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Summary

Bulk soil samples from the Iron-Age - Romano-British site at Catcote, Cleveland were analysed for their carbonised plant remains. Wheat and barley were the most commonly recovered cereals although a few oat grains were present, these latter are considered to have been present as weeds not crops. The barley was hulled and, at least some, six-rowed. Measurements of wheat glume bases suggest that most of the wheat was spelt but that emmer was also used on this site. A few bread-wheat grains were also found. All of the samples from Area E, Iron-Age houses and Romano-British ditch features, had very little present in them. The few seeds in them simply indicate the species of food plants being used in the vicinity. Whilst 13 samples from Area F, a complex sequence of ditches and a rectangular Romano-style building, also showed only this "background" activity, 5 contexts were rich in seeds. They gave evidence of storage of barley grain and parching remnants from wheat. Although relatively few seeds were recovered from Catcote it is important to continue investigations from such sites for comparison with the better known Roman military sites from the north of England. Further investigations from native settlements should give a broader Picture of the whole economy of the period.

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Carbonised plant remains from Catcote, Hartlepool

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INTRODUCTION AND METHODS:

Bulk soil samples were taken from the ditch and gulley fills excavated during investigations of the Iron-Age - Roman site known as Catcote, near Hartlepool, Cleveland.

The site was not waterlogged, indeed the soil was predominantly sandy loam and freely draining although there were some patches of clay. Only carbonised material was therefore expected to be preserved. Consequently the samples were air-dried and then floated over 500 micron mesh, the residue being washed through 1mm. Following drying, the residue was hand-sorted for animal bones and plant remains; the floats were microscopically examined for carbonised plant remains. These were identified by comparison with modern reference material held in the Biological Laboratory. Plant names follow Clapham, Tutin and Moore (1987).

RESULTS:

Table 1 lists the contextual information of the samples and Table 2 the botanical results.

Although the plant remains were all carbonised a number of the cereal grains had an iron-rich coating over them, and may have been partially mineralised, probably due to local soil conditions. This resulted in their not floating and emphasises the importance of checking the residues for identifiable material. Some weed seeds (<1mm) may have been lost for this reason since the residue was only sieved to 1mm. However, both small weed seeds and chaff were abundant in the floats of several samples in which approximately half of the cereal grains had remained in the residue, suggesting that loss of smaller items is not critical.

In general, preservation was not good with many of the cereal grains being broken or abraded. This may be due simply to the sandy soil or may reflect some post-depositional changes such as material being moved around by water in the ditches.

Twenty seven samples were analysed. Five of these had no plant material in them; these were from contexts 07 (sample 1), 06 (4), 83 (16), 132 (25) and 13 (15). A further 17 had between 1 and 19 seeds in total and little information is gained from them. The remaining 5 had between 95 and 244 seeds in total and discussion will concentrate upon these.

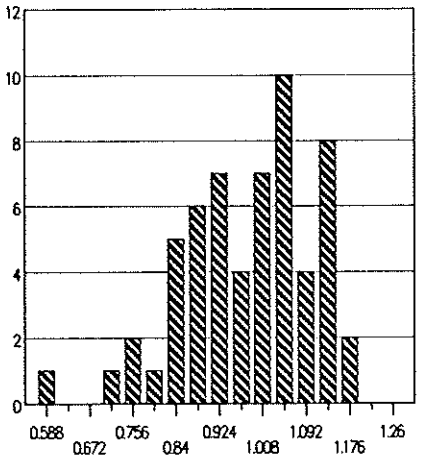
The data were sorted into three groups of plant, namely cereal grain, cereal chaff and weed seeds. The totals for each of these groups in each sample with more than 95 seeds overall are presented in Figure 1.

DISCUSSION AND CONCLUSIONS:

Wheat and barley were the most commonly recovered cereal grains although oat grains were occasionally found. A few of the wheat caryopses were identifiable as either bread wheat or another broad, hexaploid wheat. It is always difficult to identify wheat grains reliably to species and more information may be gained from looking at the chaff fragments. Five of the wheat glume bases had clear morphological characteristics of *Triticum spelta* (spelt) with several well-defined veins showing. The majority (83), however, had neither these well-defined veins nor the strong primary keel which is characteristic of emmer (*T. dicoccon*). Figure 2 below presents the measurements of all the glume bases.

