APPENDIX A

The Palaeo-environmental and Archaeological Evidence for Plant Husbandry and Cultivation in the Study Region

As with the faunal assemblages, and again for convenience, these sites and their botanical assemblages have been grouped according to their modern county, though again this is an artificial divide. The information presented here is also summarised in Tables 1-3. In addition to carbonised and/or waterlogged plant remains, other evidence such as the presence of querns is also included.

West Yorkshire (Table 1)

One of the better plant assemblages from the region came from the Iron Age and Romano-British site at Dalton Parlours. Unfortunately, samples from the Iron Age occupation do not appear to have been taken and/or processed, however, and the only information provided concerns a small number of selected Romano-British deposits. In these, spelt wheat was the most common species (as grain and glume bases), with bread wheat (as grain and rachis internodes), six-row hulled barley and oats, although the latter may have been the wild oat *Avena fatua* (Murray 1990: 190-192). Some deposits were probably residues of the crop cleaning process, suggested by high number of weed seeds, which were then burnt for fuel. In addition to weeds of crops and cultivated ground, other potentially edible plants included fat hen, brome (present in large amounts), dock/sorrel and nettles. Despite the large quantities of brome, Murray (1990: 193) felt that it was unlikely to have been deliberately cultivated.

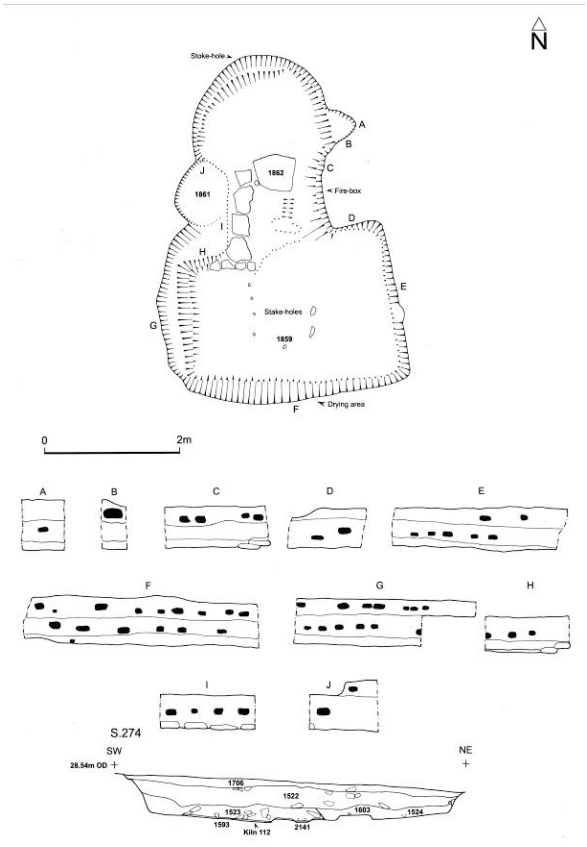
Pollen and waterlogged plant remains recovered from the Dalton Parlours well assemblage included wheat (*Triticum* spp.) and barley, and a seed of cultivated flax. Again, there were numerous weeds of cultivated ground (Bastow and Murray 1990: 263-266). The well also contained fat hen, Good King Henry, black bindweed and salad burnet that are all potential edible species. Interestingly, it also produced evidence of deadly nightshade (*Atropa belladonna*), henbane (*Hyoscyamus niger*), hemlock (*Conium maculatum*), purging flax (*Linum catharticum*) and self-heal

(*Prunella vulgaris*), plants commonly used in herbal medicines and/or poisons. It was felt that these were present as plants of disturbed and rough or abandoned ground, but this seems to be a highly unusual combination, and I believe they were linked to the other placed deposits within the well (see Chapter 11 and Appendix F). Some insect remains recovered from the well were potential crop pests, though not directly associated with cereals (Sudell 1990: 270). No conclusions were reached about potential cereal production at Dalton Parlours (but see below). Many corn-driers and ovens were excavated at the site, some from within Romano-British buildings, and seventy-seven saddle, beehive, lava and flat querns were recovered from Iron Age and Romano-British deposits (Buckley and Major 1990), which certainly implies the preparation and consumption of considerable amounts of cereals.

