

RESISTANCE OF WINTER SOFT WHEAT TO EXTERNAL ENVIRONMENTAL FACTORS AND GRAIN QUALITY INDICATORS

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Abstract. *The article provides information about the resistance of the studied specimens to diseases and adverse environmental conditions. Among the 19 constant lines selected in the experiment, 13 lines were resistant to yellow and leaf rust.*

Keywords: *winter soft wheat, indicators, grain quality, environmental factors.*

The study of the varieties and samples of the world collection shows that great achievements can be achieved in the future if scientifically based advanced methods are applied and used in the selection process of geographically and genetically distant, diverse initial sources [1].

It is commendable that breeding scientists are solving problems such as supplying ecologically clean food products to the growing population and supplying industry with raw materials while creating abundant, early varieties.

The new variety being created is required to have a better result than the existing varieties in all its parameters. Taking this into account, it is important to evaluate the hybrid lines that have reached an unchanging constant state during the selection process according to various quality indicators and to select lines with high productivity.

A competitive test of varieties of winter soft wheat, created at the Scientific Research Institute of Cereals and Legumes and introduced in Krasnodar Territory, was carried out, and it was possible to select 6 lines with high yield and 5 lines with high breadness [3]. At the Research Institute of Cereals and Legumes, Uzbek-25, Aziz, Yogdu, Qadr, Navbakhor, Nadir, Asr Chilgisi and other early varieties with a yield potential of 100-110 centners, grain quality corresponding to class I-II, natural stress new varieties resistant to factors were created and most of them were included in the State Register for planting from 2022, the seed production system was widely introduced[2,4].

The conducted experiments were carried out in the "Central" field experiment area of the Research Institute of Cereals and Leguminous Crops, and 21 options were placed in 4 returns. The area of each option is 25 m². The soil of the experimental field is grassy soil, the water table is 1.5-2 m.

The goal of the scientific work is to create new domestic wheat varieties with the highest performance according to the results of the competitive variety test, resistant to unfavorable factors of the external environment, resistant to rust diseases, productive, baking properties, high gluten and protein content.

Phenological observations were evaluated and analyzed under field and laboratory conditions. observation and assessment Russian Institute of Plant Science (1991) and main periods in phenological observations (germination, emergence, budding, tuber, spike, milk, wax, full ripening) wintering, dormancy, disease resistance in field conditions International classification developed by the Russian Institute of Plant Science (SEV Triticum type, 1983) methodological manuals were used. Mathematical analysis of experimental results Dospekhov B.A. (1985) were analyzed according to the method developed.

The tolerance of varieties and lines to external environmental factors in the competitive variety test nursery was studied under field conditions. Most of the lines were resistant and durable in terms of yellow rust damage, brown rust damage, frost resistance and lodging tolerance in the studies conducted (Table 1).

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 10% in line AS-2012-D14, 25% in line AS-2014-D15, 15% in line AS-2014-D7, 20% in line AS-2014-D39, 20% in line AS-2013-D23 organized. 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. AS-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 AS-2014-D3, AS-2010-D21, AS-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, lines with low cold resistance were identified and lines AS-2013-D14, AS-2014-D7, AS-2014-D15, AS-2012-D14 were evaluated with 5 points.

Table 2

Grain technological quality indicators of varieties and lines in competitive variety testing

№	Varieties and samples	Protein content, %	Amount of gluten, %	IDK	Group
1	Chillaki St	14,0	29,7	75	I
2	Sharof-100St	14,0	29,0	75	I
3	AS-2010-D33	14,1	29,7	85	II
4	AS-2010-D23	14,0	28,2	75	I

5	AS-2010-D30	13,9	29,2	95	II
6	AS-2010-D45	13,9	28,7	95	II
7	AS-2010-D21	14,1	30,5	80	II
8	AS-2012-D28	14,3	29,3	95	II
9	AS-2012-D31	14,0	30,1	90	II
10	AS-2012-D41-8	14,3	29,5	70	I
11	AS-2012-D14	14,0	28,8	85	II
12	AS-2012-D3	14,2	29,2	75	I
13	AS-2013-D30	14,0	29,3	75	I
14	AS-2013-D33	13,5	27,7	80	II
15	AS-2013-D14	13,2	25,5	100	II
16	AS-2013-D9	12,9	25,1	105	III
17	AS-2013-D23	14,3	29,7	80	II
18	AS-2014-D7	14,0	28,5	75	I
19	AS-2014-D3	13,5	28,1	95	II
20	AS-2014-D15	13,2	25,5	105	III
21	AS-2014-D39	13,2	24,7	105	III

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. In the experimental hybrid lines AC-2010-D33, AC-2012-D41-8, AC-2012-D3, AC-2013-D30, AC-2014-D7, the IDK index was 70-80% and it was observed that they 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.

Conclusions from the results of the conducted research:

1. Among the 19 selected constant lines in the experiment, 13 lines were found to be resistant to yellow rust and brown rust disease. Lines AC-2014-D3, AC-2010-D21, AC-2010-D45 were found to be 9 points - highly resistant to cold, and all plants were in a healthy condition in the field. Among the 19 selected constant lines in the experiment, 13 lines were found to be resistant to lodging.

2. 14.3% in AS-2012-D28, AC-2012-D41-8 and AS-2013-D3 hybrid lines, AS-2010-D33, AS-2010-D21, AS-2012-D3, lines (higher than 14.0%) it was found that the protein and gluten content of the grain was high.

3. The highest indicator of grain quality was 811.5 g/l in AS-2013-D28 line, and correspondingly positive results were obtained in AS-2010-D33, AS-2010-D30, AS-2010-D45, AS- In the lines 2012-D31, AS-2013-D30, AS-2013-D33, the result was higher than 800 g/l, and the model was superior to the varieties.

4. AS-2010-D33, AS-2012-D41-8, AS-2012-D3, AS-2013-D30, AS-2014-D7 lines were found to belong to the I-group with the IDK index of 70-80%.

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