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# The Results Of Assessment Of Durum Wheat Variety Samples On Productivity Indicators At The International Preliminary Variety Trial Experimental Field

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**Annotation.** The article presents the results of scientific research conducted on the results of the assessment of the productivity indices of varietal samples in the experimental field of the optional international preliminary trial of durum wheat in the experimental field of the Laboratory of genetics, selection and seed growing of durum wheat. Based on the results of the study, samples of durum wheat with high productivity indicators were selected.
**Keywords.** Durum wheat, variety, sample, productive tillering, spike length, number of spikelets in a spike, number of grains in a spike, selection.

**Introduction.** In order to obtain high and high-quality grain yields from cereal crops in arable lands, one of the urgent tasks is to select starting sources that are suitable for the soil and climatic conditions of each region, are fertile, resistant to adverse environmental conditions (heat, drought), diseases and pests, have high productivity indicators and grain quality, and to create new varieties using them in the selection process.

The rate of grain yield in durum wheat is a key indicator of crop yield. Several scientists have reported a positive correlation between grain yield and crop yield [4, 10, 9].

Factors such as environmental conditions, high temperature, low relative humidity, and drought negatively affect plant growth, spike length, number of spikelets per spike, and grain yield [8].

Heat and drought, which are frequent in Uzbekistan, have a significant impact on the plant during the growing season of wheat, causing a decrease in yield and grain quality. Heat reduces the amount of organic ma accumulation in plants, slows down leaf growth, and reduces the working surface area where the main photosynthesis occurs. Therefore, one of the main requirements for new varieties created in Uzbekistan is to increase heat and drought resistance while maintaining high productivity [12].

If rows are selected based on the number of grains per ear, the chances of selecting high-yielding rows are significantly increased. This indicator depends on the genetic potential of the variety and the environmental factors in which the plant is grown [5].

When selection is based on the number of grains per spike, the chances of selecting high-yielding specimens and hybrids increase. This indicator depends on the genetic potential of the variety and the environmental factors under cultivation [6].

When evaluating wheat varieties, it is important to determine their productivity indicators. Wheat productivity indicators include indicators such as the level of productive tillering, stem height, ear length, number of grains per ear, and 1000-grain weight [7].

**Materials and methods.** Scientific research was conducted in the laboratory of durum wheat genetics, selection and seed production of the Scientific research Institute of rainfed Agriculture in 2024. Experimental observations and analyses were carried out according to the methodological manuals adopted by the Institute of Plant Science [2] and the Methodological manual on selection and initial seed production of grain crops [1]. Biometric analyses were carried out based on the methodology of the State Commission for Testing Agricultural Crop Varieties.

**Results and discussions.** It was observed in the experiments that the full germination period of durum wheat samples at the International durum wheat yield trials (IDYT) fell on January 19-22, the germination assessment was 3-5 points, the winter hardiness assessment was 5-7 points, the harvesting period was March 20-23, the full earing period was May 8-14 and the full ripening period was June 17-22.

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In the conducted field experiments, when studying the productive yield of durum wheat samples from the International durum wheat yield trials (IDYT), the productive yield of the standard variety "Leukurum-3" was 2.0 grains, while the productive yield of other varieties averaged 1.8-2.3 grains. The highest productive yield was 2.1-2.3 grains in the samples No. 3 Genomis 3, No. 10 Ramajan, No. 15 Nachita, No. 17 Mamiki (Lebanon) (Table 1).

**Table 1**
**Productivity indicators of durum wheat varieties samples at the International durum wheat yield trials variety testing experimental area (Gallaorol - 2024).**

