



MORPHOLOGICAL AND BIOLOGICAL CHARACTERISTICS OF VARIETIES AND NEW LINES OF WINTER WHEAT

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Abstract.

Based on the results of the 2-year experiment of varieties and lines that have reached a constant state at the Research Institute of Cereals and Legumes in the 2nd year competitive variety test nursery, among the 19 selected constant lines, 13 lines are resistant to yellow rust and brown rust disease, and 13 lines are resistant to lodging. 70.6 ts/ha in line AC-2010-D33, 70.3 ts/ha in line AC-2010-D45, 78.2 ts/ha in line AC-2010-D21, 74.9 in line AC-2012-D31 ts/ha, 71.5 ts/ha in AC-2012-D14 line, 77.2 ts/ha in AC-2013-D30 line, and 80.1 ts/ha in AC-2013-D33 line.

Key words. Variety, line, protein, gluten, sample, crossbreeding, selection, yield, resistance, ear, ear, grain number, grain weight, grain volume weight, selection, hybrid, disease, line, model, generation, phenological observations, evaluation.

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Introduction. In recent years, a number of positive practical works have been carried out in our country in the selection of agricultural crops, in particular, in the creation of varieties of winter soft wheat, which are included in the ranks of grain crops. It should also be noted that in recent years, not only in our country, but also in the whole world, the increase in air temperature, the continuation of the global warming process, and the occurrence of drought in our irrigated fields have caused a

number of problems in grain production among agricultural crops.

Decree No. 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 the period 2020-2030" states that "the food security state, which provides for ensuring the safety of food products and improving the consumption ration, growing the required amount of food products development and implementation of



the policy" are defined as the priority directions for the implementation of the Strategy. For this, first of all, it is necessary to select wheat varieties suitable for the climatic conditions of the region, with high grain quality, and to improve agrotechnologies of their cultivation [1].

P.P. Lukyanenko found out that as the yield increases, the amount of gluten in the grain and the weight of 1000 grains decrease. In this article, the authors emphasized that early ripening is the best sign for selection of winter wheat according to the quantity and quality of the harvest, that the increase in the protein content of the grain and the improvement of the grain quality are carried out by means of hybridization and mutagenesis within the species [6].

G. V. Korenev, P. I. Podgornaya, S. N. Sherbak, based on their researches, make the following points: Showed that there is a positive relationship between productivity and growth period. According to them, the productivity of early-ripening forms is low, and the productivity of long-growing forms is high [5].

G.V. Udovenko stated that one of the main indicators of salt resistance of winter wheat varieties is coleoptile length, height, number of root nodes and weight of 1000 grains [11].

According to D.Kh. Simmendov, protein synthesis in endosperm begins 12 days after flowering, first vacuole cells are formed, then endosperm reticulum [10].

S.V.Biryukova and V.P.According to the Kamarovas, the presence of acorns helps the formation of grain in unfavorable conditions, but it is not considered as an indicator of productivity [3].

According to S. Gaibullaev, the growth period of the wheat plant is one of the main biological characteristics. Depending on different natural climatic conditions, the spike period can vary by 7-9 days. The duration of the period of sprouting and earing can be 180-200 days in the conditions of Uzbekistan [4].

According to Manoilenko, the structure of water in a living cell is constantly changing under the influence of metabolic reactions [8].

According to the information of many scientists, there is a positive correlation between the weight of the head of the head

and the yield (0.70-0.80). Therefore, in the selection, a lot of attention is paid to the weight of the head. 1000 grain weight, head weight and productivity are positively correlated with each other [12, 13].

As a result of the study of the wheat collection conducted by R. Siddikov and others, K-2629 (USA), K-36 (France), K-132 (Iran), K-2499, K-2530, K-2629 (USA), K-36 (France), K-2499, K-2530, K-2535, K-2527 (Canada), K-2770 (Mexico) samples were found to be early. The correct placement of wheat varieties based on the soil-climatic conditions of each region is important. Wheat varieties grown in our republic are divided into three: early (Chillaki, Bobur, Andijan-4, Mars-1, Kuma, Starshina, Zamin-1, Intensivnaya), mid-early (Kroshka, Selyanka, Tanya, Moskvich, Krasnodarskaya 99, Vostorg, Andijan-2, Hasildar, Durdon, Nota), late ripening varieties (Polovchanka, Pamyat, Andijan-1, Kupava, Nikoniya, Krupinka) are varieties [9].

