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Effect of Microbiological Preparations on the Growth of Cotton

Muhayo Bafoevna Tagaeva [1], Zaribboyev Ma'rufjon Oybek o'g'li [2], Bekturdiyeva Gulrux Olimboyevna [3]

Abstract: In the articleof cottonof microalgae to medium-sized Bukhara-10 varietyGrown in Chu-13 mediumB. braunii-AnDI-115andCh. infusionum-AnDI-76The effect of the sample biopreparation Algobiostim prepared on the basis of strains is to determine.

Enter. During the researchco-cultivated B. braunii-AnDI-115 and *Ch. infusionum-AnDI-76*The effect of the biopreparation prepared on the basis of cultures on cotton growth, development, leaf level, and productivity characteristics was studied under production conditions. Experiments on the implementation of the first model biopreparation were carried out at the "Sayfillo Bobo Zirabot" farm in Bukhara District, Bukhara Region. In researchg'be yourselfA model prepared on the basis of microalgae on the productivity of the medium-sized Bukhara-10 varietyAlgobiostim biopreparationThe effectiveness of the biological effect was studied on the basis of experiments.

The object of the experiment is cottonof microalgae to medium-sized Bukhara-10 varietyGrown in Chu-13 medium*B. braunii-AnDI-115*and*Ch. infusionum-AnDI-76*the effect of the sample biopreparation Algobiostim prepared on the basis of strains is studied.

Purpose of work. Grown in Chu-13 medium*B. braunii-AnDI-115*and*Ch. infusionum-AnDI-76*of the sample biopreparation Algobiostim prepared on the basis of strains **The aim is to determine the effect of cotton on leaf area and net photosynthetic productivity.**

Sources and methods used. During the experiments, the expansion of the leaf surface in cotton by phases (by the method of sections),[12];net photosynthetic productivity[13];method was taken into account.

During our observations, one of the important morphological indicators of plants is the expansion of leaf surfacesthe effect of microbiological preparations was also determined. We know that the leaf is the main assimilation organ of the plant, and the level of the leaf is one of the main indicators in the formation of productivity. Leaf level is of particular importance in determining the rate of photosynthesis.

The results of the evaluation of the effect of microbiological preparations on the expansion of the leaf surface of cotton are presented in Table 4.2 below. The effect of microbiopreparations was studied in all phases of development of cotton, i.e. in the stages of tillering, flowering, and budding. It was noted that the expansion of the cotton leaf surface increased sharply mainly during the flowering and budding phases. It was found that the growth of the leaf surface and the size of the surface were accelerated in the studied microbiological preparations compared to the control variant.

[1] Bukhara State University
[2] Bukhara State University
[3] Bukhara State University

Table 4.2. Effect of microbiological preparations on cotton leaf surface

t/r	Biopreparations	Shonalash	Flowering	Clumping	vs. control, % (slurp)
		cm2	cm2	cm2	
1	Control	755±4.41	1323±5.25	2691±4.36	100.0
2	Sample Algobiostim-1	884±3.24	1719±4.78	2875±5.98	106.83
3	Sample Algobiostim-2	901±3.56	1818±5.89	2911±6.35	108.17

If the rate of growth was -100% in the control compared to the decline,sample algobiostim-1 was 106.83%, sample algobiostim-2 was -108.17%. In particular, in the control option, that is, in the case where biopreparations are not affected, the growth of cotton in the period of carding755cm2, during flowering1323cm2, during the flowering period2691was cm2. In polishing under the influence of exemplary biopreparation Algobiostim-1884cm2, in flowering1719cm2, in the measurement2875cm2; in the grinding phase in the prototype Algobiostim-2901cm2, in flowering1818cm2, and in the case of swelling2911was recorded at the level of cm2.

All studied biopreparations differed in the degree of their effect on the leaf surface of cotton. The highest positive result according to the above indicatorsSample Algobiostim-2, the average indicatorSample Algobiostim-1 biopreparation took over.

Effect of biopreparations on net photosynthetic productivity of cotton

During our experiments, we determined the effect of biopreparations on the net productivity of photosynthesis, along with a number of indicators that determine the growth and development of cotton, and for this purpose, a number of experiments were conducted. Our experiments were carried out at the stages of cotton picking, flowering and boll growth. The results obtained during the experiments are presented in Table 3.

Table 3. Effect of biopreparations on net photosynthetic productivity of cotton

t/r	Biopreparations	Shonalash	Flowering	Clumping	vs. control, % (slurp)
		g/m2 per day	g/m2 per day	g/m2 per day	
1	Control	4.4±0.31	5.9±0.28	7.2±0.34	100.0
2	Sample Algobiostim-1	6.9±0.32	8.7±0.43	10.1±0.32	140.27
3	Sample Algobiostim-2	7.2±0.31	9.1±0.36	10.5±0.45	145.83

During our experiments, it was found that the effect of the studied biopreparations on the net productivity of photosynthesis was higher than that of the control option. If we analyze in the section of biopreparations, the value of this indicator was high in the exemplary drug algobiostim-2. Relatively lower value was observed in experimental variants treated with model algobiostim-1.

The amount of the net productivity of photosynthesis decreased in the control option compared to the effect of biopreparations, for example, it was 100% in the control, and 140.27% in the Algobiostim-1 biopreparation; 145.83% was noted in sample algobiostim-2. So, under the influence of biopreparations, the physiological and biochemical processes in the plant are activated, and the quantitative indicator of the net productivity of photosynthesis is accelerated.All this, in turn, leads to an increase in the weight and quality of biological, especially agricultural, crops.

