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Quality Requirements for Barley

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Abstract: Lack of quality (beer, pearl barley and other food) varieties of barley. Use of samples from the world collection, selection of local varieties and samples from world collections, and selection of primary sources.

Keywords: Barley, grain, breeding, varieties, variety, sample, source, quality, protein, nature, productivity, technological, valuable, economic diseases, resistance.

All barley varieties included in the State Register recommended for planting in the territory of the Republic of Uzbekistan were created in the selection of Uzbekistan. At the same time, it is necessary to do a lot of work on creating varieties that are resistant to early ripening, saltiness, heat, cold, dormancy, and diseases.

The grain growers of our country are working hard to increase the gross grain weight. The conducted scientific researches, the experiences of advanced farmers show that there are possibilities to increase the productivity of barley in irrigated fields to 50-60 t/ha, and in dry areas to 35-40 t/ha and even more. However, in the following years, it was found that the yield of barley in the irrigated lands did not exceed 25-30 t/ha per hectare, and 8-10 t/ha in dry areas. The quality of the cultivated grain is in many cases suitable for fodder, and the production of beer and food products (perlovka, barley groats, etc.) does not fully meet the requirements of the industry.

Therefore, the Decree No. PF-5853 of the President of the Republic of Uzbekistan "On approval of the strategy for the development of agriculture of the Republic of Uzbekistan for 2020-2030" is an important issue facing scientists in the consistent implementation of economic reforms in agriculture and the fundamental improvement of the population's well-being.

Due to the high nutritional quality of barley, its chemical composition differs from other crops. The amount of protein is especially high compared to other crops (wheat, oats, millet).

According to industry requirements, the quality of brewing barley, i.e. standard indicators, moisture should not be higher than 14.0%, largeness should be high 80%, average 70-80% low 60-70%, fertility 1st class not lower than 95%, 2nd class 90% below, the extract substance should be 75-82%, the color should be light yellow or yellow, it should not be damaged by pests. The weight of 1000 grains is 42-47 g. Nature 640-680 g/l, protein content is required not more than 11.0%. The brewing quality of barley can vary depending on the region where the crop is grown.

Two-row barley samples that meet the industrial requirements of studied barley varieties and samples are selected in the experimental fields of the Southern Agricultural Scientific Research Institute, and selection work is being carried out. Barley samples with high quality indicators were planted in a separate nursery, plants were phenologically observed in the field, and selection was made based on early ripening, resistance to drought and heat, resistance to dormancy and other indicators.

Also, the most important indicators of technological quality were analyzed in laboratory conditions, and 8 varieties and samples of barley were selected whose protein, quality, weight of 1000 grains and productivity indicators were higher than the model variety (Table 1).

In case of lack of high-quality (beer, pirilovka and other edible) varieties of barley, samples from the world collection were used, selection works were carried out with local varieties and samples, and primary sources were selected.

Interrelationships between barley collection samples, hybrids and their parental forms of early ripening and morpho-biological, economic and adverse environmental conditions and resistance to diseases were determined.

Currently, the plants of barley varieties planted in the collection nursery of the Karshi agricultural area of the Southern Agricultural Research Institute are thoroughly evaluated for their resistance to dormancy, disease and pest resistance, productivity and biometric (plant appearance, grain size, spike length, etc.) indicators, and cross-breeding in order to create new barley varieties. selection is underway.

To date, about 800 hybrid samples have been obtained in the experimental fields of the institute in order to create new varieties of barley.

Table 1. Comparison of quality indicators of barley varieties and samples.

№	Variety name	Weight of 1000 grains, gr				Yield, ts/ha				Nature, l/gr				Protein, %			
		2020	2021	2022	average	2020	2021	2022	average	2020	2021	2022	average	2020	2021	2022	average
1	Bolgali (control)	39,5	40,9	42,6	41,0	37,8	41,5	39,6	39,6	642,3	640,3	643,0	641,9	14,1	13,9	14,2	14,1
2	NP 4/18	43,4	43,0	44,4	43,6	44,0	43,6	42,2	43,3	672,7	655,0	671,7	666,4	14,3	14,1	13,7	14,0
3	Victoria/M2//-4-30…	42,7	43,2	45,6	43,8	42,7	43,4	44,3	43,4	668,7	647,3	682,7	666,2	13,9	14,1	13,7	13,9
4	Ste/AntoresVEA7762-21…	45,7	44,9	47,3	46,0	44,1	46,4	44,9	45,2	683,3	656,0	677,7	672,3	14,4	14,1	13,6	14,0
5	Boxa	46,1	46,1	47,5	46,5	48,1	48,5	46,3	47,6	682,0	681,7	691,7	685,1	12,3	12,4	12,1	12,2
6	Sodik -02	43,6	43,4	44,3	43,8	42,8	42,4	42,5	42,6	680,7	641,3	671,7	664,6	13,8	13,8	14,0	13,9
7	Ag/2011	45,9	45,3	48,1	46,4	46,2	48,0	45,9	46,7	669,7	684,3	691,3	681,8	12,7	12,4	12,4	12,5
8	Ardak/3/Alpha/Durra//CWB117-	42,5	43,6	44,3	43,5	44,5	43,2	42,5	43,4	663,7	642,0	682,3	662,7	13,9	14,1	14,0	14,0
9	Vicont/3/Roho/Mazurka//ICB-103	43,3	43,8	45,1	44,1	43,6	44,8	44,0	44,1	671,0	660,7	674,0	668,6	13,9	13,6	13,3	13,6
	Average	43,6	43,8	45,5	44,3	43,8	44,7	43,6	44,0	670	657	676	668	13,7	13,6	13,4	13,6
	Minimum	39,5	40,9	42,6	41,0	37,8	41,5	39,6	39,6	642	640	643	642	12,3	12,4	12,1	12,2
	Maximum	46,1	46,1	48,1	46,5	48,1	48,5	46,3	47,6	683	684	692	685	14,4	14,1	14,2	14,1

According to the obtained results, the selection of hybrids is being carried out on samples that are resistant to unfavorable conditions of various abiotic and biotic factors of natural climatic conditions and have high technological quality indicators.

For this reason, the physiology of selected samples from F-4 and F-8 hybrids was studied in laboratory conditions, plant height, spike length, number of grains in a spike, and density of spikes were analyzed. In addition, quality indicators of barley grain were studied for industrial requirements, i.e. nutritional value.

Experiments show that the quality indicators are higher when crossbreeding with local and international barley samples.

Conclusions

When planting barley, it was found that it is less resistant to cold compared to wheat, requires heat, and the quality of the harvest is higher in the southern regions

When cross-breeding between domestically created varieties and imported samples was carried out to improve the quality indicator of barley, it was found to be compatible with industrial (production and processing) requirements.

The plant height of barley plant is medium and plants with short first joint spacing were found to be

resistant to lodging.

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