CHARRED PLANT REMAINS FROM AN IRON AGE SETTLEMENT SITE AT DIRFT EAST, COVERT FARM, CRICK, NORTHAMPTONSHIRE. (DRE 97) .

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Introduction

Excavation of this extensive Iron Age settlement site was carried out by BUFAU 1997-8. Evidence of occupation dating from the Bronze Age to Roman times was found with the main evidence dating to the Middle and Late Iron Age. The excavated area was divided into three fields from south to north: Field 1 (1.48 hectares) was sealed by alluvium and contained features cutting the gravel terrace on the bank of a palaeochannel, Field 2 (4.26 hectares) was partly covered by alluvium while higher up the slope in the northern third of the field the topsoil directly overlay the features, Field 3 (5.27 hectares) was also partly covered by alluvium with the northern half of the field covered only by topsoil. Samples were taken from excavated features for the recovery of charred plant remains in order to investigate the evidence for the crops cultivated and activities on the site. It was hoped to investigate changes over time and distibution of remains on the site to contribute to the evidence about life on the site in the past.

Methods

Samples of around 20 litres in size were taken from datable features with the potential to contain charred remains including pits, postholes, hearths and ditches. Because of the large number of features and the difficulty of processing the clay soil it was decided to sample mainly the ditch terminals where the pottery and other finds were concentrated.

A total of 209 samples (143 on site and 66 later) were processed by wet sieving in a York tank using a 1mm mesh with flotation into a 0.5mm mesh sieve. For the samples processed on site the residues were air dried and separated with a 2mm sieve; the coarse fraction over 2mm was sorted by eye by the site assistants for bone, finds and all charred material. The fine fractions of the residues below 2mm were reserved, and the flotation fractions (flots) were air dried and packed carefully. During assessment of these 143 samples it was found that recovery by flotation was poor and most of the remains were present in the residues, hence it was necessary to examine the residues during analysis. Those samples with remains sorted from the coarse fraction were selected for further work and the residue below 2mm was refloated and the remains added to those from the coarse fraction and flot. The samples sieved later were processed as above but the total residue below 4mm was dried and refloated and the remains sorted using a x10 stereo microscope which was more efficient than sorting the coarse and fine residues separately. The flots, charred material from the coarse fractions, and refloated residues were sorted using a x10 stereo microscope, the plant remains counted and identified by comparison with modern reference material and all samples with 25 or more items were tabulated and analysed (tables 1 and 2). Remains were listed with reference to Stace (1991) and are seeds in the broad sense unless described otherwise. Samples with fewer remains are mentioned in the text and included in table 3 with the analysed samples. Samples where only remains from the coarse fraction residue were recovered are referred to as scanned samples in the text.

For Area 1, of the 81 samples assessed, 47 selected samples were fully recorded. For Area 2 and 3 the fine fraction residues of most of the assessed samples were not retained for the analysis so additional samples were processed later. For Area 2 this amounted to 57 samples which were fully recorded. Unfortunately little further material was available for area 3 so only 20 samples could be fully recorded. In total 124 samples were fully recorded, of which 24 were unfortunately unphased, so information from 100 samples could be used for this report.

In order to examine the distribution of remains on the site the density, expressed as the number of iems per litre of soil, was plotted on the site plan. For the analysed samples (tables 1 and 2) in order to compare the samples with each other and with those from other sites the proportions of chaff (the glumes and spikelet forks which consist of two glumes), cereal grains and seeds were calculated (tables 1 and 2, figure 1). This was done because the composition of the sample can indicate stages of cereal processing (Hillman 1984), a high proportion of grains indicating cleaned cereal product. The ratios of glumes to wheat grains, barley rachis to barley grains, and weed seeds to total cereal grains were also calculated (tables 1 and 2) to assist with interpretation of the remains (van der Veen 1992). High ratios of chaff and weed seeds indicate the presence of cereal cleaning waste. The proportions and ratios were calculated for all the tabulated samples to show the

range and character of the samples but for samples with less than fifty items it should be noted that the results could be distorted by the presence of only a few residual items. Piecharts showing the proportions of the types of grains, chaff and seeds were plotted on the site plans for samples from the selected study areas. The plants present were summarised by phase (table 4) which also includes information on colour of flowers and possible uses of the plant material.

Table 3: Total number of fully recorded samples by phase and area with number of samples containing glumes, grains and seeds.

Phase	Area	Total Samples	Samples with wheat glumes	Samples with wheat grains	Samples with barley grains	Samples with seeds
Phase 1	A1	1	-	-	-	-
Phase 2	A2	3	1	3	1	2
Phase 3	A1	7	5	3	1	7
	A2	2	1	-	-	1
	A3	2	-	-	-	2
Phase 4	A1	13	10	3	2	12
	A2	34	17	9	8	25
	A3	2	-	-	-	2
Phase 5	A1	15	14	8	5	13
	A2	9	6	4	2	9
	A3	9	3	2	1	6
Phase 6	A2	1	1	1	-	1
	A3	2	2	1	1	2

Results, the plant remains

Cereals: Charred wheat chaff (glumes and spikelet forks) were found with spelt (*Triticum spelta)* the most numerous with some chaff of emmer (*Triticum dicoccum*) present in small amounts. Both are glume wheats where the grains are held firmly in the chaff (glumes) and require several steps of processing to free the grain. Cereal grains were generally poorly preserved. Most of the identified wheat grains were of glume wheat (*Triticum dicoccum/spelta*), some were of a form consistent with spelt wheat and a few grains were identified as emmer because of their characteristic shape (Jacomet 1987). Occasional grains of free threshing wheat were present identified by the short broad rounded grains, these were possibly bread wheat type (*Triticum* cf *aestivum*) but other types could not be excluded. Only the most characteristic grains and chaff were identified here because there is considerable overlap of characters between the types of wheat and distortion can occur on charring. Barley (*Hordeum vulgare*) of a hulled form was found with the occurrence of twisted grains indicating the presence of six-row barley. A trace of oat chaff was found (*Avena* sp) present probably as a weed or contaminant of the cereals.

Gathered food: Fragments of hazel nutshell (*Corylus avellana*) were found and sloe stones (*Prunus spinosa*) were found as evidence of the use of wild resources. Hawthorn (*Crataegus* sp) was also present in scanned samples from area 2 and may also have been gathered and consumed. These woody plants grow in scrub or hedgerows suggesting the presence of this type of vegetation nearby, the latter two bear blossom in the spring and young hawthorn leaves are also considered to be edible by some people today.

Wild plants: The seeds of wild plants found were mainly the weeds of arable and disturbed ground probably weeds of the cereal fields which included those typical of autumn sown crops such as cleavers (*Galium aparine),* and spelt wheat is usually considered to be autumn sown. Barley is usually spring sown today. Although weeds more typical of spring sown crops such as goosefoots (*Chenopodium* sp.) were found this plant is typical of disturbed ground such as may be found in and around settlements as well as in cultivated fields. It is found here in many of the samples. The most numerous arable weed seeds were those of the large grasses (Poaceae) including brome grass (*Bromus* sp) which are often found with charred cereals. The seed is edible and is often suggested as being included to bulk out the crop but as it is ubiquitous in cereal waste it may have been removed because it was disliked.
Some of the plants such as sedges (*Carex* sp) and buttercup (*Ranunculus* sp) grow in damp conditions which may be found in some areas of cultivated fields or field ditches. Leguminous weed seeds such as vetch and

vetchling (*Vicia/Lathyrus*) were relatively abundant, these grow in grassland or waste ground but can occur as arable weeds. Other grassland plants included ribwort plantain (*Plantago lanceolata*) and clover type plants (*Lotus/Trifolium*). Some of these plants may have been brought to the site with fodder or plant material used as flooring or animal bedding, however, these together with all the plants found could have been growing as weeds of cultivated land. The weeds found with the spelt wheat include brome grass, blinks (*Montia fontana*), cleavers, scentless mayweed (*Tripleurospermum inodorum)* and selfheal (*Prunella vulgaris)*, a group of weeds more similar to the weeds of arable expansion or extensive cultivation rather than those of intensive garden type cultivation (van der Veen 1992). Further analysis would be needed to examine this and regional differences should also be examined when more data is available.

Other possible useful plants: Many wild plants are edible and have uses as herbs, dyes and fibres but it is rare to find evidence of these uses and there is no evidence for these here, some possibilities are mentioned in table 4. Young leaves could have been gathered in the spring of such edible plants as fat-hen and some docks or sorrel (*Rumex* sp) as spring greens. Cornsalad (*Valerianella* sp) grows on rough ground and cornfields but is also considered to be edible, here it was found only on area 2. Some herbs may have been used as medicines, for example selfheal has a long history of use for minor injuries but is also a common grassland plant, henbane (*Hyoscyamus niger)* contains deadly poisonous alkaloids and can be used as an anaesthetic, with great care, but also grows in polluted ground near latrines and rubbish pits, hence the presence of these plants is not evidence of their use.

Results by phase

Phase 1, Neolithic/EBA: One sample only from area 3 cluster 13, sample 248 contained no charred plant remains.

Phase 2, LBA/EIA: Area 2 cluster 5 was the only area represented by the recorded samples, of three samples 272 of RG73 contained sufficient items to be shown on table 2. Spelt wheat was identified from chaff and wheat grains were present, weed seeds included brome grass, small grass and sedge. Two other samples 281 and 285 contained few items but both contained wheat grains with a barley grain in the former. These remains can only show the use of the cereals on the site and probably represent a scatter of redeposited domestic waste. Two scanned samples from area 3 samples 200 and 202 had cereal grains present.

Phase 3, EMIA: The main evidence for this phase was from area 1 cluster 17, of seven samples from this cluster three were analysed (table 1). In sample 26 from RG1 and sample 44 from CG1 wheat chaff including spelt wheat was found with a little emmer, and wheat grains were also present although in low numbers. The weed seeds included large grasses and vetches as the most numerous, with scentless mayweed, blinks, cleavers and onion couch grass also found. These samples probably represent small scale cleaning of cereals for use, chaff and weed seeds being removed before consumption. More grains were present in sample 92 from RG4 possibly representing waste from food preparation. Four other samples from this cluster contained occasional barley grains as well as wheat and similar weeds to the analysed samples.
Areas 2 cluster 4 and area 3 cluster 10 produced only two samples each with too few remains to tabulate, and a scanned sample 196 contained a hawthorn pip.

Phase 4, LMIA: This phase produced a number of samples with quite abundant charred plant remains and was represented by 13 samples from area 1, and 34 samples from area 2 and three poor samples from area 3.

The samples from area 1 contained a few glumes and are mainly dominated by weed seeds with large grass seeds most numerous and the presence of other grain sized seeds such as cleavers and black bindweed. These remains probably represent a scatter cleanings from processing wheat spikelets for consumption. The waste consisting mainly of small seeds mixed with larger seeds hand sorted from the grain before use, because the larger seeds are not removed by sieving. This waste was probably burnt in domestic hearths during food preparation and was dumped in or accumulated in the nearby gullies. In the total number of samples from this area wheat chaff was present in 77% of the samples and barley in 15% .

Area 2, phase 4, (clusters 1-6 and 19-21) are mainly similar to these samples from area 1 with weed seeds as the most common item and all of the analysed samples have high ratios of wheat chaff to grain representing cereal cleaning waste. Spelt is the most common cereal with wheat chaff present in 50% of the samples and barley grains present in only 26%. Of the samples analysed (table 1) seeds are particularly numerous in sample 276 from RG57 cluster 5 with plants of grassy vegetation including clover type, cornsalad and small

grasses numerous. Two samples differ in being dominated by chaff, samples 277 and 303, chaff being particularly abundant in sample 303 from LG50 cluster 21, this is interpreted as fine sieved cereal cleaning waste from the high ratios of glumes to grains (van der Veen 1992).
On area 3 (clusters 10 and 13) phase 4, three samples were recorded but contained very few remains, a scanned sample 198 contained abundant hazel nutshell fragments in a sample taken for the recovery of bones.

Phase 5, Late Iron Age: This phase was the most productive for plant remains and is represented by 15 samples from area 1 (clusters 16 and 17), area 2 (clusters 4, 6 and 21) produced nine samples, and area 3 (clusters 9, 10 and 14) produced nine samples including a sample with abundant barley grain.

Grain from postholes of four-post structures
Area 1 cluster 17 contained the most productive samples from two postholes of a four post structure FP1. Both samples were rich in cereal grains, sample 105 from one of the postholes contained both wheat and barley grains with a little wheat chaff and few seeds indicating that this was cleaned cereal product which had become mixed at some stage of use or disposal. In the second sample 112 from another posthole of the same structure more abundant barley grains were found with fewer seeds present suggesting that this was cleaned barley product. A very small amount of wheat was also present possibly representing spikelets because the majority of indeterminate cereal grains in this sample were probably of barley. Postholes with different cereals from the same structure have been found at Stanwick in Iron Age contexts (Campbell unpublished). A second four post structure FP2 also produced sample 49 which dominated by grains but in smaller numbers, and because grain dominated samples were few on the site this suggests that this structure was also associated with cereals. Other grain rich samples from pits in this area were unphased, sample 110 contained abundant wheat grains with little chaff and few weeds except large grasses and also represents cleaned spelt wheat, and sample 76 was similar containing numerous wheat grains with a little chaff with few weed seeds.

