

**A regional study of Irish early medieval
archaeobotanical remains: a case study
from Galway**

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Table of Contents

| | |
|---|----|
| Executive summary | 1 |
| Introduction | 2 |
| Methodology | 3 |
| Results from Galway enclosed settlements | 5 |
| Comparing results from Galway with south-west Ireland | 7 |
| Further work | 12 |
| References | 13 |
| Acknowledgements | 14 |

List of figures

| | |
|----------|--|
| Figure 1 | Screen capture of a Google Maps image of early medieval sites in County Galway |
| Figure 2 | Percentage cereal composition from Galway enclosed settlement sites |
| Figure 3 | Percentage archaeobotanical results from the richest enclosed settlement sites in Galway |
| Figure 4 | Percentage cereal composition in enclosed settlement sites in Cork and Kerry |
| Figure 5 | Percentage cereal composition in Galway enclosed settlements |
| Figure 6 | Percentage cereal composition from ringfort and cashel sites in Cork and Kerry |

List of Tables

| |
|--|
| Table 1: Plant remains from early medieval enclosed settlement sites in Galway |
|--|

Executive Summary

This study set out to examine regional differences in early medieval plant remains from Galway, comparing the results to a study of material from Cork and Kerry that was published in 1998. The research focused on enclosed settlements, as there was a comparative dataset available for these site-types.

Regional differences must have existed within practices of arable agriculture in the past (there are social and cultural differences across the island of Ireland, as well as variations in soils and climatic conditions). However, these have been difficult to identify, partly because of limited availability of data. This is changing, particularly for the early medieval period, and this research is an early attempt to look at regional variations in the archaeobotanical record, as opposed to temporal changes (which have more frequently been examined in the past).

This archival research was made possible by the increased amount of excavation data from Ireland, the frequent tendency to examine archaeobotanical material, and the widespread use of radiocarbon dating in Irish archaeological research.

The results of compiling this material together suggest that the differences between the assemblages from Galway and those from south-west Ireland are visible in subtle variations amongst the least frequent cereal types (wheat and rye) as opposed to the more common types (oat and barley). The results pose the question of whether or not archaeobotanical datasets display enough variety to use them to answer sophisticated research questions about regional variation. Nevertheless, a number of follow-up research questions are highlighted by this project.

Introduction

Regional differences in the cultivation of arable plants, and of agricultural practices in general, must have existed in the past. Variations in soils and climate affect what plants grow and are grown in any given region, as well as social and economic factors that can affect choices about what types of plants and cereals are sown on a farm, or a small land holding in any particular area.

However, these differences and variations have proved very difficult to identify within the Irish archaeobotanical record. Until relatively recently, this was largely due to the fact that the existing data set was quite limited. However, as the analysis of plant remains became a routine aspect of excavation methodology during the 2000s, the amount of information available for researchers has increased enormously. The archaeological information gathered during the economic boom is still in the process of being incorporated into the narrative of Irish archaeological research, and relatively few regional studies of archaeobotanical material have been attempted to date. Instead, the focus has largely been on examining temporal variations across Ireland in general (e.g. Monk 1985/86), and specifically within the datasets gathered from particular infrastructural projects (e.g. Johnston 2007; Halwas 2009).

Nevertheless, a recent study of differences between early medieval archaeobotanical data from each province in Ireland has been carried out (McClatchie 2011, 52). Building on this, the research presented here has sought to narrow the regional focus from province to county, and has concentrated on one site type (enclosed settlements in the form of ringforts and cashels). The advantages of restricting the study to one site type has been to eliminate, as far as is possible, variation in the patterns that are based on differences attributable to function, social differentiation, etc. In addition, this research looks at sites from a relatively small area in County Galway. Almost all of the results collected for this study were from the south and east of the county. These are then compared to the results from a study of archaeobotanical remains from south-west Ireland, from Counties Cork and Kerry (Monk et al. 1998). The aim of this comparison is to determine whether it is possible to use archaeobotanical results to determine whether there are different regional patterns in the types of crops grown across Ireland in the early medieval period.

