubergine	Tropical Asia

Table 3.1: (continued).

List of Species	Common name	Origin
Pulses		
Cicer arietinum L.	chickpea	SW Asia
Glycine max Merr.	soybean	SE Asia, China
Lathyrus clymenum L.	Spanish vetchling	Mediterranean
Lathyrus sativus L.	grass pea	Aegean
Lens culinaris Medik.	lentil	SW Asia
Lupinus albus L.	lupine	Mediterranean
Vigna radiata (L.) R. Wilczek	mung bean	India
Vigna unguiculata (L.) Walp.	black-eyed bean	Tropical Africa
Nuts		
Amygdalus communis L.	almond	E Mediterranean
Juglans regia L.	walnut	prob. SW Asia
Pinus pinea L.	pine nut	Mediterranean
Pistacia atlantica Desf.	Mt. Atlas mastic tree	SW Asia
Pistacia lentiscus L.	evergreen pistache	Mediterranean
Pistacia terebinthus L.	terebinth	SW Asia
Pistacia vera L.	pistachio	C Asia
Cereals		
Fagopyrum esculentum Moench	buckwheat	China
Oryza sativa L.	rice	S, SE Asia
Sorghum bicolor (L.) Moench	sorghum	Tropical Africa
Oil rich seeds		
Cannabis sativa L.	hemp	C Asia
Papaver somniferum L.	opium poppy	W Mediterranean
Sesamum indicum L.	sesame	prob. India

Table 3.1: (continued).

Chapter 4

country	Area (km^2)	no of records					Total no of sites	no sites/km^2
		R	EM	M	U	TOTAL		
Liechtenstein	**160**	1	0	1	0	**2**	2	0.01250
Andorra	**468**	0	1	0	0	**1**	1	0.00214
Luxemburg	**2,586**	4	0	0	0	**4**	4	0.00155
Belgium	**30,510**	20	6	26	2	**54**	50	0.00164
Switzerland	**41,290**	30	4	19	3	**56**	53	0.00128
The Netherlands	**41,526**	66	33	125	7	**231**	211	0.00508
Denmark	**43,094**	10	11	37	0	**58**	58	0.00135
UK	**244,820**	181	51	164	5	**401**	367	0.00149
Germany	**357,021**	157	51	178	5	**391**	363	0.00102
Spain	**504,782**	8	7	4	2	**21**	17	0.00003
France	**547,030**	140	35	47	6	**228**	211	0.00039
TOTAL		**617**	**199**	**601**	**30**	**1447**	1337	

Table 4.1: The number of records and sites with exotics in each country by broad time period (R=Roman, EM=early medieval, M= medieval, U=unclassified).

Roman

COUNTRY	rural lesser	rural nucleated	rural elite	rural nonelite	**RURAL**	town major	town minor	**TOWN**	ceremonial burial	ceemonial temple - shrine	**CEREMONIAL**	military intramural	mitaryl extramural	miitarry unknown	**MILITARY**	**Shipwreck**	**Industrial**
Andorra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Belgium	3	4	6	-	**13**	4	1	**5**	-	1	**1**	1	-	-	**1**	-	-
Denmark	5	2	1	-	**8**	-	-	-	1	1	**2**	-	-	-	-	-	-
France	22	11	19	-	**52**	17	12	**29**	43	9	**52**	-	6	-	**6**	**1**	-
Germany	17	29	21	-	**67**	33	8	**41**	13	3	**16**	12	21	-	**33**	-	-
Liechtenstein	-	1	-	-	**1**	-	-	-	-	-	-	-	-	-	-	-	-
Luxemburg	-	1	-	-	**1**	-	-	-	1	1	**2**	1	-	-	**1**	-	-
Netherlands	23	-	3	10	**36**	3	1	**4**	-	3	**3**	17	5	1	**23**	-	-
Spain	-	-	2	-	**2**	3	1	**4**	-	1	**1**	-	-	-	-	**1**	-
Switzerland	-	1	5	-	**6**	4	5	**9**	7	-	**7**	2	6	-	**8**	-	-
UK	20	16	19	-	**55**	54	17	**71**	6	6	**12**	23	15	-	**38**	**1**	**4**
TOTAL	90	65	76	10	**241**	118	45	**163**	71	25	**96**	56	53	1	**110**	**3**	**4**

Table 4.2: The number of detailed site types with exotics per country during the Roman period.

Early medieval														
COUNTRY	rural lesser	rural village	rural elite	rural nonelite	**RURAL**	town major	town minor	**TOWN**	religious burial	religious rural monastery	religious urban monastery	**RELIGIOUS**	**Shipwreck**	**Trading centre**
Andorra	-	-	-	-	**1**	-	-	**-**	-	-	-	**-**	**-**	**-**
Belgium	3	2	-	-	**5**	1	-	**1**	-	-	-	**-**	**-**	**-**
Denmark	4	2	1	-	**7**		1	**1**	1	-	-	**1**	**-**	**2**
France	12	13	2	-	**27**	6	1	**7**	1	-	-	**1**	**-**	**-**
Germany	8	20	4	-	**32**	8	3	**11**	5	1	-	**6**	**1**	**1**
Liechtenstein	-	-	-	-	**-**	-	-	**-**	-	-	-	**-**	**-**	**-**
Luxemburg	-	-	-	-	**-**	-	-	**-**	-	-	-	**-**	**-**	**-**
Netherlands	4	8	3	8	**23**	7	-	**7**	-	-	-	**-**	**-**	**3**
Spain	1	2	1	-	**4**	1	2	**3**	-	-	-	**-**	**-**	**-**
Switzerland	-	2	-	-	**2**	-	2	**2**	-	-	-	**-**	**-**	**-**
UK	3	11	1	-	**15**	17	3	**20**	-	1	-	**1**	**1**	**14**
TOTAL	35	61	12	8	**116**	40	12	**52**	7	2	0	**9**	**2**	**20**

Table 4.3: The number of detailed site types with exotics per country during the early medieval period.

Medieval															
COUNTRY	rural lesser	rural village	rural elite	rural nonelite	**RURAL**	town major	town minor	castle	**URBAN**	religious burial	religious rural monastery	religious urban monastery	**RELIGIOUS**	**Shipwreck**	**Industrial**
Andorra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Belgium	4	1	1	-	**6**	14	4	-	**18**	-	1	1	**2**	-	-
Denmark	4	2	2	-	**8**	11	11	-	**22**	-	3	3	**6**	**1**	-
France	13	13	8	-	**34**	5	6	1	**12**	-	-	-	-	**1**	-
Germany	5	24	10	-	**39**	58	65	4	**127**	1	3	5	**9**	-	**3**
Liechtenstein	-	-	1	-	**1**	-	-	-	-	-	-	-	-	-	-
Luxemburg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands	15	9	10	10	**44**	58	16	2	**76**	-	1	4	**5**	-	-
Spain	-	1	-	-	**1**	1	1	-	**2**	-	-	-	-	**1**	-
Switzerland	-	1	5	-	**6**	2	8	-	**10**	-	1	2	**3**	-	-
UK	1	2	11	-	**14**	94	35	4	**133**	2	4	10	**16**	-	**1**
TOTAL	42	53	48	10	**153**	243	146	11	**400**	3	13	25	**41**	**3**	**4**

Table 4.4: The number of detailed site types with exotics per country during the medieval period.

Latin name	Common name	R	EM	M	U	TOTAL
RARE						
Allium cepa	onion	1	0	0	0	**1**
Armoracia rusticana	horseradish	0	0	1	0	**1**
Borago officinalis	borage	0	0	1	0	**1**
Cuminum cyminum	cumin	1	0	0	0	**1**
Eruca sativa	rocket	0	0	1	0	**1**
Lathyrus clymenum	Spanish vetchling	0	0	1	0	**1**
Myristica fragrans	nutmeg	0	0	1	0	**1**
Pistacia lentiscus	evergreen pistache	0	0	0	1	**1**
Pistacia vera	pistachio	1	0	0	0	**1**
Prunus damascena	wild plum	1	0	0	0	**1**
Sesamum indicum	sesame	1	0	0	0	**1**
Smyrnium olusatrum	alexanders	1	0	1	0	**2**
Sorghum bicolor	sorghum	0	0	2	0	**2**
Ocimum basilicum	basil	2	0	1	0	**3**
Origanum majorana	marjoram	2	0	1	0	**3**
Capparis spinosa	caper	1	0	3	0	**4**
Levisticum officinale	lovage	1	0	3	0	**4**
Melissa officinalis	balm	1	1	2	0	**4**
Rosmarinus officinalis	rosemary	1	0	2	1	**4**
Trigonella foenum-graecum	fenugreek	2	0	2	0	**4**
Elettaria cardamomum	cardamom	0	0	5	0	**5**
Pimpinella anisum	aniseed	3	0	2	0	**5**
Lactuca sativa	lettuce	1	0	5	0	**6**
Nigella sativa	black cumin	2	0	3	1	**6**
Anthriscus cerefolium	chervil	0	0	7	0	**7**
Lupinus albus	lupine	5	2	0	0	**7**
Salvia officinalis	sage	1	0	6	0	**7**
Armeniaca vulgaris	apricot	1	0	7	0	**8**
Cicer arietinum	chickpea	3	2	3	1	**9**
Cucumis sativus/melo	cucumber/melon	7	0	1	1	**9**
Allium porrum	leek	2	2	5	1	**10**
Thymus vulgaris	thyme	7	0	3	0	**10**
Ruta graveolens	rue	5	0	6	0	**11**
Punica granatum	pomegranate	2	0	9	2	**13**
LOW FREQUENCY						
Lagenaria siceraria	bottle-gourd	12	1	1	0	**14**
Aframomum melegueta	melegueta pepper	0	0	16	0	**16**
Brassica napus	rape	2	2	12	0	**16**
Cydonia oblonga	quince	3	0	13	0	**16**
Allium sativum	garlic	14	1	3	0	**18**
Oryza sativa	rice	2	0	16	0	**18**
Cucumis melo	melon	17	1	3	0	**21**
Lathyrus sativus	grass pea	8	5	11	2	**26**
Piper nigrum	black pepper	7	0	21	0	**28**
Sinapis alba	white mustard	13	3	19	0	**35**
Amygdalus communis	almond	19	2	14	1	**36**
Phoenix dactylifera	date	39	0	1	0	**40**
Cucumis sativus	cucumber	18	1	22	0	**41**
Marrubium vulgare	horehound	12	7	22	1	**42**
Brassica oleracea	cabbage	11	2	34	0	**47**

Table 4.5: Number of records with exotics, by time period (R=Roman, EM=early medieval, M=medieval, U=unclassified).

Origanum vulgare	oregano	36	4	10	1	**51**
Brassica sp.	cabbage family	10	8	38	2	**58**
Pinus pinea	pine nut	63	2	2	0	**67**
Fagopyrum esculentum	buckwheat	0	1	70	0	**71**
Olea europea	olive	54	5	10	2	**71**
Mespilus germanica	medlar	5	4	70	1	**80**
Petroselinum crispum	parsley	15	2	63	0	**80**
Carum carvi	caraway	18	1	63	1	**83**
Prunus avium/cerasus	sweet/sour cherry	32	8	51	0	**91**
COMMON						
Satureja hortensis	summer savory	67	9	39	4	**119**
Morus nigra	mulberry	29	3	99	0	**131**
Malus/Pyrus sp.	apple/pear	49	15	70	1	**135**
Foeniculum vulgare	fennel	30	6	105	2	**143**
Persica vulgaris	peach	81	10	52	3	**146**
Prunus cerasus	sour cherry	22	5	135	1	**163**
Brassica nigra	black mustard	47	15	146	3	**211**
Brassica rapa incl. ssp. *campestris*	turnip incl. wild turnip	58	29	135	6	**228**
Cannabis sativa	hemp	40	28	170	8	**246**
Prunus domestica	plum	95	16	143	5	**259**
Coriandrum sativum	coriander	170	17	73	0	**260**
Anethum graveolens	dill	114	17	127	5	**263**
Pyrus sp.	pear	74	16	170	2	**262**
Apium graveolens	celery	142	40	114	7	**303**
Prunus avium	sweet cherry	106	25	172	2	**305**
Prunus domestica subsp. *insititia*	damson	105	34	190	5	**334**
Papaver somniferum	opium poppy	139	37	194	5	**375**
Juglans regia	walnut	156	28	183	8	**375**
Lens culinaris	lentil	214	50	105	8	**377**
Malus sp.	apple	126	61	295	5	**487**
Ficus carica	fig	202	19	282	7	**510**
Vitis vinifera	grape	214	55	304	13	**586**

Table 4.5: (continued).

Latin name	**Common name**
Alpinia galangal	galangal
Amomum subulatum	black cardamom
Ceratonia siliqua	carob
Cinnamommum aromaticum	cassia
Cinnamommum verum	cinnamon
Citrullus lanatus	watermelon
Citrus limon	lemon
Citrus medica	citron
Citrus sinensis	orange
Cocos nucifera	coconut
Crocus sativus	saffron
Curcuma longa	turmeric
Cynara cardunculus	artichoke
Ficus sycomorus	sycomore fig
Glycine max	soybean
Glycyrrhiza glabra	licorice
Illicium verum	star anise
Inula helenium	elecampane
Laurus nobilis	bay leaf
Mangifera indica	mango
Murraya koenigii	curry leaf
Pistacia atlantica	Mt. Atlas mastic tree
Pistacia terebinthus	terebinth
Rhus coriaria	sumac
Saccharum officinalis	sugarcane
Salvia sclarea	clary sage
Solanum melongena	aubergine
Syzygium aromaticum	clove
Tamarindus indica	tamarind
Trachyspermum ammi	ajowan
Vigna radiate	mung bean
Vigna unguiculata	black-eyed bean
Zanthoxylum piperitum	Sichuan pepper
Zingiber officinale	ginger

Table 4.6: List of species not present in the dataset.

Roman	Rare (1-10 records)	Low frequency (11-100 records)	Common (>100 records)
Condiments	caper cumin lovage black cumin basil marjoram aniseed black pepper rosemary rue sage alexanders thyme fenugreek balm	caraway parsley white mustard oregano fennel horehound summer savory black mustard	dill coriander celery
Fruits	apricot quince wild plum pomegranate medlar	date melon mulberry olive sour cherry peach plum pear	fig sweet cherry damson grape apple
Vegetables	onion leek rape lettuce	garlic cabbage turnip incl. wild turnip cucumber bottle-gourd	
Legumes	chickpea grass pea lupine		lentil
Cereals	rice		
Nuts	pistachio	almond pine nut	walnut
Oil producing	sesame	hemp	opium poppy

Table 4.7: Species frequency in the Roman period.

Species	Common name	R	EM	M	%
Allium cepa	**onion**	**1**	**0**	**0**	**100**
Cuminum cyminum	**cumin**	**1**	**0**	**0**	**100**
Pistacia vera	**pistachio**	**1**	**0**	**0**	**100**
Prunus damascena	**wild plum**	**1**	**0**	**0**	**100**
Sesamum indicum	**sesame**	**1**	**0**	**0**	**100**
Thymus vulgaris	thyme	7	0	3	98
Lagenaria siceraria	bottle-gourd	12	1	1	94
Allium sativum	garlic	14	1	3	86
Cucumis melo	melon	17	1	3	81
Origanum vulgare	oregano	36	4	10	78
Phoenix dactylifera	date	39	0	1	76
Olea europea	olive	54	5	10	71
Pinus pinea	pine nut	63	2	2	70
Coriandrum sativum	coriander	170	17	73	65
Lens culinaris	lentil	214	50	105	57

Table 4.8: Species found only (in bold) or predominantly in the Roman period (absolute number of records and the percentage of Roman records over the total number of records of each species in all time periods). R=Roman, EM=early medieval, M=medieval.

Early medieval	**Rare (1-10 records)**	**Low frequency (11-30 records)**	**Common (>30 records)**
Condiments	caraway balm parsley white mustard oregano fennel horebound summer savory	black mustard dill coriander	celery
Fruits	melon mulberry medlar olive sour cherry peach	plum pear fig sweet cherry	damson grape apple
Vegetables	garlic leek rape cabbage cucmber bottle-gourd	turnip	
Legumes	chickpea lupine grass pea		lentil
Cereals	buckwheat		
Nuts	almond pine nut	walnut	
Oil producing		hemp	opium poppy

Table 4.9: Species frequency in the early medieval period.

Medieval	Rare (1-10 records)	Low frequency (11-100 records)	Common (>100 records)
Condiments	horseradish borage nutmeg basil marjoram alexanders aniseed rosemary fenugreek balm caper lovage black cumin thyme cardamom rue sage chervil oregano	melegueta pepper white mustard black pepper horebound summer savory caraway parsley coriander	fennel celery dill black mustard
Fruits	date melon apricot pomegranate olive	quince peach medlar mulberry	sour cherry plum pear sweet cherry damson fig apple grape
Vegetables	rocket bottle-gourd garlic leek lettuce	rape cucumber cabbage	turnip
Legumes	sweet pea chickpea	grass pea	lentil
Cereals	sorghum	rice buckwheat	
Nuts	pine nut	almond	walnut
Oil producing			hemp opium poppy

Table 4.10: Species frequency in the medieval period.

Species	Common name	M	EM	R	%
Aframomum melegueta	**melegueta pepper**	**16**	**0**	**0**	**100**
Anthriscus cerefolium	**chervil**	**7**	**0**	**0**	**100**
Armoracia rusticana	**horseradish**	**1**	**0**	**0**	**100**
Borago officinalis	**borage**	**1**	**0**	**0**	**100**
Elettaria cardamomum	**cardamom**	**5**	**0**	**0**	**100**
Eruca sativa	**rocket**	**1**	**0**	**0**	**100**
Lathyrus clymenum	**Spanish vetchling**	**1**	**0**	**0**	**100**
Myristica fragrans	**nutmeg**	**1**	**0**	**0**	**100**
Sorghum bicolor	**sorghum**	**2**	**0**	**0**	**100**
Fagopyrum esculentum	buckwheat	70	1	0	99
Oryza sativa	rice	16	0	2	89
Armeniaca vulgaris	apricot	7	0	1	88
Mespilus germanica	medlar	70	4	5	88
Salvia officinalis	sage	6	0	1	86
Lactuca sativa	lettuce	5	0	1	83
Cydonia oblonga	quince	13	0	3	81
Petroselinum crispum	parsley	63	2	15	79
Carum carvi	caraway	63	1	18	76
Morus nigra	mulberry	99	3	29	76
Brassica napus	rape	12	2	2	75
Piper nigrum	black pepper	21	0	7	75
Foeniculum vulgare	fennel	105	6	30	73
Brassica oleracea	cabbage	34	2	11	72

Table 4.11: Species found only (in bold) or predominantly in the medieval period (absolute number of records and the percentage of medieval records over the total number of records of each species in all time periods). M=medieval, EM=early medieval, R=Roman.

Latin name	common name	c	w	m	u	i	Total
Allium cepa	onion	0	1	0	0	0	**1**
Borago officinalis	borage	0	1	0	0	0	**1**
Cuminum cyminum	cumin	0	1	0	0	0	**1**
Eruca sativa	rocket	0	1	0	0	0	**1**
Lathyrus clymenum	Spanish vetchling	1	0	0	0	0	**1**
Myristica fragrans	nutmeg	0	1	0	0	0	**1**
Pistacia lentiscus	evergreen pistache	0	0	1	0	0	**1**
Pistacia vera	pistachio	1	0	0	0	0	**1**
Prunus damascena	wild plum	0	1	0	0	0	**1**
Sesamum indicum	sesame	1	0	0	0	0	**1**
Armoracia rusticana	horseradish	1	1	0	0	0	**2**
Smyrnium olusatrum	alexanders	0	2	0	0	0	**2**
Sorghum bicolor	sorghum	2	0	0	0	0	**2**
Ocimum basilicum	basil	0	3	0	0	0	**3**
Origanum majorana	marjoram	2	1	0	0	0	**3**
Capparis spinosa	caper	0	2	1	1	0	**4**
Levisticum officinale	lovage	1	3	0	0	0	**4**
Melissa officinalis	balm	1	2	0	1	0	**4**
Rosmarinus officinalis	rosemary	2	2	0	0	0	**4**
Trigonella foenum-graecum	fenugreek	3	1	0	0	0	**4**
Elettaria cardamomum	cardamom	1	3	1	0	0	**5**
Pimpinella anisum	aniseed	1	4	0	0	0	**5**
Lactuca sativa	lettuce	0	6	0	0	0	**6**
Nigella sativa	black cumin	1	4	1	0	0	**6**
Anthriscus cerefolium	chervil	0	7	0	0	0	**7**
Lupinus albus	lupine	5	0	1	1	0	**7**
Salvia officinalis	sage	0	7	0	0	0	**7**
Armeniaca vulgaris	apricot	0	6	1	1	0	**8**
Cicer arietinum	chickpea	8	0	0	1	0	**9**
Cucumis sativus/melo	cucumber/melon	2	3	4	1	0	**10**
Thymus vulgaris	thyme	2	5	2	1	0	**10**
Allium porrum	leek	1	10	0	0	0	**11**
Ruta graveolens	rue	1	10	0	1	0	**12**
Punica granatum	pomegranate	3	10	0	0	0	**13**
Lagenaria siceraria	bottle-gourd	1	11	3	0	0	**15**
Aframomum melegueta	melegueta pepper	1	15	0	0	0	**16**
Brassica napus	rape	1	13	0	2	0	**16**
Cydonia oblonga	quince	0	13	2	1	0	**16**
Allium sativum	garlic	16	2	0	0	0	**18**
Oryza sativa	rice	2	16	1	0	0	**19**
Cucumis melo	melon	1	13	7	1	0	**22**
Lathyrus sativus	grass pea	22	0	1	4	0	**27**
Piper nigrum	black pepper	1	25	1	1	0	**28**
Amygdalus communis	almond	10	19	4	3	0	**36**
Sinapis alba	white mustard	7	23	2	4	0	**36**
Phoenix dactylifera	date	34	4	1	1	0	**40**
Cucumis sativus	cucumber	0	31	8	2	0	**41**
Marrubium vulgare	horehound	3	35	1	4	0	**43**
Brassica oleracea	cabbage	3	43	0	2	0	**48**
Origanum vulgare	oregano	16	34	1	1	0	**52**
Brassica sp.	cabbage family	11	46	2	2	0	**61**
Pinus pinea	pine nut	34	31	0	2	0	**67**
Fagopyrum esculentum	buckwheat	8	61	0	3	0	**72**

Table 4.12: Number of occurrences of each species, by mode of preservation (c=carbonised, w=waterlogged, m=mineralised, u=unknown, i=impressions).

Olea europea	olive	31	38	3	2	0	**74**
Petroselinum crispum	parsley	9	64	1	6	0	**80**
Mespilus germanica	medlar	3	72	3	3	0	**81**
Carum carvi	caraway	3	73	7	4	0	**87**
Prunus avium/cerasus	sweet/sour cherry	13	73	10	2	0	**98**
Satureja hortensis	summer savory	16	91	10	5	0	**122**
Morus nigra	mulberry	5	109	14	7	0	**135**
Malus/Pyrus sp.	apple/pear	20	84	40	5	0	**149**
Foeniculum vulgare	fennel	6	118	19	7	0	**150**
Persica vulgaris	peach	36	104	1	10	0	**151**
Prunus cerasus	sour cherry	9	144	2	10	0	**165**
Brassica nigra	black mustard	26	181	4	8	0	**219**
Brassica rapa incl. ssp. *campestris*	turnip incl. wild turnip	36	186	5	11	0	**238**
Cannabis sativa	hemp	25	207	9	10	0	**251**
Prunus domestica	plum	30	204	14	16	0	**264**
Pyrus sp.	pear	30	207	13	17	0	**267**
Coriandrum sativum	coriander	32	198	19	20	0	**269**
Anethum graveolens	dill	25	213	22	16	0	**276**
Prunus avium	sweet cherry	39	244	10	17	0	**310**
Apium graveolens	celery	37	243	26	17	0	**323**
Prunus domestica subsp. *insititia*	damson	32	276	17	21	0	**346**
Juglans regia	walnut	100	262	3	22	0	**387**
Papaver somniferum	opium poppy	51	294	25	20	0	**390**
Lens culinaris	lentil	298	43	24	32	1	**398**
Malus sp.	apple	67	362	55	29	0	**513**
Ficus carica	fig	66	392	53	33	0	**544**
Vitis vinifera	grape	161	368	87	44	0	**660**

Table 4.12: (continued).

Chapter 5

	No of waterlogged records	No of carbonized records
Roman	331	317
early medieval	96	95
medieval	428	189

Table 5.1a: Number of waterlogged and carbonized records per time period.

	decrease	Increase (a)	Increase (b)	stable
Condiments	coriander celery summer savory oregano		black mustard fennel caraway parsley (black pepper) (melegueta pepper)	dill horehound (white mustard)
Fruits	peach olive (melon) date [c]	fig apple grape sweet/sour cherry damson plum	pear mulberry medlar (quince)	
Vegetables	(bottle-gourd) (garlic [c])		turnip cabbage (rape)	cucumber
Pulses	lentil [c]		(grass pea [c])	
Oil producing		opium poppy	hemp	
Nuts	pine nut (walnut [c]) (almond [c])	walnut		(almond)
Cereals			buckwheat (rice)	
Total no of species	*14*	*8*	*17*	*5*

Table 5.1b: Summary of the waterlogged archaeobotanical evidence and their pattern of occurrence in time. Species in parentheses are those rare species not included in the charts. [c]=carbonized occurrences.

ROMAN waterlogged records					
site type	total no of records	total no of food types	Average	Median	Max
(ceremonial) burial	5	12	3	3	6
(ceremonial) temple-shrine	9	11	3	1	8
military extramural	36	38	8	8	29
military intramural	45	34	5	4	15
rural elite	35	28	4	3	13
rural lesser	50	26	3	2	8
rural non elite	8	7	1	1	2
rural nucleated	27	36	6	4	19
town major	80	40	6	5	21
town minor	29	32	6	6	18
industrial	3	4	2	2	3
shipwreck	3	3	1	1	2

Table 5.2a: Distribution of waterlogged exotic food plants in the various Roman site types. NB=one military record was not classified as either intramural or extramural and thus is excluded from the table.

ROMAN carbonized records					
site type	total no of records	total no of food types	Average	Median	Max
(ceremonial) burial	64	25	3	2	14
(ceremonial) temple-shrine	17	17	3	2	9
military extramural	21	22	2	2	10
military intramural	17	29	4	2	16
rural elite	41	27	2	1	11
rural lesser	41	20	2	1	9
rural non elite	3	4	1	1	2
rural nucleated	40	22	2	1	5
town major	59	31	2	1	10
town minor	13	10	1	1	3
industrial	1	1	1	1	1

Table 5.2b: Distribution of carbonized exotic food plants in the various Roman site types.

EARLY MEDIEVAL waterlogged records					
site type	total no of records	total no of food types	Average	Median	Max
(religious) cemetery/burial	2	10	6	6	8
(religious) rural monastery	1	7	7	7	7
rural elite	6	15	4	3	10
rural lesser	12	16	3	2	8
rural non elite	7	7	2	1	3
rural village	25	19	3	2	9
town major	23	25	5	3	16
town minor	6	12	3	2	11
trading centre	12	13	3	3	4
shipwreck	2	7	4	4	6

Table 5.2c: Distribution of waterlogged exotic food plants in the early medieval site types.

EARLY MEDIEVAL carbonized records					
site type	total no of records	total no of food types	Average	Median	Max
(religious) cemetery/burial	2	2	1	1	1
rural elite	7	11	2	2	3
rural lesser	23	14	2	1	5
rural village	38	29	3	1	12
town major	13	11	2	2	3
town minor	5	3	1	1	1
trading centre	7	9	2	2	4

Table 5.2d: Distribution of carbonized exotic food plants in the early medieval site types.

MEDIEVAL waterlogged records					
site type	total no of records	total no of food types	Average	Median	Max
(religious) cemetery/burial	3	10	4	4	7
(religious) rural monastery	12	29	6	5	19
(religious) urban monastery	19	38	9	8	20
rural elite	32	30	6	5	18
rural lesser	20	19	3	2	10
rural non elite	7	13	3	3	9
rural village	18	29	5	3	23
urban castle	4	5	2	1	3
town major	201	55	8	7	30
town minor	107	52	9	7	32
industrial	2	3	2	2	2
shipwreck	3	7	2	3	5

Table 5.2e: Distribution of waterlogged exotic food plants in the medieval site types.

MEDIEVAL carbonized records					
site type	total no of records	total no of food types	Average	Median	Max
(religious) cemetery/burial	1	1	1	1	1
(religious) rural monastery	2	4	2	2	2
(religious) urban monastery	7	12	3	3	6
rural elite	15	20	3	1	13
rural lesser	25	16	2	1	5
rural non elite	4	4	1	1	2
rural village	36	21	2	2	7
urban castle	7	7	1	1	2
town major	44	24	2	1	5
town minor	47	28	2	1	10
industrial	1	1	1	1	1

Table 5.2f: Distribution of carbonized exotic food plants in the medieval site types.

Waterlogged species	No of ceremonial records	Carbonized species	No of ceremonial records
Amygdalus communis	1	*Allium sativum*	10
Brassica nigra	2	*Amygdalus communis*	7
Brassica sp.	1	*Anethum graveolens*	1
Cannabis sativa	2	*Apium graveolens*	4
Coriandrum sativum	2	*Brassica nigra*	1
Ficus carica	3	*Brassica rapa* incl. ssp. *campestris*	1
Foeniculum vulgare	1	*Cicer arietinum*	1
Juglans regia	3	*Coriandrum sativum*	6
Malus sp.	3	*Ficus carica*	23
Morus nigra	1	*Juglans regia*	22
Papaver somniferum	1	*Lens culinaris*	43
Persica vulgaris	1	*Lupinus albus*	4
Pinus pinea	1	*Malus* sp.	7
Prunus avium/cerasus	6	*Marrubium vulgare*	1
Prunus domestica	1	*Mespilus germanica*	1
Prunus domestica subsp. insititia	4	*Olea europea*	12
Pyrus sp.	4	*Origanum majorana*	1
Vitis vinifera	5	*Oryza sativa*	1
		Papaver somniferum	1
		Persica vulgaris	12
		Phoenix dactylifera	27
		Pinus pinea	23
		Prunus avium/cerasus	8
		Prunus domestica	7
		Prunus domestica subsp. *insititia*	4
		Pyrus sp.	2
		Vitis vinifera	33

Table 5.2g: Waterlogged and carbonized exotic species present in Roman ceremonial contexts.

Pattern 1 (waterlogged)	Roman	early medieval	medieval	species
i	Urban or military followed by rural elite	Very few occurrences	Urban, very few occurrences	Olive Pine nut Melon
ii	Military and urban	Few occurrences in major towns, rural and trading centres	Urban	Coriander Summer savory
iii	Military, urban, rural	Few occurrences, (celery: rural)	Urban (bottle-gourd: one occurrence, rural)	*Celery* Oregano Peach *Bottle-gourd*

Table 5.4a: Pattern 1 - waterlogged species divided in sub-groups according to their social distribution, indicating under each time period the main site types of occurrence. Species that follow the general pattern but are somewhat different are shown in italics.

Pattern 1 (carbonized)	Roman	early medieval	medieval	species
i	All site types	Rural non-elite	Urban and rural (walnut: rural refer mainly to elite records)	Lentil Walnut
ii	Burials (peach and olive also in some military, rural elite records and major towns)	Few rural non-elite (date and garlic: absent)	Very few occurrences or absent	*Peach* *Olive* Pine nut Date Garlic Almond
iii	Rural non-elite	Rural non-elite (scarce)	Rural non-elite (scarce)	Oregano

Table 5.4b: Pattern 1 - carbonized species divided in sub-groups according to their social distribution, indicating under each time period the main sites of occurrence. Species that follow the general pattern but are somewhat different are shown in italics.

Pattern 2	Roman	early medieval	medieval	species
i	Military, urban, rural	Rural non-elite and major towns	Urban and rural	Opium poppy Apple Damson Walnut
ii	Urban, followed by military and rural in equal proportions (carbonized grape mainly in ceremonial, and equally in the other site types)	Major towns (carbonized grape also in rural records)	Urban and rural	Grape *Grape (c)* Sweet/sour cherry Plum
iii	Military and urban	Trading centres	Urban and rural, mainly elite	Fig

Table 5.4c: Pattern 2 - species divided in sub-groups according to their social distribution, indicating under each time period the main sites of occurrence. (c)=carbonized.

Pattern 3	Roman	early medieval	medieval	species
i	Military or urban	Rural non-elite	Urban and rural	Pear Hemp Black mustard
ii	Military and rural (grass pea only rural)	Rural non-elite (rape: absent)	Urban and rural	Turnip *Rape* *Grass pea (c)*
iii	Military and/or urban	Very few occurrences or absent	Urban	Cabbage Black pepper Parsley Fennel Caraway Medlar Quince Mulberry
iv	Absent	Absent	Urban	Melegueta pepper Buckwheat Rice

Table 5.4d: Pattern 3 - species divided in sub-groups according to their social distribution, indicating under each time period the main sites of occurrence. Species that follow the general pattern but are somewhat different are shown in italics. (c)=carbonized.

Pattern 4	Roman	early medieval	medieval	species
i	Military and urban	Major towns (almond: absent)	Urban	Dill *Almond*
ii	Urban	Urban (white mustard: absent)	Urban	Cucumber *White mustard*
iii	Military, urban, rural	Urban and rural	Urban	Horehound

Table 5.4e: Pattern 4 - species divided in sub-groups according to their social distribution, indicating under each time period the main sites of occurrence. Species that follow the general pattern but are somewhat different are shown in italics.

Chapter 7

COUNTRY / CONDIMENT	France	Germany	Great Britain	Switzerland	Denmark	Luxemburg
Coriander	~~IIIII~~ III			I		
Celery	IIII		I			
Black mustard	I		I		I	
Dill						I
Fennel		I				
Horehound		I				
Marjoram				I		

Table 7.1: Findspots of condiments in Roman ceremonial records according to modern-day geopolitical borders (all modes of preservation).

ADDENDUM

Record Code	Record Name	Country	Site Type	Period	References
460	ABC Cinema Ipswich	Great Britain	secular urban town major	Early medieval	Murphy, P. 1991. Ipswich, Suffolk: plant macrofossils from sites IAS 3104 (Buttermarket), IAS 3201 (ABC Cinema) and IAS 5203 (Greyfriars Road).
463	Alcester, Gas House Lane 88-9	Great Britain	town minor	Roman	Moffett, L. 1996. Charred plant remains. 112-14. In Cracknell, S. (ed.), Roman Alcester: defences and defended areas: Gateway supermarket and Gas House Lane. CBA Res Rep 106 (Roman Alcester Series 2). York:
464	Alcester, Gas House Lane 88-9	Great Britain	secular urban town minor	medieval	Moffett, L. 1996. Charred plant remains. 112-14. In Cracknell, S. (ed.), Roman Alcester: defences and defended areas: Gateway supermarket and Gas House Lane. CBA Res Rep 106 (Roman Alcester Series 2). York:
467	Alchester, Bicester	Great Britain	town minor	Roman	Robinson, M. 2001. A preliminary investigation of waterlogged sediments from the early fort ditches at Alchester for environmental evidence. In Sauer, E.W. (eds.), Alchester, a Claudian 'vexillation fortress' near the western boundary of the Catuvellauni: New light on the Roman invasion of Britain. Archaeol J 157 (for 2000): 1-78.
469	Aldersgate	Great Britain	secular urban town major	medieval	Carruthers, W. 2002. The charred plant remains. 99-106.In Butler, J. (ed.), 2002. The City defences at Aldersgate. Trans London Middlesex Archaeol Soc. 52 (for 2001): 41–111.
473	Aldwark (7-9) 85	Great Britain	secular urban town major	Early medieval	Tomlinson, P.R. 1989. Plant remains from 7-9 Aldwark, York.AML Report New Series 58/89.
486	Annetwell St	Great Britain	military intramural	Roman	Huntley, J.P. and Godwin, K. 1989. Plant remains from Annetwell Street Carlisle, Cumbria: the bulk samples. AML Report New Series 1/89. AND Huntley, J.P. and Godwin, K. 1989. Plant remains from Annetwell Street Carlisle, Cumbria: a synthesis. AML Report New Series 107/89. AND Huntley, J.P. and Godwin, K. 1989. A short note on cereal bran from the Roman Fort at Annetwell Street Carlisle, Cumbria. AML Report New Series 17/89. AND Huntley, J.P. and Godwin, K. 1989. Waterlogged plant remains from Annetwell Street, Carlisle. Part 1: Sample Descriptions. AML Report New Series 81/89. Godwin.
487	Annetwell St	Great Britain	secular urban town major	medieval	Huntley, J.P. and Godwin, K. 1989. Plant remains from Annetwell Street Carlisle, Cumbria: the bulk samples. AML Report New Series 1/89. AND Huntley, J.P. and Godwin, K. 1989. Plant remains from Annetwell Street Carlisle, Cumbria: a synthesis. AML Report New Series 107/89. AND Huntley, J.P. and Godwin, K. 1989. A short note on cereal bran from the Roman Fort at Annetwell Street Carlisle, Cumbria. AML Report New Series 17/89. AND Huntley, J.P. and Godwin, K. 1989. Waterlogged plant remains from Annetwell Street, Carlisle. Part 1: Sample Descriptions. AML Report New Series 81/89. Godwin.
490	Appleford 73-4, nr Abingdon	Great Britain	rural lesser	Roman	Robinson, M. 1981. Roman waterlogged plant and invertebrate evidence. 90-106. In Hinchcliffe, J. and Thomas, R. (eds.), Archaeological investigations at Appleford. Oxoniensia: 45: 9-111.
496	Arrow Valley 93-4	Great Britain	rural elite	Roman	Moffett, L. and Ciaraldi, M. incl. Monckton, A. 1999. Charred plant remains [A/S]. In Palmer, S.C. Archaeological excavations in the Arrow Valley, Warwickshire. Birmingham Warwickshire Archaeol Soc Trans 103: 207-8. Waterlogged plant macrofossils [Roman]. In Palmer, S.C. Archaeological excavations in the Arrow Valley, Warwickshire. Birmingham Warwickshire Archaeol Soc Trans 103: 171-9.
503	Aston Tirrold 89, Goring/Didcot pipeline	Great Britain	rural lesser	Roman	Carruthers, W.J. 1990. The carbonised and waterlogged plant remains, Aston Tirrold Site 2. In Ford, S. (ed.), Archaeology of the Cleeve-Didcot pipeline, South Oxfordshire. Oxoniensia. 60: 38-40.
509	Bancroft Villa	Great Britain	rural elite	Roman	Pearson, E. and Robinson, M. 1994. Environmental evidence from the Villa. In Williams, R.J. and Zeepvat, R.J. (eds.), Bancroft The Late Bronze Age and Iron Age settlements and Roman temple-mausoleum and the Roman villa, Buckinghamshire Archaeology Society Monograph 7: 565-584
510	Bar Hill	Great Britain	military extramural	Roman	MacDonald, G. 1906. The Roman forts on the Bar Hill, Dumbartonshire, excavated by A Whitelaw. Proc. Soc. Antiq. Scotland 40: 403-46.
517	Barton Court Farm 72-6	Great Britain	rural elite	Roman	Jones, M. and Robinson, M. 1986. The carbonised plant remains. Fiche Chapter VII.and Robinson, M. with contributions by Dickson, J.H. and Greig, J.R.A. 1986. Waterlogged plant remains and invertebrate evidence. Fiche Chapter VIII. In Miles, D. (ed.), Archaeology at Barton Court Farm, Abingdon, Oxon. CBA Research Report 50/Oxford Archaeol. Unit Report 3: 1-66.
519	Baynard's Castle, Upper thames Street	Great Britain	town major	Roman	Willcox, G. 1980. The Environmental Evidence. In Hill, C.,Millett, M. and Blag, T. The Roman Riverside Wall and Monumental Arch in London. LaMas Spec Pap 3: 78-83
520	Bays Meadow Droitwich	Great Britain	rural elite	Roman	Greig, J.R.A. 1991. The plant remains in the Roman well fill from Droitwich, Bay's Meadow (Worcestershire). AML Report New Series 65/91.
522	Bearsden,nr Glasgow	Great Britain	military intramural	Roman	Dickson, C.A. and Dickson, J.H. forthcoming and Dickson, J.H. and Breeze, D.J. 1983. The plant remains. In Breeze, D.J. (ed.), Excavations of the Roman fort at Bearsden, Scotland. Soc. Antiq. Scotland. Scotland, Central and Evidence concerning the roman military diet at Bearsden, Scotland in the 2nd century AD. Journal of Archaeological Science, 10: 139-152. Also, Dickson and Dickson 2000.
528	The Bedern 76-81, Aldwark Street, York	Great Britain	various trading centre	Early medieval	Kenward, H.K, Hall, A.R. and Jones, A.K.G. 1986. Environmental evidence from a Roman well and Anglian pits in the Legionary Fortress. The Archaeology of York 14(5). London: CBA. 241-88 and fiche 2.
529	The Bedern 76-81, York	Great Britain	military intramural	Roman	Kenward, H.K, Hall, A.R. and Jones, A.K.G. 1986. Environmental evidence from a Roman well and Anglian pits in the Legionary Fortress. The Archaeology of York 14(5). London: CBA. 241-88 and fiche 2.
537	Billingsgate 74, Lower Thames St.	Great Britain	town major	Roman	Willcox, G.H. 1980. The environmental evidence. In Jones, D.M. and Rhodes, M. 1980. Excavations at Billingsgate Buildings (triangle), Lower Thames Street, London 1974. London and Middlesex Archaeol. Soc. Special
538	Birdlip 87-8	Great Britain	rural lesser	Roman	Straker, V. 1999. Charred plant macrofossils. In Parry, C. 1999. Excavations near Birdlip, Cowley, Gloucestershire, 1987-8. Trans Bristol Gloucestershire Archaeol Soc 116 (for 1998): 76-80.
547	Blackfriars St (Carlisle) 77-9	Great Britain	military extramural	Roman	Donaldson, A.M. 1990. The botanical remains. In McCarthy, M.R. (ed.), A Roman, Anglian and medieval site at Blackfriars Street, Carlisle. Excavations 1977-9. (vol. ed. C.M. Brooks) Cumberland and Westmorland Antiq. Archaeol. Soc. Res. Ser. 4. Carlisle Archae: 319 and Fiche 3/4-8.
549	Borough High St (106-114), Southwark	Great Britain	town major	Roman	Dean, M. 1978. Section F1 Seeds, wood, insects, fish and molluscs. In Ferretti, E. and Graham, A.H. (eds.), 201-211 Borough High Street. Southwark excavations 1972-1974. I. London and Middlesex Archaeol. Soc. and Surrey Archaeol. Soc. Joint Publication 1: 168-72.
550	Borough High St (199), Southwark	Great Britain	town major	Roman	Tyers, I. 1988. Environmental evidence from Southwark and Lambeth. In Hinton, P. (ed.), Excavations in Southwark and Lambeth 1973-76. London and Middlesex Archaeol. Soc. and Surrey Archaeol. Soc. Joint
553	Brayford Wharf East, Lincoln	Great Britain	town major	Roman	Moffett, L.C. 2001. Plant Remains from the Roman River Edge at Brayford Wharf East (BWE 82), Lincoln. Ancient Monuments Laboratory Report 9/95.
559	Burgess Hill	Great Britain	rural lesser	Roman	Hinton, P. 1999. Charred plant remains. In Sawyer, J. (ed.), The excavation of a Romano-British site at Burgess Hill, West Sussex.Sussex Archaeol Collect 137: 49-58.
570	Caerleon 57-81	Great Britain	military intramural	Roman	Hillman, G.C. 1986. Identification of olive stone. In Zeinkiewicz, J.D. (ed.), The legionary Fortress Baths at Caerleon. Vols I and II. National Museum of Wales, CADW: 224.
571	Caerleon Legionary Museum 83-5	Great Britain	military intramural	Roman	Caseldine, A.E and Busby, P.A. 1993. Plant remains. In Zienkiewicz, J.D. (ed.), Excavations in the Scamnum Tribunarum at Caerleon: The Legionary Museum Site 1983-5. Britannia 24: 136-8.
572	Caernarfon 76-7, Segontium (Roman Caernarvon)	Great Britain	military intramural	Roman	Hillman, G. 1986. Plant remains. In White, R.B. (ed.), Excavations in Caernarfon 1976-7. Archaeol. Cambrensis: 134: 101-3.
575	Calvert St.	Great Britain	secular urban town major	medieval	Murphy, P. 1991. Calvert Street, Norwich, Norfolk (840N): Plant remains from Late Saxon to Early Medieval deposits. AML Report New Series 67/91.
580	Cannon St 05	Great Britain	town major	Roman	Lyell, A.H., Reid, C. and Newton, E.T. 1906. In Norman, P. and Reader, F.W. (eds.), Recent discoveries in connection with Roman London. Archaeologia 60 (1): 216-7.
581	Carlisle 77	Great Britain	secular urban town major	medieval	Donaldson, A. 1978. Botanical remains from Carlisle CEU 1977. AML Report OS 2483.
583	Carrawburgh 50, near Hadrian's Wall	Great Britain	ceremonial temple-shrine	Roman	Blackburn, K. 1951. Appendix I. Report upon the natural pine-cones from the temple of Mithras at Carrawburgh. 86. In Richmond, I.A and Gillam, J.P. (eds.), The temple of Mithras at Carrawburgh. Archaeol. Aeliana 4th
584	Castle Garth	Great Britain	military intramural	Roman	Huntley, J.P. and Daniell, J.R.G. 2002. The charred plant remains. In Snape, M. and Bidwell, P. (eds.), Excavations at Castle Garth, Newcastle upon Tyne, 1976-92 and 1995-6: the excavations of the Roman fort. Archaeol Aeliana 5th ser 31: 239-243.
589	Castle St (Carlisle) 81-2, Carlisle	Great Britain	military extramural	Roman	Goodwin, K. and Huntley, J.P. 1991. The waterlogged plant remains and woodland management studies. In McCarthy, M.R. (ed), The structural sequence and environmental remains from Castle Street, Carlisle: excavations 1981-2. Cumberland and Westmorland Anti.: Fascicule 1, Fiche 1/54-64.
592	Castleford 74-85	Great Britain	military intramural	Roman	Huntley, J.P. and Daniell, J.R.G. 2002. The botanical material. (and Apps. 3-6. 329-42). In Abramson, P., Berg, D.S. and Fossick, M.R. (eds.), Roman Castleford. Excavations 1974-85. II. The structural and environmental evidence. Yorkshire Archaeology 5. Wakefield: West Yorkshire Archaeology Ser.: 163-222.
593	Castleford 74-85	Great Britain	military extramural	Roman	Huntley, J.P. and Daniell, J.R.G. 2002. The botanical material. (and Apps. 3-6. 329-42). In Abramson, P., Berg, D.S. and Fossick, M.R. (eds.), Roman Castleford. Excavations 1974-85. II. The structural and environmental evidence. Yorkshire Archaeology 5. Wakefield: West Yorkshire Archaeology Ser.: 163-222.
596	Catsgore 79, nr Somerton	Great Britain	rural nucleated	Roman	Paradine, P. 1984. Plant macrofossils from the well. and fiche D11-14. In Ellis, P. (ed.), Catsgore, 1979, further excavation of the Romano-British village. Western Archaeol. Trust Excavation Monograph No 7: 40-1.
599	Catterick 58-97 (Thornbrough Farm Site 482)	Great Britain	military intramural	Roman	Huntley, J.P. 2002. Charred and waterlogged plant remains from Thornborough Farm (sites 452 and 482). In Wilson, P.R. (ed.), Cataractonium: Roman Catterick and its hinterland. Excavations and research, 1958-1997. Part II. CBA Res Rep 129. York: CBA: 439-45.
600	Causeway Lane	Great Britain	town major	Roman	Monckton, A. 1996. Evidence for food and fodder from plant remains at Causeway Lane, Leicester. Circaea 12 (for 1995): 252-8.
606	Chalk 61, nr Gravesend	Great Britain	rural elite	Roman	Arthur, J.R.B. and Metcalf, C.R. 1972. Appendix A: plant remains. In Johnston, D.E.A. (ed.), Roman building at Chalk, near Gravesend. Britannia. 3: 112-48.
608	Chesters Bridge Abutment	Great Britain	military extramural	Roman	Huntley, J.P. 1993. The carbonised plant remains from excavations at Chesters Roman Bridge Abutment, Chesters, Northumberland. AML Report New Series 29/93.
611	Chew Park 53-5, nr Bristol	Great Britain	rural elite	Roman	Helbaek, H., Metcalf, C.R., Richardson, F., Stant, Y. and Levy, J.F. 1977. In Rahtz, P.A. and Greenfield, E. Excavations at Chew Valley Lake, Somerset. London: HMSO. DoE Archaeology Reports 8. App II. Seeds and
615	Church St. York, 72-3	Great Britain	town major	Roman	Greig, J.R A. 1976. The plant remains. In Buckland, P.C. (ed.), The Environmental evidence from the Church Street Roman Sewer System. The Archaeology of York AY 14(1). London: CBA: 23-8.
619	Clatterford	Great Britain	rural elite	Roman	Moulins, D.de 2001. Plant macrofossil remains. In Busby, P., Moulins, D. de, Lyne, M., McPhillips, S. and Scaife, R. (eds.), Excavations at Clatterford Roman Villa, Isle of Wight. Proc. Hampshire Field Club Archaeological
621	Cledemutha 79-82, Rhuddlan, nr Rhyl	Great Britain	secular rural village	Early medieval	Williams, D. 1987. Plant remains. In Manley, J. Cledemutha: a late Saxon burgh in North Wales. Medieval Archaeol. 31: 40.
625	Colliton Park 88, Dorchester	Great Britain	town major	Roman	Ede, J. 1993. Plant remains. In Smith, R.J.C. (eds.), Excavations at County Hall, Colliton Park, Dorchester, Dorset, 1988. Wessex Archaeol. Rep. 4.
627	Coney St York 74-5	Great Britain	town major	Roman	Williams, D. 1979. The plant remains. In Kenward, H.K. and Williams, D. (eds.), Biological evidence from the Roman warehouses in Coney Street. The Archaeology of York AY 14(2). London: CBA: 52-62 and 81-91.
628	Coppergate (16-22)	Great Britain	secular urban town major	Early medieval	Kenward, H.K. and Hall, A.R. 1995. Biological evidence from Anglo-Scandinavian deposits at 16-22 Coppergate. The Archaeology of York 14(7). York: CBA: 435-797.
642	Danes Terrace, Lincoln	Great Britain	secular urban town major	medieval	Moffett, L. 1995. Plant remains from an 11th century cesspit at Lincoln, Danes Terrace (DT 1 74). AML Report New Series 10/95.
645	Denton 59, nr Grantham	Great Britain	rural elite	Roman	Conolly, A.P., Levy, J.F. and Dalby, D.H. 1971. App. 1 Plant remains, wood, mosses, ferns. In Greenfield, E. The Roman Villa at Denton, Lincolnshire. Lincolnshire Hist. and Archaeol. 6: 47.
649	Dorchester County Hall	Great Britain	town major	Roman	Ede, J. forthcoming. The plant remains. In Smith, R.J.C. (ed.), The excavations at Dorchester County Hall, Dorset.
655	Dragonby 64-73, nr Scunthorpe	Great Britain	rural nucleated	Roman	Veen, M. van der 1996.The plant macrofossils from Dragonby. In May, J. (ed.), Dragonby. Report on excavations at an Iron Age and Romano-British settlement in North Lincolnshire. (2 vols.) Oxbow Monograph 61.
661	East Gate (Gloucester) 74-81	Great Britain	secular urban town major	Early medieval	Green, F.J. 1983. Plant remains from feature 351. In Heighway, C. (ed.), The East and North Gates of Gloucester, excavations 1974-81. Western Archaeol. Trust Excavation Monograph 4: 246-8 and Fiche.
662	East Gate (Mitre Yd) 73	Great Britain	military intramural	Roman	Wilson, D.G. 1988. Horse dung from Roman Lancaster: a botanical report. In Jones, G.D.B and Shotter, D.C.A. (eds.), Roman Lancaster. Rescue archaeology in an historic city 1970-75. Brigantia Monograph No. 1. Department of Archaeology, Univ. of Manchester: 170-8.
665	Elms Farm, Heybridge	Great Britain	rural nucleated	Roman	Monckton, A. 2000. Charred Plant Remains From the Late Iron Age and Roman Settlement at Elms farm, Heybridge, Essex. Ancient Monuments Laboratory reports 77/2000.
672	Faccenda Farm 83, nr Alchester, Bicester	Great Britain	rural lesser	Roman	Giorgi, J. and Robinson, M. 1984. The environment. In Foreman, M. and Rahtz, S. Excavations at Faccenda Chicken Farm, near Alchester, 1983. Oxoniensia 49: 38-45.
675	Farmoor 74-6, Farmoor, Upper Thames	Great Britain	rural lesser	Roman	Jones, M. 1979. Plant remains from dry bulk samples. In Lambrick, G. and Robinson, M. (eds). Iron Age and Roman riverside settlements in Farmoor, Oxfordshire. CBA Research Report 32. Oxfordshire Archaeol. Unit
680	Fishbourne	Great Britain	rural elite	Roman	Carruthers, W. 1992. Fishbourne Roman Palace, West Sussex: Carbonised Plant Macrofossils from Garden Features. AML Report New Series 130/91.
684	Folly Ln, St Albans	Great Britain	ceremonial burial	Roman	Murphy, P. 1995. Folly Lane, St Albans, Hertfordshire: plant macrofossils from a high-status 1st century AD cremation burial and associated contexts.AML Report New Series 65/95.
685	Frenchgate 64-9	Great Britain	town minor	Roman	Williams, D. 1985. Seeds from a second century pit (Site DG, Pit 5). In Buckland, P.C. and Magilton, J.R . (eds.), The archaeology of Doncaster. 1. The Roman Civil settlement BAR BS 148: 198-9.
687	Friernhay St 81, Exeter	Great Britain	military intramural	Roman	Straker, V., Robinson, M. and Robinson, E. 1984. Biological investigations of waterlogged deposits in the Roman Fortress ditch at Exeter. Proc. Devon Archaeol. Soc. 42: 59-69.
693	General Accident York 83-4, York, 24-30 Tanner Row	Great Britain	town major	Roman	Hall, A.R. and Kenward, H.K. 1990. Environmental evidence from the Colonia: General Accident and Rougier Street. The Archaeology of York AY 14(6). London: CBA: 289-434 and fiche 1-9.
694	General Accident York 83-4, York, 24-30 Tanner Row	Great Britain	secular urban town major	medieval	Hall, A.R. and Kenward, H.K. 1990. Environmental evidence from the Colonia: General Accident and Rougier Street. The Archaeology of York AY 14(6). London: CBA: 289-434 and fiche 1-9.
697	Gorhambury 72-82, nr St Albans	Great Britain	rural elite	Roman	Wainwright, A. 1990. The mollusc and seed remains. In Neal, D.S., Wardle, A. and Hunn, J. (eds.), Excavation of the Iron Age, Roman and Medieval settlement at Gorhambury, St Albans. London: English Heritage Archaeological Report No. 14: HBMC(E): 213-14.
702	Granville St 73, Southampton	Great Britain	various trading centre	Early medieval	Buckland, P.C., Holdsworth, P. and Monk, M. 1976. The interpretation of a group of Saxon pits in Southampton. Archaeol. Sci. 3: 61-9.
706	Great Holts Farm	Great Britain	rural elite	Roman	Murphy, P. 2000. Production, Imports and Status:Biological Remains from a Late Roman Farm at Great Holts Farm, Boreham, Essex. Enviromental Archaeology 5. 35-48 and Plant Macrofossils from a Late Roman Farm, Great Holts farm, Boreham, Essex. Ancient Monuments Laboratory Report 7/97.
709	Greyfriars Rd 88	Great Britain	secular urban town major	Early medieval	Murphy, P. 1991. Ipswich, Suffolk: Plant macrofossils from sites IAS 3104 (Buttermarket), IAS 3201 (ABC Cinema) and IAS 5203 (Greyfriars Road). AML Report New Series 33/9.
712	Hamwic	Great Britain	various trading centre	Early medieval	Biddle, B. 1997. In Andrews, P. (ed.), Excavations at Hamwic. 2. CBA Research Report 109. York: CBA: 245-6.
719	High St (113-19)	Great Britain	secular urban town major	medieval	Robinson, M. 2001. Macroscopic plant and insect remains. In Walker, G. and King, R. (eds.), Early medieval and later tenements at 113-119 High St Oxford; excavations in 1993-5. Oxoniensa 65 (for 2000): 381-440.
721	Highgate 77, Beverley	Great Britain	secular urban town minor	medieval	Hall, A.R. and Kenward, H.K. 1980. An interpretation of biological remains from Highgate, Beverley. J. Archaeol. Sci. 7: 33-51.
726	Hungate York 50	Great Britain	military extramural	Roman	Godwin, H. and Bachem, K. 1961. Appendix III Plant Materials. In Richardson, K.M. Excavations in Hungate, York. Archaeol. J. 116 (for 1959): 51-114.