The rest of the samples from area 1 are dominated by seeds or wheat chaff with sample 20 from RG6 cluster 17 containing the most chaff interpreted as fine sieved cereal cleanings. A second sample 36 also from RG6 was dominated by weed seeds, particularly chickweed type seeds, with clover type seeds and large grasses. This probably also represents cereal cleanings, wheat and barley are both present although wheat chaff is most numerous. The chickweed is more typical of damp ground and may be associated with barley which was more abundant in this phase, although this sample contains both wheat and barley. It could simply be a weed of the surroundings or have been brought in with grassy vegetation for use as fodder or kindling. The remaining samples are also dominated by seeds (table 2) as cereal cleaning waste and other samples from this phase contain a smaller amount of similar material with seeds including henbane and cleavers. Area 2 samples are similar and mainly dominated by weed seeds. These samples all probably represent small scale cleaning of cereals for domestic use and waste from food preparation, henbane may be incidentally included as a weed of the settlement as it grows on organically polluted ground and is poisonous. The samples from area 3 are generally similar but less productive.

An exception from area 3 is sample 113 from D68 of cluster 10 which contains abundant barley grains with a little wheat and wheat chaff, very few types of seeds were found but a large number of large grass seeds were present. This sample was from a ditch and may represent cleaned cereal accidentally burned near the end of processing to remove the hulls or deliberately burned because it was spoiled. A couple of germinated barley grains were present, perhaps as evidence of spoiling during storage as this is too little evidence to suggest malting. Malted barley is unknown before the Anglo-Saxon period (G. Campbell pers com) and spelt was used in Roman times (Hillman 1982). This deposit adds to the evidence for the increased use of barley in this phase.

Phase 6, Romano-British: There were few samples and very few remains from this phase. Cluster 13 on area 3 produced sample 102 (table2) which contained only a scatter of wheat chaff including spelt, wheat and barley grains and a few seeds. Sample 18 from cluster 12 and sample 245 from cluster 4 on area 2 contained less of the same material. These samples show only the continued use of the same cereals and possibley domestic activity.

Discussion

There is only a small amount of evidence from plant remains before the Middle Iron Age when charred plant remains become more abundant and markedly more so in the Later Middle Iron Age. The maximum density of remains was 5.2 items per litre of soil in phase 3 rising to 16.5 items per litre in phase 4 (table 1). This

together with the larger number of productive samples suggests the expansion of agriculture in the Middle Iron Age. However, this could only be confirmed by pollen evidence from the area which was unfortunately not found on this site. When compared with other Middle Iron Age sites, chaff is more abundant on this site than is found on sites in Leicestershire where it is remarkably sparse (Monckton 1995, Pelling 2000). Chaff was present in only 13% of samples at Wanlip (Monckton 1998) and 34% of MIA samples at Humberstone, although abundant in one sample (Pelling 2000). At that site it has been suggested that the chaff was used possibly as winter fodder (Pelling 2000). Some of the chaff is likely to have been used as fodder here but the relative abundance suggests greater production of cereals here if only to supply the extensive settlement. Chaff is not only more common but remains are at a greater maximum density than found in Leicestershire (table 5). Although some differences may be due to the type of site, situation and preservation this suggests greater emphasis on cereal production here at this time. However, when compared with some Thames Valley sites cereal remains are less abundant, glumes being found in 93% of MIA samples at Gravelly Guy at higher maximum density (table 5), grain was also very abundant at that site (Moffett 1989). The site would appear to fall in the middle of this range of evidence as the site does geographically.

Table 5: Comparison of samples with other Middle Iron Age sites.

Site	Total number of Samples with remains	% samples with glumes	Max. density of sample dominated by glumes and seeds	Samples with > 100 glumes
Gravelly Guy (Moffett 1989)	44	93%	94 / litre	7 samples
Crick, Northants.	49	53%	16.5 / litre	1 sample
Humberstone (Pelling 2000)	35	34%	4.9 / litre	1 sample
Wanlip, Leics. (Monckton 1998)	131	13%	8.1 / litre	None
Kirby Muxloe (Monckton unpub. a.)	30	6.6%	0.2 / litre	None

Key: *The number of samples containing charred plant remains followed by the proportion of them containing glumes, the maximum densities of glume or seed dominated samples, and the number of samples with over 100 glumes (wheat chaff fragments).*

In the Late Iron Age cereal remains are more numerous including some samples with abundant grain mainly from postholes of four post structures. Some of these structures are thought to have been grain stores used to keep the grain dry and safe from rodents, however there is no reason for charred grain to be preserved in the post holes unless the structure burns down or the grain is being processed nearby. Cleaned cereal product, both wheat and barley, was found in postholes here, comparing with cleaned spelt found at the Middle Iron Age site at Humberstone, Leicestershire (Pelling 2000). At that site the possibility that cleaned spelt grain was stored in the four post granary was considered, however, it was pointed out that the storage of cleaned wheat grain is more associated with Roman sites such as forts and towns. Hence, this was thought more likely for short term storage of wheat, possibly after removal from pit storage, some of the grain may have been processed then stored in the granary, some may have been stored in spikelet form (Pelling 2000).

There is no evidence for pit storage here, and this would be most unlikely in the wet conditions on the site. Storage of spelt in the chaff is thought to be more likely in damp conditions (Hillman 1981). This is because spelt is a glume wheat in which the cereal ear breaks into segments called spikelets when it is threshed with the grain still held in the chaff, it can then be stored in this form as the chaff protects the grain from damp and weevil attack (Hillman 1984). A very small amount of wheat was present in one of the postholes which consisted of approximately the same numbers of glumes (chaff fragments) as grains which is the case for the ear of wheat where there is one glume to each grain. A few other samples also had a ratio of glumes to grains close to one, which suggests that some wheat in spikelet form was present on the site. Barley differs in that the grains thresh free from the chaff and can be stored as grain, although sieving and sorting would be necessary to remove undesirable weed seeds. If the grain was required for human consumption the papery hulls would need to be removed by parching but this would not be necessary for use as animal food and would

make the grain useless for seed. Hence barley grain was probable stored in the granary and removed in batches for different purposes.

The grain could have been charred because spelt requires parching by heat then pounding to remove the chaff from the grain and hulled barley may be parched to remove the papery hulls from the grains. It is therefore possible that both cereals were processed nearby at various times. Some of the cleaned product was found charred here, perhaps burnt accidentally near the end of processing, such accidents being more likely where processing was carried out regularly. Some of the charred remains then accumulated in the postholes which may explain why one of the deposits is mixed. The deposit of barley may have been burnt during processing or discarded because it was spoiled or during cleaning of the store. Hence it is likely that this was a grain store with grain processed conveniently nearby as has been suggested at Humberstone (Pelling 2000). It is not possible to tell if this processing of wheat was before of after storage in the granary. Although there is only a small amount of evidence for spikelets on the site, when the damp local conditions are considered it seems likely that the grain was stored in the chaff. Furthermore, processing the whole crop is very labour intensive and processing cereal in batches spreads the workload, waste chaff representing dehusking of such batches of wheat has been found in other samples from the site. The above ground storage would allow easy access to remove the cereals in batches as required for use.

The maximum density of remains found in the samples from the four posters was 171 items per litre which higher than in the previous phase and is considerably higher than Late Iron Age sites in Leicestershire which range from 0.6-2.9 at Enderby and Tixover (Monckton 1992, unpublished b.) although 23 items per litre was found at Gamston in Nottinghamshire (Moffett 1992). This suggests that the trend of agricultural expansion continued from the Middle Iron Age. Little evidence was recovered from the Roman period.

Conclusions

The earliest evidence from the plant remains was from a few samples of phase 2 from cluster 5 which showed only the use of spelt and barley found with a few weed seeds as a scatter of domestic waste. Phase 3 of the Earlier Middle Iron Age produced evidence from cluster 17 also of spelt and barley with weed seeds as cereal cleaning waste, a tuber was also present which may indicate some uprooting of cereals during harvest. One of the samples contained more cereal grains probably as waste from food preparation. A few remains were also present from cluster 4 and cluster 10. Hazel nutshell from phase 3 showed the use of gathered food.

Phase 4 of the Later Middle Iron Age produced more evidence than the previous phase. Spelt was the main cereal with some emmer and a little barley as a second cereal. Samples from all three areas showed a scatter of cereal cleaning waste with a number of samples dominated by weed seeds and chaff, particularly a sample from cluster 21 containing abundant chaff, interpreted as fine sieved cleaning from spelt wheat. The higher proportion of samples containing chaff and the higher densities of remains in some samples was thought to indicate greater production of cereals than found to date at other Middle Iron Age sites in the East Midlands. Gathered food was represented by hazel nut and hawthorn may also have been consumed.

Evidence of the Late Iron Age was also found on all areas of the site showing continuity in activity from the previous phase with many samples dominated by weed seeds cleaned from the cereals, and with abundant chaff found in a sample from cluster 17. The most productive samples were also from cluster 17 where two postholes of a four post structure contained abundant cereal grains, one with cleaned spelt wheat with some barley present, and a second posthole with cleaned barley grains. This was thought to be evidence of processing cereals near to their storage, and storage above ground was indicated as the function of some of the four post structures. A sample containing cleaned barley grain was found in a pit of cluster 10, possibly burnt accidentally or because it was spoiled, added to the evidence for abundant barley in this phase unlike the previous phases. Gathered food included hazel nuts and sloes in this phase. Very few remains from the Romano-British period were found but continuity of the use of same cereals and possibly domestic activity was shown.

THEMATIC DISCUSSION

The economy (1.3.4 No.14)

During all phases of the site wheat was the main cereal utilised which was mostly spelt with some emmer present and barley as a second cereal as found on other sites in England (Greig 1991). Cereal cleaning waste consisting of chaff and weed seeds was present in many features showing the processing of cereals for consumption on the site. Because spelt can be stored and transported in the chaff the presence of this waste does not prove that the cereals were produced by the site, and waste straw from first threshing is rarely found as it is a useful product itself so is not burnt for disposal. However, the high proportion of samples containing cereal cleaning waste indicates their relative abundance on the site when compared with sites in Leicestershire, although less abundant than some sites in the Thames Valley. This appears to be the case for the Later Middle Iron Age and continues into the Late Iron Age.

Samples rich in grain can be found on all types of sites where grain is consumed, perhaps burnt accidentally or deliberately because it was spoiled. Grain rich samples were found here probably associated with storage structures. There was a little evidence of the presence of spelt in spikelet form on the site, and when the damp nature of the site was considered it was suggested that spelt may have been stored in the chaff and cleaned in batches for use. Evidence for cleaning wheat in batches was found in domestic contexts on the site. Barley was also found associated with the same four post structure and was probably stored as partly cleaned grain and removed in batches for animal food or seed, or for processing for human consumption. Barley only becomes abundant in the Late Iron Age phase perhaps for use as animal food or perhaps to make more use the more poorly drained land by cultivation, because barley is more tolerant of this than wheat. These Late Iron Age samples with abundant grain are also unusually productive in the region at this time although samples from other Northamptonshire sites may also show similar abundance when analysis is completed (Campbell unpublished, Ciaraldi unpublished).

The weeds found with the cereals could all have grown on such soils as are found in the vicinity. The weeds found include those of extensive cultivation, this means the cultivation of larger areas involving less intense soil disturbance and less manuring than found on smaller scale garden type intensive cultivation (van der Veen 1992). The strategy here may have been to produce sufficient to survive bad years or enlarge the settlement by expansion of agriculture, as distinct from the extensification of the Roman period to produce a surplus for trade (van der Veen and O'Connor 1998). These weeds, although present in phase 3, are more numerous from phase 4 where they occur with more abundant cereal remains, suggesting expansion of agriculture in the Later Middle Iron Age compared with the earlier phases of the site, which continued into the Late Iron Age phase. The evidence here suggests that the wheat was autumn sown, and spelt is more hardy than emmer, gives a better yeild in cold winters and is more tolerant of soil conditions (van der Veen 1998), autumn sowing also spreads the workload over the year.

On balance the remains found suggest that the settlement was producing grain and was possibly self sufficient in cereals, storing them to provide food for the winter. The presence of the domestic animals indicates that this was a mixed economy, as suggested for most sites of this date. Here there seems to be a greater emphasis on cereal production than found on sites in Leicestershire, although cereal production was probably less successful than some sites in the Thames Valley which may have supplied pastoral settlements (Jones 1985). It is possible that the site here may have produced a surplus at times which may have been traded, however there is no evidence for this. Cereal waste may have been used as fodder, although there is little evidence of this from England it was used in arid countries (van der Veen 1999), barley and gathered plant material were possibly used as animal fodder. Seed rich cereal waste may have been used as food for fowl, although not found here fowl are present on other Iron Age sites (e.g Gouldwell 1992). There would have been a need for animals for ploughing and manure as well as meat and other products. Wild resources were also exploited as food including hazel nuts and sloes, possibly gathered from hedge, scrub or wood margin.

SENSORY THEMES
The main evidence from the plant remains from the site is of the Later Middle Iron Age and continues into the Late Iron Age. Consideration of the growth forms and seasonal growth of the plants together with information about their habitat requirements allows some conclusions to be made about the surroundings of the site, the food available, and the work during the agricultural year. All this information is related to the seasons.

