

**Channel Tunnel Rail Link
London and Continental Railways
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**The charred plant remains from Tollgate, Cobham,
Kent**

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1 INTRODUCTION

Over two hundred environmental samples were taken from the Tollgate area of the watching brief (ARC 33098), from features ranging in date from the Bronze Age to the medieval periods. Assessment showed preservation of charred plant remains to be very poor in the majority of samples, and only ten were selected for further study. Four of these, from fills of pits [372], [387] and [1172], and from hearth [503], are thought to date from the early to mid Iron Age and one, from the eastern end of the hollow way/ditch, to the Roman period. Three of the remaining four samples come from pit [163] and hearth [419] which have been dated to the 11th to 13th? centuries AD, and layer [805], while not firmly dated, is close to medieval ditches and droveways, and assumed to be contemporary.

2 METHODS

Standard MoLSS methodology was used for sample processing, assessment, and recording of the charred plant remains. The samples were sorted, prior to recording, by staff at Oxford Archaeology. Where unidentifiable cereal grains or hazelnut shells could not be quantified precisely because of fragmentation, their abundance was estimated using a scale of + (1-10), ++ (11-50), +++ (51-approx. 250), ++++ (over 250). The plant taxa identified from each sample are shown in Table 1.

Table 1: The charred plant remains from Tollgate

	period:	e-m IA	e-m IA	e-m IA	?e-m IA	Rom	med	med	med	?med
	feature:	P 372	P 387	P 1172	F 503	D 522	P 163	P 163	HE 419	EU
	group:	4037	4036	4051	4043	4119	4115	4115	4102	4066
	subgroup:	4071	4084	4087	4077	4165	4115		4163	4107
	context no:	352	389	1193	500	526	162	179	418	805
	sample no:	81	91	340	153	133	29	30	102	233
	plant items/litre soil:	<1	<1	<1	26	45	6	4	1	4
Latin name	common name	plant part								
<i>cereals</i>										
<i>Triticum dicoccum</i> Schubl.	emmer wheat	-			179					
<i>Triticum cf. dicoccum</i>	emmer wheat	-			26					
<i>Triticum cf. dicoccum</i>	emmer wheat	SF			1					
<i>Triticum cf. dicoccum</i>	emmer wheat	GB			5					
<i>Triticum dicoccum/spelta</i>	emmer/spelt wheat	-		1	36					
<i>Triticum spelta</i> L.	spelt wheat	-				2				
<i>Triticum spelta</i> L.	spelt wheat	SF				3				
<i>Triticum spelta</i> L.	spelt wheat	GB				156				
<i>Triticum cf. spelta</i>	spelt wheat	-			16	4				
<i>Triticum cf. spelta</i>	spelt wheat	SF				3				
<i>Triticum cf. spelta</i>	spelt wheat	GB		2		75				
<i>Triticum spelta/aestivum/turgidum/dur</i>	spelt/free-threshing wheat	-				2		1		