729	Isca 58, Caerleon	Great Britain	military extramural	Roman	Helbaek, H. 1964. The Isca grain: a Roman plant introduction in Britain. New Phytologist. 63: 158-64.
730	Jubilee Hall, Covent Garden	Great Britain	various trading centre	Early medieval	Davis, A. and de Moulins, D. 1988. The plant remains. In Cowie, R., Whytehead, R.L. and Blackmore, L. (eds.), Two middle Saxon occupation sites: excavations at Jubilee Hall and 21-2 Maiden Lane. Trans. London Middx. Archaeol. Soc. 39: 139-47.
733	Langton Villa, nr Malton	Great Britain	rural elite	Roman	Blackburn, K.B. 1932. Report on the vegetable remains from the well. In Corder, P. and Kirk, J. The Roman villa at Langton, Yorks. Yorkshire Archaeol. Soc. 55.
735	Liberal Club 79	Great Britain	secular urban town minor	Early medieval	Robinson M. 1986. Baker E. Three excavations in Bedford, 1979-1984. Bedfordshire Archaeol. 17: 50-71.
736	Lion Walk 71-4	Great Britain	military intramural	Roman	Murphy, P. 1984. Carbonised fruits from building 5. In Crummy, P. (ed.), Excavations at Lion Walk, Balkerne Land and Middleborough, Colchester, Essex. Colchester Archaeological Report3. Colchester Archaeol. Trust: 40
745	London	Great Britain	town major	Roman	Boyd, P. 1980. Carbonised cereals and associated weed seeds from Roman London. A.D.60. AML Report OS 3135.
746	London (Roman waterfront)	Great Britain	town major	Roman	Straker, V. 1984. First and second century carbonised cereal grain from Roman London. In Zeist, W. van and Casparie, W.A. (eds). Plants and Ancient Man: Studies in palaeoethnobotany. [Waterfront] Rotterdam: A A
748	Low Ham, Chew Valley, nr Bristol	Great Britain	rural elite	Roman	Godwin, A. 1977. Low Ham Well Somerset, remains of trees and woody shrubs. Table XXV. In Rahtz, P.A. and Greenfield, E. (eds.), Excavations at Chew Valley Lake, Somerset. London: HMSO: 368.
749	Lullingstone 49-61, nr Orpington	Great Britain	rural elite	Roman	Arthur, J.R.B. 1974. The Roman villa at Lullingstone, Kent. Kent . Volume 1. Archaeol. Soc. Monograph Series No. 1.and Metcalf, C.R. and Doherty, G. 1987. Botanical remains. In Meates, G.W. (eds.), The Roman villa at Lullingstone, Kent. Kent . Volume 2. Archaeol. Soc. Monograph Series No. 3: 317-8.
755	Maiden Ln (21-2)	Great Britain	various trading centre	Early medieval	Davis, A. and de Moulins, D. 1988. The plant remains. In Cowie, R., Whytehead, R.L. and Blackmore, L. (eds.), Two middle Saxon occupation sites: excavations at Jubilee Hall and 21-2 Maiden Lane. Trans. London Middx. Archaeol. Soc. 39: 139-47.
759	Maxey 79-81, nr Stamford	Great Britain	rural lesser	Roman	Green, F.J. 1985. Evidence for domestic cereal use in Maxey. In Prior, F., French, C., Crowther, D., Gurney, D., Simpson, G. and Taylor, M. (eds.), The Fenland Project No 1: Archaeology and environment in the Lower Welland Valley Vol. 1. East Anglian Archaeol. 27: 224-32.
761	Meales Farm 85-6	Great Britain	secular rural elite	medieval	Carruthers, W. 1991. The carbonised plant remains. In Lobb, S., Mees, G. and Mepham, L. (eds.), Meales Farm, Sulhamstead. Archaeological investigation of Romano-British and medieval features, 1985-7. Berkshire Archaeol. J. 73 (for 1986-90): 61-2 and Fiche D4-8.
762	Melbourne St 71-6, Hamwih	Great Britain	various trading centre	Early medieval	Monk, M.A. 1980. The seed remains. In Holdsworth, P. (ed.), Excavations at Melbourne Street, 1971-76. CBA Research Report 33. Southampton Archaeol. Research Committee Report 1: 128-33.
767	Middleton Stoney 70-82	Great Britain	secular urban castle	medieval	Robinson, M. 1984. Environmental sample. In Rahtz, S. and Rowley, T. (eds.), Middleton Stoney Excavation and Survey in a North Oxfordshire parish. Oxford University Dept. for External Studies: 151-2.
768	Middleborough 79	Great Britain	town major	Roman	Murphy, P. 1984. Miscellaneous soil samples from Middleborough. In Crummy, P. (ed.), Excavations at Lion Walk, Balkerne Lane and Middleborough, Colchester, Essex. Colchester Archaeological Report 3. Colchester Archaeol. Trust: Fiche page 365.
769	Mill St (Caerleon) 84-90 nr Newport	Great Britain	military extramural	Roman	Jones, J. 2000. Plant macrofossil evidence from various contexts. passim. In Evans, E. (ed.), The Caerleon Canabae. Excavations in the civil settlement 1984-90. Britannia Monograph Series 16.
770	Millbridge	Great Britain	secular rural lesser	medieval	Murphy, P. 1991. Assessment of samples from Roman and Medieval contexts. Ancient Monuments Laboratory Report 83/91. English Heritage.
773	Moraunt Dr. 92	Great Britain	rural lesser	Roman	Hinton, P. 1994. Charred plant remians. In Barber, L. (ed.), The excavation of a Romano-British site at Moraunt Drive, Middleton-on-Sea, West Sussex. Sussex Archaeol.Coll.132: 87-100.
775	Morton Fen Saltern nr Bourne	Great Britain	various industrial site	Roman	Murphy, P. 1994. Fenland Management Project Report No. 3: charred plant macrofossils and molluscs from Morton Fen Saltern, Lincolnshire (MOS 93). AML Report New Series 42/9.
780	New Fresh Wharf	Great Britain	town major	Roman	Willcox, G. 1977. Exotic Plants from Roman Waterlogger Sites in London. Journal of Archaeological Science 4.3: 269-82.
781	Newarke St.	Great Britain	ceremonial burial	Roman	Monckton, A. 1996. Charred and mineralised plant macrofossils. In Cooper, L. (ed.), A Roman cemetery in Newarke Street, Leicester. Leicestershire Archaeol. Hist. Soc. Trans. 70: 74-8.
783	Newarke St.	Great Britain	town major	Roman	Monckton, A. 1996. Charred and mineralised plant macrofossils. In Cooper, L. (ed.), A Roman cemetery in Newarke Street, Leicester. Leicestershire Archaeol. Hist. Soc. Trans. 70: 74-8.
786	Newman's End	Great Britain	rural nucleated	Roman	Carruthers, W. 2000. The plant remains. In Guttman, E.B.A. (ed.), Excavations on the Hatfield Heath to Matching Tye rising main, north-west Essex. Archaeol.History 31: 18-32.
790	North Cave, Beverley/Goole	Great Britain	rural elite	Roman	Allison, E.P., Hall, A.R., Kenward, H.K., McKenna, B. and Robertson, A. 1990. Biological remains from excavations at North Cave, N. Humberside. AML Report New Series 105/90.
792	North Gate 74-81, Gloucester	Great Britain	secular urban town major	medieval	Green, F J. 1983. Plant remains from Northgate Street, Gloucester (site 9/76). In Heighway, C. (ed.), The East and North Gates of Gloucester, excavations 1974-81: 247-8 [and Fiche App. J].
797	Okehampton Castle 72-80	Great Britain	secular urban castle	medieval	Colledge, S. 1982. Plant remains. In Higham, R.A., Allan, J.P. and Blaylock, S.R. (eds.), Excavations at Okehampton Castle, Devon. Part 2: The Bailey. Proc. Devon Archaeol. Soc. 40: 146.
798	77-9 Droitwich	Great Britain	town minor	Roman	Colledge, S. and Greig, J. 1992. Environment . In Woodiwiss, S. (ed.), Iron Age and Roman salt production and the Medieval town of Droitwich; excavations at the Old Bowling Green and Friar Street. London: Council for British Archaeology 1992: 96-105. CBA Research Reports 81: 96-105 and Fiche 2:F1-4.
801	Old Post Office (15-17 High St)	Great Britain	secular urban town minor	medieval	Hinton, P. 1997. Plant remains. In Stevens, S. (ed.), Excavations at the Old Post Office site, 15-17 High Street, Crawley, West Sussex. Sussex Archaeol Coll 135: 206-7.
803	Old Shifford Farm 88-9, Standlake	Great Britain	rural nucleated	Roman	Robinson, M. 1995. Plant and invertebrate remains. In Hey, G. (ed.), Iron Age and Romano-British settlement at Old Shifford Farm, Standlake. Oxoniensia 60: 158-67.
805	Orchard Lane 94	Great Britain	secular urban town minor	medieval	Murphy, P. 1997. Plant macrofossils and invertebrates: summary. In Oakey, N. with Spoerry, P. (eds.), Excavations at Orchard Lane, Huntingdon, 1994. Proc. Cambridge Antiq. Soc. 85: 149-53.
806	Orton's Pasture	Great Britain	military extramural	Roman	Monckton, A. 2000. Charred plant remains. In Ferris, I.M., Bevan, L. and Cutler, R. (eds.), The excavation of a Romano-British shrine at Orton's Pasture, Rocester, Staffordshire. BAR British Ser. 314. Oxford:
809	Oxford Rd (Bicester)	Great Britain	rural lesser	Roman	Pearson, E.1997. Charred plant remains. In Mould, C. (ed.), An archaeological excavation at Oxford Road, Bicester, Oxfordshire. Oxoniensia 61 (for 1996): 102-5.
810	Paddock Hill (Octon), Thwing, nr Driffield	Great Britain	secular rural village	Early medieval	Carruthers W. 1993. AML Report New Series 14/93.
811	Pakenham , Pakenham, nr Bury St Edmunds	Great Britain	military extramural	Roman	Murphy, P. and Wiltshire, P.E.J. 1989. Pakenham, Suffolk (PKM 027): Environmental and Economic Studies. AML Report New Series 99/89.
812	Pakenham , Pakenham, nr Bury St Edmunds	Great Britain	town minor	Roman	Murphy, P. and Wiltshire, P.E.J. 1989. Pakenham, Suffolk (PKM 027): Environmental and Economic Studies. AML Report New Series 99/89.
815	Pan Sand, Thames estuary	Great Britain	shipwreck	Roman	Squirrell, J.P. 1989. The olive (Olea europaea). In Sealey, P.R. and Tyres, P.A. (eds.), Olives from Roman Spain: a unique amphora find in British waters. Antiq. J. 69: 56.
819	Peabody Site	Great Britain	various trading centre	Early medieval	Moulins, D. de 1989.Plant remains. In Whytehead, R.L., Cowie, R. and Blackmore, L. (eds.), Excavations at the Peabody Site, Chandos Place, and the National Gallery. Trans. London Middx. Archaeol. Soc. 40 (for 1989):
820	Peel Gap nr Vindolanda (Hadrian's Wall)	Great Britain	military intramural	Roman	Huntley, J.P. 1989. Plant remains from Peel Gap, Northumberland. AML Report New Series 114/89.
833	Prestatyn 84-5, Prestatyn	Great Britain	various industrial site	Roman	Jones, J. 1989. Botanical remains. In Blockley, K. (ed.), Prestatyn 1984-5. An Iron Age farmstead and a Romano-British industrial settlement in North Wales. BAR BS 210: 171-9.
839	Ribchester 89	Great Britain	military intramural	Roman	Huntley, J.P. 1995. Plant remains from Ribchester, Lancashire: AML Report New Series and Huntley, J.P. 2000. Plant remains. In Buxton, K. and Howard-Davis, C. (eds.), Bremetanacum. Excavations at Roman Ribchester 1980, 1989-1990. Lancaster Imprints Series 9: 349-59.
843	Rocester 85-7	Great Britain	secular rural lesser	Early medieval	Moffett, L.C. 1989. Economic activities at Rocester, Staffordshire, in the Roman, Saxon and Medieval Periods: The evidenec from the Charred Plant Remains. AML Report New Series 15/89.
849	Rougier St (5) 81, York	Great Britain	secular urban town major	Early medieval	Tomlinson, P.R. 1989. Plant remains from excavations at 5 Rougier Street, York. AML Report New Series 57/89.
850	Rougier St (5) 81, York	Great Britain	secular urban town major	medieval	Tomlinson, P.R. 1989. Plant remains from excavations at 5 Rougier Street, York. AML Report New Series 57/89.
851	Rougier St York 81, York	Great Britain	town major	Roman	Hall, A.R. and Kenward, H.K. 1990. Environmental evidence from the Colonia: General Accident and Rougier Street. The Archaeology of York AY 14(6). London: CBA. 289-434 and fiche 1-9.
854	Rudston Villa	Great Britain	rural elite	Roman	Greig, J.R.A. 1980. Seeds from the well. In Stead, I.M. (ed.), Rudston Roman Villa. Yorkshire Archaeol. Soc. (Leeds) and AML Report OS 2221: 169-71.
856	Saddler St (61-3) 74, Durham City	Great Britain	secular urban town major	medieval	Donaldson, A. 1979. Plant life and plant use. In Carver, M. (ed.), Three Saxo-Norman tenements in Durham City. Medieval Archaeol. 23: 55-60.
857	Scole 73, nr Diss	Great Britain	rural lesser	Roman	Jones, A.K.G. 1977. Plant remains. In Rogerson, A. (ed.), Excavations at Scole 1973. East Anglian Archaeol. Report 5: 218-21.
858	Scotch St (Carlisle)	Great Britain	military extramural	Roman	Donaldson, A. 1977. Botanical report on material from Carlisle, Vasey's excavations 1976. AML Report OS 2387.
859	Scotney Castle 90 Lamberhurst, nr Tunbridge Wells	Great Britain	various industrial site	Roman	Hinton, P. 1998. The plant remains. In Barber, L. (ed.), An early Romano-British salt-working site at Scotney Castle. Archaeol Cantiana 118: 345-9.
868	Silchester 1900-08, nr Reading	Great Britain	town major	Roman	Reid, C. 1901-03, 05-07, 09, 10. Plant remains. In Hope, W.H. (ed.), Excavations on the site of the Roman city of Silchester, Hants in 1900-08. Archaeologia. 57:2 229-256, 58:1 34-6, 58:2, 59:2 367-70, 60:1, 60:2, 61:1.
871	Skeldergate York 73-5, York	Great Britain	town major	Roman	Hall, A.R., Kenward, H.K. and Williams, D. 1980. Environmental evidence from Roman deposits in Skeldergate. The Archaeology of York AY 14(3). London: CBA. 101-56.
873	South Shields Fort	Great Britain	military extramural	Roman	Van der Veen, M. 1994. Reports on the biological remains. In Bidwell, P. and Speak, S. (eds.),. Excavations at South Shields Roman fort. Society of Antiquaries of Newcastle upon Tyne (with Tyne and Wear Museums) Monograph Series 4: 243-68.
875	Southwark and Lambeth	Great Britain	town major	Roman	Tyers, I. 1988. Environmental evidence from Southwark and Lambeth. In Hinton, P. (ed.),. Excavations in Southwark and Lambeth 1973-76. London and Middlesex Archeol.Soc. And Surrey Archaeol. Soc. Joint Publication
876	Southwark and Lambeth	Great Britain	various trading centre	Early medieval	Tyers, I. 1988. Environmental evidence from Southwark and Lambeth. In Hinton, P. (ed.),. Excavations in Southwark and Lambeth 1973-76. London and Middlesex Archeol.Soc. And Surrey Archaeol. Soc. Joint Publication
877	Southwark and Lambeth	Great Britain	secular urban town major	medieval	Tyers, I. 1988. Environmental evidence from Southwark and Lambeth. In Hinton, P. (ed.),. Excavations in Southwark and Lambeth 1973-76. London and Middlesex Archeol.Soc. And Surrey Archaeol. Soc. Joint Publication
882	Springfields Lyons, Chelmsford	Great Britain	secular rural lesser	Early medieval	Murphy, P. 1990. Carbonised plant remains from Neolithic, Late Bronze Age, Iron Age, Roman and Early- and Late-Saxon contexts. Ancient Monuments Laboratory Report 11/90. English Heritage.
885	St Marks , Lincoln	Great Britain	town major	Roman	Moffett, L. 1995. Plant remains from St Mark's Church (SM76), Lincoln. AML Report New Series 11/95.
889	St Nicholas Yard 96-7, Carlisle	Great Britain	secular urban town major	medieval	Huckerby, E. 1999. The palaeoenvironmental evidence. In Howard-Davis, C. and Leah, M. (eds.), Excavations at St Nicholas Yard, Carlisle, 1996-7. Trans Cumberland Westmorland Antiq Archaeol Soc 99: 107-10.
890	St Thomas St, Southwark, London	Great Britain	town major	Roman	Willcox, G.H. 1978. Seeds from the late 2nd century pit F28. In Dennis, G. (ed.), 1-7 St Thomas Street. 291-422. In: Southwark Excavations 1972-74. London, Middlesex and Surrey Archaeol. Socs. Joint Publication 1: 411
897	Stonea 80-5 nr March	Great Britain	rural nucleated	Roman	Van der Veen, M. 1996. Plant remains. In Jackson, R.P.J. and Potter, T.W. (eds.), Excavations at Stonea, Cambridgeshire 1980-5. London: British Museum: 613-39.
898	Stonea 80-5 nr March	Great Britain	rural lesser	Roman	Van der Veen, M. 1996. Plant remains. In Jackson, R.P.J. and Potter, T.W. (eds.), Excavations at Stonea, Cambridgeshire 1980-5. London: British Museum: 613-39.
901	Stratford Rd (Hockley Chemical Works) 94, Alcester	Great Britain	town minor	Roman	Pelling, R. 2001. Charred plant remains. In Mudd, A. and Booth, P. (eds.), Site of the former Hockley Chemical Works, Stratford Road, Alcester: excavations 1994. Birmingham Warwickshire Archaeol Soc Trans. 104 (for
908	The Forum	Great Britain	town major	Roman	Straker, V. 1984. First and second century carbonised cereal grain from Roman London. In van Zeist, W. and Casparie, W.A. (eds.), Plants and Ancient Man: Studies in palaeoethnobotany. Rotterdam: A A Balkema: 323-329. and Straker, V. 1987. Carbonised cereal grain from first century London: a summary of the evidence for importation and crop processing. In Marsden, P. (ed.), The Roman Forum site in London. London: HMSO: 151-
910	The Lanes, Carlisle	Great Britain	secular urban town major	medieval	Huntley, J P. 1992. Plant remains from excavations at The Lanes, Carlisle, Cumbria: PART I - CAL, OGL, OBL, and LEL. AML Report New Series 51/92.
911	The Lanes, Carlisle	Great Britain	military extramural	Roman	Huntley, J P. 1992. Plant remains from excavations at The Lanes, Carlisle, Cumbria: PART I - CAL, OGL, OBL, and LEL. AML Report New Series 51/92.
915	The Roman Fortress Ditch at Exeter	Great Britain	military intramural	Roman	Straker, V., Robinson, M. and Robinson, E. 1984. Biological Investigations of Waterlogged Deposits in the Roman Fortress Ditch at Exeter. Proceedings of the Devon Archaeological Society. 1984; 42:59-69.
922	Tibbets Close 83-4, Alcester	Great Britain	town minor	Roman	Moffett, L. 1989. Charred plant remains. In Cracknell, S. (ed.), Roman Alcester: Recent Archaeological Excavations. Trans. Birmingham and Warwickshire Archaeol. Soc. 94 (for 1985-6): 23 and fiche M1: E12.
929	Tiddington, nr Thame	Great Britain	rural nucleated	Roman	Robinson, M. 1988. The plant remains from Tiddington. In Greig, J. (ed.), The interpretation of some Roman well fills from the midlands of England: 367-78.
930	Tooley St (156-64) 1899, Bermondsey, London	Great Britain	town major	Roman	Reid, C. 1903. Plant remains. In Kennard, A.S. and Warren, S.H. (eds.), On a section of the Thames alluvium in Bermondsey. Geol. Mag. IV(10): 456-60.
931	Towcester	Great Britain	town minor	Roman	Robinson, M. 1992. Moats and gardens: plant and invertebrate remains from the Roman Great Ditch trench IV, F5, site E, the Cinema, Towcester. In Woodfield, C.C.S. (ed.), The defences of Towcester, Northamptonshire. Northamptonshire Archaeol. 24: 55-7.
932	Tullie House, Carlisle	Great Britain	military intramural	Roman	Donaldson, A. 1977. Botanical report on material from Carlisle Tullie House. AML Report OS 2389.
934	Upper Walbrook Valley, Copthall Avenue, London	Great Britain	town major	Roman	de Moulins, D, with Allison, E., Davis, A., Kenward, H. and Preece R. (ed.),. 1990. Environmental analysis. In Maloney, C. (ed.), The Upper Walbrook valley in the Roman period. CBA Research Report 69 (The Archaeology of Roman London Vol. 1): 85-115 and 126-50.
936	Upper Walbrook Valley, Copthall Avenue, London	Great Britain	secular urban town major	medieval	de Moulins, D, with Allison, E., Davis, A., Kenward, H. and Preece R. (ed.),. 1990. Environmental analysis. In Maloney, C. (ed.), The Upper Walbrook valley in the Roman period. CBA Research Report 69 (The Archaeology of Roman London Vol. 1): 85-115 and 126-50.
941	Vindolanda 73-6 & 85-9, Chesterholm	Great Britain	military intramural	Roman	Seaward, M.R.D. 1993. Environmental evidence. In van Driel-Murray, C., Wild, J.P., Seaward, M.P. and Hillam, J. (eds.), The early wooden forts: preliminary reports on leather, textiles, environmental evidence and dendrochronology. Vindolanda Research Reports New Series III. Bar: 91-119. And Seaward, M.R.D. 1976. The Vindolanda Environment. Haltwhistle: Barcombe Publications.
944	Walton-le-Dale, Preston	Great Britain	various industrial site	Roman	Van der Veen, M. 1985. The plant remains from Walton-le-Dale, Lancashire. AML Report OS 4544.
950	Watkins Farm, Northmoor, nr Oxford	Great Britain	rural lesser	Roman	Moffett, L. and Robinson, M. 1990. The charred plant remains and waterlogged seeds. In Allen, T. (ed.), An Iron Age and Romano-British enclosed settlement at Watkins Farm Northmoor, Oxon. Oxford University Committee for Archaeology Monograph: 60-72.
953	West Hill 77-9, Uley	Great Britain	ceremonial temple-shrine	Roman	Girling, M.A. and Straker, V. 1993. Plant macrofossils, arthropods and charcoal from West Hill, Uley. In Woodward, A. (ed.), Uley shrines. English Heritage Monograph: 250-3.
956	Westgate St (Gloucester) 75	Great Britain	secular urban town major	Early medieval	Green, F.J. 1979. The plant remains. In Heighway, C.M., Garrod, A.P. and Vince, AG. (eds.), Excavations at 1 Westgate Street, Gloucester, 1975. Medieval Archaeol. 23: 186-903.

958	Westgate St (Gloucester) 75	Great Britain	secular urban town major	medieval	Green, F.J. 1979. The plant remains. In Heighway, C.M., Garrod, A.P. and Vince, AG. (eds.), Excavations at 1 Westgate Street, Gloucester, 1975. Medieval Archaeol. 23: 186-903.
960	White Hart 91-2, Ely	Great Britain	secular urban town minor	medieval	Moffett, L. 1993. The plant remains. In Jones, A. (ed.), Archaeological investigations at the White Hart, Ely 1991-2. Proc. Cambridge Antiq. Soc. 82: 132-4.
967	Winterton, nr Scunthorpe	Great Britain	rural elite	Roman	Williams, D. 1977. A consideration of the sub-fossil remains of Vitis vinifera L. as evidence for viticulture in Roman Britain. Britannia. 8: 327-34.
970	Worcester Rd, Droitwich	Great Britain	secular urban town minor	medieval	Bretherton, J., Hurst, D., Baxter, I., Jones, L. and Pearson, E. 2002. Excavation of a multi-period site at Worcester Road, Droitwich. Trans Worcestershire Archaeol Soc. 18: 25–51.
974	Baltic House, City of London	Great Britain	town major	Roman	Gray, L. 2002. The plant remains. In Howe, E., Roman defences and medieval industry. Excavations at Baltic House, City of London MoLAS [Mus London Archaeol Service] Monogr 7. London: 104-11.
977	Baltic House, City of London	Great Britain	secular urban town major	medieval	Gray, L. 2002. The plant remains. In Howe, E., Roman defences and medieval industry. Excavations at Baltic House, City of London MoLAS [Mus London Archaeol Service] Monogr 7. London: 104-11.
978	Governmer's House	Great Britain	town major	Roman	Gray, L. 2001. The pre-Roman plant remains [and] 6.10 The Roman plant remains. In Brigham, T. and Woodger, A. (eds.), Roman and medieval townhouses on the Lodon waterfront. Excavations at Governer's House, City of London. London: MoLAS Monogr. 9: 77-78; 110-115.
979	Governmer's House	Great Britain	secular urban town major	medieval	Gray, L. 2001. The pre-Roman plant remains [and] 6.10 The Roman plant remains. In Brigham, T. and Woodger, A. (eds.), Roman and medieval townhouses on the Lodon waterfront. Excavations at Governer's House, City of London. London: MoLAS Monogr. 9: 77-78; 110-115.
980	Cannon St (25)	Great Britain	town major	Roman	Gray, L. and Pipe, A. 2002. Food remains. In Elsden, N.J. (ed.), Excavations at 25 Cannon Street, City of London: from the Middle Bronze Age to the Great Fire. London: Museum of London Archaeol Service Studies Ser
982	Cannon St (25)	Great Britain	secular urban town major	medieval	Gray, L. and Pipe, A. 2002. Food remains. In Elsden, N.J. (ed.), Excavations at 25 Cannon Street, City of London: from the Middle Bronze Age to the Great Fire. London: Museum of London Archaeol Service Studies Ser
983	Great Dover St 165	Great Britain	ceremonial burial	Roman	Giorgi, J. 2000. The plant remains - a summary. In Mackinder, A.A. (ed.), Romano-British cemetary on Watling Street Excavations at 165 Great Dover Street, Southwalk, London. MoLas Archaeology Studies 4.
984	National Gallery	Great Britain	various trading centre	Early medieval	Davis, A. 1989. Plant remains. National Gallery basement. In Whytehead, R.L. and Cowie, R. (eds.), Excavations at the Peabody Site, Chandos Place, and the National Gallery. Trans. London Middx. Archaeol. Soc. 40 (for
985	National Gallery	Great Britain	secular urban town major	medieval	Davis, A. 1989. Plant remains. National Gallery basement. In Whytehead, R.L. and Cowie, R. (eds.), Excavations at the Peabody Site, Chandos Place, and the National Gallery. Trans. London Middx. Archaeol. Soc. 40 (for
986	Eastern Cemetery (Roman London) 83-90	Great Britain	ceremonial burial	Roman	Davis, A. 2000. Plant remains. In Barber, B. and Bowsher, D. The Eastern Cemetery of Roman London: Excavations 1983-1990. MoLAS Monograph series 4.
987	Peninsular House, City of London	Great Britain	secular urban town major	Early medieval	Jones, G.E.M., Straker, V. and Davis, A. 1991. Early medieval plant use and ecology in London. In Vince, A. (ed). Aspects of Saxo-Norman London: II Finds and Environmental Evidence. Trans. London Middx. Archaeol. Soc. Special Paper 12: 347-85.
988	Watling Court	Great Britain	secular urban town major	medieval	Jones, G.E.M., Straker, V. and Davis, A. 1991. Early medieval plant use and ecology in London. In Vince, A. (ed). Aspects of Saxo-Norman London: II Finds and Environmental Evidence. Trans. London Middx. Archaeol. Soc. Special Paper 12: 347-85.
990	Miles Lane	Great Britain	secular urban town major	medieval	Jones, G.E.M., Straker, V. and Davis, A. 1991. Early medieval plant use and ecology in London. In Vince, A. (ed). Aspects of Saxo-Norman London: II Finds and Environmental Evidence. Trans. London Middx. Archaeol. Soc. Special Paper 12: 347-85.
991	Ironmonger Lane	Great Britain	secular urban town major	medieval	Jones, G.E.M., Straker, V. and Davis, A. 1991. Early medieval plant use and ecology in London. In Vince, A. (ed). Aspects of Saxo-Norman London: II Finds and Environmental Evidence. Trans. London Middx. Archaeol. Soc. Special Paper 12: 347-85.
992	Milk St, City of London	Great Britain	secular urban town major	Early medieval	Jones, G.E.M., Straker, V. and Davis, A. 1991. Early medieval plant use and ecology in London. In Vince, A. (ed). Aspects of Saxo-Norman London: II Finds and Environmental Evidence. Trans. London Middx. Archaeol. Soc. Special Paper 12: 347-85.
993	Milk St, City of London	Great Britain	secular urban town major	medieval	Jones, G.E.M., Straker, V. and Davis, A. 1991. Early medieval plant use and ecology in London. In Vince, A. (ed). Aspects of Saxo-Norman London: II Finds and Environmental Evidence. Trans. London Middx. Archaeol. Soc. Special Paper 12: 347-85.
999	West of Northumberland Bottom	Great Britain	rural lesser	Roman	Davies, A. 2004. Plant Remains from West of Northumberland Bottom, Channel Tunnel Rail Link (ARC-WNB98, HRD89, ARC-35098).
1004	Number One Poultry	Great Britain	town major	Roman	Davies, A. unpublished. Number One Poultry.
1008	Number One Poultry	Great Britain	secular urban town major	Early medieval	Davies, A. unpublished. Number One Poultry.
1009	Number One Poultry	Great Britain	secular urban town major	medieval	Davies, A. unpublished. Number One Poultry.
1011	Aldgate Union	Great Britain	secular urban town major	medieval	Davies, A. 2003. Plant remains from Aldgate Union, 27-9 Whitechapel High Street. MoLas.
1012	King Edward's Buildings	Great Britain	town major	Roman	Davies, A. 2003. Roman and medieval plant remains from King Edward's buildings. MoLas 05/03.
1014	King Edward's Buildings	Great Britain	secular urban town major	medieval	Davies, A. 2003. Roman and medieval plant remains from King Edward's buildings. MoLas 05/03.
1015	Newgate Street 3-9	Great Britain	secular urban town major	medieval	Davies, A. 2003. Plant remains from Roman and early medieval features at 3-9 Newgate Street (NEG 98).
1018	Guildhall Yard	Great Britain	secular urban town major	medieval	Giorgi, J. 2003. The plant remains from Guildhall Yard. MoLas 07/03 (GYE92, GDH85, GAG87).
1022	8-22 Smithfield Street/30-38 Hosier Lane	Great Britain	secular urban town major	medieval	Roberts, K. 2004. Report on the plant remains from 8-22 Smithfield Street/30-38 Hosier Lane, EC1 17/2004.
1023	Lion Plaza	Great Britain	secular urban town major	medieval	Roberts, K. 2004. The plant remains from Lion Plaza.
1025	168 Fenchurch street	Great Britain	town major	Roman	Davies, A. 2004. Charred cereal grains from 168 Fenchurch street (FEH95).
1026	Thurnham Well	Great Britain	rural elite	Roman	Giorgi, J. 2004. The waterlogged plant remains from Thurnham Well 25/04 MoLas (AR-THM98).
1029	London Bridge City	Great Britain	town major	Roman	Roberts, K. 2004. Report on the plant remains from London Bridge City (TYT98) 23/04.
1030	London Bridge City	Great Britain	secular urban town major	medieval	Roberts, K. 2004. Report on the plant remains from London Bridge City (TYT98) 23/04.
1031	Gresham Street	Great Britain	town major	Roman	Roberts, K. 2004. Report on the plant remains from Gresham Street 8/04.
1034	Gresham Street	Great Britain	secular urban town major	medieval	Roberts, K. 2004. Report on the plant remains from Gresham Street 8/04.
1036	70-76 Eden St., Kingston	Great Britain	secular urban town major	medieval	Davies, A. unpublished. Plant remains from 70-76 Eden St., Kingston-Upon Thames.
1038	Southwark 1974-90	Great Britain	town major	Roman	Davies, A. 2003. The plant remains. In Cowan, C. (ed.), Urban development in north-west Roman Sourhwark. Excavations 1974-90. MoLas monograph 16.
1040	Milk Street	Great Britain	secular urban town major	medieval	Davies, A. 1990. Plant remains from a medieval cesspit at Milk Street. In Schofielt, J., Allen, P. and Taylor, C. (eds.), Medieval buildings and property development in the area of Cheapside. LAMAS trans. 41: 231-2.
1041	Colham Mill Road	Great Britain	secular urban town major	medieval	Davies, A. 1998. The plant remains. In Knight, H. (ed.), Excavations at Colham Mill Road, west Drayton. LAMAS 49: 103-6.
1042	Dorter Undercroft, Westminster Abbey	Great Britain	religious monastery urban	medieval	Davies, A. 1997. The plant remains. In Mills, P. (ed.), Excavations at the Dorter Undercroft, Westminster Abbey. LAMAS 46: 113-121.
1043	Leadenhall Court, London	Great Britain	town major	Roman	Davies, A. 1993. Plant remains. LAMAS 44: 59-67.
1045	Priory and Hospital of St Mary Spital	Great Britain	religious monastery urban	medieval	Davies, A. 1997. The plant remains. The excavations of the Priory and Hospital of St Mary Spital, London. MoLas 1 monograph: 234.
1049	St John of Jerusalem, Clerkenwell, London	Great Britain	religious monastery urban	medieval	Davies, A. 2004. The plant remains. In Sloane, Bowsher, D. and Malcolm, G. (eds.), Excavations at the priory of the sides of the Hospital of St John of Jerusalem, Clerkenwell, London: 367.
1053	Royal Opera House	Great Britain	various trading centre	Early medieval	Davies, A. 2003. The plant remains. In Malcolm, G. and Bowsher, D. with Cowie, R. (eds.), Middle Saxon London. Excavations at the Royal Opera House 1989-99.
1056	Battle Bridge Lane, Southwark	Great Britain	secular urban town major	medieval	Giorgi, J. unpublished. The plant remains from Battle Bridge Lane, Southwark (BAB95) 02/97.
1059	Broadgate, London	Great Britain	town major	Roman	Giorgi, J. 2001. The plant remains from Broadgate.
1064	Broadgate, London	Great Britain	secular urban town major	medieval	Giorgi, J. 2001. The plant remains from Broadgate.
1067	Marefair, Northampton	Great Britain	secular urban town major	medieval	Giorgi, J. unpublished. The plant remains from Marefair, Northampton (NT-DODOO).
1071	Cripplegate 1992-8	Great Britain	secular urban town major	medieval	Giorgi, J. 2004. Plant remains. In Howe, E. and Lakin, D. (eds.), Roman and medieval Cripplegate, City of London. MOLAS monograph 21.
1073	Former Allied Brewery, 148-180, St John Str., London ECI	Great Britain	secular urban town major	medieval	Giorgi, J. 1998. The environmental evidence. LAMAS 49: 121-127.
1075	Wardrobe Place, City of London	Great Britain	secular urban town major	medieval	Giorgi, J. 2000. The plant remains. LAMAS Trans. 51: 38-43.
1076	Southwark Street 15-23	Great Britain	town major	Roman	Giorgi, J. and Pearson, E. 1992. The plant remains. In Cowan, C. (ed.), A possible mansio in Roman Southwark. Excavations at 15-23 Southwark Str. 1980-86. LAMAS 43: 165-170.
1078	London Bridge (Fennings Wharf)	Great Britain	town major	Roman	Giorgi, J. 2001. Plant remains. In Watson, B., Brigham, T. and Dyson, T. London Bridge: 2000 years of a river crossing. MOLAS monograph 8.
1080	201 Bishopsgate, City of London	Great Britain	ceremonial burial	Roman	Giorgi, J. 2003. Plant remains. Roman burials, medieval tenements and suburban growth. Bishopsgate. MOLAS series 10: 203.
1083	201 Bishopsgate, City of London	Great Britain	secular urban town major	medieval	Giorgi, J. 2003. Plant remains. Roman burials, medieval tenements and suburban growth. Bishopsgate. MOLAS series 10: 203.
1084	The London Charterhouse	Great Britain	secular urban town major	medieval	Giorgi, J. 2002. Plant remains. In Barber, B. and Thomas, C. (eds.), The London Charterhouse. MOLAS monograph 10.
1086	The London Charterhouse	Great Britain	religious monastery urban	medieval	Giorgi, J. 2002. Plant remains. In Barber, B. and Thomas, C. (eds.), The London Charterhouse. MOLAS monograph 10.
1087	Bankside: Benbow House, Southwark	Great Britain	secular urban town major	medieval	Gray-Rees, L. and Pipe, A. 2000. Botanical remains. In Mackindor, A. and Blatherwick, S. (eds.), Excavations at Benbow House, Southweark, London. MOLAS ser. 111.
1090	Borough High Street	Great Britain	town major	Roman	Gray, L. 2002. The botanical remains. In Drimmond-Murray, J. and Thompson, P. with Cowan, C. (eds.), Settlement in Roman Southwark. Archaeological excavations (1991-98) for the London underground Ltd. Jubilee line extension project. MOLAS 12 monograph: 242.
1092	Atlantic House	Great Britain	religious cemetery/burial	medieval	Gray, L. 2003. The plant remains. In Waton, S. (ed.), An excavation in the western cemetery of Roman London. Atlantic House, City of London. MOLAS series 7.
1093	Millenium Bridge	Great Britain	secular urban town major	medieval	Ayre, J. and Wide-Brown, R. 2002. The London millenium bridge. Excavations of the medieval and later waterfronts at Peter's Hill, City of London, Southwark.
1096	Saint-Gilles-le Vieux	France	secular rural village	medieval	Maufras, O., Mercier, C., avec la contribution de Bouby,L and Olive, Cl. 2002. Habitat et terroir du IVe au XIIe s. a Saint-Gilles-le-Vieux (Aimargues, Gard). Archeologie du TGV Mediterranee. Fishes de Synthese, tome 3. Antiquite, Moyen age, Epoque moderne. Monographies d' Archeologie Mediterraneenne, 10. UMR 154, Lattes: 945-972.
1099	Beaume, Châteauneuf-sur Isère	France	secular rural village	medieval	Bouby, L. 2001. Approche carpologique d'un habitat rural du Moyen Age central (XIIe - XIIIe siecle): Chateauneuf-sur-Isere, Beaume (Drome).
1100	Vieille-Toulouse	France	town major	Roman	Bouby, L. and Marinval, Ph. 2002. Des donnees encore partielles sur l'alimentation a Vieille-Toulouse. Les plantes exploitees. In Pailler, J.M. (dir.) Tolosa. Nouvelles reserches sur Toulouse et son territoire dans l'Antiquite. Ecole francaise de Rome, Rome: 187-190.
1102	Château du village des Angles, Capcir, Pyrénées	France	secular rural elite	medieval	Ruas, M-P., Rendy, Ch. avec la collaboration de Bergeret, A. 2005. Glanes et cultures en Haute Montagne d' apres les restes de graines et de fruits carbonises de deux sites medievaux de Cerdagne et du Capcir (Pyrenees-Orientales). Congres International RESOPYR (PUP, 2005): 147-184.
1103	Genlis	France	secular rural village	Early medieval	Ruas, MP 1992. L' habitat rural merovingien de Genlis. In Catteddu, I. avec la collaboration de Clavel, B. and Ruas, MP Revue Archeologique de L' Est et du Centre-Est. CNRS. Tome 43, Fasc.1: 93-98.
1104	Saint-Germain-des-Fossés	France	secular rural elite	medieval	Ruas, M-P 2000. Productions agricoles en Auvergne carolingienne d' apres un depotoir decouvrt a Saint-Germain-des-Fosses (Allier). Revue Archeologique du Centre de la France. Tome 39: 137-160.
1106	Grosse Tour de Bourges	France	secular urban castle	medieval	Ruas, M-P 1999. Les restes alimentaires vegetaux. In Monnet, C. (dir.) La Vie Quotidienne dans une Forteresse Royale: La Grosse Tour de Bourges (fin XIIe - milieu XVIIe siecle). Monographie 1. Bourges: Editions de la ville de Bourges, Service d' Archeologie Munnicipal: 342-356.
1108	Bolonia, Bélo, Cadiz	Spain	ceremonial temple-shrine	Roman	Lignereux, Y., Peters, J., Ruas, M-P. and Sillieres, P. 1997. Le culte d' Isis en Betique. L'Archeologue 28: 41-45.
1109	Lussat, nr Clermond Ferrand, Limagne, Auvergne, Massif Central	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1112	Rue Bergier, Clermond Ferrand, Limagne, Auvergne, Massif Central	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.