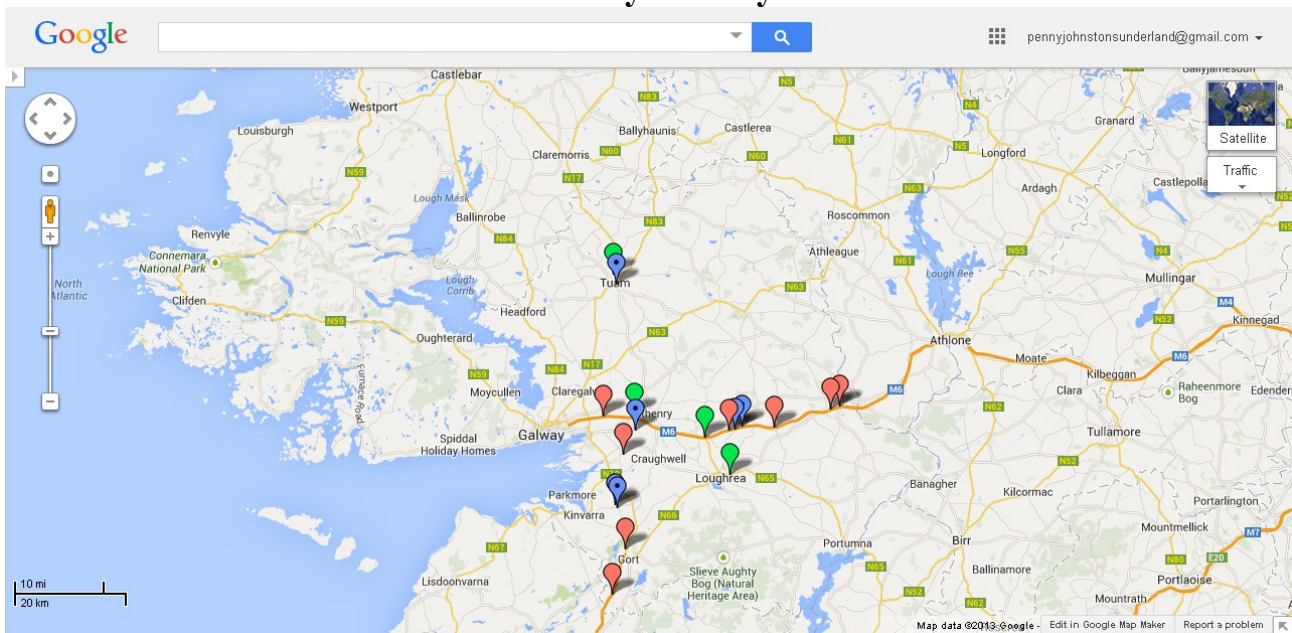
Methodology

This was an archives-based research project; there was no practical laboratory work involved. The aim was to re-assess archaeobotanical material from Galway ringfort and cashel sites by combining together data sets from numerous technical reports. The overall results are used to investigate regional patterns and variation by comparing the results to a previously published study that examined the results from ringforts and cashels in Cork and Kerry (Monk et al. 1998).

Archaeobotanical results from sites across the county were sought from colleagues to ascertain the extent of archaeobotanical work in the area (see the Acknowledgements section). A total of 18 early medieval sites were identified after this consultation, presented online as a Google Map (Figure 1): <https://maps.google.ie/maps/ms?msid=217286986479867343756.0004de3d8b8dd6e3678dc&msa=0>.

The final reports from each site was then sought; in eight cases the results had been published (in the *Eachtra Journal* online (<http://eachtra.ie/index.php/journal/>), and on CDs at the back of books published by the National Roads Authority (see Delaney et al. 2012; Delaney and Tierney 2011). Unpublished final reports were provided by the National Roads Authority as most of the sites were excavated in advance of road construction. In some cases (three sites: Carrowkeel, Rathmorrisey and Kilcloghans), the plant remains were only assessed, not fully analysed nor quantified in the final reports. As this was the case, the results from these sites could not be used for this analysis (they were not presented in a format that allowed them to be incorporated into the dataset).

