Radiocarbon dating archaeobotanical remains from Wellington Quarry

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During 1986–96, archaeological investigations at Wellington Quarry (Herefs) discovered evidence of medieval activity comprising two ovens (interpreted as corn-dryers), pits, ditches, and traces of ridge-and-furrow (Jackson and Miller 2011). Rich archaeobotanical samples from these features constitute an important assemblage of medieval charred plant remains, which are relatively scarce in Herefordshire compared with regions further east (Pearson in Jackson and Miller 2011; McKerracher 2016).

Analytical use of these archaeobotanical data as evidence for medieval crop husbandry practices requires the construction of a firm chronology for the contexts from which the charred plant remains derive. These contexts are listed in the table below, along with the phases assigned in the excavation report and the associated dating evidence.

context	date	feature	dating evidence
3606	C11–12	pit	radiocarbon dates (see below)
3608	C11–12	pit	undated but adjacent to pit 3606
3629	C13–14	oven 3631	C13–14 sherds
3630	C13–14	oven 3631	C13–14 sherds
3614	C13–14	oven 3615	circumstantially, could be contemporary with oven 3631
3632	C13–14	pit	circumstantially, could be contemporary with oven 3631
3633	C13–14	ditch fill	circumstantially, could be contemporary with oven 3631

Two samples from pit 3606 were originally submitted for radiocarbon dating, returning a pooled mean of 927±18 BP, and a calibrated date range (using IntCal04) of cal. AD 1020–1190 (Bayliss *et al.* 2007, 134: OxA-12483 and OxA-12567). This result was taken to suggest 'that the focus on arable farming indicated by the 13th or 14th century corn-driers had existed for some considerable time' (Jackson and Miller 2011, 148). The circumstantial case for assigning oven 3615, pit fill 3632 and ditch fill 3633 to the same period as oven 3631 is based upon the proximity of these features to one another, and the fact that they each contained a deposit of charred plant remains (Jackson and Miller 2011, 144–148).

In 2020, in an attempt to confirm and/or refine this chronology, the Feeding Anglo-Saxon England project (FeedSax) submitted charred grain samples from two additional contexts (3630 and 3633) to the Oxford Radiocarbon Accelerator Unit for radiocarbon dating. These grains, originally analysed by Liz Pearson, were subsampled by the author whilst visiting Worcestershire Archaeology and then photographed at the University of Oxford's Institute of Archaeology. These photographs are included in the FeedSax project's photographic archive (McKerracher *et al.* in prep.).

The new radiocarbon dates, along with the pooled mean from the original dates for pit 3606, have been calibrated using IntCal20 (Reimer *et al.* 2020) and OxCal 4.4.4 (Bronk Ramsey 2009) in the table below and figures at the end of this report.

Results

context	material	lab no.	original phase	age BP	calibrated years AD (confidence)
3606	charred material	OxA-12483 OxA-12567	C11–12	927±18 (pooled mean)	1039–1165 (95.4%)
3630	3 x wheat grains	OxA-40416	C13–14	1051±18	978–1028 (95.4%)
3633	3 x wheat grains	OxA-40417	C13–14	975±18	1023–1050 (31.3%), 1080–1154 (64.2%)

The new radiocarbon dates disagree strikingly with the dating originally postulated on ceramic or circumstantial grounds. The charred plant remains from context 3630 (oven 3631) are said to have been directly above the oven floor and therefore probably residues from the last firing; these have now been dated to cal. AD 978–1028 (with 95.4% confidence), so the thirteenth- to fourteenth-century pottery in the oven fills must in this case be intrusive. This oven (and quite possibly oven 3615 as well) thus appears to be the earliest medieval feature at the site. It predates both pit fill 3606 (cal. AD 1039–1165, with 95.4% confidence) and ditch fill 3633, whose postulated thirteenth- to fourteenth-century date has been significantly revised by the new radiocarbon result, which is broadly contemporary with that for pit fill 3606 (cal. AD 1023–1154, with 95.5% confidence). Hence, despite the ceramic evidence, none of the charred plant remains need date from the thirteenth to fourteenth centuries. Rather, they all belong to occupation phases between the late tenth and mid-twelfth centuries. Indeed, it is possible that all of the represented features could date from a comparatively short period in the early to mid-eleventh century, with the pits and ditches most probably post-dating the ovens within this phase.

