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Excavations at West Amesbury Farm: Medieval and Post Medieval Charred Plant Remains

Ruth Pelling

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West Amesbury Farm
Wiltshire

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SUMMARY

Excavations at West Amesbury Farm focused on the prehistoric landscape of the south eastern corner of the Stonehenge and Avebury World Heritage Site. An unexpected find of a sizable post medieval grain deposit within a ditch and pit provides evidence for the more recent arable activity within the landscape. The assemblage was dominated by free-threshing wheat grain. Scattered medieval and post medieval arable crop remains were also encountered in several of the prehistoric feature fills, demonstrating the importance of direct dating of such material.

CONTRIBUTORS

Ruth Pelling

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Excavations at West Amesbury Farm were directed by David Roberts. The stratigraphic narrative was produced by David Roberts and Andrew Vallez-Tullet. All dates were commissioned and calibrated by Peter Marshall, Historic England dating office. Plans were produced by Historic England Graphics Team. The cereal grain images were taken on a Keyence VHX7000 3-D digital microscope (AHRC Award AH/V011758/1). Front cover image taken at x40. The author is grateful to Gill Campbell and David Roberts for comments on the text. Data is stored within *ArboDat 2016 English Version* (copyright held by the Licensor, Landesamt für Denkmalpflege Hessen/hessenARCHÄOLOGIE) at Historic England, Fort Cumberland.

ARCHIVE LOCATION

The plant material, paper and digital archive are held at Historic England, Fort Cumberland, PO4 9LD.

DATE OF RESEARCH

Excavation was conducted in the winter of 2015-2016. Analysis of the plant material took place from 2016 to 2017.

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INTRODUCTION

Excavation, recovery and analysis of bioarchaeological material within the Southern Stonehenge and Avebury World Heritage Site (WHS) has understandably tended to focus on the prehistoric archaeology. The medieval, and particularly the post medieval periods, have tended to be of limited research interest. The chance recovery of an assemblage of post medieval cereal grain during Historic England excavations at West Amesbury Farm in the southeast of the SWHS (Roberts *et al* 2020) therefore adds valuable archaeobotanical evidence to the understanding of the more recent arable history of the area.

A number of features identified by aerial interpretation and mapping (Barber and Small in prep), and geophysical survey (Linford *et al* 2015) were excavated at West Amesbury Farm in the winter of 2015-16 by Historic England's Excavation and Analysis team. A flotation and sieving sampling programme for the recovery of charred plant remains, faunal remains, small finds, molluscs and other small material was adopted as part of the excavation strategy. Medieval and post medieval archaeobotanical evidence derives from cereal remains, pulses and arable weeds found scattered throughout the prehistoric features where they occurred as intrusive contaminants, and a substantial deposit of post medieval grain recovered from a number of closely positioned contexts in one trench.

ARCHAEOLOGICAL BACKGROUND AND SAMPLING

West Amesbury Farm (Figure 1) is situated to the south of the A303 on the slopes leading up to King Barrow ridge (centred on NGR SU 13470 41960). Excavations, designed to improve understanding of the archaeological resource in the WHS south of the A303, revealed a series of prehistoric or undated features: an area of Middle Neolithic features, tree throws and badger burrows (Roberts *et al* 2020), a series of linear features related to a Middle Bronze Age field system (Roberts *et al* 2017), a square enclosure previously excavated by Wessex Archaeology (Darvill 1995; Valdez-Tullett and Roberts 2017) and a number of isolated scattered pits and tree-throws.