Figure 1: Screen capture of a Google Maps image of early medieval sites in County Galway



Samples from all the sites were re-assessed in terms of dating/phasing. This was necessary because archaeobotanical technical reports are generally written before radiocarbon results are obtained and phasing and dating of each sample is not always determined when the technical report is written. Therefore, each sample was examined to determine whether it dated to the early medieval period, or whether it was related to another phase of activity. Samples that were confirmed as early medieval were incorporated into the project dataset.

While material from all site types of this period was initially collated, this was ultimately narrowed down to samples from 6 sites: Rahally, Mackney, Loughbown, Drumharsna South, Derrydonnell More and Owenbristy. These were identified as suitable for analysis in the context of this project since all of these sites included ringforts or cashels, and they were therefore comparable with results from similar sites analysed from Cork and Kerry (published in Monk et al. 1998). In total, 73 of samples were included in this study (see Table 1), comprising 631 plant items (seeds and chaff).

Results from Galway enclosed settlements

The results from all of the early medieval samples from the selected sites were collated for this project (Table 1). All of the dated material indicates activity relatively early in the medieval period, with the relevant radiocarbon dates indicating that the samples are from the period preceding 1000 AD. The most common plant items found were from cereals, primarily grains (Figure 2). Oat was the most common type (51.8%), followed by barley (28.6%) and wheat (19.6%).

In terms of individual sites results, very few seeds were retrieved from the cashel sites (Drumharsna South, Derrydonnel More and Owenbristy), and only the material from ringforts with >50 plant items (Rahally, Mackney and Loughbown) were selected for inclusion in individual site graphs (see Figure 3). All three sites contained quite high quantities of grains that could not be identified to species or genus, and were therefore labelled “Ceralia”. This was particularly the case in assemblages from Rahally and Loughbown, as the preservation in these assemblages was generally poor.

When the identifiable cereals were plotted (Figure 3), the results suggest that barley was an important component of the charred plant assemblage at all sites (but less so than oats at Mackney and Loughbown). It is also notable that there is a significant quantity of wheat in the assemblages from both Rahally and Mackney. This grain type was almost completely absent from the Loughbown samples. There was no rye from any of the early medieval samples at these sites.

