Selection of Winter Wheat Varieties in the Conditions of Karakalpakstan

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A B S T R A C T
Agricultural technology plays an important role in increasing yields, but the yield itself is largely determined by the hereditary economic and biological properties of varieties.. Replacing old varieties with new ones often provides an increase in yield by 10-40%. Valuable properties of new varieties allow better use of other factors of production - agricultural technology, fertilizer, etc. This effect is achieved only due to the valuable economic and biological characteristics of the variety at no additional cost. For example, from the cultivation of the winter wheat variety Bezostaya 1, created by Academician P.P. Lukyanenko, the country's farms receive annually 100 million rubles. Additional income. The cost of additional grain harvest from the introduction of spring wheat varieties created at the Research Institute of Agriculture of the South-East is annually 600-700 million rubles

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Methodologically correct implementation of seed production is one of the most important factors for the accelerated introduction of newly created wheat varieties. Only with methodically well-established seed production, a new variety can more fully realize its economic and biological capabilities and form a high-quality grain crop.

Establishing seed production contributes to the accelerated introduction of a new variety into production. With the introduction of a new variety into production, work with it should not end, it must be propagated and protected from biological and mechanical contamination. It is an urgent task to organize primary seed production of a variety, maintain varietal purity and typicality, and propagate in the amount that meets the needs of sown areas of grain farms with high-quality seeds.

The key mechanism for solving these problems is the selection of varieties that are most adapted to the conditions of the Aral Sea region, plastic, providing consistently high yields with high grain quality with a shortage of water resources and the most responsive to ongoing agrotechnical measures..

The developed technologies for the cultivation of grain crops in other regions of the Republic of Uzbekistan and abroad do not correspond to the soil and climatic conditions of the Republic of Karakalpakstan, and not all varieties from other regions correspond to local soil and climatic conditions.

The main goal of this work is to scientifically substantiate and practically implement the selection of varieties that provide high yields of winter wheat. To achieve this goal, the task of our research is to select the most adapted varieties of this crop for the conditions of the Republic of Karakalpakstan.

2. Literature review

Cultivation and obtaining stable high yields of agricultural crops in the conditions of Karakalpakstan is a very difficult task. However, due to the insufficient development of cultivation technology, grain crop yields in farms are unstable (10-15 c/ha), and cultivation technologies do not meet the intensive use of

irrigated lands. In particular, the issues of selection of varieties, the influence of sowing dates, seeding rates and fertilizer on the formation of elements of the structure of grain crops have been poorly studied.

The selection of varieties for real growing conditions is not easy, but extremely important. Practice has shown that in sharply continental weather conditions that are reflected in the territory of Karakalpakstan, one cannot be engaged in the cultivation of one variety, even if it is very good. The selection of varieties should be carried out taking into account the specialization of farms, for specific growing conditions and with a wider adaptive capacity. The choice of varieties for sowingremains directly with the producers.

Methodology and objects of research

The purpose of this study is the selection of winter wheat varieties that provide high grain yields in the extreme conditions of the Republic of Karakalpakstan.

In order to solve the tasks set, field experiments were carried out on the following varieties of winter wheat:

ASR, Aziz, Karadarya, Umid, Tabor, Davr, Kuren, Antonina, Bezostaya-100, Alekseich.

Agrotechnics on the experimental plot were carried out according to the generally accepted recommendation for the condition of the Republic of Karakalpakstan.

Research results

An important indicator in the selection of resistant varieties of winter wheat is the length of the growing season, since this indicator depends on the place of their origin. The following phases of development were noted: germination, tillering, spring regrowth, trumpeting, heading and ripeness.

From the presented data, it can be seen that there is no difference in the length of the growing season for different varieties of winter wheat. This makes it possible to cultivate 3-4 varieties on the farm that differ in the length of the growing season.

The standing density of winter wheat plants was determined (Table 1) during the period of full germination and the period of spring regrowth. The results show that in the period of full germination, the density of winter wheat plants ranged from 274.8 to 335.4 pieces per 1 square meter. m., and after spring regrowth, the number of plants decreased the most by 5.4%.

