

UMUT Monograph 2



Tell Kosak Shamali

Vol. II

The Archaeological Investigations
on the Upper Euphrates, Syria

Chalcolithic Technology
and Subsistence

Edited by
Yoshihiro Nishiaki and
Toshio Matsutani

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16 Chalcolithic carbonised cereals from Ubaid burnt storage structures at Kosak Shamali

George Willcox

16.1 Introduction

Archaeobotanical samples collected manually during the excavation at Kosak Shamali were sent to me for analysis. I would like to thank Prof. Nishiaki for allowing me to work on the samples. Flotation was not carried out on the site. Four of the samples from Kosak Shamali Sector A, Level 10, contained large quantities of carbonised cereals. They came from what appear to be storage structures which had been destroyed by fire (Nishiaki *et al.* 2001). These structures were small square rooms approximately 1.8 by 1.8 metres. Two other samples containing carbonised wood from the same sector (10A03) were also analysed and these are treated separately. Four ash samples from sediments associated with pottery kilns were also examined. Finally a sample containing

nineteen pea seeds (*Pisum sativum*) was also examined.

16.2 Description of samples

(see also Table 16.1)

Sample 1 was a sub-sample consisting of about 1.2 litres of pure grain which contained a mixture of emmer and einkorn (see Figs. 16.1 - 16.3). This grain was probably stored in the hulled state prior to threshing as indicated by the abundant presence of spikelet bases and glume fragments. The two species appear to be present in approximately equal proportions. The einkorn is of particular interest because it represents a domestic form of the two-seeded variety. Two-seeded einkorn is characterised by a flat ventral surface, which is produced be-

Table 16.1 Carbonised plant remains from Kosak Shamali.

Sample number	1	2	3	4	5	6	7
StoStr = storage structure	StoStr	StoStr	StoStr	StoStr			
Context	AE5-18	AE6-17	AE6-20	AE6-33	AD5-99	BD7-27	BE6-18
Date	970926	960903	971008	971025	960828	950908	960905
Level*	A-10	A-10	A-10	A-10	A-10	B-5	B-6
Feature	10A05	10A04	10A24	10A03	10A02	B501	B601
Volume (ml)	1200	900	800	2000			
emmer (<i>Triticum dicoccum</i>) grains	>1000	>1000					
spikelet forks	p	p					
einkorn (<i>Triticum</i> sp.) grains, 2 seeded	>1000	>1000					
spikelet forks	p	p					
awns, glume fragments	p	p				p	p
barley (<i>Hordeum sativum</i>)			>1000	>1000			
lentil (<i>Lens culinaris</i>)	1						
pea (<i>Pisum sativum</i>)					19		
flax (<i>Linum usitatissimum</i>)				1			

*A = Sector A; B = Sector B



Fig. 16.1 Digital images of wheats from Kosak Shamali.

Above left, spikelet bases of emmer; above right, grains of emmer. Below left, spikelet bases of einkorn; below right, grains characteristic of two-seeded einkorn.

cause the two grains abut in the ventral plain. The measurements of both taxa are given in Figs. 16.2 and 16.3. Grains resembling those of the single-seeded form with a convex ventral face were extremely rare. The abscission scar surface of the spikelet forks associated with the two-seeded einkorn showed clearly that the rachis was semisolid as in domestic einkorn. The majority of emmer grains were easily distinguished from the einkorn on the basis of their

morphology. However the spikelet bases were more difficult to distinguish. Examples which were clearly identifiable are given in Fig. 16.1.

Domesticated two-seeded einkorn is little known archaeobotanically and to my knowledge does not exist today in the Near East. It was first identified in the Near East by W. van Zeist and Waterbolk-van Rooijen (1996) from the late Neolithic settlement at Tell Sabi Abyad

situated about 100kms north-east of Kosak Shamali, and it would appear that these two finds represent the same cultivar, which appears to be characteristic of these two sites for this period in northern Syria. It is perhaps significant that two-seeded wild einkorn was found on Epipalaeolithic sites in the area at Mureybet and at Abu Hureyra, and for the PPNA and early PPNB small quantities were found at Jerf el-Ahmar and at Dja'de (Willcox 1999) where barley was dominant. Two-seeded wild einkorn, *Triticum boeoticum thaouidar*, occurs today along the Turkish/Syrian border (Valkoun *et al.* 1998). Farther north, emmer and single-seeded einkorn was found at early PPNB Nevalı Çori. On the Euphrates not far from Kosak Shamali, for the middle PPNB, emmer and naked wheat were found at the site of Halula. Bronze age sites in the area have produced mainly emmer and some naked wheat. Thus the domestic two-seeded einkorn found at Kosak Shamali and Tell Sabi Abyad appears to represent a local isolated cultivar which may have developed from local wild populations of *Triticum boeoticum thaouidar* (as already mentioned by van Zeist and Waterbolk-van Rooijen 1996: 527). These populations may have occurred as weeds in the fields of late Neolithic farmers. Two-grained einkorn continued to be used during the Chalcolithic as we have seen at Kosak Shamali, however it did not apparently survive into the Bronze Age, perhaps due to the introduction of

irrigation on sites in the Euphrates valley. A single seed of lentil was also recovered from sample 1.

Sample 2 (see Table 16.1) consisted of about 0.9 litres of pure grain and contained essentially the same wheats however the kernels were less well developed and perhaps more affected by the conditions and process of charring. Here too, the presence of spikelet forks, glumes and awns strongly suggest that the crops were stored together and in the hulled state. Like sample 1 this was also a sub-sample taken from a layer of carbonised grain.