Helbaek (1952) gives the size range of glume bases for spelt (0.91 - 1.52mm) and emmer (0.61 - 0.95). The majority of the glume bases can be seen to lie clearly within the range for spelt. There are some small ones definitely within the emmer range and thirteen in the overlap. It is suggested that most of the wheat present was spelt but that both emmer and bread-wheat were also being used. This is accord with similarly dated dates from the region (eg. Thorpe Thewles - van der Veen in Heslop, (1987); Annetwell Street, Carlisle - Huntley (1989)).

Figure 2: Triticum glume base widths



The barley grains were all hulled when it was possible to determine this since preservation was generally not good. Some of the grains showed the twisted embryo characteristic of *Hordeum vulgare* and, therefore, at least some of the crop was the six-rowed barley. None of the grains showed any evidence of having germinated. Very little barley chaff was recovered.

Oats were present but it is not possible to determine whether they were from the cultivated (*Avena sativa/strigosa*) or wild (*A. fatua*) species since no floret bases were found. Given the overall low numbers of oat it is suggested that they were the wild species growing as a weed amongst other crops.

One seed of the pea (*Pisum sativum*) was found, but no evidence of other food plants.

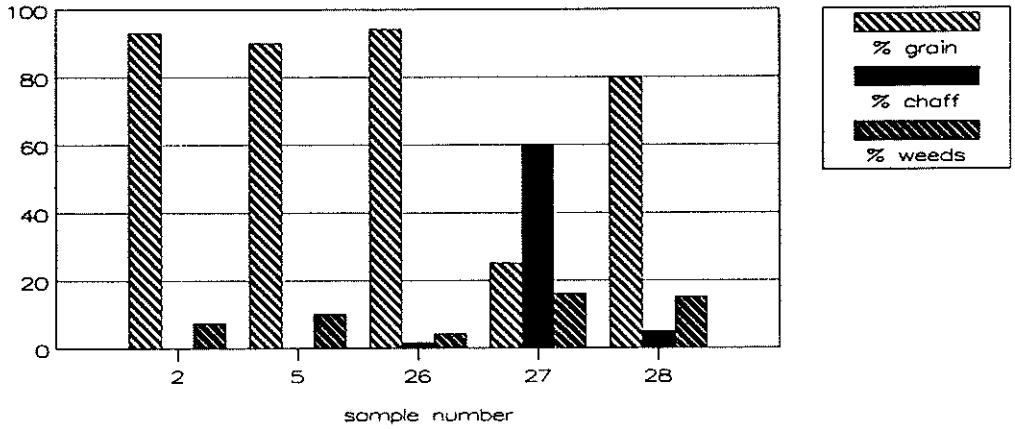
The remaining seeds were all from plants of disturbed or cultivated ground with very few characteristic of other vegetation types. This suggests that the carbonised material largely represents human activities in the area rather than the local, natural vegetation.

Of the five samples with reasonable numbers of seeds in them, four had largely cereal grain present (Figure 1) indicating fully processed crops. The fifth had predominantly chaff remains and this

probably indicates the residue from crop processing. Weed seeds were not abundant in any sample.

Figure 1: Seed-type proportions

(samples with >95 seeds)



Turning to the archaeological information available, nothing may be said about Area D which had only one sample from it analysed, and there were no plant remains identifiable in that.

Eight samples were analysed from phases 1 and 2 of Area E. They were associated with the Iron-Age houses and the Romano-British ditches. They had very little material present which could indicate that the features were kept clean during use/occupation. Alternatively material may not have survived. There is evidence of both cereals and peas being used. The low numbers of seeds are typical of many contexts and simply indicate the various food plants which were being used in the vicinity; this assemblage is often called the "background" flora of a site and varies in quantity and composition from site to site.