Several Iron Age and Romano-British sites excavated along the line of the M1-A1 Link Road Scheme also produced botanical remains. At Swillington Common South, charred plant remains included emmer, spelt wheat and some hulled barley, mostly from Enclosure C (Holden 2001a: 220-221). Barley rachis fragments and the virtual absence of weed seeds suggested that it was being stored or parched as whole ears of barley, possibly nearby. One saddle quern and a rubber stone were also recovered (Heslop 2001a). At Swillington Common Area A, Pit Group 3 comprised a series of features with clay linings, with remains of charred cereals in some. Pit 7506 was ^{14}C dated to 190 BC-AD 80 (Howell 2001: 65). This evidence suggests that these were storage pits, but similar features are extremely rare elsewhere in the study region. At Manor Farm, spelt, emmer and hulled barley were found in small quantities and one oat grain (Holden and Hastie 2001). At Parlington Hollins East, emmer, spelt, hulled barley and two oat grains were recovered. The high proportion of chaff found may indicate that it was a producer site (Young and Richardson 2001: 221-223). Fat hen and brome were two potential edible species represented at Parlington Hollins. Weeds of arable ground were present, including heath grass (*Sieglingia decumbens*), with its tendency to live on damp, base-rich soils suggesting the cultivation of heavier soils and perhaps also the use of ards in the past (Hillman 1981: 146). Nine beehive, lava and flat querns were also excavated (Heslop 2001a).

At the Roman Ridge, pollen analysis of a buried soil beneath the *agger* of the Roman road found small amounts of cereal pollen, but also evidence for a largely open, grassland landscape periodically disturbed, perhaps by ploughing (Long and Tipping 2001: 225). At Grim's Ditch South, waterlogged plant remains of early to middle Iron Age date included emmer, spelt and barley, and fat hen and black bindweed (Holden 2001b: 226), and there was some evidence of barley cultivation or handling at Grim's Ditch North (Carter, Bunting and Tipping 2001: 231). Overall, both Iron Age and Romano-British deposits excavated along the M1-A1 corridor suggested an open, cleared landscape maintained through agriculture, with evidence of arable cropping (Richardson 2001b: 248). In comparison with the Castleford fort and *vicus* assemblage (a 'consumer' site), Richardson suggested that the plant remains from Swillington Common, Parlington Hollins East and the earlier Dalton Parlours indicated that these were all 'producer' sites.

At Ferrybridge, a few grains of emmer, bread or spelt wheat, oats and barley grains, a single legume or Celtic bean, and two grape seeds were recovered from late Iron Age and Romano-British contexts in the pit alignment. Ditch deposits from the field system produced a few degraded grains of wheat and oats, and some wheat chaff (Alldritt 2005: 184). Some seeds of weeds of cultivated and waste ground were also found. However, more evidence came from the enclosures. Enclosures A-C produced some charred remains, mostly from Enclosure A, including emmer, bread or spelt wheat, oats and barley from cleaned crops, and a grape seed. Enclosure A produced a rotary quern, and Enclosure C a beehive quern (Heslop and Gaunt 2004b). Enclosure D was more productive, with most charred plant material coming from an excavated oven or corn drier (ibid.: 186). Emmer, bread or spelt wheat grains and some cereal chaff suggested that these were stored as semi-clean spikelets. There was also six-row hulled barley, whilst the low percentage of oats indicated it might be a residual weed of the other crops. Much of the grain had probably been fully processed prior to its introduction into the oven for parching or drying prior to storage, due to the absence of germinating grains that might have indicated malting for brewing purposes (cf. Reynolds and Langley 1979; van der Veen 1989). A large amount of brome seeds were recovered, though Alldritt (2005: 185) considered this to be a weed. Three quern fragments were also excavated from Enclosure D (Heslop and Gaunt 2004b).



Possible Romano-British corn-drier features from West Yorkshire sites. **Figure A.01. (top right).** *Oven flue 639 Structure F, Dalton Parlours. (Source: Tindall 1990: 59).* **Fig. A.02 (left)** *and* **Fig. A.03. (bottom right).** *Corn-drier 112 from Enclosure D, Ferrybridge. (Source: Martin 2005: 118-119).*

Other published West Yorkshire plant assemblages have been much smaller. At Apple Tree Close, Pontefract, carbonised plant remains were retrieved from the fills of two ovens, and included the glume bases of spelt wheat, probably a result of crop processing (Murray 2001: 23). Fifteen fragments of beehive and rotary querns were also found (Buckley 2001). At Moss Carr, Methley, charred cereal grains of wheat (*Triticum* spp.) were found at Site 2 (Richardson 2002: 37), along with possible brome (*Bromus* spp.), and a hazelnut fragment. Site 1 produced fragments of 12 saddle and beehive querns, and Site 2 pieces of 4 beehive querns (Heslop 2002).