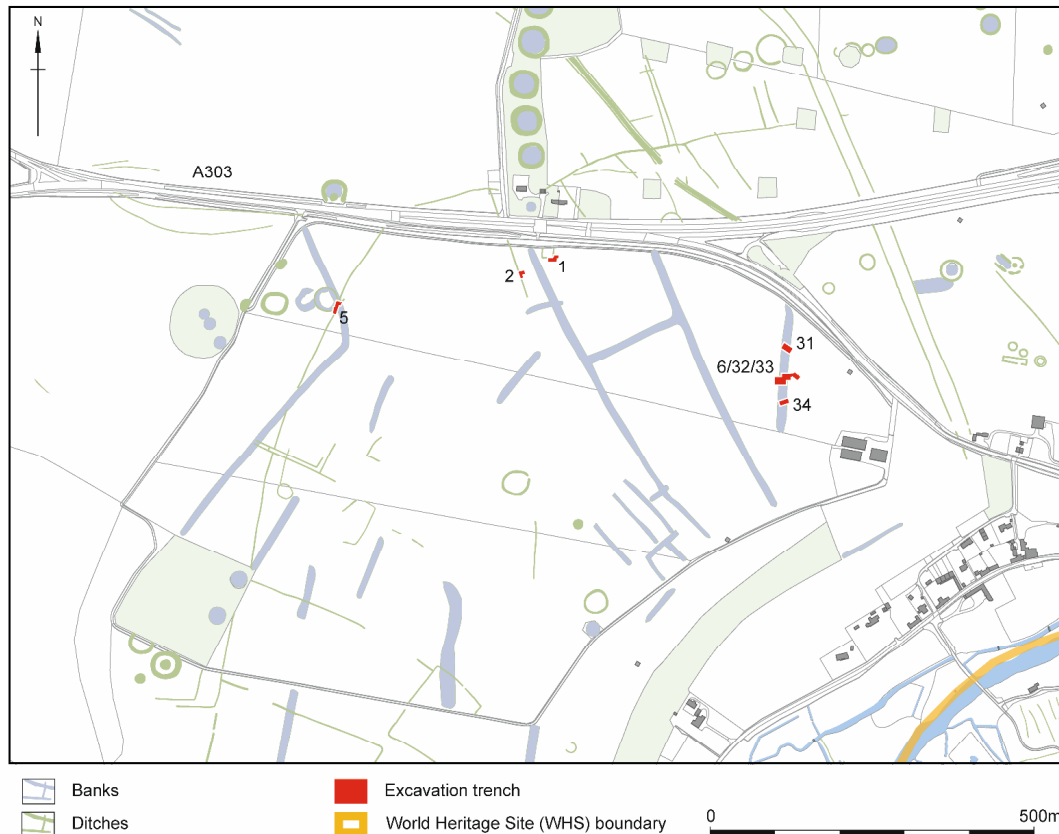
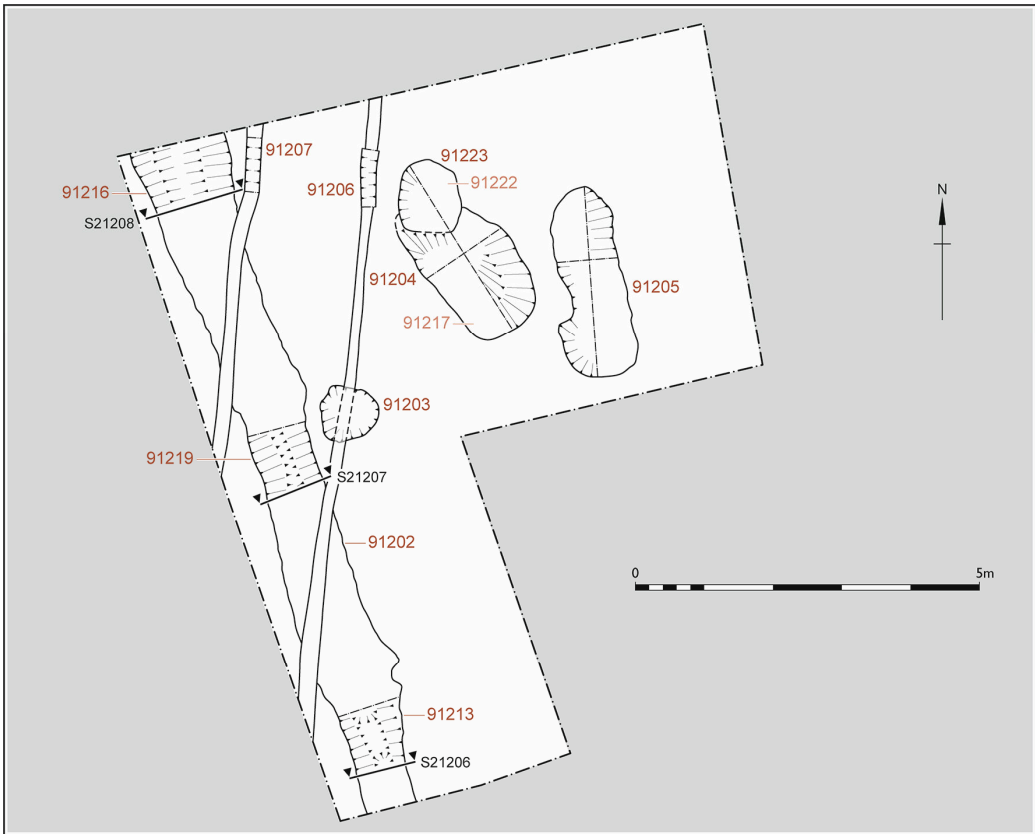
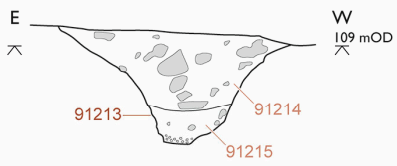


