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Research Article

# GROWING ORGANIC COTTON WITH BOMS

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## ABSTRACT

It is scientifically proven that when Boms organic preparation was applied to the soil at the rate of 300-600 kg/ha before sowing and when cotton was cultivated for without mineral fertilizers, 40.7-41.8 c/ha of cotton can be grown.

## KEYWORDS

Organic and Global G.A.P, the development of technologies, mineral fertilizers.

## INTRODUCTION

On May 18, 2020, the president of our state, Sh.Mirziyoev, adopted the Decree "On additional measures to ensure that the quality and safety indicators of agricultural products comply with international standards". This decree is aimed at the production of products that meet the requirements of "Organic" and "Global G.A.P", to increase their quality and safety indicators, and to expand exports, the concept of development of organic agriculture and production of organic food products in the Republic of Uzbekistan and the "Roadmap" for its implementation have been approved.

For this purpose, the improvement of agro-measures of crop cultivation in the agriculture of our country, the development of technologies for the cultivation of ecologically pure products with little or no use of mineral fertilizers, the cultivation of high and high-quality crops, the wide implementation of highly effective modern innovative technologies in practice, the increase of economic efficiency, economic development is one of the most important tasks.

In our country, one of the ways to collect seedlings early, correctly and healthy in unfavorable weather and stressful situations, to improve plant growth and get a

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high-quality harvest, is to treat the soil and seeds with stimulants before planting and to use them during the plant life.

It is known that physiologically active substances have a positive effect on increasing the fertility and germination of agricultural crops, accelerating the ripening of the crop, increasing the plant's resistance to drought, salt, disease and pests (Kalinin, Merejinsky, 1965).

Physiological and biologically active substances are organic additives that affect the course of physiological processes in the plant. They are applied to plants in the form of a working mixture, they have a positive effect on their vital processes and provide the opportunity to obtain a high and quality harvest. Many scientists have studied the effect of treatment of seeds and cotton with various stimulants during the vegetation period on sprout germination and cotton growth.

Currently, in world practice, the scope of using humic acids is expanding in order to increase soil fertility and the efficiency of using nitrogen and phosphorus fertilizers, to accelerate the growth and development of plants. The mechanism of action of humic acids is as follows, it is connected with the improvement of plant metabolism and activation of auxin and cytokinin phytohormones. Humic acids are one of the bases of soil humus, they are inextricably linked with maintaining soil fertility and biodiversity, ensuring vital functions of microorganisms, flora and fauna. They are one of the products of soil formation, resulting from the humification of plant residues. Humates have a range of complex effects and have a positive effect on alleviating stress processes caused by unfavorable external factors.

G.Axymbetova, Kh.D.Akhmedova et al., (2003) observed that the growth and development of 15 types of agricultural crops accelerated, resistance to diseases increased, and productivity increased when seeds were treated with biologically active substance chitosan.

Sh.Kh.Abdualimov, Kh.D.Akhmedova, S.Sh.Rashidova (2003) when treated with the stimulants T-86, Nitrolin, Tj-85 and XS-2, the seeds of the Okdarya-5 variety of cotton increased field fertility and growth accelerated development, had a positive effect on leaf surface, cotton yield and fiber quality.

In the experiments carried out by U.N.Madraimov (1995), I. Khusanov (2003), when the seeds were treated with Mival before planting, they germinated evenly and healthy despite adverse weather conditions. Mival allowed to plant hairless seeds in saline soils, the flowering of cotton was accelerated and fiber yield increased by 1-3%.

In this regard, scientific studies were conducted in 2018-2020 in the conditions of typical gray soils of Tashkent region to study the effectiveness of Boms organic preparation on cotton and to grow organic cotton without using mineral fertilizers.

## METHODS

Field experiments were conducted in accordance with the manual "Field Experiment Methods" (T:2007). The obtained data were analyzed mathematically by the method of BA Dospekhov (1985).

The research work was carried out in the conditions of the typical sierozem soils of the Tashkent region on the cotton variety "Andijan-37". The length of the experimental options was 25 m, the width was 2.4 m, the calculation area was 60 m2, and they were placed in 3 repetitions.

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In the control option for the study, cotton was grown in accordance with conventional agrotechnology based on generally accepted agrotechnical measures and the annual norm of mineral fertilizers (NPK) was 200 kg of pure nitrogen, 140 kg of phosphorus and 100 kg of potassium per hectare, while in option 2, the norm of Boms preparation was 600 kg/ha and mineral fertilizers N-200, P-140, K-100 kg/ha were applied. In the 3-5 variants of the experiment, Boms organic preparation is 300 per hectare; Mineral fertilizers were not used at all during the period of application of cotton, with the application of 600 and 1000 kg. In the care of cotton in the experimental field, measures such as inter-row processing, irrigation, and weed control were carried out in the same order in all variants.

**Boms preparation** is an organic fertilizer obtained by humification of lignite and peat compost, in dry, black, granular form. It contains humic and fulvic acids, various macro and microelements. It transforms phosphate and potassium, the most important elements in the soil, from non-absorbable form to easily absorbable form. Restores soil fertility and increases humus content, improves microflora. Before planting the seed in the plowed field, it is placed in the soil and 8-10 cm is mixed with the ground. It is recommended to use in the morning and in the evening when it is cool. The safety level is less toxic.

## RESULTS AND DISCUSSION

In the experiment conducted by Sh.Abdualimov et al., (2017) when treated with the Biodux stimulator, the active substance of which is arachidonic acid, at the rate of 3.0 ml/ha before planting, and 2.0 ml/ha during the cotton budding and flowering periods, the germination of seedlings was 10,1-13.3% accelerated, the growth and development of the plant accelerated, 44.0 centner of cotton per hectare was grown, and the yield was 4.7 c/ha higher than the control.