SIGHT 1. Views and colour.
There is some evidence for the appearance of the surroundings through the seasons of the year, it is likely that waysides and field margins were bounded by such plants as blackthorn and hawthorn which had blossom in the spring. Herbaceous plants of waysides and ditch sides provided colour in the early summer from the pink of ragged-robin and woundwort, and the yellow of buttercups. The cultivated fields of probably spring sown barley and autumn sown wheat were much more varied in the past than today. Fields would have contained area of grassy weedy vegetation, damp areas and bare patches and tall weeds would have been apparent as the grasses grew with the crops and cleavers and purple vetches twined among them. The daisy flowers of scentless mayweed would have grown in bare patches and at field margins and entrances. The crops themselves were also much more varied and mixed. The fields cultivated for wheat would have been on the better drained soils away from the valley bottom, while barley will tolerate damper ground. Lower ground is more likely to have been used as damp pasture with mixed grassy vegetation of grasses, flowers and herbs. Some of the plants of grassy vegetation are represented amongst the charred material found with the cereals and most are likely to have been from the cereal fields, although the same plants would have grown on pasture or grassy vegetation in the area. Vegetation of such grassy areas included cat's-tail grass together with flowers such as the blue of selfheal, yellows of cinque-foil, buttercups and medicks, red of clover, purple of vetches and white of eyebright. During the summer the cereals would have ripened for harvest and hedgerow fruits would have filled and ripened for gathering. As always during the autumn the leaves of the trees changed colour and fell leaving the trees bare for the winter until signs of growth appeared the following spring.

TOUCH 4. Seasons and annual routine.
From the evidence of the crop plants and weeds found some conclusions can be drawn about the seasonal work of the agricultural year. The cultivated fields were probably ploughed in the autumn for the sowing of wheat and in spring for the sowing of barley so the wheat would be growing already in the spring. Cultivation in the spring may have been signalled by the observation of the growth of wild plants and the ground becoming workable as well as the lengthening of the days. It is likely that young leaves of edible plants would be gathered as food and possibly other crops such as legumes sown although there is no evidence for this here. The crop fields would have been tended perhaps by removing the worst of the weeds, scaring away birds and keeping animals away from the fields. There may have been little difference in the harvesting times of the autumn and spring cereals, perhaps within a few weeks of each other depending on the weather and on the varieties grown. At harvest wheat and barley would have been probably cut low on the straw as both tall and short weeds are present, then probably stood as stooks in the fields to dry, the cereal would have been threshed and the straw gathered and used as thatch or stored for other uses such as flooring and bedding.

The threshed wheat was probably stored in the chaff as spikelets because the chaff protects the grain from damp and weevils. Storage above ground is most likely because of the damp ground conditions of the site and from the evidence of cereals found near four post structures. Wheat would have been processed in batches for use by parching, pounding and fine sieving, possibly batches of cleaned grain was stored in pottery jars ready for use. Barley differs from spelt wheat because it threshes free from the chaff so after threshing can be winnowed leaving clean grain, however hulled barley has a papery layer covering the seed which may need removing if used for human food but could remain if used for fodder or seed. Seed for the next season would also have to be saved cool and dry. There is insufficient evidence of germinated grains among the samples to suggest malting here of either wheat or barley. Other food gathered at the end of the summer would have been nuts and fruits from the wild to supplement the diet.

In the autumn the fields would be ploughed and wheat sown with the advantage that the wheat seed did not need to be stored over winter. The weather would have had a great influence on the yeild of the crops and drying the crops for storage which would have affected food supply for the winter. Winter fodder for animals may have included barley grain and wheat chaff, it is possible grasses were also gathered but there is little evidence for this. In the spring barley would be sown from the stored seed so cereals would not be replenished for the months until the harvest. Hence there must have been a requirement for large grain stores

and a balance between plant and animal food over the seasons of the year to provide for the winter and the months until the next harvest.

TASTE 1. Food

The available foods included grain which would keep until needed if stored well. However, such stored food as cereals and nuts would not be available again until the next harvest so it is hard to imagine that there could be sufficient to last the whole year. Some vegetable crops may have been grown or gathered in the spring although the evidence for this is lacking. Meat and dairy products would have contributed to the availability of different foods all of which would have varied with the seasons. The balance of different foods in the diet would have been different at different times of the year according to availability, possibility of storage and the strategy employed to survive the winter.

Preparation of food would have involved making fires, parching cereals then pounding wheat to free the grain from the chaff, sieving and hand sorting to clean the grain. Grinding grain for flour or meal and preparing grain for pottage would all have been small scale domestic tasks. Food cooked on a hearth would have included meat and the gathered foods which were available. Hearths would have been cleaned out and charred rubbish dumped in convenient places around the site.

The way foods were used can only be speculation based on the known foods, equipment available and recipes from rural communities (Renfrew 1985). Cereals could have been ground in querns to make flour for various types of breads and griddle cakes which could be eaten with other foods. Cereal grains could be used whole in frumenty made with milk, or in pottages with meat or vegetables. Coarse ground meal may have been used in pottages as thickener and course or fine ground meal may have been made into porridge or gruel for infants, the old or infirm. Such foods could be flavoured with perhaps with fruits or honey. Cereal meal may also have been used to add to meat offal in foods such as haggis or sausage which could be preserved by smoking, it is likely that meal was mixed with blood to make black pudding type foods, little would be wasted. Whether any sort of pastry or biscuits were made is unknown but agricultural workers would need some easily carried foods to take to the fields during work.

Fresh foods such as edible leaves gathered in the spring would have been welcome after the winter and would have provided vitamins in the diet, fat-hen and sharp tasting sorrel may have been used here. The fruits and nuts at the end of the summer would also have provided vitamins and variety. Fruit juices may have been extracted and possibly fermented, mead may have been made with honey or ale with malted wheat, possibly flavoured with herbs, but unfortunately for us the evidence was probably drunk.

SMELL 1. Rubbish, 2. Cooking, 3. Fragrance.

The main evidence for rubbish disposal on the site was the scatter of charred cereal remains found with charcoal cleaned from domestic hearths and dumped in pits and ditches, and accumulated in various features around the site, mainly near the houses. This would smell while being burnt but would be sterile once burnt, and would in fact tend to absorb odours if put into latrine pits for example. It is likely that the majority of cereal waste was used as animal food or fodder rather than burnt as it is a useful resource. Plant material used as animal bedding would have been removed to manure heaps where it would decompose with the animal waste then probably used to spread on the fields. Probably any other rotting or spoiled plant material would also be disposed of in this way rather than burning.

Cooking would have produced the smell of various types of bread baking or being cooked on the hearth. Boiling porridge, gruel or pottages with meat or vegetables would have been carried out in pots on the hearth. Probably the smell of the cooking fire would have been the most noticable as a smell of wood smoke inside the houses.

Fragrance may have been provided by herbs mixed with flooring or bedding material but there is no evidence for aromatic herbs among the plants found, although the scents of the spring blossom and grassland plants would have been pleasant then as they are today.

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Table 4. Summary of charred plant macrofossils by phase (DRE97).

Phase	**2**	**3**	**4**	**5**	**6**		**Colours** **Possible uses**
CEREAL GRAINS							
Triticum dicoccum/spelta	x	xx	xx	x	x	Glume Wheat	Wheat grains, for bread, pottage etc.
Triticum cf *spelta*	-	-	x	xx	-	Spelt	..
Triticum cf *dicoccum*	-	-	x	x	-	Emmer	..
Triticum cf *aestivum*	-	-	x	x	-	Bread wheat type	..
Hordeum sp. hulled	-	-	x	xxx	-	Barley	Barley grains, for food and fodder
Hordeum sp. hulled, twisted	-	-	x	xx	-	Barley	..
Hordeum vulgare L.	(x)	(x)	x	x	x	Barley	..
Cereal indet.	x	xx	xx	xxx	-	Cereal	Cereal grains
Cereal/Poaceae	x	x	x	x	-	Cereal/Grass	-
Cereal sprouts	-	-	-	x	-	Cereal sprouts	-
CHAFF							
T. dicoccum/spelta glume	x	xx	xxx	xxx	xx	Glume wheat	Cereal cleaning waste, possibly for fodder.
Triticum dicoccum Schubl. spikelet fork.	-	x	x	x	-	Emmer	..
Triticum dicoccum Schubl. glume	-	x	x	x	-	Emmer	..
Triticum spelta L. spikelet fork	-	x	x	x	-	Spelt	..
Triticum spelta L. glume	x	x	xx	xx	-	Spelt	..
T. dicoccum/spelta rachis	-	x	x	x	-	Glume wheat	..
Hordeum vulgare L. rachis	-	-	x	x	-	Barley	..
Awns	-	-	x	x	-	Awns	..
Culm node large	x	x	x	x	-	Cereal straw	Flooring, thatch
SCRUB/HEDGE							
Corylus avellana L.	-	x	x	x	-	Hazel nut shell	Nuts
Crataegus sp.	-	-	(x)	-	-	Hawthorn	Spring, white-pink blossom, haws.
Prunus spinosa L.	-	-	-	x	-	Sloe	Spring, white blossom, fruit.
WILD PLANTS							
Ranunculus subgen *Ranunculus*	-	-	x	x	-	Buttercup	Yellow
Urtica dioica L.	-	-	-	x	-	Nettle	Green, fibre?
Chenopodium album type	-	-	x	x	-	Fat-hen	Pale green, edible young leaves.
Chenopodium sp.	-	xx	x	x	-	Goose foot	..
Stellaria media type	-	-	x	xx	-	Chickweed	White
Stellaria palustris/graminea	-	-	x	x	-	Stitchwort	White
Stellaria sp.	-	-	x	xx	-	Stitchwort	White
Cerastium/Stellaria	-	x	x	xx	-	Mouse-ears or Stitchwort	White
Lychnis flos-cuculi L.	-	-	-	x	-	Ragged-robin	Pink
Persicaria maculosa/lapathifolia	-	x	x	x	x	Persicaria	White/pink
Polygonum sp.	-	-	x	x	-	Knotweed	-
Polygonum aviculare L.	-	-	x	-	-	Knotgrass	Green
Fallopia convolvulus L.	-	-	x	x	-	Black Bindweed	Greenish pink
Rumex sp.	-	-	x	xx	-	Dock	Greenish red
Rumex acetosella L.	-	x	x	x	-	Sheep's-sorrel	Green
Brassica/Sinapis	-	-	-	x	-	Mustards	Yellow,edible
Brassicaceae (small)	-	x	-	x	-	Cresses etc	Some edible
Potentilla sp.	-	-	(x)	x	-	Cinque-foil	Yellow
Vicia sativa ssp *nigra* (L.) Ehrh.	-	-	x	-	-	Common vetch	Purple
Vicia/Lathyrus	-	xx	x	xx	x	Vetch/Vetchling	Purple/yellow

Phase	**2**	**3**	**4**	**5**	**6**		**Colours** **Possible uses**
Lotus/Trifolium	-	x	xx	xx	-	Trefoil/Clover	Yellow
Medicago/Melilotus/Trifolium	x	x	x	xx	-	Clover type	Yellow/red
Hyoscyamus niger L.	-	-	x	(x)	-	Henbane	White, poisonous.
Prunella vulgaris L.	-	-	-	x	-	Selfheal	Blue, herb.
Stachys sp	-	-	-	x	-	Woundwort	Pink, herb.
Euphrasia/Odontites	-	-	x	-	-	Eyebright/Bartsia	White/red, herb
Plantago lanceolata L.	-	-	x	x	-	Ribwort plantain	Green
Galium aparine L.	-	x	x	x	-	Cleavers	White with bristles
Galium sp	-	-	x	x	-	Bedstraw	-
Valerianella sp	-	-	xx	x	-	Cornsalad	Pink, edible
Tripleurospermum inodorum (L) Schultz-Bip.	-	x	x	x.	-	Scentless mayweed	White and yellow daisy flower
Arrhenatherum elatius (L) tuber	-	x	-	-	-	Onion couch	Edible tubers
Bromus hordeaceus/secalinus	x	-	x	xx	x	Brome grass	Arable weed
Poaceae large	x	xx	xx	xxx	x	Grasses	..
Poaceae medium	-	-	xx	x	-	Grasses	-
Phleum sp.	-	x	x	x	-	Cat's-tail grass	Fodder/kindling
Poaceae small	x	x	xx	xx	x	Grasses	..
DAMP/WET GROUND							
Montia fontana L.	-	x	x	x	-	Blinks	White flowers
Luzula sp	-	x	x	-	-	Wood rush	Green
Eleocharis uniglumis/palustris	-	x	x	x	-	Spike-rush	Green
Carex sp	-	x	xx	x	-	Sedge	Green
OTHER REMAINS							
Buds woody	-	-	-	x	-	Tree/shrub buds	-
Tuber fragments	-	x	x	x	-	Tubers	-
Culm node small	x	x	xx	x	-	Grass stem	Green/brown
Charcoal	x	x	x	x	x	Charred wood	Leaves green - Autumn colours
Maximum items/litre	1.3	5.2	16.5	171	9.4	(Items/litre of soil)	

Key. x = samples with 1 - 9 items, xx = any sample over 10 items, xxx = any sample over 100 items.
(x) = present in samples not analysed in tables 1 and 2.
Remains are seeds in the broad sense unless described otherwise.