Figure 1: Trench locations at West Amesbury Farm

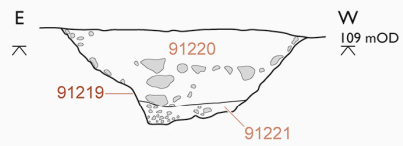
Trench 2 (Figure 1) was situated towards the crest of the hill opposite Stonehenge Cottages, a National Trust Stonehenge Estate Office. Following geophysical survey (Linford *et al* 2015) the trench was located to investigate a short linear feature [91202] extending south from a known east-west linear ditch that is part of a presumed prehistoric or Roman field system (AMIE UID 959848), and several pit-like anomalies alongside the ditch. Linear feature [91202] ran NNW-SSE across the trench and was cut obliquely by two modern field drains (Figure 2; Roberts *et al* 2016). The ditch was excavated in three slots, found to vary from 0.30m to 0.43m in depth, and contained two fills. It is likely to have been significantly truncated by later ploughing. A small pit [91203] was situated immediately to the east of the linear feature. Two tree throws were situated to the eastern site of the trench, the more westerly of which, [91204] was cut by small pit [91223]. Dating of all features other than the modern field drains is problematic. The more easterly tree throw [91205] produced a substantial but un-diagnostic assemblage of burnt flint of unknown date (Roberts *et al* 2016), while tree throw [91204] produced two sherds of probable Ebbsfleet style Peterborough ware and a small mixed assemblage of worked flint, thought likely to be residual (*ibid*).



Section 21206



Section 21207



Section 21208

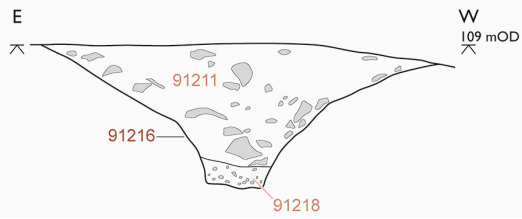


Figure 2: Features excavated in Trench 10002

ARCHAEOBOTANICAL METHODOLOGY

A total of 198 flotation samples were taken from excavated features across the site of West Amesbury Farm ranging in volume from 5 to 50 litres (but mostly 40 litres). All discrete features were sampled by context. Pits were half sectioned and samples taken from each section. Ditches were excavated and sampled by regular slots.

Flotation samples were processed by excavation staff using a siraf-type flotation tank with a mesh of 250 microns for the flot and 500 microns for the residue. All flots were assessed by scanning under a binocular microscope at magnification of x10 to x40 and the taxa range and estimated number of charred plant items present were provisionally identified and recorded (a full assessment report is held in the project archive).

Samples were selected for analysis if they produced useful quantities of material (generally more than 50 items per sample), or for completeness (the tree throw sample was sorted from Trench 2 so that the full range of feature types from the trench were examined), or because they were from significant feature types or periods (such as the Middle Neolithic pits). The Middle Neolithic plant assemblage is reported separately (Pelling 2019; Worley *et al* 2019). Notable quantities of charred cereal grain were found only in the features in Trench 2.

Eight samples from Trench 2 were sorted in their entirety and any identifiable and quantifiable seeds, chaff and other plant parts extracted. Plant material extracted from the residues by excavation staff was also examined (material was extracted from 100% of the >4mm residue and 25% of the 2-4 mm residue). Identification was made on the basis of well-established morphological criteria and by comparison with modern reference material held in the Historic England reference collection at Fort Cumberland. All results of analysed samples were entered into ArboDat 2016 English Version[©] (Kreuz and Schäfer 2002). Results are displayed in Table 1. Nomenclature and taxonomic order follows Stace (1997) for weed taxa, and Zohary and Hopf (2000, table 3 and table 5 - traditional classification) for cereals. Quantification of grain was based on embryo ends. Chaff part recorded is given in the tables (rachis, glume base, culm node and so on). Hulled wheat spikelet forks are recorded as two glume bases. Figures shown include a multiplier for fractioned samples, so that finds from the 25% of the 2 to 4mm residue have been multiplied by 4. The following discussion also refers to remains noted in samples during assessment of all samples (Roberts *et al* 2016) but not sorted and analysed in full.

