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SELECTION OF INITIAL BARLEY VARIETIES AND SAMPLES FROM A CONTROLLED NURSERY

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Abstract. During the study, economically valuable traits of barley variety samples were observed, and biometric measurements were determined. When studying the biometric indicators of spring barley varieties and samples at the Karshi experimental nursery, the most promising genotypes were identified, which differed significantly from the standard varieties in terms of yield, 1000-grain weight, nature, protein content, and the standard. These genotypes are recommended for use as valuable source material in barley breeding.

Keywords: barley, variety, samples, selection, biometric indicators, yield, 1000 grains, protein, nature, column mark, standard.

Introduction. Improving the yield and quality of cereal crops, including barley varieties, is one of the most important tasks today in further strengthening food security. However, the problem of using seeds of optimal size for sowing has not been sufficiently studied. Therefore, one of the important measures for increasing the grain yield and quality of barley varieties is the enrichment of primary sources for barley breeding, the creation of resistant varieties, and the sowing of seeds with optimal fractions [1-2].

The aim of the study is to create primary sources of spring barley that are resistant to unfavorable environmental factors and possess high indicators of economically valuable traits.

Research methods. Methodological guidelines for studying the world collection of sheep and goats (L., 1984). Phenological observations of plants, assessments of various indicators in field and laboratory conditions, and analyses were conducted according to the methods of the State Commission for Variety Testing of Agricultural Crops. The weight of 1000 grains was compared according to GOST 10842-89, and the protein content in the grain was determined in the laboratory using the Keldal method. Mathematical and statistical analysis of the experimental results was performed using B.A. Dospekhov's "Field Experiment Methodology".

In 2025, 20 barley samples, including 18 specimens and 2 standards (Kyzylkurgan and Voha), were tested in the control variety testing nursery of the Karshi district experimental field, sown in 3 replications. In the control variety testing nursery, seeds of each variety were sown in a special planting device in 8 rows with an interval of 15 cm at a depth of 3-5 cm, and the sowing area of each variety was 10 m2.

When conducting phenological observations in the control nursery of an irrigated field, the most important stage was the study of plant resistance to biotic and abiotic factors during the developmental phases, from germination to ripening. This is because spring barley has the potential to yield a harvest even in unfavorable climatic conditions.

Plants undergo developmental stages such as seed germination, tubers, tubers, spike formation, flowering, and ripening. At least 25 percent of the plant is considered to have entered a certain stage at the time of its onset, and from the moment it reaches 75 percent, it is considered to have fully passed this stage. The sum of these stages constitutes the duration of the growing season.

In the selection process, selection is the final and relatively responsible component in obtaining valuable forms. Therefore, it is an important task for a breeding scientist to know the relationship between the traits for which selection work is being carried out, as well as the properties of the plant. When selection is carried out using correlation, it creates a basis for relatively efficient work [3-4].

In the control barley nursery, the variety samples differed significantly from each other in terms of the growing season, the number of plants per 1 m2, the number of productive stems, plant height, and the length of the final node. Selection work was also conducted on barley varieties and samples based on yield and technological quality indicators.

The results of the 1000-grain weight analysis showed that a number of varieties and specimens significantly outperformed the standard variety in grain size. The weight of 1000 grains varied between 42,8–46,2 g across the variety samples; compared to the standard Kyzylkurgan and Voha varieties (41,8–43,5 g), higher indicators were recorded in the samples BR2/MERIT,B//MSEL (46,2 g), ABYSSININ (46,1 g), Atlas 46 and Mas Key-1 (45,5-45,7 g). The lowest result was recorded in the Kyzylkurgan variety (41,5 g).

Table 1.

