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UNDER THE INFLUENCE OF MICROBIOLOGICAL PREPARATIONSBIOTECHNOLOGY OF BELL PEPPER GROWING

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Abstract
Information is provided on the special importance of using biological and microbiological preparations in the context of modern agricultural development under the influence of microbial preparations in greenhouses for the cultivation of vegetable melon crops, the use of microbiological preparations and growth promoters helps to increase the productivity of agricultural crops, the scientific justification of environmentally friendly farming, the use of fertilizers and pesticides, the use of advanced technologies, and the minimization of chemical means.

Keywords: TERIA-Sv, “Green, Microbial fertilizer, Amaral-F1, enzyme, soil microflora, β-glucosidase and dehydrogenase enzymes.

Introduction

There is a great need for more food to meet the ever-increasing demand of the world's population. Chemical fertilizers have long been used to increase crop yields and can have negative effects on human health and the agricultural environment. Microbial fertilizer is a nutrient-rich and environmentally friendly biological fertilizer made from bacteria that promote plant growth. Microbial fertilizers can regulate soil nutrient dynamics and promote soil nutrient cycling by improving the dynamics of soil microbial communities. This process helps restore the soil ecosystem, which in turn helps to improve nutrient uptake, regulate crop growth, and increase resilience to biotic and abiotic stresses.

Due to the increased demand for the quality of agricultural products in the process of agricultural reform in Uzbekistan, producers were forced to reduce the required doses of chemical fertilizers. Today, against the backdrop of intensification and chemicalization of agricultural production, the issue of the impact of chemically aggressive drugs on the quality of the product obtained and the health of the final consumer is increasingly being raised. Domestic agricultural producers operating in a market economy should think about the future of the food market.

After all, the production of environmentally friendly agricultural products requires compliance with strict rules established and approved by certification bodies [1]. Therefore, the use of biological and microbiological preparations is of particular importance in the conditions of modern

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agricultural development. Studies have shown that the use of microbiological preparations and growth promoters helps to increase the yield of agricultural crops [2,].

In modern conditions, increasing crop yields can be achieved through high-quality farming, scientifically substantiated environmentally friendly use of fertilizers and pesticides, the use of advanced technologies, and minimizing chemical inputs [4].

According to many scientists, the use of microbiological preparations in combination with modern agricultural technology will allow to increase the soil-climatic potential of the agricultural landscape by 60-80% (instead of the current 2030%), as well as to realize the biological potential of agricultural plants, which is currently not very effective [5].

In addition, the use of microbiological preparations accelerates the initial development of plants and helps to neutralize the partial toxic effects of chemical protection agents. It also increases the adaptability of agricultural crops under the influence of negative factors of biotic and abiotic nature, improves the assimilation of nutrients from the soil, and increases the overall immunity of plants [6, 7]. Studies conducted in Uzbekistan and abroad have shown that the introduction of ecologically oriented agricultural systems with the use of microbiological preparations increases the yield of major agricultural crops. Numerous experiments have shown an increase in the quality of agricultural products and the profitability of agricultural enterprises by 30-50% [8, 9].

Materials and methods

Cultivation of vegetable and melon crops is commonly done by hoeing, fertilizing, seedbed preparation, and improving soil fertility; however, this process can also lead to soil degradation and greenhouse gas emissions [21]. Vegetable and melon crops are often harvested late in the season, and the movement of machinery across the soil is limited by field capacity, which can lead to soil compaction.[18] Furthermore, high nitrogen (N) applications in vegetable and melon production can disrupt soil microflora.[9] Therefore, sustainable management strategies are needed to improve soil quality, fertility, and ultimately vegetable yields. These management strategies may include crop rotation, plant-based fertilizers, cover crops, and reduced tillage.[19]

To determine the action process of various microbiological preparations and to assess how they affect soil quality, it is possible to determine them by measuring physical, chemical and biological parameters; biological indicators have been little studied, but biological indicators have great potential. Among biological indicators [20], enzyme activity is of great importance.