RESULTS

Cereal remains (grain and occasional rachis fragments) were present in 90 of the 198 flots processed from West Amesbury Farm, from features of varying, but generally early prehistoric, date. A notable assemblage of grain was recovered from Trench 2. In all other trenches the numbers of cereal items recovered were low (usually fewer than 10 per sample), and preservation was poor, grain being pitted and abraded, indicative of likely post depositional reworking. Taxa identified were free-threshing wheat (*Triticum aestivum/turgidum*), barley (*Hordeum vulgare* sl) and rye (*Secale cereale*, identified on the basis of a rachis segment from Trench 1 and a grain from a Middle Neolithic pit). Single pulses (identified as *Pisum/Vicia* sp. or indeterminate) were present in 13 samples including Middle Neolithic pits. All grain or pulses directly dated returned medieval or later dates (Table 2; Worley *et al* 2019, supplementary report SI.2) ranging from the 12th -13th century to the post-medieval period. Much or all of the poorly preserved cereal and pulse remains are likely to derive from medieval or later activity in the area, subsequently spread across the field by ploughing. A deposit of possible cereal processing waste, consisting of chaff and weed seeds, was recovered from Trench 1 (see below).

Trench 2: A post-medieval grain deposit

An assemblage of well-preserved cereal grain was recovered from features in Trench 2. Fourteen samples were taken from the trench in total, of which six were taken from three separate slots through linear feature [91202], three taken from the two tree-throws (features [91204] and [91205]) and three samples were taken from pits [91203] and [91223]. The modern field drains [91207] and [91206] were also sampled. All samples produced cereal grain, with all but three containing more than 25 grains. Eight samples were fully sorted (see Table 1): five from the ditch, and one each from field drain [91207], pit [91203] and tree-throw [91204]. Assessment results are included in the table (the two samples from tree throw 91205 are combined).

While features were initially thought to be probably prehistoric in origin given the ditch's apparent connection to a wider and well-dated prehistoric ditch system (Linford *et al* 2015; Roberts *et al* 2016), four dates obtained from free-threshing wheat grain taken from the ditch samples demonstrate a post-medieval origin for the grain assemblage; all calibrated dates fall in a period between AD 1520 and 1955 (Table 2). One of two indeterminate pulses (*Pisum/Vicia* sp.), representing the only other cultivated food plant from the trench, produced a slightly earlier date calibrated to AD 1400-1450 (UBA-31359, uncal 503±0.2 BP), suggesting it to derive from a different depositional event. A small number of fragments of *Pinus* (pine) charcoal from Trench 2 are

interpreted as residual contamination derived from Mesolithic burning events, as supported by radiocarbon dates (Table 2). Similarly, a number of hazelnut (*Corylus avellana*) shell fragments were recovered from pit [91203] and tree-throw [91204]. Hazelnut shell could be of any age, but given the presence of lithics, prehistoric pottery and Mesolithic charcoal, it is possible that it is also residual and derives from prehistoric activity.

All identifiable grain from Trench 2 was of wheat, the best preserved of which displayed characteristics typical of a free-threshing variety (*Triticum aestivum/turgidum*): generally rounded, convex ventral surface either side of the hilum, absence of longitudinal striations typical of hulled grain held tightly within their glumes. A small number of rachis segments, more reliably identified than grain, recovered from the ditch and field drain [91207], confirms the presence of free-threshing wheat. Six rachis segments were identified as hexaploid, bread wheat (*Triticum aestivum* sl), following the criteria of Hillman (Hillman 2001; Hillman *et al* 1996). A small number of culm (straw) nodes and culm fragments, in addition to the rachis, suggest some chaff and straw may have been present, although the differential preservation of free-threshing wheat chaff compared to grain is such that it is always under-represented (Boardman and Jones 1990). No awns or glume beaks were recovered so it was not possible to identify the wheat as bearded (awned) or non-bearded. Some grain was sufficiently well preserved that the epidermal distal hairs were still visible (Figure 3 and front cover).



