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Neolithic farming in north-western Europe: archaeobotanical evidence from Ireland

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ABSTRACT

This paper presents new insights into the appearance of agriculture at the north-western edge of Europe, focussing on archaeobotanical evidence from Neolithic Ireland (4000–2500 cal BC). Previous studies were based upon a limited plant macro-remains dataset, as much of the Irish evidence is unpublished. A research project, 'Cultivating Societies', was implemented to examine the nature, timing and extent of agricultural activity in Neolithic Ireland through collation and analysis of different strands of published and unpublished archaeological and environmental evidence, with a particular focus on plant macro-remains, pollen, settlement and ^{14}C data. This paper will focus on results of plant macro-remains analyses. Remains from a total of 52 excavated sites were collated and analysed, representing the most comprehensive study to date of Neolithic plant remains from this region. Cereals were present at many locations and site types, sometimes in large quantities and most often at sites dating to the earlier Neolithic (3750–3600 cal BC). Emmer wheat was the dominant crop, at least at this time. Other crops included naked and hulled barley, naked wheat, einkorn wheat and flax. Analysis of arable weeds indicates that early plots were not managed under a shifting cultivation regime, which has new implications for understanding Neolithic settlement practises and how communities engaged with landscapes. The variety of crops cultivated in Neolithic Ireland is similar to that in Britain, reflecting a decreasing diversity in crop types as agriculture spread from south-east to north-west Europe.

1. Introduction

The introduction of agriculture continues to be an important focus of archaeological and palaeoecological research throughout the world. Ireland lies at the north-western edge of Europe, and farming arrived here around 6000 years ago. International narratives relating to Neolithic agriculture rarely mention the Irish evidence, except as an adjunct to British research. Neolithic farming in Britain is often characterised as transient, with cultivated plant foods being of little economic importance, instead reflecting special or symbolic consumption in 'ritual' contexts (for example, Edmonds, 1999; Thomas, 1999, 2003, 2004, 2008). Others have maintained that crops provided a major component of daily subsistence, as has been proposed for central Europe (Jones, 2000; Monk, 2000; Jones and Rowley-Conwy, 2007; Rowley-Conwy, 2011). Although the British and Irish evidence was considered in tandem for many years, more recent studies have acknowledged differences between the two archaeological records, and it has been suggested that there may have been a greater reliance on domesticated resources in Ireland than in Britain (Thomas, 2004, 121), as long argued by some authors (Cooney, 2000; Monk, 2000; see also Bradley, 2007). Current perspectives on arable farming in Neolithic Ireland are based upon a published archaeobotanical dataset of at most 10 sites (for example, Monk, 2000; Colledge et al., 2005; Jones and Rowley-Conwy, 2007). Although cereal remains have been recorded from many more sites, much of the evidence has remained unpublished. This has led to a reliance on a handful of sites as a basis for understanding Neolithic farming throughout Ireland.

New archaeobotanical data from Ireland have recently become available following the many excavations of Neolithic sites over the last two decades, often associated with infrastructural developments (Cooney, 1999; Grogan, 2002, 2004; Smyth, 2006, 2010). A pilot study undertaken in 2007 demonstrated that the available

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published record did not adequately represent the extent and variety of plant macro-remains from this period (McClatchie, in press). The pilot study revealed evidence for cereal remains at 24 Neolithic sites, which far exceeded the dataset discussed in previously published studies. Wheat was found to be the dominant crop, being recorded at 79% of sites (19/24), and it was newly discovered that barley was also significant, being recorded at 67% of sites (16/24). A review of arable weeds from Irish Neolithic sites has never been undertaken, despite their potential for providing insights into the management of cultivation plots (e.g., Bogaard, 2002, 2004; Bogaard and Jones, 2007). In order to address these issues, a research project, 'Cultivating Societies: assessing the evidence for agriculture in Neolithic Ireland' was undertaken in 2008–2010, funded by the Heritage Council, Republic of Ireland. The project aimed to examine the nature, timing and extent of agricultural activity in Neolithic Ireland through collation and analysis of different strands of published and unpublished archaeological and environmental evidence, with a particular focus on plant macro-remains, pollen, settlement and ^{14}C data (Whitehouse et al., 2010, in press).

This paper focuses on results from analyses of the plant macro-remains. The main aim of the paper is to review comprehensively the variety and relative occurrence of different plant categories in Neolithic Ireland within its north-west European context, focussing on cultivated plants, but also taking into account other plant groups, such as gathered plants and other wild plants, including arable weeds. The quantities of cereal grains are assessed to explore their frequency of occurrence at individual sites, and the ratio of grain/chaff components is established to investigate crop-processing activities. Analyses of arable weed data provide new insights into the management of cultivation plots. Results of further analyses are provided elsewhere (McClatchie et al., in preparation), including more detailed discussion of plant remains and their associated context and site types from different sub-periods of the Neolithic.

