

IV. PALAEOETHNOBOTANICAL MATERIAL<sup>1</sup>

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During the excavation two large accumulations of charred cereal grains were found in *rooms 3 and 13*. Each accumulation contained not less than 30,000-50,000 grains, and evidently constituted the remains of the grain stocks that were stored in the house and had escaped being completely reduced to ash. One other find represented the charred remains of a vegetable meal, probably just prepared before the destruction. Also, some vegetal remains were found 'preserved' in the water of the well in the centre of the courtyard. A sample statistical analysis of the seeds of field-crop cultures from the two rooms and a numerical analysis of the finds from the well gave the ratios listed below.

*Room 3.* A sample was taken from the shattered Chersonesean amphora **Ad 10** stamped with the mark of the astynomos *Dioskouridas (Ae 52a)*. Composition as follows:

Soft-dwarf wheat <i>Triticum aestivo-compactum</i>	18.1%
Durum of the <i>Triticum durum</i> Desf. type	single grains
Einkorn <i>Triticum monococcum</i>	1 grain
Emmer <i>Triticum dicoccum</i>	1 grain
Rye <i>Secale cereale</i>	81.9%
Pellicular many-rowed barley <i>Hordeum vulgare</i>	single grains

*Room 13.* The grain was found in the handmade vessel **D 111** standing on the floor of the room. Composition as follows:

Soft-dwarf wheat like <i>Triticum aestivo-compactum</i>	26.8%
Wheat of the <i>Triticum durum</i> Desf. type	3 grains
Wheat of the einkorn type <i>Triticum monococcum</i> (?)	1 grain
Rye <i>Secale cereale</i>	73.2%
Pellicular many-rowed barley <i>Hordeum vulgare</i>	single grains
Huskless barley <i>Hordeum vulgare</i>	2 grains

In the same room some remains of millet flour or gruel (*Panicum sp.*) were found inside a handmade vessel. The find had a volume of 200 ml.

*The courtyard well.* The following remains were found in the silty layer at the bottom of the well, below the level of the subsoil water:

1. Fragments of stems of cultivated vine *Vitis vinifera* L.: 8 specimens.
2. Fragments of beech (*Fagus sp.*): 12 specimens.
3. Fragments of oak (*Quercus sp.* and *Quercus pubescens* Willd.(?)): 5/2 specimens.

Table 1. Average dimensions of the wheat grains of *Triticum aestivo-compactum*.

Provenance	Length L (mm)	Width B (mm)	Index L/B
Room 3	4.60	3.31	1.39
Room 13	4.12	3.04	1.38

## I. FIELD CROPS

*I.1. Wheats.* The wheats are represented mostly by naked-grain types. They may be defined as a population consisting of two varieties – a soft species and a dwarfish species – and also a number of intermediate forms. The average dimensions of the grains are shown in Table 1.

In the light of recent studies by a group of palaeoethnobotanists<sup>2</sup> it is probably less correct to call the charred and badly deformed grains of the huskless wheat a population of *Tr. aestivo-compactum* – as originally identified by us – and rather to unite them under the common name of *Triticum aestivum s. l.*, among which are included *Tr. Vulgare* Vill., *Tr. compactum* Host., *Tr. vulgare antiquorum* Heer., *Tr. aestivum grex aestivo-compactum* Schiem.

Probably single grains of durum *Tr. durum* and the pellicular wheats *Tr. monococcum* and *Tr. dicoccum* are natural admixtures to the crops of soft wheats.

If the average sizes of the grains of the population of soft wheats without husk from U6 are compared with similar data reported from other rural settlements within the *chora* of the Chersonesean state, our seeds are found to be the smallest.<sup>3</sup> This is possibly an indication that originally (many years before U6 was built) wheat was grown near the settlement of Panskoye I as a spring crop. When sown in spring the plants are exposed to less favourable conditions (drought, high temperatures and so on) during an important stage of their development and the grains are always smaller than those of wheat planted in autumn. However, the presence of a great number of rye grains among the finds is a strong indication that in the early 3<sup>rd</sup> century B.C. the inmates of U6 cultivated winter crops and not spring ones.