Table 1: Charred Plant Macrofossils from DIRFT East Site, Crick, Northants. Phase 2-4.

Site Area	**2**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**2**	
Phase	**2**	**3.2**	**3**	**3**	**4.1**	**4**	**4.1**	**4.2**	**4**	**4**	**4**	**4.2**	**4**	**0**	**0**	**0**	
Cluster No.	**C5**	**C17**	**C17**	**C17**	**C17**	**C17**	**C3**	**C4**	**C5**	**C5**	**C6**	**C6**	**C21**	**C18**	**C17**	**C7**	
Structure	**RG73**	**RG1**	**CG1**	**RG4**	**RG4**	**RG5**	**RG43**	**RG47**	**RG57**	**RG57**	**RG61**	**CG25**	**LG50**	**FP1?**	**P11**	**P35**	
Feature No.	**1291**	**126**	**140**	**122**	**121**	**151**	**999**	**953**	**1290**	**1298**	**1309**	**1389**	**1603**	**263**	**179**	**838**	
Context	**2682**	**1029**	**1050**	**1104**	**1022**	**1064**	**2289**	**2301**	**2694**	**2692**	**2711**	**4137**	**4308**	**1251**	**1122**	**2063**	
Context type	**Term**	**Term**	**Term**	**Term**	**Mid**	**Mid**	**Mid**	**Term**	**Term**	**Term**	**Term**	**Term**	**Top**	**Pit**	**Pit**	**Pit**	
Sample No.	**272**	**26**	**44**	**92**	**25**	**55**	**290**	**243**	**276**	**277**	**278**	**294**	**303**	**110**	**76**	**291**	
GRAINS																	
Triticum cf *dicoccum*	-	-	-	-	-	-	-	-	-	-	-	-	-	11	1	-	Emmer
Triticum cf *aestivum*	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	Bread wheat type
Triticum cf *spelta*	-	-	-	-	-	-	-	-	-	-	2	-	-	81	2	-	Spelt
Triticum dicoccum/spelta	2	2	7	13	-	17	-	3	-	-	2	2	6	125	171	-	Wheat
Triticum sp.	-	-	-	2	1	-	-	1	-	1	1ge	1	-	-	-	-	Wheat
Triticum sp. tail grains	1	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	Wheat
Hordeum sp. hulled	-	-	-	-	-	-	-	-	-	-	-	-	-	7	12	-	Barley
Hordeum sp. hulled, twisted	-	-	-	-	-	-	-	1	-	-	-	-	-	3	7	-	Barley
Hordeum vulgare L.	-	-	-	-	-	3	-	1	1	1	-	2	-	-	2ge	-	Barley
Hordeum sp. tail grains	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Barley
Cereal indet.	2	9	8	29	11	18	-	7	3	2	6	3	11	179	306	1	Cereal
Cereal/Poaceae	1	2	1	7	-	2	-	2	-	-	1	1	3	12	-	-	Cereal/Grass
Cereal embryos	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	Cereal
Cereal sprouts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Cereal sprouts
CHAFF																	
Triticum dicoccum Schubl. spikelet fork	-	2	-	1	-	1	-	1	-	-	-	-	-	-	-	-	Emmer
Triticum dicoccum Schubl. glume base	-	-	-	1	-	1	-	2	-	4	-	1	3	-	1	-	Emmer
Triticum spelta L. spikelet fork	-	-	-	1	-	-	-	-	-	-	-	-	1	-	2	-	Spelt
Triticum spelta L. glume base	3	9	2	8	-	4	-	9	1	9	9	3	13	1	2	3	Spelt
T. dicoccum/spelta spikelet fork bases	-	-	2	8	-	1	-	-	-	4	4	-	6	-	6	-	Glume wheat
T. dicoccum/spelta glume base	3	18	11	17	15	19	9	22	5	30	13	7	147	1	6	9	Glume wheat
T. dicoccum/spelta rachis	-	2	4	-	-	-	-	-	-	2	1	1	7	-	-	3	Glume wheat
Hordeum vulgare L. rachis	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	Barley
Cereal rachis	-	-	1	-	-	-	1	-	-	-	-	-	1	-	-	-	Cereal
Cereal awns/*Avena* sp awns (a)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Awns (Oat = a)
Culm node large	1	-	3	-	1	1	-	-	1	2	1	-	2	-	-	-	Cereal stem
WILD PLANTS																	

Table 1 contd. Charred Plant Macrofossils from DIRFT East Site, Crick, Northants. Phase 2-4.

Phase	**2**	**3.2**	**3**	**3**	**4.1**	**4**	**4.1**	**4.2**	**4**	**4**	**4**	**4.2**	**4**	**0**	**0**	**0**	
Sample No.	**272**	**26**	**44**	**92**	**25**	**55**	**290**	**243**	**276**	**277**	**278**	**294**	**303**	**110**	**76**	**291**	
Ranunculus subgen *Ranunculus*	-	-	-	-	-	1cf	-	-	-	-	-	-	-	-	-	-	Buttercup
Urtica dioica L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Nettle
Corylus avellana L.	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	Hazel nut shell
Crataegus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	Hawthorn
Chenopodium album type	-	-	-	-	-	2	-	-	-	-	2	-	-	-	-	-	Fat-hen
Chenopodium sp.	-	-	2	-	-	4	-	1	-	2	3	-	2	-	-	-	Goose foot
Montia fontana L.	-	-	5	-	-	2	1	1	1	1	2	3	-	-	-	1	Blinks
Stellaria media type	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	Chickweed
Stellaria palustris/graminea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Stitchwort
Stellaria sp.	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	Stitchwort
Cerastium/Stellaria	-	2	1	-	-	1	-	5	5	-	-	-	-	3	-	-	Mouse-ear/Stitchwort
Lychnis flos-cuculi L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Ragged-robin
Persicaria maculosa/lapathifolia	-	2	-	-	-	2	-	-	-	-	2	-	-	-	-	-	Persicaria
Polygonum sp.	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	Knotweed
Polygonum aviculare L.	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	Knotgrass
Fallopia convolvulus L.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	Black Bindweed
Rumex sp.	-	-	-	-	1	9	-	1	2	-	2	1	2	-	-	-	Dock
Rumex acetosella L.	-	2	2	-	-	1	-	-	-	1	-	-	-	1	-	1	Sheep's-sorrel
Brassica/Sinapis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Mustards
Brassicaceae indet. (small)	-	-	8	1	-	-	-	-	-	-	-	-	-	3	-	-	Cabbage family
Potentilla sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Cinque-foil
Prunus spinosa L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Sloe
Vicia sativa ssp *nigra* (L.) Ehrh.	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	Common vetch
Vicia/Lathyrus	-	11	11	1	3	6	1	1	3	2	-	1	1	-	-	-	Vetch/Vetchling
Lotus/Trifolium	-	3	7	-	-	3	-	-	16	-	6	-	-	-	-	-	Trefoil/Clover
Medicago/Melilotus/Trifolium	1	1	3	-	9	2	-	1	1	3	4	-	3	1	-	-	Clover type
Hyoscyamus niger L.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	Henbane
Prunella vulgaris L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Selfheal
Stachys sp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Woundwort
Euphrasia/Odontites	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	Eyebright/Bartsia
Plantago lanceolata L.	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	Ribwort plantain
Galium aparine L.	-	1	-	1	-	1	-	-	-	1	1	-	-	-	-	-	Cleavers
Galium sp	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	Bedstraw
Valerianella sp	-	-	-	-	-	-	-	-	11	1	1	-	1	-	-	-	Cornsalad
Tripleurospermum inodorum (L) Schultz-Bip.	-	-	1	-	-	1	-	1	-	-	-	-	1	-	-	-	Scentless mayweed
Asteraceae indet.	-	1	1	-	-	2	-	1	-	-	-	-	-	-	-	-	Daisy family

Table 1 contd. Charred Plant Macrofossils from DIRFT East Site, Crick, Northants. Phase 2-4.

Phase	**2**	**3.2**	**3**	**3**	**4.1**	**4**	**4.1**	**4.2**	**4**	**4**	**4**	**4.2**	**4**	**0**	**0**	**0**	
Sample No.	**272**	**26**	**44**	**92**	**25**	**55**	**290**	**243**	**276**	**277**	**278**	**294**	**303**	**110**	**76**	**291**	
Luzula sp	-	-	2	-	1	-	-	-	-	-	-	-	1	-	-	-	Wood rush
Eleocharis uniglumis/palustris	-	-	1	-	-	-	-	-	5	1	2	-	-	-	-	-	Spike-rush
Carex sp	-	-	1	-	1	4	1	1	30	1	1	1	1	1	-	-	Sedge
Arrhenatherum elatius (L) tuber	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2	-	Onion couch grass
Bromus hordeaceus/secalinus	1	-	-	-	2	2	2	3	2	5	4	1	3	12	1	-	Brome grass
Poaceae large	7	10	6	10	4	16	7	14	5	8	5	4	17	30	12	3	Grasses
Poaceae medium	-	-	-	-	-	2	-	-	3	2	10	3	2	-	-	1	Grasses
Phleum sp.	-	2	-	-	-	4	-	2	2	4	-	2	-	-	-	-	Cat's-tail grass
Poaceae small	1	3	3	-	-	5	-	2	46	10	3	-	-	1	-	-	Grasses
Indetermined seeds	-	2	7	-	2	5	2	3	4	2	7	1	-	-	2	2	Seeds
OTHER																	
Stem fragments	-	-	-	+	-	-	-	+	-	+	-	-	-	+	-	-	Stem
Root fragments	-	+	-	+	-	-	+	-	-	-	+	-	-	-	-	+	Roots
Charred fragments	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	-	Charred fragments
Buds woody	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Tree/shrub buds
Tuber fragments	-	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	Tubers
Culm node small	1	-	2	-	-	-	2	-	12	2	+	-	1	-	-	4	Grass stem
TOTAL	25	84	104	103	51	145	26	91	165	103	96	39	237	476	537	29	(Items)
Vol sample	20	20	27	20	18	20	20	20	10	20	20	18	20	11	18	20	(Litres)
Vol flot + Reflot	12	110	95	45	70	110	90	32	119	26	48	23	35	52	180	45	(mls)
Items/litre	1.3	4.2	3.9	5.2	2.8	6.9	1.3	4.6	16.5	5.2	4.8	2.2	11.9	44	30	1.5	(Items/litre)
% of items in flot	0	82	95	3	19	88	0	69	2.4	26	2.1	2.6	3	28	9	0	(% Recovery)
PROPORTIONS																	
% GLUMES	27	37	18	42	31	20	39	39	4	51	31	29	76	1	5	55	%
% GRAINS	27	15	17	46	25	28	0	18	3	4	12	24	9	88	91	5	%
% SEEDS	46	48	65	12	44	52	61	43	93	45	57	47	15	11	4	40	%
RATIOS																	
Glumes: Wheat grains	1.0	2.4	1.1	0.9	1.3	0.8	9:0	3.2	6:0	25.5	2.5	1.8	8.9	< 0.1	0.1	12	
Rachis: Barley grains	-	-	-	-	-	0: 6	-	1: 2	0: 1	0: 1	-	0: 2	-	0: 18	0: 5	-	
Seeds : All grains	1.7	3.1	3.9	0.3	1.8	1.9	14:0	2.4	35.5	11.3	4.7	2.0	1.9	0.1	10.8	9.0	

Key. + = present, ++ = abundant, G = Gully, D = Ditch, PH = posthole, Term = Gully terminal, Mid = middle, ge = germinated, * = 50% sorted..
Remains are seeds in the broad sense unless described otherwise.

Table 2. Charred Plant Macrofossils from Crick DIRFT East, Northants. Phase 5-6.

