Charred plant remains from medieval features excavated at 8, Church Lane, South Witham, Lincolnshire, 2002.

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Introduction

The site was excavated by ULAS directed by Roger Kipling and sampling was carried out during the excavation to recover charred plant remains which can provide evidence of the crops, diet and activities of people in the past. In this area there is a lack of evidence from charred plant remains from medieval sites other than in Lincoln and Boston, so it was hoped that these remains would provide evidence about the area in these periods. Samples were taken from an oven or kiln and from pits and other features on the site of Late Saxon to medieval date. A Roman pit was also sampled. The Order of Knights Templar is known to have owned property in South Witham from the mid 12th century and the pottery spot dates quoted below suggest that all the Late Saxon-1200 AD samples could fall within this period. In addition a farm belonging to the Order is known at Temple Field to the North of the village dated to the early 14th century, covers the period represented by the rest of the medieval samples.

Methods

Samples from ten contexts were processed by wet sieving in a York tank with a 0.5mm mesh and flotation into a 0.5mm mesh sieve. The flotation fractions (flots) were air dried and these were then sorted for plant remains using a x10 stereo microscope. For the richer samples a proportion of the flot was sorted and the remainder scanned for additional species. The plant remains were identified by comparison with modern reference material in the Department of Archaeology of the University of Leicester. The remains were counted and listed (table 1), the plant names follow Stace (1991) and are charred seeds in the broad sense unless described otherwise. In order to compare and interpret the samples the proportions and ratios of cereal grains, seeds and other remains were considered.

Results

The cereals: The majority of the identified grains were of wheat (*Triticum* sp), mainly of the characteristic short broad shape of free-threshing wheat. Wheat chaff fragments (rachis segments which form the central axis of the cereal ear) were found, some of these could be identified as of bread wheat (*Triticum aestivum* s.l.). Scanning more material did not produce remains of other types of wheat rachis. Barley grains (*Hordeum vulgare*) were also found in smaller numbers and these included hulled grains with occasional twisted grains suggesting the possible presence of hulled six-row barley. Oats (*Avena* sp.) were also found to be quite abundant in one sample. Rye (*Secale cereale*) was scarce and was only found in single numbers in two of the samples. The grains were examined for signs of germination but little was found.

Wild plants: The seeds found were mainly weeds of arable land such as stinking mayweed (*Anthemis cotula*) which was common in medieval times and is a plant of heavy soils. Another arable weed was corn gromwell (*Lithospermum arvense*) which has a large seed. Weeds particularly associated with autumn sown cereals included corn cockle (*Agrostemma githago),* and corn-flower (*Centaurea cyanus)* which is more typical of lighter soils and is particularly associated with free-threshing cereals such as wheat as found here. A group of weeds typical of disturbed ground such as is found in settlements, garden type cultivation or of spring sown crops was also present but not numerous. These included goosefoots (*Chenopodium* sp), docks (*Rumex* sp) and chickweed type plants (*Stellaria* sp.). Leguminous plants were notably few in comparison with some other sites of this date, they included a few vetches or vetchling (*Vicia/Lathyrus)* and clover type plants (*Medicago, Melilotus or Trifolium*) which can occurr as arable weeds but also grow on grassland. Others plants

of grassy vegetation included eyebright or bartsia (*Euphrasia* or *Odontites*), and ribwort plantain (*Plantago lanceolata*). Plant of damp or wet ground were represented by spike-rush (*Eleocharis* sp.) and sedges (*Carex* sp) perhaps as weeds of poorly drained land or from ditch sides. Others plants included large and small grasses (Poaceae) which, with most of the plants here can occur in cultivated fields as arable weeds.

The features sampled

Roman pit (136): the sample contained mainly wheat grains including free-threshing wheat with a little barley and a few seeds with grasses most numerous. The remains were similar to those from the medieval features on the site and although could be Roman they did not contain any characteristic material.

