Annotation

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Survival of Agrobacterium radiobacter 204 strain in the rhizosphere of grapes

Modern agriculture implies high costs of material and natural resources to obtain high yields. That means discharging a large amount of harmful pollutants fertilizer residues, agricultural chemicals, etc into the environment. To ensure the sustainable development and greening of agricultural production such agricultural technologies that will not adversely affect the environment and at the same time on human health should be used. Such agricultural technologies include, in particular the use of biological products based on beneficial microorganisms in growing agricultural crops.

So, it is well known that microorganisms that are the basis of microbiological preparations, have the ability to turn difficult forms of nutrients in the soil into digestible compounds for plants, thereby improving their growth and development as well as increasing crop productivity. Also, strains-bases of biological preparations can have bio protection effect in the fight against diseases and pests.

However, applying bacterial preparations does not provide absolute efficiency in contrast to classical techniques. It depends on many factors including weather conditions and efficiency of plant rhizosphere colonization with beneficial microorganisms. So studying colonization rate of strains-bases of microbial preparations in the rhizosphere of crops is urgent.

In a series of experiments of our studies mutants of A. radiobacter 204 strain were obtained resistant to streptomycin (1500 u/ml), ampicillin (130 u/ml) and kanamycin (140 u/ml). Further, the root system of grape seedlings was treated with a suspension of microorganisms and planted in containers filled with meadow alluvial carbonate soil. We have found that the strain of nitrogen-fixing bacterium A. radiobacter 204 is able to take root in the rhizosphere soil of grapes. It is noted that antibiotics influence microorganisms differently. For example, in the soil the greatest number of streptomycin resistant mutants were developing that can be explained by the presence of this preparation in the environment. The smallest number of microorganisms was observed in variants using ampitsillin- and kanamycin-resistant microorganisms in the rhizosphere of grapes and in control. This indicates that the micro-organism that is the basis of the biological preparation Diazofit is really capable of colonization rate in the rhizosphere of grapes.

Key words*: Agrobacterium radiobacter 204 strain, Diazofit, antibiotic-resistant microorganisms, rhizosphere of a grape plant.*