The advantages of measuring enzyme activity are that they can be sensitive indicators of the impact of soil management on soil quality [14]. For example, soil enzymes respond more rapidly to reduced tillage practices [14] and changes in cropping patterns[16] than to soil total organic carbon (C). Soil organic matter (SOM) content is related to soil β-glucosidase and dehydrogenase enzymes.

β-glucosidase is an extracellular enzyme that is stable and slowly formed in the soil matrix, reflecting both short-term [13] and long-term [12] management effects. In contrast, dehydrogenase is found only in living cells and does not accumulate extracellularly in soil, indicating recent general microbial activity [11] and reflecting short-term changes in soil quality. These enzyme assays, in conjunction with nitrogen (N) mineralization, are useful indicators of potential microbial activity and subsequent soil functions (Kandeler et al., 1999).

The research object was the cultivation of bell pepper (AmaralF1) grown in greenhouses using

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biological fertilizers TERIA-S and "Green".The placement of replicates in the experiment is two-stage.The replication process was four times, each variant was 10 m2, and the total area under the experiment was 100 m2. The cost of bell pepper produced and sold in 2024 and 2025 was compared with the cost of 1 ton of product produced based on the standard yield. The sowing of the "AmaralF1" variety was carried out on January 29-30. The germination rate was 1 million seeds or 600 seeds per 100 g per sotkhi.

The soil of the experimental plot is moderately saline meadow alluvial. In the experiment, all protection works were carried out for the seeds and plants of bell pepper against weeds, diseases and pests according to the agrotechnical measures plan. According to the experimental scheme, before sowing bell pepper seeds, foliar treatment with microbiological fertilizers was carried out twice at the recommended doses. Cleaning was carried out on time in February.

At the beginning of the growing season (February) in 2025, the growth and development of crops occurred in conditions of a temperature regime of 25-30 0C in the evening and 17-18 in the daytime, excess humidity (50-60 mm) and close to the average annual norm (40.8 mm) for the rest of the growing season. In general, the average air temperature during the active growing season of plants was 25° C, the germination of spring onions takes 5-6 days.

Results

The use of microbiological preparations in the technology of growing spring bell peppers has helped increase their productivity.

At the same time, it can be clearly stated that the use of microbiological preparations in all variants helped to increase the yield of spring wheat of the AmaralF1 variety. The dryness of the spring wheat of the AmaralF1 variety, although the sowing was carried out later than last year, was affected by the lack of moisture and the fact that ripening under high temperatures during the growing season significantly shortened the growing season. At the same time, it can be clearly stated that the use of microbiological preparations in all variants helped to increase the yield of spring wheat of the AmaralF1 variety. slightly reduced the amount.

Conclusion

The results of the study of biological preparations during the growing season of AmaralF1 variety spring wheat in the current agroclimatic conditions were determined1. Microbiological preparations help to increase the yield of AmaralF1 variety spring wheat by an average of 70 t/ha, which allows to increase the relative control by 1.

References

1. Teterin VS, Galeeva NN, Mitrofanov SV, Panferov NS and Gaibaryan MA 2019 Method of production of complex organomineral fertilizers and technological line for its implementation Bulletin of the Ryazan state Agrotechnological University. PA Kostycheva 4(44) 114-9

2. Panfilova A, Korkhova M, Gamayunova V, Drobitko A, Nikonchuk N, and Markova N 2019 Formation of photosynthetic and grain yield of soft winter wheat (Triticum aestivum L.) depending on varietal characteristics and optimization of nutrition Research Journal of Pharmaceutical, Biological and Chemical Sciences 10(2) 78-85

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Volume 3, Issue 3, March - 2025
ISSN (E): 2938-3781