Figure 3: charred free-threshing *Triticum* grain with distal hairs visible. Image taken on Keyence VHX7000 3-D digital microscope (AHRC Award AH/V011758/1) at x 20 magnification

The grain lacked the level of pitting and surface erosion seen on grain elsewhere from the site suggesting it had suffered less mechanical damage and presumably also less post-depositional movement. The cereal grains were present in greatest concentrations in the ditch and numbers of grain per litre are greater in the lower than the upper fill. The concentration of grain in the sample from pit [91203] was comparable, while the quantity of grain in the other features decreased with distance from the ditch, being lowest in tree throw [91205].

A very small number of weed seeds was recovered from the sorted samples; six seeds were recovered from the eight analysed samples, of which only five could be identified. Taxa identified were cleavers (*Galium aparine*), dock (*Rumex* sp.), mustard/cabbage type (*Brassica* sp.), and grasses (Poaceae). All occur in a variety of ruderal habitats, road side verges and waste places, so may represent arable weeds or background vegetation.

Trench 1

A sample taken from the backfilled section of the angular ditch reported in Valdez-Tullet and Roberts (2017, fill 91103), produced possible evidence of cereal processing by-product in the form of cereal chaff and weed seeds. The sample was not sorted given it derived from an insecure context, so all number ranges are estimates. A small number (<25) of cereal grains of hulled barley (*Hordeum vulgare*) and free-threshing wheat (*Triticum aestivum/turgidum*) were also identified. The chaff consisted of rachis (<25 segments) including rye (*Secale cereale*), free-threshing wheat and barley. The charred weed seeds from this deposit formed the greatest concentration of weed seeds from the site (estimated range of 26 to 100 items). Taxa identified were rye grass/fescue type grasses (*Lolium/Festuca*), fat hen (*Chenopodium album*), knotgrass (*Polygonum aviculare*) and dock (*Rumex* sp.). A single seed of knotgrass (*Polygonum aviculare*), an unidentified pulse and a rachis segment of free-threshing wheat were noted in other samples from the feature as well as the usual scatter of cereal grains. Given the presence of free-threshing wheat and rye, it is assumed that the deposit is medieval or later in origin. No radiocarbon dates were obtained given the entirely disturbed context of the assemblage.

DISCUSSION

The issue of potentially much later intrusive archaeobotanical remains in unrelated contexts has been highlighted in a number of recent studies involving direct dating of the remains themselves (Borojevic 2011; Pelling *et al* 2015; Stevens and Fuller 2012; Trifonov *et al* 2017) and this is echoed in the current study. The medieval and post-medieval cereal and pulse remains found

scattered in prehistoric features across the site at West Amesbury Farm have no interpretative value in terms of the archaeological contexts from which they were recovered, although they do provide some insight into later arable activity. Cereal remains might be charred accidentally, for example during roasting prior to milling, or as a result of a storage fire, or deliberately if it is in some way damaged. Such charred waste could potentially reach fields with manure if discarded on middens or manure heaps. The range of dates obtained on cereal grain would suggest continual arable production over a number of centuries.

The more substantial assemblage recovered from Trench 2 appears to derive from a single depositional event involving fully processed bread wheat grain from which chaff and weed seeds had been removed. The good preservation of the grain, and its concentration within the ditch and adjacent features indicates that it has not travelled any notable distance following deposition. The greater concentration of remains in the lower fill of the ditch would suggest a likely post-medieval origin for the back-filling of the feature despite aerial survey evidence suggesting that the ditch connects to a prehistoric ditch system. While a small amount of residual charred material (the Mesolithic *Pinus* charcoal and medieval *Pisum/Vicia* sp.) was recovered from the ditch samples, the lithics and prehistoric ceramic fragments were only recovered from the tree throws. Small quantities of residual burnt material, including the *Pinus* charcoal could easily become incorporated in the backfill of features if they were present within the soil profile.

