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BIOLOGICAL PRODUCTS BASED ON SOIL MICROORGANISMS AND THEIR STUDY ON VARIOUS AGRICULTURAL CROPS

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ABSTRACT

The article presents the study of soil microorganisms in different countries, obtaining from them biological preparations that improve soil fertility. On the example of the conclusion foreign studies for use of biological products on different crops.

DISCUSSION

Soil microorganisms play an important role in the soil processes among the representatives of the biocenosis. They constitute a permanent and active part of the soil microflora. Associated with complex interactions with all its components and take a diverse part in soil processes. In studies M.M. Gollerbach (1906-1953) revealed that microorganisms, abundantly developing on the surface of cultivated soils, serve as a source of additional organic matter and biologically active substances in plant nutrition. They are involved in the enrichment of soil with nitrogen, many blue-green algae are fixers of atmospheric nitrogen and accumulate nitrogen in virgin soils up to 17.5 kg / ha and on soils in the tropical zone up to 90 kg / ha. (Shtina, 1961). The positive effect of bioflora on soil fertility and its biological activity is noted by many researchers. It has been established that they are abundantly developing in the thickness of the soil layer and enriching the soil with organic substances improve its fertility.

For the first time in the world in the 80s of the 20th century, biopreparations in agriculture were created by Japanese scientists, in particular, microbiologist, Professor Teruo Higa proposed a new biopreparation as an alternative to mineral fertilizers and toxic chemicals, which consisted of 80 strains. The main purpose of the use of biological products by Japanese scientists was the production of environmentally friendly products. The results of which were achieved by Japanese farmers (increased yields, quality, cost reduction, plant resistance to external factors, etc.) quickly spread throughout the world.

The first experiments were conducted in Europe and in the USA. According to H. D. Burges (1987), 24 strains of the bacterium Bacillus thuringiensis were created and used in Italy as a biological preparation for protecting plants against fungal diseases. The use of biological products has more than 110 countries.

The composition of Russian biopreparations includes soil microorganisms isolated from other soil and climatic conditions, black-earth acidic soils, adapted to exist in a humid and cold climate. With the introduction of these drugs into the soil of Uzbekistan there is a high probability that they will not be able to survive and take root in our soil (alkaline pH value) and harsh climatic conditions (high temperature, drought, sharply continental climate, etc.).

Therefore, their use may not give the expected results from the use of drugs. The main

reason for the widespread development in intensive farming of negative phenomena is the poor knowledge of the influence of modern agricultural technologies and new types of fertilizers on the specifics of the vital activity of soil microorganisms and on the intensity and direction of biological processes in soils. The intensity and direction of microbiological processes has the most direct impact on the formation of agrochemical properties of soils. Therefore, without a deep microbiological substantiation of the rational use of existing and newly created fertilizers currently used in agriculture, it is not possible to diagnose the directionality of the modern evolution of soil fertility.

As a result, the newly created fertilizers can be used only after carrying out thorough, comprehensive scientific-theoretical and practical studies confirming the effect and aftereffect of the applied fertilizers in order to avoid anthropogenic load on the soil microbiocenosis of already depleted lands.

Due to the fact that soil microorganisms are factors of soil formation and fertility, and that plants feed not fertilized into the soil, but the waste products of soil microorganisms that decompose and process these fertilizers into easily accessible forms for plants, it is necessary to study the effect and aftereffect of new bio-fertilizers on the soil microflora under fruit trees in arable and subsurface horizons over a year. Soil microorganisms are very numerous and diverse. Among the main agronomically important physiological groups of soil microorganisms, it is necessary to study ammonifying, nitrifying (1 and 2 phases), nitrogen-fixing, oligonitrophilic, cellulose-decomposing (aerobic and anaerobic), denitrifying, butyric acid bacteria, in order to characterize the flow of microbiological formation, it is possible to characterize the flow of microbiological bacteria, for which it was possible to characterize the course of microbiological, but also acid-forming bacteria, so that it was possible to characterize the flow of microbiological, oil-forming bacteria bio-fertilizers. A complete microbiological analysis of the soil over the 3 years of bio-fertilizer testing, together with traditional elements of fruit tree cultivation technologies and in a comparative aspect with the data of agrochemical soil analyzes, will provide an opportunity to establish the direction and intensity of soil processes for judging the impact of soil agrobiotechnology, its biological activity, fertility, and ultimately on the development of fruit trees and their productivity (yield and quality of fruit).

