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Results Obtained On Economically Valuable Traits Of Durum Wheat In Rainfed Areas

Z.A.Ochilov

Research Institute of Irrigated Agriculture, Doctor of Philosophy in Agriculture (PhD), head of the laboratory, Uzbekistan

B.I.Mamarahimov

Research Institute of Irrigated Agriculture, Doctor of Agricultural Sciences., professor, director, Uzbekistan

H.X.Qarshiboyev

Research Institute of Irrigated Agriculture, Doctor of Agricultural Sciences., Deputy Director for Scientific Work, Uzbekistan

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Abstract: At the Central Experimental Farm of the Research Institute of Irrigated Agriculture, valuable economic traits of durum wheat cultivation under irrigated conditions in 2024-2025 are presented.

Keywords: Durum wheat, variety, sample, line, rainfed area, phenological observation, productivity, yield, spikelets, spike length, number of grains, evaluation, selection.

Introduction: In recent ears, as a result of continuous air drought, a decrease in yields has been observed in rainfed areas. This significantly affects the yield elements of agricultural crops. In our republic, durum wheat grain is considered unique and is in demand as an important raw material in the food industry, especially in the production of pasta and confectionery products. Currently, more than 500 thousand tons of durum wheat grain are needed annually for the production of pasta products in the country. In order to fully meet this need, durum wheat is imported from abroad at prices 10-15 percent higher. Therefore, growing durum wheat in large areas in our country is a pressing issue.

Durum wheat ranks second after soft wheat in terms of cultivated area and distribution. In terms of genetic characteristics, the number of chromosomes in durum wheat is 28, and in soft wheat - 42. Durum wheat belongs to the Gramineae family, genus Triticum, species durum L. There are 27 species of wheat, 6 of which are wild, and the cultivated variety is soft wheat. (T. aestivum) and durum wheat (T. durum) are widely cultivated. Other wild and cultivated wheat species are also used in genetic research and breeding work, especially for interspecific crossbreeding to obtain hybrids. The number of species varies by species, the most common of which are T.Aestivum, T.Compactum, T.Durum, T.Turgudum [4].

It emphasizes that in the selection process, when studying the interrelationship of necessary economic and biological traits that determine the productivity of agricultural crops at one level or another, it is important to determine the correlation between yield and individual productivity elements. Environmental factors such as high temperature, low relative humidity, and drought negatively affect plant growth conditions, spike length, number of spikelets per spike, and grain yield [6].

The tillering of the durum wheat plant during the growing season is the main indicator in determining yield. Several scientists have noted a positive correlation between productive tillering and yield [5].

High yields can be achieved due to the number of spikelets in the ear, the number of grains, and the weight of the grain [2].

METHODS

Field and laboratory experiments were conducted according to the methodological guidelines (2004), recommended by the Gallyaaral Research Station of

the Research Institute of Grain and Legume Crops.

Phenological observations, field and laboratory analyses were carried out according to the methodology of the All-Union Research Institute of Plant Growing (1984). Biometric analyses were conducted according to the methodology of the State Commission for Variety Testing of Agricultural Crops (1985, 1989). The degree of drought and heat resistance of varieties and samples was determined in the plant physiology laboratory of the station according to the method of N. Kozhushko (1987).

RESULTS

The harvest grown in rainfed areas is closely related to the weather, that is, in ears with favorable air temperatures, the provision of precipitation and heat in the corresponding phases of the plant vegetation period influences the high or low yield. Productivity is the yield obtained from a single plant.

According to the results of the conducted research, in the varieties and lines studied in the experimental plot of the initial variety testing, the total tillering, according to the results of 2024-2025, averaged 2.8-3.6 pcs., and the productive tillering - 2.0-2.8 pcs. It was established that the total tillering of the standard variety "Leukurum-3" averaged 2.6 plants, and the productive tillering - 2.3 plants. This information is in full Presented in Table 1.

Table 1.
In the experimental plot of the initial variety testing, the varieties and clustering indicators of lines (Gallaaral - 2024-2025).

№	Varieties and lines name	Accumulation, (pieces)					
		General			Productive		
		2024	2025	medium	2024	2025	medium
1	Leukurum-3 (st)	3,0	2,5	2,6	3,0	1,8	2,2
2	Marvarid	3,0	2,4	2,7	2,0	2,0	2,0
3	DNS-2024/4	3,0	2,6	2,8	3,0	2,0	2,5
4	DNS-2024/7	3,0	2,4	2,9	3,0	1,8	2,4
5	DNS-2024/8	3,0	2,6	2,8	3,0	2,0	2,5
6	DNS-2024/10	3,0	2,6	2,8	2,0	2,2	2,1
7	DNS-2024/14	3,0	2,8	2,9	3,0	2,2	2,6
8	DNS-2024/18	4,0	2,4	3,2	3,0	2,0	2,5
9	DNS-2024/24	4,0	3,0	3,6	3,0	2,6	2,8
10	DNS-2024/25	3,0	2,8	2,9	2,0	2,2	2,1
11	DNS-2024/26	3,0	2,8	2,9	3,0	2,4	2,7
12	DNS-2024/29	4,0	2,8	3,4	3,0	2,2	2,6
13	DNS-2024/30	3,0	2,8	2,9	2,0	2,6	2,3
14	NP-2024/10	3,0	2,4	2,9	3,0	1,8	2,4
15	NP-2024/22	3,0	2,6	2,8	3,0	2,4	2,7
16	NP-2024/34	3,0	2,4	2,8	2,0	2,0	2,0
17	NP-2024/45	3,0	2,8	2,9	3,0	2,4	2,7
18	NP-2024/46	4,0	3,0	3,6	3,0	2,6	2,8
19	NP-2024/48	4,0	2,6	3,3	3,0	2,2	2,6
20	NP-2024/49	3,0	2,4	2,9	3,0	1,6	2,3
21	NP-2024/55	4,0	2,6	3,3	3,0	2,0	2,5
22	NP-2024/64	4,0	2,8	3,4	3,0	2,6	2,8