Samples 3 and 4 (see Table 16.1) were made up of about 2.8 litres of hulled barley with no chaff remains, which indicates that they were threshed prior to storage. One flax seed (*Linum usitatissimum*) was also found in sample 4.

Samples 6 and 7 (see Table 16.1) were ash samples from kilns. These contained fragments of glumes, stems and awns of cereals. This indicates that chaff and straw were used as fuel in the kilns. In contrast, two other samples, also from kilns but from an earlier period and not shown in Table 16.1, did not contain chaff or any other identifiable carbonised plant remains. The reason for this difference could be due to different factors such as kiln temperature, availability and type of combustible used for the firing.

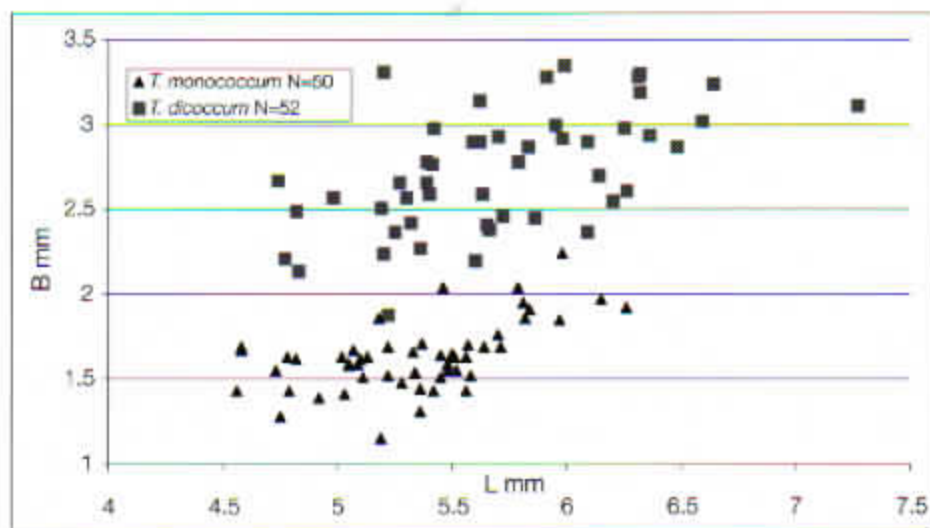


Fig. 16.2 Scatter diagram giving length/breadth measurements of einkorn and emmer.

16.3 Conclusions

The finds from Kosak Shamali indicate that two species of wheat were stored together and may have been cultivated as part of the same crop. One of these wheats is a rare and little known form of domestic einkorn which is two-seeded, and appears to be evidence of a local and independent domestication event during the late Neolithic. The resulting cultivar continued to be used during the Chalcolithic period but from present evidence did not survive into the Bronze Age. If this is the case, then it appears that crop plants in this area were biologically isolated from other areas at this time. All four samples (1 to 4) which contained large quantities of pure grain represent sub-samples taken from the residue of stored grain which had been burnt. No weed seeds were recovered from the samples indicating that these crops were cleaned prior to storage.

The size and number of storage structures would appear to indicate that cereals made up an important part of the local plant economy. These conclusions are for the moment based on a small number of samples and so remain somewhat hypothetical and would be more secure if confirmed by comparing the results of analyses from other sites of the same periods in this region.

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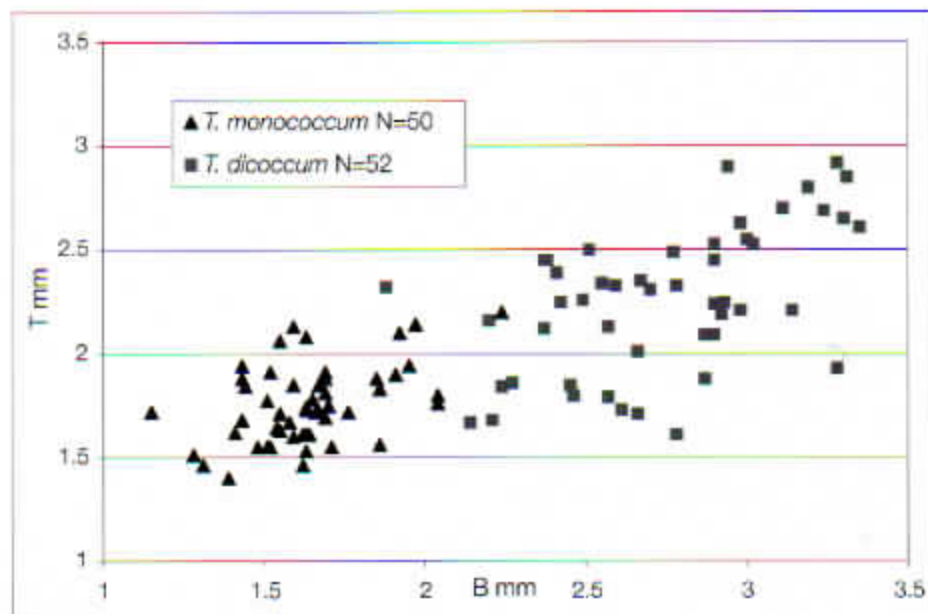


Fig.16.3 Scatter diagram giving breadth/thickness measurements of einkorn and emmer.