1113	Bernard Maître,nr Clermond Ferrand, Limagne, Auvergne, Massif Central	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1114	Rue Audollent, Clermond Ferrand, Limagne, Auvergne, Massif Central	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1115	La Pardieu, Clermond Ferrand, Limagne, Auvergne, Massif Central	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1116	Saint Lambert, Provence	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1117	Pauvadou, Provence	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1121	La Calade, Provence	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1122	La Guérine, Provence	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1123	Rue Cauvin, Provence	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1124	Valladas, St Paul Trois Châteaux, Rhôn	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1125	Alba la Romaine, Rhôn	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1126	Quai Arloing, Lyon, Rhôn	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1127	Contrescarpe, Lyon, Rhôn	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1128	Horand II, Lyon, Rhôn	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1129	La Favorite, Lyon, Rhôn	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1130	Rue Pierre Aydry (Aubry?), Lyon, Rhôn	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1131	Bram, Languedoc	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1132	Peixora, St Jean, Languedoc	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1133	Les Plas, Villelongue-d'Aude, Languedoc	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1134	La Vayssière, L' Hospitalet, Languedoc	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1135	Mercoeur, West-Centre France	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1136	Les Ribières, Bessines, West-Centre France	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1137	Veyrac, West-Centre France	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1138	Les Sagnes, Pontarion, West-Centre France	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1139	Vernes, Faverdines, East-Centre France	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1140	Croix du Rebout, Mt Beuvray, East-Centre France	France	ceremonial burial	Roman	Bouby, L. and Marinval, Ph. 2004. Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal of Archaeological Science 31: 77-86. Marinval, Ph. 1990. Analyse carpologique de deux incinerations aux Ribieres, Bessines-Sur-Gartempe (Haute-Vienne). Travaux d' Archeologie limousine 11: 90-94. Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206.
1141	Médor, Ornaisons	France	secular rural village	Early medieval	Ruas, M-P. 1999. Semences archeologiques, miroir des productions agraires en France meridionale du VIe au XVIe siecle. Castrum 5: Archeologie des Espaces Agraires Mediterraneens au Moyen Age. Tire a part. Collection de la Casa de Velazquez 55. Collection de l' Ecole Francaise de Rome 105: 301-316. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.Ruas, M-P. 1998. Les plantes cosommees au Moyen Age en France meridionale d' apres les semences archeologiques. Archeologie du Midi Medieval. Tome 15 et 16 - 1997-8. Centre d' Archeologie Medievale du Languedoc.Publie avec le concours du Ministere de la Culture et de la Communication, sous-direction de l'archeologie du centre national de la
1143	Saint-Caprais, L'Union	France	secular rural lesser	medieval	Ruas, M-P. 1999. Semences archeologiques, miroir des productions agraires en France meridionale du VIe au XVIe siecle. Castrum 5: Archeologie des Espaces Agraires Mediterraneens au Moyen Age. Tire a part. Collection de la Casa de Velazquez 55. Collection de l' Ecole Francaise de Rome 105: 301-316. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.Ruas, M-P. 1998. Les plantes cosommees au Moyen Age en France meridionale d' apres les semences archeologiques. Archeologie du Midi Medieval. Tome 15 et 16 - 1997-8. Centre d' Archeologie Medievale du Languedoc.Publie avec le concours du Ministere de la Culture et de la Communication, sous-direction de l'archeologie du centre national de la
1144	Montaigut	France	secular rural elite	medieval	Ruas, M-P. 1999. Semences archeologiques, miroir des productions agraires en France meridionale du VIe au XVIe siecle. Castrum 5: Archeologie des Espaces Agraires Mediterraneens au Moyen Age. Tire a part. Collection de la Casa de Velazquez 55. Collection de l' Ecole Francaise de Rome 105: 301-316. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.Ruas, M-P. 1998. Les plantes cosommees au Moyen Age en France meridionale d' apres les semences archeologiques. Archeologie du Midi Medieval. Tome 15 et 16 - 1997-8. Centre d' Archeologie Medievale du Languedoc.Publie avec le concours du Ministere de la Culture et de la Communication, sous-direction de l'archeologie du centre national de la
1145	Pláce de la Cathédrale, Montauban	France	secular urban town minor	medieval	Ruas, M-P. 1999. Semences archeologiques, miroir des productions agraires en France meridionale du VIe au XVIe siecle. Castrum 5: Archeologie des Espaces Agraires Mediterraneens au Moyen Age. Tire a part. Collection de la Casa de Velazquez 55. Collection de l' Ecole Francaise de Rome 105: 301-316. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.Ruas, M-P. 1998. Les plantes cosommees au Moyen Age en France meridionale d' apres les semences archeologiques. Archeologie du Midi Medieval. Tome 15 et 16 - 1997-8. Centre d' Archeologie Medievale du Languedoc.Publie avec le concours du Ministere de la Culture et de la Communication, sous-direction de l'archeologie du centre national de la

1146	Le Castlar, Durfort	France	secular rural elite	medieval	Ruas, M-P. 1999. Semences archeologiques, miroir des productions agraires en France meridionale du VIe au XVIe siecle. Castrum 5: Archeologie des Espaces Agraires Mediterraneens au Moyen Age. Tire a part. Collection de la Casa de Velazquez 55. Collection de l' Ecole Francaise de Rome 105: 301-316. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.Ruas, M-P. 1998. Les plantes cosommees au Moyen Age en France meridionale d' apres les semences archeologiques. Archeologie du Midi Medieval. Tome 15 et 16 - 1997-8. Centre d' Archeologie Medievale du Languedoc.Publie avec le concours du Ministere de la Culture et de la Communication, sous-direction de l'archeologie du centre national de la
1157	Place Conesa, Agde	France	secular rural lesser	Early medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1159	Las Jurières-Basses, Puissalicon	France	secular rural village	Early medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1160	Moulin de Gasc, Puisserguier	France	secular rural village	Early medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1161	Castellu, Corse	France	secular rural village	Early medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1162	Ermitage-Bas	France	secular rural lesser	Early medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1164	Ermitage-Bas	France	secular rural lesser	medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1165	Augéry-de-Corrèges, Arles	France	secular rural village	Early medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1167	Saint-Pierre I, Eyguières	France	secular rural elite	Early medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1168	Plaissan-les Termes	France	secular rural village	Early medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1171	Souloumiac, Quarante	France	secular rural village	medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1172	Saint-Julien, Villeneuve-de-la-Raho	France	secular rural village	medieval	Ruas, M-P. 2005. Aspects of early medieval farming from sites in Mediterranean France. Vegetation History and Archaeobotany. 10.1007/s00334-005-0069-8.
1173	La Pétonnière, Paulnay	France	rural elite	Roman	Coulon, G., Girault, J.L et Marinval , Ph. 1985. Les bains et l' environment de la villa Gallo-Romaine de la Petonniere a Paulnay (Indre). Revue Archeologique du Centre de la France 24 (2): 191-214.
1176	Le Lau, Les Martres-de-Veyre	France	ceremonial burial	Roman	Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil
1177	Louraux, Saint-Priest-d'Evaux	France	ceremonial burial	Roman	Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil
1179	La Ferme d 'Ithe, Jouars-Pontchartrain	France	military extramural	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1184	Théâtre des Arts, Rouen	France	town major	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1185	Théâtre des Arts, Rouen	France	secular urban town major	Early medieval	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1186	Place Foch, Rouen	France	town major	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1187	Place Foch, Rouen	France	secular urban town major	Early medieval	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1189	Place Foch, Rouen	France	secular urban town major	medieval	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1190	Amiens, ZAC Cathédrale	France	town major	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1191	Paris, Rue Pierre et Marie Curie	France	town major	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1192	Conchil-le-Temple, La Commanderie	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1193	La Commanderie, Conchil-le-Temple	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1194	Atilly, La Pâture de Grands Valuzaux	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1195	Villens-Vicomte, La Rosière	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1196	Marolles-sur-Seine, Le Chemin de Sens	France	rural nucleated	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1197	Mauregard, La Fossette	France	rural lesser	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1199	Touffréville	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1200	Tremblay, Le Nouret	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1201	Ennemain, L'Orme	France	rural lesser	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1202	Dury, Le Camp Rolland	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1203	Cagny, Ferme de l' Epinette	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1204	Houdan, Les Brosses	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1205	Compans, Ouest du Parc	France	rural lesser	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1206	Eaucourt	France	rural elite	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1209	Melun, Cité Judiciaire	France	town major	Roman	Matterne, V. 2001. Agriculture et Alimentation Vegetale durant l' Age du Fer et l' Epoque Gallo-Romaine en France Septentrionale. Archeologie des Plantes et des Animaux 1. Montagnac: Editions Monique Mergoil.
1210	Tours, 10 Rue Gambetta	France	town major	Roman	Pradat, B. unpublished.
1211	Brion, Les grandes Chapelles	France	rural lesser	Roman	Pradat, B. unpublished.
1212	Ingré	France	secular rural lesser	medieval	Pradat, B. unpublished.
1213	Nétilly, Sorigny	France	secular rural lesser	Early medieval	Pradat, B. unpublished.
1214	Les Cormins, Saint-Romain-sur-Cher	France	rural lesser	Roman	Pradat, B. unpublished.
1215	Rue Robert Houdin, Blois	France	secular urban town major	Early medieval	Pradat, B. unpublished.
1216	Cité Judiciaire, Bordeaux	France	town major	Roman	Pradat, B. unpublished.
1223	En Rivière, Chavéria	France	ceremonial burial	Roman	Pradat, B. unpublished.
1224	Les Gillets, Creysse	France	secular rural lesser	medieval	Pradat, B. unpublished.
1225	La Madeleine, Moulin Neuf	France	secular rural lesser	medieval	Pradat, B. and Ruas, M.P. unpublished. Discovery of sorghum (Sorghum bicolor (L.) Moench) in a thirteenth century medieval site in Dordogne (France), poster dans le cadre du XIe Colloque International Work Group for Palaeoethnobotany, Toulouse 18-24 mai 1998.
1227	Cité Judiciaire, Périgueux	France	town minor	Roman	Pradat, B. unpublished.
1229	Les Mersans, Argentomagus	France	town minor	Roman	Pradat, B. unpublished.
1231	Galbert CCI, Annecy	France	town major	Roman	Pradat, B. unpublished.
1232	Les Carreaux, Marines	France	secular rural village	Early medieval	Pradat, B. unpublished.
1233	Mirebeau-sur-Bèze	France	town minor	Roman	Pradat, B. unpublished.
1234	Le Champs des oiseaux, Pezou	France	rural lesser	Roman	Pradat, B. unpublished.
1235	Le Champs des oiseaux, Pezou	France	secular rural lesser	Early medieval	Pradat, B. unpublished.
1236	Planchebrault, Saint-Rimay	France	secular rural lesser	Early medieval	Pradat, B. unpublished.
1237	Sainte-Foy-la-Grande	France	secular rural elite	medieval	Pradat, B and Bouchette, A. unpublished.
1238	Besançon, Ilôt Vignier	France	secular urban town major	medieval	Lundstrom-Baudais, K. and Bailly, G. 1995. In the cellar of a wine-maker during the 14th century: the archaeobotanical study of Ilot Vignier, Besancon (France). Res Archaeobotanicae. Kroll, H. and Pasternak, R. (eds.),. Kiel: Oetker-Voges-Verlag: 165-194.
1239	Rue de la Croix Blanche, Autun	France	town major	Roman	Wiethold, J. 1998. Recherches archeobotaniques en France du centre-est. Glux-en-Glenne: Centre archeologique europeen du Mont Beuvray. Rapport 1998: 217-240.
1240	Le Belvédère, Alésia	France	military extramural	Roman	Wiethold, J. 1998. Recherches archeobotaniques en France du centre-est. Glux-en-Glenne: Centre archeologique europeen du Mont Beuvray. Rapport 1998: 217-240.
1241	Malain, Mediolanum	France	ceremonial temple-shrine	Roman	Wiethold, J. 1998. Recherches archeobotaniques en France du centre-est. Glux-en-Glenne: Centre archeologique europeen du Mont Beuvray. Rapport 1998: 217-240.
1242	Fontaine de l' Écluse, Bibracte (OPPIDUM)	France	rural nucleated	Roman	Wiethold, J. 1998. Recherches archeobotaniques en France du centre-est. Glux-en-Glenne: Centre archeologique europeen du Mont Beuvray. Rapport 1998: 217-240.
1243	Serris-Les Ruelles, nr Marne-la-Vallée	France	secular rural elite	Early medieval	Hingh, A. de and Bakels, C. 1996. Palaeobotanical evidence for social difference? The example of the early medieval domain of Serris-Les Ruelles, France. Vegetation History and Archaeobotany 5: 117-120.
1244	Serris-Les Ruelles, nr Marne-la-Vallée	France	secular rural village	Early medieval	Hingh, A. de and Bakels, C. 1996. Palaeobotanical evidence for social difference? The example of the early medieval domain of Serris-Les Ruelles, France. Vegetation History and Archaeobotany 5: 117-120.
1245	Rue de Namur, Bruxelles	Belgium	secular urban town major	medieval	Laurent, Ch. 1997. La micro-archeologie et la carpologie en contexte urbain medieval, methode et resultats : les sites archeologiques de Bruxelles, de 1992 a 1996, in Environment and Subsistence in Medieval Europe, papers of the « Medieval Europe Brugge 1997 » Conference, vol. 9, ed. By G. De Boe and F. Verhaegen, IAP Rapporten 9, Zellik: 169-173. Laurent, Ch., 2001. Bruxelles, rue de Namur, site de l'ancienne porte du Coudenberg : etudes micro-archeologiques et carpologiques (Br.), in Archaeologia Mediaevalis 24: 10. Laurent, Ch. Etude micro-archeologique et archeo-botanique, in BLANQUART P., De noodopgraving op de site van de voormalige Coudenbergsepoort, Naamsestraat (1993), in Autour de la premiere enceinte-Rond de eerste stadsomwalling, Archeologie a Bruxelles 4, Bruxelles: 65-68.
1246	Rue d'Une Personne, Bruxelles	Belgium	secular urban town major	medieval	Laurent, Ch. 1997. La micro-archeologie et la carpologie en contexte urbain medieval, methode et resultats : les sites archeologiques de Bruxelles, de 1992 a 1996, in Environment and Subsistence in Medieval Europe, papers of the « Medieval Europe Brugge 1997 » Conference, vol. 9, ed. By G. De Boe and F. Verhaegen, IAP Rapporten 9, Zellik: 169-173. Laurent, Ch. 1997. Etude micro-archeologique et archeo-botanique du site de la rue d'Une Personne, in DIEKMANN A., Artisanat medieval et habitat urbain, rue d'Une Personne et place de la Vieille-Halle-aux-Bles, in Archeologie a Bruxelles, 3, Bruxelles: 79-90.
1247	Rue des Chandeliers, Bruxelles	Belgium	secular urban town major	medieval	Laurent, Ch. 1997. Etude micro-archeologique et archeo-botanique de sediments preleves sur le site archeologique de la rue des Chandeliers a Bruxelles, in NACHTERGAEL I., Sauvetage archeologique dans le quartier des Marolles a Bruxelles, rue des Chandeliers, n° 12-16, in Vie Archeologique, supplement au n° 47, Bruxelles: 62-66.
1249	Place Sainte-Catherine, Bruxelles	Belgium	secular urban town major	medieval	Laurent, Ch. 1997. Etude micro-archeologique et carpologique. In Archeologie a Bruxelles 4, Bruxelles: 246-249.
1250	Fâ, Barzan	France	ceremonial temple-shrine	Roman	Zwierzinski, E., Russel, M. and Ruas, M.P. 2003. Les puits des thermes: analyse carpologique des comblements. In Bouet, A. (dir.) Thermae Gallicae: Les Thermes de Barzan (Charente-Maritime) et Les Thermes des Provinces Gauloises. Bordeaux: Ausonius, Aquitania: 539-715.
1251	Tongeren Kielenstraat	Belgium	town major	Roman	Cooremans, B. and Vanderhoeven, A. 1992. De plantaardige macroresten. In: Het oudheidkundig bodemonderzoek aan de K. ielenstraat te Tongeren (prov. Limburg). In Vanderhoeven, A., Vynckier, G., Ervynck, A. and Cooremans, B. (eds.), Archeologie in Vlaanderen II: 89-146.
1252	Zerkegem	Belgium	secular rural lesser	Early medieval	Cooremans B. 1993. Botanische macroresten. In Hollevoet, Y., Cooremans, B., Desender, K. and Ervynck, A. (eds.), Een Karolingische vlechtwerkwaterput uit Zerkegem (gem. Jabbeke, prov. West-Vlaanderen): culturele en ecologische archaeologica. Archeologie in Vlaanderen III: 243-254.
1253	Aalst H.Geestkapel	Belgium	secular urban town minor	medieval	Cooremans B. 1993. De plantenresten. In Pieters, M., Cooremans, B., Ervynck, A. and Van Neer, W (eds.), Van akkerland tot Heilige Geestkapel. Een kijk op de evolutie van de bewoningsgeschiedenis in de Kattestraat te Aalst (prov. Oost-Vlaanderen). Archeologie in Vlaanderen III: 299-329.

1254	Tongeren Minderbroedersstraat	Belgium	town major	Roman	Cooremans B. and Vanderhoeven A. 1994. De plantaardige resten. In Vanderhoeven, A., Vynckier, G., Ervynck, A., Van Neer, W. and Cooremans, B. (eds.), Het oudheidkundig onderzoek aan de Minderbroedersstraat te Tongeren (prov. Limburg). Archeologie in Vlaanderen IV: 49-74.
1255	Sint-Martinuskerk Bilzen	Belgium	secular rural village	Early medieval	Cooremans B. 1994. Het plantaardig materiaal. In Wouters, W. and Cooremans, B. (eds.), Noodonderzoek in de Sint-Martinuskerk te Bilzen (prov. Limburg). Archeologie in Vlaanderen IV: 169-186.
1257	Tongeren Koninkshemsteenweg	Belgium	town major	Roman	Cooremans, B. 1996. De plantaardige resten. In Vanderhoeven, A., Vynckier, G., Ervynck, A., Cooremans, B. and Wouters, W. (eds.), Het oudheidkundig bodemonderzoek aan de Koninkshemsteenweg te Tongeren (prov. Limburg). Eindverslag 1995. Archeologie in Vlaanderen V: 69-84.
1258	Ename gastenkwartier	Belgium	religious monastery rural	medieval	Cooremans B. 1999. Plantenresten. In Ervynck, A., Cooremans, B. and Van Neer, W. (eds.), De voedselvoorziening in de Sint-Salvatorsabdij te Ename (Oudenaarde, prov. Oost-Vlaanderen) 4. Een beer- en afvalput uit het gastenkwartier (1350-1450AD). Archeologie in Vlaanderen V: 303-315.
1259	Aalst Grote Markt	Belgium	secular urban town minor	medieval	Cooremans B. 1999. Het plantaardig materiaal. In De Groote, K., Moens, J. and Cooremans, B. (eds.), Middeleeuwse sporen op de Grote Markt en het fabrieksterrein 't Haantje' te Aalst (Oost-Vlaanderen). Een kleine bijdrage tot de ontwikkelingsgeschiedenis van de stad. Archeologie in Vlaanderen V: 111-130.
1260	Aalst 't Haantje	Belgium	secular urban town minor	medieval	Cooremans B. 1999. Het plantaardig materiaal. In De Groote, K., Moens, J. and Cooremans, B. (eds.), Middeleeuwse sporen op de Grote Markt en het fabrieksterrein 't Haantje' te Aalst (Oost-Vlaanderen). Een kleine bijdrage tot de ontwikkelingsgeschiedenis van de stad. Archeologie in Vlaanderen V: 111-130.
1261	Raversijde beerput	Belgium	secular rural village	medieval	Cooremans B. 1999. Plantenresten. In Pieters, M., Bouchet, F., Cooremans, B., Desender, K., Ervynck, A. and Van Neer, W. (eds.), Granaatappels, een zeeegel en rugstreeppadden. Een greep uit de inhoud van een bakstenen beerput uit het 15de-eeuwse Raversijde (Oostende, prov. West-Vlaanderen). Archeologie in Vlaanderen 1995/6 5: 193-224.
1262	Kasterlee	Belgium	secular rural lesser	Early medieval	Cooremans B. 1996. De planternresten. In Wouters, W., Cooremans, B., Desender, K., Ervynck, A. and Van Strydonck, M. (eds.), Archeologisch en ecologisch onderzoek van een vroegmiddeleeuwse waterput te Kasterlee (prov. Antwerpen). Archeologie in Vlaanderen V: 97-109.
1264	Tongeren Veemarkt	Belgium	town major	Roman	Vanderhoeven A., Vynckier G. and Vyn 1993. Het oudheidkundig bodemonderzoek aan de Veemarkt te Tongeren (Eindverslag 1988). Archeologie in Vlaanderen III: 127-205.
1265	Brugge centrum	Belgium	secular urban town major	medieval	Cooremans B. 1999. An unexpected discovery in Medieval Bruges (Flanders, Belgium): Seeds of the Caper (Capparis spinosa L.). Environmental Archaeology 4: 97-101.
1266	Tienen Mithraeum	Belgium	ceremonial temple-shrine	Roman	Cooremans B. 2004. Palaeobotanical research, 1. Seeds and fruits from the Mithraeum at Tienen. In Martens, M. and De Boe, G. (eds.), Roman Mithraism: the evidence of the small finds. Museum Tienen: 49-51.
1267	Brugge Refuge	Belgium	rural lesser	Roman	Cooremans B. 1998. De plantengroei in de omgeving van de waterput: palynologisch en macrobotanisch onderzoek. In Cooremans, B., Desender, K., Ervynck, A. and Schelvis, J. (eds.), Onderzoek van plantaardige en dierlijke resten uit een Romeinse waterput van de vindplaats 'Refuge'. Archeologie in Vlaanderen VI: 214-218.
1268	Erps-Kwerps	Belgium	rural elite	Roman	Bakels and Kuijper 1992. Archaeobotanical Analysis. In Lentacker, A., Bakels, C.C., Verbeeck, M. and Desender, K. (eds.), The Archaeology, fauna and flora of a Roman well at Erps-Kwerps (Brabant, Belgium). Helninium
1269	Els Mallols	Spain	secular rural lesser	Early medieval	Alonso, N. unpublished. Els conreus de l'antiquitat tardana: estudi arqueobotanic de Els Mallols. J. Frances (ed.), Monografia: L'assentament de Els Mallols. Limes.
1271	ILERDA	Spain	town major	Roman	Alonso, N. 2005. Agriculture and food from the Roman to the Islamic Period in the North-East of the Iberian peninsula: archaeobotanical studies in the city of Lleida (Catalonia, Spain). Vegetation History and Archaeobotany, 10.1007/s00334-005.0089-4.
1273	Deurganckdok (TRADE)	Belgium	secular urban town minor	medieval	Meersschaert,L. 2003. Analyse van zaden en vruchten. In Van Roeyen, J.-P. (ed.), Paleolandschappelijk en archeologisch onderzoek van de op te hogen gronden in het kader van Mida 1 en Mida 2 en van de graafwerken voor de kaaimuren van het Containergetijdendok-West (Gemeente Beveren). Archeologische Dienst Waasland: 70-80.
1275	Kluizenmolen	Belgium	rural lesser	Roman	Meersschaert, L. 2000. Landschappelijk en archeobotanisch onderzoek van de Romeinse site te Sint-Gillis-Waas – Kluizenmolen. De Aardrijkskunde 1-2: 95 – 103.
1277	Verrebroekdok	Belgium	secular rural lesser	medieval	Gelorini V., Meersschaert L. and Van Roeyen J.-P. 1999/2000. Archeobotanisch onderzoek van enkele laat- en postmiddeleeuwse archeologische contexten uit de onderzoekszone Verrebroekdok (Beveren, prov. Oost-Vlaanderen). Archeologie in Vlaanderen VII: 201-224.
1279	Emile Braunplein	Belgium	secular urban town major	medieval	Meersschaert, L. unpublished.
1280	collegiate church	Belgium	rural elite	Roman	Laurent Ch. 1999. Amay : campagne de fouilles 1995 au pied de la collegiale, resultats micro-archeologiques et carpologiques. Chronique de l'archeologie Wallonne 7 / 1998: 80-81.
1281	river port of Pommeroeul	Belgium	town minor	Roman	Laurent Ch., 1998. Bernissart / Pommeroeul : resultats carpologiques des analyses effectuees sur les echantillons preleves lors des fouilles archeologiques des annees 1975-1976. Chronique de l'Archeologie Wallonne 6 / 1997: 19-20. Laurent Ch., 1999. Contribution a l'etude carpologique de Pommeroeul. Comparaison de resultats carpologiques obtenus pour le site de Pommeroeul (fouilles de 1975-1976) avec ceux recoltes sur d'autres sites gallo-romains de Wallonie, in Vie Archeologique, Bulletin de la Federation des Archeologues de Wallonie n° 49, Actes du colloque de l'Amicale des Archeologues du Hainaut occidental « L'Archeologie en Hainaut occidental : 1993 -998, bilan de cinq annees de fouilles », 5 septembre 1998, Tournai: 35-45.
1282	Quai Taille Pierre	Belgium	religious monastery urban	medieval	Laurent, Ch. 2002. Tournai/Tournai : analyses micro-archeologique et carpologiques d'une couche de « terre noire », quai Taille-Pierre. Chronique de l'Archeologie Wallonne 10: 51-53.
1283	Les Souhesmes	France	rural lesser	Roman	Laurent, Ch. unpublished. Resultats des analyses micro-archeologiques et carpologiques realisees sur le site des Souhesmes (Meuse).
1285	Les Souhesmes	France	secular rural lesser	Early medieval	Laurent, Ch. unpublished. Resultats des analyses micro-archeologiques et carpologiques realisees sur le site des Souhesmes (Meuse).
1286	St.-Michel Cathedral	Belgium	secular urban town major	medieval	Laurent, Ch. unpublished.
1288	Esplanade St.-Léonard	Belgium	secular urban town major	medieval	Laurent Ch., Defgnee A., Damblon F., a paraitre. Liege/Liege : evolution du paysage naturel et activites horticoles durant le Bas Moyen Age sur le site de l'esplanade St-Leonard. Chronique de l'Archeologie Wallonne, 13.
1289	Quevaucamps	Belgium	rural lesser	Roman	Defgnee A., Laurent C., Dumont Gaelle unpublished. Mouscron/Moucron-Estaimpuis/Estaimpuis : etude archeobotanique du contenu d'un puits romain. Chronique de l'Archeologie Wallonne, 13.
1290	Place St.-Lambert, secteur DDD	Belgium	rural elite	Roman	Laurent Ch. 1996. Etude des micro - restes archeologiques et des macro-restes botaniques. Echantillons preleves dans le secteur DDD de la Place St-Lambert (fouilles 1993 -1994). In Leotard, J.M., Coura, G. (dir.) Place Saint Lambert a Liege. Cinq annees de sauvetage archeologique. Journee de reflexion-1 erdecembre 1995, Actes de la 1ere Journee d'Archeologie Liegeoise, Ministere de la Region Wallonne, Liege: 91-97.
1294	Place St.-Lambert, secteur DDD	Belgium	secular rural lesser	Early medieval	Laurent Ch. 1996. Etude des micro - restes archeologiques et des macro-restes botaniques. Echantillons preleves dans le secteur DDD de la Place St-Lambert (fouilles 1993 -1994). In Leotard, J.M., Coura, G. (dir.) Place Saint Lambert a Liege. Cinq annees de sauvetage archeologique. Journee de reflexion-1 erdecembre 1995, Actes de la 1ere Journee d'Archeologie Liegeoise, Ministere de la Region Wallonne, Liege: 91-97.
1295	Aux Quatre-Abias	Belgium	rural nucleated	Roman	Laurent Ch. 1997. Waremme / Lantremange : etudes micro-archeologique et carpologique du site « Aux Quatre-Abias ». Decouverte de fragments de pain dans des structures des Ie et IIe siecles. Chronique de l'Archeologie Wallonne 4-5, activites 1995-1996: 102-103.
1297	Rue du Midi	Belgium	secular urban town major	medieval	Laurent Ch. 1995. Le site de la rue du Midi a Bruxelles, a propos de la premiere enceinte et du Couvent des Carmes : etudes micro-archeologique et archeo-botanique. Archaeologia Mediaevalis 18: 9-10. Laurent Ch. 2001.Etude micro-archeologique et archeo-botanique. In Nachtergael, I. (dir.) Decouverte de la tour des Carmes, rue du Midi (1994). Autour de la premiere enceinte-Rond de eerste stadsomwalling, Archeologie a Bruxelles 4, Bruxelles: 111-115.
1299	Impasse du Papier	Belgium	secular urban town major	medieval	Laurent Ch., 2001. Etude micro-archeologique et archeo-botanique. In Massart, C. (dir.) Etude archeologique de l'impasse du Papier (1996). Autour de la premiere enceinte-Rond de eerste stadsomwalling, Archeologie a Bruxelles 4, Bruxelles: 311-315.
1300	Rue sous-le-Château	Belgium	secular urban town major	medieval	Laurent Ch. 2001. Huy, rue sous-le-Chateau : exemple de pollution urbaine. Les donnees micro–archeologiques et carpologiques (Lg.). Archaeologia Mediaevalis 24: 14-15. Laurent Ch. unpublished. Huy, rue sous-le-Chateau, place Saint–Jacques et rue Saint-Remy : resultats des analyses micro-archeologiques et carpologiques.
1301	Rue sous-le-Château	Belgium	secular urban town major	Early medieval	Laurent Ch. 2001. Huy, rue sous-le-Chateau : exemple de pollution urbaine. Les donnees micro–archeologiques et carpologiques (Lg.). Archaeologia Mediaevalis 24: 14-15. Laurent Ch. unpublished. Huy, rue sous-le-Chateau, place Saint–Jacques et rue Saint-Remy : resultats des analyses micro-archeologiques et carpologiques.
1302	Bath	Great Britain	town minor	Roman	Davenport, P. 2004. Exotic food remains from Roman Bath. The Society of Antiquaries of London Online Newsletter 104.
1303	Alchester	Great Britain	military intramural	Roman	Sauer, E. 2005. Alchester: In search of Vespasian. Current Archaeology 196: 168-176.
1304	1999-010 Eschenz (Tasgetium)	Switzerland	town minor	Roman	Pollmann, B. 2003. Archaobotanische Makrorestanalysen und molekulararchaologische Untersuchungen an botanischen Funden aus dem romischen vicusTasgetium (Eschenz/ Kanton Thurgau/ CH). Diplomarbeit. Basel. (unpublished diploma thesis).
1306	Vigier Häuser	Switzerland	town minor	Roman	Jacomet, S., Wagner, C., Wacker Feigenwinter, K., Felice, N. und Albrecht, H. unpublished. Samen und Fruchte aus vorromischen, romerzeiltlichen und mittelalterlichen Ablagerungen in der Altstadt von Solothurn (Schweiz), Areale Vigier und Klosterplatz.
1307	Vigier Häuser	Switzerland	secular urban town minor	medieval	Jacomet, S., Wagner, C., Wacker Feigenwinter, K., Felice, N. und Albrecht, H. unpublished. Samen und Fruchte aus vorromischen, romerzeiltlichen und mittelalterlichen Ablagerungen in der Altstadt von Solothurn (Schweiz), Areale Vigier und Klosterplatz.
1309	Kaiseraugst, TOP-Haus	Switzerland	town major	Roman	Huster-Plogmann, H., Jacomet, S., Klee, M., Muller, U. und Vogel Muller, V. 2003. Ein stilles Ortchen. Zur Latrinengrube in Feld 6, Grabung TOP-Haus AG, Kaiseraugst (2001.01). Jahresberichte aus Augst und
1310	Breite, Windisch	Switzerland	military intramural	Roman	Jacomet, S. 2003. Und zum Dessert Granatapfel - Ergebnisse der archaobotanischen Untersuchungen. In Hagendorn, A., Doppler, H. W., Huber, A., Huster-Plogmann, H., Jacomet, S., Meyer-Freuler, C., Pfaffli, B. und Schibler, J. (Hrsg.) Zur Fruhzeit von Vindonissa. Auswertung der Holzbauten der Grabung Windisch-Breite 1996-1998. Veroffentlichungen der Gesellschaft Pro Vindonissa 18. Brugg: 48-79; 173-229; 482-492. Jacomet, S., Kucan, D., Ritter, A., Suter, G. und Hagendorn, A. 2002. Punica granatum L. (Pomegranates) from early Roman contexts in Vindonissa (Switzerland). Vegetation History and Archaeobotany 11/1-2: 79-92.
1312	Arconciel, Pré de l'Arche	Switzerland	ceremonial burial	Roman	Petrucci-Bavaud unpublished (database).
1313	CITO, Rheinstr. 46	Switzerland	ceremonial burial	Roman	Petrucci-Bavaud (database).
1314	Kastelen (Augusta Raurica)	Switzerland	town major	Roman	Petrucci-Bavaud and Jacomet 2002. and (for 1st c and aditions) KROLL: Jacomet, S. and Petrucci-Bavaud, M. 2004. Archaobotanische Untersuchung der Kulturschichten der Holzbauphase. In Schwarz, P-A. (ed.), Kastelen 1. Die prahistorischen Siedlungsreste und die fruhkaiserzeitlichen Holzbauten auf dem Kastelenplateau. Die Ergebnisse der Grabungen 1991-1993.51 sowie 1979-1980.55 und 1980.53. im Areal der Insulae 1, 2, 5 und 6 von Augusta Raurica. Forsch Augst 21. Augst: 241-299; 345-349.
1315	Amtshaus	Liechtenstein	rural nucleated	Roman	Petrucci unpublished (database).
1317	Reinacherhof	Switzerland	rural nucleated	Roman	Petrucci-Bavaud (database).
1318	Schmidmatt	Switzerland	town major	Roman	Jacomet et al. 1988 (database).
1319	La Faye	Switzerland	ceremonial burial	Roman	Ernst, Klee, Brombacher database.
1320	Vorderfeld	Switzerland	military extramural	Roman	Klee in preparation (database).
1321	Dägerlirain, Vindonissa	Switzerland	ceremonial burial	Roman	Petrucci-Bavaud, M. and Jacomet, S. (database).
1322	Sunnhalde	Switzerland	rural elite	Roman	Brombacher 1998 (database).
1323	Stadtplatz	Switzerland	secular urban town minor	medieval	Brombacher und Schlumbaum 2004 (database).
1324	Altreu	Switzerland	secular rural village	medieval	Rigert unpublished (database).
1325	Rittergasse/Bäumleingasse	Switzerland	secular urban town major	medieval	Klee, M. and Brombacher, Ch. 1998. 4. Die botanischen Makroreste aus der Latrine. In Brombacher, Ch. (ed.), … und was davon ubrig bleibt - Untersuchungen an einem mittelalterlichen Latrinenschacht an der Baumleingasse 14 (1992 / 20). Archaeol Bodenfosrch Kanton Basel Stadt Jahresber 1998. Basel: 93-131.
1326	Rosshof	Switzerland	secular urban town major	medieval	Kuhn 1996 (database).
1327	La Pran/Tivila	Switzerland	secular rural village	Early medieval	Brombacher and Kroll: Brombacher, Ch. 1998. 8. Les macrorestes botaniques (graines et fruits) de Develier / Courtetelle - Etude 1997. In Federici-Schenardi, M. et Fellner, R. (dir.) L'habitat du haut Moyen Age a Develier-Courtetelle (JU, Suisse). Etude 1997. RepubI Canton Jura, sect archaeol office patrimoine hist, Document 60, Porrentruy: 91-104. Brombacher, Ch. 1997. 8. Botanische Makroreste (Samen / Fruchtanalysen) von weiteren 22 Proben aus Develier / Courtetelle. In Federici-Schenardi, M. et Fellner, R. (dir.) Le haut Moyen Age a Develier, La Pran et a Courtetelle, Tivila (JU, Suisse). Etude 1996. Republ Canton Jura, sect archaeol office patrimoine hist, Document 53, Porrentruy: 44-58. Klee, M. and Brombacher, Ch. 1996. Botanische Makroreste aus 37 Proben von Develier / Courtetelle. In Federici-Schenardi, M. et Fellner, R. Le haut Moyen Age a Develier, La Pran et a Courtetelle, Tivila (JU, Suisse). Mise en place de l'elaboration du site. Republ Canton Jura, sect archaeol office patrimoine hist, Document 47, Porrentruy: 41-79.
1330	Burg	Switzerland	secular rural elite	medieval	Akeret in preparation (database).
1331	Rne Grünenberg	Switzerland	secular rural elite	medieval	Brombacher und Schlumbaum in preparation (database).

1333	Kloster	Switzerland	religious monastery rural	medieval	Brombacher et al. In preparation (database).
1334	Mörsburgstrasse 23	Switzerland	secular rural elite	medieval	Kuhn and Akeret and KROLL: Kuhn, M. und Akeret, O. 2002. Die verkohlten Pflanzenreste. In Kuhn, M., Szostek, R. und Windler, R. (eds.), Apfel, Birnen, Nusse - Funde und Befunde eines Speicherbaus des 13. Jahrhunderts bei der Morsburg. In: Archaologie im Kanzon Zurich 1999-2000. Ber Kantonsarchaol Zurich 16. Zurich - Egg: 271-305.
1335	Kloster Allerheiligen	Switzerland	religious monastery urban	medieval	Brombacher 1999 (database).
1336	Haus zur Treu	Switzerland	secular urban town minor	medieval	Brombacher und Klee in preparation (database).
1337	Rüden-Buchsbaum	Switzerland	secular urban town minor	medieval	Brombacher und Klee in preparation (database).
1338	Vorstadt 40/42	Switzerland	secular urban town minor	medieval	Brombacher und Klee in preparation (database).
1339	Asyl	Switzerland	secular urban town minor	medieval	Brombacher und Klee 2005 (database).
1340	Schlosskapelle	Liechtenstein	secular rural elite	medieval	Kuhn 1998 (database).
1341	Tenedo	Switzerland	military extramural	Roman	Jacomet, S. and Wagner, Ch. 1994. Mineralisierte Pflanzenreste aus einer romischen Latrine des Kastell-Vicus in Zurzach. S. 321-343. In Hanggi, R., Doswald, C. and Roth-Rubi, K. (eds.), Die fru hen romischen Kastelle und der Kastell-Vicus von Tenedo-Zurzach. Veroffentlichungen Der Gesellschaft Pro Vindonissa. Band XI
1342	Riedfluh	Switzerland	secular rural elite	medieval	Jacomet et al.1988. In Degen, P., Albrecht, H., Jacomet, S., Kaufmann, B. and Tauber, J. (eds.), Die Grottenburg Riedfluh, Eptingen BL. Bericht uber die Ausgrabungen 1981-1983. (database).
1343	Rathausplatz	Switzerland	secular urban town minor	medieval	Karg, S. 1996. Ernahrung und Agrarwirtschaft in der spatmittelalterlichen Stadt Laufen (Schweiz): Palaoethnobotanische Funde aus der Holzhauserzeile am Rathausplatz. Berlin and Stuttgart: J.Cramer.
1345	Scotch Corner	Great Britain	rural nucleated	Roman	Abramson, Ph. with Dore, J.N., Willis, S.H. and Huntley, J.P. 1995. A late Iron Age settlement at Scotch Corner, North Yorkshire. Durham Archaeological Journal, 11: 7-18.
1346	Haute Eloge	Belgium	rural elite	Roman	Laurent, Ch. a paraitre. Resultats des etudes micro-archeologiques et carpologiques. In Bausier, K., Bloch, N., Pigiere, F. (dir.) Antoing, Bruyelle. Villa et occupations anterieures, Namur (Etudes et Documents).
1352	Rue de Dinant	Belgium	secular urban town major	medieval	Laurent Ch., 2001. Etude micro-archeologique et archeo-botanique. In De Poorter, A. (dir.) Het archeologisch onderzoek op een terrein in de Dinantstraat (1995). Autour de la premiere enceinte-Rond de eerste stadsomwalling, Archeologie a Bruxelles 4, Bruxelles: 246-249.
1353	Petite Campagne	Belgium	rural nucleated	Roman	Laurent, Ch., 2000. Fexhe-le-Haut-Clocher : resultats micro-archeologiques et carpologiques obtenus sur le site de « La Petite Campagne » II. Chronique de l'Archeologie wallonne, 8: 107-109.
1355	Spitalhof	Switzerland	rural elite	Roman	Petrucci-Bavaud (database).
1356	Spitalhof	Switzerland	ceremonial burial	Roman	Petrucci-Bavaud (database).
1357	Groß Gerau AK15	Germany	military extramural	Roman	Kreuz, A. (database). Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91. Kreuz, A. 1996/7. Archaobotanische Untersuchung von Brunnenproben der romischen Fundstelle Eschborn, Baugebiet 'Dornweg'. Berichte der Kommission fur Archaologische Landesforschung in Hessen 4: 61-77
1359	Groß Gerau AK15	Germany	ceremonial burial	Roman	Kreuz, A. (database). Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91. Kreuz, A. 1996/7. Archaobotanische Untersuchung von Brunnenproben der romischen Fundstelle Eschborn, Baugebiet 'Dornweg'. Berichte der Kommission fur Archaologische Landesforschung in Hessen 4: 61-77
1360	Heddernheim AK45	Germany	town major	Roman	Kreuz, A. (database). Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91. Kreuz, A. 1996/7. Archaobotanische Untersuchung von Brunnenproben der romischen Fundstelle Eschborn, Baugebiet 'Dornweg'. Berichte der Kommission fur Archaologische Landesforschung in Hessen 4: 61-77
1361	Nieder-Mörlen, Bad Nauheim AK81	Germany	ceremonial burial	Roman	Kreuz, A. (database). Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91. Kreuz, A. 1996/7. Archaobotanische Untersuchung von Brunnenproben der romischen Fundstelle Eschborn, Baugebiet 'Dornweg'. Berichte der Kommission fur Archaologische Landesforschung in Hessen 4: 61-77
1362	Eschborn AK82	Germany	rural elite	Roman	Kreuz, A. (database). Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91. Kreuz, A. 1996/7. Archaobotanische Untersuchung von Brunnenproben der romischen Fundstelle Eschborn, Baugebiet 'Dornweg'. Berichte der Kommission fur Archaologische Landesforschung in Hessen 4: 61-77
1365	Wölfersheim AK103	Germany	ceremonial burial	Roman	Kreuz, A. (database). Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91. Kreuz, A. 1996/7. Archaobotanische Untersuchung von Brunnenproben der romischen Fundstelle Eschborn, Baugebiet 'Dornweg'. Berichte der Kommission fur Archaologische Landesforschung in Hessen 4: 61-77
1366	Nieder-Eschbach AK123	Germany	rural elite	Roman	Kreuz, A. (database). Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91. Kreuz, A. 1996/7. Archaobotanische Untersuchung von Brunnenproben der romischen Fundstelle Eschborn, Baugebiet 'Dornweg'. Berichte der Kommission fur Archaologische Landesforschung in Hessen 4: 61-77
1368	Treurenberg	Belgium	secular urban town major	medieval	Laurent Ch. (2005) unpublished . Bruxelles, site du Treurenberg (BR 59) : resultats des etudes micro-archeologiques et carpologiques.
1370	Gernsbachstrasse	Germany	military extramural	Roman	Stika, H-P. 1996. Roemerzeitliche Pflanzenreste aus Baden-Wuerttemberg, Beitraege zur Landwirtschaft, Ernaehrung und Umwelt in den roemischen Provinzen Obergermanien und Raetien. Materialhefte zur Archaeologie in Baden-Wuerttemberg 36, Theiss Verlag, Stuttgart.
1371	Roemische Heilthermen	Germany	town minor	Roman	Stika, H-P. 1999. Botanische Grossreste aus Feuchtsedimenten vom grossen Drainagekanal der roemischen Heilthermen von Badenweiler, Kreis Breisgau-Hochschwarzwald. In: Fundberichte aus Baden-Wuerttemberg 23, Theiss Verlag, Stuttgart: 119-126 und Tab.1.
1372	Lontelstrasse	Germany	rural elite	Roman	Stika, H-P. 1996. Roemerzeitliche Pflanzenreste aus Baden-Wuerttemberg, Beitraege zur Landwirtschaft, Ernaehrung und Umwelt in den roemischen Provinzen Obergermanien und Raetien. Materialhefte zur Archaeologie in Baden-Wuerttemberg 36, Theiss Verlag, Stuttgart.
1373	Steinmäurich	Germany	rural elite	Roman	Stika, H-P. 1996. Roemerzeitliche Pflanzenreste aus Baden-Wuerttemberg, Beitraege zur Landwirtschaft, Ernaehrung und Umwelt in den roemischen Provinzen Obergermanien und Raetien. Materialhefte zur Archaeologie in Baden-Wuerttemberg 36, Theiss Verlag, Stuttgart.
1374	Seelen	Germany	rural elite	Roman	Stika, H-P. 1996. Roemerzeitliche Pflanzenreste aus Baden-Wuerttemberg, Beitraege zur Landwirtschaft, Ernaehrung und Umwelt in den roemischen Provinzen Obergermanien und Raetien. Materialhefte zur Archaeologie in Baden-Wuerttemberg 36, Theiss Verlag, Stuttgart.
1375	Am Roemerbad	Germany	military extramural	Roman	Stika, H-P. 1996. Roemerzeitliche Pflanzenreste aus Baden-Wuerttemberg, Beitraege zur Landwirtschaft, Ernaehrung und Umwelt in den roemischen Provinzen Obergermanien und Raetien. Materialhefte zur Archaeologie in Baden-Wuerttemberg 36, Theiss Verlag, Stuttgart.
1376	Grabung 1979	Germany	military extramural	Roman	Stika, H-P. 1996. Roemerzeitliche Pflanzenreste aus Baden-Wuerttemberg, Beitraege zur Landwirtschaft, Ernaehrung und Umwelt in den roemischen Provinzen Obergermanien und Raetien. Materialhefte zur Archaeologie in Baden-Wuerttemberg 36, Theiss Verlag, Stuttgart.
1377	Hochmauren + Steinwandel	Germany	town major	Roman	Stika, H-P. 1996. Roemerzeitliche Pflanzenreste aus Baden-Wuerttemberg, Beitraege zur Landwirtschaft, Ernaehrung und Umwelt in den roemischen Provinzen Obergermanien und Raetien. Materialhefte zur Archaeologie in Baden-Wuerttemberg 36, Theiss Verlag, Stuttgart.
1378	Gottlieb-Daimler Schule	Germany	rural nucleated	Roman	Stika, H-P. 1996. Roemerzeitliche Pflanzenreste aus Baden-Wuerttemberg, Beitraege zur Landwirtschaft, Ernaehrung und Umwelt in den roemischen Provinzen Obergermanien und Raetien. Materialhefte zur Archaeologie in Baden-Wuerttemberg 36, Theiss Verlag, Stuttgart.
1379	Badstube	Germany	military extramural	Roman	Puhler, D. (1990), unpublished diploma thesis: Die botanischen Makroreste der roemischen Zivilsiedlung in Walheim am Neckar (2. Jahrhundert n. Chr) – Diplomarbeitam Institut fuer Notanik, Universitaet Hohenheim.
1381	Calle Tadeo Murgia	Spain	town major	Roman	Pena-Chocarro, L. and Zapata , L. unpublished. Informe arqueobotanico. macrorrestos vegetales del yacimiento romano calle Tadeo Murgia de Irun (Gipuzkoa). Pena-Chocarro, L. and Zapata , L. in press. Trade and new plant foods in the Western Atlantic coast: the Roman port of Irun (Basque Country). Conference: Mar Exterior. L'Atlantico Occidentale in Eta Romana. Pisa, Italy
1382	Catedral Santa María	Spain	secular urban town minor	medieval	Lydia Zapata unpublished.
1383	Catedral Santa María	Spain	secular rural village	Early medieval	Lydia Zapata unpublished.
1385	Colletière, lake Paladru	France	secular rural village	medieval	Lundstrom-Baudais, K. and Mignot, C. 1993. Le milieu vegetal au Xie siecle: macrorestes et paleosemences. In Colardelle, M and Verdel, E. (dir.) Les habitats du lac de Palardu (Isere) dans leur environment: La formation d'un terroir au Xie siecle. DAF. Editions de la Maison des Sciences de l' Homme. Paris: 77-97.
1386	Nages-et-Solorgues	France	rural elite	Roman	Pottrain, A. and Py, M. 1975. Un puits gallo-romain des Ileme siecles a Nages (Gard). Ecole Antique de Nimes. Bulletin Annuel. Nouvelle Serie no.10. Bibliotheque Municipale, 19. Grand Rue, 30000 Nimes.
1387	Lunel-Viel	France	secular rural village	medieval	Ruas, M-P., 1990. Analyse des paleo-semences carbonisees. In Raynaud, C. (dir.) Le village gallo-romain et medieval de Lunel-Viel (Herault). La fouille du quartier ouest (1981-1983). Annales Litteraires de Besancon, Centre de Rescherches d'Histoire Ancienne, 97: 96-104. Ruas, M-P. 1999. Semences archeologiques, miroir des productions agraires en France meridionale du VIe au XVIe siecle. Castrum 5: Archeologie des Espaces Agraires Mediterraneens au Moyen Age. Tire a part. Collection de la Casa de Velazquez 55. Collection de l' Ecole Francaise de Rome 105: 301-316. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314. Ruas, M-P. 1998. Les plantes cosommees au Moyen Age en France meridionale d' apres les semences archeologiques. Archeologie du Midi Medieval. Tome 15 et 16 - 1997-8. Centre d' Archeologie Medievale du Languedoc.Publie avec le concours du Ministere de la Culture et de la Communication, sous-
1388	Le Castlar	France	secular urban town minor	medieval	Durand, A., Forest, V., Gardeisen, A. et Ruas, M-P. 1997. Approches bioarcheologiques de l'habitat castral languedocien. Huit sites de la bordure meridionale du Massif central (Xe-XVIe siecle). Histoire et Societes
1389	Cour Napoléon du Louvre	France	secular urban town major	medieval	Ruas, M-P. 1992. La carpologie. In Monnet, C. (dir.) L'evacuation des dechets en milieu urbain au Bas Moyen-Age: L'exemple des fosses a fond perdu de la Cour Napoleon du Louvre a Paris (XIII-Xve siecles) et mesures diverges pour assainir les villes . Louvain-la-neuve: 24-25. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany
1390	Rittergasse/Bäumleingasse	Switzerland	military extramural	Roman	Brombacher unpubished (database).
1391	Mazières-en-Mauges	France	town minor	Roman	Dietrich, A. and Ruas, M-P. 1990. Des hommes et des plantes au IIe siecle apres J.-C. a Mazieres-en-Mauges. In Berthaud, G. (dir.) A la recherche de ses origines, Mazieres-en-Mauges (Maine-et-Loire) de la prehistoire a l' epoque romaine. Plaquette de l'exposition (decembre 1990). Association Mazieraise d' Archeologie, DRAH des Pays de la Loire: 27-32. Ruas, M-P 2000. Cultures, importations et alimentation d' apres les semences. In Berthaud, G. (dir.) Mazieres-en-Mauges Gallo-Romain (Maine-et-Loire): Un quartier a vocation artisanale et domestique. ARDA-AFAN: 199-257.
1392	Bas-Berry	France	secular urban town minor	medieval	Ruas, M-P. 1988. L' archeo-carpologie. Le Paysage rural. In Querrien, A. (dir.) Un village medieval en Bas-Berry, Moulins-sur-Cephons. Catalogue de l' exposition. Association pour la Recherche en Histoire et Archeologie Medievales de l'Indre (ARHAMIS): Levroux: 80-81.
1393	Cabaret	France	secular rural elite	medieval	Ruas, M-P. 1999. Temoins carpologiques de productions cereliere et fruitiere dans le Cabardes au debut du XIIIe siecle. In Gardel, M-E. (dir.) Cabaret Histoire et archeologie d'un castrum. Les foilles du site medieval de Cabaret a Lastours (Aude). Amicale Laique de Carcassonne et Centre d' Etudes Cathares. Maison des Memoires: Carcassonne: 723-727.
1394	Ambrussum (OPPIDUM)	France	rural nucleated	Roman	Ruas, M-P. 1989. Etude carpologique. In Fiches, J-L. (dir.) L'oppidum d'Ambrussum et son territoire. Fouilles au quartier du Sablas (Villetelle, Herault): 197-1985. Monographies du CRA., CNRS, 2: 169-180.
1395	Rosières 'Plaine de la montagne'	France	rural elite	Roman	Le Calve 2004. Carpologie sur le trace du TGV Nord: petite histoire d' etsblissements ruraux antiques de la Gaule septentrionale. Memoire de DEA 'Environnement et archeologie'.
1396	Rully II 'Ravin Flobert'	France	rural elite	Roman	Le Calve 2004. Carpologie sur le trace du TGV Nord: petite histoire d' etsblissements ruraux antiques de la Gaule septentrionale. Memoire de DEA 'Environnement et archeologie'.
1397	Le Motel	France	ceremonial burial	Roman	Le Calve 2004. Carpologie sur le trace du TGV Nord: petite histoire d' etsblissements ruraux antiques de la Gaule septentrionale. Memoire de DEA 'Environnement et archeologie'.
1398	Casteel Veld	France	rural lesser	Roman	Le Calve 2004. Carpologie sur le trace du TGV Nord: petite histoire d' etsblissements ruraux antiques de la Gaule septentrionale. Memoire de DEA 'Environnement et archeologie'.
1399	Zouafques	France	rural nucleated	Roman	Le Calve 2004. Carpologie sur le trace du TGV Nord: petite histoire d' etsblissements ruraux antiques de la Gaule septentrionale. Memoire de DEA 'Environnement et archeologie'.
1400	Servon	France	rural elite	Roman	Le Calve 2004. Carpologie sur le trace du TGV Nord: petite histoire d' etsblissements ruraux antiques de la Gaule septentrionale. Memoire de DEA 'Environnement et archeologie'.