Ionova said that temperature and humidity are important in the formation of grain quality, and their influence is very important during the growth period and especially during the grain filling period. During this period, high air temperature and low humidity lead to the formation of high quality protein in soft wheat grains [7].

The fact that all varieties (100%) or most of the crops included in the state register were created in Uzbekistan is an example of achievements in the field of grain growing. But there are still many problems and work to be done [2].

RESEARCH METHODOLOGY. Placement of research experiments, phenological observations, evaluation and analysis in field and laboratory conditions were used B.A.Dospekhov (1985) and the State Agricultural Crops Variety Testing Commission (1985, 1989), Russian Institute of Plant Science (1991), methodical manuals.

The thickness of the seedling in the experimental cuttings was determined diagonally from three places with a length of 6 rows in the distance between the outer row and the outer row on both sides. Counting was done in early spring and before mowing when the grass was fully germinated. From the place where the mark was placed, the plants were



plucked by hand and biometrically analyzed according to the structure of the crop. During the analysis, total and productive stem, plant height, spike length, number of spikes in a spike, number of grains in a spike, weight of one spike, weight of 1000 grains, nature and technological and physiological parameters were determined in the physiology laboratory. Mathematical analysis of experimental results Dospikhov B.A. (1985) were analyzed according to the method developed.

Experimental results. Duration of growth-development phases of cultivars and lines in a competitive cultivar trial nursery. In the 2nd year of the competitive variety test of the selection process of the varieties and lines of the autumn soft wheat of the scientific research work, the duration of the growth and development phases of the plants, i.e. how many days the phase interval was, was studied. In the conducted experiments, 19 lines that reached a constant state were compared to model varieties, and 4 returns were planted in the nursery of a competitive variety in 4 tiers on October 19, 2022, in the "Central" experimental field of the Scientific Research Institute of Grain and Legume Crops located in Andijan district. During the phenological monitoring of the varieties and new hybrid lines planted in the test nursery of competitive varieties of selection, the period of early full germination was observed on October 27-29. The duration of the germination period was 8-10 days. In Chillaki and Sharof-100 varieties taken as sample varieties, germination was 8 days on October 27. Corresponding to the sample varieties, AC-2010-D30, AC-2014-D3, AC-2013-D33 lines also corresponded to October 27, and germination was 8 days. In the lines AC-2010-D45, AC-2014-D39, AC-2010-D33, germination took 9 days, corresponding to October 28. The rest of the lines germinated on October 29, and it was found that the model germinated 2 days later than the cultivars.

The period of complete establishment of the lines and model varieties was observed in the test nursery of the competitive variety in the experiment as follows. The period of budding of varieties and samples in the experiment was observed the earliest in line AC-2014-D3 on February 6, lines AC-2013-D14, AC-2014-D15, AC-2012-D31 on February 7, that is,

the duration from germination to budding phase is 103 days. it was observed that he did. The sample of the Chillaki variety fell on February 7, and the Sharaf-100 variety fell on February 9. It was found that all studied lines entered the flowering phase at the same time as the model varieties. However, as can be seen from the table data, it was found that in some lines, the period from germination to budding was short, that is, it was shorter by 2-3 days compared to the sample varieties.

When the spike period was studied in the results of phenological observation in constant lines, the earliest observed according to the period of biological maturation and development of the lines was observed on April 16 in lines AC-2014-D39 and AC-2014-D3. Pattern of earing in the Chillaki variety April 15, Sharof-100 variety was found to have passed on April 14.

When conducting phenological observations of varieties and lines in the field experiments in the nursery, it was found that the flowering period of the model Chillaki variety took place on April 18, Sharof-100 variety on April 17, and most of the lines entered the flowering phase on April 20-29. The earliest flowering phase was observed in line AC-2014-D39 and was found to have entered on April 20, and the latest flowering phase was observed in lines AC-2010-D23 and AC-2013-D33 on April 29 and took 184 days. It was found that the degree of correlation between the spike phase and the flowering phase, that is, the period before the flowering phase of the lines that entered the spike phase was early. When studying the ripening phases of varieties and lines in the experiment, milk, wax, and full ripening periods were observed as follows.

