

TECHNOLOGY OF MULTIFUNCTIONAL APPLICATION OF NEMATODE-BACTERIAL COMPLEXES IN BIOLOGICAL PROTECTION OF POTATOES FROM PESTS AND DISEASES

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The study conducted in 2024–2025 was aimed at a comprehensive assessment of the pathogenic potential of entomopathogenic nematodes of the *Steinemematidae* family and their symbiotic bacteria *Xenorhabdus nematophila* and *Xenorhabdus bovienii*. The evaluation was carried out in field trials, followed by an analysis of the nematode-bacterial complexes effectiveness in protecting potatoes from abiotic and biotic factors. The purpose of this study was to develop a technology for the multifunctional use of nematode-bacterial complexes in the biological protection of potatoes from pests and diseases. The results of the immunological assessment of potato tubers obtained after harvesting revealed that for effective control of the main diseases and damage of tubers by wireworm during the growing season, the most effective method is the combined use of the biological preparation Nemabact and symbiotic bacteria *X. bovienii*. This method involves spraying the soil and tubers with a suspension of invasive nematode larvae and an aqueous suspension of bacteria. In conditions of elevated ambient temperature, leaf treatment with an aqueous suspension of symbiotic bacteria *X. nematophilus* has proven to be an effective means of protecting potatoes from pathogens, providing protection against rhizoctoniosis by 38–100%, late blight by 12–100%, and scab by 50–100%. An innovative technology based on the multifunctional use of nematode-bacterial complexes has demonstrated its effectiveness in protecting potatoes. The highest yield of tubers was obtained with the combined use of the drug Nemabact and symbionts *X. bovienii* and *S. feltiae protense*. This led to an increase in yield by 1.9 t ha⁻¹ (7%) due to an increase in the number and weight of tubers. This approach makes it possible to use these complexes more effectively for pest control, taking into account conditions of each growing season.

Keywords: potato, cultivation technology, entomopathogenic nematodes, pathogens, wireworm.