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EVALUATION OF MORPHOBIOLOGICAL CHARACTERISTICS AND TOLERANCE TO RUST DISEASES OF WINTER BREAD WHEAT

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Abstract:
The selection of starting materials is the main factor in the creation and production of productive bread wheat varieties resistant to rust diseases for the irrigated areas of our republic. In this case, the main task of the breeders is to transfer the best lines to the next stages according to the features of disease resistance and morpho-biological characteristics of the lines created by hybridization methods.

Key words: bread wheat, yellow rust, line, donor varieties, morpho-biological characteristics.

Scientific selection of wheat in Central Asia began in 1909. More than 400 local wheat varieties have been studied at the Turkestan Agricultural Experiment Station. In 1913, cereal crops were planted on the territory of Uzbekistan on an area of about 1 million 540 thousand hectares, of which 460 thousand hectares were winter wheat, 470 thousand hectares were spring wheat, 38 thousand hectares were corn, and the remaining 570 thousand hectares were barley, rice, oats and millet crops. In those times, local wheat and barley samples with low productivity were planted. In 1913, the science of grain breeding was founded. At the scientific institution "Zarafshan experimental field" established in the city of Kattakorgan, Samarkand region, the selection, seed production and agrotechnics of grain crops on dry lands were studied [5, 7, 14, 22].

Wheat is one of the most common agricultural crops in the world. Its grain contains almost all substances (proteins, carbohydrates, minerals, etc.) necessary for the normal development of the human body. Wheat bread has high taste and nutritional properties, is well digested and absorbed by the body. Wheat grain is also used in cereal, pasta and confectionery industry. It is the main product for 35% of the world's population and provides about 20% of the population's energy needs [2, 10, 13, 21].

Crossbreeding of forms far from each other in terms of origin is of great importance to create new wheat varieties with high productivity and high quality [3, 8, 18, 23]. As a result of cross-breeding of geographically distant forms, productive genes formed in different places in plant genetics create the basis for the emergence of hybrid organisms. It is known that the interconnection between genes is formed differently under the influence of plant growing conditions [1, 12, 15, 24].

It is very important to attract forms with complex characteristics for crossbreeding in the creation of productive varieties of wheat [4, 11, 17, 19].

In Uzbekistan, 26 types of fungi causing diseases of wheat plants have been recorded. Among these diseases are yellow rust, brown rust, powdery mildew, septoria, yellow spotting. The most dangerous of these diseases is yellow rust, which causes a decrease in yield and a decrease in grain quality [6, 9, 16, 20, 25].

Materials and methods

Placement of the experiment and during the experiment, phenological observations, calculations and analyzes were carried out according to the method of the All-Union Plant Science Institute VIR, 1984, and biometric analyzes were carried out according to the methods of the State Variety Testing Commission of Agricultural Crops (1985, 1989).

In the experiments, the disease resistance of varieties and lines was evaluated according to the Cobb and Manners scale. Resistance to rust diseases was divided into 4 groups according to leaf surface damage.

0- when the rust spores are not dropped on the plant at all in the fall.

R - resistant - in this case, the rust spores on the surface of the plant are very small, but it is observed that immunity against the disease is formed.

MR - moderately resistant - in which spores are visible on 5-10% of the plant leaf surface, but it is observed that the rust spores harden and develop immunity against the disease.

MS - moderately susceptible - spores are visible on 10-50% of the plant's leaf surface.

C - susceptible - when the leaf or the whole body of the plant is covered with rust spores.

The resistance of varieties and lines to yellow rust disease in the collection nursery was evaluated and selection work was carried out. Grom, Ghazgon, Bunyodkor, Shams, Hisorak varieties were studied as model varieties during the studies. In this

case, it was observed that 90% of the plant leaf and stem was covered with yellow rust spores of Grom variety. In the Gozgon variety, 20 MS was moderately susceptible, and it was observed that 20% spores covered the plant leaf surface. In Bunyodkor and Shams varieties, 10 MR disease resistance is average, and it was found that spores covered 10% of the plant leaf surface and were visible.

