

## NEW EVIDENCE FOR PLANT EXPLOITATION BY THE SCYTHIAN TRIBES DURING THE EARLY IRON AGE IN THE UKRAINE

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**ABSTRACT.** Charred macroscopic remains and imprints in pieces of daub pottery were investigated. The large differences between three agricultural practices which have been developed independently in the period of the end of 7th to the 4th centuries BC were established.

**KEY WORDS:** Ukraine, Early Iron Age, cultivated plants, Scythians

### INTRODUCTION

The palaeoethnobotanical material from Scythian settlements, dated from the 7th to the 4th centuries BC, gives evidence of food production and its relative importance in the economy of different Scythian tribes. The agriculture of Scythian tribes in forest-steppe zone had a long tradition and was the main branch of economy in the Iron Age. Cultivated plants are represented by *Triticum dicoccon*, *Triticum monococcum*, *Hordeum vulgare*, *Secale cereale*, *Panicum miliaceum*, *Linum usitatissimum*. As for pulses, *Pisum sativum*, *Lens culinaris* were grown. Cereal crop plants of half-nomadic Scythian tribes in the steppe zone included only hulled wheat *Triticum dicoccon*, hulled barley *Hordeum vulgare* and common millet *Panicum miliaceum*. This composition emerged in half-nomadic society in connection with the shortage of food and forage in winter seasons and peculiarities of their husbandry. The appearance of bread wheat predominating among the cultivated plants is a characteristic feature of palaeoethnobotanical findings in Greek cities in the Northern Pontic area. These great differences in the composition of cultivated plants were connected with general trends in human activities, including food production.

### CULTIVATED PLANTS FROM THE FOREST-STEPPE ZONE

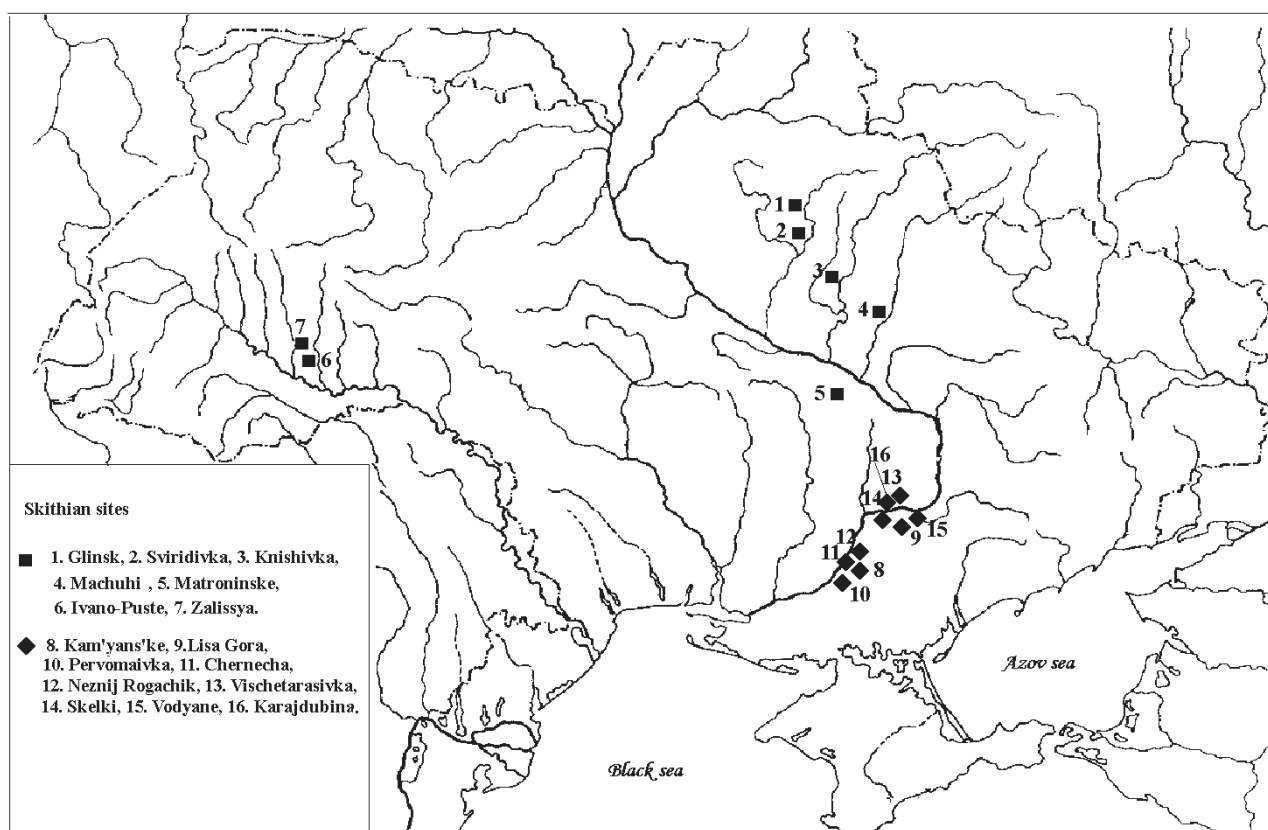
Plant cultivation was the basic occupation of the agrarian Scythian tribes which spread over the modern Ukrainian forest-steppe zone between the 7th and the 4th centuries BC. The set of cultivated plants has been reconstructed on the basis of carbonized plant remains and

