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Effects of Boms Preparation on Germination of Seedlings, Growth, Development and Yield of Cotton

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Abstract: *In this article, data is given on the effects of Boms preparation on germination, growth, development and yield of cotton seedlings. According to these data, when using Boms at a rate of 300-1000 kg / ha in the preparation of the soil before planting in the typical sierozem soils of Tashkent region, the number of sprouted seedlings was 126.3-129.7, which is 5.3-8.7 more than the control. The height of cotton is 2.6-9.8 cm, the number of harvested branches increased by 0.6-1.8 pieces, the number of stalks increased by 3.1-4.1 pieces and additional yields were achieved 3.1-4.9 c / ha of cotton.*

Keywords: *germination, growth, development, cotton seed, cotton bolls, Boms preparation, yield.*

INTRODUCTION

Improvement of agricultural crop management measures, development of technologies for growing environmentally friendly products with little or no use of mineral fertilizers at low cost and resources, high and quality yields, widespread introduction of high-efficiency modern innovative technologies, increasing economic efficiency, economic development is one of the most important tasks

One of the ways to get healthy seedlings in unfavorable weather and stress conditions in our country, to improve the growth and development of the plant and get a higher quality crop is to cultivate the soil and seeds before planting with stimulants and use them during the growing season.

It is known that physiologically active substances have a positive effect on increasing the germination and germination capacity of seeds of agricultural crops, accelerating the ripening of the crop, increasing the plant's resistance to drought, salt, disease and pests (Kalinin, Merezhinsky, [1]).

Organic cotton cultivation is also considered a priority in the developed countries of the world. The fact that Uzbekistan is one of the largest cotton-growing countries in the country requires the cultivation of organic cotton. Toxic chemicals and mineral fertilizers are not used in the cultivation of organic cotton, or biological means are used. In this regard, scientific research was conducted in 2018-2021 to study the effectiveness of the preparation Boms, which has a natural organic basis, which increases the activity of microorganisms, in cotton and to determine its importance in the cultivation of organic cotton.

MATERIALS AND METHODS

Field experiments were conducted in accordance with the manual "Methods of conducting field experiments" (T: 2007) [2]. The obtained data were analyzed mathematically by the method of B.A. Dospekhov (1985) [3]. Also, during the use of chemicals were used "Brief guidelines for state testing of

growth regulators" (Moscow, 1984) and "Guidelines for testing insecticides, acaricides, biologically active substances and fungicides" (T: 1994).

The research was carried out under the conditions of typical sierozem soils of Tashkent region in the Andijan-37 variety of cotton. Experimental options were 25 m in height, 2.4 m in width (60 cm between rows of cotton), area, 60 m2, and placed in 3 repetitions.

In the control variant of the experiment, cotton was grown on the basis of generally accepted agro-technical measures in accordance with conventional agrotechnology, and the annual rate of mineral fertilizers was 200 kg of nitrogen per hectare, 140 kg of phosphorus and 100 kg of pure potassium. N-200, P-140, K-100 kg / ha were tested in the applied background. Subsequent variants of the experiment included Boms 300 per hectare; Used in the norms of 600 and 1000 kg, in these variants mineral fertilizers were not applied at all.

RESULTS AND DISCUSSION

The scientific literature has shown that seed germination is increased when treated with various physiologically active substances. In particular, in different soil climatic conditions and cotton varieties of the republic with stimulants such as Vitavaks 200FF, Fitovak, Uzgumi, Bioduks, Sodium gumat, Obereg, pre-sowing treatment of seeds accelerated germination, increased resistance to seedling diseases [4; 5; 7].

In the experiment, the effect of Boms preparation on the germination of seedlings when applied to the soil during the preparation of the soil for planting was studied. In the experimental variants, germination of seeds was observed in 5 periods, i.e. from May 8 to May 18. The first observation revealed that on May 8, 72.7 seedlings sprouted in the control variant and 36.0-63.7 seedlings in the variant used by Boms. Later, on May 10, 12, and 15, in a similar situation, it was observed that the germination of seedlings at Boms 300-600 kg / ha was higher than the control option.