Figure 2

Percentage cereal composition from Galway enclosed settlement sites

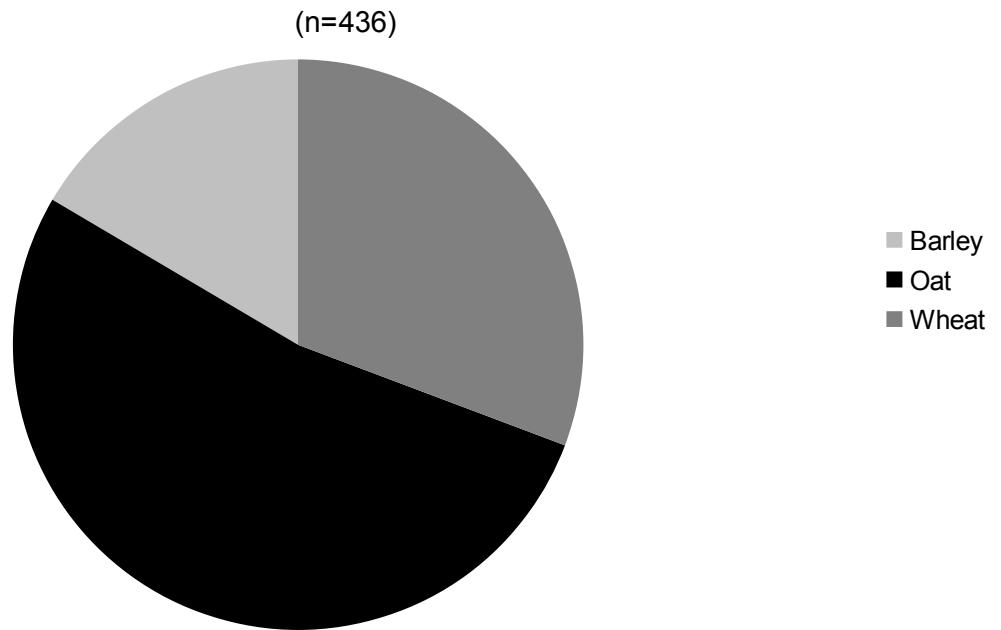
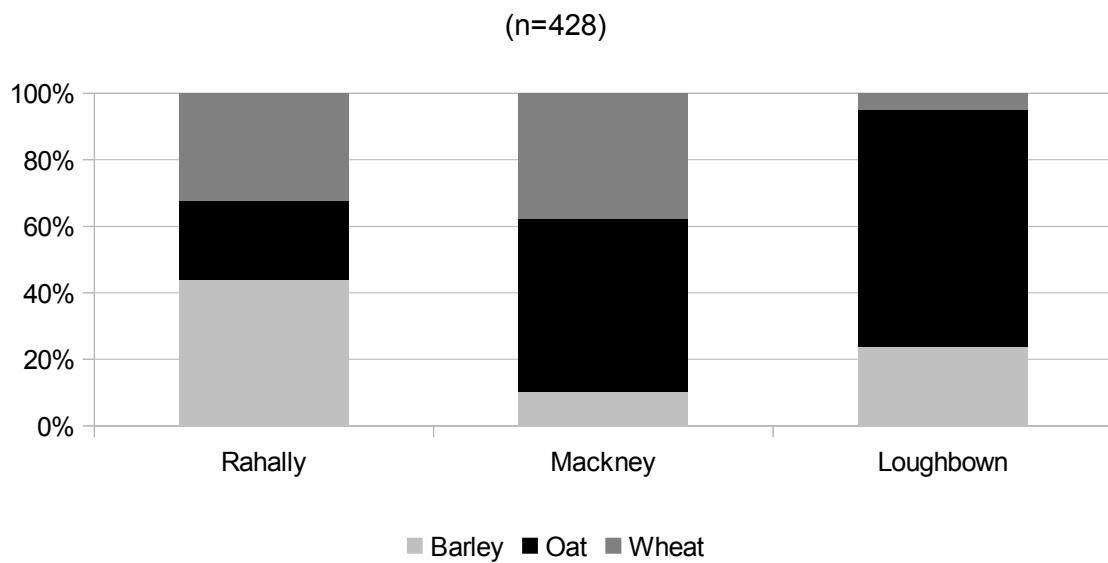


Figure 3

Percentage cereal composition Galway enclosed settlements



Comparing results from Galway with south-west Ireland

The results from early medieval enclosed settlement sites in Galway indicate a numerical significance of oat cereal grains. However, it is possible that the importance of oat is over-emphasised by the use of simple quantification methods such as counting grains. Oat grains tend to be smaller than either wheat or barley (for example, see Illus. 4, p. 76 in Kyle et al. 2009, 76). Despite the absence of systematic testing, it has been suggested that 100 oat grains may take up only half the weight or volume of a similar quantity of wheat or barley grains (a figure that was tested on a small charred assemblage from County Cork, see Johnston, in preparation). Although this issue requires more systematic investigation, these informal results suggest that, in terms of real yield, 200 oat grains may be of similar significance to 100 barley grains. If this is truly the case, barley was probably more significant than oats in terms of yield volume/food quantity or value. It also suggests that wheat was only marginally less significant than oats. For the present, however, the methodological concern of how to measure the value of oat in comparison to wheat and barley is an area that requires further research. In the case of these assemblages from Galway, the only way to cross compare data sets from across different sites, and work carried out by different specialists, is through the use of simple grain counts. Nevertheless, the caveat remains that these counts may not necessarily represent “quantity” as it was measured in the early medieval period and, as a result of various taphonomic factors that affect charred grain assemblages, there is no way to ascertain whether these results are actually indicative of the relative importance of different grain types in the past.

This project set out to compare the percentage cereal data from enclosed settlements in Galway to results from similar site-types in Cork and Kerry. In order to do this it was necessary to recreate the pie-charts from Cork and Kerry presented in Monk et al. 1998. No count data was presented with the archaeobotanical results in this paper. Instead, graphic presentations of cereal proportions were published. These were visually reproduced as part of this project and the extrapolated results are presented in graph format in Figures 4 and 5.