Evidence for a cereal processing activity is represented by chaff and weed seeds from Trench 1, although given the recovery of the material from the backfill of a previous excavation slot, it could derive from more than one source. The assemblage is undated so it is not possible to relate it to the cereal grain assemblage. The landscape between the River Avon, Amesbury to the east and The Kings Barrow Ridge to the west, appears to have been under intensive cultivation for much of the medieval period, with even *Vespasian's Camp* under the plough by the late 14th century (Bishop 2011). Much of the land was farmed by the manors of Amesbury Countess and West Amesbury, with open down land to the west of the Old and New King Barrows until areas were taken as burn-bake in the early 18th century. The land was converted to park land briefly in the 18th century, before reverting to arable, with plantations developing around the New King Barrows, and the southernmost two of the Old King Barrows (ibid). A medieval farmstead at West Amesbury Farm, situated some 800 to the south west, is still farmed today, while the current Stonehenge Estate Office stands on a building pre-dates 1846 (Papworth 2005; National Trust Heritage Records MNA141450) and may well have had arable origins. Cereal processing could have taken place at the location, or the processing waste may have been brought to the location for use as animal feed or for discard.

The cultivation of free-threshing wheat, barley, occasional rye and pulses, is typical of much of southern Britain by the high medieval period and into the post medieval or early modern period. Bread wheat type wheat, as identified at West Amesbury Farm, comprises a large group of closely related hexaploid free-threshing wheats, all of which have a high gluten content making them suitable for bread baking. Percival states that in the early 20th century more than a thousand varieties were known (Percival 1948, 96) which varied in terms of their resistance to disease, frost, adaptation to different soil or climate types, growing period and sowing time. They are the most commonly grown wheats throughout lowland Britain in recent times, used most widely for bread flour but also other forms of baking (Percival 1948).

Kerridge (1967, 42-51) provides an account of the arable agriculture of the 'chalk country', including Salisbury Plain, in the 16th and 17th centuries and the changes that occurred during the Agricultural Revolution. Sheep-folding is given as the primary dung source in the medieval period, often after sowing, providing a valuable 'top-dressing'. Following the Agricultural Revolution a system of ley farming (converting arable fields to grazed grassland for a few years before reverting to plough) was practiced, much as is conducted at West Amesbury Farm today. Wheat and barley were the most important market crops before and after the agricultural revolution and the most commonly grown; wheat was grown as a winter crop and barley sown in April. Oats, tares, lentils and peas were the most common consumption crops, with some beans. Small quantities of winter vetches and rye were cultivated primarily for sheep feed, particularly if grass or hay was scarce. Hitch or catch crops were cultivated on summer fallow, usually of 'hoarsemeat' a dredge of spring tares, peas or lentils, and oats for them to climb up, which were cut together and fed to horses. Given the limited archaeobotanical material recovered from the site, it is not possible to establish if the full range of crops referred to by Kerridge was cultivated, but we can assume they would have been available.

CONCLUSIONS

The large deposit of post medieval charred bread wheat type cereal grain and the scattered medieval arable remains found during excavation at West Amesbury Farm have provided useful additions to our understanding of the later arable history of the landscape of the Stonehenge Region. Broadly the results fit the description provided by Kerridge (1967) for the 'chalk country', although the evidence is largely restricted to a single deposition event and therefore missing the full range of crops cultivated. The dating of the assemblage suggests that some post-medieval cut features existed on the site. The scattered intrusive medieval remains may derive from manuring and subsequent ploughing of the field. The broad range of dates obtained suggest

that arable cultivation occurred at least periodically throughout the medieval and post-medieval periods.

Table 1: Charred plant remains identified from Tranch 2

Feature type	N-S Ditch 91202						Pit		Field drain		Tree throw			
Feature	91202						91203	91223	91207	91206	9120	91205		
Sample	51206	51209	51210	51211	51203	51205	51201	51212	51214	51213	51207	51208	5101/2	
Context	91211	91218	91220	91221	91214	91215	91209	91222	91224	91210	91217	91217	91212	
Section	91216	91216	91219	91291	91213	91213								
Fill	top	bottom	top	bottom	top	bottom								
Sample Volume (l)	40	20	40	15	40	25	25	40	20	20	40	40	50	
Crops														
<i>Triticum aestivum/durum</i>	Naked (bread/rivet) Wheat grain	++	173	41	100	141	194	95	+++	40	+++	13	+++	++
<i>Triticum spec.</i>	Wheat grain		35	8		17	22	18				2		
Cerealia indet.	Cereal grain		45	12		16	49	4						
cf. Cerealia indet.	Cereal grain						1							
<i>Triticum aestivum sl</i>	Bread Wheat rachis					1				4				
<i>Triticum cf. aestivum sl</i>	Bread Wheat rachis		1											
<i>Triticum cf. aestivum /durum</i>	Naked Wheat rachis					2								
<i>Triticum spec.</i>	Wheat rachis		1											
Cerealia indet.	Cereal rachis		1	1										
cf. Cerealia indet.	Cereal rachis						1			1				
Cerealia indet.	Cereal, culm segment									1				
Cerealia indet.	Cereal, culm node		1					1		3		1		
<i>Pisum/Vicia sp.</i>	Pea/Bean/Vetch						1			1				
Wild/weed taxa														
<i>Galium aparine L</i>	Cleavers		1											
<i>Galium spec.</i>	Bedstraw						1							
cf. <i>Brassica spec.</i>	Cabbage, mustard etc							1						
Poaceae	Grasses						1							