2. Methods of analysis

Archaeobotanical data were collated from 52 excavated sites (Fig. 1), around two-thirds of which were unpublished at the time of collation. Data were carefully checked for accuracy to ensure a robust dataset, in particular relating to sample location, phasing and dating. A version of the archaeobotanical database created as part of the project is currently available from the project website (www.chrono.qub.ac.uk/instar). In addition to the 52 analysed sites, cereals were recorded at a further 17 Neolithic sites, but the final excavation reports from these sites were incomplete, so they were excluded from analyses (Fig. 1).

Where possible, sites were assigned to the following chronological categories, using new Bayesian site chronologies developed as part of the project (Whitehouse et al., in press; Schulting et al., in preparation): Early Neolithic (EN I and II), Middle Neolithic (MN I and II) and Late Neolithic (LN) (Table 1). Sites where calibrated date ranges spanned different periods within the Neolithic were assigned to an indeterminate Neolithic category.

The quantity of cereal remains at each site was assessed to investigate their frequency of occurrence, taking into account potential effects of taphonomy and sample size (Jones and Rowley-Conwy, 2007). Where data were available, the number of cereal grains at each site was compared, with three grain fragments counting as one whole grain. This analysis could not be completed for every site, as in a number of cases plant remains were quantified on a ranked scale of abundance (rare, occasional, abundant, etc.) rather than actual counts. At sites where hulled wheat chaff was recorded, a comparison of the quantity of wheat grains and glume

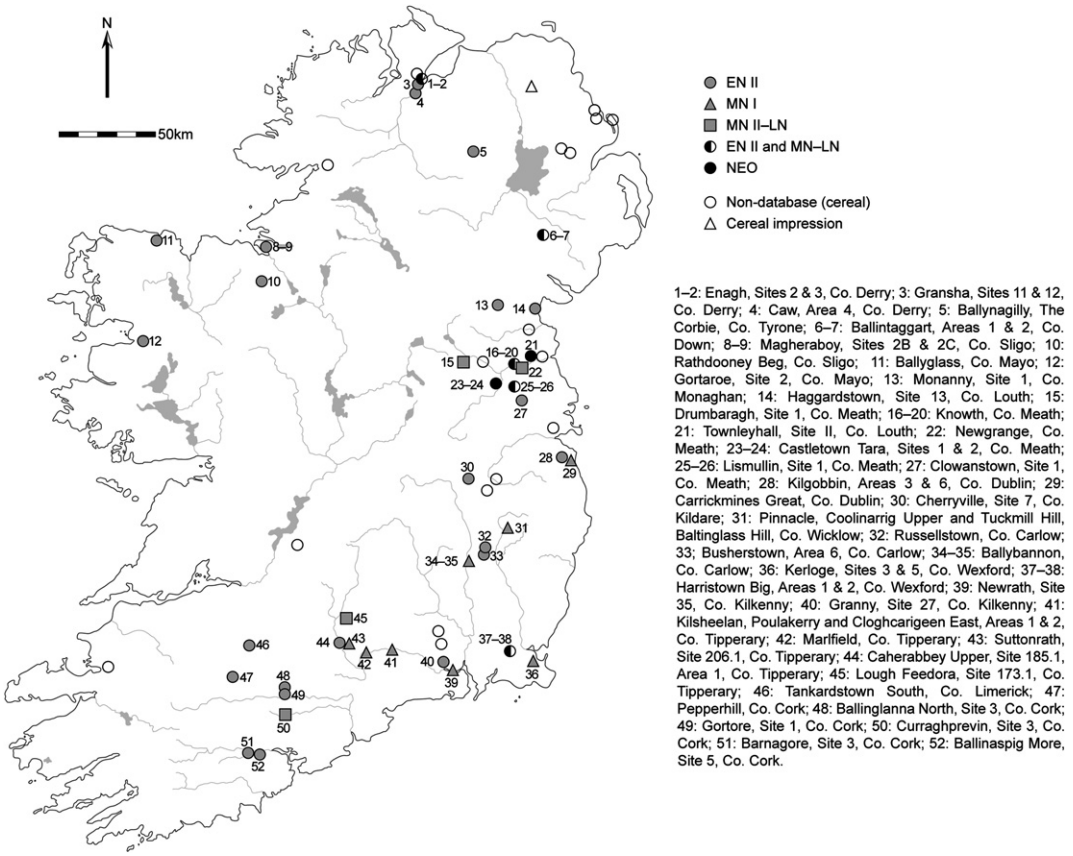

Fig. 1. Map of Ireland showing locations of sites where plant remains were recorded.

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