1402	Jurières Basses	France	secular rural lesser	Early medieval	Maune, S., Sanchez, C., Forest, V., Chabal, L. et Bouchette, A. 1999. L' etablissement rural des Jurieres Basses a Puissalicon (Herault) 1er s. - VIeme s. ap. J.-C. Contribution a l'histoire des Campagnes de la cite de Beziers dans l'Antiquite. IIeme colloque europeen-Beziers 1997: 73-121.
1404	Saintes	France	ceremonial burial	Roman	Bouchette, A. 1998. Fruits et graines. In Le char romain du musees de la Ville de Saintes avec le concours de la Direction Regionale des Affaires Culturelles de Poitou-Charentes: 123-134.
1405	Épave de la Tradeliere	France	shipwreck	Roman	Pollino, A. 1986. L' epave de la Tradeliere. L' exploration de la mer. La mer, moyen d'echange et de communication VIeme Recontres internationales d' Archeologie et d'Histoire, Antibes, Octobre 1985. Editions
1406	Le Bois Harlé	France	rural lesser	Roman	Hingh, A. de 1996. Bottle gourd seeds at Gallo-Roman 'Le Bois Harle' (Oise, France). Analecta Praehistorica Leidensia 26: 93-97.
1407	Vieux-Port, Marseille	France	town major	Roman	Molinier, R. 1949. Note sur les Pieux, debris d'objets divers et de fruits exhumes lors des fouilles du Vieux-Port a Marseille. Soc. Linneanne de Provence 12: 41-43.
1409	Grand	France	town major	Roman	Courbet, H., Bertaux, J-P et Billoret, R. 1971. Vestiges Vegetaux decouverts dans des puits Gallo-Romaines a Grand (Vosges). Bulletin Academie et Societe Lorraines des Sciences X, 4: 43-49.
1411	Boin	France	rural elite	Roman	Bordes, P. 1984. Essai de synthese sur la Faune et la Flore: trouvees aux fouilles de la villa gallo-romaine du Boin. Lemouzi 91: 479-483.
1412	Halles de Troyes	France	secular urban town major	medieval	Ferre, M. et Danion, B. 1987. Chapitre 3. Les vestiges botaniques archeologiques decouverts sur le chantier des Halles de Troyes (Aube). Premiers resultats. Bulletin de la Societe Archeologique Champenoise 80, 2. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1415	Montmaurin	France	ceremonial burial	Roman	Evreinoff, V. 1958. Vestiges de fruits dans le puits funeraire de Montmaurin. Bull. Soc. et Hist. Naturelle de Toulouse 93, 3 et 4: 501-509.
1417	Jardins du Carrousel	France	town major	Roman	De Moulins, D. Macro-restes botaniques du site des Jardins du Carrousel. In Les Jardins du Carrousel.
1418	Lestagnac	France	rural elite	Roman	Ruas, M-P. et Bouby, L. 2003. L'apport de la carpologie: les plantes identifiees a Lestagnac. In Petit-Aupert, C. and Sillieres, P. (dir.) Lestagnac: Un Chai Gallo-Romain, La Viticulture en Gascogne Antique. Abbaye de Flaran, Centre Patrimonial Departemental. Valence-sur-Baise: 24-29.
1419	Port de Lattara	France	town minor	Roman	Chabal, L. 2002. Analyse archeologique des restes vegetaux du port de Lattara (secteurs 2 et 3 de la zone 37). Lattara 15
1420	Bourbousson 3	France	rural lesser	Roman	Bouby, L. 2001. Contribution de la carpologie a la connaissance de deux sites dromois des Fouille du TGV. In Soleil, P. (ed.), Archeologie sur toute la ligne. Les fouilles du TGV mediterranee dans la moyenne vallee du
1421	Constantin Montboucher-sur-Jabron	France	secular rural lesser	medieval	Bouby, L. 2001. Contribution de la carpologie a la connaissance de deux sites dromois des Fouille du TGV. In Soleil, P. (ed.), Archeologie sur toute la ligne. Les fouilles du TGV mediterranee dans la moyenne vallee du
1422	Chegnes	France	town minor	Roman	Hopf, M., Perraud, R. et Samuel, E. 1978. Le site Gallo-Romain des Chegnes a Saint-Gengoux de Scisse (S-e-L).
1423	Le Villard	France	rural lesser	Roman	Bouby, L. 1993. Apports de la carpologie a la connaissance de l' economie vegetale de l'Auvergne: du Mesolithique a l' epoque gallo-romaine. Memoire de DEA, Universite de Montpellier II.
1424	Les Ouches du Bourg Pithiviers-le-Vieil	France	town minor	Roman	Marinval, Ph. 1993. Deux amas de grains de Ble carbonises du Haut Empire romain provenant de Pithiviers-le-Viel (Loiret) et de Liniez (Indre). Revue Archeologique du Loiret 18: 105-119.
1425	Longueil-Sainte-Marie	France	rural nucleated	Roman	Marinval, Ph. Marechal, D. et Labadie, D. 2002. Arbres fruitiers et cultures jardinees gallo-romaines a Longueil-Sainte-Marie (Oise). Gallia 59: 253-271.
1427	Le Moulin	France	secular rural village	Early medieval	Bakels, C. 1999. Dury 'Le Moulin' (Somme): etude des restes botaniques. Revue d'archeologique de Picardie 1/2: 237-245.
1428	Le Moulin	France	secular rural village	medieval	Bakels, C. 1999. Dury 'Le Moulin' (Somme): etude des restes botaniques. Revue d'archeologique de Picardie 1/2: 237-245.
1429	Sanctuaire des Basaltes	France	ceremonial temple-shrine	Roman	Beal, J-C. 1992. Le sanctuaire des basaltes a Alba-la-Romaine (Ardeche) et ses offrandes. Archeologie aujourd'hui: Les sanctuaires de tradition indigene en Gaule romaine. Actes du Colloque d' Argentomagus. Editions
1430	La Haute Borne	France	military extramural	Roman	Derreumaux, M. 2001/2002. Etude carpologique de deux enclos latenien et gallo-romain du site de 'La Haute Borne' a Villeneuve-d'Ascq (59). Memoire de D.E.A. Environment et Archeologie.
1431	Jouars-Pontchartrain	France	military extramural	Roman	Zwierzinski, E. 1999. Apport de la carpologie a la caracterisation des espaces: l' exemple des remplissages de deux puits de l' agglomeration gallo-romaine de Jouars-Pontchartrain (78, Yvelines). DEA. Environment et archeologie, Universite de Paris X.
1432	La Bourse, Marseille	France	town major	Roman	Boyer, R. 1986. Conserve d' olives dans deux amphores trouvees dans les fouilles de la Bourse a Marseille. Gallia 44, 2: 229-233.
1433	Abbaye St-Victor, Marseille	France	religious cemetery/burial	Early medieval	Boyer, R. Vie et mort a Marseille a la fin de l' Antiquite: Inhumations habilees des Ve et VIe sicles et sarcophage reliquaire trouvees a l' abbaye de Saint-Victor.
1434	Beauvais, Hôtel-Dieu	France	secular urban town minor	medieval	Marinval, Ph. 1990. Etude carpologique des fosses depotoirs des XIIe-XIIIe siecles de l' Hotel de Ville et de l' Hotel Dieu a Beauvais (Oise). Resultats preliminaires. Revue Archeologique de Picardie 3/4: 295-299.
1435	Beauvais, Hôtel de Ville	France	secular urban town minor	medieval	Marinval, Ph. 1990. Etude carpologique des fosses depotoirs des XIIe-XIIIe siecles de l' Hotel de Ville et de l' Hotel Dieu a Beauvais (Oise). Resultats preliminaires. Revue Archeologique de Picardie 3/4: 295-299.
1436	Champlieu-Orrouy, Église paroissiale	France	rural lesser	Roman	Bakels, C. 1986. Un echantillonage de graines carbonisees provenant de Champlieu-Orrouy (Oise). Revue Archeologique de Picardie 1 et 2: 35-36.
1437	Portout	France	town minor	Roman	Fritsch, R. 1990. VI- Examen de macrorestes vegetaux sur le site de portout 2. In Pernon, J. and C. (eds.), Les potiers de Portout: Productions, activites et cadre de vie d' un atelier au Ve siecle ap. J.C. en Savoie. Revue archeologique de Narbonnaise, Supplement 20, Editions du CNRS: 32-36.
1439	Krøyers Have, Svendborg	Denmark	secular urban town minor	medieval	Jensen, H-A. 1979. Seeds and other diaspores in medieval layers from Svendborg, the archaeology of Svendborg, Denmark, no 2, Odense University Press.
1440	Levroux (OPPIDUM)	France	rural nucleated	Roman	Marinval, Ph. 1985. Compterendu de l'etude paleoethnobotanique. In Buchsenschutz, O. (dir.) Recherche sur la naissance de l'urbanisation au 1o siecle avant J.-C. dans le centre de la France d'apres les nouvelles donnees archeologiques. DGRST: Archeologie metropolitaine 1983-1984: Adel, Levroux: 47-56.
1441	Les Ilettes	France	town minor	Roman	Vivian, R. 1991(dir.) Paleoenvironnement Holocene et archeologie dans les Alpes du Nord et leur Piemond. Editions du Comite des Travaux historiques et Scientifiques.
1442	Baillet-en-France	France	secular rural village	medieval	Ruas, M-P. 1988. L' agriculture. Alimentation vegetale, pratiques agricoles et environnement du XVIIe au Xe siecle (Villiers-le-Sec et Baillet-en-France). In Guadagnin, R. (dir.). Un village au temps de Charlemagne. Moines et paysans de l'abbaye de Saint-Denis du VIIo a l'An Mil. Catalogue exposition. Musee National des Arts et Traditions Populaires: Paris: 203-213. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1443	Villiers-le-Sec	France	secular rural village	medieval	Ruas, M-P. 1988. L' agriculture. Alimentation vegetale, pratiques agricoles et environnement du XVIIe au Xe siecle (Villiers-le-Sec et Baillet-en-France). In Guadagnin, R. (dir.). Un village au temps de Charlemagne. Moines et paysans de l'abbaye de Saint-Denis du VIIo a l'An Mil. Catalogue exposition. Musee National des Arts et Traditions Populaires: Paris: 203-213. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1445	Villiers-le-Sec	France	secular rural village	Early medieval	Ruas, M-P. 1988. L' agriculture. Alimentation vegetale, pratiques agricoles et environnement du XVIIe au Xe siecle (Villiers-le-Sec et Baillet-en-France). In Guadagnin, R. (dir.). Un village au temps de Charlemagne. Moines et paysans de l'abbaye de Saint-Denis du VIIo a l'An Mil. Catalogue exposition. Musee National des Arts et Traditions Populaires: Paris: 203-213. Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1448	Pâture du Couvent, Mont Beauvray (OPPIDUM)	France	rural nucleated	Roman	Wiethold, J. 1996. Late Celtic and early Roman plant remains from the oppidum of Bibracte, Mont Beuvray (Burgundy, France). Vegetation History and Archaeobotany 5: 105-116. Wiethold, J. Fonctionnement socio-economique de l' oppidum du IIe s. qav. J-C au Ier s. ap. J-C: Analyse de macrorestes vegetaux du Mont Beuvray. In Document final de synthese rapport triennal 1993-1995. Centre archeologique europeen du Mont Beuvray 3. Vitali, D. et Wiethold, J. 1996. Restes vegetaux carbonises a la Pature du Couvent (Amidonnier germe stocke dans un batiment d'epoque augusteenne). In Barral, Ph, Beck, P., Bernal, J., Boyer, F., Buchsenschutz, O., Flouest, J-L., Laszlovsky, J., Lupinbuhl, T., Paratte, C-A., Pournier, D., Quinn, D., Ralston, IBM., Szabo, M., Vitali, D., Wiethold, J. (dir.) Les fouilles du Mont Beuvray. Rapport biennal 1992-1993. Revue
1449	Pâture du Couvent, Mont Beauvray	France	ceremonial burial	Roman	Wiethold, J. 1996. Late Celtic and early Roman plant remains from the oppidum of Bibracte, Mont Beuvray (Burgundy, France). Vegetation History and Archaeobotany 5: 105-116. Wiethold, J. Fonctionnement socio-economique de l' oppidum du IIe s. qav. J-C au Ier s. ap. J-C: Analyse de macrorestes vegetaux du Mont Beuvray. In Document final de synthese rapport triennal 1993-1995. Centre archeologique europeen du Mont Beuvray 3. Vitali, D. et Wiethold, J. 1996. Restes vegetaux carbonises a la Pature du Couvent (Amidonnier germe stocke dans un batiment d'epoque augusteenne). In Barral, Ph, Beck, P., Bernal, J., Boyer, F., Buchsenschutz, O., Flouest, J-L., Laszlovsky, J., Lupinbuhl, T., Paratte, C-A., Pournier, D., Quinn, D., Ralston, IBM., Szabo, M., Vitali, D., Wiethold, J. (dir.) Les fouilles du Mont Beuvray. Rapport biennal 1992-1993. Revue
1451	Fanum Freudenberg	France	ceremonial temple-shrine	Roman	Wiethold, J. et Dalnoki, O. 2002. 4. Recherches archeobotaniques en France du Centre-Est Campagne 2001. Rapport annuel d' activite 2000 du Centre archeologique europeen du Mont Beuvray. Mont Beuvray. Glux-en-Glenne. Wiethold, J. 2003. How to trace 'Romanisation' of central Gaule by archaeobotanical analysis? - Some considerations on new archaeobotanical results from France Centre-Est. In Actualite de la Recherche en Histoire et Archeologie agraires, Actes du colloque international AGER V, septembre 2000. Besancon: Presses Universitaires Franc-Comtoises: 269-282 (Annales Litteraires, 764. Serie 'Environnement, societes et
1452	Selongey, villa de Tuillières	France	rural elite	Roman	Wiethold, J. 2003. How to trace 'Romanisation' of central Gaule by archaeobotanical analysis? - Some considerations on new archaeobotanical results from France Centre-Est. In Actualite de la Recherche en Histoire et Archeologie agraires, Actes du colloque international AGER V, septembre 2000. Besancon: Presses Universitaires Franc-Comtoises: 269-282 (Annales Litteraires, 764. Serie 'Environnement, societes et archeologie' 5).
1453	Entrains-sur-Nohain	France	ceremonial temple-shrine	Roman	Wiethold, J. 2003. How to trace 'Romanisation' of central Gaule by archaeobotanical analysis? - Some considerations on new archaeobotanical results from France Centre-Est. In Actualite de la Recherche en Histoire et Archeologie agraires, Actes du colloque international AGER V, septembre 2000. Besancon: Presses Universitaires Franc-Comtoises: 269-282 (Annales Litteraires, 764. Serie 'Environnement, societes et archeologie' 5).
1454	Mont Beuvray	France	secular rural lesser	medieval	Wiethold, J. 1997. Chapitre 12. Etudes archeobotaniques. In Rapport annuel d'activite scientifique 1997 du centre archeologique europeen du Mont Beuvray. Glux-en-Glenne: 249-263.
1455	La Générie, Chassenard	France	secular rural village	medieval	Dalnoki, O. et Wiethold, J. 1999. L'etude archeobotanique des macro-restes vegetaux carbonises. In Lurol, J-M., Allier, R.C.E.A. (dir.) Route Centre Europe Atlantique. Zone d'emprunt. 03 Chassenard, La Generie. Document final de synthese de l'operation preventive de fouille archeologique 7 decembre 1998 – 5 fevrier 1999 (Clermont-Ferrand 1999) 85-90 u. 94-95 u. Tab. 1-47 im Anhang.
1456	Monségur	France	ceremonial burial	Roman	Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil
1457	Pérignat-sur-Allier	France	ceremonial burial	Roman	Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil
1458	Vatteville, Les Landes	France	ceremonial burial	Roman	Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil
1459	Faulquemont	France	ceremonial burial	Roman	Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206. Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil Regional du Centre: 45-65. Preiss, S., Matterne, V., Latron, F. 2005. An approach to funerary rituals in the Roman provinces: plant remains from a Gallo-Roman cemetery at Faulquemont (Moselle, France), Vegetation
1460	Javols	France	ceremonial burial	Roman	Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206. Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil Regional du Centre: 45-65. Preiss, S., Matterne, V., Latron, F. 2005. An approach to funerary rituals in the Roman provinces: plant remains from a Gallo-Roman cemetery at Faulquemont (Moselle, France), Vegetation
1461	Lyon, Impasse de la Duchère	France	ceremonial burial	Roman	Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206. Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil Regional du Centre: 45-65. Preiss, S., Matterne, V., Latron, F. 2005. An approach to funerary rituals in the Roman provinces: plant remains from a Gallo-Roman cemetery at Faulquemont (Moselle, France), Vegetation
1462	Ouest centre Giratoire du Boulevard Périphérique Nord, Lyon	France	ceremonial burial	Roman	Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206. Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil Regional du Centre: 45-65. Preiss, S., Matterne, V., Latron, F. 2005. An approach to funerary rituals in the Roman provinces: plant remains from a Gallo-Roman cemetery at Faulquemont (Moselle, France), Vegetation
1463	Villeneuve-lès-Bèziers	France	ceremonial burial	Roman	Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206. Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil Regional du Centre: 45-65. Preiss, S., Matterne, V., Latron, F. 2005. An approach to funerary rituals in the Roman provinces: plant remains from a Gallo-Roman cemetery at Faulquemont (Moselle, France), Vegetation
1465	St-Germain-les Vergnes	France	ceremonial burial	Roman	Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206. Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil Regional du Centre: 45-65. Preiss, S., Matterne, V., Latron, F. 2005. An approach to funerary rituals in the Roman provinces: plant remains from a Gallo-Roman cemetery at Faulquemont (Moselle, France), Vegetation
1466	Trier, Altbach	Germany	ceremonial burial	Roman	Marinval, Ph. 2004. Offrandes alimentaires d'origine vegetale en contexte funeraire gallo-romain, nouveau regard. In Baray, L. (dir.) Archeologie des pratiques funeraires Approches critiques. Collection Bibracte 9: 197-206. Marinval, Ph. 1993. Etude carpologique d'offrandes alimentaires vegetales dans le sepultures gallo-romaines: reflexions preliminaires. Monde des Mortes, Monde des Vivants en Gaule Rurale. A. Ferdiere, Conseil Regional du Centre: 45-65. Preiss, S., Matterne, V., Latron, F. 2005. An approach to funerary rituals in the Roman provinces: plant remains from a Gallo-Roman cemetery at Faulquemont (Moselle, France), Vegetation
1470	Estrées-Saint-Denis, Les Sablons	France	rural nucleated	Roman	Matterne, V. Les fruits et les graines provenant de quelques fosses, fosses et depotoirs du site d' Estrees-Saint-Denis (Oise). In Querel, P. et Woimant, G-P. (dir.) Le site d' Estrees-Saint-Denis: sanctuaire et habitat une agglomeration secondaire.
1471	Compiègne, Place des Hallettes	France	secular urban town major	Early medieval	Matterne, V. 1997. Etude d' une concentration de semences carbonisees provenant d' une structure du Xe siecle, Place de Hallettes a Compiegne (Oise). Revue Archeologique de Picardie no special 13: 214-228.

1473	La Fonderie, Douai	France	secular urban town major	Early medieval	Zeist, W. van 1993. Einege Bemerkungen zur Getreideunkrautflora im mittelalterlichen Douai, Nordfranreich. Archaeo-Physika 13: 173-185.
1476	Gournay-sur-Marne, Avenue Roger Ballu	France	town minor	Roman	Matterne, V. (database).
1478	Champlieu, Orrouy	France	town minor	Roman	Bakels, C. 1984. Carbonized seeds from Northern France. Analecta Praehistorica Leidensia 17: 1-27. Bakels, C. 1999. Archaeobotanical investigations in the Aisne valley, northern France, from the Neolithic up to the early Middle Ages. Vegetation History and Archaeobotany 8: 71-77.
1480	Beaurieux 'Les Grèves'	France	rural lesser	Roman	Bakels, C. 1999. Archaeobotanical investigations in the Aisne valley, northern France, from the Neolithic up to the early Middle Ages. Vegetation History and Archaeobotany 8: 71-77.
1485	Steinmöri	Switzerland	rural elite	Roman	Klee (database).
1486	Neuss, Hospital of castrum de Novaesium	Germany	military intramural	Roman	Marinval, Ph. 2004. Plantes medicinales et saveurs de la Protohistoire a l' Antiquite. Actes du seminaire d' ethnobotanique de Salagon 2, 2002: L' arbre. 'Les cahiers de Salagon' 10, Musee departmental de Haute-Provence et Les Alpes de lumiere, Mane: 119-124. (secondary data from Knorzer 1991, 1970).
1487	Cour Napoléon of Louvre, Paris	France	secular urban town major	Early medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1488	Beaugency	France	secular rural lesser	medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1489	Beaugency	France	secular rural lesser	Early medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1490	Tavers	France	secular rural lesser	Early medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1491	Béon, Brétigny-Ouest	France	secular rural lesser	medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1492	Grand Longueron, Champlay	France	secular rural lesser	Early medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1493	Aber Wrac'h	France	shipwreck	medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1494	Dracy	France	secular rural village	medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1495	Cour Carrée of Louvre, Paris	France	secular urban town major	medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1496	Bourg-l'Hôpital, Melle	France	secular rural village	medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1497	Moulins-sur-Céphons	France	secular rural elite	medieval	Ruas, M-P. 1992. The archaeobotanical record of cultivated and collected plants of economic importance from medieval sites in France. Review of Palaeobotany and Palynology 73: 301-314.
1501	Kiel, Haßstraße/Klosterkirchhof	Germany	secular urban town minor	medieval	Wiethold, J. 1995. Plant remains from town-moats and cesspits of medieval and post-medieval Kiel (Schleswig-Holstein, Germany). In Kroll, H. and Pasternak, R. (eds.), Res archaeobotanicae, 9th Symposium IWGP:
1502	Clausthal-Zellerfeld, Johanneser Kurhaus	Germany	various industrial site	medieval	Willerding, U. On the utilisation of the plant resources of the upper Harz Mountains by the mining and smelting industries during medieval times. In Segers-Glocke, Ch. And Witthoft, H. (eds.), Aspects of mining and smelting in the upper Harz Mountains up to the 13th/14th century. Seperatum, Scripta Mercaturae Verlag: 79-98.
1503	Lautenthal forest, Schnapsweg	Germany	various industrial site	medieval	Willerding, U. On the utilisation of the plant resources of the upper Harz Mountains by the mining and smelting industries during medieval times. In Segers-Glocke, Ch. And Witthoft, H. (eds.), Aspects of mining and smelting in the upper Harz Mountains up to the 13th/14th century. Seperatum, Scripta Mercaturae Verlag: 79-98.
1504	Dominican Priory, Oxford	Great Britain	religious monastery urban	medieval	Robinson, M. 1985. Plant and invertebrate remains. In Lambrick, G. (ed.), Further excavations on the second site of the Dominican priory, Oxford.Oxoniensia 50: 196-201and fiche D14, F1.
1505	Cornmarket St 70, Oxford	Great Britain	secular urban town major	medieval	Brown, A. 1971. Botanical material. In Hassall, T.G. (ed.), Excavations at 44-46 Cornmarket Street, Oxford, 1970. Oxoniensia 36: 33.
1507	Dean Court Farm, Cumnor, nr Oxford	Great Britain	religious monastery urban	medieval	Moffet, L. and Robinson, M. 1995. Charred plant remains and Invertebrate and waterlogged plant remains. In Allen, T. A (ed.), Medieval grange of Abingdon Abbey at Dean Court Farm, Cumnor, Oxon. Oxoniensia 59: 398-
1508	Abbots Worthy, nr Winchester	Great Britain	secular rural village	Early medieval	Carruthers, W. 1991. The plant remains. In Fasham, P.J. and Whinney, R.J.B. (eds.), Archaeology and the M3. The Abbots Worthy Settlement. Trust for Wessex Archaeology and Hampshire Field Club Archaeol. Soc.
1509	Heidelberg, Kirchheim, Speyrer Str.	Germany	rural nucleated	Roman	Manfred Rosch (database).
1510	Bad Mergentheim, Rotkreuzstraße	Germany	rural lesser	Roman	Piening, U. 1982a/b (Bad Mergentheim, Lauffen). In Manfred Rosch database and VHA 7 (1998): 109-125 and Piening, U. 1982. Botanische Untersuchungen an Verkohlten Pflanzenresten aus Nordwurttemberg. Neolithikum bis Romische Zeit. Fundberichte aus Baden-Wurttemberg 7: 239-271.
1511	Langenau	Germany	secular rural village	Early medieval	Manfred Rosch (database).
1512	Aalen, Hofherrenweiler	Germany	rural nucleated	Roman	Manfred Rosch (database).
1513	Kirchheim/Teck, Charlottenstraße	Germany	rural nucleated	Roman	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1514	Mengen (Fr.), Löchleacker	Germany	rural nucleated	Roman	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1515	Igersheim, Neuseser Tal	Germany	rural nucleated	Roman	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1516	Mühlheim-Stetten /Do., Bachäcker	Germany	rural nucleated	Roman	Rosch, M. 1989. Pflanzenreste des fruhen Mittelalters von Muhlheim an der Donau-Stetten/Kreis Tuttlingen. Arch Ausgr Baden-Wurttemberg 1988: 211-212. Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In
1517	Vörstetten	Germany	secular rural village	medieval	Manfred Rosch (database).
1518	Heidenheim, Großkuchen	Germany	secular rural village	Early medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1519	Tauberbischofsheim, TBB-Dittigheim, Bogenäcker	Germany	religious cemetery/burial	Early medieval	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1520	Igersheim, Neuseser Tal	Germany	secular rural village	Early medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1521	Trossingen	Germany	religious cemetery/burial	Early medieval	Rosch/Fischer 2004 In Manfred Rosch database.
1522	Mühlhausen Ehingen bei der Mauer	Germany	secular rural village	Early medieval	Rosch 2004 In Manfred Rosch database.
1523	Lauchheim, Mittelhofen	Germany	secular rural village	Early medieval	Kokabi, M. and Rosch , M.1991. Knochen und Pflanzenreste des fruhen Mittelalters von Lauchheim, Ostalbkreis. Arch Ausgr Baden-Wurttemberg 1990: 215-220. Stork, I. and Rosch, M. 1993. Zum Fortgang der Untersuchungen im fruhmittelalterlichen Graberfeld, Adelshof und in der Hofgrablege bei Lauchheim, Ostalbkreis. Arch Ausgr Baden-Wurttemberg 1993: 231-243. In Manfred Rosch db and VHA 7 (1998): 109-125.
1524	Mühlheim-Stetten /Do., Bachäcker	Germany	secular rural village	Early medieval	Rosch, M. 1989. Pflanzenreste des fruhen Mittelalters von Muhlheim an der Donau-Stetten/Kreis Tuttlingen. Arch Ausgr Baden-Wurttemberg 1988: 211-212. Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In
1525	Oberflacht, Leerhalde	Germany	religious cemetery/burial	Early medieval	Zauner, F. 1992. Anhang 3: Die Pflanzenfunde von Oberflacht. In Schiek, S. (ed.), Das Graberfeld der Merowingerzeit bei Oberflacht. Forsch Ber Vor- Fruhgesch Baden-Wurttemberg 41: 128-166. In Manfred Rosch db and VHA 7 (1998): 109-125.
1526	Renningen, Neuwiesenäcker	Germany	secular rural village	Early medieval	Rosch, M. 1990. Pflanzenfunde aus einem mittelalterlichen Dorf in Renningen, Kreis Bblingen.Arch Ausgr Baden-Wurttemberg 1989: 285-289. In Manfred Rosch db and VHA 7 (1998): 109-125.
1527	Steißlingen, Radolfzeller Str.	Germany	secular rural village	Early medieval	Manfred Rosch (database).
1529	Mengen (Fr.), Hofstatt	Germany	secular urban town minor	Early medieval	Rosch, M. 1988. Pflanzenreste der Merowingerzeit aus Mengen am Tuniberg, Kreis Breisgau-Hochswarzwald. Arch Ausgr Baden-Wurttemberg 1987: 164-165. In Manfred Rosch db and VHA 7 (1998): 109-125.
1530	Bruchsal	Germany	secular rural village	Early medieval	Rosch, M. 1989. Pflanzenreste des fruhen Mittelalters von Muhlheim an der Donau-Stetten/Kreis Tuttlingen. Arch Ausgr Baden-Wurttemberg 1988: 211-212. Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In
1534	Wiesloch Baiertaler Str.	Germany	secular rural village	medieval	Manfred Rosch (database).
1535	Wiesloch, Evangelische Kirche	Germany	secular rural village	medieval	Manfred Rosch (database).
1537	Mühlheim-Stetten /Do., Bachäcker	Germany	secular rural village	medieval	Rosch, M. 1989. Pflanzenreste des fruhen Mittelalters von Muhlheim an der Donau-Stetten/Kreis Tuttlingen. Arch Ausgr Baden-Wurttemberg 1988: 211-212. Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In
1538	Rottweil, Auf dem Wall	Germany	secular urban town minor	medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1539	Rottweil Königshofweg	Germany	secular urban town minor	medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1540	Gerlingen, Bachstraße 7	Germany	secular rural village	medieval	Rosch, M. and Gross, U. 1994. hochmittelalterliche Nahrungspflanzenvorrate aus Gerlingen, Kreis Ludwigsburg. Fundber Baden-Wurttemberg 19/1: 711-759. In Manfred Rosch db and VHA 7 (1998): 109-125.
1541	Herrenberg Raistingen	Germany	secular rural village	medieval	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1542	Lauchheim, Mittelhofen	Germany	secular rural village	medieval	Kokabi, M. and Rosch , M.1991. Knochen und Pflanzenreste des fruhen Mittelalters von Lauchheim, Ostalbkreis. Arch Ausgr Baden-Wurttemberg 1990: 215-220. Stork, I. and Rosch, M. 1993. Zum Fortgang der Untersuchungen im fruhmittelalterlichen Graberfeld, Adelshof und in der Hofgrablege bei Lauchheim, Ostalbkreis. Arch Ausgr Baden-Wurttemberg 1993: 231-243. In Manfred Rosch db and VHA 7 (1998): 109-125.
1543	Mengen/Do Tal Josaphat	Germany	secular urban town minor	medieval	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1544	Freiburg, Harmonie	Germany	secular urban town minor	medieval	Sillmann 2002. In Manfred Rosch db and VHA 7 (1998): 109-125.
1545	Heilbronn, Kaiserstr	Germany	secular urban town minor	medieval	Manfred Rosch (database).
1546	Freiburg, Salzstraße	Germany	secular urban town minor	medieval	Sillmann 2002. In Manfred Rosch db and VHA 7 (1998): 109-125.
1547	Weiterdingen Amtshaustraße	Germany	secular rural village	medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1549	Bietigheim Kelter	Germany	secular urban castle	medieval	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1552	Schwäbisch Hall Hinter der Post	Germany	secular urban town minor	medieval	Fischer/Rosch 1994 and Rosch/Fischer 1995. In Manfred Rosch db and VHA 7 (1998): 109-125.
1553	Wiesloch, Küferstraße	Germany	secular urban town minor	medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1555	Rot am See, Ev. Pfarrkirche	Germany	secular rural village	medieval	Rosch 1994 (Rot am See). In Manfred Rosch db and VHA 7 (1998): 109-125.
1556	Biberach, Viehmarkt	Germany	secular urban town minor	medieval	Rosch/Schmid 1992 (Biberach Viehmarkt). In Manfred Rosch db and VHA 7 (1998).: 109-125.
1558	Leimen	Germany	secular rural village	medieval	Manfred Rosch (database).
1559	Schwieberdingen, Vöhingen	Germany	secular rural village	medieval	Manfred Rosch (database).
1560	Villingen Gerberstraße	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1561	Villingen Hans-Kraut-Gasse	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1562	Villingen Rietzentrum	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1564	Lahr, Schiller-/Kreutzstr.	Germany	secular urban town minor	medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1565	Rottweil	Germany	secular urban town major	medieval	Manfred Rosch (database).
1566	Villingen Kapuzinerkloster	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1567	Villingen Josefsgasse	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.

1568	Villingen	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1569	Esslingen Denkendorf.Pflegh.	Germany	secular urban town minor	medieval	Fischer 1993 (Esslingen). In Manfred Rosch db and VHA 7 (1998): 109-125.
1571	Tübingen Kelternplatz	Germany	secular urban town minor	medieval	Rosch 1991b (Tubingen). In Manfred Rosch db and VHA 7 (1998): 109-125.
1572	Eschelbronn	Germany	secular rural elite	medieval	Korber-Grohne 1979 (Eschelbronn). In Manfred Rosch db and VHA 7 (1998): 109-125.
1573	Villingen VSG	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1574	Villingen Kaisserring2/Hof	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1575	Freiburg, Oberlinden 19	Germany	secular urban town minor	medieval	Sillmann 2002. In Manfred Rosch db and VHA 7 (1998): 109-125.
1576	Freiburg, Gauchstr. 21	Germany	secular urban town minor	medieval	Sillmann 2002. In Manfred Rosch db and VHA 7 (1998): 109-125.
1577	Villingen Rietstraße	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1578	Schwäbisch Gmünd, Badmauer	Germany	secular urban town minor	medieval	Manfred Rosch (database).
1579	Rottweil, Hauptstraße 41	Germany	secular urban town major	medieval	Manfred Rosch (database).
1580	Steißlingen, Radolfzeller Str.	Germany	secular rural village	medieval	Manfred Rosch (database).
1581	Stuttgart Altes Schloß	Germany	secular urban castle	medieval	Rosch 2004 In Manfred Rosch database.
1582	Nußloch	Germany	secular rural village	medieval	Manfred Rosch (database).
1583	Bruchsal	Germany	secular urban castle	medieval	Maier, U. 1988. Pflanzenhaltige Bodenproben aus der mittelalterlichen Bischofsburg in Bruchsal. Forsch Ber Vor- Fruhgesch Baden-Wurttemberg 31: 403-417. In Manfred Rosch db and VHA 7 (1998): 109-125.
1584	Calw-Hirsau	Germany	religious monastery rural	medieval	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1585	Villingen VSZ	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1586	Konstanz	Germany	secular urban town major	medieval	Kuster 1989, 1992 (Konstanz, several excavations). In Manfred Rosch db and VHA 7 (1998): 109-125.
1588	Kirchheim/Teck	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1590	Unterregenbach	Germany	secular rural village	medieval	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1591	Mengen/Donau	Germany	secular urban town minor	medieval	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1592	Reutlingen	Germany	secular urban town minor	medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1593	Wiesloch	Germany	secular urban town minor	medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1594	Heidelberg HDK (Kornmarkt?)	Germany	secular urban town minor	medieval	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1595	Werbach-Gamburg, Alte Kirchen	Germany	secular rural village	medieval	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1596	Aichtal, Grötzingen	Germany	secular rural village	medieval	Manfred Rosch (database).
1597	Bad Krotzingen, Glöcklehof	Germany	secular rural lesser	medieval	Manfred Rosch (database).
1598	Giengen, Stadtmauer	Germany	secular urban town minor	medieval	Manfred Rosch (database).
1599	Radolfzell, Schützenstraße	Germany	secular urban town minor	medieval	Manfred Rosch (database).
1601	Geislingen, Alte Post	Germany	secular urban town minor	medieval	Manfred Rosch (database).
1602	Freiburg, Gauchstr. 23B	Germany	secular urban town minor	medieval	Sillmann 2002. In Manfred Rosch db and VHA 7 (1998): 109-125.
1605	Kaiserring2/Hof Villingen	Germany	secular urban town minor	medieval	Rosch 1999a,b. In Manfred Rosch db and VHA 7 (1998): 109-125.
1606	Heidelberg Alte Universität	Germany	religious monastery urban	medieval	Rosch 1993d (Heidelberg). In Manfred Rosch db and VHA 7 (1998): 109-125.
1608	Sindelfingen Obere Vorstadt	Germany	secular urban town minor	medieval	Korber-Grohne 1978 (Sindelfingen). In Manfred Rosch db and VHA 7 (1998): 109-125.
1609	Heidelberg HDS	Germany	religious cemetery/burial	medieval	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1610	Schwäbisch Hall Roter Steg	Germany	secular urban town minor	medieval	Manfred Rosch (database).
1611	Schwäbisch Hall, Pfarrgasse 9	Germany	secular urban town minor	medieval	Rosch/Fischer 1997 (Schw. Hall). In Manfred Rosch db and VHA 7 (1998): 109-125.
1612	Ubstadt, Josefshaus	Germany	secular rural village	medieval	Manfred Rosch (database).
1614	Rottweil, Hochmausen	Germany	military intramural	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1615	Walheim Badstube	Germany	rural nucleated	Roman	Puhler 1990 (Walheim). In Manfred Rosch db and VHA 7 (1998): 109-125.
1616	Köngen Am Kehlweg	Germany	rural nucleated	Roman	Maier, S. 1988 (Kongen). In Manfred Rosch db and VHA 7 (1998): 109-125.
1617	Lahr-Dinglingen Schillinger	Germany	rural nucleated	Roman	Rosch 1995b (Lahr). In Manfred Rosch db and VHA 7 (1998): 109-125. Romanization project data added
1618	Gerlingen	Germany	rural elite	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1619	Mundelsheim, Steinäcker	Germany	rural elite	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1620	Rottweil, Steinwandel	Germany	town major	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1621	Ladenburg, Domhofplatz	Germany	town minor	Roman	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1622	Osterburken, Seedammstraße	Germany	military intramural	Roman	Froschle 1994 (Osterburken). In Manfred Rosch db and VHA 7 (1998): 109-125. Also KROLL: Froschle, B. 1994. Botanische Untersuchungen romerzeitlicher Pflanzenreste aus der archaologischen Ausgrabung in Osterburken. Der romische Weihebezirk von Osterburken II. Kolloquium 1990 und palaobotanische-osteologische Untersuchungen. Forsch Ber Vor- Fruhgesch Baden-Wurttrmberg 49: 319-362. Also R[429/30].
1623	Pforzheim, Kappelhofstraße	Germany	rural nucleated	Roman	Rosch, M., Jacomet, S. and Karg, S. 1992. The history of cereals in the region of the former Duchy of Swabia (Herzogtum Schwaben) from the Roman to the Post-medieval period: results of archaeobotanical research. Vegetation History and Archaeobotany 1: 193-231. In Manfred Rosch db and VHA 7 (1998): 109-125.
1624	Bondorf	Germany	rural elite	Roman	Korber-Grohne/Piening 1979 (Bodorf). In Manfred Rosch db and VHA 7 (1998): 109-125.
1625	Murrhardt Rlöße	Germany	military extramural	Roman	Rosch 1989b (Murrhardt). In Manfred Rosch db and VHA 7 (1998): 109-125.
1626	Sontheim Braike	Germany	military extramural	Roman	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1627	Welzheim Rienharzer Str.	Germany	military extramural	Roman	Korber-Grohne/Piening 1983 (Welzheim). In Manfred Rosch db and VHA 7 (1998): 109-125.
1628	Nürtingen-Oberens, Seelen	Germany	rural elite	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1629	Rainau-Buch	Germany	military extramural	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1630	Walldürrn Am Römerbad	Germany	military extramural	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1631	Riegel, Fronhofbuck	Germany	rural nucleated	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1632	Sindelfingen	Germany	rural nucleated	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1633	Stettfeld several excavations	Germany	rural nucleated	Roman	Stika 1996 (Rottweil, Gerlingen, Nurtingen, Rainau-Buch, Walldurrn, Riegel, Sindelfingen, Stettfeld). In Manfred Rosch db and VHA 7 (1998): 109-125.
1634	Rottweil	Germany	town major	Roman	Manfred Rosch (database).
1635	Rottweil, Kapellenösch	Germany	town major	Roman	Manfred Rosch (database).
1636	Pforzheim Städt. Krankenhaus	Germany	rural nucleated	Roman	Fietz 1961 (Pforzheim). In Manfred Rosch db and VHA 7 (1998): 109-125.
1637	Lauffen a.N.	Germany	rural nucleated	Roman	Piening, U. 1982a/b (Bad Mergentheim, Lauffen). In Manfred Rosch database and VHA 7 (1998): 109-125 and Piening, U. 1982. Botanische Untersuchungen an Verkohlten Pflanzenresten aus Nordwurttemberg. Neolithikum bis Romische Zeit. Fundberichte aus Baden-Wurttemberg 7: 239-271.
1638	Schwieberdingen, Hummelbrunnen	Germany	rural lesser	Roman	Manfred Rosch (database).
1639	Mühlacker, Enzberg	Germany	rural lesser	Roman	Manfred Rosch (database).
1640	Aalen, Aalbachtal	Germany	military intramural	Roman	Labor f. Archaobotanik LDA Hemmenhofen, unpublished data. In Manfred Rosch db and VHA 7 (1998): 109-125.
1641	Mainhardt	Germany	military extramural	Roman	Korber-Grohne/Rosch 1988 (Mainhardt). In Manfred Rosch db and VHA 7 (1998): 109-125.
1642	Oberndorf-Bochingen	Germany	rural elite	Roman	Manfred Rosch (database).
1643	Ladenburg, Wormser Str.	Germany	town minor	Roman	Manfred Rosch (database).
1644	Güglingen	Germany	rural nucleated	Roman	Rosch, M. 2004. Archaologische Ausgrabungen (database).
1645	Güglingen	Germany	ceremonial temple-shrine	Roman	Rosch, M. 2004. Archaologische Ausgrabungen (database).
1647	Lübeck	Germany	secular urban town major	medieval	Haaster, H. van 1994. Plant resources and environment in late medieval Lubeck. In Hall, A.R. and Kenward, H.K. (eds.), Urban-rural connexions: perspectives from environmental archaeology. Symposia of the Association for Environmental Archaeology No.12. Oxford: Oxbow Books: 79-84.
1651	Alms Lane 76, Norwich 302N	Great Britain	secular urban town major	medieval	Murphy P. 1985. The plant remains. In Atkin M, Carter A and Evans D H. Excavations in Norwich 1971-78. Part II. East Anglian Archaeol. Rep. 26. Norwich Survey: 228-34 and fiche Table 29.
1654	Baker Ln 68-9 Kings Lynn 1219 KLY	Great Britain	secular urban town minor	medieval	Franks J. 1977. Plant remains. In Clarke, H. and Carter, A. (eds.), Excavations in King's Lynn 1963-1970. Medieval Archaeol. Monograph Series 7. [Baker Lane]: 409-10.
1656	Castle Acre Castle 72-7, nr Swaffham	Great Britain	secular rural elite	medieval	Green F J. 1982. The plant remains. In Coad, J.G. and Streeten, A.D.F. (eds.), Excavtions at Castle Acre Castle, Norfolk 1972-7, Country House and castle of the Earls of Surrey. Archaeol. J. 139: 273-5.
1658	Chapel Lane Staith 78, Kingston-upon-Hull	Great Britain	secular urban town major	medieval	Underdown S. 1979. The plant remains. In Ayers, B. (ed.), Excavations at Chapel Lane Staith 1978. East Riding Archaeol. 5. Hull Old Town Series 3: 73-7.
1659	Clapton 87, Hackney, London	Great Britain	shipwreck	Early medieval	Vaughan, D. 1989. Plant remains associated with the longboat. In Marsden, P. (ed.),. A late Saxon logboat from Clapton, London Borough of Hackney.Int. J. Nautical Archaeol. and Underwater Exploration 18: 104-5.
1661	Close Gate 88-9, Newcastle upon Tyne	Great Britain	secular urban town major	medieval	Huntley J P. 1994. Plant remains. In Fraser, R., Maxwell, R. and Vaughan, J.E. (eds.), Excavations adjacent to Close Gate, Newcastle 1988-89. Arch. Aeliana 5th ser. 22: 134-44, 149-51.
1663	Cogges Manor Farm 86-94, nr Witney	Great Britain	secular rural village	Early medieval	Robinson M. 1996. The environmental evidence. In Rowley, T. and Steiner, M. (eds.), Cogges Manor Farm Witney Oxfordshire. The excavations from 1986-1994 and the Historic Building Analysis. University of Oxford Dept for Continuing Education/Oxfordshire County Council Dept of Leisure and Arts: 133 and Table 9: 138.
1664	Cowick 76, nr Snaith	Great Britain	secular rural elite	medieval	Hayfield C and Greig J. 1989. Excavation and salvage work on a moated site at Cowick, South Humberside, 1976. Yorkshire Archaeol. J. 61: 41-70.
1667	Crown Court 85-6, Newcastle upon Tyne	Great Britain	secular urban town major	medieval	Huntley J P. 1989. The plant remains. In O'Brien, C., Bown, L., Dixon, S., Donel, L., Gidney, L.J., Huntley, J.P., Nicholson, R. and Walton, P. (eds.), Excavations at Newcastle Quayside: the Crown Court site. Archaeol. Aeliana. 5th ser. 17: 180-2.

1669	Denny Abbey 68-75, Cambridge/Ely	Great Britain	religious monastery rural	medieval	Arthur, J.R.B. 1980. Seeds. In Christie, P.M. and Coad, J.G. (eds.), Excavations at Denny Abbey. Archaeol. J. 137: 267. [see also AML OS: 1805].
1671	Dominican Priory (Beverley) 86-9	Great Britain	religious monastery urban	medieval	Allison, E.P., Hall, A.R., Kenward, H.K., McKenna, W.J.B., Nicholson, C. and Man O'Connor, T.P. 1996. 4.2 Environmental evidence. In Foreman, M. (ed.), Further excavations at the Dominican Priory, Beverley, 1986-89. Sheffield Excavation Reports 4: Sheffield: 195-212 and Fiche 3.
1676	Dundas Wharf 82-3, Bristol	Great Britain	secular urban town major	medieval	Jones, J. and Watson, N. 1987. The early medieval waterfront at Redcliffe, Bristol. In Balaam, N.D., Levitan, B. and Straker, V. (eds). Studies in palaeoeconomy and environment in South-West England. BAR BS 181: 135-
1680	Eastgate (Beverley) 83-6, Beverley	Great Britain	secular urban town minor	medieval	McKenna, W.J.B. 1992. The environmental evidence. In Evans, D.H. and Tomlinson, D.G. (eds.), Excavations at 33-35 Eastgate, Beverley, 1983-86. Sheffield Excavation Reports 3: Sheffield: 227-33.
1683	Finck St 78, London, Lambeth	Great Britain	secular urban town major	medieval	Tyers I. 1988. Environmental evidence from Southwark and Lambeth. In Hinton, P. (ed.),. Excavations in Southwark and Lambeth 1973-76. London and Middlesex Archaeol. Soc. and Surrey Archaeol. Soc. Joint Publication 3. [Finck St 78]: 443-77.
1684	Fishergate (46-54) 85-6	Great Britain	various trading centre	Early medieval	Allison, E., Hall, A., Jones, A., Kenward, H. and Robertson, A. 1996. Report on plant and invertebrate remains. In Kemp, R.L. (ed.), Anglian settlement at 46-54 Fishergate. The Archaeology of York 7 (1). York: Council for British Archaeology: 85-107.
1685	Fishergate (46-54) 85-6 (Priory)	Great Britain	religious monastery urban	medieval	Allison, E., Hall, A., Jones, A., Kenward, H., O'Connor, T. and Robertson, A. 1996. Report on plant and invertebrate remains. Fiche 2:C-G. In: Kemp, R L (with Graves C P). The Church and Gilbertine Priory of St Andrew, Fishergate. The Archaeology of York 11 (2). York: Council for British Archaeology.
1686	Fishergate (46-54) 85-6 (Priory)	Great Britain	religious cemetery/burial	medieval	Allison, E., Hall, A., Jones, A., Kenward, H., O'Connor, T. and Robertson, A. 1996. Report on plant and invertebrate remains. Fiche 2:C-G. In: Kemp, R L (with Graves C P). The Church and Gilbertine Priory of St Andrew, Fishergate. The Archaeology of York 11 (2). York: Council for British Archaeology.
1688	Ford 60, Laverstock, nr Salisbury	Great Britain	secular rural lesser	Early medieval	Metcalfe C. 1969. Contents of the bowl. In Musty, J. (ed.), The excavation of two barrows, one of Saxon date, at Ford, Laverstock near Salisbury, Wilts. Antiq. J. 49: 109-10.
1689	Full St 72, Derby	Great Britain	secular urban town minor	medieval	Richardson, F. 1975. Seeds. In Hall, R. (ed.), Excavations at Full Street, Derby, 1972. Derbyshire Archaeol. J. 92 (1972): 43.
1690	Goss St 72, Goldsmiths House, Chester	Great Britain	secular urban town major	medieval	Wilson, D.G. 1975. Plant foods and poisons from medieval Chester. In Ward, T. and Wilson, D.G. (eds.), Goldsmith House site, Goss Street, Chester, 1972. J. Chester Archaeol. Soc. 58 (for 1972-3): 55-67.
1691	Hen Domen 60-74, Montgomery	Great Britain	secular rural elite	medieval	Greig, J., Girling, M. and Skidmore, P. 1982. The plant and insect remains. In Barker, P. and Higham, R. (eds.), Hen Domen Montgomery. A timber castle on the English-Welsh Border. I. Roy. Archaeol. Inst. London: 60-71.
1692	Hereford City 70	Great Britain	secular urban town major	medieval	Mitchell, G.F., McCutchen, H.J.A. and Hood, J.S.R. 1971. Seeds and fruit from pit 1. Note 2. In Shoesmith, R. (ed.), Hereford City excavations 1970. Trans. Woolhope Nat. Field Club 40: 235-6.
1693	High St/Blackfriargate (Hull) 73-6, Kingston-upon-Hull	Great Britain	secular urban town major	medieval	McKenna W J B. 1987. The environmental evidence. In Armstrong, P. and Ayers, B. (eds.), Excavations in High Street and Blackfriargate. East Riding Archaeol. 8. Hull Old Town Report Series 5: 255-61 and 298.
1694	Hungate (York) 50-1	Great Britain	secular urban town major	medieval	Godwin, H. and Bachem, K. 1961. Appendix III Plant Materials. In Richardson, K.M. (ed.), Excavations in Hungate, York. Archaeol. J. 116 (for 1959): 109-13.
1696	Kings Langley 74-6	Great Britain	secular rural elite	medieval	Paradine, P.J. 1977. Seeds from cess pit 47. In Neal, D.S. (ed.), Excavations at the Palace of King's Langley, Hertfordshire 1974-1976. Medieval Archaeol. 21: 136.
1697	Kirk Close, 86-100 High St, Perth	Great Britain	secular urban town minor	medieval	Robinson D. 1987. Botanical remains Kirk Close. In Holdsworth, P. (ed) Excavations in the Medieval Burgh of Perth 1979-1981. Soc. Antiq. Scotland Monograph Series No. 5. Edinburgh: 199-209.
1700	Mansion House 90, Newcastle upon Tyne	Great Britain	secular urban town major	medieval	Huntley J P. 1995. The plant remains. In Fraser, R., Jamfrey, C. and Vaughan, J. (eds.), Excavation on the site of the Mansion House, Newcastle, 1990. Archaeologia Aeliana (5th ser.) 23: 197-200, 201.
1702	Monkgate (Hull) 76-7	Great Britain	secular urban town major	medieval	McKenna W J B. 1987. The environmental evidence. In Armstrong, P. and Ayers, B. (eds.), Excavations in High Street and Blackfriargate. East Riding Archaeol. 8. Hull Old Town Report Series 5: 255-61 and 298.
1703	Mytongate 75	Great Britain	secular urban town major	medieval	Miller, N., Williams, D. and Kenward, H.K. 1993. Plant macrofossils and insect remains from Mytongate. In Evans, D.H. (ed). Excavations in Hull 1975-76. East Riding Archaeologist 4. Hull Old Town Report Series 2: 195-8
1705	New Inn Court 72, Oxford	Great Britain	secular urban town major	Early medieval	Robinson, M. 1983. Plant and invertebrate remains, New Inn Court. In Halpin, C. (ed.), Late Saxon evidence and excavation of Hinxey Hall, Queen Street, Oxford. Oxoniensia 48: 69 and fiche E14-F2.
1707	Oil Mill Lane, Berwick-upon-Tweed	Great Britain	secular urban town minor	medieval	Donaldson, A.M. 1982. Appendix III. Botanical remains. In Hunter, J.R. (ed.), Medieval Berwick-upon-Tweed. Archaeol. Aeliana 10: 90-1.
1708	Paisley Abbey 90	Great Britain	religious monastery rural	medieval	Dickson, C. 1996. Food, medicinal and other plants from the 15th century drains of Paisley Abbey, Scotland. In Behre, K-E. and Oeggl, K. (eds.), Early Farming in the Old World. Vegetation History and Archaeobotany 5:
1710	Pavement (6-8) 72, York	Great Britain	secular urban town major	medieval	Hall, A.R. and Williams, D. 1983. plant remains. In Hall, A.R., Kenward, H.K., Williams, D. and Greig, J.R.A. (eds) Environment and living conditions at two Anglo-Scandinavian sites. The Archaeology of York AY 14, 4. London: CBA: 157-225 and fiche 1.
1715	Pottergate (31-51) (Norwich) 73	Great Britain	secular urban town major	medieval	Murphy P. 1985. VII. Environmental reports. Plant macrofossils (excluding charcoal). In Atkin, M., Carter, A. and Evans, D.H. (eds.), Excavations in Norwich 1971-78. Part II. East Anglian Archaeol. 26. Norwich Survey: 68 and fiche Table 26: 8-85.
1716	Queen St (Aberdeen) Midden Area 73	Great Britain	secular urban town minor	medieval	Fraser, M. and Dickson, J.H. 1982. 7. Plant remains. In Murray, J.C. (ed.), Excavations in the Medieval Burgh of Aberdeen 1973-81. Soc. Antiq. Scotland Monograph Series 2. Edinburgh. [Queen St Midden]: 239-243 and
1717	Queen St (Hull) 76	Great Britain	secular urban town major	medieval	McKenna, W.J.B. 1993. The plant macrofossils from Queen Street. In Evans, D.H. (ed). Excavations in Hull 1975-76. East Riding Archaeologist 4, Hull Old Town Report Series 2: 198-201 and Fiche A7-C3.
1718	Queen St (Newcastle)	Great Britain	secular urban town major	medieval	Nicholson, R. and Hall, A.R. 1988. The plant remains. In O'Brien, C., Brown, L., Dixon, S. and Nicholson, R. (eds.), The origins of the Newcastle Quayside. Excavations at Queen Street and Dog Bank. The Society of Antiquaries of Newcastle upon Tyne, Monograph Series 3: 112-19.
1720	Scale Ln/Lowgate 74	Great Britain	secular urban town major	medieval	Underdown S. 1980. The Plant remains. In Armstrong, P. (ed.), Excavations in Scale Lane/Lowgate 1974. East Riding Archaeol. 6. Hull Old Town Series 4: 86-90.
1721	Sewer Ln 74	Great Britain	secular urban town major	medieval	Williams, D. 1977. The plant macrofossil contents of medieval Pits at Sewer Lane, Hull. In Armstrong, P. (ed.), Excavations in Sewer Lane, Hull 1974. East Riding Archaeol. 3. Hull Old Town Report Series 1: 18-32.
1723	Shackerley Mound 81	Great Britain	secular rural elite	medieval	Greig, J.R.A. 1987. Plant remains from Shackerley mound. In Andrews, D.D. (ed.), Shackerley Mound: a medieval moated site and its bridge. Trans. Shropshire Archaeol. Soc. 65: 29-32.
1725	Sidbury (39-47) (Worcester Barrel) 75	Great Britain	secular urban town minor	medieval	Greig, J.R.A. 1981. The investigation of a medieval barrel-latrine from Worcester. J. Archaeol. Sci. 8: 265-82.
1726	Southampton (various sites)	Great Britain	secular urban town major	medieval	Dimbleby, G.W. 1975. The seeds. [Cuckoo Lane, High St B, C]. In Platt, C. and Coleman-Smith, R. (eds.), Excavations in medieval Southampton. Vol I The excavation reports. Leicester: University Press: 344-6.
1727	Southgate 81-2, Hartlepool	Great Britain	secular urban town minor	medieval	Huntley, J.P. 1987. Summary report on the plant remains. In Young, G.A.B. (ed.), Excavations at Southgate, Hartlepool, Cleveland, 1981-2. Durham Archaeol. J. 3: 53-5 and Fiche 19-27.
1728	Speke Hall 81-2, nr Liverpool	Great Britain	secular rural elite	medieval	Kenward, H.K. and Tomlinson, P.R. 1992. Environmental analysis. In Higgins, D.A. (ed.), Speke Hall: Excavations in the West Range, 1981-82. J. Merseyside Archaeol. Soc. 8 (for 1988-89): 75-8.
1729	St Barnabas Hospital 77, Thetford	Great Britain	secular urban town minor	Early medieval	Murphy P. 1984. Plant macrofossils from Site 1092. In Rogerson, A. and Dallas, C. (eds.), Excavations in Thetford 1948-59 and 1973-70. East Anglian Archaeol. Report 22. [St Barnabas Hospital]: 194-5 Table 15.
1732	St Martin at Palace Plain 81, Norwich	Great Britain	secular urban town major	medieval	Murphy P. 1988. VII. Plant macrofossils. In Ayers, B. (ed.), Excavations at St. Martin-at-Palace Plain, Norwich, 1981. East Anglian Archaeol. 37: 118-26 and Fiche 2:A.12-14.
1734	St Paul St 77-8, Aberdeen	Great Britain	secular urban town minor	medieval	Fraser, M. and Dickson, J.H. 1982. 7. Plant remains. In Murray, J.C. (ed). Excavations in the Medieval Burgh of Aberdeen 1973-81. Soc. Antiq. Scotland Monograph Series 2. Edinburgh. [42 St Paul Street]: 239-243 and
1735	Staunch Meadow 80-7, Brandon	Great Britain	secular rural village	Early medieval	Carr, R.D., Tester, A. and Murphy, P. 1988. The Middle Saxon settlement at Staunch Meadow, Brandon. Antiquity 62: 371-7.
1736	Stockbridge 95, Newcastle upon Tyne	Great Britain	secular urban town major	medieval	Grinter, P. and Huntley, J.P. 2002. The plant remains. In Truman, L. (ed.), Excavations at Stockbridge, Newcastle upon Tyne, 1995. Archaeologia Aeliana 29: 210-17.
1738	Tanyard Ln 77	Great Britain	secular urban town minor	medieval	Hinton, M.P. 1979. The environmental samples. In Freke, D.J. (ed.), Excavations in Tanyard Lane, Steyning, 1977. Sussex Archaeol. Coll. 117: 147-9.
1739	Taunton Priory 80	Great Britain	religious monastery urban	medieval	Greig, J.R.A. and Osborne, P.J. 1984. Plant and insect remains at Taunton Priory. In Leach, P. (ed.),. The archaeology of Taunton: excavations and fieldwork to 1980. Gloucester: Western Archaeol. Trust Excavation
1741	The Bedern (Foundry), York	Great Britain	secular urban town major	medieval	Hall, A.R. and Kenward, H.K. 1993. Environmental evidence. In Richards, J.D. (ed.), The Bedern Foundry. The Archaeology of York AY 10(3). London: CBA: 157-9 and fiche 1.
1743	The Hamel 75-6	Great Britain	secular urban town major	medieval	Robinson, M. and Jones, M. 1980. Carbonised plant remains. In: Palmer N. (ed.), Beaker burial and medieval tenements at The Hamel, Oxford. Oxoniensia. 45: 124-225 and fiche 2 G07.
1745	Upper Bugle St 73-4, Southampton	Great Britain	secular urban town major	medieval	Hamilton-Dyer, S. 1986. A note on the sieved material from the garderobe layers A296-8. In Oxley, J. (ed). Excavations at Southampton Castle. Southampton Archaeological Monographs 3. Southampton City Museums: 37-
1747	Upper Thames St, City of London	Great Britain	secular urban town major	medieval	Willcox, G.H. 1980. The environmental evidence. In Hill, C., Millet, M. and Blagg, T. (eds.), The Roman riverside wall and monumental arch in London. London and Middlesex Archaeol. Soc. Special Paper 3: 78-82.
1748	Vicars Choral 70, Hereford	Great Britain	religious monastery urban	medieval	Williams, J.T. 1972. Plant remains in the 15th century cloisters of the college of the Vicar's Choral, Hereford. Medieval Archaeol. 15 (for 1971): 117-18 and Pl. XII.
1749	Walton 73-4, Aylesbury	Great Britain	secular rural village	Early medieval	Monk M. 1976. The seeds from P5. In Farley, M. (ed.), Saxon and medieval Walton, Aylesbury: excavations 1973-4. Rec. Buckinghamshire 20: 171-3 and [seed identifications] 23.
1750	Watergate St (12) 85, Chester	Great Britain	secular urban town major	medieval	Greig, J.R.A. 1988. Plant remains. In Ward, S. (ed.), Excavations at Chester: 12 Watergate Street 1985. Roman Headquarters to medieval row. rosvenor Museum Archaeol. Excavation and Survey Report 5. Chester: City
1752	Whitefriars St 79	Great Britain	secular urban town minor	Early medieval	Murphy P. 1983. Plant macrofossils. In Ayers, B. and Murphy, P. (eds.), A waterfront excavation at Whitefriars Street Car Park, Norwich 1979. East Anglian Archaeol. Report 17: 40-44 and fiche.
1753	Whitefriars St 79	Great Britain	secular urban town major	medieval	Murphy P. 1983. Plant macrofossils. In Ayers, B. and Murphy, P. (eds.), A waterfront excavation at Whitefriars Street Car Park, Norwich 1979. East Anglian Archaeol. Report 17: 40-44 and fiche.
1756	Woolster St 65-6, Plymouth	Great Britain	secular urban town major	medieval	Dennell, R.W. 1970. Seeds from a medieval sewer in Woolster Street, Plymouth. Economic Botany 24, 2: 151-4.
1758	Ulm, Grüner Hofes	Germany	secular urban town major	medieval	Wiethold, J. 1993. Botanische Gro?reste des hohen und spaten Mittelalters der Grabung Ulm, Donaustra?e. Erste Ergebnisse zu Ernahrung und Umwelt im hoch- und spatmittelalterlichen Ulm. Fundberichte Baden-Wurttemberg 18: 491-599.
1760	Einbeck	Germany	secular urban town major	medieval	Wiethold, J. 2002. Giff in de schottele. Strowe dar peper up ...Botanische Funde als Quellen zur mittel-alterlichen Ernahrungs- und Umweltgeschichte in Einbeck. In: A. Heege (Hrsg.), Einbeck im Mittelalter: eine archaologisch-historische Spurensuche. Studien zur Einbecker Geschichte 17: Oldenburg: 240-246.
1761	Augsburg	Germany	secular urban town major	medieval	Wiethold, J. 2001e. Archaobotanische Analysen an Bodenproben der Grabung "Beim Marzenbad 9"im Lechviertel Augsburgs. In: L. Bakker (Hrsg.), Augsburger Beitrage zur Archaologie, Sammelband 2000. Augsburger Beitrage zur Archaologie 3: Augsburg: 239-250.
1763	Greifswald, Markt 10	Germany	secular urban town major	medieval	Wiethold, J. and Schafer, H. 2001. Ein 1263/64 verkohlter Roggenvorrat vom Markt 10 in Greifswald. Archaologische Berichte aus Mecklenburg-Vorpommern 8: 180-193.
1764	Göttingen, Obere Karspüle 19	Germany	secular urban town major	medieval	Arndt, B. and Wiethold, J. 2001. Pflaume, Pfeffer, Paradieskorn. Archaologie in Niedersachsen 2001: Oldenburg 4, 35-39. Preliminary results published.
1766	Stralsund, Papenstraße (Hansestadt) Apollonienmarkt (HST-63)	Germany	secular urban town major	medieval	Fries, H. and Wiethold, J. 2003. Bemerkenswertes aus Stralsunds Altstadt – die Grabung Apollonienmarkt 6 und ihre Ergebnisse. Archaologische Berichte aus Mecklenburg-Vorpommern 10: 220-247.
1768	Rostock, Kröpeliner Straße 55-56	Germany	secular urban town major	medieval	Wiethold, J. 2000. Ernahrung und Umwelt im spatmittelalterlichen und fruhneuzeitlichen Rostock. Archaobotanische Ergebnisse der Analyse zweier Kloaken der Ausgrabung Kropeliner Str. 55-56/Kuhstra?e (Hotel Warnow). Bodendenkmalpflege in Mecklenburg-Vorpommern, Jahrbuch 47, 1999: 351-378.
1769	Büschdorf	Germany	ceremonial burial	Roman	Wiethold, J. 2000. Die Pflanzenreste aus den Aschengruben. Ergebnisse archaobotanischer Analysen. In Miron, A. (Hrsg.) Archaologische Untersuchungen im Trassenverlauf der Bundesautobahn 8 im Landkreis Merzig-Wadern. Bericht der Staatlichen Denkmalpflege im Saarland, Beiheft 4: Saarbrucken: 131-152.
1771	Sehndorf-Espen	Germany	rural elite	Roman	Wiethold, J. 2000. Pflanzenreste aus der gallo-romischen villa rustica von Sehndorf. In Miron, A. (Hrsg.), Archaologische Untersuchungen im Trassenverlauf der Bundesautobahn A 8 im Landkreis Merzig-Wadern. Bericht der Staatlichen Denkmalpflege im Saarland, Beiheft 4: Saarbrucken: 509-514.
1772	Rostock, Kröpeliner Straße 34-36	Germany	secular urban town major	medieval	Wiethold, J. 1999. Pflanzenreste des Mittelalters und der Fruhen Neuzeit aus zwei Rostocker Kloaken der Ausgrabung Kropeliner Stra?e 34-36/Kleiner Katthagen 4. Bodendenkmalpflege in Mecklenburg-Vorpommern 1998, Jahrbuch 46: 409-432.
1773	Borg	Germany	rural elite	Roman	Wiethold, J. 1998. Archaobotanische Aspekte der „Romanisierung" in Sudwestdeutschland: Bemerkun¬gen zur Unkrautflora romerzeitlicher Dinkelacker. In Muller-Karpe, A., Brandt, H., Jons, H., Krau?e, D. und Wigg, A. (Hrsg.) Studien zur Archaologie der Kelten und Romer in Mittel- und Westeuropa. Alfred Haffner zum 60 Geburtstag gewidmet. Internationale Archaologie - Studia Honoraria 4: Rahden/Westfalen: 531-551.
1775	Greifswald, Kuhstraße 23	Germany	secular urban town major	medieval	Wiethold, J. und Meyer, J. 2003. Getreidevorrate und Verarbeitungsabfalle aus einer Brandruine des 13. Jahrhunderts auf dem Grundstuck Kuhstra?e 23 in Greifswald. Bodendenkmalpflege in Mecklenburg-Vorpommern, Jahrbuch 50, 2002: 77-118.
1776	Pasewalk, Ueckerstraße 28-37	Germany	secular urban town minor	medieval	Hoffmann, V. und Wiethold, J. 1999. Pasewalks brennend interessante Geschichte. Archaologische und archaobotanische Untersuchungen in Pasewalk, Krs. Uecker-Randow, Ueckerstr. 28-37. Archaologische Berichte aus Mecklenburg-Vorpommern 6: 84-100.
1778	Greifswald, Badestraße 1a	Germany	secular urban town major	medieval	Ansorge, J., Igel, K., Schafer, H. und Wiethold, J. 2003. Ein Holzschacht aus der Baderstr.1 in Greifswald. Aus der materiellen Alltagskultur der sozialen Oberschicht einer Hansestadt in der 2. Halfte des 14. Jahrhunderts. Bodendenkmalpflege in Mecklenburg-Vorpommern, Jahrbuch 50, 2002: 119-157.
1780	Culip IV, Port de la Selva	Spain	shipwreck	Roman	Buxo, R. 1989. Estudi de restes carpologiques recuperades a Culip IV In Nieto, J.(ed.), Excavacions arqueologiques subaquatiques a Cala Culip (I) 9: 255-257.
1781	Culip IV, Port de la Selva	Spain	shipwreck	medieval	Buxo, R. 1989. Estudi de restes carpologiques recuperades a Culip VI. In Nieto, J. (ed.), Excavacions arqueologiques subaquatiques a Cala Culip (I) 9: 311-316.
1783	Els Tolegassos, Viladamat	Spain	rural elite	Roman	Buxo, R. i Catala, M. 1989. Restes paleocarpologiques del jaciment Els Tolegassos. In Casas, J. (de.) Els Tolegassos i l'Olivet d'en Pujol, Serie Monografica, 10, Centre d'Investigacions Arqueologiques de Girona: 177-
1784	L'Esquerda, Roda de ter	Spain	secular rural village	Early medieval	Ollich, I., I Cubero, C. 1991. El graner de l'Esquerda: un conjunt tecnologic agrari a la Catalunya Medieval. Actes del 1r i 2n Curs d'Arqueologia d'Andorra, Andorra la Vella: 33-47. Ollich, I. i Cubero, C. 1992. Paleocarpologia i Agricultura a l'Edat Mitjana: l'excavacio i estudi d'un graner medieval a Catalunya, III Congreso de Arqueologia Medieval Espanola, Oviedo: 73- 85.