*I.2. Rye.* The average dimensions of the rye grains are presented in Table 2.

In terms of morphology the grains of rye are of a single type. They are narrow and pointed at the base with obtuse tops. Like the wheat grains they too are characterized by their small size. In these features they resemble the wild rye *Secale cereale* Roshev, which is a known pest among crops of soft wheat. Finds of rye with similar morphology of the grains and occurring with finds of wheat are reported from other settlements in Crimea including those on the agricultural territory of Chersonesos both in south-western and north-western Crimea.<sup>4</sup>

Table 2. Average dimensions of the rye grains of *Secale cereale*.

Provenience	Length L (mm)	Width B (mm)	Index L/B
Room 3	4.60	2.08	2.21
Room 13	4.60	2.10	2.19

Table 3. Average dimensions of the berries of *Hordeum vulgare*.

Provenance	Length L (mm)	Width B (mm)	Index L/B
Room 3	6.23	3.33	1.87
Room 13	6.36	3.30	1.90

However, in our case, the proportion of rye is so great (73-82%) that the designation 'weed' is hardly appropriate. Elsewhere, a similar state of affairs has been observed only at the settlement of Vladimirovka (excavations by V.A. Latyševa), which is located 23 kilometres north-east of Panskoye I in the same landscape zone. Here the proportion of rye reached 95% in the mixture with wheat, *i.e.* the latter was finally crowded out by rye, which became an independent, cultivated crop.<sup>5</sup>

*I.3. Barley.* Only single charred grains of barley were found. They were present as a slight admixture among grains of wheat and rye. Their dimensions are shown in Table 3.

The grains of barley are of a single type in terms of morphology; most of them still had remains of scales preserved on their bodies, which indicates their belonging to pellicular barley. Moreover, the structure of the central groove is clearly visible on all seeds of this type; this groove widens from the base to the top and in some cases shows traces of asymmetry. All these features are characteristic of the grains of pellicular many-rowed barley. Only two grains among the material analysed were identified as those of huskless barley (*room 13*).

The finds published here lead us to suppose either that the dwellers of U6 did not cultivate barley as a pure crop, or that barley grain was for some reason not represented in the material from the excavation. However, palaeoethnobotanical finds of the same period made during excavations of other areas and buildings at Panskoye I suggest that pure barley plantations did exist in the vicinity of the settlement.<sup>6</sup>

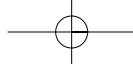
*I.4. Millet.* Though no actual grains of millet have been found, the remains of millet flour or gruel in a vessel from *room 13* are a clear indication that pure millet crops were indeed harvested here.

## II. VINE CLIPPINGS

The finds were preserved in the silt layer on the bottom of the well. They are represented by small pieces (up to 5 cm in length) of thin shoots with internodes, twigs, and leaf stalks. On two of them traces of cutting are still clearly to be seen. Judging by the morphological features and traces of cutting, all these sprouts belong to cultivated vine *Vitis vinifera* L.

## III. TIMBER REMAINS

The partially (or considerably) charred fragments of beech and oak preserved in the filling layer of the well, below the level of the subsoil waters, are most probably the remains of the wooden well curb destroyed by the fire when the site was sacked. Some of the least charred pieces still show one or two worked planes, *i.e.* they are remains of beams or boards; they



were found mixed up with animal bones, pottery, and soil that had slipped down from the adjacent courtyard area, and this fact is a further indication of their having been an integral part of the well.

#### CONCLUSION

The material from U6 published here enables us to suppose with a fair degree of probability that at the beginning of the 3<sup>rd</sup> century B.C. wheat was the main cereal. Moreover, through comparison with other finds both from the same settlement and from other rural settlements in the western Crimea it is possible to reconstruct the agricultural system and harvests of the major cereal crops hypothetically.