Comparisons between the overall data sets from both regions (ringforts and cashels from Galway compared to those from Cork and Kerry) can be made by examining the pie-charts in Figure 2 (Galway) and contrasting it to results in Figure 4 (Cork and Kerry). The results suggest that, while

oat is roughly equally significant in both assemblages, barley is less important (in proportionate terms) in assemblages from Galway, and wheat is more significant in percentage terms. This corresponds to a broad overview of early medieval plant remains from sites across Ireland, which found that wheat was somewhat more common in early medieval Leinster and Connaught, as compared to Ulster and Munster (McClatchie 2011, 51–52).

Figure 4

Percentage cereal composition in enclosed settlement sites in Cork and Kerry

(based on details from Monk et al. 1998)

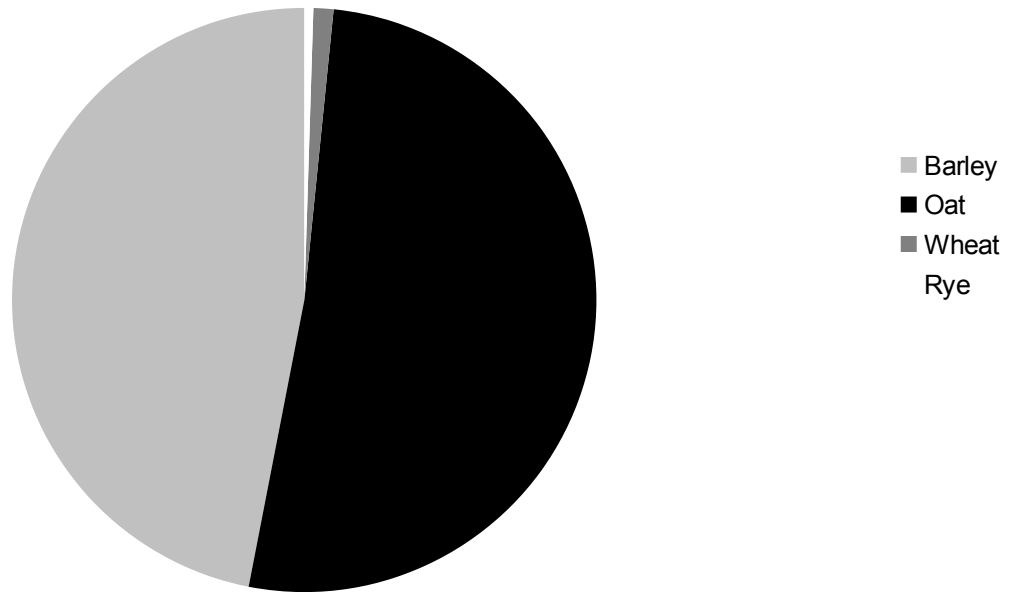
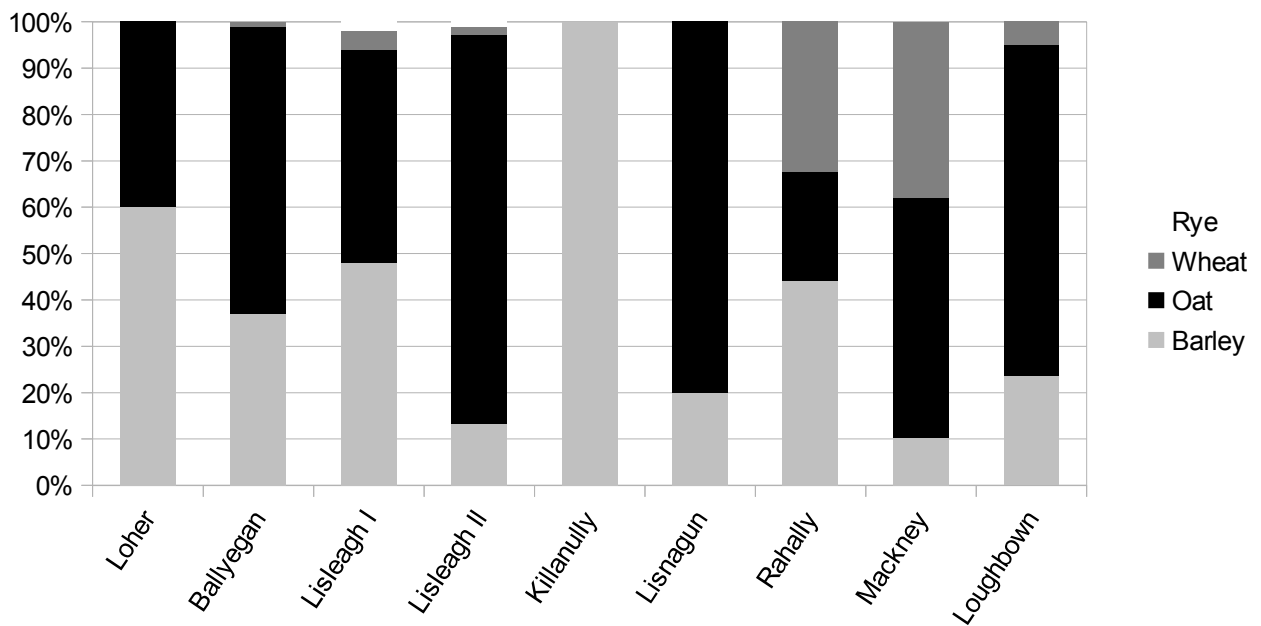