numerous grain impressions preserved on potsherds and clay. The first data were published in the 70-ties and 80-ties by Janushevich. They originated from the well known Scythian strongholds at Bils'ke, Trahtemirivs'ke, Kolomaks'ke and Polkova Nikitivka and a number of settlements – Mala Publivka, Musove 1, Gorodne, Lihachivka and Kurgan 1 near Osniagi. Plant records showed that the dominant species were hulled emmer wheat *Triticum dicoccon*, millet *Panicum miliaceum* and hulled many-row barley *Hordeum vulgare*. According to her first opinion, naked wheats *Triticum aestivum* and *T. compactum* were also grown. Other cultivated plants included rye *Secale cereale*, pea *Pisum sativum* and hemp *Cannabis* sp. (Kovpanenko & Janushevich 1975, Janushevich 1981, Sramko & Janushevich 1985). It is interesting to note, that among the cultivated plants, according to the opinion of Sramko (1987), there was also rye – a new cultivated plant which developed from a weed of naked wheats by the end of the 1st millennium BC. This assumption of Sramko was confirmed by the large finds of rye grains in the settlement Mala Rublivka (Janushevich 1986). The information about the presence of *Triticum durum* grains in the Scythian settlement Uch-Bash is erroneous (Janushevich 1986, p.49), because at that site, the younger pit with grains of this wheat, dated to the Old Rus period, cut through the older, Scythian pit. *Triticum durum* appeared in the Ukraine as late as the period of Old Rus.

The new information about the use of cultivated plants by Scythians living in the forest-steppe zone was obtained due to the research carried out by the present author in the settlements at Ivane-Puste and Zalissyia (7th–6th century BC), Machuhi (7th–6th century BC), Svir-

**Table 1.** Composition of cultivated plants from sites of forest-steppes Scythian culture. i = imprints, g = grains

Cultivated plants	Sites				
	Glins'k	Hillfort Knischivs'ke	Machuchi	Sviridivka	Hillfort Motronins'ke
<i>Triticum dicoccon</i>	1 i	2 g			2 i
<i>T.aestivum</i>					3 i
<i>Hordeum vulgare</i>	7 i	1998 g	2 i	2 i	21 i
<i>H. vulgare</i> var. <i>coeleste</i>	1 i	9 g		1 i	
<i>Panicum miliaceum</i>	135 i		6 i	24 i	52 i
<i>Pisum sativum</i>					1 i

**Fig. 1.** Map showing location of sites mentioned in text

idivka (6th–4th century BC) and Glins'k (6th – 4th century BC) and strongholds at Knischivs'ke and Motronins'ke (7th–3th century BC) (Fig. 1, Table 1).