It seems that originally spring wheat was planted near the settlement. At the same time, however, there were two separate ecological processes going on – the wheat grains were becoming smaller and the amount of the rye harvested was increasing. Winter crops were evidently taking the place of the spring ones, and at the end of 4<sup>th</sup> and the beginning of the 3<sup>rd</sup> century B.C. the spring crops were finally replaced by the winter wheat. Simultaneously, wheat was gradually being crowded out by rye as a more enduring species on those fields that had been continuously cultivated over the long time since the appearance of the settlement. By the time of the sudden destruction of U6 rye had ousted wheat almost completely and become an independent species. The same thing happened at the settlement of Vladimirovka ('Masliny').

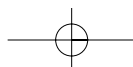
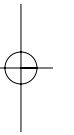
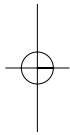
It should be noted that the process just described has been identified only in one landscape zone on the Tarkhankut Peninsula. In other regions of the same peninsula, where there were probably somewhat different and more favourable micro-climatic conditions (*e.g.* the area of the bay of Chernomorskoye and the southern coast), and in the south-western Crimea too (*i.e.* the Herakleian Peninsula), rye represented only an insignificant admixture to the grain harvested.<sup>7</sup>

According to N.I. Vavilov, the Crimea and the north-eastern Black Sea area were possibly among the regions where rye became an independent cereal crop at approximately the beginning of our era.<sup>8</sup> Our material might perhaps add some details to our understanding of this process and indicate its irregular character.

Finds of millet grains at rural settlements of the western Crimea as well as at other Greek sites of the northern Black Sea area are not numerous. Therefore the question as to whether millet was cultivated as a pure crop remains unresolved, though possibly in the case of the U6 household the answer may be positive.

In addition to the vine clippings from the well, charred vine seeds found in other areas of the settlement are a further indication of the existence of vineyards in the vicinity of the site.<sup>9</sup>

In the light of the rests of charred remains of trees and shrubs found elsewhere during excavations of settlements of the 4<sup>th</sup> century B.C. – first centuries A.D. in the north-western Crimea, and the results of pollen analysis too, it is reasonable to suppose a local provenance for the wooden remains. The presence of wood and scrub in this region in the period under consideration can hardly be doubted.<sup>10</sup>



## NOTES

1. A preliminary identification of the cereal grains was carried out by A.N. Ščeglov; a detailed analysis was conducted by Z.V. Januševič (Botanical Gardens of the AS of the Moldavian SSR, Kishinev). Identification of the vegetal remains from the well was carried out by E.S. Čavčavadze (Botanical Institute of the USSR AS, St Petersburg). *Cf.* Januševič 1976, 90, table 17; 134-138, tables 23, 24; Ščeglov 1978, 104 ff.; Januševič 1986, tables 10, 11; Ščeglov, Januševič, Kuz'minova and Čavčavadze 1989.
2. Wasylkova, Carciumaru, Hajnalova, Pashkevich *et al.* 1991, 209.
3. Ščeglov, Januševič, Kuz'minova and Čavčavadze 1989, 58, tables 3, 4.
4. Januševič 1986, 53 ff.
5. Januševič 1976, 134, table 23.
6. This is indicated by the imprints of barley grains and traces of barley husks (left behind after threshing). *Cf.* Ščeglov, Januševič, Kuz'minova and Čavčavadze 1989, 60.
7. Januševič 1986, 42 ff., table 9.
8. Vavilov 1967, 143-157.
9. *Cf.* Ščeglov, Januševič, Kuz'minova and Čavčavadze 1989, 62 ff.
10. *Cf.* Ščeglov 1978, 24 ff. (with many references); Ščeglov, Januševič, Kuz'minova and Čavčavadze 1989, 53; Maslov 1991, 76-81.