Table 1 **Resistance and morpho-biological characteristics of selected ridges to yellow rust disease, Karshi, 2023.**

№	Name	Resistance to yellow rust	Biological feature	The presence of spikes	Grain color
1	**Grom (check)**	90 S	Winter type	Ownless	Red
2	**Gozgon (check)**	20 MS	Winter type	Own	Red
3	**Bunyodkor (check)**	10 MR	Facultative	Own	White
4	**Shams (check)**	10 MR	Facultative	Own	White
5	**Hisorak (check)**	0	Winter type	Own	Red
6	KR20-LPYT-F6-06	5 MR	Winter type	Own	Red
7	KR20-LPYT-F6-08	0	Winter type	Own	Red
8	KR20-LPYT-F6-19	0	Winter type	Own	Red
9	KR20-LPYT-F6-20	0	Winter type	Own	Red
10	KR20-LPYT-F6-38	0	Facultative	Own	White
11	KR20-LPYT-F6-43	0	Winter type	Own	Red
12	KR20-LPYT-F6-47	0	Winter type	Own	Red
13	KR20-LPYT-F6-51	0	Winter type	Own	Red
14	KR20-LPYT-F6-52	0	Winter type	Own	Red
15	KR20-LPYT-F6-53	10MS	Winter type	Own	Red
16	KR20-LPYT-F6-59	10MR	Winter type	Own	Red

17	KR20-LPYT-F6-77	0	Winter type	Own	Red
18	KR20-LPYT-F6-82	20MR	Winter type	Own	Red
19	KR20-LPYT-F6-85	0	Facultative	Own	Red
20	KR20-LPYT-F6-93	0	Winter type	Own	Red
21	KR20-LPYT-F6-98	0	Winter type	Own	Red
22	KR20-LPYT-F6-106	5R	Winter type	Own	Red
23	KR20-LPYT-F6-107	5R	Winter type	Own	Red
24	KR20-LPYT-F6-108	0	Winter type	Own	Red
25	KR20-LPYT-F6-110	10MR	Winter type	Own	Red
26	KR20-LPYT-F6-111	0	Winter type	Own	Red
27	KR20-LPYT-F6-115	0	Winter type	Own	Red
28	KR20-LPYT-F6-137	0	Facultative	Own	White
29	KR20-LPYT-F6-145	5R	Facultative	Own	Red
30	KR20-LPYT-F6-150	0	Winter type	Own	Red
31	KR20-LPYT-F6-159	0	Facultative	Own	Red
32	KR20-LPYT-F6-176	0	Facultative	Own	White
33	KR20-LPYT-F6-183	20MR	Winter type	Own	Red
34	KR20-LPYT-F6-234	5R	Facultative	Own	Red
35	KR20-LPYT-F6-242	0	Winter type	Own	Red

In this process, it is observed that rust spores are hardened and immunity against the disease is formed. Hisorak variety was 0, and it was found that it was not infected with any yellow rust spores. KR20-LPYT-F6-08, KR20-LPYT-F6-19, KR20-LPYT-F6-20, KR20-LPYT-F6-38, KR20-LPYT-F6-43, KR20 from the lines not infected with yellow rust spores compared to the model varieties. -LPYT-F6-47, KR20-LPYT-F6-51, KR20-LPYT-F6-52 and other lines were not affected by any yellow rust disease.

When we divided the wheat crop into autumn or facultative varieties according to the biological characteristics of the wheat crop in the period of establishment, it was found in the experimental field that Grom, Gozgon and Hisorak varieties are autumn, Bunyodkor and Shams varieties are facultative varieties. The rest of the ridges were also determined by autumn and facultative characteristics. During the earing period of wheat, when we divided it into spiked and non-spiked, it was observed that Grom variety was spikeless, and other varieties and ridges had spiked spikes (table 4.6.1). In wheat, grain color is one of the most important indicators. When measuring the protein content of wheat in laboratory conditions, whether the wheat grain is white or red depends on the quality indicator of the grain. Here, the model variety is Grom, and the grain of Gozgon varieties is red. It was observed that the grain of Bunyodkor and Shams varieties was white. The grain color of the remaining ridges was determined.

In conclusion, it should be noted that 30 varieties were selected and transferred to the next stages of selection based on the study of valuable characteristics of varieties and varieties.

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