STUDYING THE FEATURES OF MORPHO-PHYSIOLOGICAL PARAMETERS OF PLANTS OF SPRING WHEAT VARIETIES IN THE EARLY STAGES OF ONTOGENESIS IN RELATIONSHIP WITH YIELD AND PRODUCTIVITY

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The paper presents the experimental data on the morphological and physiological parameters which were used to evaluate seedlings of eighteen spring wheat varieties during the initial stages of their growth and development, the vast majority of these varieties were characterized by a complex of economically valuable traits – high yield, productivity, adaptability, etc. Wide polymorphism of the spring wheat traits was revealed, the dependence of the morphophysiological parameters on varietal specifics was shown, varieties with different degree of growth processes intensification were identified. The level of growth functions variation within one variety was determined to be in a range of 3.2–21.5%. The vast majority of varieties had an average variability of traits (11–19%), with the least variability found in the length of roots (6.8%), and the greatest – in the length of sprouts (12.7%). The level of correlation contingency of all the studied parameters was evaluated, the degree the seedling organs affect the yield formation and elements of productivity was determined, and a direct dependence of those traits on the activation of the root system growth processes was established.

It was found that the yield was strongly related to the roots length (r = 0.48), roots numbers (r = 0.40) and roots mass (r = 0.48), while the 1000 grain mass was related to the yield (r = 0.40) and roots length (r = 0.41). Such elements of productivity as mass of grain per ear, number of grains per ear and productive tillering were interconnected with the root system activation. Based on the sum of numerical indicators of the morphophysiological parameters, yield and productivity elements converted into a rank format, varieties were identified that form the highest degree of development of initial growth processes and are characterized by the highest rating of biological usefulness, among which are Marfa, Zlata, Faina and Agros.

Keywords: spring wheat, morphometric parameters, sprouts mass, roots mass, yield, 1000 grain mass, grain mass per ear, number of grains per ear, productive tillering, variability, correlation.