Site Area	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**2**	**2**	**3**	**3**	
Phase	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**6**	
Cluster No.	**C16**	**C16**	**C16**	**C17**	**C17**	**C17**	**C17**	**C17**	**C17**	**C4**	**C4**	**C6**	**C6**	**C10**	**C13**	
Structure	**E3**	**E3**	**E4**	**FP1**	**FP1**	**FP2**	**LG3**	**RG6**	**RG6**	**RG52**	**RG53**	**RG61**	**RG62**	**D68**	**P73**	
Feature No.	**223**	**686**	**198**	**247**	**246**	**153**	**110**	**109**	**132**	**1201**	**1080**	**1341**	**1313**	**467**	**434**	
Context	**1191**	**1364**	**1151**	**1226**	**1225**	**1067**	**1011**	**1010**	**1036**	**2520**	**2478**	**2761**	**2719**	**3289**	**3229**	
Context type	**Mid**	**Pot**	**PH**	**PH**	**PH**	**PH**	**Term**	**Term**	**Term**	**Mid**	**Term**	**Term**	**Term**	**Mid**	**Mid**	
Sample No.	**93**	**176**	**85**	**105**	**112**	**49**	**15**	**20**	**36**	**259**	**250**	**283**	**280**	**113**	**102**	
GRAINS																
Triticum cf *dicoccum*	-	-	-	2	-	-	1	-	-	-	-	-	-	2	-	Emmer
Triticum cf *aestivum*	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	Bread wheat type
Triticum cf *spelta*	-	-	-	13	4	-	-	-	-	-	-	-	-	5	-	Spelt
Triticum dicoccum/spelta	-	-	-	6	-	6	-	-	6	3	-	4	2	11	-	Wheat
Triticum sp.	-	-	7	-	-	-	-	2	-	-	-	1	1	-	4	Wheat
Triticum sp. tail grains	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Wheat
Hordeum sp. hulled	-	-	-	6	364	1	-	-	-	-	-	-	-	203	-	Barley
Hordeum sp. hulled, twisted	-	-	-	1	30	-	-	-	-	1	-	-	-	60	-	Barley
Hordeum vulgare L.	1	-	2	5	7ge	-	-	1	4	-	-	-	1	-	1	Barley
Hordeum sp. tail grains	-	-	-	3	7	-	-	-	-	-	-	-	-	3	-	Barley
Cereal indet.	4	3	11	86	239	17	5	26	21	2	2	5	8	262	7	Cereal
Cereal/Poaceae	-	-	3	3	31	-	2	5	-	1	3	-	-	29	-	Cereal/Grass
Cereal embryos	-	-	-	-	1	-	-	-	1	-	-	-	1	1	-	Cereal
Cereal sprouts	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	Cereal sprouts
CHAFF																
Triticum dicoccum Schubl. spikelet fork	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	Emmer
Triticum dicoccum Schubl. glume base	-	-	-	-	-	-	-	-	-	3	1	2	2	1	-	Emmer
Triticum spelta L. spikelet fork	-	-	-	2	-	-	-	1	-	1	-	1	-	-	-	Spelt
Triticum spelta L. glume base	8	1	2	1	-	-	3	27	7	3	5	9	1	7	1	Spelt
T. dicoccum/spelta spikelet fork bases	-	2	-	4	4	-	-	14	2	1	-	3	-	-	-	Glume wheat
T. dicoccum/spelta glume base	27	9	13	1	-	-	7	92	39	29	4	28	10	22	12	Glume wheat
T. dicoccum/spelta rachis	-	1	-	-	-	-	-	1	4	5	2	1	1	-	-	Glume wheat
Hordeum vulgare L. rachis	-	-	-	1	2	-	-	1	1	-	-	-	-	-	-	Barley
Cereal rachis	-	-	-	-	1	-	-	-	2	-	-	-	-	-	-	Cereal
Cereal awns	-	-	-	-	1a	-	-	2	-	3	-	-	3	-	-	Awns
Culm node large	1	-	-	-	-	-	-	1	-	-	-	1	-	-	-	Cereal stem
WILD PLANTS																

Table 2 contd. Charred Plant Macrofossils from Crick DIRFT East, Northants. Phase 5-6.

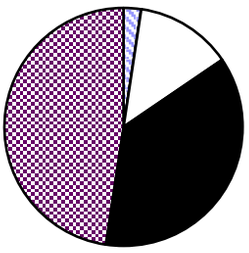
Phase	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**6**	
Sample No.	**93**	**176**	**85**	**105**	**112**	**49**	**15**	**20**	**36**	**259**	**250**	**283**	**280**	**113**	**102**	
Ranunculus subgen *Ranunculus*	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	Buttercup
Urtica dioica L.	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	Nettle
Corylus avellana L.	-	-	-	-	1	-	1	-	-	-	-	1	-	1	-	Hazel nut shell
Crataegus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Hawthorn
Chenopodium album type	2	-	-	-	1	1	-	-	-	-	1	5	-	1	-	Fat-hen
Chenopodium sp.	4	2	-	1	11	-	1	2	8	-	3	-	4	1	-	Goose foot
Montia fontana L.	-	3	2	-	-	-	-	-	-	1	-	-	-	-	-	Blinks
Stellaria media type	-	-	-	-	-	-	-	-	31	-	-	-	-	-	-	Chickweed
Stellaria palustris/graminea	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	Stitchwort
Stellaria sp.	-	-	-	-	-	-	-	-	32	1	-	-	-	-	-	Stitchwort
Cerastium/Stellaria	-	-	2	-	-	-	-	2	39	-	-	-	3	-	-	Mouse-ear/Stitchwort
Lychnis flos-cuculi L.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	Ragged-robin
Persicaria maculosa/lapathifolia	-	-	1	-	1	-	-	-	-	-	-	-	2	-	1	Persicaria
Polygonum sp.	3	-	-	-	-	-	-	-	-	-	-	1	-	-	-	Knotweed
Polygonum aviculare L.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Knotgrass
Fallopia convolvulus L.	-	-	-	1	7	-	1	-	-	-	-	-	-	4	-	Black Bindweed
Rumex sp.	10	1	-	-	-	1	1	-	4	-	-	2	6	-	-	Dock
Rumex acetosella L.	2	1	-	-	-	-	-	-	2	-	-	-	1	-	-	Sheep's-sorrel
Brassica/Sinapis	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	Mustards
Brassicaceae indet. (small)	-	-	-	-	-	-	-	-	4	-	-	-	1	-	-	Cabbage family
Potentilla sp.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	Cinque-foil
Prunus spinosa L.	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	Sloe
Vicia sativa ssp *nigra* (L.) Ehrh.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Common vetch
Vicia/Lathyrus	10	-	3	1	1	-	3	3	15	2	-	4	3	-	1	Vetch/Vetchling
Lotus/Trifolium	-	-	-	-	-	-	-	-	17	-	-	9	-	-	-	Trefoil/Clover
Medicago/Melilotus/Trifolium	-	-	4	-	-	-	-	-	10	6	1	3	2	1	-	Clover type
Hyoscyamus niger L.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	Henbane
Prunella vulgaris L.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	Selfheal
Stachys sp	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	Woundwort
Euphrasia/Odontites	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Eyebright/Bartsia
Plantago lanceolata L.	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	Ribwort plantain
Galium aparine L.	-	-	-	-	1	3	1	-	-	-	1	-	1	-	-	Cleavers
Galium sp	-	-	-	-	1	-	-	2	1	-	-	-	-	-	-	Bedstraw
Valerianella sp	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	Cornsalad
Tripleurospermum inodorum (L) Schultz-Bip.	-	-	-	-	-	-	-	1	9	1	-	1	-	-	-	Scentless mayweed
Asteraceae indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Table 2 contd. Charred Plant Macrofossils from Crick DIRFT East, Northants. Phase 5-6.

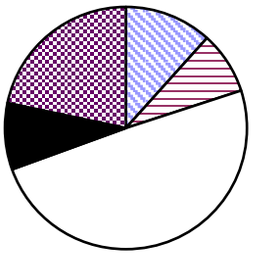
Phase	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**6**	
Sample No.	**93**	**176**	**85**	**105**	**112**	**49**	**15**	**20**	**36**	**259**	**250**	**283**	**280**	**113**	**102**	
Luzula sp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Wood rush
Eleocharis uniglumis/palustris	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	Spike-rush
Carex sp	-	1	-	-	-	-	-	-	2	1	-	2	1	1	-	Sedge
Arrhenatherum elatius (L) tuber	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Onion couch grass
Bromus hordeaceus/secalinus	4	3	1	3	4	-	1	21	4	2	2	6	5	1	1	Brome grass
Poaceae large	10	4	10	33	130	1	7	29	14	7	6	11	12	139	3	Grasses
Poaceae medium	-	-	-	-	3	-	-	-	6	3	-	-	-	-	-	Grasses
Phleum sp.	-	2	-	-	-	-	-	-	5	-	-	-	2	1	-	Cat's-tail grass
Poaceae small	1	2	2	-	-	-	-	-	16	5	2	6	11	2	1	Grasses
Indetermined seeds	6	1	2	1	2	-	2	3	13	-	2	-	3	-	-	Seeds
OTHER																
Stem fragments	-	-	+	-	-	-	-	-	-	+	-	-	-	+	-	Stem
Root fragments	-	-	-	+	-	-	-	+	-	-	-	+	-	-	-	Roots
Charred fragments	-	-	-	+	-	-	-	+	-	-	-	-	-	-	+	Charred fragments
Buds woody	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	Tree/shrub buds
Tuber fragments	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	Tubers
Culm node small	1	-	-	-	-	-	-	-	-	1	-	-	2	1	-	Grass stem
TOTAL	95	38	65	174	855	31	38	239	325	84	35	109	92	760	32	(Items)
Vol sample	20	5	20	11	10	12	10	20	27	20	20	20	16	40	26	(Litres)
Vol flot	80	37	105	50	115*	67	35	27	80	15	15	38	30	130*	27	(mls)
Items/litre	4.8	7.6	3.3	16	171	2.6	3.8	12	12	4.2	1.8	5.5	5.8	38	1.2	(Items/litre)
% of items in flot	2	45	57	26	72	93	37	2	92	0	0	14	22	54	9.4	(% Recovery)
PROPORTIONS																
% GLUMES	37	36	23	8	1	0	28	60	16	53	30	43	15	4	41	%
% GRAINS	5	8	34	70	80	77	25	14	10	9	15	9	14	76	38	%
% SEEDS	58	56	43	22	19	23	47	26	74	38	55	48	71	20	21	%
RATIOS																
Glumes: Wheat grains	35: 0	14: 0	0.9	0.2	1.1	0: 20	1.1	6.5	2.8	8.2	10: 0	4.7	1.4	0.8	1.3	
Rachis: Barley grains	0: 5	-	0: 5	1: 52	2: 666	0: 3	-	1: 11	1: 12	0: 1	-	-	0: 1	0: 537	0: 1	
Seeds : All grains	10.8	7.3	1.2	0.3	0.2	0.3	1.8	1.9	7.5	4.3	3.6	5.3	5.0	0.9	0.6	

Key. + = present, ++ = abundant, G = Gully, D = Ditch, PH = posthole, Term = Gully terminal, Mid = middle, ge = germinated, * = 50% sorted.
Remains are seeds in the broad sense unless described otherwise.

