



SELECTION OF HIGH GRAIN QUALITY LINES OF DURUM WHEAT FOR IRRIGATED AREAS

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ABSTRACT

In the breeding process in selection, a very important factor is the quality of grain and yield. The article analyzes the hybrid lines of durum wheat.

It is expedient to cultivate 30,000 tons of durum wheat in the dry lands of Kashkadarya and Surkhandarya regions, and the rest in the wetlands of these regions. When placing durum wheat, it should be taken into account that it is more resistant to cold, heat-demanding than soft wheat, and the yield quality is higher in the southern regions.

Currently, a large amount of pasta and confectionery products imported from foreign countries, which are necessary for the needs of the population, affects the state budget. The quality of grain grown often does not fully meet the requirements of the bakery, pasta and confectionery industries [2, 6, 11, 19, 21, 26, 34].

Hard wheat varieties are less resistant to drought, high temperatures, yellow and brown rust, and black currant than soft wheat varieties and the grains in the ears do not spill when ripe. In the arable lands of the republic it is expedient to sow durum wheat in autumn [4, 9, 13, 17, 24, 28, 32].

Creating new high-yielding, early-maturing, dormant and disease-resistant varieties is one of the most pressing challenges in agriculture in increasing grain production [3, 7, 15, 18, 22, 27, 35].

Hard wheat growers grow large quantities of durum wheat in Mexico, Italy, the United States, Kazakhstan, France and Spain [1, 8, 12, 20, 25, 29, 31].

Planting of durum wheat varieties in the Republic ensures high dry and hot temperatures, high amount of protein and gluten in the grain, high grain quality as a result of high photosynthetic radiation [5, 10, 14, 16, 23, 30, 33].

20 durum wheat varieties and lines were selected as the object of study. Krupinka variety, which is planted for irrigated areas, was taken as a standard variety. Experiment 3 was replanted, with a crop area of 10 m², planted at the rate of 5 million germinated seeds.

Field experiment was conducted in the Karshi experimental field of the Kashkadarya



branch of the Scientific Research Institute of Cereals and Legumes. Statistical analyzes were performed based on the method of B.A. Dospekhov (1985). Technological quality indicators of durum wheat grown in the experimental field "Methodical recommendations for the evaluation of the quality of grain", "Methods of biochemical research of plants", gluten content GOST 13586-1-68, grain vitreous GOST 10987-76, grain moisture content 93, grain nature was studied in comparison with GOST 3040-55, 1000 grain weight in accordance with GOST 10842-89.

The study examined the weight of 1000 grains of durum wheat varieties and lines, its dependence on yield indicators.

Varieties are divided into 4 groups according to the weight of 1000 grains: 1)

very large grains - more than 50 g, 2) large - 41-50 g, 3) medium large - 31-40 g, 4) small - less than 30 g.

While the standard grain size of the Krupinka variety was 38.7 g per 1000 grains, 18 lines were found to be higher.

During the study, it was found that durum wheat varieties and lines have 6 lines corresponding to 1 group of 1000 grain weight. The number of lines belonging to the second group, with a grain weight of 41.0-50.0 g, was 12, while there were 2 cultivars and lines belonging to the third group. No small grains less than 30 g were detected in the experiment. When the correlation of 1000 grain weights with yield was studied, it was found that $r = 0.22$ had a positive correlation.

Table 1

Productivity and grain quality indicators of durum wheat varieties and lines (Karshi, 2018).

