

P.27 - Antibiotics and the microbe-antagonists as a means for the treatment of plant diseases

Dvali, G., Nadiradze, K., Megrelishvili, I., Shamatava, T., Lomtadze, N., Phirosmanashvili, N., Chachanidze, M.

In the current conditions the microbe-antagonists and their product antibiotics are one of the means used to fight against plant disease. A plant, with the aid of its root system, can absorb from a substrate different organic substances, antibiotics included. The latter produce the special effects in the plant tissues. Specifically, they increase bacteriocidity of plant sap, which provides a plant with the capacity to struggle against infectious diseases. The antibiotics are exceptionally active against the pathogenic microorganisms of various origins. An antibiotic of a certain concentration and majority of microbial preparations stimulates growth and development of the plants and increases the overall crop. The antibiotics are used in low concentrations. In the soil and on a plant surface they decay rapidly, which decreases accumulation of harmful substances in the environment and in the plant products. A pre-sowing treatment of the seeds with the microbe-antagonists or after their introduction into the soils results in their proliferation around the root system. Sometimes, their antagonistic properties are elevated as well. Simultaneous introduction of two or more antibiotics or their mixing with the chemical preparations increases their effectiveness. Investigations by a number of scientists have shown that the implementation of the antibiotics has a high effectiveness against bacterial, fungal, and viral diseases of the plants. In recent years a wide range of studies have been carried out concerning the usage of microbe-antagonists and the antibiotics produced by these microbes. In order to use these preparations against different plant diseases, special technologies are under development. In the Georgian conditions, investigation of the microbe-antagonists and the antibiotics synthesized by the latter was carried out in the strains isolated from the rhizospheres of the vegetable cultures (tomatoes, cucumbers, egg-plants, sweet pepper). Against the *Fusarium*, various cultures of the spore bacteria have been isolated, including *Bac. mesentericus* and bacteria of the *Pseudomonas* family. The majority of those bacteria, which synthesized the antibiotics, belonged to the actinomycetes. Also a large portion of the antagonists contained fungi.