At Garforth, barley, spelt (as glume bases and spikelet forks), six-row hulled barley some emmer and oats were recovered from four Romano-British contexts, including three corn driers. A small amount of arable weed seeds and chaff were recovered (Pearson 2000: 19), but there was no evidence of malting. Vetch was also found, and

two quern fragments (Thompson 2000). Because of the very large quantities of cereal grain, it was suggested that Garforth was a significant crop-producing site. At South Elmsall, a few charred grains of wheat and barley were recovered, and weed species associated with arable land (Richardson and Young 2001). There were many postholes of four-post structures that might have been for storing grain. Although most of the ^{14}C dates from this site suggested late Bronze Age occupation (including one of the four-post structures), some of these structures might have continued in use into the early Iron Age (as one ^{14}C date suggested). At Stile Hill, Colton, carbonised plant remains included six-row hulled barley, spelt and bread wheat, and possibly brome (*Bromus* spp.). The northern enclosure, thought to be of early Romano-British date, produced only bread wheat grains, but the underlying or adjacent late Iron Age enclosure produced both spelt and bread wheat (Bastow 1994). The southern enclosure contained a rectangular post-built structure that had both spelt and bread wheat grains, and a glume base of spelt, and this may have been a domestic building and/or a grain store. Non-carbonised remains included fat hen, black bindweed, nettle and blackberry, though some of these remains might have been modern contaminants. Cereals were being consumed, stored and possibly grown at or near Stile Hill.

The palaeo-environmental evidence from the A1 (M) excavations by Oxford Archaeology North was not published in time to form part of my detailed analysis, but it is worth briefly reviewing these results. At Site Q, ditch 10217 contained charred plant remains including wheat and barley ^{14}C dated to 360-50 BC (Druce 2007: 361), and a fill of pit 59 contained fat hen, sheep's sorrel and plantain from open and/or arable ground, though no cereal grains. At Site M, over 10 000 charred cereal grains were recovered from the fill of a four-post structure, which along with charred wood dated to 390-180 BC. The vast majority of cereal grains were barley, with some oats and wheat, and a limited amount of associated chaff and weed seeds, indicative of a processed crop (ibid.: 362). Cabbage, mustard or turnip seeds, vetches or beans and a stone of a plum or cherry were also found in this deposit. There is compelling contextual evidence to suggest that rather than being derived from an accidental fire at a storage structure, this deposit was in fact deliberately introduced into the posthole after the post had been removed. Another posthole from a second four-post structure at Site M contained some limited quantities of barley, and spelt glume bases. The

outer ring gully of roundhouse 126/1220 contained spelt wheat glume bases, fat hen and weeds of open or arable land such as clovers. Limited quantities of cereal grains recovered from other Site M contexts included emmer and spelt wheat, and barley.

Several sites along the A1 (M) road corridor produced small quantities of cereal remains dating to the Romano-British period, most notably at Site XX15 where a pit with traces of *in situ* burning contained some wheat, barley and oat grains, and spelt wheat glume bases and spikelet forks (Druce 2007: 367-368).

At Ledston, approximately sixty rock-cut pits were excavated out of a possible original total of around 285 (Roberts 2005), and were initially held to be the first clear evidence for Iron Age storage pits in northern England (e.g. Hartley and Fitts 1989: 9; Keighley 1981: 119-120), similar to those found in the south of England (Gent 1983; Reynolds 1979). But as Roberts (2005: 32-33) has noted, this is based on the supposition that northern pits must have been similar in function. At Ledston, there was no palaeo-environmental evidence concerning the contents and original function of the pits, and there are many differences in pit shape and location between those excavated at Ledston and those from southern sites. Other groups of pits have subsequently been found at Ferrybridge and Micklefield (Brown, Heawood, Howard-Davis and Lupton 2007: 93-97). The 'function' of many of these is also not clear. More detailed palaeo-environment and micromorphological analyses are clearly needed. At Ledston, more tangible evidence of crop processing and storage consisted of three quernstones (Sumpter, Heslop and Gaunt 2005), and at least two possible four-post structures were identified.

At Swillington Common South, the remains of at least four four-post structures were recorded (Howell 2001: 64-65), one ^{14}C dated to AD 85-382, and another to 409-207 BC. Both were to the east of the double-ditched trackway with the pronounced kink in its length. At the adjacent Temple Point, Colton site, which investigated the area to the west of the main trackway, at least fourteen four-post or five-post structures were recorded (Johnson 2002: 36-37, 2003a: 8, 2003b). These were dispersed across a relatively wide area, although five seem to have been concentrated around an earlier

Bronze Age round barrow. To date, only interim reports of the site have been produced, and although two of these structures were sampled for radiocarbon dating the results of this are not known. They have been ascribed an Iron Age date on the basis of their form. Charcoal from two posts of a single four-post structure found at Sharp Lane, Middleton in Leeds was ^{14}C dated to 770-410 BC and 790-420 BC(Davies 2006: 17). Hulled barley grains and chaff, emmer or einkhorn wheat grains, possible bread wheat and some oats were found in these postholes, along with wood charcoal (Carter 2006: 46; Simmons 2006: 43-44). These results are again not included in Table 1.