№	Name	Grain yield, c/ha	1000 kernel weight, g	Test weight, g/l	Protein, %	Gluten, %	IDK	Vitreousity, %
1	Krupinka (check)	73,4	38,7	793,7	16,6	22,3	100,7	74
2	KR17_DurumAgro_Entry-3	75,4	40,5	817,3	17,7	28,3	104,9	78,5
3	KR17_DurumAgro_Entry-7	85,8	47,9	820,0	18,3	19,2	108,6	86,5
4	KR17_DurumAgro_Entry-16	83,2	44,5	814,3	15,7	21,7	93,0	84
5	KR17_DurumAgro_Entry-18	75,0	43,7	790,0	16,8	25,7	104,7	80
6	KR17_DurumAgro_Entry-19	82,0	48,7	819,3	18,1	31,2	102,1	84
7	KR17_DurumAgro_Entry-20	77,2	42,8	810,0	16,9	29,8	99,5	82
8	KR17_DurumYT_Entry-2	87,3	47,4	784,7	15,6	23,7	89,6	73
9	KR17_DurumYT_Entry-3	85,1	53,3	804,7	16,6	21,9	92,2	71
10	KR17_DurumYT_Entry-7	73,9	46,7	792,3	19,2	29,7	98,0	80
11	KR17_DurumYT_Entry-14	82,7	52,2	804,3	17,2	23,6	93,7	73,5
12	KR17_DurumYT_Entry-15	62,3	51,3	824,3	16,3	29,3	92,1	79
13	KR17_DurumYT_Entry-16	62,5	46,9	813,7	15,1	29,9	95,1	78
14	KR17_DurumYT_Entry-18	74,8	53,6	790,7	17,8	25,1	109,8	83
15	KR17_DurumYT_Entry-19	81,8	51,3	809,3	17,6	30,1	98,8	80
16	KRDW17-1	81,5	50,7	814,3	17,4	27,6	91,8	80
17	KRDW17-2	71,7	41,3	801,3	16,9	29,7	98,3	85
18	KRDW17-3	69,0	46,6	804,0	17,8	30,6	92,9	82
19	KRDW17-4	74,8	35,7	801,7	19,0	24,1	84,4	84



20	KRDW17-5	78,0	43,8	816,0	17,7	28,1	108,5	80,5
	Mean	76,9	46,4	806,3	17,2	26,6	97,9	79,8
	Maximum	87,3	53,6	824,3	19,2	31,2	109,8	86,5
	Minimum	62,3	35,7	784,7	15,1	19,2	84,4	70,7
	LSD_{0,5}	1,02	2,69	2,98	1,71	3,21	2,54	2,34
	LSD_{0,5} %	0,8	3,4	2	6	7,4	1,5	1,8

The grain yield of durum wheat varieties and lines was 784.7-824.3 g / l, the grain yield of the standard Krupinka variety was 793.7 g / l. It was found that the grain yield of the 15 lines studied was higher than 800 g / l and the standard variety.

When the grain protein content of durum wheat varieties and lines was studied, it was found that it was 15.1-19.2 percent. If the protein content of the grain is higher than 14%, it is included in class 1, when it is 11-13.9%, it is included in class 2, when it is less than 10.9%, it is included in classes 3 and 4. It was determined that the protein content of the grain of all cultivars and lines studied belonged to the 1st class. Although the grain protein content of the standard Krupinka variety was 16.6 percent, in 14 lines this figure was found to be higher than that of the standard variety.

The non-binding properties of wheat flour are mainly assessed by the amount and quality of gluten. The amount and quality of gluten is understood as a hydrated gel-rubber mass of wheat dough washed in water, consisting mainly of water-insoluble protein.

Wheat grains are divided into the following classes depending on the amount of gluten:

Class 1 - wheat grains with gluten content not less than 28% and quality not lower than group II;

Class 2-gluten content not less than 25%;

Class 3 - gluten content not less than 22%.

If the gluten content is less than 22% and the quality is lower than Group II, such wheat is called "classless".

According to the results of the experiment, it was found that the number of lines of varieties and lines with a grain gluten content of more than 28% was 11. The grain gluten content of the standard Krupinka variety was 22.3%, 31.2% in the KR17_DurumAgro_Entry-19 line, 30.6% in the KRDW17-3 line, and 30.1% in the KR17_DurumYT_Entry-19 line.

In conclusion, it should be noted that KRDW17-5, KR17_DurumAgro_Entry-19, KR17_DurumYT_Entry-19, KRDW17-1, KR17_DurumAgro_Entry-20, KR17_DurumYntiR17, KR17_DurumYntiR-3, KR17_DurumYT_E recommended.

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