Figure 5: comparative graph showing results from sites in Cork, Kerry and Galway

Percentage cereal composition from enclosed settlement sites



When results from all of the selected sites were plotted in a comparative graph (Figure 5), the results show that the three Galway sites (Rahally, Mackney and Loughbown) all contained wheat, whereas wheat was only present in very small quantities from a few sites in Cork and Kerry (present in tiny proportions in assemblages from Ballyegan and Lisleagh I and II). Wheat was not present at all in the remaining sites.

Another significant difference is the presence of rye in assemblages from Lisleagh I and II. In contrast, rye was entirely absent from early medieval deposits in the enclosed settlement sites in Galway. However, rye has been found at non-enclosed early medieval sites in Galway, for example at Carnmore West (see Dillon 2007 and Sutton 2008).

In summary, it seems from the plotting of these results that it is possible to distinguish some differences between results from early medieval sites from Galway and those from Cork and Kerry. However, the differences are not in the main cereal types found (in both regions this is oat and barley) but in the cereals that appear to be of more marginal importance (at least in terms of the count numbers from archaeobotanical assemblages). In Galway wheat is significant, in Cork it is not. In Cork, rye is found in small amounts (although it makes up only a tiny portion of the assemblages), whereas it is largely absent in the Galway enclosed settlement sites.

The results show that the distinctions between assemblages from different regions are subtle. This topic warrants further investigation, incorporating results from more sites, to determine whether the patterns identified here are typical of the region (rather than merely typical of this particular small group of sites).

A further question raised by this research is that of the suitability of these kinds of datasets, where the types of cereals are placed into very broad categorisations (e.g. “barley” or “wheat” or “oat”). This is by no means a reflection of the different types of cereal that would have been grown in different regions of Ireland in the past: the truth is that these categorisations probably cover a variety of different species and sub-species of cereal types (variation may well have been in the types of barley, wheat or oat that were cultivated). Further division/more subtle identifications within archaeobotanical results is, however, often problematic. This is often due to issues of preservation, which can militate against species level identification (it is frequently not possible to identify the remains more closely without the presence of other parts of the plant, such as chaff, or

because the grain has been corroded). But it is also true to say that the quantities of cereal grains recovered from Irish archaeological sites are often so low that, when comparing datasets from different sites, it is often necessary to generalise very broadly about the identification of the grains. It is likely that, in the absence of closely identified archaeobotanical results, it will remain difficult to pin-point regional variety in the choices made in cereal selection in the past.