Carbonized plant remains have been recovered from the settlement Ivane-Puste (the excavation of O.D. Ganina) by washing soil samples from cultural layers. Millet grains *Panicum miliaceum* prevailed in the material. The remaining cereals consisted of hulled barley, hulled wheats – *Triticum dicoccon*, *T. monococum* and *T. spelta*, naked barley *Hordeum vulgare* var. *coeleste*, and only one grain of naked wheat *Triticum aestivum* s.l. Other seeds belonged to pea *Pisum sativum*, flax *Linum usitatissimum* and lentil *Lens culinaris*. Seeds and grains

of weeds occurred in significant quantity. The impressions of millet grains prevailed on clay fragments. The impressions of hulled barley, emmer and rye grains, as well as of threshing by-products, such as glumes, culms and spikelet forks of hulled wheats were also found.

Half of the soil samples from the settlement Zalissyia (excavation of O.D. Ganina), which were labeled “sample of soil with millet”, contained seeds of *Chenopodium album* instead of millet. The volume of these seeds was 40.5 ml. They were probably gathered intentionally. Seeds of this well known weed, which grows near places of human habitation on soils rich in nitrates, were used in Antiquity and until recently as forage for domestic

birds. They were also added to human foods instead of flour in years of famine. One plant can give up to three thousands seeds. *Chenopodium album* seeds are often found in materials from ancient monuments in Europe, since the Mesolithic. For instance seeds of this species made 20% of all seeds preserved in a vessel from the Early Iron Age in Jutland (Helbaek 1960) and 7055 seeds were found in the material from the Linearbandkeramik settlement at Lamersdorf (Knörzer 1971).

Millet grains occurred in four samples from Zalissyia. The total grain volume was 12.2 ml. Two samples contained mostly flax seeds and rye grains, with impurities of hulled barley, emmer, naked wheat and lentil (Fig. 2). Grain dimensions are presented in Table 2. The examination of plant remains from Zalissyia and Ivane-Puste supplemented the list of cultivated plants obtained by Janushevich with flax and lentil. In the settlement Zalissyia, the 540 seeds of *Linum usitatissimum* made 19.49% of all remains. Seeds of flax could be used to produce oil for human consumption or to prepare a tasteful porridge.

The storage pit discovered in the hillfort Knischiv's'ke contained almost two thousands grains of *Hordeum vulgare*, nine grains of *Hordeum vulgare* var. *coeleste* and one grain of *Triticum dicoccon*. Hulled barley grains are large and elongated, some are asymmetrical, which allows to identify them as many-rowed barley. Grain dimensions (50 measurements): 5.68 (2.86–6.76) × 2.84 (2.34–4.06) mm. The impressions of millet grains prevailed on fragments of pottery from the settlements Glin's'k and Machuhi, and the tomb No.1 in the settlement Sviridivka. They were present mainly on the outer surface of vessel bottoms, suggesting the use of millet

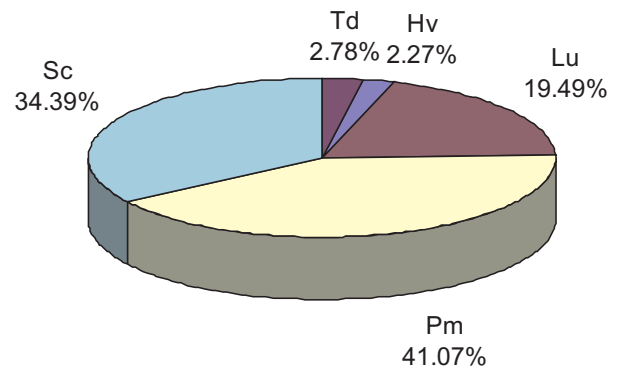


Fig. 2. The proportion between cultivated plants from Zalissyia. Hv – *Hordeum vulgare*, Lu – *Linum usitatissimum*, Pm – *Panicum miliaceum*, Sc – *Secale* sp., Td – *Triticum dicoccon*

spikelets as a sort of bedding, on which unfired pots were placed during manufacturing. Scattered grain impressions of hulled and naked barley and emmer were also found.