A large, T-shaped corn drier or malting oven was excavated at Womersley (Buckland and Dolby 1987), and at least two such structures were excavated during recent work at Wattle Syke near Wetherby (Chadwick pers. obv.) (Figs. A.04.-A.05.). Numerous beehive and flat quernstones and quern fragments were also been found during this recent work. Previous work at Wattle Syke found three four-post structures (Turner 1991a), and at least two more have been identified during the recent excavations. Querns have also been recovered from enclosures near Whitwood (Heslop and Gaunt 2004a) and at Methley (MAP 1996).

Figure A.04. (left) and **Fig. A.05. (right).** *Two T-shaped stone-lined Romano-British corn-driers recently excavated at Wattle Syke, W. Yorks. (Source: © AS WYAS).*

South Yorkshire (Table 2)

Spelt, emmer and hulled barley were recovered from Sutton Common in the 1987-1988 and 1992-1993 investigations (Boardman and Charles 1997: 248-249). Fat hen and brome were also present. The recent extensive excavations during 2001-2003 revealed intriguing details of early-middle Iron Age occupation. The larger, eastern enclosure was the setting for dozens of four and six post structures, and in this case it seems highly likely that many or all of these were granaries (Chapman 2003).

Some of the postpipes and postholes associated with these structures contained charred grain, whole spikelets and detached spikelet forks of barley, spelt and emmer, originally from a cleaned crop, and possibly the result of deliberate placed deposition (Hall and Kenward 2007b: 126; Van de Noort 2007a: 133; Van de Noort and Chapman 2007). There may have been a preference for the south-west post of each four-post structure for such placed deposits. It is not clear how many of these structures were in use at any one time, but their distribution in rows is notable, so this was grain storage on an impressive scale, far beyond the household level. The shrinkage of some grains may point to problems of storage, assuming that this did not indicate the deliberate germination of grain for malting and brewing. Barley was also frequent, possibly rye, and also bread wheat – although if the latter is the case, this would be a very early date for its cultivation and use. Some pit and ditch fills also contained charred spelt, emmer and barley grains and spikelets (Hall and Kenward 2007b: 129-130). Weed seeds were infrequent, but included black bindweed. Nineteen quern fragments were recovered in 2001-2003, with nine unstratified quern fragments found in 1992-1993 (Buckland et al. 1997; Watts 2007: 145). Many were saddle querns, and some were recovered from four-post structure postholes; the fortuitous reuse of stone fragments, and/or perhaps some form of symbolic referencing to different elements of agricultural processing. Some cereal pollen was detected in soil samples (Geary 2007: 64), but although there was a transition from a partially wooded to an open landscape during the inhabitation of the site, there was little direct evidence for clearance or cultivation. Arable production was probably not taking place in the immediate locale of Sutton Common.

In comparison, the waterlogged and charred cereal remains recovered from the late Iron Age and Romano-British contexts at Balby Carr near Doncaster have been miniscule, with only a few grains and spikelets of wheat, probably emmer or spelt, and a small fragment of possible oat (*Avena* spp.), though this could be a wild species (Alldritt 2006; Hall, Kenward, Carrott, Mant and Gardner 2005). Blackberry and raspberry seeds were also recovered. Some pollen analysis has detected a small but consistent record of cereal cultivation, though in the general rather than the immediate area (Greig 2005: 13). Most plant species seem to have been those inhabiting both dry and damp grasslands, alder carr, hedges and water filled ditches. Only three quern fragments have been recovered (Heslop 2005). This has important implications for understanding the likely character of occupation at Balby Carr (see discussion below).

At Billingley Drive, Thurnscoe, over 90% of all the charred grain recovered was wheat, mostly unidentifiable to species, but with some spelt and emmer, although a small number of rounded grains were from free threshing bread wheat. There was also some six-row hulled barley (6%), and even less oats and rye (Giorgi 2004: 64, 68). It was not clear if the oats were cultivated, or wild. Chaff was present in many samples, but especially those from an oven or corn drier (Fig. A.06), and consisted primarily of wheat glume bases and spikelet forks. There were also charred seeds of vetch or pea, and charred hazelnut shells. Wild species included weeds of disturbed and/or cultivated ground, with cleavers, an autumn germinating weed, indicating autumn sowing, probably of spelt. Possible other edible species were sorrel, brome and docks. Some of the grains from the oven or corn drier had germinated, but it was unclear if this was deliberate as part of malting (ibid.: 72). The structure might have been used for both parching and drying grain before storage or milling, and for malting. The cereal remains seemed to satisfy the criteria for a producer settlement.