SELECTED INITIAL SET

№	Sample name	Type	Yield to template ±	1000 grains (g)	Yield, s/ha	Protein, %	Nature, g/l	Key advantage
1	**Kyzylkurgan**	6 lines	0	41,5	44,0	13,7	639,9	**standard**
2	**Atlas 46**	2 lines	+0,01	45,5	45,6	13,9	651,7	1000 grain weight indicator
3	**MODOS**	2 lines	+2,1	45,1	48,6	13,2	650,7	1000 grain weight is good
4	**ABYSSININ**	2 lines	+1,5	46,1	48,4	13,3	673,7	1000 grains + natural good
5	**CI 04207 (Potron-2025)**	6 lines	+18,1	44,1	62,7	14,0	765,6	All indicators are leading
6	**Mas Key-1**	2 lines	+0,9	45,7	45,6	13,3	654,1	1000 grain weight is high.
7	**Voha**	2 lines	0	43,4	45,1	12,0	635,8	**standard**
8	**Mas Key-14**	6 lines	+8,4	43,1	52,0	14,8	714,7	High protein content
9	**Saida**	6 lines	+5,5	44,2	48,4	14,2	701,8	High protein content, good natural indicator
10	**Harbin**	6 lines	+5,2	43,3	49,0	14,5	705,8	High protein content, good natural indicator
11	**P-09**	6 lines	+5,3	43,5	48,1	14,0	696,3	High protein content, good natural indicator
12	**P-14**	6 lines	+3,6	43,7	47,6	14,8	684,5	High protein content
13	**P-21**	6 lines	+7,0	42,8	51,0	14,4	686,3	High yield indicator
14	**ArabiAbiad/Arar//H.spont.41-5/Tadmor/3/Hml**	6 lines	+7,4	44,0	51,8	14,5	707,9	High protein, good natural indicator
15	**6B89.2027/CHAMICO/5/P.STO/3/LBIRAN/U**	6 lines	+3,5	43,8	47,6	14,6	690,5	High protein content
16	**ESMERALDA//6B89.2027/CHAMICO**	6 lines	+8,3	42,9	52,7	15,1	679,2	High protein content
17	**CABUYA/MJA//PETUNIA1/5/PENCO/CHE**	6 lines	+6,6	43,6	50,9	14,4	708,5	High physical indicator
18	**BR2/MERIT,B//MSEL**	2 lines	+1,3	46,2	47,2	13,3	677,3	1000 grain weight indicator
19	**Carina/Moroc9-75//WI3257**	6 lines	+8,0	44,2	53,3	14,4	709,7	Good yield, nature, and protein content
20	**Ssn/Bda//Arar/3/Gloria'S/Copal'S (AA-24)**	6 lines	+16,2	43,9	59,4	14,6	765,5	All indicators are leading

According to yield indicators, the varieties showed results ranging from 44,0 to 62,7 c/ha. The highest yields were recorded in the varieties CI 04207 (Potron-2025) (62,7 c/g), Ssn/Bda//Arar/3/Gloria'S/Copal'S (AA-24) (59,4 c/ha), and Carina/Moroc9-75//WI3257 (53,3 c/ha), which exceeded the standard varieties Kyzylkurgan and Voha (44,0–45,1 c/ha) by +20.7 and +9.4 c/ha, respectively (Table 1).

When analyzing the studied control varieties and samples by grain nature, it can be seen that the CI 04207 (Potron-2025) (765,6 l/gr), Ssn/Bda//Arar/3/Gloria'S/Copal'S (AA-24) (765,5 l/gr), and Carina/Moroc9-75//WI3257 (709,7 l/gr) samples are superior to the standard varieties Kyzylkurgan and Voha (641,3-640 l/gr).

Among the barley variety samples studied in the control nursery, varieties CI 04207 (Potron-2025), Ssn/Bda//Arar/3/Gloria'S/Copal'S (AA-24), and Carina/Moroc9-75//WI3257 prevailed over the standard variety in terms of yield, grain nature, and grain size. The Mas Key-1 and Atlas 46 varieties are characterized by a high protein content and are valuable in terms of technological quality indicators. These results showed that some varietal samples are promising for breeding and industrial testing (Table 1).

In conclusion, according to the results of the biometric assessment, 18 samples from the control variety testing nursery were distinguished by superiority over the standard (Kyzylkurgan and Voha) varieties in several indicators, namely economically valuable traits. These specimens are considered promising and recommended for use in breeding work as a source of valuable traits related to yield elements.

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