The studied varieties differ in winter hardiness from each other. The results of accounting for the winter hardiness of winter wheat are shown in table 1

Table 1. **Density of standing of various varieties of winter wheat and their degree of wintering**

№	Name varieties	The number of plants in the period of full germination pcs per 1 m²	Number of plants during spring growth, pcs per 1 m²	winter hardiness%
1	ASR (st)	287,1	259,5	90,3
2	Aziz	329,0	297,6	90,4
3	Koradaro	292,4	261,4	89,4
4	Umid	310,7	278,4	89,6
5	Davre	295,9	265,3	89,6
6	Camp	335,4	302,0	90,0
7	Kuren	298,7	271,4	90,8
8	Antonina	274,8	245,8	89,4
9	Bezostaya-100	325,5	287,6	88,3
10	Alekseich	299,7	267,4	89,2

The highest winter hardiness among the studied varieties is observed in varieties Asr, Aziz, Tabor and Kuren 90.0-90.8%. And in other varieties, it was in the range of 88.3-89.6%.

The results of the study on determining the height of the plant and the accumulation of the above-ground dry mass of winter wheat plants showed that in the phase of spring regrowth in plant height, the

differences between varieties are insignificant within 0.5-4.5 cm, and with the onset of the heading phase, this indicator differs between varieties. In varieties Asr, Koradaro, Umid and Antonina, the height of plants in the heading phase was the highest than in other varieties (89.6-94.0 cm).

The accumulation of dry matter by the aboveground organs of plants is dynamic in time and increases from one phase to another. In the initial phase of development of winter wheat, there are no significant differences in the accumulation of above-ground dry mass, and from the heading phase, this indicator differs between varieties. The greatest accumulation of dry matter is observed in varieties ASR, Antonina, Koradaro and Bezostaya-100 (37.5-38.5 g).

The final assessment of any agricultural technique is the productivity of plants. The influence of different varieties on the yield of winter wheat is shown in Table 2.

As can be seen from the data in Table 2, during the study period, high yields of winter wheat grain were obtained in the tested varieties Alekseich, ASR, Koradaro, and Antonina (57.5-65.8 c/ha). The increase in yield of the tested variety Alekseich compared to the studied varieties ranged from 3.4 to 16.8 q/ha.

Table 2. Biometric indicators of the tested varieties of winter wheat

№п/п	Varieties	yield, c/ha	Plant height, cm	Spike length, cm	Number of grains in an ear, pcs	Grain weight of the 1st ear, g	Grain weight of 1 plant, g	Weight of 1000 grains, g
1	Asr	62,4	93,2	8,3	38,8	1,8	4,3	47,3
2	Aziz	52,0	83,8	6,7	28,6	1,0	2,9	36,8
3	Koradare	60,3	95,6	9,6	38,8	1,5	3,7	43,4
4	Umid	49,0	93,0	7,3	36,3	1,2	3,2	36,5
5	Davre	55,8	86,0	8,5	35,0	1,2	3,2	37,7
6	Camp	53,0	70,4	7,6	30,7	1,0	3,0	35,8
7	Kuren	49,0	88,4	6,8	30,3	1,2	3,1	42,0
8	Antonina	57,5	91,2	9,4	38,2	1,4	3,5	40,6
9	Bezostaya-100	54,0	83,8	7,1	33,2	1,2	3,3	37,4
10	Alekseich	65,8	81,2	6,3	35,5	1,4	3,4	41,7

NSR05 c/ha 3.23

NSR05 % 5.61

Studies have shown that these varieties have the largest number of productive stems, the number of grains (35.5-38.8 pieces in one ear), the grain weight of one ear (1.4-1.8 g) and the weight of 1000 grains (40. 6-47.3 gr.) is higher than that of other tested varieties.

Thus, according to the results of the third year of research, of the studied varieties for the selection of winter wheat, the most high-yielding varieties were Alekseich (65.8 c/ha), ACP (62.4 c/ha), Koradare (60.3 c/ha), and Antonina (57.5 q/ha).

Conclusion Of the tested 10 varieties of winter wheat, according to economically valuable traits, the varieties of winter wheat ASR (62.4 c/ha), Koradaro (60.3 c/ha), Antonina (57.5 c/ha) and Alekseich (65.8 q/ha).

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