Late Saxon 1050-1200 AD, hearth or pit (138): the sample was very rich in charred cereals and was dominated by wheat grains of free-threshing type and contained wheat chaff (rachis), some of which was identifiable as of bread wheat while most of the remaining chaff, classified as free-threshing wheat (table 1), was also consistent with the form of bread wheat although broken and abraded. Considering the quantity of chaff, on average there are three grains to each segment of rachis in the ear of the wheat, so over half the chaff was absent and had probably been removed by processing the cereal. Weed seeds were relatively few and were mainly the larger seeds including large grasses, corn-flower and corn gromwell, while stinking mayweed which has small seeds was represented mainly by part of a seed head. This suggests that the grain may have been burnt before the final stage of processing by hand sorting to remove the larger contaminants, although sometimes this stage was omitted. Barley grains were also present in smaller numbers perhaps mixed with the wheat on disposal. Occasional grains of wheat and barley had evidence of germination (table 1), but were very few. The grain appears to represent a bread wheat crop which had been threshed and partly cleaned. Another sample of this date from pit (270) contained only single numbers of items including free-threshing wheat grains, a small grass seed and no chaff. It perhaps represented part of the scatter of the same material as in the previous sample.

Early-middle 12th century, pit (210): this sample, like that from (270) contained a small number of items, mainly cereal grains but including free-threshing wheat and barley with a few weed seeds (table 1).

Medieval (1100-1250 AD), pit (180): this sample, like the rest from the site, was dominated by cereal grains but differed in that the main cereal was oats, although the species could not be confirmed as insufficient chaff was found the size of some of the grains suggested this was cultivated oat. This was found with arable weeds including large grasses and with the wet ground plants of spike-rush and sedges suggesting this was grown on poorly drained ground .

Medieval (1100-1400 AD), pit cut 191: the sample from context (192) contained a moderate number of cereal grains with a single weed seed and no chaff. The grains were of free-threshing wheat and barley with a few oats and a single possible rye grain. This may represent waste from a domestic fire including grains accidentally spilled or burnt as waste during food preparation. A sample from context (244) from the same pit was similar except that it contained a few chaff fragments including bread wheat and barley, possibly also cleaned from the cereal before consumption and burnt in a hearth. Both samples contained light coloured sediment as often seen in the fill of cesspits, sample (192) contained a few small fly puparia and sample (244) contained a couple of fish vertebrae both of which are common finds in cesspits. The feature may therefore contain some latrine waste as well as domestic rubbish.

A sample from a possible hearth (261) of 13th-14th century date contained a few free-threshing wheat grains and arable weed seeds but was very heavily contaminated by roots and contained too few remains for analysis so was not examined further.

Kiln/oven, primary silt (245) predating 13-14th century: the feature was backfilled with rubble containing 13-14th century pottery and the primary fill below this was sampled. This sample contained very few charred plant remains which consisted mainly of wheat grains with a few weed seeds (table 1). The sample also contained a moderate number of snail shells, none of which were burnt. These included *Trichia* sp., *Oxychilus cellarius, Cochlicopa lubrica, Discus rotundatus* and *Carychium* sp. which are all found in damp places such as pits or ditches and also in rubble. If these snails were well sealed in the silt this would indicate that the feature was left open, however it is possible that if the snails colonised the rubble fill the shells may have accumulated at the base of the rubble after abandonment. The sample contained too few remains to indicate the use of the feature which may have been cleaned out after use.

Medieval gully (142): this feature respects the kiln so may be contemporary in use. The sample compares with that from (138) in being rich in free-threshing wheat grains and containing bread wheat chaff with a few arable weeds with large grasses most numerous. It appears to represent wheat at a similar stage of processing, being partly cleaned. Some barley with a few oats and occasional rye grains are also present, with a nutshell fragment perhaps suggesting the inclusion of domestic rubbish in the feature.

Discussion

The main crop found on the site was bread wheat identified from chaff which is more diagnostic than grains. Despite examining more of the sample, rivet wheat which is another type of free-threshing wheat, was not found, however, its presence on the site cannot be excluded. Bread wheat and rivet wheat have been found together in medieval deposits of early medieval date from Flaxengate, Lincoln from 13th century deposits (Moffett 1996) but is so far unrecorded from rural Lincolnshire. It has been found from the 11th-13th century onwards from Leicester (Moffett 1993, Monckton 1999), but is so far only known from Melton Mowbray and the village of Saxby in Leicestershire as sites outside the city. There have been more finds of rivet wheat in Northamptonshire, perhaps because it favours a more southerly distribution as it is thought to have been introduced from the continent. The earliest find to date is from Highham Ferrers, Northamptonshire, dated to just before 1000 AD (Moffett pers. comm.). Rivet wheat is now known from an increasing number of sites in the midlands from the Early Medieval period onwards (Moffett 1991) and evidence at present suggests that this crop spread in use during the medieval period. It is unknown if the cereal was cultivated in Lincolnshire at this period and further investigation of the dated distribution of this cereal is required in this area. The samples here may represent the production of bread wheat crops as this was the preferred cereal for fine white bread consumed by the wealthy.