1786	Iesso, Guissona	Spain	town minor	Roman	Buxo, R., Canal, D., Guitart, J., Pera, J., Pique, R. 2004. Excavacio de dos pous d'epoca romana a Guissona. L'explotacio dels recursos vegetals a la ciutat d'Iesso als segles I aC-IIdC, Iesso I. Miscel·lania arqueologica, Barcelona-Guissona: 213-278.
1788	Roc d'Enclar, Santa Coloma	Andorra	secular rural village	Early medieval	Buxo, R. i Gonzalez, I. 1997. L'agricultura i l'alimentacio vegetal a partir de llavors i fruits, Roc d'Enclar (Andorra), 4, Ministerio de Cultura, Gobierno de Andorra: Andorra: 461-482.
1790	Vilauba, Camós	Spain	rural elite	Roman	Buxo, R. 1999. Estudi de les restes vegetals. In Castanyer, P., Tremoleda, J. (eds.), La villa romana de Vilauba. Un exemple de l'ocupacio i explotacio romana del territori a la comarca del Pla de l'Estany, Girona, Palahi: 365-370. Green, F.J. 1982. Environmental evidence. Late Roman villa of Vilauba. The Antiquaries Journal 62: 274-275.
1791	Lleida city	Spain	secular urban town minor	Early medieval	Alonso, N. 2005. Agriculture and food from the Roman to the Islamic Period in the North-East of the Iberian peninsula: archaeobotanical studies in the city of Lleida (Catalonia, Spain). Vegetation History and Archaeobotany, 10.1007/s00334-005.0089-4.
1792	Calle Santiago	Spain	town major	Roman	Pena-Chocarro, L. and Zapata-Pena, L. 1996. Los recursos vegetales en el mundo romano: estudio de los macrorrestos botanicos del yacimiento Calle Santiago de Irun (Guipuzcoa). Archivo Espanol de Arqueologia 69: 119-134. Zapata-Pena,L. and Pena-Chocarro, L. 1997. Higos, ciruelas y nueces: Aportacion de la arqueobotanica al estudio del mundo romano. Isturitz 9: 45-52. Pena-Chocarro, L. and Zapata , L. in press. Trade and new plant foods in the Western Atlantic coast: the Roman port of Irun (Basque Country). Conference: Mar Exterior. L'Atlantico Occidentale in Eta Romana. Pisa, Italy
1793	Eberswalde, Töpferstraße/Breite straße	Germany	secular urban town minor	medieval	Wiethold, J. 2005. Archaobotanische Untersuchungen: Botanische Analysen zur mittelalterlichen Ernahrungs- und Umweltgeschichte in Eberswalde. In Eberswalder Ausgrabungsgeschichten. Archaologie und Geschichte einer markischen Stadt [Begleitheft Ausstellung Eberswalde 2005]: 47-54. Includes unpublished results.
1795	Wehringen, 'Obere-Point'	Germany	secular rural village	Early medieval	Wiethold, J. 2005. Fruher Ackerbau und pflanzliche Ernahrung auf Wehringer Gemarkung im Laufe von 1500 Jahren. Archaobotanische Untersuchungen an Bodenproben vom Fundplatz Wehringen-"Interquell". In Babucke, V., Buttner, A. Czyzch, W., Dietrich, H., Herzig, F., Lore, F. und Wiethold, J. (eds.), Grubenhaus und Brettchenweber. Archaologische Entdeckungen in Wehringen. Archaologie in Bayerisch-Schwaben 1:
1796	Wehringen, 'Obere-Point'	Germany	rural lesser	Roman	Wiethold, J. 2005. Fruher Ackerbau und pflanzliche Ernahrung auf Wehringer Gemarkung im Laufe von 1500 Jahren. Archaobotanische Untersuchungen an Bodenproben vom Fundplatz Wehringen-"Interquell". In Babucke, V., Buttner, A. Czyzch, W., Dietrich, H., Herzig, F., Lore, F. und Wiethold, J. (eds.), Grubenhaus und Brettchenweber. Archaologische Entdeckungen in Wehringen. Archaologie in Bayerisch-Schwaben 1:
1797	Vilauba, Camós	Spain	secular rural elite	Early medieval	Cubero, C.C. 1992. Paleocarpologia y fuentes escritas clasicas: dos vias de conocimiento de la agricultura antigua. Aequeologia medioambiental a traves de los macrorrestos vegetales. Palacio de exposiciones y Congresos Madrid, 7 y 8 de Noviembre de 1991. Asociacion Cultyura Viva: 1-36.
1798	Six Dials, Hamwic	Great Britain	various trading centre	Early medieval	Biddle, B. 1997.Seeds. In Andrews, P. (ed.), Excavations at Hamwic. 2. CBA Research Report 109. York: CBA: 245-6.
1799	King Edward St., Perth	Great Britain	secular urban town minor	medieval	Robinson, D. 1995. The botanical remains. In Smith, C. (ed.), Mill Street and King Edward Street. 990-3.In Bowler, D., Cox, A. and Smith, C. (eds.), Four excavations in Perth, 1979-84. Proc. Soc. Antiq. Scotland 125: 917-
1800	Hartlepool 84-5, Church Close	Great Britain	religious monastery rural	Early medieval	Huntley, J. 1988. The botanical remains. In Daniels, R. (ed.), The Anglo-Saxon Monastery at Church Close, Hartlepool, Cleveland. Archaeol. J. 145: 201-2.
1801	80-6 High St, Perth	Great Britain	secular urban town minor	medieval	Fairweather, A. 1997. Botanical remains. In Moloney, C. and Coleman, R. (eds.), The development of a medieval street frontage: the evidence from excavations at 80-86 High Street, Perth. PSAS 127: 773-4.
1802	Worcester Barrel, 39-47 Sidbury	Great Britain	secular urban town major	medieval	Greig, J.R.A. 1981. The investigation of a medieval barrel-latrine from Worcester. J. Archaeol. Sci. 8: 265-82.
1803	Holly tree Farm, Pott Row, Grimston (site 24054)	Great Britain	various industrial site	medieval	Fryer, V. and Murphy, P. 1994. II. Plant macrofosiils and molluscs. In Leach, M. (ed.), The Late Saxon and Medieval Pottery Industry of Grimston, Norfolk: Excavations 1962-92. East Anglian Archaeology, 64. Field Archaeology Division: Norfolk Museums Service: 107-8.
1804	Ménestreau, Entrains-sur-Nohain	France	ceremonial temple-shrine	Roman	Wiethold, J. unpublished results.
1805	Langres 'Freudenberg'	France	ceremonial temple-shrine	Roman	Wiethold, J. unpublished results.
1806	Otterbach, Kaiserslautern	Germany	military extramural	Roman	Wiethold, J. in press. Hirse, Hanf und Hohldotter – Pflanzenfunde aus einem romischen Brunnen des 2.-3. Jh. n. Chr. von Kaiserslautern-Otterbach. Archaologie in der Pfalz. Jahresbericht 2002/2003.
1807	Augsburg, Moritzplatz 6	Germany	secular urban town major	medieval	Wiethold, J. Hirse, Hasenohr und Herzgespann. Archaobotanische Untersuchungen zu Ernahrung und Umwelt im Mittelalter und in der Fruhen Neuzeit. S. Codreanu-Windauer/A. Buttner (Hrsg.), 25 Jahre Jahre Gesellschaft fur Archaologie in Bayern. In press and unpublished results.
1808	Saarbrücken, St Arnual	Germany	religious monastery urban	medieval	Wiethold, J. in press. Archaobotanische Analysen an spatromischen und mittelalterlichen Pflanzenresten aus dem Kreuzgang der Stiftskirche von St. Arnual, Stadt Saarbrucken. In: H.-W. Herrmann (Hrsg.), Leben und Sterben in einem mittelalterlichen Kollegiatstift. Ergebnisse archaologischer und baugeschichtlicher Untersuchungen im Kreuzgangbereich des Stiftes St. Arnual. Veroffentlichungen des Institutes fur Landeskunde im
1809	Maison des Chapelains, Cosne-sur-Loire	France	town minor	Roman	Wiethold, J. 2001. Recherches archeobotaniques in France Centre-Est. Campagne 2001. In Guichard, V. (dir.), Rapport annuel d'acitivite scientifique 2001 du Centre archeologique europeen du Mont Beuvray: Glux-en-
1811	Saint-Apollinaire, Val Sully, near Dijon	France	secular rural lesser	medieval	Wiethold, J. 1998. Annex 2. Macro-restes vegetaux provenant du site medieval « Saint-Apollinaire, Val Sully » (Cote d'Or). In Chopelain, P. (ed.), "Val Sully", Saint-Apollinaire. L'occupation d'un terroir de La Tene a l'epoque moderne (DFS)(Saint-Apollinaire, Dijon, Nancy): 4.
1813	Varois-et-Chaignot, Les Epenottes	France	rural lesser	Roman	Wiethold, J. 2004. Restes de plantes detrempees et carbonisees de puits et de autres structures gallo-romaines et medievales. In Card, Ch. (dir.), Varois-et-Chaignot, Les Epenottes. Rapport final de fouilles (D.F.S.), fevrier – mai 2002: Dijon: 179-199.
1814	Varois-et-Chaignot, Les Epenottes	France	secular rural lesser	medieval	Wiethold, J. 2004. Restes de plantes detrempees et carbonisees de puits et de autres structures gallo-romaines et medievales. In Card, Ch. (dir.), Varois-et-Chaignot, Les Epenottes. Rapport final de fouilles (D.F.S.), fevrier – mai 2002: Dijon: 179-199.
1815	Marlenheim "La Peupleraie 2", Alsace	France	secular rural lesser	Early medieval	Wiethold, J. 2002. Analyse de Macro-restes vegetaux carbonises des structures medievales sur le site de "La Peupleraie" a Marlenheim (Bas-Rhin). In Chatelet, M. (dir.), Marlenheim "La Peupleraie 2". Sur les marges d'une villa romaine et d'un habitat du haut Moyen Age (6e-12e siecle). D.F.S. de sauvetage urgent 23/07/2001 – 17/09/2001. SRA Alsace, Strasbourg: 8.
1817	Mirebeau-sur-Bèze La Fenotte	France	ceremonial temple-shrine	Roman	Wiethold, J. 2004. Les analyses archeo-botaniques. In Joly, M. et Barral, Ph. (dir.), Mirebeau-sur-Beze. La Fenotte (21 416 003)(Cote d'Or). Fouille programmee triennale 2002-2004 sous la responsabilite de Martine Joly. Rapport triennal de la campagne 2002-2004. Vol. 2 Documentation: Besancon, Dijon: 335-338.
1818	Speyer, Armbrustr. Brunnen	Germany	secular urban town major	medieval	Wiethold, J. unpublished, preliminary results.
1820	Magdeburg, Hunderwasserhaus frühere Nikolaikirche	Germany	secular urban town major	medieval	Hellmund, M. 2005. Pflanzenfunde aus dem mittelalterlichen Magdeburg-Der Abfallschacht eines "Grafenhofes". In Schaufenster der Archaologie-Neues aus der archaologischen Forschung in Magdeburg: 72-77.
1823	Seehausen	Germany	religious monastery rural	medieval	Lange von, E. 1988. Obstreste aus dem Zisterzienserkloster Seehausen, Kreis Prenzlau. Gleditschia 161: Berlin, Marz: 3-24. and Lange, E. 1989. Obstreste aus dem Zisterzienserkloster Seehausen, Kreis Prenzlau. Kurzbericht. Mitteilungen Bezirksfachausschu? Ur-u. Fruhgesch. Neubrandenburg 36: 73-79.
1824	Göttingen, Weender Straße	Germany	secular urban town major	medieval	Hellwig, M. 1997. Plant remains from two cesspits (15th and 16th c AD) and a pond (13thc AD) from Gottingen, southern Lower Saxony, Germany. Vegetation History and Archaeobotany 6: 105-116.
1826	Göttingen, Johannisstraße 28	Germany	secular urban town major	medieval	Hellwig, M. 1997. Plant remains from two cesspits (15th and 16th c AD) and a pond (13thc AD) from Gottingen, southern Lower Saxony, Germany. Vegetation History and Archaeobotany 6: 105-116.
1827	Cösitz	Germany	secular rural elite	Early medieval	Lange, E. von and Kohler, H. 1982. Kulturpflanzen und Unkrauter aus den Grabungen Cositz. Kr. Kothen (8/9 Jh.), und Tilleda, Kr. Sangerhausen (10-12 Jh.). Jschr. Mitteldt. Vorgesch. 65: 249-263.
1828	Kempten, Cambodunum	Germany	ceremonial burial	Roman	Willerding, U. 1978. Die Pflanzenreste. In Mackensen, M. (ed.), Cambodunumforschungen IV: Das Romische Graber und Grabanlagen des 1. und 4. Jahrhunderts. Bayerisches Landesamt fur Denkmalpflege. Im Verlag Michael Lassleben Kallmunz/Opf.
1829	Höxter	Germany	secular urban town minor	medieval	Willerding, U. 1986. Palao-ethnobotanische befunde zum Mittelalter in Hoxter/Weser. Neue Ausgrabungen und Forschungen in Niedersachsen, 17: Hildesheim: 319-346.
1831	Amorbach, Templerhaus	Germany	secular urban town minor	medieval	Willerding, U. 1991. Palao-ethnobotanische Untersuchung von Baumateralien im Templerhaus. In Schmidt, W. (ed.), Das Templerhaus in Amrbach. Arbeitshefte des Bayerischen Landesamtes fur Denkmalpflege 53: 73-
1832	Altenberg	Germany	secular urban town minor	medieval	Willerding, U. 1998. 6. Pflanzen- und Seilreste des 13 Jahrhunderts aus der Bergbausiedlung Altenberg im Siegerland. Band 2. Sonderdruck aus Der Altenberg Bergwerk und Siedlung aus dem 13 Jahrhundert im Siegerland: 183-191. and Vierck, S. 1998. 5. Pflanzliche Funde. In Dahm, C., Lobbedey, U. und Weisgerber, G. (eds.), Der Altenberg. Bergwerk und Siedlung aus dem 13. Jahrhundert im Siegerland. Denkmalpflege und
1833	Corvey	Germany	religious monastery rural	Early medieval	Willerding, U. 2000. Karolingische und Hochmittelalterliche Pflanzenreste aus Convey. In Stephan, H-G. (ed.), Studien zur Siedlungsenticklung und - struktur von Stadt und reichskloster Correy (800-1670). Eine Gesamtdarstellung auf der Grundlage archaologischer und historischer Quellen. Wachholtz Verlag Neumunster: 593-621.
1834	Corvey	Germany	secular urban town minor	medieval	Willerding, U. 2000. Karolingische und Hochmittelalterliche Pflanzenreste aus Convey. In Stephan, H-G. (ed.), Studien zur Siedlungsenticklung und - struktur von Stadt und reichskloster Correy (800-1670). Eine Gesamtdarstellung auf der Grundlage archaologischer und historischer Quellen. Wachholtz Verlag Neumunster: 593-621.
1835	Aachen	Germany	town minor	Roman	Knorzer, K-H. 1967. Romerzeitliche Pflanzenfunde aus Aachen. In Archaeo-Physika 2. Untersuchungen Subfossiler Pflanzlicher Grossreste im Rheinland. Bohlau Verlag Koln Graz: 39-64.
1836	Xanten, Ulpia Traiana	Germany	town major	Roman	Hinz, H. mit einem Exkurs von K-H Knorzer 1967. 3. Bericht uber die Ausgrabungen in der Colonia Ulpia Traiana bei Xanten. Sonderdruck aus Bonner Jahrb. 167: 325-46.
1840	Braunschweig	Germany	secular urban town major	medieval	Hellwig, M. 1990. Palaoethnobotanische Untersuchungen an mittelalterlichen und fruhneuzeitlichen Pflanzenresten aus Braunschweig. Dissertationes Botanicae. Band 156. J. Cramer.Berlin. Stuttgart.
1844	Duisburg, Alte Markt	Germany	secular urban town major	Early medieval	Knorzer, K-H. 1983. Mittelalterliche Pflanzenfunde unter dem Alten Marktin Duisburg.
1846	Duisburg, Alte Markt	Germany	secular urban town major	medieval	Knorzer, K-H. 1983. Mittelalterliche Pflanzenfunde unter dem Alten Marktin Duisburg.
1847	Hambach 382	Germany	rural elite	Roman	Knorzer, K-H. 1984. Veranderungen der Unkrautvegetation auf rheinischen Bauernhofen seit der Romerzeit. Bonner Jahrb. 184: 479-503.
1848	Mönchengladbach-Giesenkirchen, Ahren 46	Germany	secular rural lesser	medieval	Knorzer, K-H. 1984. Veranderungen der Unkrautvegetation auf rheinischen Bauernhofen seit der Romerzeit. Bonner Jahrb. 184: 479-503.
1849	Köln, Breslauer Platz	Germany	town major	Roman	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1850	Köln, Martinsviertel 1973/4	Germany	town major	Roman	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1851	Köln, Hochsammler Domhof	Germany	town major	Roman	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1852	Köln, Domumgebung	Germany	town major	Roman	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1853	Köln, Kattenbug	Germany	town major	Roman	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1854	Köln, Josef-Haubrich-Hof	Germany	town major	Roman	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1855	Köln, Breslauer Platz	Germany	secular urban town major	Early medieval	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1856	Köln, Martinsviertel	Germany	secular urban town major	Early medieval	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1858	Köln, Martinsviertel	Germany	secular urban town major	medieval	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1860	Köln, Friesenplatz	Germany	secular urban town major	medieval	Knorzer, K-H. 1987. Geschichte der Synanthropen Vegetation von Koln. Kolner Jahrbuch fur Vor- und Fruhgeschichte 20, Seite: 271-388. [Includes results from previous publications on Koln].
1861	Weisweiler Pattern, near Aldenhoven	Germany	rural elite	Roman	Knorzer, K-H. 1989. Pflanzenreste und Vegetation. In Gaitzsch, W., Knorzer, K-H, Kohler, F., Kokabi, M., Meuers-Balke, J., Neyses, M. and Radermacher, H. (eds.), Archaologische und naturwissen-schaftliche Beitrage zu einem romischen Brunnensediment aus der rheinischen Lo?borde: 252-69.
1862	Königshoven	Germany	secular urban town minor	medieval	Knorzer, K-H. 1990. Botanische Untersuchung von Sedimenten aus zwei Brunnen in Konigshoven. Archaologie im Rheinland 1987. Rheinland-Verlag GmbH. Koln: 170-4.
1864	Krefeld-Oppum	Germany	secular rural village	Early medieval	Knorzer, K-H. 1990. Landwirtschaft und Vegetation eines mittelalterlichen Dorfes bei Krefeld-Oppum. Bonner Jahrbucher 190: 403-420.
1865	Krefeld-Oppum	Germany	secular rural village	medieval	Knorzer, K-H. 1990. Landwirtschaft und Vegetation eines mittelalterlichen Dorfes bei Krefeld-Oppum. Bonner Jahrbucher 190: 403-420.
1866	Duisburg	Germany	secular urban town major	Early medieval	Knorzer, K-H. 1991. Vorbericht uber palao-ethnobotanische Untersuchungen in Duisburg. In Krause, G. Stadtarchaologie in Duisburg 1980-1990. Duisburger Forschungen Band 38: 223-236.
1867	Krefeld-Linn	Germany	secular urban town minor	medieval	Knorzer, K-H. and Reichmann, C. 1991. Pflanzenfunde aus den mittelalterlichen Stadtgraben von Krefeld-Linn: 15-35.
1869	Wachtendonk	Germany	secular rural elite	medieval	Knorzer, K-H. 1991. Pflanzliche Gro?reste von der Burg Wachtendonk. Bonner Jahrbucher 191: 503-11
1871	Duisburg	Germany	secular urban town major	medieval	Knorzer, K-H. 1991. Vorbericht uber palao-ethnobotanische Untersuchungen in Duisburg. In Krause, G. Stadtarchaologie in Duisburg 1980-1990. Duisburger Forschungen Band 38: 223-236.

1873	Siegburg	Germany	secular urban town minor	medieval	Knorzer, K-H. 1994. Mittelalterliche und neuzeitliche Pflanzenreste aus der Stadt Siegburg. Heimatblatter des Rhein-Sieg-Kreises. Jahrbuch des Geschichts-und Altertumsvereins fur Siegburg und den Rhein-Sieg-Kreis e.V. 62 Jahrgang. Rheinlandia Verlag: 153-75.
1875	Xanten, Colonia Ulpa Traiana, Insula 39	Germany	town major	Roman	Knorzer, K-H., Meurers-Balke, J. and Tegtmeier, U. 1995. Archaobotanische Untersuchungen zu einem Brunnen in der CUT, Insula 39. Xantener Berichte. Band 6. Rheinland-Verlag. Koln: 111-18.
1877	Duisburg	Germany	secular urban town major	medieval	Knorzer, K-H. 1996. Ein spatmittelalterlicher Getreidevorratsfund in Duisburg. Ley, A. Zwischen Beekstra?e und Steinscher Gasse Duisburger Altstadtgraburg 1992-94. Aragologie und Denkmalpflege in Duisburg. Heft 2.
1879	Crenwick, Berloz/Rosoux	Belgium	secular rural village	Early medieval	Laurent Ch. 2001. Berloz/Rosoux-Crenwick: resultats des analyses micro-archeologiques et carpologiques pour le site merovingien de Crenwick. Chronique de l' Archaeologie Wallonne 9: 115.
1880	Château de Mons	Belgium	secular rural elite	medieval	Laurent Ch. 1998. Mons: le chateau comtal, analyses micro-archeologiques et carpologiques. Chronique de l' Archaeologie Wallonne 6: 30-1.
1881	Rue Sainte-Catherine, Bruxelles	Belgium	secular urban town major	medieval	Laurent Ch. 1995. 2. Etudes archeobotanique: carpologie. In Degre, S. (dir.) Brasseries au Quartier Sainte-Catherine. Ministere de la Region de Bruxelles-Capitale. Bruxelles: 165-171.
1882	Wesel, Großer Markt	Germany	secular urban town minor	medieval	Knorzer, K-H., Krull, H-P. and Wirth, S. 1995. Der Gro?e Markt zu Wesel- Leder-, Pflanzen- und knochenfunde der Grabungen 1987/88. Bonner Jahrbucher 195: 371-423.
1883	Hambach 500	Germany	rural elite	Roman	Knorzer, K-H. 1997. Romische und mittelalterliche Pflanzenfunde. In Heege, A. (ed.), Hambach 500. Villa rustica und fruh-bis hochmittelalterliche Siedlung Wustweiler (Gemeinde Niederzier), Kreis Duren. Rheinland-
1884	Hambach 500	Germany	secular rural lesser	medieval	Knorzer, K-H. 1997. Romische und mittelalterliche Pflanzenfunde. In Heege, A. (ed.), Hambach 500. Villa rustica und fruh-bis hochmittelalterliche Siedlung Wustweiler (Gemeinde Niederzier), Kreis Duren. Rheinland-
1885	Al Claus, Varen	France	secular rural lesser	Early medieval	Durand, F. Varen "Al Claus"(81), Bilan triennial (Unpublished report).
1886	Al Claus, Varen	France	secular rural lesser	medieval	Durand, F. Varen "Al Claus"(81), Bilan triennial (Unpublished report).
1887	Köln, Plectrudengasse	Germany	town major	Roman	Knorzer, K-H. 1998. Romerzeitliche Pflanzenfunde. In Knorzer, K-H. and Neus, S. Aragologische Untersuchungen an der Plecteudengasse in Koln. Kolner Jahrbuch 31: 445-80.
1888	Oldenburg, Markthallenviertel	Germany	secular urban town minor	medieval	Kucan, D. 1998. Zur Ernahrungsgeschichte des Spatmittelalters und der fruhen Neuzeit in Oldenburg anhand der botanischen Untersuchungen der Altstadtgrabungen. Probleme der Kustenforschung im sudlichen Nordseegebiet. Band 25. ISENSEE VERLAG- OLDENBURG.
1890	Oberaden	Germany	military intramural	Roman	Kucan, D. 1992. Die Pflanzenreste aus dem romischen Militarlager Oberaden. Bodenaltertumer Westfalens 27. Das Romerlager in Oberaden III. Die Ausgrabungen im nordwestlichen Lagerbereich und weitere Baustellenuntersuchungen der Jahre 1962-1988. Aschendorff Munster: 237-81.
1892	Braunschweig, Kohlmarkt	Germany	secular urban town major	Early medieval	Willerding, U. 1985. Palao-ethnobotanische Befunde uber Ernahrung und Umwelt im Mittelalter Braunschweigs. In Rotting, H. Stadtarchaologie en Braunschweig. 1976-1984. Forschungen der Denkmalpflege in Niederachsen 3: 201-214. Preliminary results from various authors.
1893	Braunschweig, Schloßplat	Germany	secular urban town major	Early medieval	Willerding, U. 1985. Palao-ethnobotanische Befunde uber Ernahrung und Umwelt im Mittelalter Braunschweigs. In Rotting, H. Stadtarchaologie en Braunschweig. 1976-1984. Forschungen der Denkmalpflege in Niederachsen 3: 201-214. Preliminary results from various authors.
1894	Braunschweig, Petersilienstraße	Germany	secular urban town major	medieval	Willerding, U. 1985. Palao-ethnobotanische Befunde uber Ernahrung und Umwelt im Mittelalter Braunschweigs. In Rotting, H. Stadtarchaologie en Braunschweig. 1976-1984. Forschungen der Denkmalpflege in Niederachsen 3: 201-214. Preliminary results from various authors.
1895	Braunschweig, Packhof	Germany	secular urban town major	medieval	Willerding, U. 1985. Palao-ethnobotanische Befunde uber Ernahrung und Umwelt im Mittelalter Braunschweigs. In Rotting, H. Stadtarchaologie en Braunschweig. 1976-1984. Forschungen der Denkmalpflege in Niederachsen 3: 201-214. Preliminary results from various authors.
1896	Braunschweig, Kleine Burg	Germany	secular urban town major	medieval	Willerding, U. 1985. Palao-ethnobotanische Befunde uber Ernahrung und Umwelt im Mittelalter Braunschweigs. In Rotting, H. Stadtarchaologie en Braunschweig. 1976-1984. Forschungen der Denkmalpflege in Niederachsen 3: 201-214. Preliminary results from various authors.
1898	Friesheim	Germany	rural elite	Roman	Knorzer, K-H. 1971. Romerzeitliche getreideunknauter von Kalkreichen Boden Rhoeinische Ausgrabungen 10. Beitz. Z. Arch. des Rom. Rheinlandes II: Dusseldorf: 467-81.
1899	Neuss	Germany	military intramural	Roman	Knorzer, K-H. 1970. Novaesium IV Romerzeitliche Pflanzenfunde aus Neuss. Limesforschungen Band 10. Verlag. Gebr. Mann. Berlin.
1900	Neuss, Klarissenstraße	Germany	secular urban town major	medieval	Knorzer, K-H. 1984. Aussagemoglichkeiten von palaoethnobotanischen Latrinenuntersuchungen. The prospects of the palaeoethnobotanical examination of cesspits. 6th Symposium Palaeoethnobotany/Groningen. In VanZeist, W. and Casparie, W.A. Plants and Ancient Man: studies in palaeoethnobotany: 331-38.
1901	Brüggen	Germany	secular rural elite	medieval	Knorzer, K-H. 1984. Aussagemoglichkeiten von palaoethnobotanischen Latrinenuntersuchungen. The prospects of the palaeoethnobotanical examination of cesspits. 6th Symposium Palaeoethnobotany/Groningen. In VanZeist, W. and Casparie, W.A. Plants and Ancient Man: studies in palaeoethnobotany: 331-38.
1902	Aachen	Germany	secular urban town major	medieval	Knorzer, K-H. 1984. Aussagemoglichkeiten von palaoethnobotanischen Latrinenuntersuchungen. The prospects of the palaeoethnobotanical examination of cesspits. 6th Symposium Palaeoethnobotany/Groningen. In VanZeist, W. and Casparie, W.A. Plants and Ancient Man: studies in palaeoethnobotany: 331-38.
1903	Neuss, Peinturm	Germany	secular urban town major	medieval	Knorzer, K-H. 1984. Aussagemoglichkeiten von palaoethnobotanischen Latrinenuntersuchungen. The prospects of the palaeoethnobotanical examination of cesspits. 6th Symposium Palaeoethnobotany/Groningen. In VanZeist, W. and Casparie, W.A. Plants and Ancient Man: studies in palaeoethnobotany: 331-38.
1904	Neuss, Oberstrasse	Germany	secular urban town major	medieval	Knorzer, K-H. 1984. Aussagemoglichkeiten von palaoethnobotanischen Latrinenuntersuchungen. The prospects of the palaeoethnobotanical examination of cesspits. 6th Symposium Palaeoethnobotany/Groningen. In VanZeist, W. and Casparie, W.A. Plants and Ancient Man: studies in palaeoethnobotany: 331-38.
1905	Krefeld- Hüls	Germany	rural lesser	Roman	Knorzer, K-H. 1987. Pflanzliche Gro?reste. In Frahm, J-P., Friedrich, H., Knorzer, K-H., Rehagen, H-W, Rehnelt, K. and Reichmann, Ch. (eds.), Die Umwelt eines romischen Brunnens. Bonner Jehrb. 187: 511-521.
1906	Neuss, Rathaus	Germany	secular urban town major	medieval	Knorzer, K-H. 1988. Pflanzenreste aus einer spatmittelalterlichen schachtlatrine in Neuss.
1907	Neuss, Neumarkt	Germany	secular urban town major	medieval	Knorzer, K-H. 1988. Pflanzenreste aus einer spatmittelalterlichen schachtlatrine in Neuss.
1909	Ausgburg, Äuberes Pflaffengäßchen II	Germany	military intramural	Roman	Wartenberg, N. 2001. Pflanzliche Ernahrung im romischen Augsburg. Eine archaobotanische Analyse: 71-104.
1910	Hans-Nagel-Gasse 3	Germany	town major	Roman	Wartenberg, N. 2001. Pflanzliche Ernahrung im romischen Augsburg. Eine archaobotanische Analyse: 71-104.
1911	Hinter dem Schwalbeneck 5-9, Ausgburg	Germany	town major	Roman	Wartenberg, N. 2001. Pflanzliche Ernahrung im romischen Augsburg. Eine archaobotanische Analyse: 71-104.
1912	Ausgburg, Jesuitengasse 14	Germany	town major	Roman	Wartenberg, N. 2001. Pflanzliche Ernahrung im romischen Augsburg. Eine archaobotanische Analyse: 71-104.
1913	Ausgburg, Kornhausgasse 4	Germany	military extramural	Roman	Wartenberg, N. 2001. Pflanzliche Ernahrung im romischen Augsburg. Eine archaobotanische Analyse: 71-104.
1914	37 High St., Pershore	Great Britain	secular urban town minor	medieval	Moffett L. 1994. Plant remains. In Hughes, G. and Litherland, S. (eds.), Excavations to the rear of 37 High Street, Pershore, 1992. Trans. Worcestershire Archaeol. Soc. 14: 165-6.
1915	Howards Lane, Wareham	Great Britain	secular urban town minor	medieval	Carruthers W. 1996. The charred plant remains. In Harding, P.A., Mepham, L. and Smith, R.J.C. (eds.), The excavation of 12th-13th century deposits at Howard's Lane, Wareham. Dorset Nat. Hist. Archaeol. Soc. Proc.
1916	Ivy St/Brown St, Salisbury	Great Britain	secular urban town major	medieval	Hinton P. 2000. The plant remains. In Rawlings, M. (eds.), Excavations at Ivy Street and Brown Street, Salisbury, 1994. Wiltshire Archaeol Natur Hist Mag 93: 39-45.
1917	Johnsons Corner, Alton	Great Britain	secular urban town minor	medieval	Green F J. 1983. The plant remains. In Millet, M. (ed.), The history, architecture and archaeology of Johnson's Corner, Alton.Proc. Hampshire Field Club Archaeol. Soc. 39: 105 and fiche 81-7.
1919	Leazes Bowl 96, Durham City	Great Britain	secular urban town major	medieval	Huntley, J.P. and Daniell, J.R.G. 2001. The charred and waterlogged plant remains. In Carne P. (ed.), Durham City Leazes Bowl: archaeological excavations 1996. Durham Archaeol J. 16: 75-80 and Appendix 5.
1920	Market Field, Steyning	Great Britain	secular rural village	Early medieval	Hinton P. 1993. Plant remains. In Gardiner, M. (ed.), The excavation of a Late Anglo-Saxon settlement at Market Field, Steyning, 1988-9. Sussex Archaeol Coll 131: 57-64.
1921	Straubing-Azlburg	Germany	town minor	Roman	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1922	Passau	Germany	military intramural	Roman	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1923	Oettingen	Germany	rural elite	Roman	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1925	Seebruck	Germany	rural nucleated	Roman	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1926	Künzig: Sportplatz, Steinbiegl and Käserfeld	Germany	military extramural	Roman	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1927	Pilsting	Germany	rural lesser	Roman	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1928	Großsorheim	Germany	rural elite	Roman	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1929	Kellmünz	Germany	military intramural	Roman	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1930	Straubing Gräberfeld Bajuwarenstraße	Germany	religious cemetery/burial	Early medieval	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1931	Friedberg	Germany	secular rural village	Early medieval	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1932	Straubing-Azlburg	Germany	secular urban town minor	Early medieval	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1933	Ergolding-Fischergasse	Germany	secular rural village	Early medieval	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1934	Gaimersheim	Germany	secular rural village	medieval	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1935	Pilsting	Germany	secular rural lesser	medieval	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1936	Eichstätt, Huttenstadel	Germany	secular urban town minor	medieval	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1937	Deggendorf, Haßfurter	Germany	secular urban town minor	medieval	Kuster, H. 1995. Postglaziale Vegetationgeschichte Sudbayerns. Geobotanische Studien zur Prahistorischen Landschaftskunde. Akademie Verlag. Berlin. GmbH. Collective article citing the work of various authors.
1939	9 High Street, Stone	Great Britain	secular urban town minor	medieval	Moffett L. 1998. The plant remains. In Hughes, G. (ed.), Excavations within a medieval and post-medieval tenement at Stone, 1993. Transactions of the Staffordshire Archaeological and Historical Society 37: 79-85.
1941	Teacher's Centre, Walton Rd, Aylesbury	Great Britain	secular rural village	medieval	Cauvain, S. 1991. Plant remains and Mollusca. In Hawkins, A. (ed.), Medieval and post-medieval occupation at the Teacher's Centre, Walton Road.Rec. Buckinghamshire 31 (for 1989): 218.
1942	Fishergate, Norwich	Great Britain	secular urban town major	medieval	Murphy P. 1994. Plant macrofossils (excluding wood and mosses). In Ayers, B.S. (ed.), Excavations at Fishergate, Norwich 1985: 54-8.
1943	Church St, Barton Bendish	Great Britain	secular rural elite	medieval	Murphy P. 1997. The plant and animal macrofossils. In Rogerson, A., Davison, A., Pritchard, D. and Silvester, R. (ed.), Barton Bendish and Caldecote, fieldwork in south-west Norfolk. East Anglian Archaeol 80. Dereham: Norfolk Museum Service: 66-74.
1944	Christchurch Priory	Great Britain	religious monastery rural	medieval	Green F J. 1983. The palaeobotanical evidence. 98. In Jarvis, K.S. (ed.), Excavations in Christchurch 1969-1980. Dorset Nat. Hist. Archaeol. Soc. Monograph Ser. 5.
1945	New Radnor	Great Britain	secular urban town minor	medieval	Caseldine, A.E. and Barrow, C.J. 1999. Carbonised plant remains. In Jones, N.W. (ed.), Excavations within the medieval walled town at New Radnor, Powys, 1991-92. Archaeol J. 155: 187-97.
1946	St Annes Ln, Nantwich	Great Britain	rural nucleated	Roman	Tomlinson P. 1987. Plant remains. In McNeil, R. and Roberts, A.F. (eds.), A plank tank from Nantwich.Britannia 18: 291-5.
1947	Crossgate, Old Borough, Durham	Great Britain	secular urban town major	medieval	Huntley, J. 1999. Palaeoenvironmental Analysis. In Williams, A. and Wood, P. (ed.), Excavation in Durham's Old Borough, 1995. Archaeol Aeliana 5th Ser 27: 45-74.
1948	La Gravette	France	secular rural elite	medieval	Ruas, M.P., Bouby, L., Py, V. and Cazes, J.P. 2005. A 11th century AD burnt granary in La Gravette, south-western France: preliminary archaeobotanical results. Vegetation History and Archaeobotany 14: 416-426.
1949	Le Marais de Dourges	France	rural nucleated	Roman	Derreumaux, M. 2005. How to detect folder and litter? A case study from the Roman site "Le Marais de Dourges", France, Vegetation History and Archaeobotany 14: 373-385.
1950	Lattara	France	town minor	Roman	Buxo, R. 1988. Semences et fruits, recherches sur les donnees carpologiques dans les niveaux antiques de Lattes. Introduction l' etude de l'environnement de Lates Antique. C.N.R.S. ATP 'Archeologie Metropolitaine'. Buxo, R. 2005. Etude carpologique des puits de Lattes. Evaluation et comparaison avec l'habitat. In Piques, G., Buxo, R. (dir.) Onze puits gallo-romains de Lattara (Ier s.av.n.e-IIe s. de n.e.), Lattara 18, ADAL, Lattes: 199-220. Buxo, R. 1993. Des semences et des fruits. Cueillette et agriculture en France et en Espagne Mediterraneennes du Neolithique a l'age du Fer, PhD. dissertation, Universite de Montpellier II.
1953	Willingshausen-Leimbach AK116	Germany	rural nucleated	Roman	Kreuz, A. 2000. 'tristem cultu aspectuque'? Archaobotanische Ergbnisse zur fruhen germanischen Landwirtschaft in Hessen und Mainfranken. In Haffner, A. und von Schurbein, S. (Hrsg.) Kelten, Germanen, Romer im Mittelgebirgsraum zwischen Luxemburg und Thuringen. Archaologische und naturwissenschaftliche Forschungen zum Kulturwandel unter der Einwirkung Roms in den Jahrhunderten um Christi Geburt. Akten des Internationalen Kolloquiums zum DFG Schwerpunktprogramm "Romanisierung" in Trier vom 28. bis 30: September1998 Trier. Kolloquien zur Vor- und Fruhgeschichte 5. Bonn: 221-241.
1954	Wanfried-Aue AK113	Germany	rural nucleated	Roman	Kreuz, A. 2000. 'tristem cultu aspectuque'? Archaobotanische Ergbnisse zur fruhen germanischen Landwirtschaft in Hessen und Mainfranken. In Haffner, A. und von Schurbein, S. (Hrsg.) Kelten, Germanen, Romer im Mittelgebirgsraum zwischen Luxemburg und Thuringen. Archaologische und naturwissenschaftliche Forschungen zum Kulturwandel unter der Einwirkung Roms in den Jahrhunderten um Christi Geburt. Akten des Internationalen Kolloquiums zum DFG Schwerpunktprogramm "Romanisierung" in Trier vom 28. bis 30: September1998 Trier. Kolloquien zur Vor- und Fruhgeschichte 5. Bonn: 221-241.
1955	Wetzlar-Naunheim AK111	Germany	rural nucleated	Roman	Kreuz, A. 2000. 'tristem cultu aspectuque'? Archaobotanische Ergbnisse zur fruhen germanischen Landwirtschaft in Hessen und Mainfranken. In Haffner, A. und von Schurbein, S. (Hrsg.) Kelten, Germanen, Romer im Mittelgebirgsraum zwischen Luxemburg und Thuringen. Archaologische und naturwissenschaftliche Forschungen zum Kulturwandel unter der Einwirkung Roms in den Jahrhunderten um Christi Geburt. Akten des Internationalen Kolloquiums zum DFG Schwerpunktprogramm "Romanisierung" in Trier vom 28. bis 30: September1998 Trier. Kolloquien zur Vor- und Fruhgeschichte 5. Bonn: 221-241.