The last observation was that on May 18, the number of seedlings germinated in the Boms bio-preparation 300-600 kg / ha norm was 126.3-129.7, which is 1.7-8.7 more than the 121.0 controlled ones (table1).

Table 1

Influence of Boms preparation on seedling germination, Andijan-37 variety of cotton, Tashkent 2020

№	Options	The norm of application to the soil before sowing, kg / ha	Number of sprouted seedlings, pieces / at the rate of 10 m^2					Difference from control, pcs
			8.05	10.05	12.05	15.05	18.05	
1	Control (NPK)	-	72,7	95,0	104,0	119,7	121,0	-
2	Boms+NPK	600	36,0	64,3	88,7	115,3	122,7	1,7
3	Boms	300	53,3	86,7	102,3	113,7	126,3	5,3
4	Boms	600	63,7	105,7	119,0	123,7	129,7	8,7
5	Boms	1000	61,0	96,7	109,7	116,3	127,0	6,0

Thus, during the preparation of the soil for planting, when Boms was applied to the soil at a rate of 300-600 kg / ha, the number of sprouted seedlings was 126.3-129.7, which was 5.3-8.7 more than the control and had a positive effect on seedling germination.

In the experimental field, the effect of Boms preparation on plant growth and development during the growing season of cotton was studied (Table 2). In particular, in the observation conducted on June 1, 2020, there was no significant difference between the variants, as the height of the cotton was 9.0-9.5 cm according to the variants, and the number of true leaves was 3.7-3.9 piece.

In the next observation, during the period of mass budding of cotton on July 1 in the control variant the plant height was 35.6 cm, the number of harvest branches was 6.1, the number of branches was 6.1, in the variants, where Boms 600 kg / ha + NPK and Boms 300-1000 kg / ha was used, the height of stem was 33.7-37.3 cm, the number of harvest branches was 5.9-6.3 piece, the number of buds was 6.2-6.8. In the variant applied to Boms 600-1000 kg / ha, it was found that the height of the cotton was 1.7 cm higher than the control, the yield branches were 0.2 pieces more, and the buds were 0.1-0.7 pieces more.

Phenological observations of cotton during the flowering and fruiting periods (1.08.2020) also showed that in the variants used by Boms, the height of the cotton was 2.6-9.8 times higher than the control, the number of branches was 0.4-1.0 more, and the number of the buds and flowers was calculated to be slightly higher than the control. For example, at the end of the growing season (1.09.2020) the height of the cotton was 81.1 cm in the control, 91.0 cm in the Boms + NPK variant, and 83.7-90.9 cm in the Boms 300-1000 kg / ha variant and height was 2.6-9.8 cm high compared to the control. The number of harvest branches was 13.3 in the controls, while the number of harvest branches was 13.9-15.1 in the variants used by Boms, and it was 0.6-1.8 more than control option. The number of bolls was observed to increase compared to the

control option. In particular, before the cotton harvest (20.09.2020) the number of bolls was 11.8 in the control variant, and 14.4-15.9 in the variants used by Boms or 3.1-4.1 more than in the control.

Table 2

The effect of Boms preparation on the growth and development of cotton, Andijan-37 variety, Tashkent region, 2020

Options	Cotton height, cm				Number of harvest branches, piece			Number of buds, piece		Number of bolls, piece	Opened bolls
	1.06	1.07	1.08	1.09	1.07	1.08	1.09	1.07	1.08	20.09	%
Control (NPK)	9,5	35,6	78,6	81,1	6,1	13,0	13,3	6,1	6,4	11,8	50,0
Boms+ NPK	9,0	33,7	79,5	91,0	5,9	13,7	14,6	6,3	5,4	14,4	48,6
Boms 300 kg/ha	9,0	34,9	82,6	90,9	6,0	14,0	15,1	6,2	6,3	14,9	45,0
Boms 600 kg/ha	9,3	35,6	85,3	89,2	6,3	14,0	14,6	6,6	6,0	15,9	47,8
Boms 1000 kg/ha	9,4	37,3	81,2	83,7	6,1	13,4	13,9	6,8	5,2	15,3	49,7

It should be noted that in the variants given the preparation Boms, mineral fertilizers were not used during the cultivation of cotton, but we can see that the growth and yield of cotton is accelerated.

