

**THE RESISTANCE OF TOMATO PLANTS MICROCLONES *LYCOPERSICON ESCULENTUM* MILL. OBTAINED BY USING OF METABOLIC BIOFORMULATION OF STREPTOMYCES ORIGIN AGAINST PARASITIC NEMATODES**

**Loboda M., Biliavska L.**

D.K. Zabolotny Institute of Microbiology and Virology of the NAS of Ukraine  
e-mail: marichka20loboda@gmail.com

Tomato is a commercially useful agricultural plant. Its low tolerance against pathogens and parasites is an obstacle in obtaining of high-quality harvest, and parasitic nematodes are one of the widespread harmful reasons of it. Therefore, a complex approach of obtaining of tomato plants microclones resistant against them is relevant. The widespread use of streptomycetes in agriculture is connected with their ability to synthesize a complex of biologically active substances (BASs) which suppress phytopathogens and parasites, increase plants resistance against stresses. **The aim** of the research was to prove the effectiveness of the use of Phytovit bioformulation based on streptomycete metabolites to obtain tomato plants microclones *Lycopersicon esculentum* mill., resistant against nematodes.

Phytovit is a complex metabolic bioformulation which consists of ethanolic extract of *Streptomyces netropsis* IMV As-5025 biomass and culture liquid. It inhibits phytopathogenic fungi and bacteria and provides a priming effect for plants indirectly through other BASs. Averkom is based on *Streptomyces avermitilis* IMV Ac-2179 biomass extract and culture liquid and was used as a positive control. It contains Avermectin with antiparasitic properties, and other BASs. They were constructed at the D.K. Zabolotny Institute of Microbiology and Virology, NASU. Microclonal reproduction was carried out at Institute of Food Biotechnology and Genomics, NASU. Bioformulations were added in nutrient medium and then plants were grown in vegetative conditions without further treatment by them.

The decrease of the amount of parasitic nematodes in the roots and rhizosphere of tomato plants of the 1st generation under the influence of Phytovit and Averkom was shown by nematological analysis. Bioformulations showed high biological efficiency against *Ditylenchus dipsaci*, *Pratylenchus pratensis*, *Helicotylenchus dihystra*, *Paratylenchus nanus*) in the roots, which was 84.92%, 40.87%, and 57.14%. Their effectiveness against *Paratylenchus nanus* was 100%. An increase of stem length by 29% was observed. The amount of tomato fruits was 2-fold increased, and the weight of them from one plant – 3.3-fold under the action of 75 µl/mL of Phytovit. This resistance was also preserved for the 2nd generation of plants, which indicates the prolonged effect of bioformulations.

**Summary.** The efficacy of soil streptomycete metabolites for *in vitro* obtaining tomato plants microclones *L. esculentum* Mill resistant against parasitic nematodes was shown for the first time. It was associated with the induction of plant systemic resistance by streptomycetes secondary metabolites.

**Key words:** *Streptomyces netropsis*, Phytovit, bioformulation, biologically active substances, microclones, nematodes.