



rye (*Secale cereale*) in one of the Ottoman samples. Cultivated legumes were also present sparsely through the sample set, with bitter vetch (*Vicia ervilia*) most common. A few fruit seeds and stones were also present. The wild plant seeds consisted of dryland and wetland plant species from agricultural, ruderal and grassland settings. A new taxon identified at a tentative level in only 1 sample was wild einkorn (*Triticum cf. boeoticum*), a common crop weed today in the fields and verges of the Kalehöyük area. Seed abundance varied widely, with chaff elements less abundant and common than cereal grains. Some of the pit fills contained highly diverse seed assemblages, perhaps indicating that a wide range of activities contributed to the deposits accumulated there.

Brief wood charcoal analysis identified the presence in several samples of numerous fragments of oak (*Quercus* sp.) and willow/poplar (Salicaceae), as well as a conifer species (Gymnosperm), possibly pine, in several samples (Table 1 Section D). Oak and conifer wood was present in the Early/Late Bronze Age samples, with both taxa and the willow/poplar in the Iron Age and Ottoman period samples.

## DISCUSSION AND CONCLUSION

In 2006 the Kalehöyük archaeobotany project provided a significant addition to the developing sample archive and sample assessment some new insights into plant use at the site. The seeds and fruits were of a familiar range, but the wild seed assemblages of such diversity to suggest that significant information about agricultural practices and land use may be available as a result of their analysis. The wood charcoal results, albeit provisional and by no means providing a comprehensive picture of wood collection and use, showed the use of species (oak and conifer) currently absent in the immediate vicinity of the site. Oak is part of the natural woodland of Central Turkey and has widely been reduced in abundance or totally lost as a result of over-harvesting, land clearance, agricultural and grazing pressures. Its presence in the past, along with conifer wood which is also absent from the local area today, suggests that either the environment was significantly different from that visible today, or that wood from those taxa were being

imported to the site from elsewhere. If the former is correct, the new data suggest a significant degradation in the local vegetation cover in the last 400 years. Further and fuller analysis will provide more data to investigate these possibilities and add to the limited wood charcoal record for Central Turkey in the last 4,000 years (e.g. Miller 1999).

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Table 1. Plant taxa recorded in samples from Kaman-Kalehöyük in 2006 using the following scale of abundance: \* = rare; \*\* = occasional; \*\*\* = frequent; \*\*\*\* = abundant; \*\*\*\*\* = very abundant

A. SAMPLE DETAILS		2006/012	2006/013	2006/046	2006/069	2006/010	2006/011	2006/014	2006/017	2006/056	2006/015	2006/016	2006/007
Sample	Area (e.g. Noth)	Noth	Noth	Noth	Noth	Noth	Noth	Noth	Noth	Noth	South	South	South
Sector	Sector	V	V	V	V	VIII	XXXII	XXXII	XXXII	XXXII	LVIII-LIX	LVIII-LIX	LV 49
Provisional layer	Grid	85	72	76	79	51	72	73	74	57	②	③	92
Feature	Feature	P281	P2935	P2951	P2962	P2934	P2934	R289	P2937	P2955	P637	P773	R152
Kaman Phase	Kaman Phase	IIIc/IV a	IIIc/IV a	IIIc/IV a	IIIc/IV a	II	II	II	II	II	I	I	-
Wood charcoal >4mm	Wood charcoal >4mm	*****	***	****	****	****	**	****	****	**	****	****	**
Wood charcoal >2mm	Wood charcoal >2mm	*****	***	*****	*****	*****	****	*****	****	****	*****	*****	**
Cereal grain	Cereal grain	*****	***	****	****	****	****	****	****	****	****	****	****
Cereal chaff	Cereal chaff	*****	***	****	****	****	****	****	****	****	****	****	*
Large-seeded legumes	Large-seeded legumes	***	**	**	**	**	**	**	**	*	**	**	*
Large fruits	Large fruits	***	**	*	*	*	*	*	*	*	*	*	*
Nuts and nutshell	Nuts and nutshell	*****	***	**	***	****	**	****	*	***	**	*	**
Charred wild plant seeds	Charred wild plant seeds	*****	***	**	***	****	**	****	***	****	****	****	**
Siliceous seeds	Siliceous seeds	**	*	**	**	****	****	**	***	**	**	*	**
Mineralised seeds	Mineralised seeds	**	*	**	**	****	*	*	**	**	**	*	**
Dung	Dung	**	*	**	**	**	**	**	**	**	**	**	*
Straw etc	Straw etc	**	**	**	**	**	**	**	*	**	**	**	*
Siliceous awns	Siliceous awns	*****	**	*	*	*	*	*	****	****	****	****	*
<b>C. ASSESSMENT</b>													
<b>Cereal taxa</b>	<b>Component</b>												
<i>Hordeum vulgare</i>	Grain	***	**	*	**	****	**	**	**	**	**	****	*
<i>Hordeum vulgare/distichum</i>	Rachis internode					**	*	*	**	**	**	**	*
<i>Triticum</i> free threshing	Grain	**	**	**	****	**	**	**	**	**	****	****	*
<i>Triticum</i> hexaploid type	Rachis internode	*	**	**	*	**	**	*	*	*	*	*	*
<i>Triticum</i> sp. free-threshing type	Rachis internode	*	**	**	*	**	**	*	*	*	*	*	*
<i>Triticum</i> sp.	Rachis internode	*	**	**	*	**	**	*	*	*	*	*	*
<i>Triticum monococcum</i>	Grain	**	**	*	**	**	**	**	**	**	*	*	*
<i>Triticum monococcum/dicoccum</i>	Grain	**	**	*	**	**	**	**	**	**	*	*	*
<i>Triticum monococcum/dicoccum</i>	Glume base	*****	**	*	*	*	*	*	*	*	*	*	*
<i>Triticum</i> spp.	Grain						**	**					
<i>Secale cereals</i>	Grain											**	**
Cerealia	Grain	*****	**	**	**	**	**	**	**	**	**	**	**
Cerealia	Awn fragments	*****	**	**	**	**	**	**	**	**	**	**	**
Cerealia	Rachis internode	*	**	*	**	**	**	**	**	**	**	**	*
Cerealia	Culm nodes	*	**	*	**	**	**	**	**	**	**	**	*
<b>Cultivated legume taxa</b>													
<i>Cicer arietinum</i>	Seed		*	*	*	*	*	*	*	*	*	*	*
<i>Lens</i> sp.	Seed		*	*	*	*	*	*	*	*	*	*	*
<i>Pisum</i> sp.	Seed		*	*	*	*	*	*	*	*	*	*	*
<i>Vicia ervilia</i>	Seed	***	*	*	*	**	**	**	**	*	*	*	*
<b>Fruits</b>													
<i>Vitis</i> sp.	Seed	*	*	*	*	*	*	*	*	*	*	*	*
<i>Prunus</i> sp.	Seed								*	*	*	*	*