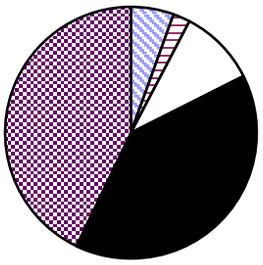
P3.s26 RG1



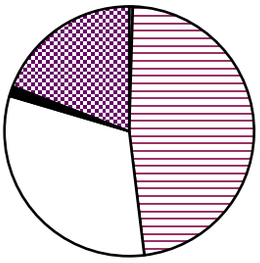
P5.s105 FP1



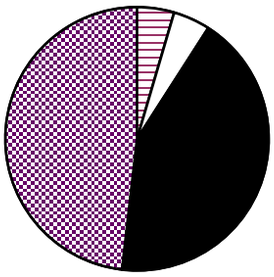
P4.s243 RG47



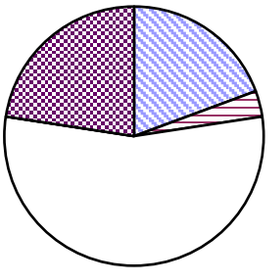
P5.s112 FP1



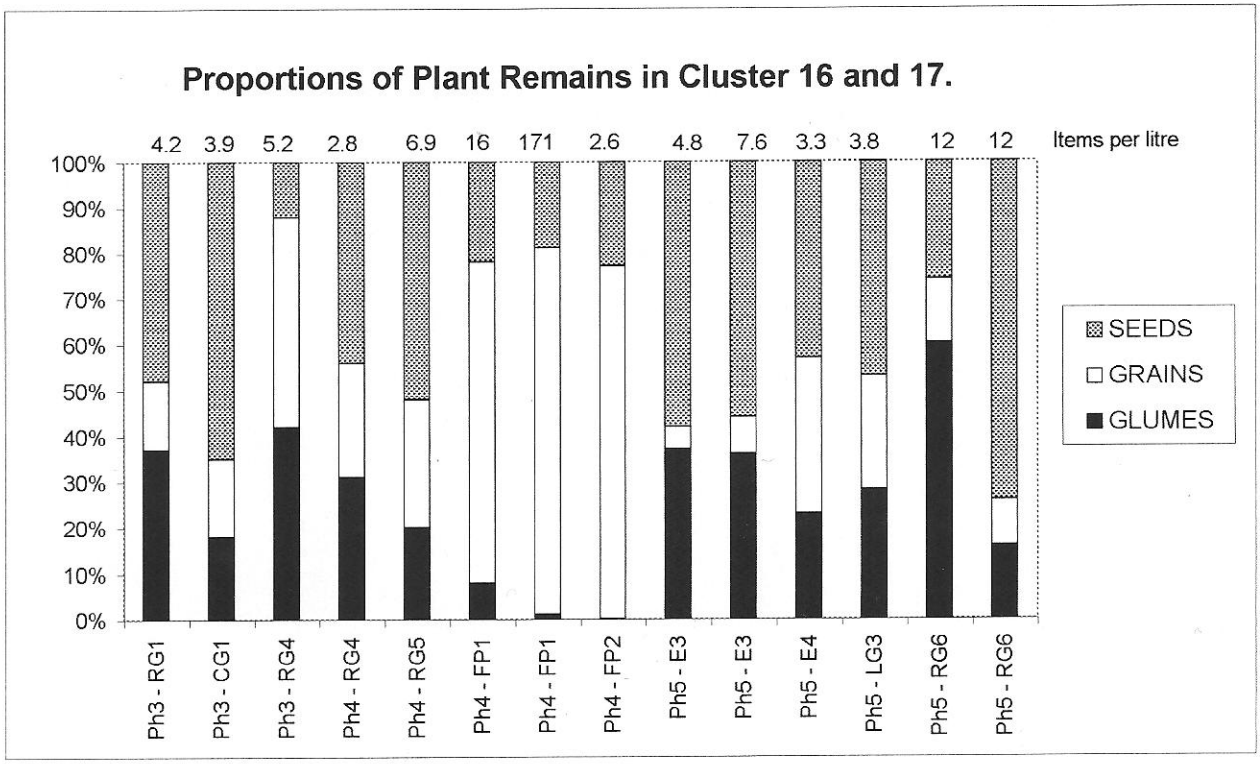
P5.s283 RG61

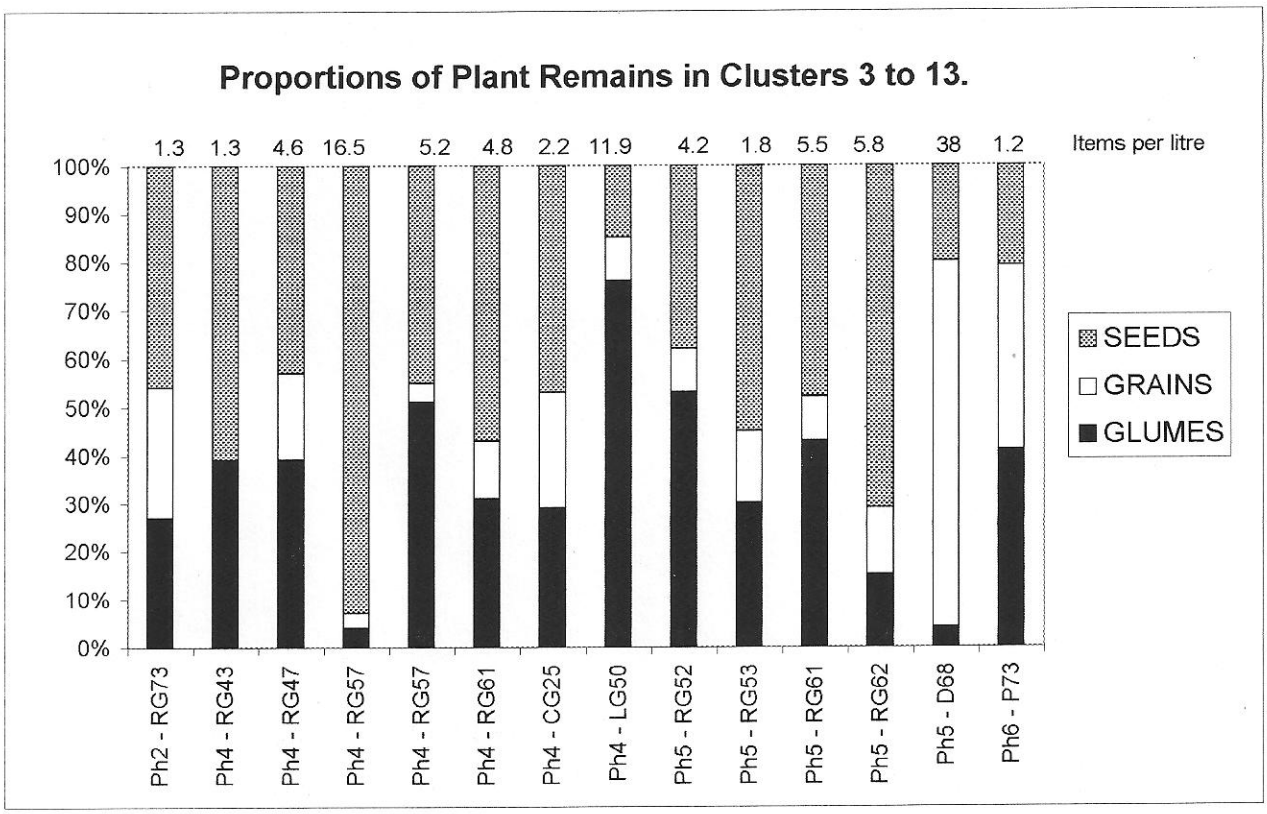


P5.s49 FP2



WGr BGr Cere Gr Chaff Seeds


Proportions of Plant Remains in Cluster 16 and 17.
4.2 3.9 5.2 2.8 6.9 16 171 2.6 4.8 7.6 3.3 3.8 12 12
Items per litre
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
SEEDS
GRAINS
GLUMES
Ph3 - RG1
Ph3 - CG1
Ph3 - RG4
Ph4 - RG4
Ph4 - RG5
Ph4 - FP1
Ph4 - FP1
Ph4 - FP2
Ph5 - E3
Ph5 - E3
Ph5 - E4
Ph5 - LG3
Ph5 - RG6
Ph5 - RG6


Proportions of Plant Remains in Clusters 3 to 13.
1.3 1.3 4.6 16.5 5.2 4.8 2.2 11.9 4.2 1.8 5.5 5.8 38 1.2
Items per litre
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
SEEDS
GRAINS
GLUMES
Ph2 - RG73
Ph4 - RG43
Ph4 - RG47
Ph4 - RG57
Ph4 - RG57
Ph4 - RG61
Ph4 - CG25
Ph4 - LG50
Ph5 - RG52
Ph5 - RG53
Ph5 - RG61
Ph5 - RG62
Ph5 - D68
Ph6 - P73

Charred plant remains from Covert Farm (DIRFT East), Crick, Northamptonshire.

Angela Monckton August 2000, ULAS Report 2000-107. **Appendix 1, Table E1.**

During analysis the residue 1-2mm was sorted or refloated for a range of phased samples from each Area and added to the remains from the sorted Flots. Then the density of remains was calculated from the total charred remains in the volume processed and recorded as items per litre of soil on Table E1 and on the site database in order to show the distribution of plant remains on the site. Samples incompletely sorted were noted as scanned samples.
Samples fully tabulated on Tables 1 and 2 were marked #.

Key to plants recorded in Table E1:
Gb = wheat chaff (glume bases), W = wheat grains, B = Barley grains, C = indet cereal grains.
LG = large grasses including *Bromus* spp., SG = small grasses including *Phleum* sp.
SE = seeds, V = vetch type *Vicia* sp., V/L = vetches/tares *Vicia/Lathyrus*, CH = *Chenopodium* sp., PA = *Polygonum aviculare*, FC = *Fallopia convolvulus*, CA = sedges *Carex* sp., M = *Medicago* type, MO = water-blinks *Montia* sp., RU = docks *Rumex* sp., RA = *Rumex acetosella*, S = chickweed type *Stellaria* sp., CE = mouse-ears *Cerastium* sp., GA = cleavers *Galium aparine*, P = *Persicaria* sp., PL = *Polygonum* sp., PT = *Potentilla* sp., TR = scentless mayweed *Tripleurospermum* sp., VA = cornsalad *Valerianella* sp., TU = tuber of grasses.

Table E1: Phasing of Samples with totals and density (items per litre of soil processed) of charred plant remains found, with types of remains found at Crick (DRE 97).

Phase	Sample	Con	Clustr	Structure	Total	Items /litre	Plant Remains
3	1	3058	C10	D64 F301.1	5	0.5	C, LG, FC, CH
3	2	3034	C10	D64 F301.1	0	0	-
3	3	3053	-	PH79 F347	8	0.6	C, LG, RU, Nutshell
0	8	3121	-	PH81 F380	2	0.5	+
5	10	3186	C10	D66 F306.2	7	0.7	Gb, LG
5	11	3184	C10	RG28 F394	6	0.3	Sloe stone, Hazel nutshell x5
0	12	1001	-	P7 F101	-	None	Scan
4	13	3222	C13	D76 F430	1	0.1	C, FC
5	15#	1011	-	LG3 F110	38	3.8	Gb, SE++
3.1	16	1014	C17	H1 F113	2	0.2	C, V
5	17	3177	C14	E10 F403	14	0.7	W, GA
6	18	3204	C10	D40 F452	14	0.7	Gb, LG, V, M, TU
5	19	3246	C14	LG42 F427	5	0.3	Gb, C, LG
5	20#	1010	C17	RG6 F109	239	12.0	Gb++, W
4.1	22	1019	-	RG4 F118.1	-	None	Scan
4.1	23	1025	-	RG4 F118.1	-	None	Scan
4.1	25#	1022	C17	RG4 F121.2	51	2.8	Gb, W, SE++
3.2	26#	1029	C17	RG1 F126.1	84	4.2	Gb, W, V, LG
3.1	28	1032	-	LG1 F129	-	None	Scan
0	32	1031	-	H2 F128	-	None	Scan
0	33	1041	-	H2 F128	13	2.2	+

5	36#	1036	C17	RG6 F132.1	325	12.0	Gb, W, S, LG, V/L, SE++
4	41	1046	C17	FP4 F139	4	0.4	C
3	44#	1050	C17	CG1 F140.1	104	3.9	Gb, W, V, LG
4	49#	1067	C5	FP2 F153	31	2.6	W, B, LG, CH, S, RU
0	50	1062	C17	PH9 F150	24	1.3	W++
0	51	1061	-	PH8 F149	-	+	Scan, few cereal grains
3	52	1051	C17	CG1 F140.2	16	0.9	B, V/L, S, M,LG
3.2	54	1052	-	RG1 F126.6	-	+	Scan, few cereal grains
4	55#	1064	C17	RG5 F151	145	6.9	Gb, W, SE++
4	65	1087	C17	FP4 F159	5	0.4	B, V, RA
4.2	72	1112	C17	D20 F170	9	0.5	Gb, M, FC
4	73	1117	-	H3 F176	-	No	Scan
5	74	1123	-	D7 F180	-	+	Scan, few cereal grains
0	76#	1122	C17	P11 F179	537	30.0	Gb, W++,LG, TU, Haw
5	79	1094	-	RG6 F132.2.3	-	+	Scan, C
5	82	1109	-	D7 F168	-	+	Scan, C
5	85#	1151	C16	PH4 F198	65	3.3	Gb, W, SE++
5	86	1150	C16	PH3 F197	11	0.4	Gb, W, C
5	88	1143	-	D6 F124	-	+	Scan, C
0	90	1163	-	P12 F207	-	None	Scan
5	91	1181	C16	CG8 F216	21	1.1	Gb, B, LG, M
3	92#	1204	C17	RG4? F122.2	103	5.2	Gb, W, LG
5	93#	1191	C16	E3 F686	95	4.6	Gb, SE++
3.2	70	1153	-		9	0.8	Gb, C, V, LG, P
5	87	1291	-		18	0.9	Gb, V, M, LG, HYO
4.2	136	1219	-		11	0.6	Gb, C, LG
3.1	94	1203	C17	RG11 F230	17	3.1	Gb, B, LG
5	95	1189	C16	P4 F222	24	1.2	Gb, LG, V, P, GA
5	97	1197	-	E1 F239	-	None	Scan
0	100	1221	-	PH23 F241	5	0.3	+
5	101	3267	C9	RG29 F472	1	+	LG frag
6	102#	3229	C13	P73 F434 (RG26)	32	1.2	Gb, W, B, LG, SG, P
4	105#	1226	C17	FP1 F247	174	16.0	Gb, W, B
5	106	3273	C9	RG29 F436	0	0	None
0	107	1233	-	F252 F252	5	0.5	+
0	110#	1251	C17	FP1 F246	472	44	Gb, B
4	112#	1225	C17	FP1 F244	855	171	Gb, W, B++, SE+, Nutshell x1
5	113#	3289	C10	D68/E6 F467.1	760	38	Gb, W, B++, SE
0	114	3316	-	P58 F482	13	0.7	+
4	118	3296	C10	D71 F471.2	0	0	Nothing
4	132	3352	-	CG47 F512.1	7	0.4	+
4.1	138	1269	C17	RG82 F277.2	8	0.4	C, LG, SG

4.1	141	1270	C17	RG82 F278	16	1.6	Gb, LG, FC, RU
4	142	1271	C17	CG19 F297.1	10	4.0	Gb, LG, GA, TR, RU, Nutshell
5	145	1287	C17	D5 F291	20	1.0	Gb, V, LG, S, CH, CA
4.1	146	1279	C17	CG21 F286	5	0.5	Gb, W, B, SG
0	147	1282	-	PH10 F287	7	0.7	+
0	149	1280	-	PH9 F292	1	0.1	+
4	151	1276	C17	P12 F283	6	0.3	Gb, CH
0	155	1310	-	D6 F661	10	0.5	+
0	160	1333	-	PH13 F673	15	1.3	+
0	161	1334	-	PH16 F674	-	+	Scan, C
4.1	162	1354	C15	LG9 F620	24	1.3	Gb, LG, SG
4.2	165	1350	C15	RG8 F600.2	3	0.2	Gb, P
0	167	1312	-	P13 F663	4	0.4	+
0	168	1315		P13 F663	-	None	Scan
5	175	1441	-	P6 F703	6	1.2	Gb
5	176#	1364	-	E3 F686	38	7.6	Gb, C, SE++
4.2	213	2125	-	RG40 F806.2	-	None	Scan
4	215	2149	C1	RG37 F914.2	0	0	None
4	218	2139	C1	RG37 F914.1	4	0.2	W, TU
3.2	219	2200	C1	D35 F933	0	0	None
4	223	2232	C4	D37 F947	1	0.1	Culm node
4.2	224	2283	C3	H4 F973	+	+	B, C
4.2	225	2284	C3	H4 F973	1	0.1	B
4.1	237	2337	C3	LG29 F994	3	0.2	CA, FC
4.2	240	2308	C4	D61 F888	6	0.3	W, LG
0	241	2818	-	P33 F1036	0	0	Nothing
4.2	243#	2301	C4	RG47 F953.2	91	4.6	Gb, W, B, SE++
4.2	244	2251	C4	RG47 F953.1	1	0.1	TR
6	245	2390	C4	RG53 F1063.1	8	0.4	Gb, W, C, M, MO
4	246	2459	C4	RG54 F1064.1	2	0.1	MO
4.2	226	2262	-		0	0	Nothing
5	31	3260	-		0	0	Nothing
5	128	3192	-		2	0.1	C
1	248	3686	C113	P74 F423	0	0	Nothing
4	249	2479	C4	RG54 F1081	1	0.1	W
5	250#	2478	C4	RG53 F1080	35	1.8	Gb, C, SE+
4.1	251	2483	C5	CG38 F1083.1	4	0.2	Gb, M
4.2	252	2494	C5	RG56 F1090	2	0.1	B, C
4.2	253	2504	C5	RG56	2	0.2	C, MO