The material examined from the hillfort Motronins'ke was composed of impressions on potsherds, mainly on the vessel bottoms, on clay pieces, and on small objects made of clay named "bread". In 1991 a lump of black earth from the filling of a vessel was obtained for analysis. On the surface of this lump numerous impressions of millet grains were seen in the form of small hollows, scattered glumes were also present, while the grains were not preserved. Millet impressions were also found on the external, and very rarely on internal, surfaces of vessel bottoms and in their walls, in daub, and in the clay sample, from which the so called "breads" were made. Sometimes they covered the external surface of the bottoms rather densely. In some cases there were from 15 to

Table 2. Dimensions in mm and index values of grains from site Zalissyia

	L	B	T	L/B	T/B
<i>Panicum miliaceum</i> , n=30					
average	1.98	1.64	1.33	1.21	0.81
min	1.80	1.24	1.20	0.99	0.67
max	2.24	1.86	1.64	1.50	1.01
<i>Linum usitatissimum</i> , n=40					
average	3.73	1.57	0.75	2.43	0.48
min	2.60	1.00	0.20	1.67	0.20
max	4.40	2.00	1.20	3.20	0.86
<i>Triticum dicoccon</i> , n=13					
average	5.79	2.35	2.02	2.50	0.87
min	5.24	2.00	1.82	1.96	0.69
max	6.40	2.86	2.26	2.94	1.00
<i>Hordeum vulgare</i> , n=14					
average	6.16	2.90	2.25	2.12	0.78
min	5.44	2.80	2.00	1.93	0.67
max	7.20	3.00	2.40	2.40	0.86

40 impressions on one fragment. The impressions of millet grains are rounded and elongated, their sizes are: length 2.4–3.2, width 1.4–2 mm.

Next in numbers were grain impressions of hulled many-rowed barley. A part of *Hordeum vulgare* ear with four grains is visible on one piece of clay (No. 375) among numerous impressions of the vegetative plant parts. Quantitatively, the impressions of wheat grains take the third place.

Three of them belong to *Triticum aestivum* s.l. and two to *T. dicoccon*. One impression of pea seed is present. The impression of an alder leaf *Alnus glutinosa* on a piece of clay (No. 378) represents a rare kind of remains, because usually cereal threshing by-products are used as temper.

### CULTIVATED PLANTS FROM THE STEPPE ZONE

The agriculture was included in the economy of Scythian tribes from the steppe zone in the Lower Dnieper region during the 5th–4th century BC. The search for the new forage resources was probably caused by the growth of herds and an increase of human population. Thus, agriculture of Scythian tribes in the steppe zone has arisen from the requirements connected with cattle breeding.

Plant husbandry has been confirmed by finds from 19 localities, in which imprints of grains, spikelet fragments and glumes were found on pottery. Charred grains, mainly of *Hordeum vulgare* with an admixture of hulled wheats *Triticum monococcum*, *T. dicoccon* and *T. spelta*, and some grains of bread wheat *T. aestivum* s.l., were recovered from the settlement Lysa Gora and the stronghold Kam'jns'ke (Gavriluk & Pashkevich 1991). In Lysa Gora, hulled barley grains occurred in great numbers in each storage pit and prevailed among the cereals. Well

preserved morphological characteristics were visible in the impressions of hulled barley and millet grains on the outer surface of pot bottoms (Table 3).

A few grain impressions were found also on potsherds from sites Pervomaivka, Cherecha, Neznij Rogachik, Vischetarasivka, Skelki, Vodyane, Illichevo, Karajdubina, Vilna Ukraina. The most frequent imprints belonged to millet, emmer and hulled barley, while rye *Secale cereale* was rare. Grain impressions of a typical rye form were present in the settlement Lysa Gora; eight charred grains and four impressions occurred in the samples from the stronghold Kam'jns'ke. Most probably these grains, which appeared in a small quantity only, belonged to a weedy species of rye (Behre 1992).

Fairly numerous weeds identified in the samples from Kam'jns'ke included abundant seeds of *Chenopodium album* and Brassicaceae and rare impressions of *Setaria* sp., *Bromus* sp., *Cannabis* sp. and *Rumex* sp. According to Herodotus, *Cannabis* sp. was known to the Scythian tribes.