1956	Krofdorf-Gleiberg AK124	Germany	rural nucleated	Roman	Kreuz, A. 2000. 'tristem cultu aspectuque'? Archaobotanische Ergbnisse zur fruhen germanischen Landwirtschaft in Hessen und Mainfranken. In Haffner, A. und von Schurbein, S. (Hrsg.) Kelten, Germanen, Romer im Mittelgebirgsraum zwischen Luxemburg und Thuringen. Archaologische und naturwissenschaftliche Forschungen zum Kulturwandel unter der Einwirkung Roms in den Jahrhunderten um Christi Geburt. Akten des Internationalen Kolloquiums zum DFG Schwerpunktprogramm "Romanisierung" in Trier vom 28. bis 30: September1998 Trier. Kolloquien zur Vor- und Fruhgeschichte 5. Bonn: 221-241.
1957	El Bovalar, Sros, Lleida	Spain	secular urban town minor	Early medieval	Cubero, C. 1990. Especies cultivades documentades paleocarpologicament en jaciments medievals. Una aproximacio al mon agricola. V Jornades d' Arqueologia Medieval a Catalunya June: 19-27.
1958	Butzbach	Germany	military extramural	Roman	Knorzer, K-H. 1973. Romerzeitliche Pflanzenreste aus einem Brunnen in Butzbach (Hessen). Saalburg Jahrbuch 30: 71-114. also R[116/117].
1959	Koblenz	Germany	ceremonial burial	Roman	Kroll, H unpblished Romanization [274].
1960	Oberlöstern	Germany	ceremonial burial	Roman	Kroll, H unpblished Romanization [412].
1961	Pommern, Martberg	Germany	ceremonial temple-shrine	Roman	Kroll, H unpblished Romanization [456].
1962	Trier, Walramsneustraße	Germany	town major	Roman	Kroll, H unpblished Romanization [592]. AND Konig, M. 2001. Die Grundlagen der Ernahrung im romischen Trier. In Kuhnen, H-P. (ed.), Das romische Trier. Fuhrer zu archaologischen Denkmalern in Deutschland, Bd. 40:
1963	Wallendorf	Luxemburg	military intramural	Roman	Kroll, H unpblished Romanization [629].
1965	Tornow	Germany	rural nucleated	Roman	Neef database [51]
1966	Tornow	Germany	secular rural lesser	Early medieval	Neef database [51]
1967	Behren-Lübchin, Teterow	Germany	secular rural elite	medieval	Neef database [18]
1968	Leipzig	Germany	secular urban town major	medieval	Neef database [4]
1970	Magdeburg	Germany	secular urban town major	medieval	Neef database [6]
1972	Magdeburg	Germany	secular urban town major	Early medieval	Neef database [6]
1973	Mecklenburg	Germany	secular rural elite	Early medieval	Neef database [31]
1974	Alt-Graaz, Mecklenburg (Rerik)	Germany	secular rural lesser	Early medieval	Neef database [31]
1976	Berlin-Spandau	Germany	secular urban town minor	medieval	Neef database [13]
1977	Gross Raden, Sternberg	Germany	secular rural lesser	Early medieval	Neef database [30]
1978	Dresden	Germany	secular urban town minor	medieval	Neef database [3]
1979	Dummerstorf, Rostock	Germany	secular rural village	medieval	Neef database [17]
1980	Brandenburg	Germany	secular rural elite	Early medieval	Neef database [19]
1982	Zirzow Neubrandenburg	Germany	secular rural lesser	medieval	Neef database [21]
1983	Cottbus	Germany	secular urban town minor	medieval	Neef database [2] citing Lange 1989, 1994.
1986	Gerolzhofen AK97	Germany	rural nucleated	Roman	Kreuz unpublished.
1987	Piesport	Germany	rural lesser	Roman	Konig, M. 1995. Pflanzenfunde aus romerzeitlichen Kelteranlagen der Mittelmosel. In Gilles, K-L. (ed.), Neuere Forschungen zum romischen Weinbau an Mosel und Rhein. Rheinisches Landesmus Trier: 60-73.
1988	Wederath-Belginum	Germany	ceremonial burial	Roman	Konig, M. 1991. Die vegetabilischen Beigaben aus dem gallo-romischen Graberfeld Wederath-Belginum im Hunsruck. Funde u Ausgr im Bez Trier 23 (= Kurtrier Jahrb 31): 11-19. AND Konig, M. in press. Die Pflanzenfunde aus dem gallo-romischen Graberfeld von Wederath-Belginum (catalogue of the plant remains). Konig, M. in press. Keltische und romische Pflanzenfunde aus Wederath-Belginum (in press). (FORM SENT)
1989	Siesbach	Germany	ceremonial burial	Roman	Konig, M. 1988. Ein Traubenkernfund aus dem 4./5. Jahrhundert nach Christus in Piesport. In Funde und Ausgrabungen im Bezirk Trier 20, Kurtrierisches Jahrbuch 28: 21-26. Konig, M. 1989. Ein Fund romerzeitlicher Traubenkerne in Piesport/Mosel. In: Archaobotanik, Dissertationes Botanicae 133, Stuttgart: 107-116.
1991	Ellingen, Sablonetun	Germany	military intramural	Roman	Frank, K-S. and Stika, H-P. 1988. Bearbeitung der makroskopischen Pflanzen- und einiger Tierreste des Romerkastells Sablonetum (Ellingen bei Weissenburg in Bayern)- Materialhefte zur Bayerischen Vorgeschichte Reihe A, Band 61, Verlag Michael Lassleben, Kallmunz/Opf.: 99, 14 Tafeln. Also R[160/1].
1992	Günzburg	Germany	town minor	Roman	Kuster unpublished Romanization project [209-10].
1993	Rumney Castle 78-81, Cardiff	Great Britain	secular rural elite	medieval	Williams D. 1992. Plant macrofossil remains. In Lightfoot, K.W.B. (ed.), Rumney Castle, a ringwork and manorial centre in South Glamorgan. Medieval Archaeol. 36: 155-6.
1995	Layerthorpe Bridge EAU 2000/64	Great Britain	secular urban town major	Early medieval	Hall A, Kenward H, Jaques D and Carrott J. 2000. Technical Report: Environment and industry at Layerthorpe Bridge, York (site code YORYM 1996.345).Reports from the EAU, York 2000/64.
1996	Layerthorpe Bridge EAU 2000/64	Great Britain	secular urban town major	medieval	Hall A, Kenward H, Jaques D and Carrott J. 2000. Technical Report: Environment and industry at Layerthorpe Bridge, York (site code YORYM 1996.345).Reports from the EAU, York 2000/64.
1997	All Saints (York) EAU 98/30	Great Britain	secular urban town major	Early medieval	Hall, A., Kenward, H. and Carrott, J. 1998. Technical report: Plant and invertebrate remains from excavations associated with renovations at All Saints Church, Pavement, York (site code 95.47).
1998	Layerthorpe Bridge EAU 2000/64	Great Britain	town major	Roman	Hall A, Kenward H, Jaques D and Carrott J. 2000. Technical Report: Environment and industry at Layerthorpe Bridge, York (site code YORYM 1996.345).Reports from the EAU, York 2000/64.
1999	Clifford St (2) EAU 2000/17	Great Britain	secular urban town major	Early medieval	Hall A. and Kenward H. 2000. Technical report: Plant and invertebrate remains from Anglo-Scandinavian deposits at 2 Clifford Street, York (site code 99.256).
2001	Parliament St (4-7) EAU 2000/22	Great Britain	secular urban town major	Early medieval	Hall, A. and Kenward, H. 2000. Technical Report: Plant and invertebrate remains from Anglo-Scandinavian deposits at 4-7 Parliament Street (Littlewoods Store), York (site code 99.946).
2002	Dundrennan Abbey nr Kirkcudbright	Great Britain	religious monastery rural	medieval	Rankin D. 2001. Plant remains. In Ewart, G. (ed.), Dundrennan Abbey: archaeological investigation within the south range of a Cistercian house in Kirkcudbrightshire (Dumfries and Galloway), Scotland. Scottish Archaeological Internet Rep 1: 53-6. [http://www.britarch.ac.uk/sair/sair1.html].
2004	Butzbach AK1012	Germany	military extramural	Roman	Baas, J. 1979. Kultur- und Nutzpflanzen aus einer romischen Grube in Butzbach und ihr Zusammenhang mit Pflanzenfunden aus anderen romischen Fundstatten. Ein Beitrag zur Geschichte unserer Kulturpflanzen. Saalburg Jahrbuch, Bericht des Saalburg Museums 36:45-82. and Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91.
2005	Mainz-Weisenau AK1016	Germany	military extramural	Roman	Baas, J. (and Hopf, M.) 1971. Pflanzenreste aus romerzeitlichen Siedlungen von Mainz-Weisenau und Mainz-Innenstadt und ihr Zusammenhang mit Pflanzen-Funden aus vor-und fruhgeschichtlichen Stationen Mitteleuropas. Ein Beitrag zur Geschichte userer Kulturpflanzen. Saalburg Jahrbuch, Bericht des Saalburg Museums 28: 61-87.
2007	Rottweil-Altstadt	Germany	town major	Roman	Baas, J. 1974. Kultur- und Wildpflanzenreste aus einem romischen Brunnen von Rottweil-Altstadt. In Verbindung mit prahistorischen Schlehenfunden aus Suddeutschland. Fundberichte aus Baden-Wurttemberg 1: 373-
2008	Saalburg AK1009	Germany	military intramural	Roman	Baas 1951. Saalb Jb. 1951; 10. 14-28. Romanization project [493] and Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91.
2009	Bad Dürkheim	Germany	rural elite	Roman	Piening, U. 1988. Verkohlte Pflanzenreste aus zwei romischen Gutshofen bei Bad Durkheim (Pfalz). Gekeimtes Getreide aus archaologischen Ausgrabungen: 325-340.
2010	Kempten	Germany	town major	Roman	Hopf, M. and Blankenhorn, B. 1987. Kultur- und Nutzpflanzen aus Vor- und Fruhgeschichtlichen Grabungen Suddeutschlands. Bericht der Bayerischen Bodenkmalpflege 24/25 - 1983/4. Romanization project [266].
2012	Hooper Street, London	Great Britain	ceremonial burial	Roman	David/de Moulins unpublished Romanization project [327].
2013	Courage Brewery, London	Great Britain	town major	Roman	Davis unpublished Romanization project [325/6].
2016	Dorchester By-pass, Maiden Castle Road	Great Britain	rural nucleated	Roman	Straker, V. 1996. Wessex Arch Rep. 1996/11 Romanization project [152].
2017	Vigier Goldgasse	Switzerland	town minor	Roman	Jacomet unpublished Romanization project [525].
2019	Kälberhügel, Windisch	Switzerland	military intramural	Roman	Neuweiler 1908. Vierteljahrschr. Zurich. 1908/53. Romanization project [656].
2020	Dietikon, Zürich	Switzerland	rural elite	Roman	Klee/Jacquat unpublished Romanization project [140].
2021	Windisch, Aargau (Vindonissa)	Switzerland	military intramural	Roman	Baas, J. 1987. Romerzeitliche Kultur- und Nutzpflanzen aus Windisch, Avenches und Cham in der Schweiz. Ein Beitrag zur Geschichte unserer Kulturpflanzen. Saalburg Jahrbuch 43: 108-11.
2022	'Amphitheater R', Waadt (Aventicum, Avenches VD)	Switzerland	town major	Roman	Baas, J. 1987. Romerzeitliche Kultur- und Nutzpflanzen aus Windisch, Avenches und Cham in der Schweiz. Ein Beitrag zur Geschichte unserer Kulturpflanzen. Saalburg Jahrbuch 43: 108-11. Romanization project [620/1].
2023	Cham ZG, Hagedorn	Switzerland	military extramural	Roman	Baas, J. 1987. Romerzeitliche Kultur- und Nutzpflanzen aus Windisch, Avenches und Cham in der Schweiz. Ein Beitrag zur Geschichte unserer Kulturpflanzen. Saalburg Jahrbuch 43: 108-11. Romanization project [124].
2024	Worb-Sunnhalde, Bern	Switzerland	rural elite	Roman	Brombacher unpublished Romanization project [77].
2025	Biberist, Solothurn	Switzerland	ceremonial burial	Roman	Jacomet/Iseli unpublished Romanization project [521].
2026	Oedenburg, Biesheim/Kunheim	France	military extramural	Roman	Jacomet, S. und Schibler, J. 2001. Les contributions de l'archeobotanique et de l'archeozoologie a la connaissance de l'agriculture et de l'alimentation du site de Biesheim-Kunheim. In Plouin, S., Redde, M., Boutantin, C. (Hrsg.) La frontiere romaine sur le Rhin superieur. A propos des fouilles recentes de Biesheim-Kunheim, 60-69. Exposition presentee au Musee gallo-romain de Biesheim, 31 aout au 20 octobre 2001. Biesheim: 60-69. Jacomet, S., Schlumbaum, A., Klee, M. und Vandorpe, P. 2002. Les investigations archeobotaniques. In Redde, M. (Hrsg.) Rapport triennal (2000-2002) sur les fouilles FRanco-Germano-Suisses a Oedenburg (Haut-Rhin). Paris, 283307. Vandorpe, P., Schlumbaum, A., Wick, L. und Jacomet, S. (2004) Les analyses archeobotaniques de la zone des temples 2004. In Redde, M. (Hrsg.) Oedenbourg 2004. Rapport de la fouille 2004. 95-105. Vandorpe, P., Wick, L., Schlumbaum, A. und Jacomet, S. 2003. Biesheim-Kunheim 2003: Analyses botaniques preliminaires des echantillons archeobotaniques. In Redde, M. (Hrsg.) Oedenburg (Haut-Rhin). Rapport
2028	The Bedern 73-81, York	Great Britain	secular urban town major	medieval	Hall, A.R., Jones, A.K.G. and Kenward, H.K. 1983. Cereal bran and human faecal material from archaeological deposits. 85-104.In Proudfoot, B. (ed). Site, environment and economy. BAR IS 173.
2030	Pontefract Castle 82-6	Great Britain	secular rural elite	Early medieval	Bastow M. 2002. The botanical remains. In Roberts, I. (ed.), Pontefract Castle. Archaeological excavations 1982-86.Yorkshire Archaeology 8. West Yorkshire Archaeology Service. Wakefield: 394-6.
2031	Pontefract Castle 82-6	Great Britain	secular urban castle	medieval	Bastow M. 2002. The botanical remains. In Roberts, I. (ed.), Pontefract Castle. Archaeological excavations 1982-86.Yorkshire Archaeology 8. West Yorkshire Archaeology Service. Wakefield: 394-6.
2032	Piccadilly (38), York	Great Britain	secular urban town major	medieval	Carrott, J. B., Dobney, K. M., Hall, A. R., Kenward, H. K. and Milles, A. 1992. An evaluation of environmental evidence from excavations at 38 Piccadilly, York (YAT/Yorkshire Museum site code: 1992.4).
2036	Magistrates Court Norwich, Norwich	Great Britain	secular urban town major	medieval	Murphy P. 1988. VII. Plant macrofossils. In Ayers, B. (ed.), Excavations at St Martin-at-Palace Plain, Norwich. East Anglian Archaeol. 37: 118-25.
2037	North Bridge 93, Doncaster	Great Britain	secular urban town minor	medieval	Carrott, J., Dobney, K., Hall, A., Issitt, M., Jaques, D., Johnstone, C., Kenward, H., Large, F. and Skidmore, P. 1997. Technical Report: Environment, land use and activity at a medieval and post-medieval site at North Bridge, Doncaster, South Yorkshire.
2039	Can Roqueta, Sabadell	Spain	secular rural village	medieval	Buxo and Roviva.
2055	The Franciscan monastery, Svendborg	Denmark	religious monastery urban	medieval	Jensen, H-A. 1979. Seeds and other diaspores in medieval layers from Svendborg, the archaeology of Svendborg, Denmark, no 2, Odense University Press.
2058	Borchs Gård, Kolding	Denmark	secular urban town minor	medieval	Jensen 1979, 1988, 1991a In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2059	Sønderportsgade, Ribe	Denmark	secular urban town major	medieval	Bencard, Lange 1972, Jensen 1986, 1988, 1991b In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2061	Lotzes Have, Odense	Denmark	secular urban town minor	medieval	Robinson, Harild 1996c In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2062	Black Friars' Monastery, Odense	Denmark	religious monastery urban	medieval	Jensen 1986, Harild, Robinson 1996 In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2063	Folfagen Gård, Svendborg	Denmark	secular urban town minor	medieval	Jensen 1979, 1988, 1991a In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2067	Møllegade, Svendborg	Denmark	secular urban town minor	medieval	Jorgensen 1980, 1986 In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.

2069	Kompagnistræde, Næstved	Denmark	secular urban town minor	medieval	Robinson, Harild 1997e In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2070	Sct. Peters Stræde, Roskilde	Denmark	secular urban town major	medieval	Robinson, Harild 1996a, Robinson 2000b In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2071	Provstevænget, Roskilde	Denmark	secular urban town major	medieval	Robinson, Harild 1996a, Robinson 2000b In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2072	Præstegård, Herstedøster	Denmark	secular rural lesser	medieval	Karg 2000 In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2075	Skanderbrog Amt, Øm	Denmark	religious monastery rural	medieval	Jensen 1986, 1988, 1991a, Robinson, Harild, Boldsen in press In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142. and from KROLL: Robinson, D. and Moltsen, A.S.A.1999. Ark?obotaniske analyser 1998. Ark?ologiske Udgravninger I Danmark
2076	Brogade, Svendborg	Denmark	secular urban town minor	medieval	Robinson, Harild unpublished In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2077	Algade, Roskilde	Denmark	secular urban town major	medieval	Robinson, Harild 1996a, Robinson 2000b In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2078	Tårnby Torv, Amager	Denmark	secular rural lesser	medieval	Robinson, Harild 1997e In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2080	Tofting	Germany	rural nucleated	Roman	Behre 1972 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2081	Haithabu	Germany	various trading centre	Early medieval	Behre 1969, 1978, 1981, 1983 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2082	Elisenhof	Germany	secular rural village	Early medieval	Behre 1975, 1976 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2083	Copenhagen	Denmark	secular urban town major	medieval	Rostup 1906 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2084	Copenhagen	Denmark	secular urban town major	medieval	Jessen and Lind 1922-3 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2085	Archsum, Sylt	Germany	rural nucleated	Roman	Kroll, H. 1975 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2087	Archsum, Sylt	Germany	secular rural village	Early medieval	Kroll, H. 1975 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2088	Fyrkat	Denmark	secular rural elite	Early medieval	Helb?k 1974 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2089	Ginnerup	Denmark	rural lesser	Roman	Jessen 1933 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2090	Østebølle	Denmark	rural lesser	Roman	Hatt 1938 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2091	Fjand	Denmark	rural lesser	Roman	Helb?k 1954 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2092	Oksbøl	Denmark	secular rural lesser	Early medieval	Hatt 1948 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2093	Århus Søndervold	Denmark	secular urban town minor	Early medieval	Fredskild 1971 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2094	Asmild	Denmark	religious monastery rural	medieval	Odum 1965 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2095	Herlufsholm	Denmark	religious monastery rural	medieval	Odum 1965 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2100	Brænde Lydinge	Denmark	ceremonial burial	Roman	Mackeprang 1934 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2102	Alt-Schleswig	Germany	secular urban town major	medieval	Behre 1978 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2103	Boringholm (Boring)	Denmark	secular rural elite	medieval	Jessen and Lind 1922-3 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2104	Stengade	Denmark	religious cemetery/burial	Early medieval	Fredskild 1977 In Jensen, H.A. 1985. Catalogue of late- and post-glacial macrofossils of Spermatophyta from Denmark, Schleswig, Scania, Halland, and Blekinge dated 13,000 B.P. to 1536 A.D. Danmarks Geologiske Undersogelse. Serie A, no. 6. Miljoministeriet. Geological Survey of Denmark. Copenhagen.
2105	Ribe	Denmark	various trading centre	Early medieval	Robinson, Boldsen and Harild in press In Karg, S. and Robinson, D. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany-NAC 2000 in Umea. Archaeology and Environment 15: 133-142.
2106	Chadwell St Mary County Primary 96	Great Britain	secular rural village	Early medieval	Fryer, V. and Murphy, P. 1998. Charred plant macrofossils and other remains. 54-6. In Lavender, N.J. (ed.), A Saxon building at Chadwell St Mary: excavations at Chadwell St Mary County Primary School 1996. Essex Archaeol. Hist. 29: 48-58.
2109	Culver St 81-5, Colchester	Great Britain	town major	Roman	Murphy, P. 1992. Plant remains. In Crummy, P. (ed.), Excavations at Culver Street, the Gilberd School, and other sites in Colchester 1971-85. Colchester Archaeol. Reports 6. Colchester Archaeol. Trust. [Culver St].
2112	Culver St 81-5, Colchester	Great Britain	secular urban town minor	medieval	Murphy, P. 1992. Plant remains. In Crummy, P. (ed.), Excavations at Culver Street, the Gilberd School, and other sites in Colchester 1971-85. Colchester Archaeol. Reports 6. Colchester Archaeol. Trust. [Culver St].
2113	Yarnton	Great Britain	secular rural village	Early medieval	Greig, J., Pelling, R., Robinson, M.A. and Stevens, C. 2004. The Saxon plant remains. In Hey, G. (ed.), Yarnton: Saxon and medieval settlement and landscape.Thames Valley Landscape Monograph 20. Oxford.
2116	Dundurn (Strath Earn) (Pictish Fort)	Great Britain	secular rural village	Early medieval	Dickson, J.H. and Brough, D.W. 1989. Biological studies of a Pictish midden . In Korber-Grohne, U. (ed.), Archaobotanik. Dissertationes Botanicae 133: 155-66.
2118	Jennings Yard, Windsor	Great Britain	secular rural elite	medieval	Carruthers, W.J. 1993. Plant remains. In Hawkes, J.W. and Heaton, M.J. (eds.), Jennings Yard, Windsor: a closed-shaft garderobe and associated medieval structures. Wessex Archaeol. Rep. 3: 82-90.
2120	Lüneburg, St.-Michaelis-Kloster	Germany	religious monastery urban	medieval	Behre, K.-E. 1981. Pflanzenreste der Zeit um 1400 n. Chr. Aus dem Luneburger St.-Michaelis-Kloster. Nachrichten aus Niedersachsens Urgeschichte 50: 321-327.
2121	Lüneburg, St.-Michaelis-Kloster	Germany	secular urban town major	medieval	Behre, K.-E. 1981. Pflanzenreste der Zeit um 1400 n. Chr. Aus dem Luneburger St.-Michaelis-Kloster. Nachrichten aus Niedersachsens Urgeschichte 50: 321-327.
2123	Lübeck, Petersgrube	Germany	secular urban town major	medieval	Alsleben, A. 1991. Archaobotanische Untersuchungen in der Hansestadt Lubeck. Landschaftsentwicklung im stadtischen Umfeld und Nahrungswirtschaft wahrend des Mittelalters bis in die fruhe Neuzeit. Offa 48: 329-362.
2125	Wurt Niens	Germany	secular rural village	Early medieval	Behre, K.-E. 1991. Umwelt und Ernahrung der fruhmittelalterlichen Wurt Niens/Butjadingen nach den Ergebnissen der botanischen Untersuchungen. Probleme Kustenforschung im sudlichen Nordseegebiet 18: 141-168.
2126	Bremen	Germany	secular urban town major	medieval	Behre, K.-E. 1991. Die ersten Funde von Nahrungspflanzen aus dem Mittelalter Bremens. Bremisches Jahrbuch 70: 207-227.
2128	Lübeck, Alfstraße/Schüsselbuden	Germany	secular urban town major	medieval	Alsleben, A. 1991. Archaobotanische Untersuchungen in der Hansestadt Lubeck. Landschaftsentwicklung im stadtischen Umfeld und Nahrungswirtschaft wahrend des Mittelalters bis in die fruhe Neuzeit. Offa 48: 329-362.
2129	Lübeck, Schrangen	Germany	secular urban town major	medieval	Alsleben, A. 1991. Archaobotanische Untersuchungen in der Hansestadt Lubeck. Landschaftsentwicklung im stadtischen Umfeld und Nahrungswirtschaft wahrend des Mittelalters bis in die fruhe Neuzeit. Offa 48: 329-362.
2130	Lübeck, Hunderstraße 9-17	Germany	secular urban town major	medieval	Alsleben, A. 1991. Archaobotanische Untersuchungen in der Hansestadt Lubeck. Landschaftsentwicklung im stadtischen Umfeld und Nahrungswirtschaft wahrend des Mittelalters bis in die fruhe Neuzeit. Offa 48: 329-362.
2133	Lübeck, St Johanniskloster	Germany	religious monastery urban	medieval	Alsleben, A. 1991. Archaobotanische Untersuchungen in der Hansestadt Lubeck. Landschaftsentwicklung im stadtischen Umfeld und Nahrungswirtschaft wahrend des Mittelalters bis in die fruhe Neuzeit. Offa 48: 329-362.
2137	Düna	Germany	secular rural elite	Early medieval	Andrae, C. 1989. Kaiserzeitliche bis spatmittelalterliche Pflanzenreste aus Duna, Kr. Osterode am Harz: Eine Zwischenbilanz. Archaobotanik. Dissertationes Botanicae 133: 175-190.
2138	Düna	Germany	secular rural elite	medieval	Andrae, C. 1989. Kaiserzeitliche bis spatmittelalterliche Pflanzenreste aus Duna, Kr. Osterode am Harz: Eine Zwischenbilanz. Archaobotanik. Dissertationes Botanicae 133: 175-190.
2139	Düna	Germany	secular rural village	Early medieval	Andrae, C. 1989. Kaiserzeitliche bis spatmittelalterliche Pflanzenreste aus Duna, Kr. Osterode am Harz: Eine Zwischenbilanz. Archaobotanik. Dissertationes Botanicae 133: 175-190.
2140	Piesport-Müstert	Germany	rural lesser	Roman	Konig, M. 1992. Romerzeitliche Pflanzenfunde aus der Kelteranlage in Piesport-Mustert. Funde und Ausgrabungen im Berzirk Trier 24. Kurtrierisches Jahrbbuch 32: 32-38
2141	Dalheim-Petzel (Ricciacum)	Luxemburg	rural nucleated	Roman	Konig, M. 1994. Die Pflanzenfunde. In Goddard, E. (ed.), Eine Brunnenverfullung aus dem romischen Vicus Dalheim. Sonderdruck aus HEMECHT 46: 798-810.
2143	Erden	Germany	rural lesser	Roman	Konig, M. 1994. Olproduktion und/oder Fasergewinnung? Uber einen romerzeitlichen Hanffund aus Erden/Mosel. Funde und Ausgrabungen im Berzirk Trier 26. Kurtrierisches Jahrbbuch 34: 42-48. AND Konig, M. 2000. Erden, Kreis Bernkastel-Wittlich. 2. Archaobotanische Untersuchungen, Jahresbericht des Landesamtes fur Denkmalpflege, Amt Trier, fur den Regierungsbezirk Trier und den Kreis Birkenfeld (au?er Stadtbereich) 1998.
2144	Trier, Wechselstraße Kuhnenstraße	Germany	secular urban town minor	medieval	Konig, M. 1995. Erste Ergebnisse der botanichen Untersuchungen einer Abfallgrube des ausgehenden 13. Jahrhunderts aus Trier. Trierer Zeitschrift 58: 317-323. and Konig, M. 1995. Mittelalterliche Obstfunde aus Trier. Funde und Ausgrabungen im Berzirk Trier 27. Kurtrierisches Jahrbbuch: 71-76. AND Konig, M. 1995. Pflanzenfunde aus romerzeitlichen Kelteranlagen der Mittelmosel. In: Neuere Forschungen zum romischen Weinbau an Mosel und Rhein, Trier: 60-73. Konig, M. 1997. Pflanzenfunde aus den romerzeitlichen Kelteranlagen in Brauneberg und Piesport-Mustert. Weinbau zwischen Maas und Rhein in der Antike und im Mittelalter, Trierer Historische Forschungen 28, Mainz: 53-83. Konig, M. 1992. Romerzeitliche Pflanzenfunde aus der Kelteranlage in Piesport-Mustert. Funde und Ausgrabungen im Bezirk Trier 24. Kurtrierisches Jahrbuch 32: 32-38.
2145	Brauneberg I, „Unter Mötschert“	Germany	rural lesser	Roman	Konig, M. 1995. Pflanzenfunde aus romerzeitlichen Kelteranlagen der Mittelmosel. In Gilles, K-J. (ed.), Neuere Forschungen zum romischen Weinbau an Mosel und Rhein. Schriftenreihe des Rheinischen Landesmuseums Trier 11: 60-73. AND Konig, M. 1997. Pflanzenfunde aus den romerzeitlichen Kelteranlagen in Brauneberg und Piesport-Mustert. In: Weinbau zwischen Maas und Rhein in der Antike und im Mittelalter, Trierer Historische Forschungen 23, Mainz: 53-83. (FORM SENT)
2146	Brauneberg II, „Unter Mötschert“	Germany	rural lesser	Roman	Konig, M. 1995. Pflanzenfunde aus romerzeitlichen Kelteranlagen der Mittelmosel. In Gilles, K-J. (ed.), Neuere Forschungen zum romischen Weinbau an Mosel und Rhein. Schriftenreihe des Rheinischen Landesmuseums Trier 11: 60-73. AND Konig, M. 1997. Pflanzenfunde aus den romerzeitlichen Kelteranlagen in Brauneberg und Piesport-Mustert. In: Weinbau zwischen Maas und Rhein in der Antike und im Mittelalter, Trierer Historische Forschungen 23, Mainz: 53-83. (FORM SENT)
2147	Planig, Bad Kreuznach, Mainzer-Str. 118	Germany	ceremonial burial	Roman	Konig, M. 1997. Der botanische Inhalt. In Witteyer, M. (ed.), Alte und neue Funde der Romerzeit aus Bad Kreuznach-Planig, Mainzer Archaologische Zeitschrift, Bd. 3, Mainz: 88-90.
2148	Tawern, "In den Brühl-morgen"	Germany	rural nucleated	Roman	Konig, M. 1996. Pflanzenreste aus dem romischen Vicus Tawern. Ein Beitrag zu Landwirtschaft und Umwelt. Funde und Ausgrabungen im Berzirk Trier 28: 31-40.
2149	Regensburg, Wahlenstraße 17	Germany	secular urban town major	medieval	Kuster, H. 1994. Pflanzenreste aus der Latrine im Deggingerhaus. In Dallmeier, L-M. (ed.), Das Deggingerhaus zu Regensburg. Munchen: Hugendubel: 115-119.

2150	Clay district of Land Wursten	Germany	secular rural village	medieval	Lempiainen, T. and Behre, K-H. 1997. Zur Umwelt und Ernahrung einiger hochmittelalterlicher Wurtsiedlungen in der Marsch des Landes Wursten, Ldkr. Cuxhaven (Niedersachsen), nach archaobotanischen Untersuchungen. Probleme der Kustenforschung im sudlichen Nordseegebiet 24. Oldenburg: 275-300.
2151	Kelheim	Germany	secular urban town minor	medieval	Gregor, H.J. 1985. Palaoethnobotanische Untersuchung eines mittelalterlichen Brunneninhaltes in Kelheim. Documenta naturae 23: 1-26.
2152	Irrel	Germany	rural lesser	Roman	Schroeder, K. 1971. Geologisch-palaeobotanische Untersuchung eines romerzeitlichen Brunnens bei Irrel, kreis Bitburg-Prum (Eifel). Trierer Zeitschrift 34: 97-117.
2153	Regensburg, Kreissparkasse	Germany	secular urban town major	medieval	Hopf, M. and Blankenhorn, B. 1987. Kultur- und Nutzpflanzen aus Vor- und Fruhgeschichtlichen Grabungen Suddeutschlands. Bericht der Bayerischen Bodenkmalpflege 24/25 - 1983/4.
2154	Bautzen, Ortenburg	Germany	secular urban castle	medieval	Maier, U. 2002. Die Ortenburg in Bautzen - botanische Untesuchung verkohlter Getreidevorrate aus dem 11./12. Jahrhundert. Dresden. Arbeits- und Forschungsberichte zur Sachsischen Bodendenkmalpflege 44: 174-
2155	Duisburg, Niederstraße	Germany	secular urban town major	medieval	Meurers-Balke, J., Knorzer, K-H., Glasmacher, H-A., Berke, H., Gerlach, R. und Tegtmeier, U. 1999. Ein spatmittelalterlicher Brunnen in der Duisburger Niederstra?e. Bonner Jahrbucher 199: 347-396.
2158	Höxter, Stummrige Straße 20	Germany	secular urban town minor	medieval	Wolf, G. 1991. Die pflanzlichen Makroreste aus der mittelalterlichen Kloake Stummrige Str. 20 in Hoxter/Westfalen. Excurs 3. In Konig, A. und Stephan, H-G. Untersuchungen einer spatmittelalterlichen Kloake in Hoxter. Ausgrabungen und Funde in Westfalen-Lippe. Munster 6/B: 507-523.
2159	Harste 21	Germany	secular rural village	Early medieval	Wolf, G. 1991. Palao-ethnobotanische Befunde zu fruhmittelalterlichen Pflanzenresten aus Harste, Kreis Gottingen. In Grote, K. Fruhmittelalterlichen Befunde zur Siedlungs- und Wirtschaftsgeschichte in Harste, Kreis Gottingen. Hildesheim. Neue Ausgrabungen und Forschungen in Niedesachsen 19: 218-228.
2160	Höxter, Heilig-Geist-Hospital	Germany	secular urban town minor	medieval	Wolf, G. 1987. Nutzpflanzenfunde des Mittelalters und der fruhen Neuzeit aus Hoxter, Heilig-Geist-Hospital. Excurs 2. In Konig, A. und Stephan, H-G. Ausgrabungen 1971-1986 im Bereich des ehemaligen Heilig-Geist-Hospitals in Hoxter an der Weser. Ausgrabungen und Funde in Westfalen-Lippe. Munster 5: 393-399.
2161	Braunschweig, Weberstraße 10	Germany	secular urban town major	medieval	Wolf, G. 2000. Nutzpflanzennachweise aus einer spatmittelalterlichen und einer fruhneuzeitlichen Kloake von der Weberstra?e 10 in Braunschweig. Kablitz, K. Archaologisches Schwerpunktprojekt Lange Stra?e/Weberstra?e in der Braunschweiger Neustadt (Baugrundstuck Multiplex-Gro?kino). Stuttgart. Nachrichten aus Niedersachsens Urgeschichte 69: 282-287.
2162	Ingolstadt	Germany	secular urban town minor	medieval	Zach, B. 1992. Aufschlu?reiche Pflanzenreste aus einer mittelalterlichen Fa?latrine in Ingolstadt. Sammelblatt des Ingolstadt. Sonderdruck aus Historischen Vereins Ingolstadt: 157-173.
2164	Echzell AK2569	Germany	military extramural	Roman	Kreuz, A. (database). Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91. Kreuz, A. 1996/7. Archaobotanische Untersuchung von Brunnenproben der romischen Fundstelle Eschborn, Baugebiet 'Dornweg'. Berichte der Kommission fur Archaologische Landesforschung in Hessen 4: 61-77
2165	Rainau-Buch	Germany	military extramural	Roman	Piening, U. 1982a/b (Bad Mergentheim, Lauffen). In Manfred Rosch database and VHA 7 (1998): 109-125 and Piening, U. 1982. Botanische Untersuchungen an Verkohlten Pflanzenresten aus Nordwurttemberg. Neolithikum bis Romische Zeit. Fundberichte aus Baden-Wurttemberg 7: 239-271.
2166	Hanau-Kesselstadt, Salisweg AK86	Germany	military extramural	Roman	Kreuz, A. 1994. Bemerkungen zu archaobotanischen Untersuchungen im romischen vicus 'Hanau-Kesselstadt, Salisweg'. Neus Magazin fur Hanauische Geschichte. Mitteilungen des Hanauischen Geschichtsvereins: 4-6. and Kreuz, A. 1994/5. Landwirtschaft und ihre okologischen Grundlagen in der Jahrunderten um Christi Geburt: zum Stand der naturwissenschaftlichen Untersuchungen in Hessen. Berichte der Kommission fur Archaologische Landesforschung in Hessen 3: 59-91.
2167	Oberursel-Bommersheim	Germany	secular rural elite	medieval	Kreuz, A. 1993. Vorbericht zur archaobotanischen Untersuchung. In Friedrich, R., Junk, H., Kreuz, A., Petrasch, J., Rittershofer, K-F., Titzmann, P. and Waldstein, C. von. (eds.), Die hochmittelalterliche Motte und Ringmauerburg Oberursel-Bommersheim, Hochtaunuskreis. Vorbericht der Ausgrabungen 1988-1991. Germania 71, 2: 498-509.
2168	Dieburg	Germany	town minor	Roman	Goldner, H. und Kreuz, A. 1999. Begraben an einem 'stillen Ort': Pflanzenreste und archaologische (Be) Funde als neue Hinweise zum Leben im romischen Dieburg. Denkmalpflege und Kulturgeschichte 2: 10-17.
2169	Waldgirmes, Lahnau (fort) AK88	Germany	rural nucleated	Roman	Kreuz, A. 2003. Vorbericht zur archaobotanischen Untersuchung. In Becker, A. und Rasbach, G. (eds.), Die spataugusteische Stadtgrundung in Lahnau-Waldgirmes. Archaologische, architektonische und naturwissenschaftliche Untersuchungen. Halbband. Germania 81: 179-189.
2170	Lübeck, Grabung Burgkloster	Germany	religious monastery urban	medieval	Paap, N. 1982. Haus Engelsgrube 56, Botanische Gro?reste. In Meyer, D. und Neugebauer, M. (eds.), Archaologisch-Baugeschichtliche Beobachtungen und Teiluntersuchungen im Hause Engelsgrube 56 und Seinen Nachbarhausern in Lubeck. Bonn: Lubecker Schriften zur Archaologie und Kulturgeschichte 6: 172-180. Lynch, A. und Paap, N. 1982. Untersuchungen an Botanischen Funden aus der Lubecker Innenstadt. Ein Vorbericht. Bonn: Lubecker Schriften zur Archaologie und Kulturgeschichte 6: 339-360. and Paap, N. 1984. Botanische Analysen in Lubeck - Eine Zwischenbilanz. Bonn: Lubecker Schriften zur Archaologie und [illegible]
2171	Lübeck, Engelsgrube 56	Germany	secular urban town major	medieval	Paap, N. 1982. Haus Engelsgrube 56, Botanische Gro?reste. In Meyer, D. und Neugebauer, M. (eds.), Archaologisch-Baugeschichtliche Beobachtungen und Teiluntersuchungen im Hause Engelsgrube 56 und Seinen Nachbarhausern in Lubeck. Bonn: Lubecker Schriften zur Archaologie und Kulturgeschichte 6: 172-180. Lynch, A. und Paap, N. 1982. Untersuchungen an Botanischen Funden aus der Lubecker Innenstadt. Ein Vorbericht. Bonn: Lubecker Schriften zur Archaologie und Kulturgeschichte 6: 339-360. and Paap, N. 1984. Botanische Analysen in Lubeck - Eine Zwischenbilanz. Bonn: Lubecker Schriften zur Archaologie und [illegible]
2172	Lübeck, Grosse Petersgrube 17-27	Germany	secular urban town major	medieval	Paap, N. 1982. Haus Engelsgrube 56, Botanische Gro?reste. In Meyer, D. und Neugebauer, M. (eds.), Archaologisch-Baugeschichtliche Beobachtungen und Teiluntersuchungen im Hause Engelsgrube 56 und Seinen Nachbarhausern in Lubeck. Bonn: Lubecker Schriften zur Archaologie und Kulturgeschichte 6: 172-180. Lynch, A. und Paap, N. 1982. Untersuchungen an Botanischen Funden aus der Lubecker Innenstadt. Ein Vorbericht. Bonn: Lubecker Schriften zur Archaologie und Kulturgeschichte 6: 339-360. and Paap, N. 1984. Botanische Analysen in Lubeck - Eine Zwischenbilanz. Bonn: Lubecker Schriften zur Archaologie und [illegible]
2173	Xanten, Ulpia Traiana, Insula 26	Germany	town major	Roman	Becker, W-D. und Tegtmeir, U. 1998. Datteln, Feigen, Mandeln, Nusse- Sudfruchte aus dem romischen Xanten. Archaologie im Rheinland 1997. Koln: Rheinland-Verlang GmbH: 188-191.
2174	Eltville	Germany	religious cemetery/burial	Early medieval	Blaich, M. 2003. Messer, Glefen und Vitis sylvestris L. zur Fruhgeschichte des Weinbaus im Rheingau. Archaologisches Korrespondenzblatt 33: 427-436.
2175	Kosel	Germany	secular rural village	medieval	Kroll, H. 1990. Zum vorgeschichtlichen Ackerbau von Kosel. In Meier, D. (Red.) Beretning fra niende tv?rfagelige Vikingesymposium. Moesgard - Kiel: 43-47.
2176	Lübeck, Untertrave 97	Germany	secular urban town major	medieval	Lynch, A. und Paap, N. 1986. Botanische Untersuchungen zur Granbung an der Untertrave 97 in Lubeck. Ein Beitrag zu den Naturraumlichen Voraussetzungen Mittelalterlicher Siedlungsgeschichte. Bonn: Lubecker Schriften zur Archaologie und Kulturgeschichte 12: 15-25.
2177	Saint-Étienne à Mulhouse	France	secular urban town minor	Early medieval	Lundstrom-Baudais, K. et Guild, R. 1997. Reflexions sur l' agriculture au 10e siecle: le site de l' eglise Saint-Etienne a Mulhouse (France). In Boe, G. de et Verhaeghe, F. (eds.), Environment and subsistence in medieval Europe. Papers Medieval Europe Brugge 1997. Conference Volume 9. Zellik, Instituut voor het Archeologisch Patrimonium: 123-133.
2178	Montbéliard	France	secular urban town minor	medieval	Lundstrom-Baudais, K. 1998. Premier apercy de l'agriculture montbeliardaise au 13e siecle. In Tchirakadze, C. Fuhrer, E. (eds.), En quete d'une memoire. 10 ans d'archeologie municipale a Montbeliard [catalogue exhibition Montbeliard]. Montbeliard: 111-113.
2179	Wallendorf	Luxemburg	ceremonial temple-shrine	Roman	Kroll, H. 2000. Zum Ackerbau in Wallendorf in vorromischer und romischer Zeit. In Haffner, A. und von Schnurbein, S. (Hrsg.) Kelten, Germanen, Romer im Mittelgebirgsraum zwischen Luxemburg und Thuringen. Akten des Internationalen Kolloquiums zum DFG-Schwerpunktprogramm 'Romanisierung' in Trier vom. 28. bis 30. September 1998. Koll. Vor- u. Fruhgesch. 5. Bonn: 121-128.
2180	Lamadelaine, Luxemburg	Luxemburg	ceremonial burial	Roman	Kroll, H. 1999. 3.3 Zu den Pflanzenfunden aus den Grabgefa?en von Lamadeleine. In Metzler-Zenz, N. u. J. und Meniel, P. (eds.), Lamadeleine. Une necropole de l' oppidum du Titelberg. Dossiers d' Archeologie du Musee National d' histoire et d' Art 6: 282-284.
2183	Georgenkapelle, Luckau	Germany	secular urban town minor	medieval	Bittmann, F. 2000. Mittelalterliche Pflanzenreste aus Luckau. Umwelt und Mensch. Archaologische Entdeckungen aus der Fruhzeit der Niederlausitz. Wunsdorf: 90-96.
2186	Königsberg	Germany	ceremonial burial	Roman	Neuweiler, 1935. Nachtrage urgeschichtlicher Pflanzen. Vieteljahrschricht Naturwiss. Ges. Zurich. In Hopf, M. and Blankenhorn, B. 1987. Kultur- und Nutzpflanzen aus Vor- und Fruhgeschichtlichen Grabungen Suddeutschlands. Bericht der Bayerischen Bodenkmalpflege 24/25 - 1983/4.
2187	Löddigsee	Germany	secular rural elite	medieval	Schoknecht, T. 1992. Kulturpflanzenreste aus der slawischen Siedlung am Loddigsee bei Parchim. Ausgrabungen und Funde 37, 3: 161-163.
2188	Trier	Germany	town major	Roman	Konig, M. 2001. Die Grundlagen der Ernahrung im romischen Trier. In Kuhnen, H-P. (ed.), Das romische Trier. Stuttgard: THEISS: 69-79.
2189	Jossigny, 'Echangerur A4' secteur II	France	rural lesser	Roman	Matterne, V. (database).
2190	Venette, 'Le Bois de Plaisance'	France	rural lesser	Roman	Matterne, V. (database).
2192	Vic-sur-Seille, 'Musée G. de la Tour'	France	secular rural village	Early medieval	Matterne, V. (database).
2193	TGV Est Goussancourt	France	rural lesser	Roman	Matterne, V. (database).
2194	Gonesse, 'Zac Tulipe'	France	rural lesser	Roman	Matterne, V. (database).
2195	Aéroport Régional MNL, LIEHON 'Larry'	France	rural lesser	Roman	Matterne, V. (database).
2196	Macon, 'Bibliothèque'	France	town major	Roman	Matterne, V. (database).
2197	Vendresse, 'Les Longues Fauchées'	France	rural lesser	Roman	Matterne, V. (database).
2198	Montevrain, 'Le Clôs Rose'	France	secular rural village	Early medieval	Matterne, V. (database).
2200	Ploisy	France	rural lesser	Roman	Matterne, V. (database).
2201	Precy sur Oise, '2 rue du Martray'	France	secular rural lesser	medieval	Matterne, V. (database).
2202	Horbourg wihr, 'Le Clos de Diane'	France	military extramural	Roman	Matterne, V. (database).
2203	Compans, 'Le Poteau du Mensil'	France	rural elite	Roman	Matterne, V. (database).
2211	Charny, 'Les Champs de Choisy'	France	rural lesser	Roman	Matterne, V. (database).
2212	Bohain, 'Le Moulin Mayeux'	France	rural nucleated	Roman	Matterne, V. 2003. Nouvelles Donnees Carpologiques Relatives a la Periode Gallo-Romaine en Regions Picardie et Ile-de-France. Actualite de la Recherche en Histoire et Archeologie agraires, Actes du colloque international AGER V, septembre 2000. Besancon: Presses Universitaires Franc-Comtoises: 241-267. (Annales Litteraires 764. Serie 'Environment, societes et archeologie' 5).
2214	Estrées-Deniécourt, 'Derrière le Jardin du Berger'	France	rural nucleated	Roman	Matterne, V. 2003. Nouvelles Donnees Carpologiques Relatives a la Periode Gallo-Romaine en Regions Picardie et Ile-de-France. Actualite de la Recherche en Histoire et Archeologie agraires, Actes du colloque international AGER V, septembre 2000. Besancon: Presses Universitaires Franc-Comtoises: 241-267. (Annales Litteraires 764. Serie 'Environment, societes et archeologie' 5).
2215	Orléans, 'La Charpenteire'	France	town major	Roman	Matterne, V. 2003. Nouvelles Donnees Carpologiques Relatives a la Periode Gallo-Romaine en Regions Picardie et Ile-de-France. Actualite de la Recherche en Histoire et Archeologie agraires, Actes du colloque international AGER V, septembre 2000. Besancon: Presses Universitaires Franc-Comtoises: 241-267. (Annales Litteraires 764. Serie 'Environment, societes et archeologie' 5).
2218	Kloster Sterkrade, Oberhausen	Germany	religious monastery rural	medieval	Knorzer, K-H. 2001. Einblicke in die mittelalterliche Vegetation am Kloster Sterkrade, Oberhausen. In …nicht nur Kraut und Ruben - Archaobotanik im Ruhrgebiet. Essen: Klartext Verlag: 55-64.
2219	Niedermörmter	Germany	shipwreck	Early medieval	Knorzer, K-H. 1996. Pflanzentransport im Rhein zur Romerzeit, im Mittelalter und heute. Bonn: Decheniana 149: 81-123.
2222	Xanten, Colonia Ulpia Traiana, Insula 25 und 26	Germany	town major	Roman	Knorzer, K-H. 1989. Romerzeitliche Pflanzenfunde von Xanten, Colonia Ulpia Traiana, Insula 25 und 26. Beitrage zur Geschichte des Xantener Raumes. Rheinland-Verlag GmbH Koln: 105-112.
2223	Zons, Dormagen	Germany	secular urban town minor	medieval	Knorzer, K-H. 1988. Pflanzenfunde in einer spatmittelalterlichen Latrine in Zons. Archaologie im Rheinland. Rheinland-Verlag GmbH Koln: 138-140.
2224	Neuss, Münsterplatz	Germany	secular urban town major	medieval	Knorzer, K-H. 1980. Romische und mittelalterliche Pflanzenfunde vom Munsterplatz in Neuss. Bonner Jahrbucher 180: 581-584.
2225	Neuss, Quirinusstraße	Germany	secular urban town major	medieval	Knorzer, K-H. 1979. Pflanzenfunde des 14./15. Jh. aus einer mittelalterlichen Grube in Neuss, Quirinusstra?e. Bonnner Jahrbucher 179: 720-721.
2226	Köln, Heumarkt	Germany	town major	Roman	Knorzer, K-H. 2001. Pflanzenfunde unter dem Kolner Heumarkt. Kolner Jahrbuch 34: 887-907.
2229	Köln, Heumarkt	Germany	secular urban town major	Early medieval	Knorzer, K-H. 2001. Pflanzenfunde unter dem Kolner Heumarkt. Kolner Jahrbuch 34: 887-907.
2235	Köln, Heumarkt	Germany	secular urban town major	medieval	Knorzer, K-H. 2001. Pflanzenfunde unter dem Kolner Heumarkt. Kolner Jahrbuch 34: 887-907.
2236	Aachen-Burtscheid	Germany	town minor	Roman	Knorzer, K-H. 1980. Romerzeitliche Pflanzenfunde aus Aachen-Burtscheid. In Naturwissen-schaftliche Beitrage zur Archaologie. Archaeo-Physika 7: 35-60.
2237	Mainz-Weisenau	Germany	ceremonial burial	Roman	Konig, M. 1995. Botanische Grabinhalte und ihre Aussagemoglichkeiten. In Witteyer, M. und Fasold, P. (eds.), Des Lichtes beraubt. Totenehrung in der romischen Graberstra?e von Mainz-Weisenau. Wiesbaden: 139-143. AND Konig, M. 2000. Uberlegungen zur "Romanisierung" anhand der Pflanzenfunde aus den Graberfeldern von Mainz-Weisenau und Wederath-Belginum. In Haffner, A. und von Schurbein, S. (Hrsg.) Kelten, Germanen, Romer im Mittelgebirgsraum zwischen Luxemburg und Thuringen. Akten des Internationalen Kolloquiums zum DFG-Schwerpunktprogramm "Romanisierung" in Trier vom 28. bis 30. September 1998, Bonn: 349-354. (FORM SENT)
2238	Dasing	Germany	secular rural lesser	Early medieval	Kuster, H. 1994. Botanische Untersuchungen belegen die Existenz eines Muhlweihers bei der fruhmittelalterlichen Wassermuhle von Dasing. Archaologische Jahr Bayern 1993: 128-129.
2239	Tüschnitz	Germany	secular rural elite	medieval	Kuster, H. 1997. Faserpflanzen, Nahrungspflanzen, Unkraut: Archaobotanische Untersuchungen an Bodenproben aus der Niederungsburg Tuschnitz. In Munz, B. (ed.), Die Niederungsburg Tuschnitz im Landkreis Kronach. Die archaologische Erforschung eines Kleinadelssitzes aus dem Spatmittelalter. Materialh Archaol Mittelalter Neuzeit 3. Rahden: 162-166.