Table 1 (continued)

	Sample	2006/012	2006/013	2006/046	2006/069	2006/010	2006/011	2006/014	2006/017	2006/056	2006/015	2005/016	2006/007
	Kaman Phase	IIIc/IV a	IIIc/IV a	IIIc/IV a	IIIc/IV a	II	II	II	II	II	I	I	-
<b>Wild plant taxa</b>													
<i>Arnebia/Lithospermum</i>	Seed	***	*	**	**	**	***	**	**	**	*		**
<i>Bolboschoenus maritimus</i>	Seed				**	*	*						
<i>Bromus</i> sp.	Mineralised Seed						*				**		
<i>Caryophyllaceae</i>	Seed					*		**		*			
<i>Chenopodium/Atriplex</i> sp.	Seed		*			*				*	***		
Cruciferae	Seed					*				*	****		
Cyperaceae	Seed	*											
<i>Eleocharis</i> sp.	Mineralised Seed	*				*							
<i>Gallium</i> type	Seed	*	*	*	**	*					***		*
Gramineae (small types)	Seed	****	**	**		**		**	**	**	****		*
Gramineae (large types)	Seed	***	**			**		**	**	**	**		*
<i>Helictropium</i> sp.	Seed												*
<i>Hordeum</i> wild types	Seed					*							
Lamiaceae	Seed	***	**			*					**		**
Leguminosae (small)	Seed	*				*	**	***		**	*		*
Leguminosae (large)	Seed			*	**	*				**	**		
<i>Lolium</i> sp.	Seed	*	*			*							
<i>Papaver</i> sp.	Seed												*
<i>Plantagosp.</i>	Seed												*
<i>Polygonum</i> sp.	Seed	**				*		**	*				
<i>Rumex</i> sp.	Seed							**			*		
<i>Stipa</i> sp.	Seed												
<i>Taeniatherum caput medusae</i>	Seed	**	*			**							
<i>Tenacium</i> sp.	Seed					*							
<i>Ziziphora</i> sp.	Seed	**	*			*					**		**
Indeterminate	Seed	****	**	**	****	****	**		**	****	****		****
Indeterminate	Mineralised Seed					****							
<b>D, WOOD CHARCOAL</b>													
Gymnosperm					P					P			
<i>Quercus</i>				P	P		P			P			
Salicaceae							P						



Table 2 (continued)

Wild plant taxa	Kaman Phase										
	2006/003	2006/008	2006/005	2006/001	2006/006	2006/004	2006/009	2006/023	2006/031	2006/035	2006/037
<i>Adonis</i> sp.			*								
Asteraceae											
<i>Arnebia/Lithospermum</i>		***				*	***		*	*	***
<i>Bolboschoenus maritimus</i>		*					*				
<i>Caryophyllaceae</i>		*			**	**	**			*	
<i>Chenopodium/Atriplex</i> sp.							**				
Cruciferae				*			**				
Cyperaceae		**		*			*				
<i>Galium</i> type		**	*	*		*	*		*		
Gramineae (small types)		**	*	*	*	**	***		**	**	
Gramineae (large types)		**	**				*				
<i>Hordeum</i> wild types		*									
<i>Juncus</i> sp.				**							
Lamiaceae						*	*				
Leguminosae (small)		**		**		**			**		
Leguminosae (large)		*	*				*			**	
<i>Lemna</i> sp.							*				
Mineralised Seed											
<i>Lolium</i> sp.		*					*				
<i>Papaver</i> sp.		**									
<i>Polygonum</i> sp.				*							
Primulaceae			*								
<i>Rumex</i> sp.							*				
<i>Setaria</i> sp.				*							
<i>Salsola</i> type						*					
Umbelliferae				*		***	*				
<i>Ziziphora</i> sp.		**					*				
Indeterminate		***	***	**	**	**	*		**	**	***
Indeterminate		*									
Mineralised Seed											
<b>D. WOOD CHARCOAL</b>											
Gymnosperm											
<i>Quercus</i>									P	P	P
Salicaceae									P	P	P