				F1090.1			
4	254	2382	C4	LG17 F1057	19	1.0	Gb, C, LG, MO, RU, CE
0	255	2519	-	CG14 F1200.1	0	0	Nothing
3	256	2482	C4	RG51 F1082.1	14	0.9	Gb, C, LG, CH, S, PA
4	257	2521	C4	RG52 F1202	3	0.5	Gb, S
4.1	258	2499	C5	CG38 F1083	1	0.1	C
5	259#	2520	C4	RG52 F1201.1	84	4.2	Gb+, W,
4	260	2535	C4	LG13 F1079.2	9	0.6	Gb, C, V, SG
4.2	261	2545	C5	RG56 F1090.2	6	0.5	C, MO, GA, FC
4	263	2547	C4	P24 F1203	0	0	Charcoal only
4	266	2598	C6	P25 F1240	8	0.8	Gb, MO
4	267	2609	C4	D56 F1224.2	4	0.5	Gb, C, PT
5	268	2615	C4	RG52 F1201.3	23	1.2	Gb, C, LG, SG, M, RU
2	272#	2682	C5	RG73 F1291.2	25	1.3	Gb, W, LG, SG, CA
4	273	2679	C4	RG57 F1290.1	10	0.5	Gb, C, LG, PL, RU, CH
4	274	2683	C5	RG57 F1290.1	5	0.5	B, LG, SG, CH
4	275	2680	C5	RG57 F1290.2	7	1.4	Gb, RU, P, SG
4	276#	2694	C5	RG57 F1290.2	167	16.5	Gb, B, SE+, VA
4	277#	2692	C5	RG57 F1298	103	5.2	Gb++, W, B, SE+, VA
4	278#	2711	C6	RG61 F1309	92	5.8	Gb++, W, SE, VA
6	280#		C6	RG62 F1313	92	5.8	Gb+, W, B, SE+
2	281	2716	C5	RG73 F1291.1	5	2.4	W, B, LG
0	282	2847	-	P34 F1048	11	0.6	+
5	283#	2761	C6	RG61 F1341	109	5.5	Gb, W, SE++
2	285	2792	C5	PH78 F1355	4	0.3	C, W
0	286	4032	-	P26 F1374	15	0.8	+
0	287	4034	-	P27 F1357	2	0.1	+
0	288	2895	-	P35 F1400	4	0.2	+
4.1	290#	2289	C3	RG43 F1419	26	1.3	Gb, SE+
0	291#	2063	-	P35 F838	29	1.5	Gb, C, MO, PA, LG
5	292	2953	C6	P28 F1447	4	0.2	W, C, MO

5	293	2954	C6	P28 F1447	2	0.1	MO, SG
4.2	294#	4137	C6	CG25 F1398.1	39	2.2	Gb, W, B, SE+
5	300	4299	C21	RG96 F1598	26	0.7	Gb, C, LG, V, PA, TR, CH, M
0	302	4241	-	PH93 F1560	2	0.2	+
4	303#	4308	C21	LG50 F1603	237	12.0	Gb++, W
4.2	304	4349	C21	RG98 F1621	11	1.1	Gb, C, LG, M
4	306	4381	C19	RG89 F1650	16	1.6	Gb, C, LG, SG, V, CH
4	308	4355	C20	RG90 F1625	1	0.2	V/L
X	X	4248	-		0	0	Nothing
5	125	-	-	BONE	-	NUTS	Nutshell only
4	198	-	-	BONE	-	NUTS	Nutshell only
5	301		-			+	B, MO, LG
5	31		-			+	+

Key: For samples with items per litre calculated all residues completely sorted and counted (i.e Flot, Fine fraction/Reflot, and CF) except in Scanned samples. Results shown except for Phase 0 samples.
+ = present only, ++ = numerous. # = samples tabulated in report.
Contexts 1000 = Area 1, 2000 and 4000 = Area 2, 3000 = Area 3.

Assessment of charred plant remains from Covert Farm (DIRFT East), Crick, Northamptonshire.

Angela Monckton 29.8.98 ULAS Report Number 98/102.

Introduction

Excavation of part of an extensive Iron Age site were carried out by BUFAU between August 1997 and June 1998. The excavated area was divided into three fields from south to north: Field 1 (1.48 hectares) was sealed by alluvium and contained features cutting the gravel terrace on the bank of a palaeochannel, pottery was mainly of Early to Middle Iron Age date; Field 2 (4.26 hectares) was partly covered by alluvium while higher up the slope in the northern third of the field the topsoil directly overlay the features which contained pottery of Late Bronze Age to Late Iron Age date; Field 3 (5.27 hectares) was also partly covered by alluvium with the northern half of the field covered only by topsoil, the pottery ranged from Beaker Period to Roman date.

Sampling for charred plant remains was carried out because it was a major objective of the excavation to find evidence for the economy and surrounding landscape of the site. Unfortunately the palaeochannels and prehistoric features did not preserve any waterlogged plant or animal remains which are more likely to give evidence of the environment. However, charred plant remains and animal bone did survive and consideration of these remains in conjunction with the types of features and finds from the site has the potential to contribute information about arable cultivation and animal husbandry and possibly provide evidence of activities on the site.

Charred plant remains include cereal grains, chaff and seeds which, because of their small size, are only recovered from sieved samples. When charred, organic materials do not decay so charred plant remains are preserved in most soil conditions, although they are usually sparse on prehistoric sites in the region (Moffett 1991, Monckton in press). The type of remains found are likely to represent plant materials brought to the site for use such as cereals and other food plants or plant material for such purposes as flooring, bedding, roofing or fodder. As most plant waste products can be used rather than disposed of by burning, and burnt cereal grains represent waste of the food product itself, it can be seen that such remains are likely to be at a low concentration, particularly when the chances of survival of deposits is taken into consideration. When found, charred plant remains can give evidence about the crops grown and the weeds of the crops and surroundings, about the preparation and consumption of cereals on the site and possibly about other plant materials used on the site. Charcoal can provide evidence about the wood used for fuel or possibly for stuctures and give some evidence about trees and shrubs in the landscape.

Methods

Samples of 20 litres in size were taken from datable features with the potential to contain charred remains including pits, postholes, hearths and ditches. Ditches were initially sampled from the terminals, middle and junctions, but because of the large number of features and the difficulty of processing the clay soil it was decided to sample mainly the ditch terminals where the pottery and other finds were concentrated.

The samples were processed by wet sieving in a York tank using a 1mm mesh with flotation into a 0.5mm mesh sieve. The residues were air dried and separated with a 2mm sieve; the fraction over 2mm was sorted by eye by the site assistants for bone, finds and all charred material. The fraction of 1-2mm was reserved unsorted for assessment of the recovery of charred remains. The flotation fractions (flots) were air dried and packed and reserved for assessment of charred plant remains.

Method of assessment

The flots and charred material sorted from the residue over 2mm were submitted for this assessment together with a selection of residues of 1-2mm size from 15 of the samples.

It was immediately apparent that the bulk of the charred material was contained in the material sorted from the residue over 2mm and that most of the flots were small so it was decided to examine all the charred material from these residues at x10 magnification. All the flots were examined by eye and their size and presence of charred material noted, a selection of them was then scanned at x10 magnification. For the residues of 1-2mm size which were from selected samples of good, moderate or poor content of charred material some of each were sorted at x10 magnification and some were refloated and then checked for the recovery of charred plant remains.

For the purpose of this assessment the plant remains were identified without comparison with modern reference material so identifications should not be regarded as final. The quantities of the larger groups of remains are an estimate only. The recovery of remains was examined in detail for the 15 selected samples and the potential of different feature type to contain remains was examined for Field 1 in order to provide information in order to decide which further samples should be processed from Area 2 and other excavated areas.

Quantity of samples

Area 1: 73 samples processed (5 unprocessed)
Area 2: 30 samples processed (55 unprocessed)
Area 3: 40 samples processed (5 unprocessed)

Totals: 143 samples processed and 65 remain unprocessed.

Quantity of residues from processed samples

Area	Number of samples processed	Number of flots	Number of bags of charcoal >2mm	Number of unsorted residues 1-2mm
Area 1	73	64	63	73
Area 2	30	7	23	30
Area 3	40	19	40	40
Total	143	90	126	143
Assessed		25	126	15

Results of the assessment

Around 50% of the samples from Areas 1 and 3 had cereal grains present and five very productive samples with over a hundred items of charred plant remains were found which is unusual for sites of this period in the region. On examination of the rest of the samples from Areas 1 and 3 a further ten moderately productive samples were found together with samples which were of interest because they contained remains such as nutshell or fruit stones. This is a most encouraging result as recovery of remains from the clay soils was extremely difficult and had taken a great deal of effort from the site staff. The plant remains were, however, present in the residues as well as the flots because of the low buoyancy of the remains. Of the most productive samples three were seen to have charcoal rich flots with grain apparent during processing and with numerous grains sorted from the >2mm residue on site (110, 112 Area 1 and 113 Area 3). Another was from a moderately charcoal rich flot (36) which proved to contain numerous small seeds, a further sample had the majority of the grains amongst charcoal sorted from the 2mm residue (76). On examination of the unsorted 1-2mm residue additional remains were found, mainly seeds and chaff, which are important for the interpretation of the remains. The recovery of remains was examined below.

Recovery efficiency

In order to be able to compare samples with each other and with those from other sites it is necessary to calculate the proportions of different types of plant remains in the samples. The ratios of cereal grains, chaff and seeds are also used to give evidence about the stage of cereal processing and to establish if the remains found are from, for example, cleaned cereal product or cereal cleaning waste. Therefore it is important to have the consistent recovery of not only the cereal grains and large seeds but the small seeds and chaff fragments.

From Area 1 the 73 processed samples produced 64 flots and 63 bags of charred material sorted from the residue >2mm. Four of the flots were large and charcoal rich, they were scanned and two of these contained abundant cereal grains the remaining two consisted mainly of charcoal (Table 1). On scanning the 63 bags of charred remains from the residue >2mm 43 samples were found to contain cereal grains showing that 59% of the samples processed had cereal remains present (Table 3). Two of the samples (76 and 105) contained more cereal grains from the >2mm residue than in the flot showing that the remains were not always recovered by flotation (Table 2). It is of some concern that this fraction was sorted by eye by a number of different people, partly because of the time taken and partly because recovery may not have been consistent, particularly of any seeds of around 2mm in size. This does seem to have been carried out most diligently as can be seen from the number of grains recovered as well as small charcoal fragments (Tables 1 and 2).

Area 3 samples had cereal grains present in 12 of the processed samples (30%). A very productive sample (113) was from the middle section of one of the enclosure ditches. On examination of the 1-2mm residue numerous seeds and some glumes were found by reflotation of this fraction. Three other samples had more remains than the rest, one had abundant nut shell fragments (198) and fruit stone fragments in other samples were worthy of record.

Area 2 samples remain mostly unprocessed, few flots were produced so reflotation of the residues should be carried out to check for the presence of charred material as well as processing more of the samples as this was a large area with a high density of features.

Table 1. Comparison of quantity of charred plant remains in different fractions.

