CHARACTERISTICS OF THE SOURCE MATERIAL, WHICH RESISTANT TO EAR BLIGHT OF WHEATGRASS AND ROOT ROTS, FOR BREEDING OF WINTER WHEAT

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Diseases of winter wheat significantly reduce grain yield and quality. Losses of gross grain yield because of them annually make 20-30%, and in epiphytotic years – 50%. An effective measure to limit the development of winter wheat diseases is the introduction of resistant varieties. Successful development of selection work in this direction is impossible without the use of a gene pool of stable forms. Among the genetic resources of wheat are genotypes that are resistant to several pathogens simultaneously, and therefore have special value as sources of group resistance. There is a constant need to identify new sources and donors of resistance to pathogens, the search for which is a relevant area of research and requires constant screening of the gene pool. The creation of sustainable varieties is recognized worldwide as the most effective, economically sound, and environmentally safe method in terms of environmental protection. Successful development of selection work in this direction is impossible without the use of a gene pool of stable forms. Recently, against the background of rising prices for fungicides, on the one hand, and the ecological crisis of the biosphere, on the other hand, the search for new effective sources of disease resistance is of particular importance. Among the genetic resources of wheat are genotypes that are resistant to several pathogens simultaneously, and therefore have special value as sources of group resistance. The V. M. Remeslo Myronivka Institute of Wheat is constantly working to create a source of breeding material for winter wheat, resistant to major pathogens, which are then used by breeders. According to the selection program for resistance to ear blight of wheatgrass and root rot, the following lines have been created: Lutescens F.g. 163/19, Erythrospermum F.g. 164/19 Erythrospermum F.g. 166/19, Erythrospermum C.h. 177/19, Erythrospermum

C.h. 175/19, which are used by breeders of the institute and transferred to the National center for plant genetic resources of Ukraine. One of the most important criteria for evaluating the material of winter wheat is the length of the growing season. This indicator determines not only the level of the yield of variety but also its resistance to drought, disease, and other stressors. The value of the period "seedlings - maturation" of samples of the selection winter wheat nursery was in the range of 238-245 days. According to the indicator of the vegetation period duration, the line Erythrospermum F.g. 164/19 in which the growing season was 238 days, which is 3 days less than the standard variety Podolyanka. It belongs to the group of early forms. The weight of 1000 grains is an important indicator of productivity, as well as a sign that characterizes increased drought resistance and heat resistance. As M. S. Savytskyi points out, grain formation with a high absolute mass is the resultant indicator of the high and stable yields formation. Crucial in the formation of grain with a high mass of 1000 grains are growing conditions, precipitation, and temperature during the period of grain swelling, as well as biological characteristics of the variety. In our experiments, the weight of 1000 grains in samples of winter wheat averaged 44.9 g. High weights of 1000 grains were observed in the lines Erythrospermum Fg164/19 – 50.6 g, Erythrospermum Fg166/19 – 49.3 g, Erythrospermum Fg163/19 – 46.5 g and Erythrospermum Ch177/19 – 47.3 g. In terms of yield, the standard exceeded the Lutescens F.g. 163/19 – at 38.8 g/m^2, Erythrospermum C.h. 177/19 – at 39.6 g/m^2, Erythrospermum C.h. 175/19 – at 26.7 g/m^2. The main features that limit the production of high-quality grain were and remain protein and gluten content. These indicators are closely related, having a high (0.765) correlation coefficient. The content of protein and gluten in the grain characterizes its quality, which is a decisive indicator in determining the price of grain. According to the current standard in Ukraine, food can include grain in which the protein content exceeds 10.5% and gluten - 18% (DSTU 3768:2010). High protein content was discerned at lines Erythrospermum F.g. 166/19 – 16.5% and Erythrospermum C.h. 177/19 – 15.8%. The highest level of gluten content in grain was recorded in the line Erythrospermum F.g.166/19 – 41.2%. The index of sedimentation (plumpness) is a complex indicator by which to judge the strength of grain (flour). According to our data, this figure in samples of winter wheat ranged from

51 to 71 ml. The best in terms of sedimentation are the following lines: Lutescens F.g.163/19 – 70 ml, Erythrospermum F.g.164/19 – 67 ml, Erythrospermum F.g.166/19 – 71 ml. In nature, the plant is usually affected by several diseases, so there is a need to create varieties with group resistance. Evaluating the lines created under the program of resistance against pathogens of ear blight of wheatgrass, it was found that the line Lutescens F.g.163/19 showed high resistance to the pathogen powdery mildew (lesion – 1.0%) and Septoria leaf blotch (lesion – 3.0%). Ear blight of wheatgrass did not exceed 5.0%. Resistance against two pathogens (ear blight of wheatgrass, powdery mildew) was distinguished by the line Erythrospermum F.g.166/19, and against Fusarium wilt and Septoria leaf blotch - Erythrospermum F.g.164/19. Lines created under the program of resistance to root rot Erythrospermum C.h.177/19 and Erythrospermum C.h. 175/19, showed relative resistance to this pathogen – lesions of 10.0 and 10.5% and had high resistance to powdery mildew – lesions of 2.0%.

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