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TRITICUM BOEOTICUM (*POACEAE*) AS A BOTANICAL AND HISTORICAL PHENOMENON OF THE CRIMEAN FLORA

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Introduction

Crops origin is considered as a process of wild cultivar selection being under human control or their evolution in a case of accidental hybridization. After laws of genetics were disclosed, centers of diverse of economically useful plants, which coincided with sites of ancient civilizations, were emphasized. As to another study direction it became a search of probable genetic combinations, which could cause breeding of modern agricultural cultivars.

In the Crimea there is a plant, probably the ancestor of cultivated wheat - *Triticum boeoticum* (Boiss.). Disjunctive areal of this species is traced from steppe outskirts of the Kerch and Feodosia till towns of the eastern foothills: Stary Krym, Sudak and further – to the western foothills in direction of Belogorsk region and to southwest – points of intermontane lowering between inside range and foothills of the Crimean mountains – to Bakhchisaray, Baidarskaya valley, Balaklava [6].

In the Crimea population of this cultivar was registered in XIX. On the start of XX wild einkorn was often found in the area of Baidarskaya valley. Later this cultivar was out of botanical field for decades. At the beginning of 80-ieth the largest population of this species, that is millions of plants, was fixed in outskirts of Orlinoye village (ex-Baidary) [2]. Till 90-ieth the species was "lost". Nowadays it is spread all over the whole Baidarskaya valley, near Sevstopol [1, 3] and in the Eastern Crimea.

"Appearance" and "dropping" of this wheat cultivar in the Crimea demand special approach and understanding. In the end of 90-ieth when this species occurred very seldom, authors of this article started searching of *Triticum boeoticum* in Baidarskaya valley – the region where it was found most frequently. It was interesting to reveal it in ecotopes with similar origin, named as "outskirts". As it turned out present outskirts of Orlinoye had moved to the central square of the village, where next to vegetable gardens many thousand population of wild-einkorn was found. This cultivar of wild einkorn, which was looked for in natural condition of phytocenosis on "dry and herbaceous slopes" [2, 6], quite selectively and abundantly occupied "outskirts" inside of the village [3], as well as on agricultural lands with a high level of underground water. It was revealed that such a circumstance characterizes and other villages of Baidarskaya valley and suburbs of Sevastopol [1].

Results and discussion

Wheat (*Triticum* genus) belongs to the family of bluegrass (*Poaceae).* Diversity of the wheat consists of 27 cultivars. Genetically 4 groups are strictly emphasized in the genus. *Triticum boeoticum* – belongs to diploid group, somatic cell of plants contains 14 chromosomes. This group includes the following cultivars: *Triticum aegilopoides* Link. –, *Tr. monococcum* L. –, *Tr. urarthu* Tum. [6].

Hard wheat (*Tr. durum* Desf.) – the group of tetraploid wheat (somatic cells contains 28 chromosome) is considered to appear after natural complicated synthesis of some cultivars and further integration of chromosome sets of wild einkorn and goat grass (Aegilops) in northeast Africa [5, 6].

Wheat species (einkorn, amelcorn, soft and club wheat) got in the Crimea before the beginning of Greek colonization during Late Neolithic and Eneolithic [7]. Later during ancient times wheat from the Kerch peninsula and northwest Crimea was in a great demand in Greece and West Mediterranean. Grains for export were provided by cities of Bosporan Kingdom (Mermiky, Panticapaeum, Tyritake and etc.) and west Crimea (Kalos-Lyman). Grain stores were in use during the whole ancient époque in Panticapaeum. Since 387 till 347 BC 125 thousand tones of wheat grain were exported from the Crimea. Sometimes this number reached 25 thousand tones. Bosporan cities paid tribute to Pontic king Mithridates – 8 thousand tones per year [5]. It means that crop capacity and nutritional value of any wheat culture[1] during ancient times considerably exceeded the same parameters for wheat in Asia Minor and Balkans.

Migration and cultivation of Caucasian wheat cultivars caused wheat spreading all over the Crimea during the early agriculture [7]. In the antique period cuvarslt from Balkans, Asia Minor and Transcaucasia were replenished to the Crimean wheat cultivars. In case if that was caused by Greek-colonists, then arrival from Asia Minor was the principal, as the largest and only Greek colonies in the Crimea were founded by emigrants from Miletus – Panticapaeum and Sinope - the Chersonese. Wheat species from Balkans could got the Crimea during Roman colonization of South and Piedmont Crimea [5]. Well-known wheat cultivars couldn`t yield so much in the Crimea to exceed needs of the local population. During Middle Ages export of wheat from the Crimea stopped and didn`t recommenced [5]. Growing of all modern wheat cultivars and varieties in the Crimea is limited by local ecological conditions.

It`s a well-known fact, that any certain cultivar has its own biological qualities grounded genetically, which reveal as its ecological and biological taxonomic characteristics. The characteristics serve as a cultivar response to complex of various ecological factors: favorable, neutral or unfavorable.

Chernozem and dark brown soils are the best ground for wheat cultivation. Not so favorable are chestnut alkaline and brackish soils – common for Steppe Crimea and the Kerch peninsula.

Autumn and spring in Steppe and Piedmont Crimea are quite auspicious for wheat cultivation. While in winter a lack of snow cover is often fixed and in summer dry conditions is a common phenomenon. Strong winds ablate above ground parts of plants by soil fractions and dehydrate roots by dry, hot or frosty air.