Thirteen of the samples from Area F fall into this "background" category but the remaining five have reasonable amounts of seeds present:

Sample number	2	5	26	27	28
Context number	56	55	151	75	120
Volume floated (litres)	1	11	27	22	26
Seeds per litre	95	17	9	7.4	5.5
Excavation area	F	F	F	F	F
Cerealia undiff.	66	103	13	10	58
Hordeum indet.	9	33		11	12
Triticum sp(p). grain	13	29	7	15	33
Avena grain		3		4	7
Hordeum hulled			183		2
Hordeum straight hulled			8		
Hordeum twisted hulled			13		
Triticum (hexaploid)			3		2
Triticum aestivum grain			3		1
Culm nodes			1	1	
Hordeum rachis internode			1	2	
Triticum glume base			2	78	3
Triticum spelta glume				1	4
Triticum floret base				15	
Pisum sativum					
Bromus sp(p). grain		4	4	12	12
Chenopodiaceae undiff.	1	1		1	1
Legume <4mm	1	2	2	2	
Chenopodium album		2		1	
Galium aparine		2	1		
Sieglingia decumbens					
Ranunculus repens-type				1	
Stellaria media			1		
Trifolium sp(p).					
Arrhenatherum elatius - tuber					
Carex (trigonous)				2	
Caryophyllaceae undiff	1				
Gramineae undiff.	1	1	2	4	4
Polygonum aviculare	1	3			
Polygonum periscaria	2				1
Rumex acetosella		2		1	1
Rumex obtusifolius-type		2			2
Plantago lanceolata					
Polygonaceae undiff.					
Fallopia convolvulus				1	
Urtica dioica				1	1
Grain	88	168	230	40	115
Chaff			4	97	7
Weeds	7	19	10	26	22
Total	95	187	244	163	144
grain %	93	90	94	25	80
chaff %			1.6	60	4.9
weeds %	7.4	10	4.1	16	15

Context 56 (sample 2) is from phase 4 and consists of masking material or Medieval ploughsoil. It has a very large quantity of seeds

present (95 per litre) which is unlikely for a soil. The seed concentration implies that they were either concentrated in the soil for some reason or the material was a spread or dump of burnt material. They were largely unidentifiable cereal grains with a few weed seeds from traditional arable weed plants. No chaff was recovered.

Context 55 (sample 5) is the fill of gulley 49 and, botanically, is similar to context although it has more barley.

Context 151 (sample 26) is the fill of post-hole 150 near to the north-west corner of a Romano-British building. Its contents were more or less pure hulled barley and this could indicate that the building was a local grain store at the time of burning.

Context 75 (sample 27) was from the fill of ditch 84. Although cereal grains were present in this sample, it had mainly chaff fragments, in the form of wheat glume bases. Their presence in the carbonised state indicates that a cereal crop was being parched in the near vicinity; this was done to remove the tough glumes prior to grinding the grain. The fact that they are part of a ditch fill probably indicates that this was a convenient place to dispose rubbish.

Context 120 (sample 28) is from a gulley running through the same Romano-British house from which context 151 above was taken. Both were from phase 2 features and are therefore considered contemporary by the archaeologists. The botanical material was less well preserved in the gulley which probably relates to post-depositional processes. Otherwise, the two samples are very similar botanically.

In conclusion, most of the botanical remains recovered were from contexts in Area F. Area E is considered to show low level "background" activity only and that crop processing and storage activities were not being carried out in this part of the site. The richest contexts are in the Romano-British building in Area F with a post-hole demonstrating the best preserved material, predominantly hulled barley. It is suggested that this building was used, at least in part, as a store although the material could represent one household's store. This is likely to have been the function immediately prior to burning.

One ditch fill had considerable amounts of wheat chaff in it indicating that some crop processing was being carried out on-site. The presence of this material in a ditch suggests rubbish disposal rather than the site of parching.

Barley was the most abundant cereal grain recovered but wheat was also common. From measurements of the wheat chaff it is suggested that largely spelt but some emmer were being used. The only weed seeds recovered were from the expected arable weeds, reinforcing the suggestion that carbonised plant material largely represents usage of plants rather than natural vegetation.

Although relatively few seeds have been recovered from this site it is important to continue investigating such sites from the environmental point of view. Most material from the north of England of this period is associated with Roman military sites and little is known about the native settlements. Where the Romans obtained the vast amount of cereal grain that they must have consumed is a question which cannot be totally addressed until we have native sites and data for comparison.

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Helbaek, H. (1952) Early crop plants in southern England. Proc. Prehist. Soc.