In the experimental variants, it was found that the opening rate of the bolls was 50.0% in the control, while in the variants treated with Boms it was 45.0-49.7% or 0.3-5% less than in the control, or no significant difference in this indicator. Thus, Boms had a specific effect on the growth and development of cotton when applied to the soil, and it can be noted once again that under typical sierozem soils, cotton is not fed with mineral fertilizers, only when Boms biopreparation is applied at a rate of 300-600 kg / ha, its height is 2.6 Height 9.8 cm, the number of harvest branches increased by 0.6-1.8, the number of bolls increased by 3.1-4.1.

The effect of Boms preparation on cotton yield was determined experimentally. First of all, according to the variants, the weight of cotton in one boll was 4.8 g in the control when measured, and 5.0-5.1 g in the treatment with Boms, which was 0.2-0.3 g heavier than the control. In the experimental variants, it was observed that the seedling thickness of cotton was 58.7-61.0 thousand bushes per hectare, close to each other (Table 3).

The yield of cotton grown in the experimental field in the first harvest was 23.9 in the control variant, 22.9 in the Boms + NPK variant, 25.3 in the Boms 300 kg / ha, 29.0 in the Boms 600 kg / ha and 27.4 c / ha in the Boms 1000 kg / ha, in the Boms 300-600 kg / ha norms, 1.4-5.1 c / ha more cotton was harvested than the control. In the experimental variants, the yield was 9.0-11.1 c / ha in the second harvest (Table 3).

Table 3

Effect on cotton yield when using Boms pteparation, Andijan-37 variety, Tashkent 2020

№	Options	The norm of application to the soil before sowing, kg / ha	Weight of cotton in a boll, g	Seedling thickness, thousand bush/ha	Yield on gathering		Total yield, c/ha	Additional yield	
					1	2		c/ha	%
1	Control (NPK)	-	4,8	60,3	23,9	9,2	33,1	-	-
2	Boms+NPK	600	5,0	61,0	22,9	11,1	34,0	0,9	2,7
3	Boms	300	5,0	59,9	25,3	10,9	36,2	3,1	9,4
4	Boms	600	5,1	58,7	29,0	9,0	38,0	4,9	14,8
5	Boms	1000	5,0	59,3	27,4	9,1	36,5	3,4	10,3

Thus, in the second harvest in the experiment, yield of cotton harvested 9.2 c / in the control variant, 9.1 in the Boms + NPK variant, 10.9 in the Boms 300 kg / ha, 9.0 in the Boms 600 kg / ha and 9.1 c / ha in the Boms 1000 kg / ha.

The total cotton yield in the experimental variants was harvested. In control variant where mineral fertilizers (NPK) used in, the yield was 33.1 c / ha, 34.0 c / ha in the case of Boms with mineral fertilizers (NPK) at the rate of 600 kg / ha, Boms without mineral fertilizers 300 kg / ha at the rate of 36.2 c / ha, Boms at the rate of 600 kg / ha at the rate of 38.0 c / ha and Boms at the rate of 1000 kg / ha at the rate of 36.5 c / ha. At

the same time, when cotton was grown without mineral fertilizers using only Boms, mineral fertilizers yielded 3.1-4.9 c / ha more than the full control variant, and the highest yield was observed at 600 kg / ha of Boms, with a yield of 4.9 c / ha, an increase of 14.8% was achieved. Both the 300 and 1000 kg / ha norms of Boms produced 3.1–3.4 c / ha or 9.4–10.3% more than the control. When Boms was applied at a rate of 600 kg / ha on the background of mineral fertilizers (NPK), the yield differed only 0.9 c / ha compared to control option.

CONCLUSION

When using Boms at a rate of 300-1000 kg / ha in pre-sowing soil preparation in the conditions of typical sierozem soils of Tashkent region, the number of sprouted seedlings was 126.3-129.7, which is 5.3-8.7 more than the control. 2.6-9.8 cm high, the number of harvested branches increased by 0.6-1.8, the number of pods increased by 3.1-4.1 and the additional yield of cotton was 3.1-4.9 c / ha.

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