When free-threshing wheat is processed the grain is easily separated from the ear by first threshing and then winnowing to remove small light weed seeds and the light chaff. The grain would then be coarse sieved to remove the larger chaff fragments and then fine sieved in a sieve which retains the grains to remove small weed seeds (Hillman 1981, Jones 1990). Hence the presence of chaff in the rich samples (138) and (142), suggests that the grain was produced nearby because this wheat is easily threshed to reduce the bulk before transport. This may therefore represent partly cleaned grain brought to the site with most of the seeds and chaff being removed by fine sieving. Some chaff and larger seeds remained to be removed before use of the grain. The cereal may have been burnt for a number of possible reasons if not burnt accidentally in a domestic context. It may have been burnt during parching the grain for storage or to facilitate milling, it could however have been spoiled which may not be apparent when charred. Charred cereal remains can originate from thatch, but the find here of abundant grains with few seeds make it unlikely that this is the source of these remains.

Unfortunately there is no evidence from the kiln or oven itself to suggest its function but such features could be used for a number of purposes such malting, parching grain for storage or to

facilitate milling. They may also have been used as baking ovens but could have been used for other purposes not connected with cereals. The other remains from the site did not contain sufficient evidence of germination to suggest malting was carried on here, although it would have been carried out somewhere in the vicinity to supply beer. The remains from the gully (142) near the kiln may be contemporary with the use of the kiln and may suggest processing of bread wheat, perhaps parching grain for storage or before milling. The presence of quite abundant bread wheat on the site suggests the use of the cereal to make bread. After milling into flour baking could have been carried out in a large oven to supply the wealthy people in the area.

The remaining samples, with the exception of sample (180), consist mainly of grains with few weed seeds and occasional chaff fragments and may represent waste from cereal consumption. The material being removed from hearths as domestic rubbish including grains spilled and burnt accidentally during food preparation or cooking. Sample (180) consists mainly of oats and large grasses and may represent animal fodder rather than oats for human consumption. The crop contains wet ground plants indicating the cultivation of poorly drained and oats will grow in these conditions. This differs from the bread wheat which does not contain such plants and is likely to have been grown on better land.

Conclusions

The sample from a feature of Roman date contained similar remains to the medieval samples. The main crop found in the medieval samples was bread wheat with some barley oats and occasional rye grains in the later samples. The bread wheat was identified from chaff (rachis) and the presence of chaff was thought to indicate nearby production of the cereal. The richest samples were interpreted as partly cleaned bread wheat crops with some of the chaff removed and few seeds present. The grain may have been burnt during processing, perhaps during parching for storage or before milling. The grain may have been part of a crop for use to make bread, and bread wheat was favoured for producing fine white bread for the wealthy. No evidence was found from the plant remains for the function of the kiln or oven although remains from nearby may suggest that it could have been used for parching grain for storage or before milling, or perhaps used as a bread oven, although other functions are possible. The other crops included barley, while occasional rye grains were insufficient evidence that this was grown as a crop here. A sample with mainly oats as possible fodder also contained plants suggesting that it was grown on wet ground, while the wheat was likely to have been autumn sown on better drained land. A few samples were thought to contain domestic waste from food preparation.

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Table 1. CHARRED PLANT REMAINS FROM SOUTH WITHAM, LINCOLNSHIRE .