Summer aridity of climate in Steppe Crimea causes unstable wheat crop capacity even applying modern technology for its cultivation. As it grows demand for moisture rises as well; the most intensive need in moisture occurs during phase of stem elongation. If there is a lack of moisture the wheat plants are characterized by short stems, small leaf surface, low-yield ear. During ear-formation and blossoming phases moisture requirement is also high though formation and growth of above ground organs doesn`t occur. In case of moisture deficit a number of embryonate flowers in an ear reduces dramatically, conditions for grain formation become worse, weak grains develop. [5].

According to complex of the main soil and climatic indices conditions of wheat growing in Steppe Crimea give in the natural conditions in forest-steppe zone of Ukraine.

[1]According to paleontobotanical data during the ancient epoch in the Crimea *Triticum aestivo-compactum* Schiemann [7], club wheat was cultivated for export [7].

Crop capacity in the Crimea makes 28,0 centner/ha, while in Poltava – 29,5 centner/ha,

Cherkassy – 32,5 centner/ha, Chernigov – 35,6 centner/ha, Zakarpatye – 36,5 centner/ha (1991-1995) [5]. As to *Triticum boeoticum* it`s a quite warm and moisture-requiring cultivar during ear-formation and blossoming. Its ear-formation phase takes place in the second half of May, blossoming – in the end of May and June. It means that maximum moisture requiring for cultivar development in the Crimea falls at the beginning of droughty season.

Triticum boeoticum needs extra sources of moisture for yield formation. It belongs to ecological group of xeromesophytes [1, 2, 4], what makes this cultivar growing next to reservoirs, as a part of moisture-requiring vegetation, impossible. On the territory with more xerotic conditions – "on dry slopes" - *Triticum boeoticum* needs either repeating rainfalls or regular extra irrigation from other sources. Just this factor grounds location of wild einkorn within the Crimean piedmont areas, as there an amount of precipitation is larger in the beginning of summer.

North outskirts of cultivar growing are located in large cities – the Kerch and Feodosia. Perhaps here thermal regime is more favorable for wintering of *Triticum boeoticum*. It is known than bigger settlement is, than it radiates more thermal energy into environment, forming distinctive microclimate. To southwest settlements are smaller and climate is milder accordingly.

Ecological balancing of droughty for this cultivar development conditions in the beginning of summer serves occasionally moistened country roads – places of cattle driving, slightly moistened area of drainage systems, outskirts of irrigated cities.

There is a question if the wild einkorn is a native cultivar of the Crimean flora – autochthon or it is an alien – allochthon. According to nowadays climate this kind of wheat has an allochthonic origin. It`s worth to note its location: the Kerch, (Panticapaeum), Feodosia (Kafa), Sudak, Stary krym, Belogorsk (Karasubazar), Bakhchisarai, Balakklava, Sevastopol (the Chersonese). All these cities (besides Balaklava) were large trade centers in the Crimea during antique and Middle Ages. If to connect these cities in one line, it`s possible to follow the ancient land transit trade routes along the peninsula. Intensive usage of these routes by caravans with grain crops including could cause introduction and fixation of wild einkorn in the key points of stops and trading.

Conclusions

Therefore, taxon being included into Red Data book of Ukraine, connected with anthropogenic environment could be considered as an ordinary for regional flora cultivar of ruderal nature. That is why it doesn`t need to be protected by traditional for rare cultvars methods: limitation of "anthropogenic activity" on its locations, "reserving" of population growing – "dumps, country roads and forest belts", forbidding of cattle grazing [2, 5]. Quite the contrary, spreading and development of *Tr. boeoticum* completely depend upon the complex of various anthropogenic effects. Botanical value of wild einkorn differs from other cultivars with a special protective status. Cultivar of *Tr. boeoticum* in the Crimea is a botanical and historical phenomenon. It is as valuable for the Crimean nature as antique artifacts or medieval fortresses are for its History.

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Methods of rare species protection usually function as preservation of plant localities and minimization of anthropogenic influence on these ecotopes. These methods are not always effective concerning rare species of allochthonic origin. Study case of such a cultivar is *Triticum boeoticum* (Boiss.). North edge of this cultivar disjunctive area occupies regions of Steppe, Mountain and Piedmont Crimea. Present isolation of this wheat population in the Crimea is historically grounded. All well-known habitats have anthropogenic origin while townships where these plants were found, are nothing but settlements along ancient trade roads. These circumstances permit to suppose allochthonic origin of this cultivar in the Crimea. Special combination of factors, non-typical for the Crimean nature is necessary for growing of the studied wheat cultivar. These factors are formed sporadically being influenced by different local anthropogenic changes of environment.

Key words: *the Crimea; Triticum Boeoticum (Poaceae); origin; protection.*

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TAXONOMIC DIVERSITY OF FLORAL COMPLEXES ON THE TERRITORY OF GRAZING ECOSYSTEMS IN SOUTHEAST OF UKRAINE

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Introduction

One of the most important task for present science is revealing the scale and degree of changes in natural ecosystems caused by anthropogenic effects, determination the ways of balancing usage and renewal of natural resources, their renaturalization and return into the field of rational nature management. Grazing ecosystems, as historically generated under conditions of traditionally economical usage anthropogenic complexes of landscape, are of