Many opinions and judgments about the indicators of the main spike have been recognized by world scientists and have been proven in experiments.

Spike length and density are varietal characteristics of the plant and depend on environmental factors. That is, when soil moisture is high, it can positively affect the

length and density of the ear, and when it is insufficient, it can negatively affect it [3].

The most important indicator in determining the yield is the number of grains in the ear. This trait depends on the plant's biology and cultivation conditions[1].

In the studied varieties and lines, the length of the ear was 6.8-8.7 cm, the number of spikelets was 16.0-20.1, and the number of grains was 35.6-40.9. In the standard variety "Leukurum-3," the ear length was 7.6 cm, the number of spikelets was 18.7 pieces, and the number of grains was 37.6 pieces (Table 2).

Table 2.
Indicators of durum wheat in the main ear
(Gallaaral 2024-2025)

№	Varieties and lines name	Main spike indicators								
		Ear length, (cm)			Number of spikelets, (units)			Number of grains, (units)		
		2024	2025	medium	2024	2025	medium	2024	2025	medium
1	Leukurum-3 (st)	8,0	7,6	7,6	20,0	17,8	18,7	40,0	35,6	37,6
2	Marvarid	7,6	7,5	7,5	18,0	17,6	17,8	36,0	35,2	35,6
3	DNS-2024/4	7,1	7,4	7,2	18,0	18,0	18,0	36,0	39,6	37,8
4	DNS-2024/7	7,6	8,0	7,8	20,0	20,0	20,0	40,0	40,0	40,0
5	DNS-2024/8	7,4	7,4	7,4	19,0	19,6	19,3	38,0	39,2	38,6
6	DNS-2024/10	8,1	7,3	7,7	19,0	17,6	18,3	38,0	35,2	36,6
7	DNS-2024/14	9,0	7,5	8,2	20,0	18,0	19,0	40,0	39,6	39,8
8	DNS-2024/18	8,1	7,3	7,7	19,0	17,4	18,2	38,0	41,8	39,9
9	DNS-2024/24	8,0	7,6	7,8	19,0	17,8	18,4	38,0	42,7	40,3
10	DNS-2024/25	7,0	7,4	7,3	17,0	17,4	17,2	34,0	41,8	37,9
11	DNS-2024/26	7,5	7,5	7,5	17,0	19,8	18,4	34,0	39,6	36,8
12	DNS-2024/29	7,4	6,5	6,9	18,0	14,4	16,2	36,0	43,2	39,6
13	DNS-2024/30	6,2	8,1	7,1	17,0	20,0	18,5	34,0	40,0	37,0
14	NP-2024/10	8,0	7,5	7,7	19,0	19,6	19,3	38,0	39,2	38,6
15	NP-2024/22	7,5	7,7	7,6	18,0	19,2	18,6	36,0	38,4	37,2
16	NP-2024/34	7,5	6,5	7,0	18,0	14,0	16,0	36,0	42,0	39,0
17	NP-2024/45	7,5	8,0	7,7	19,0	20,2	19,6	38,0	40,4	39,2
18	NP-2024/46	7,6	8,7	8,5	19,0	21,2	20,1	38,0	42,4	40,2
19	NP-2024/48	7,5	6,4	6,9	19,0	14,6	16,8	38,0	43,8	40,9
20	NP-2024/49	8,1	6,1	7,1	20,0	13,2	16,6	40,0	39,6	39,8
21	NP-2024/55	7,6	6,1	6,8	19,0	13,2	16,1	38,0	39,6	38,8
22	NP-2024/64	9,3	7,9	8,7	20,0	19,2	19,6	40,0	38,4	39,2

CONCLUSION

In terms of productivity indicators, compared to the standard variety "Leukurum-3," according to the tillering state, DNS-2024/14, DNS-2024/24, DNS-2024/26, DNS-2024/29, NP-2024/22, NP-2024/45, NP-2024/46, NP-2024/48, P-2024/55, NP-2024/64, and in terms of indicators in the main spike, DNS-2024/14, NP-2024/46, NP-2024/64 varieties and lines had high indicators.

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