Sample No.	**10**	**7**	**8**	**1**	**2**	**3**	**4**	**6**	
Date/phase	**RB**	**LS**		**Med**					
Context	**136**	**138**	**210**	**180**	**192**	**244**	**245**	**142**	
Feature type	**Pit**	**Hth**	**Pit**	**Pit**	**Pit**	**Pit**	**Kln**	**Gu**	
Cereal chaff									
Triticum aestivum s.l. rachis	-	15	-	2	-	1	-	3	Bread wheat
Triticum free-threshing rachis	-	89	-	1	-	-	-	11	Wheat free-threshing
Triticum sp. rachis	-	2	-	-	-	-	-	-	Wheat
Hordeum rachis	-	2	-	1	-	1	-	-	Barley
Cereal rachis	-	6	-	1	-	-	-	3	Cereal
Awns	-	+	-	-	-	-	-	-	Cereal barbs
Cereal culm node	-	13	-	7	-	2	-	1	Cereal straw frag.
Cereal grains									
Triticum free-threshing	28	319	6	6	23	29	7	133	Wheat free-threshing
Triticum sp(p)	23	66	2	-	5	6	2	31	Wheat
Triticum sp. tail-grain	-	10	-	-	-	-	-	19	Wheat
Triticum sp. germinated	-	4	-	-	-	-	-	-	Wheat
Hordeum vulgare L. hulled	1	84	1	1	-	-	-	16	Barley
H. vulgare L. hulled,twisted	-	-	-	-	-	7	-	5	Barley
Hordeum vulgare L.	4	-	3	-	14	15	-	6	Barley
Hordeum sp. tail grains	-	-	-	4	-	-	-	-	Barley
Horduem sp. germinated	-	6	-	-	-	-	-	1	Barley
Secale cereale L.	-	-	-	-	1cf	-	-	3	Rye
Avena sp.	-	13	-	43	3	1	-	10	Oat
Cereal grains	14	369	5	2	14	24	1	56	Cereal
Cereal/Poaceae	3	31	-	11	5	5	-	-	Cereal/Grass
Cereal embryos	-	2	-	-	-	-	-	4	Cereal embryos
Collected									
Corylus avellana L.	-	-	-	1	-	-	-	1	Hazel nutshell frag.
Wild plants									
Chenopodium album L.	-	1	-	-	-	-	-	-	Fat-hen
Chenopodium sp.	-	-	1	-	-	-	-	-	Goosefoots
Montia fontana L.	1	-	-	-	-	-	-	-	Blinks
Stellaria sp	-	-	-	-	-	-	1	-	Chickweed type
Agrostemma githago L.	-	-	-	1	-	-	-	1	Corn cockle
Agrostemma githago L. capsule	-	1	-	-	-	-	-	-	Corn cockle
Rumex sp	-	-	-	1	1	-	-	-	Docks
Thlaspi arvense L.	-	+	-	-	-	-	-	-	Field penny-cress
Polygonum sp.	-	-	-	1	-	-	-	-	Knotweeds
Vicia sp	1	-	-	-	-	-	-	-	Vetches
Vicia/Lathyrus	-	-	-	1	-	-	-	-	Vetch/Vetchling
Medicago sp	-	2	-	-	-	-	2	1	Medick
Medicago/Melilotus/Trifolium	-	-	-	-	-	-	1	-	Clover type
Apiaceae	-	-	-	-	-	-	-	3	Carrot family
Galium aparine L.	-	+	-	-	-	-	-	-	Cleavers
Plantago lanceolata L.	-	2	-	-	-	-	-	-	Ribwort plantain
Euphrasia/Odontites	-	8	-	-	-	-	-	3	Eyebright/Bartsia
Lithospermum arvense L.	-	2	-	-	-	-	-	-	Field Gromwell
Crepis sp.	-	-	-	-	-	-	-	3	Hawk's-beard
Anthemis cotula L.	-	17	1	3	-	-	-	29	Stinking Mayweed
Centaurea cyanus L.	-	1	-	1	-	-	-	-	Corn-flower
Centaurea sp.	-	2	-	1	-	-	-	-	Knapweeds
Asteraceae	-	-	1	2	-	-	-	-	Daisy family
Eleocharis sp.	-	-	-	21	-	-	-	-	Spike-rush

Carex sp	-	-	-	3	-	-	-	-	Sedges
Bromus hordeaceus/secalinus	-	14	-	4	-	-	-	3	Brome grass
Poaceae (large)	6	46	-	107	-	1	1	51	Grasses large
Poaceae (small)	2	3	-	6	-	-	-	4	Grasses
Indeterminate seeds	2	5	-	5	-	-	-	4	Indeterminate seeds
Culm fragment small	-	3	-	-	-	-	-	-	Grass stem
Woody bud small	-	1	-	1	-	-	-	-	Bud
TOTAL	85	1140	20	233	66	92	16	401	items = 2053
Vol sample	9.5	5.5	17	9	35	9	10	19.5	litres
Flot volume	45	400	8	260	7	34	7	60	mls
Part of flot sorted	all	12.5	all	all	all	all	all	25	%
items per litre of sample	8.9	1658	1.2	259	1.9	6.0	1.6	82	

Key: Remains are seeds in the broad sense unless stated.
Phases: RB = Roman period, LS + Late Saxon- 12th century, Med = medieval 1100/1150-1400 AD.
Hth = hearth/pit, Kln = kiln/oven, Gu = gully, frag = fragment, + = present in another part of the sample.

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