The relationship between the flowering phase and full ripening phases in the studied lines can be seen from the tabular data, that the ripening phases were also shorter in the lines with a short period of entering the flowering phase.

When phenological observations were made in varieties and lines, wax ripening period was observed at the earliest on May 15 in line AC-2014-D3. AC-2013-D23, AC-2013-D14 lines in the test were observed late on May 28. It was found that the model varieties entered the lines 10-12 days earlier.



When the full ripening of the studied cultivars was studied in the competitive cultivar test nursery, the earliest observation in the lines was observed on June 5 in the AC-2014-D3 line. It was observed that full ripening material Chillaki and Sharof-100 varieties passed on May 25.

The tolerance of competitive cultivars and lines to external environmental factors was studied under field conditions. In studies conducted, most of the lines have been shown to be resistant and durable in terms of yellow rust damage, brown rust damage, frost resistance and lodging tolerance.

Varieties and lines were infected with yellow rust in experimental varieties and lines from April 5 to 15, and the percentage of plants infected with fungal yellow rust was evaluated according to the Minners scale. The incidence of yellow rust was 10% in the model Chillaki variety, and no incidence was observed in the Sharof-100 variety. Infestation rates ranged from 10% to 25% in nursery lines. Incidence was 10% in line AC-2012-D14, 25% on AC-2014-D15 line, 15% on AC-2014-D7 line, It was 20% in line AC-2014-D39, 20% in line AC-2013-D23. It can be seen that these lines are infected with yellow rust disease.

When brown rust infection was observed in varieties and lines, the percentage of plants infected with the fungus was evaluated according to the Peterson scale. No disease was observed in the sample varieties in the experiment. AC-2010-D30 line showed 25% incidence of brown rust. The rest of the lines were not affected by brown rust.

In the experiment, the general condition of varieties and lines, i.e. exit from the village, and cold resistance were evaluated using a 9-point scale.

The sample selected for the competitive variety trial nursery showed that the varieties and lines were cold tolerant. It was observed that the sample varieties Sharof-100 and Chillaki have 7 points, i.e. high durability. In the selected lines, it was found that the pattern is characteristic of varieties, that is, it is durable.

It was found that AC-2014-D3, AC-2010-D21, AC-2010-D45 lines have 9 points-extremely high resistance in terms of frost resistance, and all plants are in a healthy condition in the field. Among the lines, the lines with low frost resistance were identified, this is AC-2013-D14, AC-2014-D7, AC-2010-D23, AC-2014-D15, AC-2012-D14 lines were observed and evaluated with 5 points.

The productivity of varieties and lines studied in a constant condition in a competitive variety test nursery was analyzed in terms of returns per hectare. The highest yield was observed in the AC-2013-D33 line of the tested competitive variety and was 80.1 t/ha. Model Chillaki had an average yield of 53.8 t/ha and Sharof-100 50.7 t/ha, which was lower than most of the tested lines. Low productivity in lines compared to model varieties: 37.9 t/ha in AC-2013-D9 line, 45.5 t/ha in AC-2013-D14 line, 43.7 t/ha in AC-2014-D15 line, AC-2014 - D39 line was 42.2 ts/ha, and no sharp difference was observed in returns of these lines.

2598

Yield performance of winter soft wheat cultivars in a competitive cultivar trial nursery. (2021)

	Varieties and samples	Average				Average yield
		I	II	III	IV	
	ЧиллакиSt	53,7	52,5	54,3	54,7	53,8
	Шароф-100St	50,5	50,8	49,7	51,9	50,7
	AC-2010-D33	69,7	70,5	72,1	70,3	70,6
	AC-2010-D23	66,7	65,9	64,7	65,9	65,8
	AC-2010-D30	63,7	64,5	61,9	59,9	62,5
	AC-2010-D45	70,5	69,7	71,2	70,1	70,3
	AC-2010-D21	79,9	78,7	77,3	76,2	78,2
	AC-2012-D28	69,7	70,2	68,9	67,2	69,0
	AC-2012-D31	75,2	74,3	75,8	74,1	74,9
	AC-2012-D41-8	69,2	67,7	68,5	66,8	68,1