2240	Gliechow	Germany	secular rural elite	medieval	Lange, E. 1989. Spatmittelalterliche Pflanzenreste von Gliechow, Kr. Calau. Ausgrabungen und Funde 34: 101-102.
2242	Ulm	Germany	secular urban town major	medieval	Kuster, H. 1998. Wassergraben oder trockenes Schutzbauwerk? Sedimentologische, hydrologische und botanische Untersuchungen zu Genese und Verfullung des stauferzeitlichen Stadtgrabens von Ulm. In Brauning, A. (ed.), Um Ulm herum. Untersuchungen zu mittelalterlichen Befestigungsanlagen in Ulm. Forsch Ber Archaolo Mittelalter Baden-Wurttemberg 23: 127-140.
2244	Kalbach	Germany	secular rural lesser	Early medieval	Kreuz, A. 1996. Bericht uber die Untersuchung von eisenzeitlichen und mittelalterlichen Erdproben der Fundstelle Kalbach "Krutzen", Stadt Frankfurt am Main. In Dohrn-Ihmig, M. Die fruh- bis spatmittelalterliche Siedlung und Kirchenwustung "Krutzen" im Kalabacher Feld, Stadt Frankfurt am Main. Wiesbaden: Materialien zur Vor- und Fruhgeschichte von Hessen 16: 87-89.
2245	Einbeck	Germany	secular urban town major	medieval	Paetzold, D. 1998. Einbeck, Negenborner Weg. Palaoethnobotanische Untersuchungen. In Heege, A. (ed.), Einbeck Negenborner Weg 1: Naturwissenschaftliche Studien zu einer Topfferei des 12. und fruhen 13. Jahrhunderts in Niedersachsen. Keramiktechnologie, Palaeoethnobotanik, Pollenanalyse, Archaozoologie. Oldenburg: 89-168.
2246	Metelen	Germany	secular rural lesser	Early medieval	Ruhmann, C. 1999. Cannabisverarbeitung. Archaologie in Deutschland 4: 41.
2248	Oberwinterthur - Vitudurum	Switzerland	military extramural	Roman	Jacquat, Ch. 1986. Romerzeitliche Pflanenfunde aus Oberwinterthur (Kanton Zurich, Schweiz). Beitrage zum romischen Vitudurum - Oberwinterthur 2. Berichte Zurcher Denkmalpflege, Monographien 2: 241-264. Also Romanization project [416/8].
2249	'Campagne d' Argentan'	France	secular rural village	medieval	Dietsch-Sellami, M-F. 2002. 3.2.2. Restes vegetaux. In Carpentier, V. (ed.), Un habitat des 11e-12e siecles dans la campagne d'Argentan (Oise). Archeol Medievale 32: 89-92.
2250	Oldenburg	Germany	secular urban town minor	Early medieval	Kroll, H. 1991. Kultur- und Sammelpflanzen. In Muller-Wille, M. (ed.), Statigard/Oldenburg. Ein slawischer Herrschersitz des fruhen Mittelalters in Ostholstein. Wachholtz, Neumunster: 307-314.
2251	Auerberg	Germany	military intramural	Roman	Kroll, H. 1994. Pflanzliche Gro?reste aus einer Latrine vom Auerberg. In Ulbert, G. Der Auerberg I. Topographie, Forschungsgeschichte und Wallgrabungen. Munchen. Munchner Beitrage zur Vor- und Fruhgeschichte 45:
2252	Berkum	Germany	rural nucleated	Roman	Hopf, M. 1972. Getreideabdrucke in Keramik aus Berkum, Kr. Peine (1.-2. Jh. N. Chr.). Nachrichten aus Niedersachsens Urgeschichte 41: 207-210.
2253	Lebehn	Germany	secular rural lesser	Early medieval	Neef, R. 2002. 5.1.1 Ackerbau und Sammelwirtschaft. In Gringmuth-Dallmer, E. and Leciejewicz, L. (eds.), Forschungen zu Mensch und Umwelt im Odergebiet in ur.- und fruhgeschichtlicher Zeit. Mainz: Rom-Germ
2255	Herdstedøster	Denmark	secular rural lesser	medieval	Karg, S. 2000. Medieval plant remains from a well in Herdstedoster, Kobenhavns Amt. NNU [Nationalmuseets Naturvidenskabelige Undersogelser] rapport nr. 27.
2256	Lausen-Bettenach (G114)	Switzerland	secular rural village	Early medieval	Jacomet, S. (unter Mitarbeit von Pascal Favre) 1992. Verkohlte Pflanzenreste aus einem karolongischen Grubenhaus. In Schmaedecke, M. and Tauber, J. (eds.), Ausgrabungen in Lausen-Bettenach. Vorbericht uber die archaologischen Untersuchungen 1985-1992. Archaologie und Museum Heft 025, Berichte aus der Arbeit des Amtes fur Museen und Archaologie des Kantons Baselland: 32-39.
2257	Basel, 'Münsterplatz, Münsterhügel'	Switzerland	secular urban town minor	Early medieval	Jacomet, S. and Blochinger, C. 1994. Verkohlte Pflanzenreste aus einem fruhmittelalterlichen Grubenhaus (7. / 8. Jh. AD) auf dem Basler Munsterhugel. Grabung Munsterplatz 16, Reischacherhof, 1977 / 3. In d'Aujoud'hui, R. (ed) Jahresber archaol Bodenforsch Basel-Stadt 1991: 106-143.
2258	Friedberg	Switzerland	secular rural elite	medieval	Jacomet, S. 1981. Die Holzer und Fruchte im Sodbrunnen. In Muller, F. (ed.), Die Burgstelle bei Meilen am Zurichsee. Zeitschrift fur Archaologie des Mittelalters 9: 69-77.
2259	Dohøjvej, Guderup (Als)	Denmark	rural nucleated	Roman	Ethelberg, P., Hardt, N., Poulsen, B., Sorensen, A.B. 2003. Det sonderjyske landsbrugs historie. Jernalder, Vikingetid og Middelalder. Skr Hist Samfund Sonderjylland 82. Haderslev.
2261	Viborg, Søndersø	Denmark	secular urban town minor	medieval	Robinson, D., Krongaard Kristensen, H., Boldsen, I. 1992. Botanical analyses from Viborg Sonderso. A waterlogged urban site from the Viking Period. Acta Archaeologica 62, 1991: 59-87. And Robinson, D. and Boldsen, I. 1998. 6.2. Ark?obotanisk analyse. In Hjermind, J. (ed.), Viborg Sonderso 1000-1300. Byark?ologiske undersogelser 1981 og 1984-85. Viborg Stiftsmus skrr 2/Jysk Ark?ol Selsk Skr 34. Aarhus: 309-323.
2262	Drengsted	Denmark	secular rural village	Early medieval	Mikkelsen, P.H. Norbach, L.C. 2003. Drengsted. Bebyggelse, jernproduction og agerbrug i yngre romersk og ?ldre germansk jernalder. Arhus.
2263	Mageroy, nr Habay-la-Vieille	Belgium	rural elite	Roman	Heim, J. 1991. Analyse de grains. Resultats paleoethnobotaniques de l' analyse des macrorestes vegetaux recueillis dans la cave de la villa galoo-romaine de Mageroy. Bulletin Trimestriel ARC-HAB 20: 14-27.
2264	Cham	Germany	secular urban town minor	medieval	Gregor, H-J. 1988. Ein mittelalterliches Massenvorkommen von Tollkirschen-Samen in Cham. Munchen: Bayerische Vorgeschichtsblatter 53:251-252.
2265	Klötze	Germany	rural lesser	Roman	Leineweber, R. und Willerding, U. 2000. Ein kaiserzeitlicher Kastenbrunnen aus Klotze, Altmarkkreis Salzwedel: archaologische und palao-ethnobotanische Befunde. Jahresschr Mitteldeutsche Vorgesch 83: 141-189.
2266	Marburg	Germany	secular urban town major	medieval	Rittweger, H. 2001. [Marburg] Botanische und zoologische Reste aus Gefa?en des 13. Jahrhunderts. Fundber Hessen 36 [for 1996]: 478-480
2268	Johanneser Kurhaus	Germany	various industrial site	medieval	Andrae, C. 2003. Ergebnisse botanischer Macrorestanalysen an Bodenproben vom Johanneser Kurhaus in tabellarischer Form. In Alper, G. (ed.), „Johanneser Kurhaus". Ein mittelalterlicher Blei- / Silbergewinnungsplatz bei Clausthal-Zellerfeld im Oberharz. Materialh Ur- u Frugesch Nidersachsen R A 32. Rahden: 407-412.
2269	Lübeck, Köningstrasse 59	Germany	secular urban town major	medieval	Averdieck, F-R. 2002. Botanische Bearbeitung von Proben der Grabungsplatze Heiligen-Geist-Hospital und Konigstrasse in Lubeck. Offa 46, 1989: 307-332.
2271	Lübeck, Heilingen-Geist-Hospital	Germany	secular urban town major	medieval	Averdieck, F-R. 2002. Botanische Bearbeitung von Proben der Grabungsplatze Heiligen-Geist-Hospital und Konigstrasse in Lubeck. Offa 46, 1989: 307-332.
2273	Tildonk, Groenstraat	Belgium	secular rural lesser	medieval	In't Ven, I., Wouters, W., Debruyne, T. and Cooremans, B. 2005. Middeleeuwse bewoningssporen aan de Groenstraat te Tildonk (Haacht, prov. Vlaams-Brabant). Archeologie in Vlaanderen. Monographie 5 (part 2): 271-
2274	Veldhoekstraat, Damme/Sijsele	Belgium	secular rural lesser	medieval	In't Ven, I., Hollevoet, Y., Cooremans, B., Groote, A. de and Deforce, K. 2005. Volmiddeleeuwse bewoningssporen aan de Veldhoekstraat in Damme/Sijsele (prov. West-Vlaanderen). Archeologie in Vlaanderen.
2275	Antwerpse Heirweg, Sijsele/Damme	Belgium	rural nucleated	Roman	In't Ven, I., Hollevoet, Y., Cooremans, B., Groote, A. de and Deforce, K. 2005. Romeinse bewoning aan de Antwerpse Heirweg in Sijsele/Damme (prov. West-Vlaanderen). Archeologie in Vlaanderen. Monographie 5 (part
2276	Houtemveld, Houtem	Belgium	rural nucleated	Roman	In't Ven, I., Wouters, W., Debruyne, T., Bellingen van and Cooremans, B. 2005. Een Gallo-Romeinse rurale nederzetting aan het Houtemveld in Houtem (Vilvoorde-Steenokkerzeel, prov. Vlaams-Brabant). Archeologie in Vlaanderen. Monographie 5 (part 2): 259-269.
2277	Boskouterstraat, Kerkom	Belgium	rural elite	Roman	In't Ven, I., Wouters, W., Roovers, I., Debruyne, T. and Cooremans, B. 2005. Romeinse gebouwsporen aan de Boskouterstraat in Kerkom (Boutersem, prov. Vlaams-Brabant). Archeologie in Vlaanderen. Monographie 5
2278	Boskouterstraat, Kerkom	Belgium	secular rural lesser	medieval	In't Ven, I., Wouters, W., Roovers, I., Debruyne, T. and Cooremans, B. 2005. Romeinse gebouwsporen aan de Boskouterstraat in Kerkom (Boutersem, prov. Vlaams-Brabant). Archeologie in Vlaanderen. Monographie 5
2279	Hatzum-Langwurt	Germany	secular rural village	Early medieval	Behre, K-E. 1986. Ackerbau, Vegetation und Umwelt im Bereich fruh- und hoch-mittelalterlicher Siedlungen im Flu?marschgebiet der unteren Ems. Probleme der Kustenforschung im sudlichen Nordseegebiet 1: 99-125.
2280	Hatzum-Burg	Germany	secular rural village	medieval	Behre, K-E. 1986. Ackerbau, Vegetation und Umwelt im Bereich fruh- und hoch-mittelalterlicher Siedlungen im Flu?marschgebiet der unteren Ems. Probleme der Kustenforschung im sudlichen Nordseegebiet 1: 99-125.
2281	Hatzum-Burg	Germany	secular rural village	Early medieval	Behre, K-E. 1986. Ackerbau, Vegetation und Umwelt im Bereich fruh- und hoch-mittelalterlicher Siedlungen im Flu?marschgebiet der unteren Ems. Probleme der Kustenforschung im sudlichen Nordseegebiet 1: 99-125.
2282	Alten Boombarg	Germany	secular rural village	medieval	Behre, K-E. 1986. Ackerbau, Vegetation und Umwelt im Bereich fruh- und hoch-mittelalterlicher Siedlungen im Flu?marschgebiet der unteren Ems. Probleme der Kustenforschung im sudlichen Nordseegebiet 1: 99-125.
2283	Gittrup	Germany	secular rural lesser	Early medieval	Neef, R. 1985. Botanische Funde aus den vorgeschichtlichen und fruhmittelalterlichen Emssand-Siedlungen Gittrup und Ostbevern. Ausgrabungen und Funde in Westfalen-Lippe 3: 89-100.
2286	Bernshausen 1	Germany	secular urban town minor	medieval	Wolf, G. 2003. Palao-ethnobotanische Untersuchung an Pflanzenmaterial aus Bernshausen, Ldkr. Gottingen. In Grote, K. (ed.), Bernshausen. Archaologie und Geschichte eines mittelalterlichen Zentralortes am Seeburger See. Bonn: Zeitschr Archaol Mittelalter Beih 16: 209-222.
2287	Mainz, Mogontiacum	Germany	ceremonial temple-shrine	Roman	Zach, B. 2002. Vegetable offerings on the Roman sacrificial site in Mainz, Germany - short report on the first results. Vegetation History and Archaeobotany 11: 101-106.
2288	Cambridge, St John's Triangle	Great Britain	secular urban town major	medieval	Cessford, C. forthcoming. St John's Triangle, Cambridge. An Archaeological Excavation. Cambridge Archaeological Unit Report.
2289	Eschenz	Switzerland	town minor	Roman	Feigenwinter, F. 1997. 2.5. Die Pflanzenfunde aus der Latrine. In Jauch, V. (ed.), Eschenz - Tasgetium. Romische Abwasserkanale und Latrinen. Archaol Thurgau 5. Veroff Amt Archaol Kanton Thurgau: 21-28.
2290	Toledo, Santa María de Melque	Spain	secular urban town major	Early medieval	Arnanz, A.M. 1999. Anexo 4. La paleocarpologia de Melque (Toledo). In Caballero Zoreda, L., Fernandez Mier, M. (eds.), Notas sobre el complejo productivo de Melque (Toledo). Archivo Espanìol Arqueol 72: 230-234.
2291	Toledo, Santa María de Melque	Spain	secular urban town major	medieval	Arnanz, A.M. 1999. Anexo 4. La paleocarpologia de Melque (Toledo). In Caballero Zoreda, L., Fernandez Mier, M. (eds.), Notas sobre el complejo productivo de Melque (Toledo). Archivo Espanìol Arqueol 72: 230-234.
2292	Zürich, Schmidgasse 5	Switzerland	secular urban town minor	Early medieval	Huster-Plogmann, H., Kuhn, M. und Motschi, A. 2004. Fruh- und hochmittelalterliche Siedlungsreste in Zurich-Niederdorf. Jahrb Schweizer Ges Ur- Fruhgesch 87: 313-321.
2294	Basel, Augustinergasse	Switzerland	religious monastery urban	medieval	Jacomet, S. 1995. VI. Botanische Untersuchungen der Erdproben aus den mittelalterlichen Latrinengruben (13. Jh.) an der Augustinergasse 2 in Basel (1968). In Kamber, P. (ed.), Die Latrinen auf dem Areal des Augustinerklosters. Basel-Augustinergasse 2, Grabung 1968. Basel: Materialh Archaol Basel 10: 104-105.
2295	Thun, Obere Hauptgasse	Switzerland	secular urban town minor	medieval	Brombacher, C. and Petrucci-Bavaud, M. 1999. 4. Die botanischen Makroreste. In Roth, E. and Gutscher, D. (eds.), Thun, Obere Hauptgasse 6 / 8. Die Funde der Rettungsgrabungen von 1989. Archaol Kanton Bern 4B:
2296	Alle, Noir Bois	Switzerland	town minor	Roman	Brombacher, C. et Klee, M. 1999. 6.6 Analyse des macrorestes vegetaux de stuctures de combustion. In Demarez, J-D. and Othenin-Girard, B. (eds.), Une chaussee romaine avec relais entre Alle et Porrentruy (Jura, Suisse). Cahier archeol jurassienne 8. Porrentruy: 139-143.
2297	Braives	Belgium	military intramural	Roman	Heim, J. 1993. c. Etude paleocarpologique du fond du puits. In Brulet, R. (ed.), Braives Gallo-Romain V. La fortification du Bas Empire. Publ Hist Art Archeol Univ Cath Louvain (Louvain-la-Neuve) 73: 277-283.
2298	Mainz-Innenstadt	Germany	town major	Roman	Baas, J. (and Hopf, M.) 1971. Pflanzenreste aus romerzeitlichen Siedlungen von Mainz-Weisenau und Mainz-Innenstadt und ihr Zusammenhang mit Pflanzen-Funden aus vor-und fruhgeschichtlichen Stationen Mitteleuropas. Ein Beitrag zur Geschichte userer Kulturpflanzen. Saalburg Jahrbuch, Bericht des Saalburg Museums 28: 61-87.
2299	Heldenbergen	Germany	military extramural	Roman	Baas, J. 2003. Pflanzenreste aus den Heldenberger Latrinen, Brunnen und Kellern. In: Czysz W, Heldenbergen in der Wetterau. Feldlager, Kastell, Vicus.Mainz: Limesforschungen 27: 313-314.
2300	Badenweiler	Germany	town major	Roman	Stika, H-P.1999. Botanische Gro?reste aus Feuchtsedimenten vom gro?en Drainagekanal der romischen Heilthermen von Badenweiler, Kreis Breisgau-Hochschwarzwald. Fundberichte aus Baden-Wurttemberg 23: 119-128. And Stika, H-P. 1998. Archaobotanische Untersuchungen am gro?en Drainagekanal der romischen Heilthermen von Badenweiler, Kreis Breisgau-Hochschwarzwald. Archaol Ausgr Baden Wurttemberg: 185-187.
2301	Haus Meer	Germany	secular rural elite	medieval	Knorzer, K-H. 1999. Die Pfalanzenfunde. In Janssen, W. und Janssen, B. (eds.), Die fruhmittelalterliche Niederungsburg bei Haus Meer, Kreis Neuss. Rheinische Ausgrabungen 46. Koln-Bonn: 104-214. And (from Wiethold literature) Knorzer, K-H. 1999. Die Bisherigen Obstfunde aus der fruhmittelalterlichen Niederungsburg Bei Haus Meer: 133-186.
2302	Xanten, Colonia Ulpa Traiana, Insula 3, 4, 5	Germany	town major	Roman	Knorzer, K-H. 1981. Romerzeitliche Pflanzenfunde aus Xanten. Koln: Archaeo-Physika 11. Rheinland-Verlag. Also: Knorzer, K-H. 1994.Romerzeitliche Pflanznfunde aus der CUT, Insula 38. Xantener Berichte. Grabung-Forschung-Pr asentation. Rheinland-Verlag. Koln: 133-7.
2303	Xanten, Colonia Ulpa Traiana, Insula 10, 19, 20, 27, 29	Germany	town major	Roman	Knorzer, K-H. 1981. Romerzeitliche Pflanzenfunde aus Xanten. Koln: Archaeo-Physika 11. Rheinland-Verlag. Also: Knorzer, K-H. 1994.Romerzeitliche Pflanznfunde aus der CUT, Insula 38. Xantener Berichte. Grabung-Forschung-Pr asentation. Rheinland-Verlag. Koln: 133-7.
2304	Xanten, Colonia Ulpa Traiana, Insula 3, 34	Germany	town major	Roman	Knorzer, K-H. 1981. Romerzeitliche Pflanzenfunde aus Xanten. Koln: Archaeo-Physika 11. Rheinland-Verlag. Also: Knorzer, K-H. 1994.Romerzeitliche Pflanznfunde aus der CUT, Insula 38. Xantener Berichte. Grabung-Forschung-Pr asentation. Rheinland-Verlag. Koln: 133-7.
2305	Xanten, Colonia Ulpa Traiana, Insula 7	Germany	town major	Roman	Knorzer, K-H. 1981. Romerzeitliche Pflanzenfunde aus Xanten. Koln: Archaeo-Physika 11. Rheinland-Verlag. Also: Knorzer, K-H. 1994.Romerzeitliche Pflanznfunde aus der CUT, Insula 38. Xantener Berichte. Grabung-Forschung-Pr asentation. Rheinland-Verlag. Koln: 133-7.
2306	Xanten, Colonia Ulpa Traiana, Insula 3, 11, 29, 33, 32, 34, 38	Germany	town major	Roman	Knorzer, K-H. 1981. Romerzeitliche Pflanzenfunde aus Xanten. Koln: Archaeo-Physika 11. Rheinland-Verlag. Also: Knorzer, K-H. 1994.Romerzeitliche Pflanznfunde aus der CUT, Insula 38. Xantener Berichte. Grabung-Forschung-Pr asentation. Rheinland-Verlag. Koln: 133-7.
2308	Xanten, Colonia Ulpa Traiana, port	Germany	town major	Roman	Knorzer, K-H. 1981. Romerzeitliche Pflanzenfunde aus Xanten. Koln: Archaeo-Physika 11. Rheinland-Verlag. Also: Knorzer, K-H. 1994.Romerzeitliche Pflanznfunde aus der CUT, Insula 38. Xantener Berichte. Grabung-Forschung-Pr asentation. Rheinland-Verlag. Koln: 133-7.
2311	Regensburg	Germany	rural elite	Roman	Kuster unpublished in R [465/6].
2312	Kempten	Germany	town major	Roman	Kuster unpublished in R [267/8].
2313	Lichfield, Sandford Street	Great Britain	secular urban town minor	medieval	Ciaraldi, M. 2004. The mineralised plant assemblage from the cesspit. In Nichol, K. and Ratkai, S. with contributions by Bevan, L., Bonham, M., Ciaraldi, M. and Murray, E. (eds.), Excavations on the North side of Sandford Street, Lichfield, Staffordshire 2000. Staffordshire Archaeological and Historical Society Transactions 40: 105-109.
2314	Augst Rundbau (Osttor)	Switzerland	ceremonial burial	Roman	Jacomet, S. 1986. Verkohlte Pflanzenreste aus einem romischen Grabmonument beim Augster Osttor (1966). Jahresberichte aus Augst und Kaiseraugst 6: 7-53.
2315	Oedenburg, Biesheim/Kunheim	France	ceremonial temple-shrine	Roman	Jacomet, S. und Schibler, J. 2001. Les contributions de l'archeobotanique et de l'archeozoologie a la connaissance de l'agriculture et de l'alimentation du site de Biesheim-Kunheim. In Plouin, S., Redde, M., Boutantin, C. (Hrsg.) La frontiere romaine sur le Rhin superieur. A propos des fouilles recentes de Biesheim-Kunheim, 60-69. Exposition presentee au Musee gallo-romain de Biesheim, 31 aout au 20 octobre 2001. Biesheim: 60-69. Jacomet, S., Schlumbaum, A., Klee, M. und Vandorpe, P. 2002. Les investigations archeobotaniques. In Redde, M. (Hrsg.) Rapport triennal (2000-2002) sur les fouilles FRanco-Germano-Suisses a Oedenburg (Haut-Rhin). Paris, 283307. Vandorpe, P., Schlumbaum, A., Wick, L. und Jacomet, S. (2004) Les analyses archeobotaniques de la zone des temples 2004. In Redde, M. (Hrsg.) Oedenbourg 2004. Rapport de la fouille 2004. 95-105. Vandorpe, P., Wick, L., Schlumbaum, A. und Jacomet, S. 2003. Biesheim-Kunheim 2003: Analyses botaniques preliminaires des echantillons archeobotaniques. In Redde, M. (Hrsg.) Oedenburg (Haut-Rhin). Rapport
2317	St Bartholomews Hospital 76-8, Bristol	Great Britain	secular urban town major	medieval	Jones J. 1998. Plant and insect remains. In Price, R. and Ponsford, M. (eds.), St Bartholomew's Hospital, Bristol: the excavation of a medieval hospital: 1976-8. CBA Res Rep 110. York: CBA: 193-7.
2319	South St, Bridport	Great Britain	secular urban town minor	medieval	Stevens, C.J. 2001. Charred plant remains. In Godden, D., Grove, J. and Smith, R.J.C. (eds.), Medieval and post-medieval Bridport: excavations at 43 SOuth Street, 1996: 120-1.
2320	Byre Theatre Abbey St, St Andrews	Great Britain	secular urban town minor	medieval	Hastie, M. and Holden, T. 2001. The plant remains. In Moloney, C. and Baker, L.M. (eds.), Evidence for the form and nature of a medieval burgage plot in St Andrews: an archaeological excavation of the site of the Byre Theatre, Abbey Street, St Andrews. Taysdie Fife Archaeol J. 7: 77-9.
2321	Graach, "Josephshof"	Germany	rural lesser	Roman	Konig, M in preparation Graach.

2322	Lieser	Germany	rural lesser	Roman	Konig, M in preparation Lieser.
2323	Trier, Walramsneustraße	Germany	secular urban town minor	medieval	Konig, M in preparation Walramsneustra?e, Trier.
2324	Wittlich, "Ober-Unter der Neumühle"	Germany	rural elite	Roman	Konig, M in preparation Wittlich, "Ober-Unter der Neumuhle".
2325	Wolf, "Wolfer Goldgrube"	Germany	rural lesser	Roman	Eine spätantike Kelteranlage mit "Mehrzweckcharakter". Die archäobotanischen Untersuchungen in Wolf, Kreis Bernkastel-Wittlich. Mainzer Archäologische Zeitschrift 5. Konig, M in preparation. Wolf, Kreis Bernkastel-Wittlich. Jahresbericht des Landesamtes fur Denkmalpflege, Amt Trier, fur den Regierungsbezirk Trier und den Kreis Birkenfeld (au?er Stadtbereich) 2001-2003. Trierer
2326	Zeltingen-Rachtig, Rachtig Kelteranlage	Germany	rural lesser	Roman	Konig, M in preparation. Zeltingen-Rachtig, Kreis Bernkastel-Wittlich. Jahresbericht des Landesamtes fur Denkmalpflege, Amt Trier, fur den Regierungsbezirk Trier und den Kreis Birkenfeld (au?er Stadtbereich) 2001-2003. Trierer Zeitschrift 66.
2350	Rotterdam-Spoortunnel 13-26	Netherlands	secular urban town minor	medieval	Brinkkemper, O. 1996. Vroeg Rotterdam opgespoord. Archeobotanisch onderzoek aan bewoningsresten langs de dam in de Rotte (Hoogstraat; object 13-26). BIAXiaal 30.
2353	Dordrecht-Torenstraat	Netherlands	secular urban town major	medieval	Kooistra, L.I., Hanninen, K. , Haaster, H. van and Vermeeren, C. 1998. Voedselresten in beer en afval. Botanisch onderzoek aan beerputten, afvalkuilen en ophogingslagen van de steden Dordrecht en Nijmegen uit de 12e 20e eeuw. BIAXiaal 52.
2356	IJsselstein-Hofstraat	Netherlands	secular urban town minor	medieval	Haaster, H. van 2002. Plantaardige en dierlijke resten uit een beerput (1480-1520) aan de Hofstraat in IJsselstein. BIAXiaal 133.
2357	Rotterdam-Binnenrotte	Netherlands	secular urban town minor	medieval	Brinkkemper, O. 2002. Rotterdam-Binnenrotte. Archeobotanisch onderzoek aan monsters uit de Late Middeleeuwen en de Nieuwe tijd. ArBoRa 14.
2358	's-Hertogenbosch Boerenmouw	Netherlands	secular urban town major	medieval	Haaster, H. van 2003. Archeobotanica uit 's-Hertogenbosch. Milieuomstandigheden, bewoningsgeschiedenis en economische ontwikkelingen in en rond een (post)middeleeuwse groeistad. Proefschrift Universiteit van
2360	's-Hertogenbosch Volderstraat	Netherlands	secular urban town major	medieval	Haaster, H. van 2003. Archeobotanica uit 's-Hertogenbosch. Milieuomstandigheden, bewoningsgeschiedenis en economische ontwikkelingen in en rond een (post)middeleeuwse groeistad. Proefschrift Universiteit van
2361	's-Hertogenbosch Terrein De Gruijter	Netherlands	secular urban town major	medieval	Haaster, H. van 2003. Archeobotanica uit 's-Hertogenbosch. Milieuomstandigheden, bewoningsgeschiedenis en economische ontwikkelingen in en rond een (post)middeleeuwse groeistad. Proefschrift Universiteit van
2364	Nijmegen-castellum I	Netherlands	military intramural	Roman	Buurman, J. 1984. Botanisch laboratorium. Jaarverslag ROB 1982: 91-94.
2365	Utrecht-Dorstige Harthof e.o.	Netherlands	secular urban town major	medieval	Brink, L.M. van der 1984. Dorstige Harthof en omgeving. Maandblad Oud Utrecht 8-9: 108-113.
2366	Utrecht Hema Steenweg	Netherlands	secular urban town major	medieval	Brink, L.M. van den 1984. Zaden en vruchten uit middeleeuws Utrecht. Een onderzoek naar zaden en vruchten uit middeleeuwse tonputten en beerputten en een aanvullend parasitologisch onderzoek. Intern Rapport Lab. voor Palaeobotanie en Palynolgie, RU Ut.
2370	Valkenburg-Marktveld III	Netherlands	military extramural	Roman	Brinkkemper, O. unpublished. Ongepubliceerde gegevens Valkenburg-Marktveld.
2374	's-Hertogenbosch-Sint-Janskerkhof	Netherlands	secular urban town major	medieval	Haaster, H. van 1997. Plantaardige en dierlijke resten uit de Middeleeuwen. De resultaten van het oecologisch onderzoek op het Sint Janskerkhof. In Boekwijt, H.W. and Janssen, H.L. (red.), Bouwen en wonen in de schaduw van de Sint Jan. Kroniek Bouwhisto.
2375	Nijmegen-Canisiuscollege II	Netherlands	military intramural	Roman	Hingh, A.E. de and Kooistra, L.I. 1994. Voedselresten. Numaga 41: 29-34.
2376	Maastricht-Houtmaas	Netherlands	military extramural	Roman	Kuijper, W.J. 1984. Plantenresten uit Romeins Maastricht. Archeologie in Limburg 21: 3-8.
2377	Alphen aan den Rijn-Julianastraat	Netherlands	military intramural	Roman	Kuijper, W.J. and Turner, H. 1992. Diet of a Roman centurion at Alphen aan den Rijn, the Netherlands, in the first century AD. In Pals, J.P. , Buurman, J. and Veen, M. van der (eds.), Review of Palaeobotany and Palynology 73: 187-203 (Festschrift Van Zeist).
2378	Wijk bij Duurstede-de Horden	Netherlands	rural non elite	Roman	Lange, A.G. 1990. De Horden near Wijk bij Duurstede. Plant remains from a native settlement at the Roman frontier, a numerical approach. Thesis Groningen.
2385	Amsterdam-Nieuwendijk	Netherlands	secular urban town major	medieval	Paap, N.A. 1983. Economic plants in Amsterdam: qualitative and quantitative analysis. In Jones, M. (ed.), Integrating the Subsistence economy. Symposia of the Association for Environmental Archaeology No. 4. BAR International Series 181: 315-325.
2387	Amsterdam-Damrak 49	Netherlands	secular urban town minor	medieval	Pals, J.P. 1972. Plantaardigheden onder Damrak 49. Ongepubliceerd manuscript.
2388	Zwolle-Praubstraat	Netherlands	secular urban town major	medieval	Pals, J.P. 1987. Zaden en vruchten. In Hagedoorn, J. and Wormgoor, I. (red.), Domus Parva. Het eerste huis van de Moderne Devoten te Zwolle: 45-47.
2389	Maastricht-Plankstraat 23	Netherlands	secular urban town major	medieval	Seeman, M. 1986. Oecologisch onderzoek van enkele monsters uit Maastricht. Intern Rapport IPP.
2390	Kampen-"Achter Blokker"	Netherlands	secular urban town major	medieval	Vermeeren, C.E. 1990. Botanisch onderzoek van middeleeuwse beerputten uit Kampen. In Clevis, H. and Smit, M. (red.), Verscholen in vuil. Archeologische vondsten uit Kampen 1375-1925.
2392	Leeuwarden-Gouverneursplein	Netherlands	secular urban town major	Early medieval	Zeist, W. van, Cappers, R., Neef, R. and During, H. 1987. A palaeobotanical investigation of medieval occupation deposits in Leeuwarden, the Netherlands. Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series B 90, (4): 371.
2396	Leeuwarden-Speelmanstraat	Netherlands	secular urban town major	medieval	Zeist, W. van, Cappers, R., Neef, R. and During, H. 1987. A palaeobotanical investigation of medieval occupation deposits in Leeuwarden, the Netherlands. Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series B 90, (4): 371.
2399	Montfoort-Antoniushuis	Netherlands	secular urban town minor	medieval	Man, R. de 1996. De inhoud van een 14e eeuwse beerput te Montfoort-Antoniushuis. Interne Rapporten Archeobotanie ROB 1996/15.
2400	Dordrecht-Groenmarkt	Netherlands	secular urban town major	medieval	Kooistra, L.I., Hanninen, K. , Haaster, H. van and Vermeeren, C. 1998. Voedselresten in beer en afval. Botanisch onderzoek aan beerputten, afvalkuilen en ophogingslagen van de steden Dordrecht en Nijmegen uit de 12e 20e eeuw. BIAXiaal 52.
2403	Oldenzaal-St. Agnesklooster	Netherlands	religious monastery urban	medieval	Brinkkemper, O. and Man, R. de 1999. Archeobotanisch onderzoek van beerput 1 (15e eeuw). In Ostkamp, S. (red.), De opgraving van het St. Agnesklooster in Oldenzaal, Amersfoort (Rapportage Archeologische Monumentenzorg 50): 52-59.
2404	Leiden-Roomburg	Netherlands	military extramural	Roman	Amen, I. van and Brinkkemper, O. unpublished. De plantenresten uit de Romeinse sporen van de opgraving te Roomburg., Rapportage Archeologische Monumentenzorg.
2405	Bunnik-Vechten	Netherlands	military intramural	Roman	Vermeeren, C. 1995. Opgraving Vechten (Bunnik), rapportage botanisch onderzoek. Interne Rapporten Archeobotanie ROB 1995/2.
2408	Groningen-Oude Ebbingestraat	Netherlands	secular urban town major	medieval	Zeist, W. van, Cappers, R.T.J., Ouderkerken, M.G., Palfenier-Vegter, R.M., Roller, G.J. de and Vrede, F. 2000. Cultivated and wild plants in late- and postmedieval Groningen. A study of archaeological plant remains.
2409	Vechten-Bunnik	Netherlands	military intramural	Roman	Man, R. de 1996. Archeobotanisch onderzoek in Vechten-Bunnik 1995 (inhoud Rom. (honing)potten). Interne Rapporten Archeobotanie ROB 1996/30.
2410	Kerk-Avezaath 'Huis Malburg'	Netherlands	secular rural lesser	medieval	Haaster, H. van, Kooistra, L.I. and Vermeeren, C. 2000. Archeobotanie. In Oudhof, J.W.M., Dijkstra, J. and Verhoeven, A.A.A. (red.), Archeologie in de Betuweroute. 'Huis Malburg' van spoor tot spoor. Een middeleeuwse nederzetting in Kerk-Avezaath, Amersfoort.
2411	Purmerend-Purmersteijn	Netherlands	secular rural elite	medieval	Haaster, H. van and Hanninen, K. 1999. Hout, pollen en zaden uit het 15e eeuwse kasteel Purmerstein te Purmerend. BIAXiaal 79.
2413	Buren-Stenen Kamer/Linge	Netherlands	secular rural non elite	medieval	Haaster, H. van 2001. Archeobotanie. In Verhoeven, A.A.A. and Brinkkemper, O. (red.), Archeologie in de Betuweroute. Twaalf eeuwen bewoning op de Stenen Kamer aan de Linge, Amersfoort (Rapportage Archeologische Monumentenzorg, 85): 519-608.
2415	Oss-Ussen Westerveld	Netherlands	rural lesser	Roman	Bakels, C.C., Wesselingh, D.A. and Amen, I. van 199. Acquiring a taste: the menu of Iron Age and Roman-period farmers at Oss-Ussen, the Netherlands. Analecta Praehistorica Leidensia 29: 193-211.
2416	Veere-Domburg	Netherlands	secular rural elite	Early medieval	Brinkkemper, O. 2003. De conservering van botanische resten in een Karolingische ringwalburg te Domburg (Zeeland). Interne Rapporten Archeobotanie ROB 2003/2.
2417	's-Hertogenbosch Beurdsestraat	Netherlands	secular urban town major	medieval	Haaster, H. van 2003. Archeobotanica uit 's-Hertogenbosch. Milieuomstandigheden, bewoningsgeschiedenis en economische ontwikkelingen in en rond een (post)middeleeuwse groeistad. Proefschrift Universiteit van
2419	Borsele-Ellewoutsdijk	Netherlands	rural non elite	Roman	Hanninen, K., Kubiak, L., Rijn, P. van and Smeerdijk, D.G. van 2003. Hout-, pollen- en zadenonderzoek van de Romeinse vindplaats Ellewoutsdijk 2002, gem. Borsele, Zeeland. BIAXiaal 162.
2420	Houten-Tiellandtweg IV	Netherlands	rural lesser	Roman	Kooistra, L.I. 1996. Borderland farming. Possibilities and limitations of farming in the Roman Period and Early Middle Ages between the Rhine and Meuse. Thesis Leiden.
2421	Geldrop	Netherlands	secular rural village	Early medieval	Beurden, L. van 2002. Botanisch onderzoek in het Maas-Demer-Schelde gebied. In Fokkens, H. and Jansen, R. (red.), 2000 jaar bewoningsdynamiek. Brons- en IJzertijdbewoning in het Maas-Demer-Scheldegebied.
2422	Sittard-gasthuis	Netherlands	secular urban town minor	medieval	Bakels, C.C. 1980. Een Sittardse beerput en mestvaalt. Archeologie in Limburg 9: 2-3.
2423	's-Hertogenbosch Hooghuis van Megen	Netherlands	secular rural elite	medieval	Brink, L.M. van der 1986. Botanische resten uit de beerput van het Hooghuis van Megen. Intern Rapport Gemeentelijk Oudheidkundig Bodemonderzoek 's-Hertogenbosch.
2425	Leiden-Agnietenklooster	Netherlands	religious monastery urban	medieval	Kuijper, W.J. 1986. Planten- en dierenresten in laatmiddeleeuwse beerputten op het terrein van het St. Agnietenklooster in Leiden. Bodemonderzoek in Leiden. Jaarverslag 1984: 131-142.
2427	Kampen-Agnietenklooster	Netherlands	religious monastery urban	medieval	Brinkkemper, O. 1995. Een fleurig en kruidig Agnietenklooster in Kampen. Botanisch onderzoek aan een beerkelder uit de zestiende eeuw. BIAXiaal 11.
2429	Dordrecht-Heer Heiman Suisstraat	Netherlands	secular urban town major	medieval	Kooistra, L.I., Hanninen, K. , Haaster, H. van and Vermeeren, C. 1998. Voedselresten in beer en afval. Botanisch onderzoek aan beerputten, afvalkuilen en ophogingslagen van de steden Dordrecht en Nijmegen uit de 12e 20e eeuw. BIAXiaal 52.
2432	Haarlem-Korte Begijnestraat 10	Netherlands	secular urban town major	medieval	Haaster, H. van and Hanninen, K. 1998. Archeobotanisch onderzoek aan enkele afvalkuilen en beerputten van de locatie Korte Begijnestraat 10 te Haarlem. BIAXiaal 57.
2435	Haarlem-Spaarne	Netherlands	secular urban town major	medieval	Brinkkemper, O. 2002. Plantenresten uit beerputten van Haarlem-Spaarne. Een 'rijke' informatiebron! ArBoRa 12.
2436	Kampen-Voorstraat 18-20	Netherlands	secular urban town major	medieval	Haaster, H. van, Brinkhuizen, D.C. and Zeiler, J.T. 2001. Archeobotanisch en -zoologisch onderzoek van twee beerputten (1450-1575) aan de Voorstraat in Kampen. BIAXiaal 125.
2441	's-Hertogenbosch St. Pieterskerk	Netherlands	secular urban town major	medieval	Haaster, H. van 2003. Archeobotanica uit 's-Hertogenbosch. Milieuomstandigheden, bewoningsgeschiedenis en economische ontwikkelingen in en rond een (post)middeleeuwse groeistad. Proefschrift Universiteit van
2443	's-Hertogenbosch Paradeplein	Netherlands	secular urban town major	medieval	Haaster, H. van 2003. Archeobotanica uit 's-Hertogenbosch. Milieuomstandigheden, bewoningsgeschiedenis en economische ontwikkelingen in en rond een (post)middeleeuwse groeistad. Proefschrift Universiteit van
2444	's-Hertogenbosch Spuistroom	Netherlands	secular urban town major	medieval	Haaster, H. van 2003. Archeobotanica uit 's-Hertogenbosch. Milieuomstandigheden, bewoningsgeschiedenis en economische ontwikkelingen in en rond een (post)middeleeuwse groeistad. Proefschrift Universiteit van
2446	Velsen 1	Netherlands	military intramural	Roman	Berg, T. van den 1985. Paleobotanisch onderzoek van enkele anthropogene lagen uit de Romeinse haven bij Velsen. Intern Rapport IPP.
2450	Nieuwenhoorn 09-89	Netherlands	rural lesser	Roman	Brinkkemper, O. 1993. Wetland farming in the area to the south of the Meuse estuary during the Iron Age and Roman Period. An environmental and palaeoeconomic reconstruction. Thesis Leiden (Analecta Praehistorica
2451	Rockanje II	Netherlands	rural lesser	Roman	Brinkkemper, O. 1993. Wetland farming in the area to the south of the Meuse estuary during the Iron Age and Roman Period. An environmental and palaeoeconomic reconstruction. Thesis Leiden (Analecta Praehistorica
2454	Uitgeest-Floretijnse veld	Netherlands	rural lesser	Roman	Buurman, J. 1988. Roman medicine from Uitgeest. In Kuster, H. (Hrsg.), Der prahistorische Mensch und seine Umwelt. Festschrift U. Korber-Grohne, (Forschungen und Berichte zur Vor- und Fruhgeschichte in Baden-Wurttemberg 31): 341-351.
2456	Medemblik-Muntstraat/Korensteeg (M82)	Netherlands	secular rural village	Early medieval	Cremer, R.A. 1985. Verscheiden vegetaties: een palaeobotanisch onderzoek van monsters uit middeleeuws Medemblik. Intern Rapport IPP.
2459	Medemblik-Oude Haven/Ridderstraat (M76)	Netherlands	secular rural village	Early medieval	Cremer, R.A. 1985. Verscheiden vegetaties: een palaeobotanisch onderzoek van monsters uit middeleeuws Medemblik. Intern Rapport IPP.
2460	Schagen-Muggenburg	Netherlands	rural lesser	Roman	Haaster, H. van 1985. Schagen-Muggenburg. Een bijdrage aan de reconstructie van milieu en agrarische activiteiten rond een nederzetting uit de 2e/3e eeuw., Scriptie I.P.P.
2461	Monnickendam-Kerkstraat 49-53	Netherlands	secular rural village	medieval	Hogestijn, J.W.H. 1984. Een palaeobotanisch onderzoek van enkele middeleeuwse ophogingslagen uit Monnickendam (N.H.). Intern Rapport IPP.
2463	Alkmaar-Magdalenastraat	Netherlands	secular urban town major	medieval	Man, R. de 1988. Botanische macroresten uit een laatmiddeleeuwse waterput te Alkmaar-Magdalenastraat (alleen data). Interne Rapporten Archeobotanie ROB 1988/1.
2464	Valkenburg-Marktveld I	Netherlands	military intramural	Roman	Noordam, A. and Pals, J.P. 1987. In de put zitten (2). Zaden uit Valkenburgse waterputten. In Bult, E.J. and Hallewas, D.P. (red.), Graven bij Valkenburg II: 56-67.
2465	Dordrecht-Tolbrug	Netherlands	secular urban town major	medieval	Pals, J.P. 1972. Zadenanalyse stadskernonderzoek Dordrecht. Ongepubliceerd manuscript.
2466	's-Hertogenbosch Postelstraat 16-18	Netherlands	secular urban town major	medieval	Tomlinson, P.R. 1988. Het botanisch onderzoek van plantenresten uit een 13e eeuwse greppel rond de Uithof van de Priorij van Postel te 's-Hertogenbosch. In Boekwijt, H.W. and Janssen, H.L. (red.), Kroniek van bouwhistorische en archeologisch onderzoek.
2467	Kampen-"de Kokpanden"	Netherlands	secular urban town major	medieval	Vermeeren, C.E. 1990. Botanisch onderzoek van middeleeuwse beerputten uit Kampen. In Clevis, H. and Smit, M. (red.), Verscholen in vuil. Archeologische vondsten uit Kampen 1375-1925.
2468	Oldeboorn	Netherlands	secular rural non elite	medieval	Zeist, W. van 1988. Archeobotanisch onderzoek van Oldeboorn. In Bierma, M., Clason, A.T., Kramer, E. and Langen, G.J. de (red.), Terpen en wierden in het Fries-Groningse kustgebied.
2469	Pesse	Netherlands	secular rural village	medieval	Zeist, W. van, Roller, G.J. de, Palfenier-Vegter, R.M., Harsema, O.H. and During, H. 1986. Plant remains of medieval sites in Drenthe. Helinium 26: 226-274.
2474	Leeuwarden-Gouverneursplein	Netherlands	secular urban town major	medieval	Zeist, W. van, Cappers, R., Neef, R. and During, H. 1987. A palaeobotanical investigation of medieval occupation deposits in Leeuwarden, the Netherlands. Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series B 90, (4): 371.
2477	Heveskesklooster	Netherlands	rural lesser	Roman	Cappers, R.T.J. 1994. An ecological characterization of plant macro-remains of Heveskesklooster (the Netherlands). A methodological approach. Thesis Groningen.
2478	Eindhoven-Heuvelterrein	Netherlands	secular urban town minor	medieval	Luijten, H. 1994. Gebruiksplanten en de natuurlijke vegetatie van het Heuvelterrein. In Arts, N. (red.), Sporen onder de Kempische stad.
2479	Peelo-Hovinge	Netherlands	secular rural village	Early medieval	Zeist, W. van and Palfenier-Vegter, R.M. 1994. Medieval plant remains from Peelo, the Netherlands. Palaeohistoria 35/36: 307-321.
2487	Groningen-Pelsterstraat	Netherlands	secular urban town major	medieval	Zeist, W. van, Cappers, R.T.J., Ouderkerken, M.G., Palfenier-Vegter, R.M., Roller, G.J. de and Vrede, F. 2000. Cultivated and wild plants in late- and postmedieval Groningen. A study of archaeological plant remains.

