DEVELOPMENT OF *ENTEROBACTER NIMIPRESSURALIS* 32-3 IN GRAPE PLANTS RHIZOSPHERE

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It is well known that microbial preparations used in the cultivation of various crops have a number of useful properties. First, they are environmentally safe for the environment and human, secondly – they have the ability to improve mineral nutrition of plants, to improve their growth and productivity. In addition, bacterial strains, that make basis for biological preparations, have positive impact on the formation of groups of microorganisms in the soil [1; 2]. However, the effectiveness of preparation use depends on the ability of bacterial strains to survive in the rhizosphere of plants.

One of the promising microbial preparations based on phosphate mobilizing bacteria is Phosphoenteryn. Research conducted by a number of authors suggest that strain-basis of this preparation (*Enterobacter nimipressuralis* 32-3) is capable to survive in the rhizosphere of corn and vegetables [3-5]. However, the ability of this bacterium to grow and develop in the root areas of grape has not been studied yet. In this context, the goal of our research was to study the survival ability of *E. nimipressuralis* 32-3 in the rhizosphere of grape plants.

Materials and methods. The study was conducted during growing experiment with Muscat white at Chasselas x Berlandieri 41B rootstock. The duration of the experiment was 70 days. The survival ability of *E. nimipressuralis* 32-3 in the rhizosphere of grape was studied through its streptomycin-, ampicillin- and kanamycin-resistant mutants. Antibiotic-resistant strain mutants were obtained by Zibalskyi method [6]. The final concentration of antibiotics in the culture medium, that did not keep the studied bacteria

from growth, was 1000 units/ml of streptomycin, 100 units/ml of ampicillin and kanamycin.

Grape root system was treated with the suspension made of diurnal culture of microorganisms (10.2-11.5 million CFU/ml) in the amount of 6 ml per each seedling. Plants were planted in the vessels of 6 litres each filled with meadow alluvial carbonated soil. The main characteristics of the soil: humus reserves 1.5-2.2%; mobile nitrogen content 11-18 mg/kg of soil, phosphorus – 32-38 mg/kg, potassium – 260-430 mg/kg; reaction of soil solution (pH) 8.2-8.5; carbonate content – 15-37%; active lime content – 10-15%. These characteristics of soil are optimized for growing grape. Six-time repetition of the experiment.

The number of bacterial cells mutants in the rhizosphere of the plant was determined by deep planting of certain dilutions of soil suspension onto the culture medium (glucose-aspartic agar) supplemented with 1000 units/ml of streptomycin, 100 units/ml of ampicillin and kanamycin, 5-time repetition. The number of bacteria naturally resistant to antibiotics is stated in the control. Soil samples for this variant were taken in the rhizosphere of non-bacterized plants.

Thus, the conducted studies show that *E. nimipressuralis* 32-3 has the ability to survive in the rhizosphere of grape and can adapt and exist on the surface of grape roots. These results explain the data that we obtained during a field experiment, namely: the use of Phosphoenteryn makes positive impact on the growth, development and yield of grape [7].