At the Institute of Microbiology, a number of bacterial fertilizers have been created that have been tested on vegetable, grain crops and cotton. The condition of the plant in the experimental plots differed sharply from the control options with higher yields and product quality with more increased resistance to heat and drought, unexpected cold snaps and frost, the plants are less susceptible to pests and diseases. All of the above encourages research on new biological products in horticulture as part of this work. All of the above encourages research on new biological products in horticulture as part of this work.

The main indicators of apple varieties (average for 2016-2018)

№	Options	pickup date	Harvest			The average weight of the fetus,	Общая Fruit ratinga по 5 б/шк.	Pests and diseases 5 b / w.			
			average, kg / der.	Max. kg / der.	centners per hectare			moth	purple shield (pest)	scab	monilioz
Renet Simirenko											
1.	CONTROL	20/1X	11,1	28	55,5	110	4,3	3	0	1	1
2.	ORG. + MIN + BIO FERT.-100%	24/1X	12,5	22	62,5	100	3,8	3	0	0	0
3.	ORG. + MIN + BIO FERT.-50%	24/1X	11,0	21	55,0	120	4,0	4	0	0	0
4.	Abs.CONTROL	23/1X	10,4	20	52	90	3,7	4	0	4	0
Golden Delicious											

1.	CONTROL	25/УШ	3,5	15	17,1	100	3,8	4	0	0	0
2.	ORG. + MIN + BIO FERT.-100%	28/УШ	9,2	22	26	110	4,0	3	0	0	0
3.	ORG. + MIN + BIO FERT.-50%	27/УШ	12	15	60	115	4,1	4	0	0	0
4.	Abs.CONTROL	27/УШ	3,0	17	15	95	3,6	4	0	3	1

To determine the optimal dose and timing of fertilizer, providing the best growth and fruiting trees at a young age, experiments were conducted on the experimental base of the Institute of Horticulture, Viticulture and Winemaking named after. Ac M.M. Mirzaev. Experiments were conducted with fertilizer in 4 variants, 4 replications, on 2 varieties of apple.

The experiments were conducted according to the following scheme:

I. N 240 + P 180 + K 120 + org. fert. (40 tons every 3 years) - control.

II. N 240 + P 180 + K 120 + org. fert.(40 tons every 3 years)+ bio-fertilizer.

III. N 120 + P 90 + K 60 + org. fert.(40 tons every 3 years) + bio-fertilizer.

IV. without fertilizer- abs. Control.

Experiments were conducted with fertilizer in 4 versions, 4. replications, on 2 varieties of apple.

Soil - irrigated serozem, groundwater occurrence is below 3 m. Experienced trees were planted in spring 2014 according to the 3.5x2 m scheme. The plot was under black steam.

The condition of trees on the variants of the experimental plot without the use of fertilizers has deteriorated due to poor agrotechnology and under-irrigation, the gardens are watered 2-3 times a year with an incomplete norm. Not enough quality control of pests and diseases conducted.

All this contributed to the deterioration of the trees, a decrease in yield and a deterioration in the quality of the fruit. The crop on the Renette variety Simirenko was an average of 3 kg / der. (45 kg / ha) when, as in variants of experiments 2 - 3, a good harvest was on individual trees of 28 kg. (420 kg / ha), and 26 kg. (390 centners per hectare), respectively, in the control variant of experiments from 22 kg (330 centners per hectare).

In the Golden variety, in absolute terms, the average harvest was from 2.7 kg. (40.5 q / ha). With a relatively good harvest, there were separate trees on variant 3 and 2 at 22 kg / der. (330 kg / ha) 24 kg. (360 kg / ha), respectively.

According to the results of scientific research, for the first time a set of techniques was developed to improve farming systems in the direction of increasing their balance, environmental sustainability and reducing the need for resources. For the first time, scientifically-based elements of the agrobiological system of agriculture and practical recommendations, norms and terms of application of bio-fertilizers, and production have been developed.

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