Sample (context)	Context type	Flot	Sorted from Residue >2mm	Residue 1-2mm
Good				
49 (1067) A1	Pit #	20gr,2se,+++Ch (55mls)	2gr (12mls)	few grain frags
50 (1062) A1	Pit	6gr,8se,+++Ch (240mls)	2gr (40mls)	few grain frags
110 (1251) A1	Pit ##	c60gr,10se. (17mls)	c70gr (16mls)	35 seeds
112 (1225) A1	Posthole ##	c400gr,12se (60mls)	c100gr,5se (36mls)	55se,11gl (17mls)*
113 (3289) A3	Ditch, middle ##	c350gr,15se. (115mls)	c200gr (40mls)	c200se,25gl. (44mls)*
Moderate				
36 (1036) A1	Terminal ##	15gr,15gl,100se. (60mls)	10gr,1se. (11mls)	14se,3gl.
65 (1087) A1	Posthole	1gr,3se. (25mls)	None (2mls)	None
162 (1354) A1	Terminal	7se,7gl. (25mls)	None (3mls)	1 seed.
175 (1441) A1	Posthole	None (20mls)	Sloe stone (90mls)	4 glumes
107 (1233) A1	Terminal	few grain frags (45mls)	3gr,1nut frag. (50mls)	1 grain frag. (20mls)*
Poor				
10 (3186) A3	Ditch, middle	1gr frag,1se. (10mls)	None (4mls)	4 glumes
25 (1022) A1	Ditch, middle #	2gr,1gl,8se. (10mls)	8gr. (17mls)	11se,5gl.
101 (3267) A3	Ditch, middle	None (15mls)	None (4mls)	None
102 (3229) A3	Ditch, middle #	3gr. (12mls)	5gr, Fruit stone. (12mls)	1 seed.
72 (1112) A1	Ditch.	None (12mls)	None (3mls)	1gr,1se,1gl. (9mls)*

Key: gr = cereal grain, se = seed, gl = glume base ie chaff, frag = fragment, Ch = charcoal.
* = reflotation of the 1-2mm residue, dried and sorted at x10 magnification.
#, ## = analysis suggested.

Table 2. Plant remains from other Area 1 and 3 samples.

Sample (context)	Context type	Flot	Sorted from Residue >2mm	Residue 1-2mm
Others				
76 (1122) A1	Pit ##	c30gr,5se. (120mls)	150 grains (45mls)	Not seen
105 (1226) A1	Posthole #	15gr. (c10mls)	50+ grains (15mls)	Not seen
239 A1	-	2gr,4se. (15mls)	None (0 mls)	Not seen
198 (3434) A3	Pit #	No flot	+++Nutshell (40mls)	Not seen
73 (1117) A1	Hearth	1se, ++Ch (50mls)	None (65mls)	Not seen
44 (1050) A1	Terminal #	c15gr,25se. (65mls)	2gr. (10mls)	Not examined
82 (1109) A1	Terminal	2gr,4se. (45mls)	1gr. (3mls)	Not seen
176 (1364) A1	Posthole #	3gr,10se,7gl. (7mls)	Fruit stone (5mls)	Not seen
13 (3222) A3	Ditch, middle	few gr frags, 1se. (10mls)	None (5mls)	Not examined
20 (1010) A1	Terminal #	Small flot	21gr,6se. (6mls)	Not seen
92 (1104) A1	Terminal #	4gr (c5mls)	10gr,6se. (19mls)	Not seen
94 (1203) A1	Dirch, middle	Small flot	10gr,2se. (19mls)	Not seen
140 (3358) A3	Pit	No flot	7gr. (5mls)	Not seen
11 (3184) A3	Ditch, middle #	Small flot	Sloe stone (6mls)	Not seen

Key: gr = cereal grain, se = seed, gl = glume base ie chaff, frag = fragment, Ch = charcoal.

As can be seen from Table 1 the recovery of remains by flotation was variable, the two fractions of residue also retained charred plant remains to a greater or lesser extent hence the examination of all three fractions will be necessary to recover all types of remains because there is a bias towards the seeds and chaff fragments remaining in the 1-2mm fraction of the residue. This is fortunate as these residues have been retained and reflotation as carried out on samples 112,113,107 and 72 recovered over 95% of these remains. It is suggested that if more samples are processed, reflotation of the whole dried residue below 4mm is tried after sorting for finds and bone.

Recovery of remains by feature type

In order to provide information to decide which unprocessed samples from Area 2 and current excavations to prioritise for processing the samples from Area 1 features which produced remains were considered. The total number of samples which produced any

remains from each feature type was tabulated against total sampled and the number of samples with abundant remains of each type was also recorded.

Table 3. Area 1 Features with plant remains present and abundant

Feature type	Total samples	Number of samples with plant remains	Samples with more abundant remains
Pits	12	9	3
Hearths	4	2	-
Terminals	26	15	4
Ditch, middle	9	7	1
Ditch, junction	6	1	-
Ditch	1	0	-
Posthole	12	7	3
Pot contents	2	1	-
Indet	1	1	-
Total	73	43 (59%)	11

The pits, postholes and ditch terminals were the most productive features (Table 3). Postholes are often unproductive and these were presumably selected as having some potential for charred remains. Few samples were taken from middle sections of ditches to compare with the terminals so it may not be possible to conclude that plant remains were concentrated in the ditch terminals as was found with other finds. Ditch junctions were given a low priority for sampling because material may be mixed from different phases. Considering that areas with samples still to be processed should be comparable to the areas already sampled priority should be given to processing samples from pits and ditch terminals and postholes with good potential. This will allow comparison of the ring ditches of the structures between areas and phases of the site, pits however have been more productive and may reflect other activities so should be a priority for further work.

Table 4. Area 3 Features with plant remains present and abundant

Feature type	Total samples	Number of samples with plant remains	Samples with more abundant remains
Pits	7	3	1
Kiln	-	-	-
Terminals	9	3	-
Ditch, middle	17	6	1+2
Ditch, junction	1	-	-
Cremations	2	?	?
Posthole	2	-	-
Total	40	12 (30%)	4

Area 3 was less productive with more remains present in middle sections of the ditches. These were mainly the larger enclosure ditches rather than the ring ditches of the structures so these deposits should not be excluded from further work.

Range and variety of material

Cereals: Wheat chaff was found mainly in sample 36 and in the 1-2mm residues and was identified as including the glumes of both emmer (*Triticum dicoccum)* and spelt (*Triticum spelta*) both of which are hulled wheats. Wheat grains were also present together with barley (*Hordeum* sp) which was most abundant in sample 112. Barley chaff (rachis) fragments were also present in small numbers in a few samples.

Seeds: The most numerous seeds were of the larger grasses (Poaceae) including brome grass (*Bromus* sp), this is often found with charred cereals and was probably an arable weed. Other arable weeds included scentless mayweed (*Tripleurospermum inodorum*), cleavers (*Galium aparine*) a weed of autumn sown crops, and black bindweed (*Fallopia convolvulus*). Tubers of onion couch grass (*Arrhenatherum elatius*) were also found which was thought to be a perennial weed of the cereals. Other weeds either of the cultivated fields or the disturbed ground around the settlement were goosefoots (*Chenopodium* spp), chickweeds (*Stellaria* spp) and docks. Damp ground plants included buttercup (*Ranunculus* sp), blinks (*Montia* sp), sedges (*Carex* sp.) and wood-rush (*Luzula* sp). These may have grown near field ditches or in damp areas of the fields, some may have been brought to the site with materials for purposes such as flooring or bedding. Grassland plants were also found and these included ribwort plantain (*Plantago lanceolata*), vetches (*Vicia* sp) and clover type plants (*Trifolium type*), these may have been weeds of the crops but may have been brought to the site with animal fodder.

Gathered foods: Fragments of sloe stones (*Prunus spinosa*) were found in several samples and one sample was very rich in hazel nutshell (*Corylus avellana*) although found in surprisingly few other samples. In addition hawthorn (*Cretaegus* sp) was found in samples from Area 2. These may have been gathered from wood margins or scrub and charcoal may provide more evidence for this type of vegetation.

Potential of remains to answer site objectives

Conclusions from the assessment were made difficult because remains were present in three different residues from the samples so not all remains were seen. The plant remains found have the potential to show the cereals consumed by the occupants of the site and the weeds found with them show something of the conditions in the cultivated fields, the season of growth and possibly the method of harvesting. Other plants may indicate grassland and the type of vegetation of the wet areas of the site. Fruit stones and nutshell give evidence of the use of gathered foods and woody plants in the area. The analysis of the remains may show cleaned cereal product and cereal cleaning waste but this cannot be anticipated until the remains from all the fractions are assembled and analysed. Comparison of the type and distribution of remains from different areas and phases may show continuity or change or differences between areas of the site but more work is needed to investigate this. Differences may be seen between domestic and other areas.

Research objectives concerning arable cultivation cannot be addressed without analysis of the plant remains nor can the type of economy be suggested unless the cereal remains are considered. Comparison with other sites thought to have a self-sufficient economy, or biased towards pastoral or arable economies may be possible (van der Veen 1992), although there may be insufficient productive samples for detailed comparison. Analysis of the assemblage of cereals and weeds may allow consideration or whether intensive or extensive

production was carried out (van der Veen and O'Connor 1998) particularly if more seeds are recovered from the residues. Some indications of the type of land cultivated may be obtained from the weeds present although it is unlikely to give evidence of where the cereals were grown. It has been suggested that regional variations may be detected in economic strategies (van der Veen and O'Connor 1998), and even if it is difficult to draw conclusions for the site itself the results will contribute to the regional picture. Other questions relating to deposition on the site may be raised and if deposits of particular groups of finds also include plant remains they may be worthy of consideration (Hill 1995). The question of storage of cereals raised in the research objectives requires examination. In the absence of *in situ* burning of cereals in pits the use of storage pits cannot be suggested, and considering the wet clay soils of the area pit storage seems unlikely. Other methods of above ground storage may be considered although the plant remains themselves are unlikely to contribute to this.

Some research aims considering sensory themes may be addressed by evidence from the plant remains, for example:
Sight: Colour of weeds of the cultivated fields, appearance of cereal fields over the seasons, plants of the waysides, grassland and wet areas. Possible locations of crop fields may be considered, likely to be on drier ground but may be visible from the site. Appearance of possible straw thatch on roofs and other plant materials used on the site.
Sound: Pounding wheat grains to dehusk them then grinding in a beehive quern (there are working querns at Jewry Wall Museum, Leicester- not musical at all). ?Fowl pecking spilled grains and seeds making use of waste and reducing the evidence. Wind through the leaves of trees, autumn leaves.
Taste: Cereal foods eg bread or pottage, edible plants eg fat-hen and some docks for spring greens, Grain may have been used for malting and brewing but one germinated grain is insufficient evidence. Fruit; only sloe so far but this is not always bitter, hazel nuts. Drinking water, water for cooking etc.
Smell: Cooking bread, pottage etc. Burning wood for cooking fires, burning cereal waste. Damp grass, composted waste.

Method of analysis
It is suggested that the remains from the selected samples are identified and tabulated to show the range and quantity of plant remains on the site and are considered in the phases and areas defined on the site with analysis carried out in line with the research objectives of the site. In order to examine the differences or similarities between areas and phases the rest of the samples should be scanned and remains recorded to add to the distribution of other materials on the site. In order to assemble all the remains from each sample the 1-2mm residues should be refloated or sorted at x10 magnification.

For Area 2 because it is a large area with a high density of features having more clusters of features than the other two areas (Table 5), it is recommended that more samples are processed. It is suggested that samples from the pits, posthole and ditch terminals are prioritised for processing with flotation. Few remains have been recovered from this area so far which may be because of the problems caused by the clay sediments so it is suggested that the dried residue below 4mm is refloated. The residues 1-2mm from samples already processed which have cereal grains present should also be refloated. It is expected that 10-15% of the samples from this area may be worthy of record and the rest should be scanned and the distribution recorded.

Other excavations: in order to compare the sites it is suggested that samples from pits and ditch terminals are processed and selected deposits of good potential should not be neglected, Samples should be processed with flotation and the residue below 4mm refloated or retained for assessment for recovery of plant remains.

Table 5. Unprocessed and processed samples by area.

Feature type	**Area 1**	**Area 3**	**Area 2**
Area examined	**1.48 He**	**5.27 He**	**4.26 He**
Number of clusters	**3**	**5**	**6**
	Samples	Samples	Samples
Pits	1 (12 s)	2 (7 s)	9 (5 s)
Hearths	- (4 s)	-	- (2 s)
Terminals	- (26 s)	- (9 s)	31 (11 s)
Ditch, middle	2 (6 s)	- (17 s)	11 (6 s)
Ditch, junction	1 (6 s)	1 (1 s)	3 (0 s)
Posthole	1 (12 s)	1 (2 s)	1 (6 s)
Kiln	-	1 (0 s)	-
Others	- (4 s)	- (2 s)	
Total	5 (73 s)	5 (40 s)	55 (30 s)

(s) = samples already processed.

Quantity of material for analysis

Area 1: Analysis of samples 36, 76, 110, 112, 49, 25, 105, 44, 176, 20 and 92 = 11 samples.
Scan of remaining samples with plant remains = 31 samples.

Area 3: Analysis of samples 113, 198, 102 and 11 = 4 samples.
Scan of remaining samples with plant remains = 8 samples.
Total 15 samples to analyse and 39 to scan. (39 residues 1-2mm to refloat).

Charcoal for identification by other specialist.

Groups of large fragments of charcoal over 4mm in size were present in 13 samples from Area 1, 4 samples from Area 2 and 4 samples from Area 4, 21 samples in all with smaller amounts in other samples. Is is suggested that some of this material is identified.

Task List for analysis of plant remains Areas 1 and 3

Analysis of 15 selected samples including residues.
Scan and recording of remaining c39 samples.
Tablulation of remains and report
For analysis Areas 1 and 3, with addition of Area 2**.**

Reflotation of 30 other residues from Areas 1 and 2 is also required.
Area 2: analysis should be possible when the samples have been processed.
Reflotation of 10 residues from samples already processed is required.

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