SPECTRAL ASSESSMENTS OF WINTER WHEAT VARIETIES AND BREEDING LINES IN THE AUTUMN PERIOD

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The introduction of modern methods for field assessment of winter wheat genotypes is an integral part of improving the quality of the breeding process. The creation, adaptation and use of innovative screening technologies in breeding is becoming increasingly popular and allows the breeder to more widely and objectively evaluate the original forms and newly created material. Important for winter is the autumn period, when under favorable weather conditions (gradual decrease in temperature) there is a slowdown in the growth rate of winter wheat, changing physiological and biochemical processes in the plant, which contribute to its transition to hibernation. The state of winter wheat crops (morpho-biometric indicators of plants) in the autumn is largely decisive in the formation of a sufficient level of winter hardiness, and thus affects the further productivity of the crop.

The research was carried out during 2018–2020 in the breeding crop rotation, in winter wheat breeding laboratory of the Myronivsky Wheat Institute named after VM Remesla of the National Academy of Sciences of Ukraine. Soybeans were sown after the sowing predecessor in two sowing dates: 2018 - September 25 and October 5; 2019 and 2020 - October 5 and 15. Contrasting weather conditions during the assesmet period made it possible to obtain objective results.

Seven new varieties and four breeding lines of winter wheat were used as source material: MIP Assol, Balada Myronivska, Gratsia Myronivska, Erytrospermum 55023 (Aurora Myronivska), MIP Jubilejna, MIP Lada, MIP Dnipryanka, Lutesens 55198 (MIP Darunok), Lutesens 37519 (MIP Vidznaka), Lutesens 60049, Lutesens 60107 and Podolyanka st.

Dates of morpho-biometric analysis of winter wheat plants and spectral survey of crops - 21.XI 2018, 29.XI 2019 and 10.XI 2020. For three years of research it was established that the value of biometric indicators of varieties and breeding lines before In winter it depended on the hydrothermal regime in the pre-sowing and sowing periods and during the autumn vegetation: the amount of precipitation and the uniformity of their distribution, the moisture reserves in the soil, the air temperature and its differences.

As a result of research it was found that the height of plants after the cessation of autumn vegetation averaged 10.24 cm (first sowing period) and 8.11 cm (second), the number of stems per plant varied in the range of 3.35 - 3, 10 pcs., Respectively, the number of leaves - 7.34 and 3.59 pcs., The weight of one plant - 4.59 and 2.76 g, the vegetative mass after sampling - 14.35 and 6.22 g, and absolutely dry (25 plants) - 2.50 and 1.19 g. The largest vegetative mass before the beginning of winter was developed by winter wheat plants during the first sowing period in the 2018/19 growing year. Depending on the genotype and weather conditions, the height of the plants was in the range of 6.10 cm (Lutescens 60107) and 9.10 cm (Gracia Myronivska) in 2019/20; 13.63 cm (Podolyanka st.) and 21.28 cm (MIP Assol) in 2020/21; 19.91 cm (Lutescens 55198) and 25.63 cm (MIP Yuvileyna) in 2018/19. In 2019/20 before wintering, the plants of the first sowing period formed a small

vegetative mass - 6.92 and 2.35 g (Lutescens 55198) and 3.65 and 6.92 g (Erythrospermum 55023). The lowest indicators of vegetative mass according to the experiment were found in plants during the second sowing period of 2019/20, which negatively affected their resistance to adverse conditions of the cold period (low air temperatures in the absence of snow cover).

According to the results of analysis of morpho-biological and spectral analysis data, it was established that before overwintering the best condition for the first sowing period was winter wheat plants: MIP Lada (NDVI = 0.48), erythrospermum line 55023 (NDVI = 0.46), Lutesens 60049 (NDVI = 0.46), varieties MIP Distinction (NDVI = 0.46) MIP Jubilee (NDVI = 0.46), MIP Dnipryanka (NDVI = 0.46) and line Lutesens 55198 (MIP Gift) (NDVI = 0, 47). In the standard variety Podolyanka, the index value was at the level of 0.45. During the second sowing period, the following varieties were identified: MIP Assol (NDVI = 0.32), Ballad Myronivska (NDVI = 0.32), Erythrospermum 55023 (NDVI = 0.33), MIP Lada (NDVI = 0.33), MIP Jubilejna (NDVI = 0.32) and Lutesens 55198 (MIP Gift) (NDVI = 0.32) and Lutesens 60107 (NDVI = 0.32). NDVI index of Podolyanka variety was at the level of 0.32.

In the future, the analysis of biometric indicators of winter wheat plants and spectral evaluation during the restoration of spring vegetation and flowering will be carried out, followed by the establishment of their correlation with grain yield.