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Table 1: Sample details, Catcote (CAT87)

sample	context	grid	period	volume (l)	feature
1	7	D	c.R-B	5	fill of gulley 58, phase II.
3	45	E	phase 1	18	fill of posthole 09, phase 1, building III
4	6	E	phase 4	25	layer sealing phases 1 to 3. Phase 4. ?R-B
15	47	E		8	fill of post hole 46
16	83	E	phase 1	38	fill of hollow 82, phase 1/2/3
22	122	E	phase 2	27	fill of gulley 121, phase 2/3
23	114	E	phase 2	28	fill of gulley 115, phase 2/3
24	150	E	phase	32	fill of gulley 150, phase 2/3
25	132	E	phase 1	0.1	fill of posthole 131, phase 1/2/3
2	56	F	phase 4	1	masking material
5	55	F	phase 1	11	fill of gulley 49
6	57	F	phase 1	29	fill of ditch 94
7	22	F	phase 1	28	fill of ditch 09
8	21	F	phase 1	27	fill of ditch 11
9	26	F	phase 1	4	fill of ditch 08
10	17	F	phase 1	37	fill of ditch 05
11	38	F	phase 1	17	fill of gulley 52
12	34	F	phase 1	31	fill of gulley 51
13	74	F	phase 1	24	fill of ditch 11
14	46	F	phase 1	20	fill of gulley 47
17	85	F	phase 1	2	fill of gulley 99
18	24	F	phase 1	31	fill of ditch 23
20	121	F	phase 3	32	fill of gulley 118
21	125	F	phase 2	2	charcoal fill of gulley 119
26	151	F	phase 2	27	fill of posthole 150
27	75	F	phase 1	22	fill of ditch 84
28	120	F	phase 2	26	fill of gulley of R-B house, 118

Table 2: Hartlepool Catcote (CAT87)

Sample number	03	22	23	24	02	05	06	07	08	09	10	11	12	13	14	17	18	20	21	26	27	28
Context number	45	122	114	150	56	55	57	22	21	26	17	38	34	74	46	85	24	121	125	151	75	120
Volume floated (litres)	18	22	28	32	1	11	29	28	27	4	37	17	31	24	20	2	31	32	2	27	22	26
Seeds per litre	0.06	0.2	0.07	0.1	95	17	0.5	0.1	0.07	1.8	0.1	0.3	0.1	0.2	0.2	2.5	0.1	0.6	0.5	9	7.4	5.5
Excavation area	E	E	E	E	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Cerealia undiff.		3		3	66	103		1			3			3			1	4		13	10	58
Hordeum indet.					9	33	7	1				1			1	1	1	5			11	12
Triticum sp(p). grain			1		13	29	7										1		1	7	15	33
Avena grain						3	1				1							2			4	7
Hordeum hulled													1	1				5		183		2
Hordeum straight hulled																		3		8		
Hordeum twisted hulled																				13		
Triticum (hexaploid)																				3		2
Triticum aestivum grain																				3		1
Culm nodes												1								1	1	
Hordeum rachis internode																				1	2	
Triticum glume base																				2	78	3
Triticum spelta glume																					1	4
Triticum floret base																					15	
Pisum sativum				1																		
Bromus sp(p). grain						4			1			1								4	12	12
Chenopodiaceae undiff.					1	1			1							3					1	1
Legume <4mm		1	1		1	2		1							1					2	2	
Chenopodium album						2							1								1	
Galium aparine						2		1				1								1		
Sieglingia decumbens										2												
Ranunculus repens-type													1								1	
Stellaria media													1							1		
Trifolium sp(p).															1							
Arrhenatherum elatius - tuber																1						
Carex (trigonous)																					2	
Caryophyllaceae undiff					1																	
Gramineae undiff.					1	1				3					1					2	4	4
Polygonum aviculare					1	3																
Polygonum persicaria					2																	1
Rumex acetosella	1					2						1									1	1
Rumex obtusifolius-type						2																2
Plantago lanceolata										1												
Polygonaceae undiff.										1												
Fallopia convolvulus																					1	
Urtica dioica																					1	1
Total seeds	1	4	2	4	95	187	15	4	2	7	4	5	4	4	4	5	3	19	1	244	163	144
Grain		3	1	3	88	168	15	2			4	1	1	4	1	1	3	19	1	230	40	115
Chaff												1								4	97	7
Weeds	1	1	1	1	7	19		2	2	7		3	3		3	4				10	26	22
Grain %		75	50	75	93	90	100	50			100	20	25	100	25	20	100	100	100	94	25	80
Chaff %												20								1.6	60	4.9
Weeds %	100	25	50	25	7.4	10		50	100	100		60	75		75	80				4.1	16	15