2492	Maastricht-Pandhof	Netherlands	town major	Roman	Bakels, C.C. and Dijkman, W. 2000. Maastricht in the first millennium AD. The archaeobotanical evidence. Maastricht (Archaeologica Mosana 2).
2493	Maastricht-Houtmaas II	Netherlands	military extramural	Roman	Bakels, C.C. and Dijkman, W. 2000. Maastricht in the first millennium AD. The archaeobotanical evidence. Maastricht (Archaeologica Mosana 2).
2494	Wijk bij Duurstede-Voorwijn	Netherlands	various trading centre	Early medieval	Brinkkemper, O., and Man, R. de 2002. Archeobotanisch onderzoek aan een Merovingische waterput te Wijk bij Duurstede (REMU-Voorwijn). Interne Rapporten Archeobotanie ROB 2002/4.
2495	Dokkum-Koningsstraat	Netherlands	secular urban town minor	medieval	Haaster, H. van 2003. Plantaardige en dierlijke resten uit enkele 13e-eeuwse ophogingslagen in Dokkum. BIAXiaal 153.
2497	Houten-Tiellandtweg IV	Netherlands	secular rural lesser	Early medieval	Kooistra, L.I. 1996. Borderland farming. Possibilities and limitations of farming in the Roman Period and Early Middle Ages between the Rhine and Meuse. Thesis Leiden.
2499	's-Hertogenbosch Zuidned. drukkerij	Netherlands	secular urban town major	medieval	Haaster, H. van 2003. Archeobotanica uit 's-Hertogenbosch. Milieuomstandigheden, bewoningsgeschiedenis en economische ontwikkelingen in en rond een (post)middeleeuwse groeistad. Proefschrift Universiteit van
2500	Kampen-"Helenius de Cock"	Netherlands	secular urban town major	medieval	Vermeeren, C.E. 1990. Botanisch onderzoek van middeleeuwse beerputten uit Kampen. In Clevis, H. and Smit, M. (red.), Verscholen in vuil. Archeologische vondsten uit Kampen 1375-1925.
2502	Houten-Doornkade	Netherlands	rural lesser	Roman	Buurman, J. 1986. Botanisch laboratorium. Jaarverslag ROB 1984: 95-97.
2504	Utrecht-Jan Meijenstraat	Netherlands	secular urban town major	medieval	Brink, L.M. van den 1984. Zaden en vruchten uit middeleeuws Utrecht. Een onderzoek naar zaden en vruchten uit middeleeuwse tonputten en beerputten en een aanvullend parasitologisch onderzoek. Intern Rapport Lab. voor Palaeobotanie en Palynolgie, RU Ut.
2506	Utrecht-Korte Nieuwstraat	Netherlands	secular urban town major	medieval	Brink, L.M. van den 1984. Zaden en vruchten uit middeleeuws Utrecht. Een onderzoek naar zaden en vruchten uit middeleeuwse tonputten en beerputten en een aanvullend parasitologisch onderzoek. Intern Rapport Lab. voor Palaeobotanie en Palynolgie, RU Ut.
2508	Monster-kasteel Polanen	Netherlands	secular rural elite	medieval	Bult, E.J. 1985. Polanen, monster. Intern Rapport IPP.
2512	Medemblik-Muntstraat/Korensteeg (M82)	Netherlands	secular rural village	medieval	Cremer, R.A. 1985. Verscheiden vegetaties: een palaeobotanisch onderzoek van monsters uit middeleeuws Medemblik. Intern Rapport IPP.
2514	Delft-Heilige Geestkerkhof	Netherlands	secular urban town major	medieval	Esser, E. 1992. Het Heilige Geestkerkhof te Delft. Macroscopische plantenresten uit een 12e/13e eeuws huis. Intern Rapport IPP.
2516	Haarlem-Lange Veerstraat 27-29	Netherlands	secular urban town major	medieval	Haaster, H. van 1985. Palaeobotanisch onderzoek aan een kuilinhoud uit twaalfde eeuws Haarlem. Haarlems Bodemonderzoek 19: 19-24.
2521	Houten-Tiellandtweg I	Netherlands	secular rural lesser	Early medieval	Kooistra, L.I. and Hessing,W.A.M 1988. Ein fruhmittelalterlicher Brunnen mit einer exotischen Frucht aus Houten. Berichten ROB 38: 207-228.
2523	Oostzaan-Zuideinde 64A	Netherlands	secular rural lesser	medieval	Pals, J.P. 1984. Verkoolde plantenresten uit een 11e/12e eeuwse huisplaats te Oostzaan. De Jol 1(2): 6-10.
2524	Midwoud-Papenveersloot	Netherlands	secular rural lesser	medieval	Pals, J.P. and van Dierendonck, M.C. 1988. Between Flax and Fabric: Cultivation and Processing of Flax in a Mediaeval Peat Reclamation Settlement Near Midwoud (Prov. Noord Holland). Journal of Archaeological
2525	Hoorn-C & A	Netherlands	secular urban town minor	medieval	Smeerdijk, D. van 1991. Verkennnend oecologisch onderzoek uit de stadskern van Hoorn. Intern Rapport Archeologische Dienst Hoorn.
2526	Marken-Moeniswerf	Netherlands	secular rural lesser	medieval	Veldhuizen, E. 1980. Vruchten en zaden van Marken. Intern Rapport IPP.
2529	Westenholte-Kasteel Voorst	Netherlands	secular rural elite	medieval	Vilsteren, V.T. van 1983. Aan de vruchten herkent men de...Voorst. Botanisch onderzoek bij de opgraving. Het Kasteel Voorst, macht en verval van een Overijsselse burcht circa 1280-1362 naar aanleiding van een opgraving. (Vereeniging tot beoefening van.
2530	Wateringen-Rom-'93	Netherlands	rural lesser	Roman	Man, R. de 1995. Een Romeinse huisplaats te Wateringen (Z.H.). Interne Rapporten Archeobotanie ROB 1995/25.
2532	Peins-Oost	Netherlands	secular rural non elite	Early medieval	Nieuwhof, A. 2001. Macrobotanische resten in de terp Peins-Oost. Een onderzoek naar natuurlijke en antropogene vegetaties en vroege landbouw. Doctoraalscriptie G.I.A.
2535	Delft-Gasthuis	Netherlands	secular urban town major	medieval	Esser, E. 1992. Resten van leven: eten om te genezen. Dierlijke en plantaardige resten uit twee beerputten van het Oude en Nieuwe Gasthuis te Delft. Intern Rapport IPP.
2536	Amersfoort-de Hof	Netherlands	secular urban town minor	medieval	Hanninen, K. and Man, R. de 1994. Stuifmeel en zaden. In Krauwer, M. and Snieder, F. (red.), Nering en vermaak. De opgraving van een veertiende eeuwse markt in Amersfoort.
2537	Eindhoven-Kasteel	Netherlands	secular rural elite	medieval	Luijten, H. 1992. Zaden en vruchten: overblijfselen van het plantaardige voedsel en de begroeiing van de grachten. In Arts, N. (red.), Het Kasteel van Eindhoven. Archeologie, ecologie en geschiedenis van een heerlijke woning 1420-1676: 237-244.
2538	Amsterdam-Olofspoort	Netherlands	secular urban town major	medieval	Pals, J.P. 1972. Vruchten en zaden uit de stadsgracht. In Regteren Altena, H.H. van (red.), Vondsten onder de Sint Olofskapel: 39-40.
2539	Hoogelande	Netherlands	secular rural lesser	medieval	Trimpe Burger, J.A. 1958. Onderzoekingen in vluchtbergen, Zeeland. Berichten ROB 8: 114-157.
2540	Zoetermeer-Palenstein	Netherlands	secular rural elite	medieval	Vijverberg, P. 1993. Zaden en pitten. In Koopmans, B., Tuinstra, B. and Westenbroek, B. (red.), Het huis te Palenstein in Zegwaart: historisch en archeologisch onderzoek naar een kasteel in het veen. Historisch Genootschap Oud Soetermeer: 105-108.
2542	Groningen-Wolters/Noordhoff-Complex	Netherlands	secular urban town major	medieval	Zeist, W. van 1992. Cultuurgewassen en wilde planten. In Broekhuizen, P.H. (red.), Van boerenerf tot bibliotheek: 525-541.
2546	Veere-huis de Struijs	Netherlands	secular urban town minor	medieval	Brinkkemper, O. and Man, R. de 1996. Granen, groente, fruit en (on)kruiden. In Vreenegoor, E. and Kuipers, J. (red.), Vondsten in Veere. Middeleeuwse voorwerpen uit een beerput van huis "In den Struys".
2548	Tiel-Koornmarkt	Netherlands	secular urban town major	medieval	Man, R. de 1996. Botanische resten uit een viertal LME beerputten te Tiel. Interne Rapporten Archeobotanie ROB 1996/12.
2551	Vlaardingen-Fonotheek	Netherlands	secular urban town major	medieval	Vermeeren, C., Haaster, H. van and Kuijper, W. 1996. Vlaardings verleden verkend. Archeobotanisch en malacologisch onderzoek aan monsters uit het centrum van Vlaardingen. BIAXiaal 31.
2554	Rotterdam-Spoortunnel 13-27	Netherlands	secular rural lesser	medieval	Haaster, H. van 1996. Op het spoor van Rotta. Archeobotanisch onderzoek aan monsters uit de Spoortunnel in Rotterdam, vindplaatsen 05-27, 05-33, 13-27 en 13-28. BIAXiaal 29.
2559	Dordrecht-Voorstraat-Minderbroederklooster	Netherlands	religious monastery urban	medieval	Kooistra, L.I., Hanninen, K. , Haaster, H. van and Vermeeren, C. 1998. Voedselresten in beer en afval. Botanisch onderzoek aan beerputten, afvalkuilen en ophogingslagen van de steden Dordrecht en Nijmegen uit de 12e 20e eeuw. BIAXiaal 52.
2561	Poortugaal 11-64	Netherlands	secular rural lesser	medieval	Brinkkemper, O. 1997. Houtskool van een grafveld uit de Romeinse tijd en botanische macroresten van sloten uit de Late Middeleeuwen te Poortugaal. BIAXiaal 43.
2562	Castricum-Oosterbuurt	Netherlands	secular rural non elite	Early medieval	Brinkkemper, O. and Man, R. de 1999. Botanische macroresten. In Hagers, J.-K.A. and Sier, M.M. (red.), Castricum-Oosterbuurt, bewoningssporen uit de Romeinse tijd en Middeleeuwen, Amersfoort (Rapportage Archeologische Monumentenzorg 53): 161-171.
2563	Gemert-Textielfabriek	Netherlands	secular rural elite	medieval	Man, R. de 1998. Archeobotanisch onderzoek aan een LME kasteelgracht te Gemert (N.Br.). Interne Rapporten Archeobotanie ROB 1998/10.
2564	Vleuten-Nijevelt	Netherlands	secular rural elite	medieval	Man, R. de 1999. Archeobotanisch onderzoek aan twee monsters uit een LME kasteelgracht te Vleuten-Nijevelt. Interne Rapporten Archeobotanie ROB 1999/10.
2565	Kuinre-IJsselham	Netherlands	secular rural elite	medieval	Man, R. de 1999. Archeobotanisch onderzoek aan de buitenste gracht van een 15e eeuwse burcht te IJsselham (Kuinre). Interne Rapporten Archeobotanie ROB 1999/12.
2566	Deventer-Oxersteeg	Netherlands	secular urban town major	medieval	Man, R. de 1998. Archeobotanisch onderzoek aan een laat 12e eeuwse waterput te Deventer-Oxersteeg-Oost. Interne Rapporten Archeobotanie ROB 1998/9.
2571	Groningen-Martinikerkhof	Netherlands	secular urban town major	medieval	Zeist, W. van, Cappers, R.T.J., Ouderkerken, M.G., Palfenier-Vegter, R.M., Roller, G.J. de and Vrede, F. 2000. Cultivated and wild plants in late- and postmedieval Groningen. A study of archaeological plant remains.
2579	Groningen-Gelkingestraat	Netherlands	secular urban town major	medieval	Zeist, W. van, Cappers, R.T.J., Ouderkerken, M.G., Palfenier-Vegter, R.M., Roller, G.J. de and Vrede, F. 2000. Cultivated and wild plants in late- and postmedieval Groningen. A study of archaeological plant remains.
2584	Groningen-Westerbinnensingel	Netherlands	secular urban town major	medieval	Zeist, W. van, Cappers, R.T.J., Ouderkerken, M.G., Palfenier-Vegter, R.M., Roller, G.J. de and Vrede, F. 2000. Cultivated and wild plants in late- and postmedieval Groningen. A study of archaeological plant remains.
2585	Groningen-Hardewikerstraat	Netherlands	secular urban town major	medieval	Zeist, W. van, Cappers, R.T.J., Ouderkerken, M.G., Palfenier-Vegter, R.M., Roller, G.J. de and Vrede, F. 2000. Cultivated and wild plants in late- and postmedieval Groningen. A study of archaeological plant remains.
2588	Alkmaar-Langestraat	Netherlands	secular urban town major	medieval	Esser,E., Dijk, J. van and Luijten, H. 1997. Biologisch onderzoek van vier beerputten. In Bitter, P., Dijkstra, J., Roedema, R. and Wilgen, R. van (red.), Wonen op niveau. Archeologie, bouwhistorie en historie van twee percelen aan de Langestraat.
2590	Lieshout-Nieuwenhof	Netherlands	secular rural non elite	medieval	Man, R. de 1996. De botanische inhoud van twee Andennepotten uit een 12/13e eeuwse waterput te Lieshout-Nieuwenhof. Interne Rapporten Archeobotanie ROB 1996/18.
2592	Kesteren-De Woerd	Netherlands	rural lesser	Roman	Kooistra, L.I. and Haaster, H. van 2001. Archeobotanie. In Sier, M.M. and Koot, C.W. (red.), Archeologie in de Betuweroute. Kesteren-De Woerd. Bewoningssporen uit de IJzertijd en de Romeinse tijd, Amersfoort (Rapportage Archeologische Monumentenzorg, 82).
2593	Vlaardingen-Kolpabad 6.123	Netherlands	secular urban town major	medieval	Brinkkemper, O. and Ridder, T. de 2002. Vlaardingen Kolpabad. VLAK-verslag X.Y (ArBoRa 7).
2594	Peins-Oost	Netherlands	rural non elite	Roman	Nieuwhof, A. 2001. Macrobotanische resten in de terp Peins-Oost. Een onderzoek naar natuurlijke en antropogene vegetaties en vroege landbouw. Doctoraalscriptie G.I.A.
2595	Gouda-Oostpolder II	Netherlands	secular rural non elite	medieval	Bakels, C.C., Kok, R., Kooistra, L.I. and Vermeeren, C. 2000. The plant remains from Gouda Oostpolder, a twelfth century farm in the peatlands of Holland. Vegetation History and Archaeobotany 9: 147-160. and Haaster, H. van, Hanninen, K. Kooistra, L.I. , Schelvis, J. and Vermeeren, C. 1997. Ontginningsboeren op het veen. Zaden, vruchten, hout en ongewervelden van een 12e eeuwse boerderij te Gouda Oostpolder. BIAXiaal 37.
2597	Amsterdam-Sint Jansstraat	Netherlands	secular urban town major	medieval	Haaster, H. van 2001. Botanisch onderzoek aan een tweetal middeleeuwse mestmonsters uit de Sint Jansstraat te Amsterdam (1350-1475). BIAXiaal 129.
2601	Zutphen-Ooijerhoek VME	Netherlands	secular rural non elite	Early medieval	Vernimmen, T.J.J. 2000. Botanische macroresten uit de opgraving Zutphen-Ooijerhoek. Interne Rapporten Archeobotanie ROB 2000/9.
2602	Leeuwarden-Bullepolder	Netherlands	rural non elite	Roman	Roller, G.J. de 2002. Archeobotanisch onderzoek. In Koopstra, C.G. (red.), Archeologisch onderzoek in de Bullepolder, Gemeente Leeuwarden, Groningen (ARC-publicaties, 52): 55-60.
2605	Oldenzaal-Schoolstraat	Netherlands	secular urban town minor	medieval	Hanninen, K. and Waijjen, M.C.A. van 2002. Pollen en zaden uit een veertiende-eeuwse laag in een depressie te Oldenzaal. BIAXiaal 139.
2606	Eindhoven-Admirant	Netherlands	secular urban town minor	medieval	Hanninen, K. and Haaster, H. van 2002. Archeobotanisch onderzoek op de locaties Heesterakkers, Meerhoven, Admirant en Smalle Haven in de gemeente Eindhoven (IJzertijd-16e eeuw). BIAXiaal 150.
2607	Houten-Hoge Dijk	Netherlands	secular rural lesser	medieval	Hanninen, K., P. Rijn and Oversteegen, J. 2001. Plantaardige en dierlijke resten uit een 12e/13e eeuwse ontginningsnederzetting te Houten. BIAXiaal 110.
2608	Oostzaan-Kerkbuurt	Netherlands	secular rural village	medieval	Smeerdijk, D.G, van 2003. Paleobotanisch onderzoek aan materiaal uit een middeleeuwse vindplaats in Oostzaan. BIAXiaal 174.
2609	Hoogeloon	Netherlands	rural elite	Roman	Beurden, L. van 2002. Botanisch onderzoek in het Maas-Demer-Schelde gebied. In Fokkens, H. and Jansen, R. (red.), 2000 jaar bewoningsdynamiek. Brons- en IJzertijdbewoning in het Maas-Demer-Scheldegebied.
2611	Uitgeest 54	Netherlands	rural lesser	Roman	Verhagen, M. 1986. Uitgeest 54, een palaeo-botanisch onderzoek naar de exploitatie van een veenlandschap. Intern Rapport IPP.
2612	Den Haag-Scheveningse Weg-tempel	Netherlands	ceremonial temple-shrine	Roman	Vermeeren, C.E. 1987. Plantenresten uit de Romeinse tijd. Scheveningse Weg, Den Haag. Intern Rapport IPL.
2616	Middelburg-Balans '93	Netherlands	secular rural elite	Early medieval	Buurman, J. 1995. Planteresten uit een riool van de burg te Middelburg. In Heeringen, R.M. van, Henderikx, P.A. and Mars, A. (red.), Vroeg-Middeleeuwse ringwalburgen in Zeeland: 58-66.
2617	Reimerswaal-Kasteel	Netherlands	secular urban castle	medieval	Man, R. de 1996. Archeobotanisch onderzoek aan beerputmonsters van een begin 15e eeuws kasteel bij het verdronken dorp "Oud Valkenisse" (Gem. Reimerswaal, Zeeland). Interne Rapporten Archeobotanie ROB
2619	Schagen-Waldervaart	Netherlands	secular urban non elite	Early medieval	Buurman, J. 1999. Plant Remains from an Early Medieval Site at Schagen, the Netherlands. In Sarfatij, H., Verwers, W.J.H. and Woltering, P.J. (eds.), In Discussion with the Past. Archaeological Studies presented to W.A.
2620	Venray-de Hulst II	Netherlands	rural non elite	Roman	Hanninen, K. 2003. Onderzoek aan monsters uit de IJzertijd en de Romeinse tijd uit Venray-De Hulst II. BIAXiaal 159.
2621	Lieshout-Beekseweg	Netherlands	rural non elite	Roman	Haaster, H. van 2003. Milieuomstandigheden en agrarische activiteit op en rond drie nederzettingen uit de IJzertijd, Romeinse Tijd en Volle Middeleeuwen aan de Beekseweg in Lieshout (N.B). BIAXiaal 172.
2622	Alkmaar-Doelenveld	Netherlands	secular urban town major	medieval	Buurman, J. 1989. Botanisch laboratorium. Jaarverslag ROB 1988: 87-90.
2628	Goor-het Schild (1983)	Netherlands	secular urban castle	medieval	Buurman, J. and Gerritsen, P. 1984. Zadenanalyse aan enkele monsters van een burchtterrein te Goor 't Schild (13e eeuw). Interne Rapporten Archeobotanie ROB 1984/1.
2629	Leiden-Agnietenklooster (civiel)	Netherlands	secular urban town major	medieval	Kuijper, W.J. 1986. Planten- en dierenresten in laatmiddeleeuwse beerputten op het terrein van het St. Agnietenklooster in Leiden. Bodemonderzoek in Leiden. Jaarverslag 1984: 131-142.
2632	Kootwijk 2	Netherlands	secular rural village	Early medieval	Pals, J.P. 1987. Reconstruction of landscape and plant husbandry. In Groenman-van Waateringe, W. and Wijngaarden-Bakker, L.H. van (eds.), Farm Life in a Carolingian Village: 52-96. (Studies in Prae- en Protohistorie
2636	Schiedam-Kethel	Netherlands	rural lesser	Roman	Zeist, W. van 1974. Palaeobotanical studies of settlement sites in the coastal area of the Netherlands. Palaeohistoria 16: 223-371.
2637	Ouddorp-Oude Oostdijk revisited	Netherlands	rural lesser	Roman	Zeist, W. van 1974. Palaeobotanical studies of settlement sites in the coastal area of the Netherlands. Palaeohistoria 16: 223-371.
2638	Tzummarum-Monnikenterp	Netherlands	secular rural non elite	Early medieval	Zeist, W. van 1974. Palaeobotanical studies of settlement sites in the coastal area of the Netherlands. Palaeohistoria 16: 223-371.
2639	Den Helder-het Torp	Netherlands	secular rural non elite	medieval	Zeist, W. van 1976. The environment of "het Torp" in its early phases. Berichten ROB 23: 347-353.
2641	Oostburg-Rabobank	Netherlands	secular rural non elite	medieval	Buurman, J. 1989. Zaden uit een kuil te Oostburg (ca 1200 AD). Interne Rapporten Archeobotanie ROB 1989/1 (Jaarverslag ROB 1989: 97-100).
2644	Castricum-Oosterbuurt	Netherlands	rural lesser	Roman	Brinkkemper, O. and Man, R. de 1999. Botanische macroresten. In Hagers, J.-K.A. and Sier, M.M. (red.), Castricum-Oosterbuurt, bewoningssporen uit de Romeinse tijd en Middeleeuwen, Amersfoort (Rapportage Archeologische Monumentenzorg 53): 161-171.
2645	Didam-Aalsberg	Netherlands	rural lesser	Roman	Brinkkemper, O. 1998. Didam-Aalsberg. Onderzoek van botanische macroresten uit de Romeinse Tijd. ArBoRa 1.
2646	Wijnaldum-Tjitsma	Netherlands	secular rural elite	Early medieval	Pals, J.P. 1999. Preliminary notes on crop plants and the natural and anthropogeneous vegetation. In Besteman, J.C. , Bos, J.M., Gerrets, D.A., Heidinga, H.A. and Koning, J. de (eds.), The excavations at Wijnaldum. Reports on Frisia in Roman and Medieval times.
2657	Vlaardingen-Hoogstad 5.19	Netherlands	rural lesser	Roman	Brinkkemper, O. and Ridder, T. de 2001. Archeobotanisch onderzoek naar het milieu rond een nederzetting en een dam uit de Romeinse Tijd (150-175 na Chr.), VLAK-verslag 2.3 (= ArBoRa 6).

2658	Buren-Stenen Kamer/Linge	Netherlands	secular rural non elite	Early medieval	Haaster, H. van 2001. Archeobotanie. In Verhoeven, A.A.A. and Brinkkemper, O. (red.), Archeologie in de Betuweroute. Twaalf eeuwen bewoning op de Stenen Kamer aan de Linge, Amersfoort (Rapportage Archeologische Monumentenzorg, 85): 519-608.
2660	Vleuten-Balije	Netherlands	rural lesser	Roman	Haaster, H. van 2002. Pollen- en macrorestenonderzoek op de vindplaats "Balije" (VINEX locatie Leidsche Rijn). BIAXiaal 136.
2662	Aardenburg-Hof Buize II	Netherlands	secular urban town minor	medieval	Kooistra, L.I. and Man, R. de 1995. Botanische resten uit de Romeinse tijd en de Middeleeuwen van Aardenburg-Hof Buize. Interne Rapporten Archeobotanie ROB 1995/5.
2663	Baflo	Netherlands	rural non elite	Roman	Roller, G.J. de and Korf, G. 2002. Archeobotanie. In Koopstra, C.G. (red.) Archeologisch onderzoek op de wierde van Baflo, provincie Groningen, Groningen (ARC-publicaties, 47): 39.
2664	Baflo	Netherlands	secular rural village	Early medieval	Roller, G.J. de and Korf, G. 2002. Archeobotanie. In Koopstra, C.G. (red.) Archeologisch onderzoek op de wierde van Baflo, provincie Groningen, Groningen (ARC-publicaties, 47): 39.
2666	Lieshout-Beekseweg	Netherlands	secular rural non elite	medieval	Haaster, H. van 2003. Milieuomstandigheden en agrarische activiteit op en rond drie nederzettingen uit de IJzertijd, Romeinse Tijd en Volle Middeleeuwen aan de Beekseweg in Lieshout (N.B). BIAXiaal 172.
2667	Zutphen-Looërenk	Netherlands	secular rural non elite	medieval	Smeerdijk, D.G. van, Kubiak, L. and Rijn, P. van 2003. Paleobotanisch onderzoek aan materiaal uit verschillen structuren van de opgraving Looer Enk (gemeente Zutphen). BIAXiaal 175.
2668	Dordrecht/Ruygten bezuiden den Peereboom	Netherlands	secular urban town major	medieval	Buurman, J. 1991. Sectie Archeobotanie. Jaarverslag ROB 1990: 118-122.
2671	Soest-Marienberg	Netherlands	religious monastery rural	medieval	Wijnmaalen, P. and Buurman, J. 1981. Zaden en vruchten uit het middeleeuwse klooster Marienburg te Soest. Interne Rapporten Archeobotanie ROB 1981/1.
2672	Woerden-hoek Molenstraat/Kazernestraat	Netherlands	military intramural	Roman	Brinkkemper, O. and Man, R. de 1999. Archeobotanisch onderzoek. In Haalebos, J.K. and Vos, W. (red.), Aanvullend Archeologisch Onderzoek in Woerden. ADC-rapport 5: 27-31.
2674	Lochem-Baggnerstraat	Netherlands	secular rural village	medieval	Buurman, J. and Man, R. de 1999. Archeobotanisch onderzoek aan een stortlaag van een leerlooierij te Lochem (Gld.). Interne Rapporten Archeobotanie ROB 1999/5.
2675	Kuinre-burcht	Netherlands	secular rural elite	medieval	Man, R. de and Brinkkemper, O. 2000. Archeobotanisch onderzoek aan grachtsystemen uit twee fasen van een middeleeuwse burcht te Kuinre (NOP). Interne Rapporten Archeobotanie ROB 2000/2.
2676	Zwinderen-Kleine Esch	Netherlands	rural lesser	Roman	Velde, H. van der, Haaster, H. van, Spek , Th. and Taayke, E. 1999. Het paleo-ecologisch onderzoek van de opgravingen Wachtum en Zwinderen: de macroresten. In Velde, H.M. van der (red.), Archeologisch onderzoek langs de snelweg opgravingen in het kader van.
2681	Maastricht-Stokstraat II	Netherlands	secular urban town major	Early medieval	Kooistra, L.I. 1994. Een pakket graan uit het Maastricht van de 7de eeuw na Chr. In Stoepker, H. (red.), Archeologische kroniek van Limburg over 1992.
2682	Deventer-Proosdij	Netherlands	secular urban town major	medieval	Man, R. de and Buurman, J. 1992. Plantenresten en houtskool voor C14, Deventer Proosdij 92. Interne Rapporten Archeobotanie ROB 1994/22.
2683	Woerden	Netherlands	military intramural	Roman	Pals, J.P. and Hakbijl, T. 1992. Weed and insect infestation of a grain cargo in a ship at the Roman fort of Laurium in Woerden (Province of Zuid-Holland). In Pals, J.P., Buurman, J. and Veen, M. van der (eds.), Review of Palaeobotany and Palynology 73: 287
2684	Oss-Ussen III	Netherlands	rural lesser	Roman	Sanden, W.A.B. van der 1987. Oss-Ussen: ecologie en economie. In Sanden, W.A.B. van der and Broeke, P.W. van den (red.), Getekend zand. Tien jaar archeologisch onderzoek in Oss-Ussen.
2685	Maastricht-Wolfstraat	Netherlands	secular urban town major	Early medieval	Kooistra, L.I. 1996. Borderland farming. Possibilities and limitations of farming in the Roman Period and Early Middle Ages between the Rhine and Meuse. Thesis Leiden.
2686	Maastricht-Derlon	Netherlands	secular urban town major	Early medieval	Kooistra, L.I. 1996. Borderland farming. Possibilities and limitations of farming in the Roman Period and Early Middle Ages between the Rhine and Meuse. Thesis Leiden.
2688	Groningen-Folkingestraat	Netherlands	secular urban town major	medieval	Zeist, W. van, Cappers, R.T.J., Ouderkerken, M.G., Palfenier-Vegter, R.M., Roller, G.J. de and Vrede, F. 2000. Cultivated and wild plants in late- and postmedieval Groningen. A study of archaeological plant remains.
2690	Maastricht-Pandhof	Netherlands	military extramural	Roman	Bakels, C.C. and Dijkman, W. 2000. Maastricht in the first millennium AD. The archaeobotanical evidence. Maastricht (Archaeologica Mosana 2).
2691	Vleuten-De Meern Veldhuizen (trackway)	Netherlands	military intramural	Roman	Haaster, H. van and Vermeeren, C. 2001. Vleuten-De Meern Veldhuizen. BIAXiaal 93.
2692	Deventer-Burseplein	Netherlands	secular urban town major	medieval	Buurman, J. 1989. Plantenresten. In Clevis, H. and Kottman, J. (red.), Weggegooid en teruggevonden. Aardewerk en glas uit Deventer vondstcomplexen.
2693	Gennep	Netherlands	rural elite	Roman	Heidinga, H.A. and Offenberg, G.M. 1992. Op zoek naar de vijfde eeuw.
2696	Empel	Netherlands	ceremonial temple-shrine	Roman	Groenman-van Waateringe, W. and Pals, J.P. 1994. De vegetatie op en rondom het heiligdom. In Roymans, N. and Derks, T. (red.), De tempel van Empel. Een Hercules-heiligdom in het woongebied van de Bataven.
2697	Wijchen-Centrum	Netherlands	secular rural village	medieval	Man, R. de 1993. Zaden uit een 15e eeuwse beerput onder een toekomstige parkeergarage in Wijchen. Interne Rapporten Archeobotanie ROB 1993/2.
2699	Nijmegen-Nonnenstraat	Netherlands	secular urban town major	medieval	Kooistra, L.I., Hanninen, K. , Haaster, H. van and Vermeeren, C. 1998. Voedselresten in beer en afval. Botanisch onderzoek aan beerputten, afvalkuilen en ophogingslagen van de steden Dordrecht en Nijmegen uit de 12e 20e eeuw. BIAXiaal 52.
2700	Riel-Rielsedijk	Netherlands	secular rural lesser	medieval	Arts, N. and Luijten, H. 1994. Het bodemarchief van een langgevelboerderij te Riel, gemeente Eindhoven. Brabants Heem 46: 87-99.
2701	Maastricht-Onze Lieve Vrouwenplein II	Netherlands	secular urban town major	medieval	Buurman, J. 1983. Plantaardige resten uit een mergelstenen beerput te Maastricht. Interne Rapporten Archeobotanie ROB 1983/1.
2702	Deventer-Burseplein	Netherlands	secular urban town major	Early medieval	Buurman, J. 1989. Plantenresten. In Clevis, H. and Kottman, J. (red.), Weggegooid en teruggevonden. Aardewerk en glas uit Deventer vondstcomplexen.
2709	Haarlem-Grote Markt 15 (II)	Netherlands	secular urban town major	medieval	Pals, J.P. 1980. Zaden en vruchten uit de vulling van twee greppels onder de Rembrandt-bioscoop. Haarlems Bodemonderzoek 12: 51-52.
2710	Harderwijk (straat?)	Netherlands	secular urban town minor	medieval	Pals, J.P. 1980. Archeologische waarnemingen in Harderwijk (hoofdstuk "zaden en vruchten"). In Feenstra, E.J. (red.), Westerheem 29: 299-300.
2711	Valkenburg-castellum II	Netherlands	military intramural	Roman	Troostheide, C.D. and Groenman-van Waateringe, W. 1988. Zaden- en vruchtenanalyse. Bij: De Romeinse castella te Valkenburg Z.H. In Bloemers, J.H.F. (red.), Archeologie en oecologie van Holland tussen Rijn en Vlie (Studies in prae- en protohistorie).
2714	Wijchen-Woezik	Netherlands	secular rural village	medieval	Kooistra, L. 1992. Een voorname boerderij uit de 16e eeuw te Woezik (bij Wijchen). Interne Rapporten Archeobotanie ROB 1992/3.
2717	Nijmegen-Maasplein	Netherlands	ceremonial temple-shrine	Roman	Hanninen, K. and Vermeeren, C. 1997. Exotische offers. Botanisch onderzoek aan kuilen uit de Romeinse Fortuna-tempel op het Maasplein in Nijmegen. BIAXiaal 51.
2721	Wijk bij Duurstede-Dorestad	Netherlands	various trading centre	Early medieval	Zeist, W. van 1990. The palaeobotany of early-medieval Dorestad: evidence of grain trade. Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen 93 (4): 335-348.
2722	Betuweroute-AAO12 Buren-Stenen Kamer west	Netherlands	secular rural lesser	medieval	Haaster, H. van 1999. Archeobotanisch onderzoek. In Sier, M.M. and Schotten, J. (red.), Aanvullend archeologisch onderzoek in het trace van de Betuweroute, vindplaats 12 westelijk deel: Buren/Stenen Kamer, Amersfoort (Rapportage Archeologische Monumente.
2723	Wijk bij Duurstede-Dorestad (put 753)	Netherlands	various trading centre	Early medieval	Buurman, J. 1988. Botanisch laboratorium. Jaarverslag ROB 1987: 86-89.
2725	Aardenburg-Hof Buize I	Netherlands		Roman	Kooistra, L.I. 1988. Archeobotanisch onderzoek aan twee monsters uit de Romeinse tijd uit Aardenburg. Interne Rapporten Archeobotanie ROB 1988/2.
2726	Leiderdorp	Netherlands	secular rural lesser	Early medieval	Pals, J.P. 1986. Plantenresten uit een vroeg-middeleeuwse kreek te Leiderdorp. Westerheem 35: 236-241.
2727	Leeuwarden-Speelmanstraat	Netherlands	secular urban town major	Early medieval	Zeist, W. van, Cappers, R., Neef, R. and During, H. 1987. A palaeobotanical investigation of medieval occupation deposits in Leeuwarden, the Netherlands. Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series B 90, (4): 371.
2728	Voerendaal-ten Hove	Netherlands	rural elite	Roman	Kooistra, L.I. 1996. Borderland farming. Possibilities and limitations of farming in the Roman Period and Early Middle Ages between the Rhine and Meuse. Thesis Leiden.
2732	Middelburg-Markt	Netherlands	secular urban town major	medieval	Vries, L. de 2000. Dierlijk botmateriaal. In Kuipers, J.J.B., Hendrikse, H. and Waarden-Koets, A. van (red.), De onderkant van de markt. De Westmonsterkerk van Middelburg in archeologie en historie.
2733	Nijmegen	Netherlands	military intramural	Roman	Buurman, J. 1982. Botanisch laboratorium. Jaarverslag ROB 1980: 82-84.
2734	Nijmegen-Kops Plateau	Netherlands	military intramural	Roman	Buurman, J. 1988. Botanisch laboratorium. Jaarverslag ROB 1987: 86-89.
2738	Zutphen-Turfstraat 7	Netherlands	secular rural non elite	medieval	Pals, J.P. unpublished. Graanmonster Zutphen. Ongepubliceerd manuscript.
2739	Valkenburg-Marktveld II	Netherlands	military intramural	Roman	Pals, J.P., Beemster, V. and Noordam, A. 1989. Plant remains from the Roman castellum Praetorium Agrippinae near Valkenburg (prov. of Zuid-Holland). Dissertationes Botanicae 133: 117-134.
2740	Maastricht-Plankstraat 23	Netherlands	town major	Roman	Seeman, M. 1986. Oecologisch onderzoek van enkele monsters uit Maastricht. Intern Rapport IPP.
2743	Maastricht-Derlon	Netherlands	military intramural	Roman	Kooistra, L.I. 1996. Borderland farming. Possibilities and limitations of farming in the Roman Period and Early Middle Ages between the Rhine and Meuse. Thesis Leiden.
2744	Maastricht-Derlon	Netherlands	town major	Roman	Bakels, C.C. and Dijkman, W. 2000. Maastricht in the first millennium AD. The archaeobotanical evidence. Maastricht (Archaeologica Mosana 2).
2746	Raalte-De Zegge	Netherlands	secular rural non elite	medieval	Buurman, J. 1994. Drie stukken huttenleem met indrukken en een zeefresidu uit een kuil uit een Laat Middeleeuwse boerderij te Raalte-De Zegge 1993. Interne Rapporten Archeobotanie ROB 1994/17.
2747	Venray-St. Antoniusveld	Netherlands	secular rural non elite	Early medieval	Vernimmen, T. 1999. Botanische macroresten uit twee Karolingische waterputten te Venray-St.Antoniusveld. Interne Rapporten Archeobotanie ROB 1999/20.
2749	Oss-Ussen Vijver	Netherlands	rural lesser	Roman	Bakels, C.C., Wesselingh, D.A. and Amen, I. van 199. Acquiring a taste: the menu of Iron Age and Roman-period farmers at Oss-Ussen, the Netherlands. Analecta Praehistorica Leidensia 29: 193-211.
2750	Delfgauw-Zuidpolder PZPD3	Netherlands	secular rural lesser	medieval	Smeerdijk, D.G. and Kooistra, L.I. 2001. Palaeo-ecologisch onderzoek van de opgravingen in de VINEX-locatie Delfgauw, Gemeente Pijnacker. BIAXiaal 127.
2752	Maastricht-Plankstraat 23	Netherlands	secular urban town major	Early medieval	Seeman, M. 1986. Oecologisch onderzoek van enkele monsters uit Maastricht. Intern Rapport IPP.
2753	Odoorn 1966	Netherlands	secular rural lesser	Early medieval	Zeist, W. van 1968. Prehistoric and Early Historic Foodplants in the Netherlands. Palaeohistoria 14: 41-173.
2755	Rotterdam-Spoortunnel 13-28	Netherlands	secular rural lesser	medieval	Haaster, H. van 1996. Op het spoor van Rotta. Archeobotanisch onderzoek aan monsters uit de Spoortunnel in Rotterdam, vindplaatsen 05-27, 05-33, 13-27 en 13-28. BIAXiaal 29.
2757	Peelo-Haverland	Netherlands	secular rural village	Early medieval	Zeist, W. van and Palfenier-Vegter, R.M. 1994. Medieval plant remains from Peelo, the Netherlands. Palaeohistoria 35/36: 307-321.
2760	Dommelen-Kerkakkers	Netherlands	secular rural village	medieval	Pals, J.P. 1988. Akkerbouw in het middeleeuwse Dommelen. Phyto-archeologische studies.
2761	Noordbarge-Hooge Loo	Netherlands	rural non elite	Roman	Zeist, W. van 1983. Plant remains from Iron Age Noordbarge, province of Drenthe, the Netherlands. Palaeohistoria 23: 169-193.
2763	Leeuwarden-Hempens Teerns	Netherlands	rural non elite	Roman	Stuijts, I.-L.M. and Roller, G.J. de 1999. Een palaeo-botanisch onderzoek bij Hempens-Teerns, Gem. Leeuwarden. ARC-Publicaties 25.
2764	Den Haag-Scheveningse Weg-inheems	Netherlands	rural lesser	Roman	Vermeeren, C.E. 1987. Plantenresten uit de Romeinse tijd. Scheveningse Weg, Den Haag. Intern Rapport IPL.
2765	Delfgauw-Zuidpolder	Netherlands	secular rural lesser	medieval	Kooistra, L.I. 2002. Delfgauw vindplaats PZPD2. Een middeleeuwse boerderij met een stads sausje? BIAXiaal 151.
2766	Delfgauw-Zuidpolder PZPD2	Netherlands	secular rural lesser	medieval	Smeerdijk, D.G. and Kooistra, L.I. 2001. Palaeo-ecologisch onderzoek van de opgravingen in de VINEX-locatie Delfgauw, Gemeente Pijnacker. BIAXiaal 127.
2767	Valkenburg-castellum IV	Netherlands	military intramural	Roman	Ledden Hulsebosch, C.J. van 1955. Chemisch en mikroskopisch onderzoek van monsters van Valkenburg Z.H. 33e - 37e jaarverslag van de verening voor terpenonderzoek: 190-191.
2768	Dommelen-Kerkakkers	Netherlands	secular rural village	Early medieval	Pals, J.P. 1988. Akkerbouw in het middeleeuwse Dommelen. Phyto-archeologische studies.
2771	Venray-Hoogriebroek	Netherlands	rural non elite	Roman	Hanninen, K. 1991. Botanische macroresten uit de Bronstijd, de IJzertijd en de Romeinse tijd van Venray-Hoogriebroek (alleen data). Interne Rapporten Archeobotanie ROB 1991/8.
2772	Valkenburg-castellum I	Netherlands	military intramural	Roman	Zeist, W. van 1968. Prehistoric and Early Historic Foodplants in the Netherlands. Palaeohistoria 14: 41-173.
2775	Peelo-Hovinge	Netherlands	secular rural village	medieval	Zeist, W. van and Palfenier-Vegter, R.M. 1994. Medieval plant remains from Peelo, the Netherlands. Palaeohistoria 35/36: 307-321.
2776	Den Haag-Amicitia	Netherlands	secular urban town minor	medieval	Vermeeren, C. 1998. Botanisch onderzoek aan een 15e eeuws monster uit de opgraving Amicitia te Den Haag. BIAXiaal 64.
2778	Elst-Brienenshof-ROM	Netherlands	town minor	Roman	Buurman, J. 1989. Botanisch laboratorium. Jaarverslag ROB 1988: 87-90.
2780	Oss-IJsselstraat-Rom	Netherlands	rural lesser	Roman	Bakels, C.C. 1980. De bewoningsgeschiedenis van de Maaskant I. Plantenresten uit de Bronstijd en Romeinse tijd gevonden te Oss-IJsselstraat, prov. Noord-Brabant. Analecta Praehistorica Leidensia 13: 115-131.
2782	Borculo	Netherlands	secular rural non elite	Early medieval	Man, R. de 1997. Zaden uit een 8e eeuwse (704 na Chr.) waterput te Borculo (Ov.). Interne Rapporten Archeobotanie ROB 1997/8.
2784	Uitgeest I	Netherlands	rural lesser	Roman	Buurman, J. 1984. Botanisch laboratorium. Jaarverslag ROB 1982: 91-94.
2786	Poortugaal 11-63	Netherlands	secular rural lesser	medieval	Brinkkemper, O. 1997. Houtskool van een grafveld uit de Romeinse tijd en botanische macroresten van sloten uit de Late Middeleeuwen te Poortugaal. BIAXiaal 43.
2787	Slough House, nr Heybridge	Great Britain	rural lesser	Roman	Wiltshire, P.E.J. and Murphy, P. 1993. An analysis of microfossils and macrofossils from waterlogged deposits at Slough House and Chigborough Farms, near Heybridge, Essex. AML Report New Series 66/93.
2788	Vindolanda	Great Britain	military intramural	Roman	Huntley, J. pers. comm.
2789	Hibaldstow	Great Britain	town minor	Roman	Greig 1979 and Straker, V. 1978.
2790	Waterside, Lincoln	Great Britain	town major	Roman	Greig, J. 1989. The Plant Remains. In Jones, M. J. (ed.), Lincoln Archaeology 1988-9. Lincoln: City of Lincoln Arachaeology Unit: 11-12.
2791	Carlisle Bowling Green	Great Britain	military extramural	Roman	Huntley, J. 1993. DEAR 2/93.
2792	High Street, Colchester	Great Britain	town major	Roman	Murphy, P. 1977.
2794	Vindolanda, 67-69 Chesterholm (incl 33-35)	Great Britain	military intramural	Roman	Blackburn, K. B. 1970. In (Birley) Wood samples from the well in HQB 1933 . Archaeology Aeliana, 4th series, 48: 97-155.
2795	Lower Brook St 71, Winchester	Great Britain	ceremonial temple-shrine	Roman	Ross, A. 1975. (Biddle) Excavations at Winchester 1971. Journal of antiquity 55: 295-337.
2797	Flaxengate, Lincoln	Great Britain	secular urban town major	medieval	Moffett, L. 1996.
2799	Duck Mill lane, Bedford	Great Britain	secular urban town minor	medieval	Robinson, M. 1986.
2800	Chopdike Drove, Gosberton	Great Britain	secular rural village	Early medieval	Murphy, P. in press

2802	Hinxton Hall	Great Britain	secular rural village	medieval	Fryer, V. and Murphy, P. forthcoming a. Plant macrofossils In Spoerrey, P. (ed.), Excavations at Hinxton Hall, Cambridgeshire.
2803	Castle Mall, Norwich	Great Britain	secular urban town minor	medieval	Murphy, P. forthcoming.
2804	Castle Mall, Norwich	Great Britain	secular urban castle	medieval	Murphy, P. forthcoming.
2805	Fuller's Hill, Great Yarmouth (TRADE)	Great Britain	secular urban town minor	medieval	Jones 1976 from P. Murphy's excel files.
2806	Foundation Street, Ipswich	Great Britain	secular urban town major	Early medieval	Murphy, P, 1987. Ipswich, Suffolk: plant macrofossils from Middle Saxon to early Medieval contexts at sites IAS 4201, 4601, 4801 and 5701, Ancient Monuments Laboratory Report 225/87, English Heritage, London.
2807	Foundation Street, Ipswich	Great Britain	secular urban town major	medieval	Murphy, P, 1987. Ipswich, Suffolk: plant macrofossils from Middle Saxon to early Medieval contexts at sites IAS 4201, 4601, 4801 and 5701, Ancient Monuments Laboratory Report 225/87, English Heritage, London.
2808	School Street, Ipswich	Great Britain	secular urban town major	Early medieval	Murphy, P, 1987. Ipswich, Suffolk: plant macrofossils from Middle Saxon to early Medieval contexts at sites IAS 4201, 4601, 4801 and 5701, Ancient Monuments Laboratory Report 225/87, English Heritage, London.
2809	School Street, Ipswich	Great Britain	secular urban town major	medieval	Murphy, P, 1987. Ipswich, Suffolk: plant macrofossils from Middle Saxon to early Medieval contexts at sites IAS 4201, 4601, 4801 and 5701, Ancient Monuments Laboratory Report 225/87, English Heritage, London.
2810	Waterside, Lincoln	Great Britain	secular urban town major	medieval	Greig, J. 1989. The Plant Remains. In Jones, M. J. (ed.), Lincoln Archaeology 1988-9. Lincoln: City of Lincoln Arachaeology Unit: 11-12.
2812	Rectory Farm, Godmanchester	Great Britain	rural elite	Roman	Murphy, P. unpublished.
2813	Rectory Farm, West Deeping	Great Britain	rural nucleated	Roman	Murphy, P. and Fryer, V. forthcoming. Plant macrofossils. In Hunn, J. and Rackham, J. (eds.), Rectory Farm, West Deeping Project 1994, British Archaeological Reports (British Series).
2814	Snettisham By-pass	Great Britain	rural lesser	Roman	Murphy, P, 1991. Snettisham By-pass, Norfolk: plant macrofossils from Roman contexts, Ancient Monuments Laboratory Report 39/91, English Heritage, London.
2815	Scole-Stuston By-pass	Great Britain	rural lesser	Roman	Fryer, V. and Murphy, P. in preparation.
2820	Bath, Spa development	Great Britain	town minor	Roman	Pelling, R. unpublished a
2821	West Hawk Farm (South of Ashford)	Great Britain	ceremonial temple-shrine	Roman	Pelling, R. unpublished b, for the Temple/Shrine and Pinus pinea - also Booth, P. 2001. The roman shrine at Wasthawk farm, Ashford: a preliminary account. Archaeologia Cantiana 121: 1-23.
2822	West Hawk Farm (South of Ashford)	Great Britain	town minor	Roman	Pelling, R. unpublished b, for the Temple/Shrine and Pinus pinea - also Booth, P. 2001. The roman shrine at Wasthawk farm, Ashford: a preliminary account. Archaeologia Cantiana 121: 1-23.
2823	Brough Field, Carsington 1980 (site A)	Great Britain	rural nucleated	Roman	Van der Veen, M. 1995. Seed identifications. In Dearne, M.J., Anderson, S. and Branigan, K. (eds.), Excavations at Brough Field, Carsington, 1980. Journal Derbyshire Archaeol. J. 115: 37-75.
2824	Wellington Row, York 1989-1990	Great Britain	town major	Roman	Hall, A. 1995. EAU 95/14.
2826	Blake Street, York	Great Britain	military intramural	Roman	Hall, A. 1986. EAU 86/07.
2827	Piccadilly (50), York	Great Britain	military extramural	Roman	Hall, A. 1992. EAU 92/08.
2830	North Street, York 93	Great Britain	town major	Roman	Hall, A. 1993. EAU 93/14.
2831	Springhead Roman town, Southfleat	Great Britain	town minor	Roman	Cambell, G. 1998. The charred plant remains. In Boyle, A. and Early, R. (eds.), Excavation at Springhead Roman town, Southfleat, Kent. Oxford. OAU occasional paper 1: 35-39.
2833	Abbey Wharf, W61A and W61B	Great Britain	secular urban town major	medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2834	Greyhound Yard, Dorchester	Great Britain	town major	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2837	Balksbury Camp 67, nr Andover	Great Britain	rural nucleated	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2838	Bartholomew St, Newbury	Great Britain	secular urban town minor	medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2842	Cathedral Car Park, Winchester	Great Britain	town major	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2843	Cathedral Green, Winchester	Great Britain	town major	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2844	Cheap St, Newbury	Great Britain	secular urban town minor	medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2845	Claydon Pike	Great Britain	rural nucleated	Roman	Straker, V, unpublished 9a. Claydon Pike, Gloucestershire: Carbonised cereals from the late Iron Age to Roman Periods.
2847	Dorchester Western Link	Great Britain	rural lesser	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2849	Fosse Lane, Shepton Mallet	Great Britain	town minor	Roman	Straker, S. unpublished (b). Charred plant macrofossils from Fosse Lane, Shepton Mallet, Somerset.
2851	Kenn Moor 94-5, nr Cleredon	Great Britain	rural lesser	Roman	Jones, J. unpublished b. The plant remains from the Roman settlement at Kenn Moor, 1994-1995.
2852	London (Roman waterfront)	Great Britain	town minor	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2858	Neatham 69-79, nr Alton	Great Britain	town minor	Roman	Millet, M, and Graham, D, 1986. Excavations on the Romano-British small town at Neatham, Hampshire 1969-79, Hampshire Field Club Monograph 3.
2860	Owslebury 67, nr Winchester	Great Britain	rural nucleated	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2861	Palace Stables, Bishop's Waltham, nr Southampton	Great Britain	secular rural elite	medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2862	Phoenix Brewery Site, Hastings 1988	Great Britain	secular urban town minor	medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2863	Pomeroy Wood, A30 Devon	Great Britain	military intramural	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2864	Pound Lane, Canterbury	Great Britain	secular urban town major	medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2865	Reading Business Park 86	Great Britain	rural lesser	Roman	Moore, J. and Jennings, D. 1992. Reading Business Park: a Bronze Age Landscape. Oxford Archaeological Unit Thames Valley Landscapes: the Kennet Valley, Volume 1.
2866	Shadwell, London	Great Britain	town major	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2867	Southwark St (15-23) 80-84	Great Britain	various trading centre	Early medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2868	St John the Baptist, Oxford	Great Britain	secular urban town major	medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2869	St Thomas St., Oxford	Great Britain	secular urban town major	medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2870	Stert St. 75-6, Abingdon	Great Britain	secular urban town minor	medieval	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2871	Suddern Farm 91	Great Britain	rural nucleated	Roman	Campbell, G 2000(c). Charred plant remains. In Cunliffe, B. and Poole, C. (eds.), The Danebury Environs Programme The prehistory of a Wessex Landscape Volume 2 – part 3 Suddern Farm, Middle Wallop, Hants, 1991 and 1996. (English Heritage and Oxford University Committee for Archaeology Monogr. 49). Oxford: Institute of Archaeology: 193-4.
2872	Tintagel Island, Tintagel	Great Britain	various trading centre	Early medieval	Straker, V, 1997 (b). The Ecofactual Assemblage. In Harry, .R and Morris, C.D. (eds.), Excavations on the Lower Terrace, Site C, Tintagel Island 1990-4, in The Antiquaries Journal 77: 1- 143, 82-108.
2873	Triangle, London	Great Britain	town major	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2874	Winchester Palace, London	Great Britain	town major	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2875	Woolbury 89, Stockbridge	Great Britain	rural lesser	Roman	G Campbell db: the references of the sites are not mentioned and it is not clear which site corresonds to which reference from her bibliographical list.
2876	Smedegård	Denmark	rural nucleated	Roman	Henriksen, P. S. and Harild, J. A. 2002. Smedegard, en byhoj fra Thy- Ark?obotaniske undersogelser. NNU Rapport 20.
2877	Østergård	Denmark	rural lesser	Roman	Henriksen, P. S. 2002. Ark?obotanisk undersogelse af materiale fra yngre jernalder fra fire lokaliteter udgravet af Haderslev Museum. NNU Rapport 7.
2878	Vårhøj	Denmark	rural lesser	Roman	Henriksen, P. S. 2002. Ark?obotanisk undersogelse af materiale fra yngre jernalder fra fire lokaliteter udgravet af Haderslev Museum. NNU Rapport 7.
2879	Herstedøster Menighedsrådshus	Denmark	secular rural lesser	medieval	Karg, S. 2000. Medieval plant remains from a well in Herstedoster, Kobenhavns Amt. NNU Rapport 27. AND Karg, S. and Robinson, D.E. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany - NAG 2000 in Umea. Archaeology and Environment 15: 133-142. AND Karg, S. 2001. Herstedoster Menighedsradshus (02.02.06 Herstedoster). In Robinson, D. E. and Karg, S. (eds.), Ark?obotaniske analyser, Nationalmuseet, AUD 2000.
2880	Kolding Kogge	Denmark	shipwreck	medieval	Karg, S. unpublished. Nationalmuseet, Naturvidenskabelige Undersogelser.
2881	Sophienborg V	Denmark	secular rural lesser	Early medieval	Henriksen, P. S. 2002. Sophienborg V, makrofossilanalyse af materiale fra en germanertids-gard i Nordsj?lland. NNU Rapport 15.
2882	H. Taastrup, Kragehavegård	Denmark	secular rural village	Early medieval	Robinson, D.E., Harild, J.A. and Pedersen, L. H. 2001. Ark?obotaniske analyser af materiale fra to bronde ved Kragehavegard, Hoje Taastrup. NNU Rapport 10. And Robinson, D. E., Harild, J. A. and Pedersen, L. H. 2002. Kragehavegard (02.02.07 Hoje Taastrup). In Robinson, D. E. and Karg, S. (eds.),: Ark?obotaniske analyser, Nationalmuseet, AUD 2001: 327.
2883	Strandby Gammeltoft, OBM 6715	Denmark	secular rural lesser	Early medieval	Henriksen unpublished. Odense Bys Museer.
2884	Ribe Posthus	Denmark	various trading centre	Early medieval	Robinson, D. E. and Boldsen, I. 1993. Botaniske analyser af prover fra udgravningen ved Ribe Posthus. NNU Rapport 32.
2885	Tinggård	Denmark	secular rural village	medieval	Henriksen, P. unpublished. Nationalmuseet, Naturvidenskabelige Undersogelser.
2886	Horsens, Søndergade	Denmark	secular urban town minor	medieval	Robinson, D. E. and Moltsen, A. unpublished. Botaniske analyser af prover fra det middelalderlige Horsens 1991-92 - Borgergade, norregade, Sondergade og Kirketorvet. unpubl. NNU-rapport
2888	København, Mikkel Bryggersgade 11	Denmark	secular urban town major	medieval	Karg, S. and Robinson, D.E. 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany - NAG 2000 in Umea. Archaeology and Environment 15: 133-142. And Robinson, D. E. 1991. Naturvidenskabelige analyser af prover fra udgravningen ved Mikkel Bryggers Gade 11, Kobenhavn. NNU Rapport 16.
2889	Næstved, Susåen	Denmark	secular urban town minor	medieval	Karg, S. 2002. N?stved Susa (05.07.07 N?stved). In Robinson, D. E. and Karg, S. (eds.), Ark?obotaniske analyser, Nationalmuseet, AUD 2001: 328. And Karg, S. 2001. Tv?rfaglige undersogelser af middelalderlige aflejringer og anl?g ved Susaen i N?stved, Sydsj?lland. NNU Rapport 28.
2891	Ålborg, Møllegade	Denmark	secular urban town major	medieval	Robinson, D.E. and Harild, J. A. 2002. Plantemakrofossilanalyse af materiale fra middelalderlige lag (o. 1200-1600) fra mollegade 8-10 Aalborg. NNU Rapport 3.
2892	Tønderhus	Denmark	secular rural elite	medieval	Harild, J. A. and Andreasen, E. R. 1999. Ark?obotanisk og pollenanalytiske undersogelser af prover fra voldstedet Tonderhus. NNU Rapport 5. And Harild, J. A. and Andreasen, E. R. 2000. Tonderhus (21.05.03 Tonder). in: Robinson, D. E. and Moltsen, A. (eds.), : Ark?obotaniske analyser, Nationalmuseet, Aud 1999: 362.
2893	Næstved, Lillelunds Have	Denmark	secular urban town minor	medieval	Robinson, D.E. and Brandsnes, P. 2002. Lillelunds Have, N?stved. Brev af 29.01.2002. And Karg, S. and D.E. Robinson 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany - NAG 2000 in Umea. Archaeology and Environment 15: 133-142.
2894	København, Nytorv 17	Denmark	secular urban town major	medieval	Karg, S. and D.E. Robinson 2002. Secondary food plants from medieval sites in Denmark: fruits, nuts, vegetables, herbs and spices. In Viklund, K. (ed.), Nordic Archaeobotany - NAG 2000 in Umea. Archaeology and Environment 15: 133-142.
2895	Vallensbæk Nordmark	Denmark	secular rural lesser	Early medieval	Robinson, D. E. and Boldsen, I. 2000. Ark?obotaniske undersogelser af materiale fra enkeltgravshustomter ved Strandet Hovedgaard, Orum sogn, Fjends herred, Viborg amt. NNU Rapport 5. And Robinson, D. E., Harild, J. A. and Pedersen, L. H. 2001. Vallensb?k Nordmark (02.02.15 Vallensb?k). In Robinson, D. E. and Karg, S. (eds.), Ark?obotaniske analyser, Nationalmuseet, AUD 2000: 375.
2896	Hollenæs	Denmark	secular rural village	medieval	Alsleben, A. unpublished. Christian-Albrechts-Universitat, Kiel.
2897	Fuglsøgård Mose	Denmark	ceremonial temple-shrine	Roman	Karg, S. and Harild, J.A. unpublished.
2900	København, Højbro Plads	Denmark	secular urban town major	medieval	Boldsen, I. unpublished. Nationalmuseet, Naturvidenskabelige Undersogelser.
2903	København, Kongens Nytorv	Denmark	secular urban town major	medieval	Moltsen, A.S.A. 2002. Ark?obotaniske undersogelser fra middelalderbyen Kobenhavn - metodik og udvalgte eksempler. In Viklund, K. (ed.), Nordic archaeobotany - NAG 2000 in Umea. Archaeol Environm 15. Umea: 173-180. And Karg's database for detailed samples: Moltsen, S. A. and Henriksen, P. S. 1998. Ark?obotaniske undersogelser fra Kongens Nytorv i Kobenhavn. NNU Rapport 29 AND Moltsen, S. A. and Henriksen, P. S. 1999. Kongens Nytorv (Kobenhavns Amt). In Robinson, D. E. and Moltsen, A. (eds.), : Ark?obotaniske analyser, Nationalmuseet, Aud 1998: 401.
2904	Elginhaugh, nr Edinburgh	Great Britain	military intramural	Roman	Dickson and Dickson 2000. MV archive.
2905	Deansway, Worcester	Great Britain	town minor	Roman	Moffett, L. 1991. Botanical remains from Worcester Deansway. AML Report New Series 39/95.
2907	Caerwent 02-08, nr Chepstow (Venta Silurum)	Great Britain	town major	Roman	Reid, C. 1978. A comparative List of Plant-Remains from Caerwent. In Boon, G.C. (ed.), Roman Sites. Cardiff: Cambrian Archaeological Association: 113-119.
2908	Gudme 3	Denmark	rural elite	Roman	Robinson, D. E. and Harild, J. A. 1997. Analyser af ark?obotanisk materiale fra Gudme 3. NNU Rapport 31.
2909	Sorø, Akademi	Denmark	religious monastery urban	medieval	Harild, J. A. unpublished. Nationalmuseet, Naturvidenskabelige Undersogelser.
2911	Verulanium (St Albans)	Great Britain	ceremonial temple-shrine	Roman	Wheeler, R.E.M. and Wheeler, T.V. 1936. Verulanium, A Belgic and two Roman Cities. Rep. Res Comm Soc Antiq London 11: 114-119. NB. Info taken from unpublished typescript by Colin Wallace 2002.
2912	Temple of Mithras, London	Great Britain	ceremonial temple-shrine	Roman	Wardle, A. 1998. The small objects. In Shepherd, J.D. (ed.), The Temple of Mithras, London. Excavations by WF Grimes and A. Williams at the Walbrook. London, English Heritage Archaeology Report 12: 151, 155.

2914	Amsterdam-Nieuwendijk	Netherlands	secular urban town minor	medieval	Paap, N.A. 1983. Economic plants in Amsterdam: qualitative and quantitative analysis. In Jones, M. (ed.), Integrating the Subsistence economy. Symposia of the Association for Environmental Archaeology No. 4. BAR International Series 181: 315-325.