0						
1	AC-2012-D14	72,2	71,1	70,3	72,4	71,5
2	AC-2012-D3	64,3	62,9	63,5	63,9	63,7
3	AC-2013-D30	77,5	77,1	77,9	76,1	77,2
4	AC-2013-D33	79,5	79,1	80,1	81,5	80,1
5	AC-2013-D14	45,7	43,5	50,2	42,5	45,5
6	AC-2013-D9	38,9	38,2	37,3	37,3	37,9
7	AC-2013-D23	54,7	55,3	56,5	54,9	55,4
8	AC-2014-D7	63,2	61,3	62,5	61,5	62,1
9	AC-2014-D3	63,4	62,3	65,7	63,7	63,8
0	AC-2014-D15	39,7	38,2	37,5	40,7	39,0
1	AC-2014-D39	42,7	40,7	41,9	43,5	42,2

Sx= 0,63Sd= 0,92

HCP (05) = 2,12 %-, HCP(0.5)= 2,74 μ/ra

In the studied lines, AC-2010-D33 line with a positive indicator had 70.6 t/ha, AC-2010-D45 line 70.3 t/ha, AC-2010-D21 line 78.2 t/ha, AC-2012- 74.9 t/ha in D31 line, 71.5 t/ha in AC-2012-D14 line, 77.2 t/ha in AC-2013-D30 line, and 80.1 t/ha in AC-2013-D33 line productivity was determined.

Based on the purpose of the project, if the amount of gluten in the grain was compared to the model varieties, the selected lines showed higher results.

The grain quality index of varieties and lines is the highest AS-2013-D28 was 811.5 g/l in the line, and correspondingly positive results were obtained in AS-2010-D33, AS-2010-D30, AS-2010-D45, AS-2012-D31, AS-2013- D30 was higher than 800 g/l in AS-2013-D33 lines. In sample varieties, this indicator was 810.5 g/l in the Chillaki variety and 781.5 g/l in the Sharof-100 variety. When the transparency of grain is studied in laboratory analysis, the transparency of grain is of great importance to its flour and non-baking properties.

When the grain transparency was studied in experimental varieties and lines, it was 59.2 in Chillaki variety and 57.9 in Sharof-

100 variety in standard varieties. In the lines, it was determined from 48.5 to 67.1. The highest value is 67.1 in line AC-2014-D7, the lowest value is in line AC-2014-D15 48.5 compared to 49.5 in the AC-2013-D9 line.

Also, the following results were observed in the hybrid lines when the IDK indicator of the experimental varieties and lines were analyzed in laboratory conditions and which group they belong to. Model varieties Chillaki and Sharof-100 have an IDK index of 75% and belong to the I-group. IDK indicator of AC-2010-D33, AC-2012-D41-8, AC-2012-D3, AC-2013-D30, AC-2014-D7 lines in the experimental hybrid lines it was observed that 70-80% belonged to the I-group. According to the laboratory analysis results of other hybrid lines studied in the experiment, it was found that 85-100% of IDK index belongs to II-group and 105-120% belongs to III-group.

Summary. The following conclusions can be drawn based on the results of the 2nd-year competitive variety test nursery of varieties and lines that have reached a constant state at the Research Institute of Cereals and Legumes.



1. Phenological and laboratory results of the lines planted in the competitive nursery (2021), 19 lines of winter soft wheat, whose tolerance to external factors, the gluten content of the grain is at least 28-32%, the protein content is 14%, and the productive morpho-biological characteristics have reached a constant state. was studied.

2. Among the 19 selected constant lines in the experiment, 13 lines were found to be resistant to yellow rust and brown rust, and 13 lines were resistant to lodging.

3. In the studied lines, AC-2010-D33 line with a positive index was 70.6 ts/ha, AC-2010-D45 line 70.3 ts/ha, AC-2010-D21 line 78.2 ts/ha, AC-2012-D31 line 74.9 ts/ha, 71.5 ts/ha in AC-2012-D14 line, 77.2 ts/ha in AC-2013-D30 line, and 80.1 ts/ha in AC-2013-D33 line.

4. AS-2012-D28, AC-2012-D41-8, AS-2013-D3, AS-2010-D33, AS-2010-D21, AS-2012-D3, grain protein content from 14% and gluten content from 28 was found to be high.

5. It was determined that AC-2010-D33, AC-2012-D41-8, AC-2012-D3, AC-2013-D30, AC-2014-D7 lines belong to the I-group with the IDK index of 70-80%.

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