	period:		e-m IA	e-m IA	e-m IA	?e-m IA	Rom	med	med	med	?med
	feature:		P 372	P 387	P 1172	F 503	D 522	P 163	P 163	HE 419	EU
	group:		4037	4036	4051	4043	4119	4115	4115	4102	4066
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	context no:		352	389	1193	500	526	162	179	418	805
	sample no:		81	91	340	153	133	29	30	102	233
	plant items/litre soil:		<1	<1	<1	26	45	6	4	1	4
Latin name	common name	plant part									
<i>um</i>											
<i>Triticum aestivum/turgidum/durum.</i>	free-threshing wheat	-						16	14	2	11
<i>Triticum</i> sp.	wheat	-		2		100	4	8	9		6
<i>Triticum</i> sp.	wheat	SB					19				
<i>Triticum</i> sp.	wheat	GB		4			137				
<i>Triticum</i> sp.	wheat	R		2			20				
<i>Secale cereale</i> L.	rye	-								8	
cf. <i>Secale cereale</i>	rye	-								1	
<i>Triticum/Secale</i> sp.	wheat/rye	-							1		
<i>Hordeum sativum</i>	barley	-				26	3	4	2		6
cf. <i>Hordeum sativum</i>	barley	-				8		1	1		4
cf. <i>Hordeum sativum</i>	barley	R					1				
<i>Avena</i> sp.	oats	-				2	1	3	2		19
cf. <i>Avena</i> sp.	oats	-							1	2	8
<i>Cerealia</i>	indet. cereal	-				+++	8	15	5	3	20
<i>other plants</i>											
cf. <i>Capsella bursa-pastoris</i>	shepherd's purse	-			1						
cf. <i>Agrostemma githago</i>	corn cockle	-								1	
<i>Scleranthus annuus</i> L.	annual knawel	-									1
<i>Chenopodium album</i> L.	fat hen	-				4					
cf. <i>Chenopodium</i> sp.	goosefoot etc.	-				12					
<i>Atriplex</i> sp.	orache	-	1								1
<i>Chenopodium/Atriplex</i> sp.	goosefoots/oraches	-	2								
cf. <i>Chenopodiaceae</i> indet.	-	-		1							
cf. <i>Trifolium</i> sp.	clover	-			1	1	1				
<i>Vicia/Lathyrus</i> spp.	vetch/tare/vetchling	-	1				3	5	2	1	4
<i>Vicia/Lathyrus/Pisum</i> sp.	vetch/tare/vetchling/ pea	-					2				
<i>Apiaceae</i> indet.	-	-								2	
<i>Fallopia convolvulus</i> (L.) A. Love	black bindweed	-	1								1
<i>Rumex</i> cf. <i>acetosella</i> agg.	sheep's sorrel	-		1							
<i>Rumex</i> spp.	docks	-		1	4		1			1	1
<i>Corylus avellana</i> L.	hazel	NS						+			
<i>Veronica hederifolia</i> L.	ivy speedwell	-							1		
<i>Sambucus nigra</i> L.	elder	-									5
<i>Anthemis cotula</i> L.	stinking mayweed	-						2	2		
<i>Lolium/Festuca</i> sp.	rye-grass/fescue	-					4				
<i>Bromus</i> sp.	brome grass	-					3				
<i>Poaceae</i> indet.	grasses	-					3	2			
<i>Poaceae</i> indet.	grasses	CN						1			
indeterminate	-	-				2					

Key

-: seed/fruit/grain; CN: culm node; GB: glume base; NS: nutshell; R: rachis; SB: spikelet base; SF: spikelet fork

3 RESULTS

3.1 Early-mid Iron Age

Three of the four samples dated to this period, from fills of pits, [387], [372], and [1172], contained very few charred plant remains. Three grains of wheat were found, one identifiable to emmer/spelt (*Triticum dicoccum/spelta*) and the other two simply to wheat (*Triticum* sp.), along with six wheat glume bases – two of probable spelt (*Triticum* cf. *spelta*) and four too fragmentary to be identified to species. Two fragments of wheat rachis internodes were also found. Occasional charred weed seeds, in these samples were all from common plants of disturbed ground, including arable fields, and included black bindweed (*Fallopia convolvulus*), docks (*Rumex* spp.), vetch/tare (*Vicia/Lathyrus* sp.), and orache (*Atriplex* sp.).

A much larger assemblage of relatively well-preserved cereal remains was recovered from the fill [500] of hearth/oven [503]. This included over 350 charred wheat grains (over 90% of all identified grains from the sample), the majority resembling emmer (*Triticum dicoccum*). Several glume bases and a single spikelet fork were also identified as probable emmer, although the glumes had broken off too low down for identification to be certain. Sixteen grains were more characteristic of spelt wheat, and the sample also contained 34 hulled barley (*Hordeum vulgare*) grains (9% of all identified grains) and just two of oats (*Avena* sp.). More than half of the barley grains were twisted, indicating six-row barley. No oat florets were recovered, to indicate whether the grains belong to wild or cultivated species, but they are most likely to have grown as crop weeds. Seeds of other wild plants, mostly goosefoots (*Chenopodium* spp.) accounted for only 4% of the assemblage, and chaff for less than 1%. This suggests that the assemblage is from fully cleaned grain, possibly burnt during parching, prior to grinding, or spilled and discarded during food preparation.