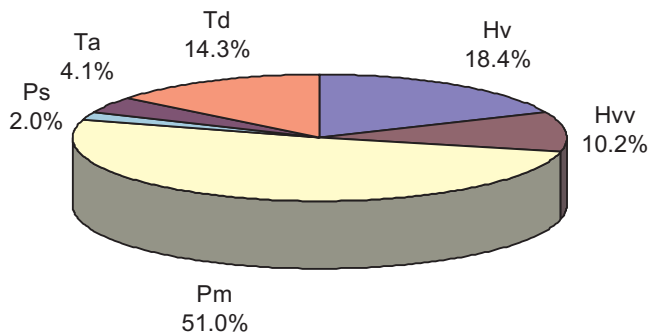
The general conclusion of these investigations is that the crop-plant assemblage of the steppe Scythian tribes included *Hordeum vulgare*, *Panicum miliaceum* and less frequently *Triticum dicoccon* (Fig. 3).

It is interesting to note that the significant difference existed in the crops used by the tribes which lived in neighboring territories along the northern Black Sea coast. Hulled barley and common millet prevailed among the cereals in the Scythian sites of the Lower Dnieper region, emmer wheat was of some importance, too. Later, probably as a result of contacts with the husbandry of adjacent Greek cities, bread wheat acquired a significant role. Millet and hulled barley are drought-resistant and quickly ripening crops which makes them irreplaceable in the areas of droughts. Millet is frequently used as green fodder for cattle. Thanks to its short growing season, from 60 to 110 days, in southern

**Table 3.** Plant from sites of steppe Scythian tribes. g = grains, i = imprints

Taxa	1	1a	2	3	4	5	6	7	8	9	10	11	12
<i>Hordeum vulgare</i>	1004g/3i	3i	–	9i	li	li	–	–	–	–	–	–	–
<i>Hordeum vulgare</i> v. <i>coeleste</i>	–	–	–	–	–	–	–	–	–	–	2i	li	2i
<i>Panicum miliaceum</i>	–	25i	2i	10i	–	li	li	–	li	li	–	–	–
<i>Triticum aestivum</i> s.l.	15g	–	–	3i	–	li	–	li	–	–	–	–	–
<i>Triticum dicoccon</i>	89g/2i	2i	–	4i	–	li	–	–	–	–	li	–	–
<i>Triticum monococcum</i>	7g	–	–	–	–	–	–	–	–	–	–	–	–
<i>Triticum spelta</i>	7g	–	–	–	–	–	li	–	–	–	–	–	–
<i>Secale</i> sp.	–	–	–	–	–	–	–	–	–	–	–	–	–
<i>Bromus</i> sp.	–	li	–	–	–	–	–	–	–	–	–	–	–
<i>Cannabis</i> sp.	–	li	–	li	–	–	–	–	–	–	–	–	–
<i>Echinochloa crusgalli</i>	–	–	–	li	li	–	–	–	–	–	–	–	–

1 – Lysa Gora; 2 – Niznui Rogachik; 3 – Kam'ians'ke; 4 – Velika Lepetuha; 5 – Kut; 6 – Vushetarasivka; 7 – Skelki; 8 – Karajdubina; 9 – Vodjane; 10 – tomb Vilna Ukraina; 11 – tomb Illichevo; 12 – Novoe



**Fig. 3.** The proportion between cultivated plants in finds from steppe Scythian sites. Hv – *Hordeum vulgare*, Hvv – *Hordeum vulgare* var. *coeleste*, Pm – *Panicum miliaceum*, Ps – *Pisum sativum*, Ta – *Triticum aestivum*, Td – *Triticum dicoccon*

regions it is possible to get two crops in one year. Barley is also known as a forage crop of high quality, used for feeding horses especially in those areas, where oat does not grow.

In the Greek cities located in the Northern Pontic area, unlike in the Scythian settlements, bread wheat prevailed over the other cultivated plants. Palaeoethnobotanical investigations have shown similar composition of cultivated plants in all of these cities. The bread wheat/club wheat and hulled barley were the most common cereals, hulled wheats were of lesser significance. Pulses were represented by bitter vetch, pea, lentil and chickpea, vine seeds were present (Kruglikova 1975, Janushevich 1976, 1986, Pashkevich 1984, 1990). Thus, in the Early Iron Age, at the northern Black Sea coast existed human communities which differed in their economy despite living in similar natural conditions.

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