3. Valiullin IT 2010 Dependence of the size and chemical composition of the spring barley crop on the combined use of macro-fertilizers and the biological product Rizoagrin Agrochemical Bulletin 4 28-9
4. Polushkina TM 2018 The need for state support for the development of organic agriculture in the Russian Federation Management of economic systems: electronic scientific journal 5 59
5. Asaturova AM 2018 Integrated pest-free protection systems in organic farms resource-Saving agriculture 39(03) 34-8
6. Zubarev AA 2011 Influence of inter row treatments and humic fertilizer on potato productivity Achievements of science and technology APK 02 24-5 7. Abdulvaleev RR, Safarov Z f, Khisamov I Zh and Abdulvaleeva GR 2016 Influence of antistress growth regulators on the yield and quality of spring wheat grain Achievements of chemistry in the agro-industrial complex Materials of the II all-Russian Youth Conf. – School with Int. Partic (Ufa: Bashkir State Agrarian University) 10-4
8. Nikitin SN and Zakharov SA 2016 Influence of mineral fertilizers, biological preparations and manure aftereffects on soil biological properties and spring wheat yield Bulletin of the Ulyanovsk state agricultural Academy 2(34) 37-42
9. Singh DP, Prabha R, Renu S et al. 2019 Agrowaste bioconversion and microbial fortification have prospects for soil health, crop productivity, and eco-enterprising Int J Recycl Org Waste Agricult 8 457-472 DOI:10.1007/s40093-019-0243-0
10. Mukhayo Tagaeva1, Anorgul Gulova, and Nafisa Koshshaeva. Technology for preparing prototype biopreparations based on microalgae. BIO Web of Conferences 141, 03016 (2024) Agricultural science 2024
11. Tagaeva, MB, Oybek oğ, ZMR, & Olimboyevna, BG (2024). The Effect of Microalgae on Soil Fertility. Miasto Przyszłości, 57-60.
12.M. Tagayeva, Chu-13 nutrient environment o' styryan b. braunii-andi-115 and ch. Infusionum-andi-76 strain analysis, Center of scientific publications 44(44) (2023)
13. Tagaeva, M., Rozieva, Z., and Djumaev, T. (2024). Biotechnology increase productivity of plant pod vozdeystviem microibolicheskikh preparatov. V BIO Web of Conferences (vol. 113, p. 01008). EDP Sciences.
14.Shonazarova Niginabonu Bobir qizi, Fayzieva Ziyoda Turaevna , Zaribboyev Ma'rufjon Oybek o'gli , Tag'ayeva Muhayo Bafoevna . Hypoglycemic Action of Glycocar on Insulin and Glucose Metabolism In Vivo Angiotherapy review 1–6 | Angiotherapy | Published online Jul 15, 2024
15. MB Tagaeva, TB Bakhshullaevich, Science and innovation 2(Special Issue 8), 517-523 (2023
16.M. Tagayeva, Classification and ecology of sutemizumukvi in Bukhara province, Central scientific publication 8(8) (2021)
17. M. Tagayeva, Medicinal Properties of Mint Plant and Export Power of the Republic on Medicinal Plants, Central Scientific Publication IKATIUS 9(9) (2022)
18. BB Takhirov, MB Tagaeva, Z. Kakhorova, International Journal of Pediatrics and Genetics 2(5), 1-6 (2024)
19. MB Tagaeva, ZMR Oybek oğ, BG Olimboyevna, Miasto Przyszłohści 47, 74-78(2024)
20. MB Tagaeva, ZMR Oybek oğ, BG Olimboyevna, The Effect of Microalgae on Soil Fertility, Miasto Przyszłohści, 57-60 (2024)

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Volume 3, Issue 3, March - 2025
ISSN (E): 2938-3781

21. M. Tagayeva, Tamiya No. 1 and Tamiya No. 2 food media b. braunii-andi-115 and ch.infusionum-andi-76 strains seed development, Center of scientific publications (2024)
22.M. Tagayeva, Chu-13 nutrient environment o'styryan b. braunii-andi-115 and ch. Analyzing seed development infusionum-andi-76 strains, Center scientific publication(2023)

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8