No remains of food plants, other than cereals, were found in any of the Iron-Age samples.

3.2 Roman

The single sample dated to the Roman period, fill [526] of ditch/hollow way [522], contained a plant assemblage consisting mostly of wheat chaff. This was composed mainly of glume bases and spikelet forks, approximately half of which were from spelt wheat, with the remainder too fragmentary to be identified to species. Several wheat rachis internodes were also present, as well as a single rachis node from barley. Only 24 cereal grains were found in the sample (5% of quantified items), of which 12 were spelt or unidentified wheat, three were barley, and one oats. The proportion of weed seeds was also very low (3%), and was made up mainly of vetch/tare, rye-grass/fescue (*Lolium/Festuca* sp), brome (*Bromus* sp.) and other

wild grasses. Fragments of two large leguminous seeds, possibly from peas or beans, were also present.

3.3 Medieval

The two fills, [162] and [178], of pit [163] contained very similar small assemblages of cereal grains with no chaff, and a relatively small proportion of weed seeds. Cereals in both fills were mostly (75–80% of identified grains) free-threshing wheat (*Triticum aestivum/turgidum/durum*), with small amounts of barley and oats. Free-threshing wheat grains are impossible to identify to species in the absence of associated chaff, none of which was found in these samples. Weed seeds included vetch/tare, stinking mayweed (*Anthemis cotula*), and wild grasses (Poaceae). A few fragments of hazelnut shell (*Corylus avellana*) were also found in [162]

The two remaining samples from this period, fill [418] of hearth [419] and burnt layer [805], were similarly composed mainly of cereal grains, with less than 25% weed seeds, but the majority of grains in the hearth fill were rye (*Secale cereale*) while those in the burnt layer were more mixed but with oats predominating. Again no florets were found, so the oat grains may have been from either cultivated or wild species. Free-threshing wheat was also present in both samples and formed a significant proportion (32%) in [418], which also included several barley grains. Arable weed seeds included corn cockle (*Agrostemma githago*) in [418], and annual knawel (*Scleranthus annuus*) and black bindweed in [805], all of which are common weeds of acid soils.

4 DISCUSSION

No specific conclusions can be drawn from the small charred plant assemblages from the Iron Age pits, apart from the use, and possible processing of hulled wheats in the area. The substantial group of emmer grains from hearth/oven [503] is potentially more informative although unfortunately the feature is dated only provisionally, by its proximity to other Iron Age activity. This assemblage clearly indicates that emmer was being cultivated, probably locally, and consumed as a crop in its own right. Emmer was the main wheat grown in the Bronze Age and, while not uncommon on Iron Age sites, it is considerably less widespread than spelt by this period.

Processing of spelt wheat during the Roman period is illustrated by the processing debris recovered from Roman ditch [522]. The predominance of glume bases and spikelet forks, with very few cereal grains, is consistent with fine sieving waste produced at a late stage in crop-processing, and resulting in semi-clean grain, ready for storage (Hillman 1981,

1984), although rather more weed seeds might have been expected. Similar assemblages have been found in first century AD ditch and pitfills at West of Northumberland Bottom.

The medieval assemblages are again typical of their period, with free-threshing wheat replacing spelt, and the increased use of oats and rye, for both human and animal consumption.

The majority of weed seeds in the samples come from plants with non-specific habitat requirements, but several, from all periods, have a preference for acid and sandy soils, and could well have grown in the sandy silts overlying the Upper Chalk in this area. Seeds of stinking mayweed, which is an indicator plant of waterlogged loams and clay soils (Hanf 1983, 235), were found only in the two fills of medieval pit [163]. Areas of silty clay, where these weeds and their associated crops may have grown, are also recorded in the area of the site, although the medieval assemblages contain no specific evidence for local production, in the form of partially processed crops or their waste products, and could equally well have been grown elsewhere.

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