In particular, the net photosynthesis productivity of cotton in the control variant is 4.4 g/m2day, during flowering - 5.9 g/m2day, and during budding - 7.2 g/m2day; 6.9 g/m2day during flowering, 8.7 g/m2day during flowering, 10.1 g/m2day during flowering under the influence of sample algobiostim-1; and under the influence of sample algobiostim-2, during budding - 7.2 g/m2 day, during flowering - 9.1 g/m2 day, during budding - 10.5 g/m2 dayestablished.

The obtained results and their discussion.

In general, during our scientific research, it was proved that the increase in the value of the net productivity of cotton photosynthesis is directly related to the level of exposure to biopreparations. Effect of biopreparations on yield weight of cotton under different salinity conditions

Plant productivity is one of the most important indicators. During our research, we conducted experiments to evaluate the effect of microbiological preparations on the yield weight of cotton. The data obtained on this indicator are presented in Table 4.4.

Table 4.4. Effect of microbiological preparations on crop weight in moderate salinity conditions

t/r	Biopreparations	Productivity, ts/ha					
		2021	2022	2023	Average	with respect to control, %	with respect to control, ts/ha
1	Control	36.3	35.9	38.2	36.80±0.06	100.0	36.80
2	Sample Algobiostim-1	37.3	40.8	41.6	39.90±0.05	108.42	+3.11
3	Sample Algobiostim-2	38.7	42.0	43.5	41.40±0.07	112.50	+4.68

The weight of the harvest was studied in the control variant, i.e. without the effect of biopreparations and in the section of 2 different biopreparations. Differences in productivity in the section of biopreparations were also determined. According to the data in the table, it was observed that all studied biopreparations are directly related to the increase in the weight of the cotton crop. In particular, it was noted that cotton productivity increased by 108.42% under the influence of sample algobiostim-1, and by 112.50% under the influence of sample algobiostim-2 compared to the control. This is 12.50% higher than the control option. In the control option, where biopreparations were not applied, the yield weight was lower than in all the experimental options. In relation to Controlthe yield compared to the control in the experimental variant using the sample Algobiostim-1 and the yield compared to the control in the variant treated with Algobiostim-2 in moderately saline soilsIt was scientifically proven that it increased by 4.68 centners.

If we analyze in terms of years, the yield weight of cotton in 2021 is 36.3 per hectare; In sample algobiostim-1 – 37.3; in sample algobiostim-2 - it was 38.7 centners. in control in 2022-35.9; Sample algobiostim-1- 40.8; in sample algobiostim-2 - 42.0 centner yield was obtained. in 2023, in control - 38.2; sample algobiostim-1da- 41.6; in sample algobiostim-2 - 43.5 centners of yield was obtained. The weight of the harvest during the three years (2021-2023) the average productivity level is under control - 36.80 per hectare; sample algobiostim-1da- 39.90; in the sample algobiostim-2 experimental variant, it was 41.40 centners.

So, the level of positive effect of biopreparations model algobiostim-1 and model algobiostim-2 on the yield weight of cotton in moderately saline soil conditions was determined. According to the level of influence, it was found that the exemplary biopreparation Algobiostim-2 takes the highest place.

During the field experiments, the effect of biopreparations on the productivity characteristics of the Bukhara-10 cotton variety was studied even in the conditions of highly saline soils. Based on the obtained data, it was noted that the effect of highly saline soils is higher than that of weakly saline fields. The data obtained from these experiments are presented in Table 4.5.

Table 4.5. Effect of microbiological preparations on crop weight in highly saline conditions

t/r	Biopreparations	Productivity, ts/ha					
		2021	2022	2023	Average	with respect to control,%	with respect to control, to ts/
1	Control	28,37	29,14	32.85	30.12±0.06	100.0	30.12
2	Sample Algobiostim-1	29,37	33,48	34.65	32.50±0.05	107.90	+2.38
3	Sample Algobiostim-2	30,14	34,13	35.57	33.28±0.07	110.49	+3.16

The weight of the harvest was studied in the control variant, i.e. without the effect of biopreparations and in the section of 2 different biopreparations. Differences in yield were also found in the section of biopreparations. According to the data in the table, it was observed that all studied biopreparations are directly related to the increase in the weight of the cotton crop.

If we analyze in terms of years, the yield weight of cotton in 2021 is 28.37 per hectare; In sample algobiostim-1 – 29.37; in sample algobiostim-2 - it was 30.14 centners. in control in 2022-29.14; Sample algobiostim-1- 33.48; in sample algobiostim-2 - 34.13 centners of yield was obtained. In 2023, in control - 32.85; sample algobiostim-1da- 34.65; in sample algobiostim-2 - 35.57 centners of yield was obtained. The weight of the harvest in three years is under control on average per hectare - 30.12; sample algobiostim-1da- 32.50; in the sample algobiostim-2 experimental variant, it was 33.28 centners.

In particular, it was noted that the yield of cotton increased by 107.90% under the influence of model algobiostim-1 compared to the control, and by 110.49% under the influence of model algobiostim-2. This is 10.49 percent higher than the control option. In the control option, where biopreparations were not applied, the weight of the crop decreased compared to all the experimental options. In relation to controlthe yield compared to the control in the experimental variant using the sample Algobiostim-1 and the yield compared to the control in the variant treated with Algobiostim-2 in highly saline soils3.16 centners higher was recorded during the years.

The level of positive effect of sample algobiostim-1 and sample algobiostim-2 biopreparations on the productivity of cotton in highly saline soil conditions was evaluated. According to the degree of positive effect, a high yield was recorded in the experimental options where the sample algobiostim-2 biopreparation was used.

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