Acknowledgements

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References

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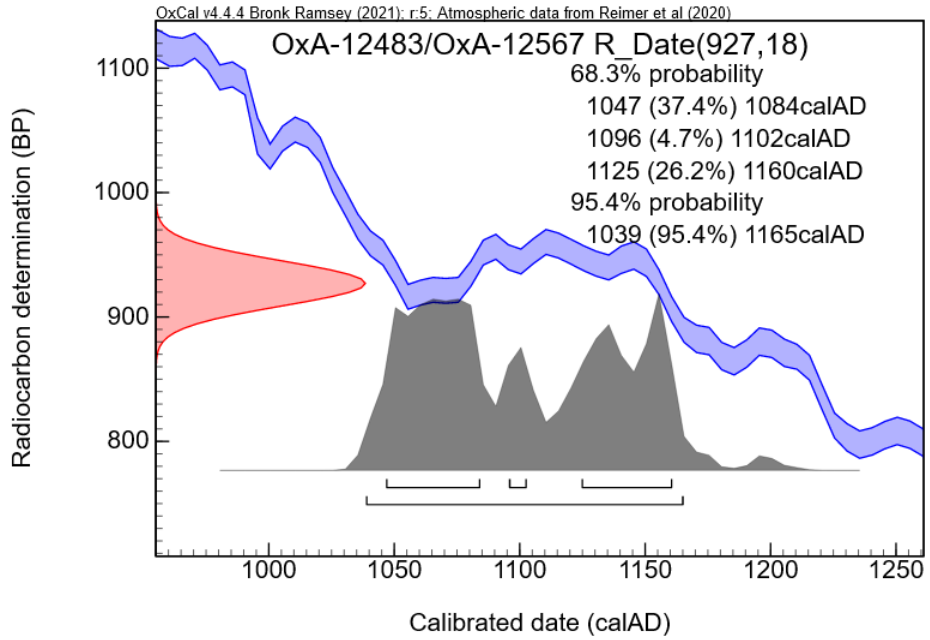
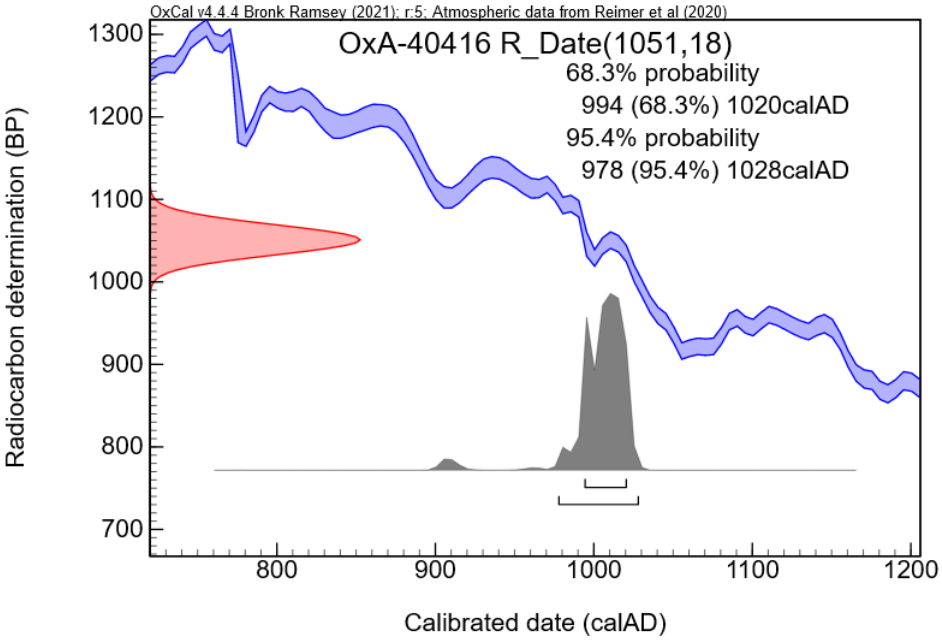
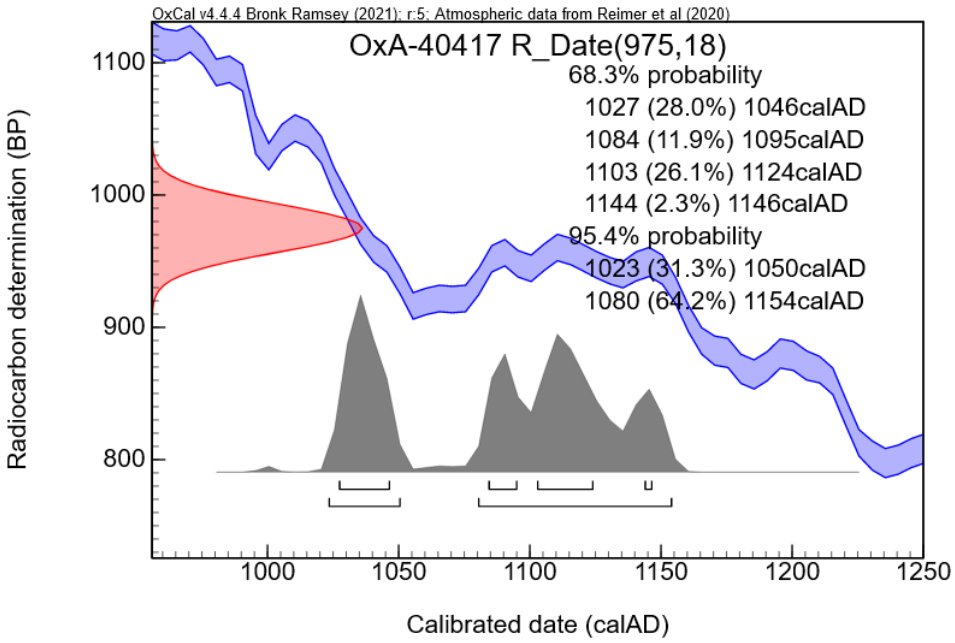
Calibration of radiocarbon determinations






OxCal v4.4.4 Bronk Ramsey (2021); r:5; Atmospheric data from Reimer et al (2020)
OxA-40417 R_Date(975,18)
68.3% probability
1027 (28.0%) 1046calAD
1084 (11.9%) 1095calAD
1103 (26.1%) 1124calAD
1144 (2.3%) 1146calAD
95.4% probability
1023 (31.3%) 1050calAD
1080 (64.2%) 1154calAD
Radiocarbon determination (BP)
1100
1000
900
800
1000
1050
1100
1150
1200
1250
Calibrated date (calAD)