At Barnburgh Hall, one deposit from a Romano-British pit fill contained mostly cleaned grain of unidentifiable wheat (*Triticum* spp.), though some of this was likely to have been spelt, with no chaff (Young and Alldritt 2005). Some barley and rye grains were identified as well. At High Street, Shafton, the vast majority of cereal grains recovered were from two ovens and their secondary fills. Most identifiable grain was emmer, with some spelt and six-row hulled barley. There were quite large

amounts of chaff, with glume bases from wheat and rachis internodes from barley (Young 2001). There were also many weed seeds of species associated with cultivated and/or disturbed land, but also black bindweed, brome, and legumes that might have been pea, Celtic bean or vetch. Fat hen was recorded in significant quantities, nearly as frequent as grain. The relatively large amounts of chaff and weed seeds suggested the enclosure could be a producer site, although no querns were excavated, and both emmer and spelt could have been imported and stored when only partly processed. Some pits and four-post structures were excavated on the site (Burgess 2001).

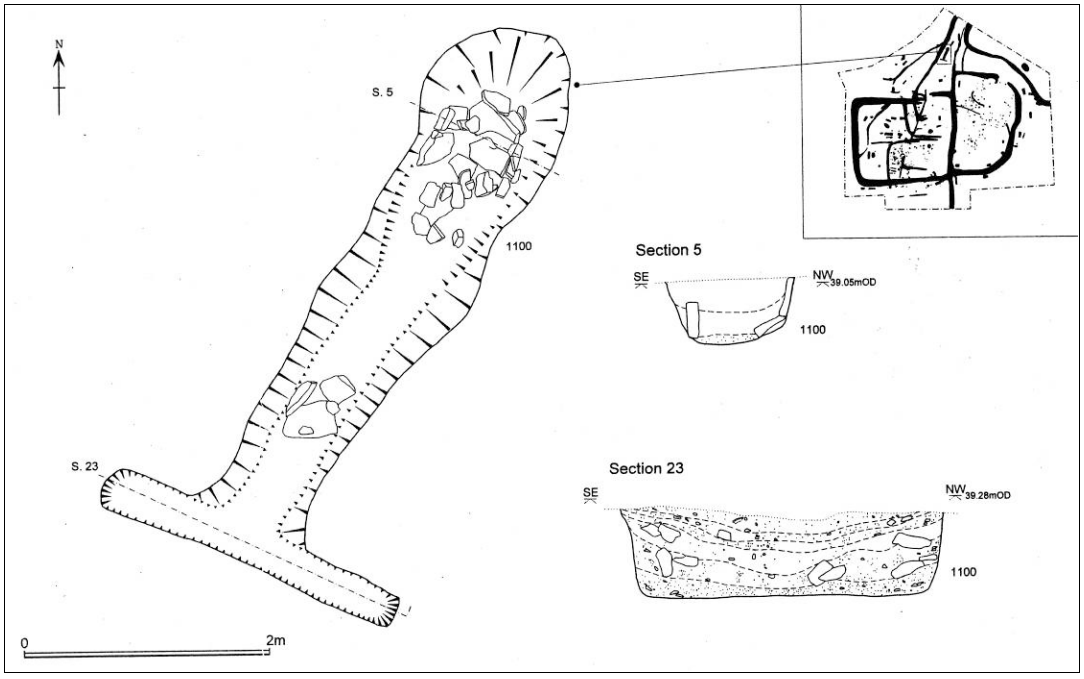


Figure A.06. *The T-shaped corn-drier and/or malting oven excavated at Billingley Drive, Thurnscoe, S. Yorks., probably in use during the second or early third centuries AD. (Source: Neal and Fraser 2004: 20).*

Other sites have produced only minimal remains. At Scawthorpe, excavation of a double ditched trackway and an associated enclosure produced some barley grains and emmer chaff, brome, and a seed of pea or vetch (Akeret et al. 2004: 32-33). At Topham Farm, Sykehouse, some probable six-row hulled barley grains were found in association with the Structure 7 roundhouse, and no weeds or chaff were recovered. A single oat grain came from the enigmatic Structure 5 (Richardson 2003: 26). Again, this lack of evidence of evidence for cereal processing may be significant. Possibly because of the Sherwood Sandstone geology and the acidic sands and gravel soils,

