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COMPLEX BIOPREPARATION IN AGRICULTURE AS A FACTOR OF HUMAN HEALTH PRESERVATION AND PROMOTION

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Relevance. The strategic objectives of the Republic economic development include a gradual transition to a “green economy”, the key component of which is the organic agriculture development (Decree of the Council of Ministers of the Republic of Belarus, dated December 21st, 2016 No. 1061). Taking into the account the current level of phytopathogenic load on agrobiocenoses, the efficiency of agricultural production is achieved by increasing the used chemicals dose and the treatment multiplicity. This leads to the human health and environmental situation deterioration. The use of biopreparations based on the microorganisms cultures, which are safe for human health and environmentally friendly, is becoming relevant. This is the sustainable development goal of the Republic of Belarus No. 3 “Good health and well-being” (p. 3.9): by 2030, significantly reduce the deaths and illnesses number as a result of hazardous chemicals, air, water and soil pollution and poisoning impact.

Aim: to develop new complex biological products as a means of preserving and strengthening human health and to study their growth-stimulating, protective and immunomodulatory properties that increase plant productivity.

Materials and methods. The complex biopreparations modeling was carried out on the basis of four components: biopreparations Bactogen and MaxImmun, coniferous extract, minor-nutrient complex. The following methods were used: fungi cultures cultivation; growth-regulating study and antagonistic activity of complex biological products; determination of the disease prevalence and the study development of the plant systemic resistance induction.

Results and discussion. In the research, 11 variants of treatment with complex biopreparations were tested. It allowed to select the most effective complexes of biopreparations for stimulating growth and inducing systemic resistance of plants (“MaxImmun + coniferous extract”), as well as protecting plants from pathogens (“Bactogen + coniferous extract”). On the basis of the data statistical analysis, the developed complex biopreparations effectiveness has been proven. Recommendations for their practical use have been worked out. Information about the manufacturers’ interest in the introduction of the developed complex biopreparations into production has been given.

Conclusions. In the study course, results, characterizing the growth-stimulating, antagonistic and immunomodulatory effects of the developed complex biopreparations, have been obtained. There may be the basis for the creation of new complex biopreparations with the biofungicide and plant growth regulator properties with the immunomodulator functions. The data obtained in the research expand the possibility idea of using biopreparations as a means of increasing plant productivity based on their growth stimulating, developing protective properties and inducing systemic resistance, as well as a factor in reducing the phytopathogenic load on agrobiocenoses. Biopreparations have the following properties: environmentally friendly; non-pathogenic and non-toxic to humans and animals; do not have mutagenic and oncogenic activities. The developed biopreparations use will reduce the residual pesticides level in the final product (food), which will ensure the human health preservation and strengthening.