| № | Sample name | Productive accumulation, (pieces) | Main spike indicators | | | Grain difference from standard, (grain),± |
|---|---|---|---|---|---|---|
| | | | Spike length, (cm) | Number of spikelet, (pcs) | Number of grains, (grains) | |
| 1 | Leukurum-3 (an) | 2,0 | 6,9 | 16,8 | 33,6 | ± |
| 2 | №2 Omrabi 5 | 1,9 | 5,5 | 12,2 | 36,6 | 3,0 |
| 3 | №3 Genomis 3 | 2,1 | 6,5 | 13,0 | 39,0 | 5,4 |
| 4 | №4 Nakuri | 1,8 | 6,1 | 13,5 | 40,5 | 6,9 |
| 5 | №5 Naurora | 1,9 | 5,2 | 11,4 | 34,2 | 0,6 |
| 6 | №6 Nacheto | 2,0 | 5,1 | 12,1 | 36,3 | 2,7 |
| 7 | №7 Derita | 2,0 | 5,3 | 12,6 | 37,8 | 4,2 |
| 8 | №8 Nemesis 2 | 1,8 | 4,7 | 13,0 | 39,0 | 5,4 |
| 9 | №9 Nemesis 1 | 1,9 | 5,1 | 12,1 | 36,3 | 2,7 |
| 10 | №10 Ramajan | 2,2 | 5,3 | 12,9 | 38,7 | 5,1 |
| 11 | №11 Myperno | 2,0 | 4,6 | 12,4 | 37,2 | 3,6 |
| 12 | №12 Jabajan | 2,0 | 5,6 | 12,5 | 37,5 | 3,9 |
| 13 | №13 Kondita | 2,0 | 5,6 | 12,5 | 37,5 | 3,9 |
| 14 | №14 Nachit Kan | 2,0 | 5,5 | 12,5 | 37,5 | 3,9 |
| 15 | №15 Nachita | 2,1 | 5,4 | 12,6 | 37,8 | 4,2 |
| 16 | №16 Xu | 1,9 | 5,5 | 12,5 | 36,1 | 2,5 |
| 17 | №17 Mamiki | 2,3 | 5,6 | 12,8 | 38,4 | 4,5 |
| 18 | №18 Margheto | 1,9 | 5,6 | 12,3 | 36,9 | 3,3 |
| 19 | №19 Mamasita | 1,8 | 6,5 | 13,2 | 39,6 | 6,0 |
| 20 | №20 Miki 3 | 2,1 | 5,5 | 12,7 | 38,1 | 4,5 |
| 21 | №21 Sebanachit | 1,8 | 5,8 | 13,2 | 39,6 | 6,0 |
| 22 | №22 Sebarita | 1,9 | 5,6 | 13,1 | 39,3 | 5,7 |
| 23 | №23 Yopy | 1,9 | 5,3 | 12,2 | 36,6 | 3,0 |
| 24 | №24 Yosan | 1,8 | 5,5 | 12,6 | 37,8 | 4,2 |

When analyzing the spike length, the standard variety "Leukurum-3" was 6.9 cm. In other samples, the spike length was observed to be 4,7-6,5 cm. When examining the number of spikelets, it was 16.8 in the standard variety and 11,4-13,5 in the samples. When analyzing the number of grains in one ear, it was found that the number of grains in the main ear was higher than in the standard variety, with 2,0 grains in the standard variety and 3,0 grains in the other samples. The number of grains in the main ear was 33,6 grains in the standard variety. The number of grains in the studied samples ranged from 34,2 to 40,5 grains. The analysis results revealed that the number of grains in the main spike was 0,6 to 6,9 grains higher than the standard variety. The highest number of grains in the main spike was found in the varieties №3 Genomis 3,

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№8 Nemesis 2 (5,4 grains), №22 Sebarita (5,7 grains), №19 Mamasita, №21 Sebanachit (6,0 grains), №4 Nakuri (6,9 grains) varieties with high indicators were selected as samples.

**Conclusion.** Based on the results of the study, it was determined that productivity indicators such as productive earing, main ear length, number of ears, number of grains per ear, and number of grains per main ear of durum wheat samples in the international preliminary variety testing field (IDYT) in the open fields are among the main indicators determining the productivity of durum wheat crops.

According to the results of the study, the highest yielding varieties were 2,1-2,3 grains in the samples №3 Genomis 3, №10 Ramajan, №15 Nachita, №17 Mamiki (Lebanon). The number of grains in the main spike was observed to be 5,4-6,9 grains in the samples №3 Genomis 3, №8 Nemesis 2 (5,4 grains), №22 Sebarita (5,7 grains), №19 Mamasita, №21 Sebanachit (6,0 grains), №4 Nakuri (6,9 grains).

Based on the results of the research, durum wheat varieties with high productivity in arable fields will be used in hybridization work in the durum wheat genetics, selection and seed growing laboratory to create new varieties of durum wheat with high productivity and yield.

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