few palaeo-environmental remains have ever been recovered from 'brickwork' field sites. At West Moor Park, Armthorpe, a single chaff fragment and a few poorly preserved cereal grains were found, of which only some could be identified as wheat (*Triticum* spp.), but not to species (Richardson 2001d), although at the West Moor Park II site small amounts of barley, oats and wheat grains were recorded, some from possible oven features (Alldritt 2007: 58). The wheat probably consisted of spelt and bread wheat. Spelt, emmer, oats and chaff fragments were identified at Junction 4, Armthorpe, in addition to fat hen, blackberry and elderberry (Huckerby 2006: 26). Rounded possible oven bases and keyhole-shaped 'kilns' were found during other investigations at Armthorpe (Chadwick and Richardson 2007; Hughes 2006; Richardson 2001c; Rosenberg and Williams 1996), in addition to 'figure of eight' features, but their exact function is unknown. Keyhole-shaped features were excavated at Holme Hall quarry near Stainton (Bevan 2006: 29; O'Neill in prep.), where it was suggested that they were bread ovens (Fig. A.08). These are unlike the large, stone-lined corn drying/malting ovens that have been excavated at sites such as Billingley Drive and Womersley (Buckland and Dolby 1987; Fraser and Neal 2004).

Figure A.07. (left). *Romano-British oven, flue or related feature 1253 excavated at West Moor Park II, Armthorpe, S. Yorks. (Source: Chadwick and Richardson 2007, plate 4).* **Fig. A.08. (right).** *Richard O'Neill of ARCUS (right) and Pete Robinson of Doncaster Museum (left) examine an excavated keyhole-shaped Romano-British oven or kiln at Holme Hall Quarry near Stainton, S. Yorks. (Source: Bevan 2006: 29).*

At Red House, Adwick-le-Street, an Iron Age and Romano-British enclosure (Area 7/Enclosure E1) produced only two unidentified charred cereal grains, but six-row hulled barley, spelt, oat/rye and other indeterminate cereal grains were recovered from trackway ditches and Romano-British enclosures (Deighton 2002: 28). Fat hen was also noted, and a small pulse (*Leguminosae*). Weeds included species of arable or disturbed ground. Some of the deposits seemed to be cleaned grain, such as one from Area 2, but others contained chaff and were the by-products of processing (from the watching brief area associated with a trackway). Eight querns or quern fragments were excavated, five of these from enclosure E1 Area 7 (Upson-Smith 2002: 23).

Just east of South Yorkshire at Sandtoft in South Humberside (SE 7330 0980), near the confluence of the Rivers Don and Idle, two adjoining rectangular enclosures were excavated, 150m west of a possible small Roman fort. Although no internal features survived deep ploughing, the southern ditch of the one enclosure produced preserved insect remains likely to be of Romano-British date (Samuels and Buckland 1978: 67). Two insect pests of stored grain were identified – the saw-toothed grain beetle (*Oryzaephilus surinamensis*), and the grain weevil (*Sitophilus granarius*). The latter is flightless, requires human buildings in order to survive, and was almost certainly introduced into Britain by the Romans via grain shipments (Buckland 1978a). Six pits were also identified that could have been ploughed-out bases of corn driers (Samuels and Buckland 1978: 68). Other more circumstantial evidence for crop husbandry or processing in South Yorkshire includes a possible linear corn drier excavated in 1966 at Kiveton Park, east of Sheffield (Radley and Plant 1969: 158-159).

A recent assessment report for excavations at Roebuck Hill, Jump, Barnsley noted the presence of small quantities of emmer and spelt wheat, barley, oats and rye grains, and agricultural weeds including black bindweed, cleavers, speedwell, sheep's sorrel and knotweed (Schmidl, Jacques and Gardner 2007: 57-58). Fragments of two beehive querns and a saddle quern were also recovered. Very small quantities of wheat, oats and brome grains and chaff were found at St Wilfred's Road, Cantley (Carrott and Gardner 2007), in addition to hazelnut shells, two rotary quern fragments (one of lava) and one beehive quern base. The results of these more recent investigations are not included in Table 2, however.

Nottinghamshire (Table 3)

Palaeo-environmental analyses identified six-row hulled barley, rye, spelt, bread wheat and possibly emmer from Dunston's Clump, though only spelt 'occurred in quantity', and some of it might have been stored as whole spikelets (Jones 1987: 58). Oat grains present may have been a wild species. Weed seeds associated with arable and/or disturbed ground were found too. In the rectangular Structure 1 in Phase II, one postpipe produced cleaned rye grains, whilst another contained almost entirely weed seeds, indicating processing within or around this building. In Phase III Structures 2 and 3 had postpipes that contained predominantly barley and/or spelt chaff, with only a few weed seeds. This may have been the remains of fodder (ibid.: 59). Another interesting charred plant deposit came from pit 1066, which consisted mostly of wheat grains with some rye and oats. Associated with the remains of a wooden box and carbonised basketry, although interpreted as accidental charring this may have formed part of a placed deposit (see Appendix F). Overall, it was concluded that there was "…ample evidence for the use of fully cleaned cereal products and by-products at Dunston's Clump and for the final processing of cereals at the site" (ibid.: 60), although this did not necessarily mean that there was local cultivation.