Further work

There are a number of ways in which this research could be extended:

- There were three enclosed settlement sites where the results of archaeobotanical assessments were the only details available in the final reports: Carrowkeel (E2046), Kilcloghans (06E1139) and Rathmorrissey (E4024). Because no counts were provided in these reports, the material could not be incorporated into the results for this project. However, some further work has been carried out on this material (e.g. Carrowkeel and Kilcloghans percentage results were presented in Kyle et al. 2009, 80 (Illus. 8)). Further work incorporating these results with those already analysed as part of this project is desirable, but it has not been possible to trace these results within the timescale of this research project.
- This research could be extended to include results from un-enclosed sites. In order for this to be used for comparative analysis, it would be necessary to construct a similar table of results from early medieval sites from another part of the country (preferably for Cork or Kerry again, as initial work on enclosed settlement sites has already been done and could be used again for comparison).
- This work focused on a relatively limited time period, from between 400 and 1000 AD. The database that was constructed from this could be expanded for the later medieval period, to include other sites and, in some cases, material from the same sites (where there are both early and late medieval phases of activity).
- Systematic methodological inquiry into the suitability of quantifying oat grains by counting (particularly when comparing results with those from wheat and barley).

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Acknowledgements

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Table 1

| SiteName | SiteNumber | Sample | Context | Barley | Oat | Wheat | Rye | Chaff | Weed | Ceralia |
|-------------------|------------|--------|---------|--------|-----|-------|-----|-------|------|---------|
| Derrydonnell More | E3867 | 8 | 9 | | | | | | | 1 |
| Derrydonnell More | E3867 | 9 | 10 | | | | | | | 1 |
| Owenbristy | E3770 | 81 | 48 | 3 | | | | | | 1 |
| Owenbristy | E3770 | 335 | 254 | | | | | | | |
| Owenbristy | E3770 | 336 | 256 | | | | | | | |
| Drumharsna South | E3872 | 49 | 35 | | | | | | | |
| Drumharsna South | E3872 | 20 | 5 | 1 | | | | | | 1 |
| Drumharsna South | E3872 | 6 | 21 | 2 | | | | | 1 | |
| Drumharsna South | E3872 | 22 | 26 | | 2 | | | | | |
| Loughbown | E2442 | 149 | 202 | 1 | | 1 | | | | 3 |
| Loughbown | E2442 | 227 | 270 | 12 | 45 | 2 | | | | 11 |
| Loughbown | E2442 | 199 | 256 | | | | | | | 20 |
| Loughbown | E2442 | 251 | 256 | | | | | | | 2 |
| Loughbown | E2442 | 250 | 304 | 1 | | | | | 1 | 3 |
| Loughbown | E2442 | 195 | 268 | | 1 | | | | 1 | |
| Loughbown | E2442 | 202 | 274 | 4 | 4 | | | | | 3 |
| Loughbown | E2442 | 208 | 280 | | | 1 | | | | 8 |
| Loughbown | E2442 | 221 | 289 | | 1 | | | | | 1 |
| Loughbown | E2442 | 220 | 287 | | | | | | | 1 |
| Loughbown | E2442 | 222 | 291 | 1 | 1 | | | | | |
| Loughbown | E2442 | 223 | 293 | | 2 | | | | | 1 |
| Loughbown | E2442 | 224 | 295 | | 1 | | | | | |
| Loughbown | E2442 | 210 | 297 | | | | | | 1 | 11 |
| Loughbown | E2442 | 213 | 300 | | 2 | | | | | |
| Mackney | E2444 | 7 | 16 | | 3 | | | | | 3 |
| Mackney | E2444 | 143 | 188 | 1 | | | | | | |
| Mackney | E2444 | 150 | 188 | 2 | | 3 | | | | 1 |
| Mackney | E2444 | 246 | 290 | 4 | 12 | 3 | | | 1 | 2 |
| Mackney | E2444 | 278 | 291 | 1 | | | | | | 1 |
| Mackney | E2444 | 273 | 328 | 14 | 50 | 24 | | | 23 | 5 |

