

BIOPREPARATIONS INFLUENCE ON PLANT GROWTH AND DEVELOPMENT

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Introduction. Biological preparations (biologicals) are the preparations of biological origin, which are received due to the microbiological synthesis. They are used for introduction into plant seeds along or with organic fertilizer.

By means of biotechnology new pheromones, attractants, repellents and biologically active substances, growth regulators, antibiotics, to breed predatory and parasitic insects, phytophages that suppress harmful insects, diseases, weeds were began to receive.

It is consider that biological products are more environmentally safe, harmless to humans, animals and insects than pesticides. So them are consider safer then pesticides.

The mechanism of biological preparations action is associated with the fact that the microorganisms into the soil conquers his living space in bacteria that is already there. Microorganisms recycle the soil, doing therein nutrients "edible" plants, do not allow the roots to harmful bacteria. Useful substances produced by microorganisms faster reach the cells of the plant.

Biological preparations are used to stimulate development of the root system and plants in general, to improve the germination of seeds, strengthening of plant immunity and enhance resistance to diseases and abiotic factors, to protect from pests, for the treatment of organic waste for digestion remedies, increasing yield and soil fertility. They provide plants with nutrients required during germination. Designed for grains, beans, oilseeds and cereal crops, beets, corn, vegetables (cucumbers, tomatoes, cabbage, and others), flowers, tubers, also used for berry crops, herbs, soil.

In Ukraine there is a large spectrum of biologicals products. They are biofungicides-Field®-R, Mikosan, biocomplex®-BTU-p, the insecticides-Lepidocide®-BTU-R, Bitoxibacillin®-BTU-R, biodestruktor-Organic-balance®-R and others.

Nitrogen-fixing bacteria are in the majority of biologics. Nitrogen-fixing bacteria are belong to gram-negative bacteria from the free-living nitrogen fixers group. Representatives of this group of bacteria inhabit neutral and alkaline soils, water and are symbiotic with certain plants. They play an important role in the nitrogen cycle in nature. Nitrogen-fixing bacteria can be aerobic and anaerobic, living freely in the soil (*Azotobacter*, *Clostridium*) and living in symbiosis with plants.

The energy source for the reduction of nitrogen in aerobic bacteria is the processes of respiration, anaerobic is the processes of fermentation. In free-living nitrogen-fixing activity is influenced by the content of soil organic matter, macro and micronutrients, its acidity, temperature and humidity.

Nitrogen-fixing bacteria of the genus *Azotobacter* are in the majority of Biological preparations.

Members of the genus *Azotobacter* are bacteria living in the soil, which in the process of nitrogen fixation is able to transfer gaseous nitrogen into a soluble form for absorption plants.

Aim. The aim of our research is to study the effect of biological preparation on the germination, energy of germination of seeds and growth of tomato seedlings.

Materials and methods. We studied the universal biological preparation AZOTOPHYT® (manufacturer: PE "BTU-Center", Ukraine, Vinnitsa region, Ladyzhyn).

Treatment of seeds and seedlings was performed with a AZOTOPHYT® solution, which was prepared according to the manufacturer's recommendations.

The experiments and statistical analysis of results was conducted according to State Standard 12038-84 "Seeds of agricultural crops, methods of determination of germination".

Results and discussion. The biopreparation AZOTOPHYT® contains cell bacteria of the species *Azotobacter chroococcum* as a valid base, as well as micro- and macronutrients, enzymes, amino acids, vitamins, phytohormones, antifungal substance.

Species *Azotobacter chroococcum* is a free living obligate aerobic bacterium. To obtain a biologicals culture the producer is grown by the method of deep cultivation, in addition enter the sulphates of iron and manganese salt of molybdenum acid, pH 5.7-6.5.

As the object of research we choose the tomato Volgograd cultivar. The are a high content of carotenoids, vitamins (B1, B2, B3, B5), organic acids (folic, ascorbic, citric, malic, oxalic and others), high-molecular fat (palmitic, stearic and others), and carboxylic acids In the tomato fruit. Choline, which is present in tomatoes, helps to lower cholesterol levels in the blood, prevents fatty degeneration of the liver, strengthens the immune system, increases hemoglobin content. Tomatoes are a common vegetable crop in the industrial and private horticulture.

Conclusions. The results, obtained in the conducted experiments, can be used in the selection of biological preparations to increase the yield of vegetables and the creation of new and effective biological products for use in agriculture.