At Menagerie Wood, a few badly preserved barley and oat grains were recovered, together with a few fragments of straw and chaff. Vetch, sorrel and dandelion were also recorded, in addition to weeds of arable ground (Garton, Hunt, Jenkinson and Leary 1988: 28). Two grape pips were also found; and three quern fragments. In contrast, no plant remains were retrieved from salvage excavations at Chainbridge Lane, Lound, or at Wild Goose Cottage, although at the latter site a complete quernstone and two fragments were retrieved from the backfill of the well construction cut (Garton 1995: 38). A roughly manufactured quern was found at Bellmoor Quarry near Retford (Cox and Hurcombe 1989: 170). At Gamston, the most abundant cereal remains from later Iron Age deposits were spelt and six-row hulled barley present as grains, spikelet forks and rachis fragments, with a single glume base of possible emmer (Moffett 1992: 79). There was also a poorly preserved pea or bean, fat hen, vetch, one turnip/black mustard grain, and a charred hazelnut shell. The weed species included those of disturbed and/or arable ground, but were mainly grasses. Some of the plant remains from pits and gullies probably represented deliberate

backfilling episodes, one of these possibly a place deposit (see Chapter 11 and Appendix F). Four saddle querns, four rubbers and at least four beehive querns were also recorded at Gamston as complete or fragmented finds (Wright and Firman 1992).

At Aslockton, only one sample from an Iron Age pit was analysed, but this produced almost as much charred material as all of the samples from Gamston (Moffett 1993: 3). Spelt and hulled barley grains and chaff were identified, possibly from semi-cleaned spikelets, and although emmer might have been present, most of the grain was too distorted by charring to be more closely identified. Brome, fat hen and weeds of disturbed or cultivated ground were also recorded. A Romano-British context also produced some unidentified wheat, barley and weed seeds. At Bottom Osiers, Gonalston, cereal pollen included significant quantities of wheat/barley and rye, and there was a single pollen grain of flax (Scaife 1999). There was also pollen evidence for weeds of disturbed and/or cultivated ground. However, local cultivation cannot be assumed for the cereals, as it may have been derived from secondary sources such as winnowing or threshing of imported grain, and/or from human and animal faeces.

Figure A.09. *Feature excavated within the enclosure at Gonalston Lane, Hoveringham Quarry, Notts., one of a series consisting of stone-lined pits connected to flues, and with traces of possible fired clay superstructures. These were possibly domestic ovens. (Source: Knight and Elliott forthcoming).*

At Scrooby Top there was little charred plant material, but some spelt was identified, mostly as glume bases, and six-row hulled barley grain. Emmer, bread wheat and rye were also present at very low levels (Bogaard 2000: 182-183). A comparatively large number of flax seeds were found, with the relatively small size of the seeds suggesting it was grown for its fibres, and nearly 100 elderberry seeds suggest that these were deliberately collected. Fat hen was also present, and a variety of arable weeds, including species that germinated mostly in the autumn, implying autumn sowing of winter crops of spelt or barley. Only late-stage crop processing was indicated due to the absence of large quantities of straw or chaff, but this does not rule out local cultivation, especially as many of the weeds are associated with more acid soils (ibid.: 185). Only one quern fragment was recovered (Davies 2000: 180).

Excavations of an enclosure at Raymoth Lane, Worksop, recovered charred grains of spelt and emmer, hulled barley, one possible rye grain, and a few grains of possible bread wheat and einkorn (Rackham and Martin 2004: 56). The latter would be extremely unusual, although it is possible that some einkorn survived as a 'weed' within other wheat crops. Some wheat chaff was found, but it was mostly cleaned grain that may have been accidentally burnt whilst parching or drying it for milling or storage. Legume remains included pea, vetch or Celtic bean, and there were also fragments of hazelnut, blackberry and elder seeds, and a fruit stone (ibid.: 72). Weed seeds included black bindweed, and arable or disturbed ground species. A second century AD kiln deposit consisted mostly of weed seeds with some barley, probably a cleaning residue that was being burnt for fuel. Cleaned grain was thus being stored and consumed on site, but there was little evidence for early stages of crop processing.

Evidence for cereals and other economic or socially important plant species

The evidence presented above has been summarised in Tables 1-3 following. This data only includes those reports held by SMRs prior to May 2007, and does not include the results from sites such as Jump in South Yorkshire.

Table 1

West Yorks.

