

AGROECOLOGICAL VARIATION OF WHEAT PRODUCTIVITY AND DISEASE RESISTANCE: ELEMENTS AND MODELING

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The data on the influence of a complex of agroecological factors on the soft wheat (*Triticum aestivum* L.) productivity and the crop phytosanitary condition are presented in the paper. The conditions of the growing seasons in 2009-2021 were characterized by a complex of meteorological indicators and by parameters of solar activity. The phenotypic variability of wheat cultivars in productivity and its structure elements were assessed by the variability of a complex of indicators: plant height, flag and pre-flag leaf area, spike weight, spike length, spikelets number per spike, grain number and the grain weight per spike, the 1000 grain weight. When analyzing the intensity of the wheat cultivars infection by root rot pathogens, brown and yellow rust, powdery mildew, the complex of phytopathological indicators was used: some are generally accepted (disease development, reaction type) and some are additional clarifying parameters. As plants protective adaptations to diseases, morphological features of cultivars were considered: height, angle of the leaf inclination to the stem, leaf pubescence, wax coating, leaf color, general bushiness. The hidden heterogeneity of wheat grain used as a seed material and its relationship with the productivity and plant resistance to the diseases was analyzed using the methods of gas-discharge imaging and soft-beam X-ray.

Key words: Soft wheat, meteorological factors, solar activity, plant habitus, productivity, diseases development.