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EFFECT OF MICROBIOLOGICAL DRUG "FITOBIOSOL" ON THE GROWTH, DEVELOPMENT AND PRODUCTIVITY OF BROCCOLI

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ABSTRACT
The results of a study conducted to determine the effect of the microbiological drug "Fitobiosol" on the development and yield of broccoli are presented. The experiments also covered changes observed in broccoli cabbage.

Keywords: broccoli cabbage, microbiological drug, biopreparation, experiment, treatment.

Introduction

In order to expand the range of vegetables in the world today, there is great interest in growing broccoli cabbage, which surpasses cauliflower, which is a close relative of its nutritional composition, biologically active substances, medicinal properties and a number of economic characteristics. It is common in many countries. The area under broccoli in the world is 250 thousand / ha. Currently, broccoli cabbage is grown in large quantities, mainly in China, India, the United States, and Spain.

Despite the importance of increasing broccoli production in the Republic of Uzbekistan, the area under broccoli is not growing. This is due to the lack of science-based technologies for its cultivation. The selection of high-yielding hybrids suitable as a secondary crop and the establishment of a favorable sowing period for crops grown in the summer-autumn period, the use of microbiological drugs that increase yields are urgent and necessary.

One of such microbiological drugs "Fitobiosol" is isolated from the rhizosphere of healthy plants and has a complex beneficial properties soil bacteria and mycelial fungi that based on synthesize cellulose: Azotobacter chroococcum A-2; Bacillus subtilis V-1 (SK5-256); Rseudomonas putida Pp-1 (SK5-251); Trichoderma harzianum is THNUU-1.

Research Methodology

Experiments on broccoli using the biopreparation "Fitobiosol" were performed at the Department of Fruit and Vegetable and Viticulture of Tashkent State Agrarian University. Field experiments were conducted in 2021-2022 on the experimental farm of SUE "Center for Innovative Development and Consulting in Agriculture".

The studies were conducted using the field experiment method. Field experiments were carried out with phenological observations, biometric calculations, formation of medium-weight heads, as well as determination of the yield of central and lateral heads.

The experiments were carried out in 4 repetitions, in 0.7 m two - and four-row plots, and the calculated sites were 31 m^2 in the first experiment - 20.3 m^2 in the second - and 94 and 148 plants, respectively, were placed.

Different concentrations of broccoli cabbage [1] hybrids Fiesta F_1, Hallmark F_1 and Stromboli F_1 and biopreparation "Fitobiosol" were selected.

Results

According to the data, a new generation of microbiological drug "Fitobiosol" - improves plant nutrition, enhances immunity, stabilizes growth and simultaneously leads to the formation of lateral branches and inflorescences. Increases productivity by 17-20%. It suppresses the proliferation of pathogenic microorganisms, moves plants along growth points, and promotes healthy growth.

Experiments have shown that the biopreparation "Fitobiosol" prevents the accumulation of nitrates in broccoli cabbage. When broccoli cabbage is planted in the form of monocultures, it acts as a soil healing agent (sanitation).

Broccoli seedlings were planted on July 15th. Young grasses were treated with different concentrations of the drug "Fitobiosol" 5 times during the growing season. Normal water was sprayed as a control. It was found that the growth and development of plants under the use of the drug "Fitobiosol" was significantly different from the variant treated with ordinary water. It was also observed that the use of the drug "Fitobiosol" increased the average weight and yield of broccoli hybrids (Table 1).

Table 1 The effect of the drug "Fitobiosol" on the growth and development and productivity of broccoli cabbage (2020-2021 yy)

№	Research options	Average weight of cabbage, g		Yields of cabbage					
		central	side	central		side		total	
				t / ha	% st. ga	t / ha	% st. ga	t / ha	% st. ga
"Fiesta F_1" hybrid									
1	Normal water (control)	418	73	16,60	100	4,47	100	21,07	100
2	2% solution of phytobiosol	495	82	19,78	119,1	5,20	116,6	24,98	118,5
"Hallmark F_1" hybrid									
1	Normal water (control)	420	74	16,90	100	4,52	100	21,42	100
2	2% solution of phytobiosol	505	85	20,45	121,0	5,49	121,5	25,94	121,1
"Stromboli F_1" hybrid									
1	Normal water (control)	410	69	15,90	100	4,30	100	20,20	100
2	2% solution of phytobiosol	450	74	18,78	118,1	4,92	114,4	23,70	117,3

In our experiments, we observed that the average weight of the central heads was 418 g and the average weight of the side heads was 73 g when we sprayed during the growth of the Fiesta F_1 hybrid of broccoli. When we treated this Fiesta F_1 hybrid with a 2% solution of Fitobiosol, the average weight of the central heads was 495 g and the average weight of the side heads was 82 g. The average weight of the central heads was 420 g in the Hallmark F_1 hybrid, 410 g in the Stromboli F_1 hybrid, and the average weight of the side heads in the Hallmark F_1 hybrid was 74 g. Stromboli F_1 "hybrid was 69 g. When treated with Fitobiosol, the average weight of the central heads of the Hallmark F_1 was 505 g, the average weight of the lateral heads was 85 g, the average weight of the central heads was 450 g, and the average weight of the lateral heads was 74 g.

It became clear that the weight of the central heads of water-treated hybrids was 410-420 g, the weight of the side heads was 69-74 g, while the weight of the central heads was 450-505 g, the weight of the side heads was 2% solution of Fitobiosol 74-85 g. The results of the study show that when working with water, the yield of the central heads is 16.60 t / ha in the hybrid Fiesta F_1, 16.90 t / ha in the hybrid Hallmark F_1, 15.90 t / ha in the hybrid Stromboli F_1, 4.47 t / ha in Fiesta F1, 4.52 t / ha in Hallmark F1, 4.30 t / ha in Stromboli F_1, and 21.07 t / ha in Fiesta F1, respectively. was 21.42 t / ha in the Hallmark F_1 hybrid and 20.20 t / ha in the Stromboli F_1 hybrid.

When we treated with the drug "Fitobiosol", along with the increase in the average weight of the central and lateral heads, the overall yield also increased. The yield of the central heads is 19.78 t / ha in the Fiesta F_1 hybrid, 20.45 t / ha in the Hallmark F_1 hybrid, 18.78 t / ha in the Stromboli F_1 hybrid, and 5 t / ha in the Fiesta F_1 hybrids. 20 t / ha, 5.49 t / ha in Hallmark F_1, 4.92 t / ha in Stromboli F_1, 24.98 t / ha in Fiesta F_1 and Hallmark F_1, respectively. 25.94 t / ha, in the hybrid Stromboli F_1 - 23.70 t / ha.

In the statistical analysis of the results, the use of 2% solution of the drug "Fitobiosol" increased the productivity of the central heads by 18.1-21.0%, the productivity of the lateral heads by 14.4-21.5%, and the total yield by 17.3-21.1%. showed.

Conclusions

- Microbiological drug "Fitobiosol" has a positive effect on the growth and development of broccoli hybrids.
- Protects the plant from pathogenic microflora;
- Increases productivity;
- Improves the orgonolyptic properties of broccoli cabbage and quality indicators in storage.
- Proper selection of broccoli cabbage hybrids as early spring and repeat crops;
- Treatment with the microbiological drug "Fitobiosol" at least 5 times during the growing season;
- The concentration of the recommended microbiological drug "Fitobiosol" should not exceed 2%.

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