Site name	Cereal crops								Other useful plants	Evidence of prod.	Crop weeds	Grain pests	Querns	Other evidence
	Einkorn	Emmer	Spelt	Bread	Barley	Oats	Rye	Unident.						
Dalton Parlours	-	-	√	√	√	√	-	-	Fat hen Nettle Brome	-	√	?	2 saddle 37 beehive 2 lava 36 R-B	-
Ledston	-	-	-	-	-	-	-	-	-	-	-	-	3 querns	2 4-post structures
Swillington Common South	-	√	√	-	√	-	-	-	Brome	-	-	-	1 quern 1 rubber	-
Manor Farm	-	√	√	-	√	√	-	-		-	-	-		-
Parlington Hollins East	-	√	√	-	√	√	-	-	Fat hen Brome	√	√	-	9 querns	-
Grim's Ditch	-	√	√	-	√	-	-	-	Fat hen Black bindweed	-	√	-		-
Ferrybridge Enc. A-C	-	√	√	?	√	√	-	-	Grape	-	√		1 (A) 1 (C)	-
Enc. D	-	√	√	?	√	√	-	-	Sorrell Brome	-	√		-	Corn drier
Apple Tree Close	-	-	√	-	-	-	-	-	-	-	-		15 querns	2 corn driers
Moss Carr Methley	-	-	-	-	-	-	-	Wheat sp.	Brome Hazelnut	-	-	-	3 saddle 13 beehives	-
Garforth	-	√	-	√	√	-	-	-	-	√	√	-	-	3 corn driers

South Elmsall	-	-	-	-	√	-	-	Wheat sp.	-	-	√	-	4-post structures
Stile Hill,Colton	-	-	√	√	√	-	-	-	Fat hen Blackberry Brome Nettle Black bindweed	-	√	-	-

Table 2

South Yorks.	Cereal crops							Other useful plants	Evidence of prod.	Crop weeds	Grain pests	Querns	Other evidence
Site name	Einkorn	Emmer	Spelt	Bread	Barley	Oats	Rye	Unident.					
Sutton Common	-	√	√	?	√	-	?	-	-	-	-	3 frags.	4-post structures
Billingley Drive, Thurnscoe	-	√	√	√	√	√	√	-	Pea Vetch Brome Hazelnut Sorrel	√	-	-	Corn drier
Barnburgh Hall	-	-	-	-	√	-	√	Wheat sp.	-	-	-	-	-
High Street, Shafton	-	√	√	-	√	-	-	-	Celtic bean/vetch Fat hen Brome	?	√	-	-	4-post structures Pits?
Scawthorpe	-	√	-	-	√	-	-	-	Pea/vetch Brome	-	-	-	-
Red House Farm, Adwick-le-Street	-	-	√	-	√	?	?	Oats/rye	Fat hen 'Pulse'	-	√	8 querns	Plough furrows micromorph.
West Moor Park, Armthorpe	-	-	-	-	-	-	-	Wheat sp.	-	-	-	-	Poss. corn driers/ovens
West Moor Park II, Armthorpe	-	-	√	√	√	√	-	-	Black bindweed	-	√	-	2 frags. beehive 1 stone rubber	Poss. corn driers/ovens
Junction4, Armthorpe	-	√	√	-	-	√	-	-	Fat hen Blackberry Elderberry	?	√	-	-	Poss. corn driers/ovens
Balby Carr	-	-	-	-	-	√	-	Wheat sp.	-	-	-	-	3 querns	Cereal pollen
Topham Farm, Sykehouse	-	-	-	-	√	√	-	-	-	-	-	-	-	-

Table 3

Notts.	Cereal crops								Other useful plants	Evidence of prod.	Crop weeds	Grain pests	Querns	Other evidence
Site name	Einkorn	Emmer	Spelt	Bread	Barley	Oats	Rye	Unident.						
Dunston's Clump	-	?	√	√	√	√	√	-	Sorrel Flax	-	√	-	1 grinding stone 3 querns	
Wild Goose Cottage	-	-	-	-	-	-	-	-	-	-	-	-	1 quern 2 quern frags.	-
Menagerie Wood	-	-	-	-	√	√	-	-	Grape Vetch Dandelion Sorrel	-	√	-	3 frags.	-
Gamston	-	?	√	-	√	-	-	-	Pea/bean Vetch Fat hen Hazelnut Turnip/ Mustard	-	√	-	4 saddle 4 rubbers 4 beehive	-
Aslockton	-	?	√	-	√	-	-	-	Fat hen Brome	-	√	-	-	-
Scrooby Top	-	√	√	√	√	-	√	-	Fat hen Elderberries Flax	-	√	-	1 frag.	-
Raymoth Lane, Worksop	√	√	√	?	-	-	?	-	Celtic bean Pea/vetch Blackberry Hazelnuts Elder Black bindweed	-	-	-	-	-