Table 1 (continued)

| SiteName | SiteNumber | Sample | Context | Barley | Oat | Wheat | Rye | Chaff | Weed | Ceralia |
|----------|------------|--------|---------|--------|-----|-------|-----|-------|------|---------|
| Mackney | E2444 | 271 | 331 | | | | | | | 1 |
| Mackney | E2444 | 274 | 333 | | | 1 | | | | 2 |
| Mackney | E2444 | 302 | 395 | | | 1 | | | | 1 |
| Mackney | E2444 | 462 | 565 | 2 | 1 | | | | | 3 |
| Mackney | E2444 | 473 | 588 | | | | | | | |
| Mackney | E2444 | 678 | 856 | | 5 | 2 | | | 2 | |
| Mackney | E2444 | 621 | 755 | | 1 | | | | | |
| Mackney | E2444 | 714 | 892 | | | | | | | 1 |
| Mackney | E2444 | 670 | 832 | | 1 | | | | | |
| Mackney | E2444 | 713 | 893 | | | | | | 1 | |
| Mackney | E2444 | 715 | 893 | | | | | | | 2 |
| Mackney | E2444 | 731 | 907 | | | | | | | |
| Mackney | E2444 | 739 | 915 | | | | | | | 2 |
| Mackney | E2444 | 823 | 1017 | 1 | | | | | | |
| Mackney | E2444 | 843 | 1020 | | 1 | 1 | | | | 2 |
| Mackney | E2444 | 817 | 1080 | 1 | 29 | 8 | | | 1 | 4 |
| Mackney | E2444 | 865 | 1080 | | 20 | 19 | | | 7 | 2 |
| Mackney | E2444 | 928 | 1143 | | | | | | 1 | |
| Mackney | E2444 | 39 | 31 | 4 | | 1 | | | | 3 |
| Mackney | E2444 | 336 | 276 | | | | | | | 1 |
| Mackney | E2444 | 459 | 367 | | | 1 | | | | 4 |
| Mackney | E2444 | 252 | 290 | | | 1 | | | | |
| Mackney | E2444 | 1099 | 1229 | | | | | | 2 | |
| Mackney | E2444 | 989 | 1198 | | 31 | 52 | | | 3 | 5 |
| Mackney | E2444 | 1258 | 1229 | | 5 | | | | | |
| Mackney | E2444 | 1091 | 1229 | 2 | | | | | 4 | 3 |
| Mackney | E2444 | 209 | 255 | | | 1 | | | | |
| Mackney | E2444 | 994 | 1203 | | 4 | 1 | | | 1 | 1 |
| Rahally | E2006 | 295 | 37 | | | | | | | 1 |
| Rahally | E2006 | 298 | 150 | | | | | | | 1 |

Table 1 (continued)

| SiteName | SiteNumber | Sample | Context | Barley | Oat | Wheat | Rye | Chaff | Weed | Ceralia |
|----------|------------|--------|---------|--------|-----|-------|-----|-------|------|---------|
| Rahally | E2006 | 374 | 575 | | | 1 | | | | 3 |
| Rahally | E2006 | 300 | 157 | 4 | 1 | | | | 1 | 3 |
| Rahally | E2006 | 340 | 718 | 1 | 3 | 8 | | | | 5 |
| Rahally | E2006 | 497 | 220 | 2 | | | | | | |
| Rahally | E2006 | 286 | 673 | | 2 | | | | | 1 |
| Rahally | E2006 | 413 | 673 | | | | | | | 1 |
| Rahally | E2006 | 554 | 776 | 1 | | | | | | |
| Rahally | E2006 | 375 | 771 | | | | | | | 3 |
| Rahally | E2006 | 338 | 722 | | | | | | 1 | 1 |
| Rahally | E2006 | 396 | 739 | | 1 | 1 | | | | 2 |
| Rahally | E2006 | 399 | 740 | 3 | 1 | | | | | |
| Rahally | E2006 | 401 | 847 | 3 | | 1 | | | 1 | 4 |
| Rahally | E2006 | 448 | 216 | 1 | | | | | | |