Feature type	N-S Ditch 91202						Pit		Field drain		Tree throw			
Feature	91202						91203	91223	91207	91206	9120	91205		
Sample	51206	51209	51210	51211	51203	51205	51201	51212	51214	51213	51207	51208	5101/2	
<i>Rumex</i> spec.	Dock								1					
Other														
Indet	undetermined seed								1					
Indet	undetermined frag						1							
Shrubs														
<i>Corylus avellana</i> L.	Hazel nutshell fragments						85	+				9		
Charcoal														
<i>Corylus/Alnus</i> sp.	Hazel/Alder													+
<i>Prunus</i> sp.	Cherry, plum, blackthorn													+
<i>Pinus</i> sp.	Pine													++
Unidentified non-Quercus taxa	Non-oak								+	+		+		

Semi-quantified data: + = 1-5' ++ = 6 - 25, +++ = 26 - 100 items

Table 2: Radiocarbon dates obtained plant material from Trench 2 and cereal grains from other trenches. Dates calibrated by Peter Marshall

Lab number	Sample	Context	Feature	Feature type	Material dated	$\delta^{13}\text{C}$ (‰)	Radiocarbon Age (BP)	Calibrated Date (95% confidence)
Trench 10002								
SUERC-66324	51211	91221	[91202] slot [91219]	Ditch (primary)	<i>Triticum</i> sp. free-threshing grain	-23.6±0.2	195±26	cal AD 1650–1955*
UBA-31360	51209	91218	[91202] slot [91216]	Ditch (primary)	<i>Triticum</i> sp. free-threshing grain	-24.2±0.22	190±32	cal AD 1640–1955*
SUERC-66323	51205	91215	[91202] slot [91213]	Ditch (primary)	<i>Triticum</i> sp. free-threshing grain	-24.2±0.2	268±29	cal AD 1520–1800
SUERC-69122	51210	91220	[91202] slot [91219]	Ditch (upper)	<i>Pinus</i> charcoal	-25.0±0.2	8210±33	
UBA-31359	51205	91215	[91202] slot [91213]	Ditch (primary)	<i>Pisum/Vicia</i> sp. x1	-23.8±0.22	503±27	cal AD 1400–1450
UBA-31358	51201	91209	91203	Pit (primary)	<i>Triticum</i> sp. free-threshing grain	-22.9±0.22	242±24	cal AD 1640–1955*
SUERC-69120	5101	91212	91205	Tree throw	<i>Pinus</i> charcoal	-24.6±0.2	8258±33	
SUERC-69121	5101	91212	91205	Tree throw	<i>Pinus</i> charcoal	-24.6±0.2	8303±33	
Middle Neolithic Pits								
UBA-31616	53228	93230	93208	Pit	<i>Hordeum vulgare</i> grain x2	-25.0±0.22	825±39	cal AD 1150–1280
OxA-35988	53221	93230	93208	Pit	<i>Triticum</i> sp free-threshing grain	-22.9±0.2	824±24	cal AD 1165-1265
UBA-31617	53222	93231	93206	Pit	<i>Hordeum vulgare</i> grain	-24.9±0.22	184±60	cal AD 1530–1955*
SUERC-74012	53220	93227	93206	Pit	<i>Triticum</i> sp. free-threshing grain	-25.0 (assumed)	401±30	cal AD 1430-1620
UBA-34945	53220	93227	93206	Pit	<i>Hordeum vulgare</i> grain	Failed: insufficient carbon		

Single items dated unless otherwise stated. *Beyond calibration.

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