Sh.Abdualimov, Sh.Karimov (2017) stated that Obereg' stimulator 1.0 ml/t per seed, 10.0 ml/ha during the budding and flowering periods of cotton, Fitovak 200 ml/t per seed and 400 ml/ha during the budding period, Sodium humate when the stimulator was applied to the seed at the rate of 2.2 kg/t, germination of seedlings was accelerated, rapid growth and development of cotton was observed, the number of bolls increased by 1.0-2.0 grains, the yield of cotton increased by 3-5 c/ha and the level of profitability increased.

Therefore, various organic-based stimulants had a positive effect on sprouting, plant growth, development, and to improve the yield. For this reason, in order to study the effect of Boms organic preparation on the soil before sowing, on the germination, growth, development and yield of the seedlings, we conducted observations by cultivating for cotton with and without mineral fertilizers. Below we analyze the results obtained from these studies.

In the experiment, the effect of Boms preparation on the germination of seedlings was studied in the variants applied to the soil at the rate of 300-1000 kg/ha during the preparation of the land for planting before sowing. In the initial observation of the research on May 14, 2019, 174.0 sprouts sprouted on 10 m2 in the control option , 185.0-200.7 sprouts in the options using Boms 300-1000 kg/ha, it was determined that there were more and 11.0-26.7 sprouts compared to the control. In the subsequent observations, the positive effect of Boms was more evident, and in the last observation on May 22, 227.3 sprouts sprouted in the control, 231.7-250.3 sprouts in the options treated with Boms at the rate of 300-1000 kg/ha, and It was observed that it increased to 4,4-23.0 pieces than the control option (table 1).

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**Table 1**

**Effect of Boms preparation on seed germination, Andijan-37 variety of cotton, 2019**

| No | Options | Application rate to the soil before planting, kg/ha | Number of sprouts, pieces /10 m² | | | | Difference compared to control, pieces |
|---|---|---|---|---|---|---|---|
| | | | 14.05 | 17.05 | 20.05 | 22.05 | |
| 1 | Control (NPK) | - | 174,0 | 196,0 | 216,0 | 227,3 | - |
| 2 | Boms + NPK | 600 | 164,7 | 177,0 | 214,0 | 234,3 | 7,0 |
| 3 | Boms | 300 | 185,0 | 203,3 | 225,0 | 231,7 | 4,4 |
| 4 | Boms | 600 | 200,0 | 213,7 | 231,0 | 234,0 | 6,7 |
| 5 | Boms | 1000 | 200,7 | 210,3 | 233,0 | 250,3 | 23,0 |

Explanation. In options 1-2, NPK 200-140-100 kg/ha was used, in options 3-5 mineral fertilizers were not given.

**Effect of Boms preparation on growth and development of cotton.** In the research conducted by K.Tadjiev (2006), before planting, hairy and hairless seeds were treated with Vitavaks 200 FF at the rate of 5 l/t, the germination of seedlings was accelerated, it had a positive effect on growth and development, and the cotton yield was 3.0-4.1 c/ha. it has been found that it has increased and the possibility of growing high and quality crops has been created.

In the experimental field, the effect of Boms drug on the growth and development of the cotton plant during the vegetation period was studied. In the observation carried out on June 1, 2019, the height of the cotton was 9.2-10.8 cm, the number of true leaves was 2.4-2.6 pcs., during the period of cotton's mass pruning and flowering on July 1, in the control variant, the plant height was 39.6 cm, the harvested branches number 5.7 pieces, branches 5.7 pieces, Boms 600 kg/ha + NPK and Boms 300-1000 kg/ha, height 40.5-40.7 cm, number of harvested branches 5.8-6.0 pieces, the branches are 5.8-6.0 pieces, compared to the control, the length of the cotton was 1.1 cm higher, the yield branches were 0.3 pieces, and the branches were 0.1-0.3 pieces more. Such a positive difference was also observed during the flowering-harvest period of cotton (1.08.2019). In the variants used by Boms, the height of the cotton was 2.2 cm, the number of branches was 0.2 more, and it was estimated that there were slightly more buds, flowers and bolls.

At the end of the cotton growth period (1.09.2019), the height of the cotton in the control option was 94.4 cm, in the option using Boms+NPK, it was 97.0 cm, in the options where Boms was applied at the rate of 300-1000 kg/ha and no mineral fertilizers were given, 91.6-

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100.0 cm, the number of bolls was observed to be 8.8 pieces in the control option, 9.7-10.8 pieces or 0.9-2.0 pieces more than the control option.

The variants using Boms organic preparation have less vegetative mass due to the absence of mineral fertilizers, which is shown by the closeness of the length of the cotton and the number of harvested branches. However, the number of generative organs increased and increased in the variants used by Boms during the period of cotton bearing and ripening. Before the cotton harvest (October 2, 2019), in the control variant, there were 9.3 bolls per cotton bush, while when Boms was applied on the background of mineral fertilizers at the rate of 600 kg/ha, the number of bolls was 10.8 bolls or 1.5 bolls more than the control. Also, in the options where Boms was applied at the rate of 300-1000 kg/ha and mineral fertilizers were not given, the number of bolls was the highest at 10.2-11.2 pieces and increased by 0.9-1.9 pieces from the control. In these variants, the degree of opening of boll was 68.6-70.5%, and it opened 7.3-9.2% faster than the control.

In the conditions of typical sierozem soils of Tashkent region, Boms organic preparation had a positive effect on cotton yield when applied to the soil at the rate of 300-1000 kg/ha (Fig. 1).

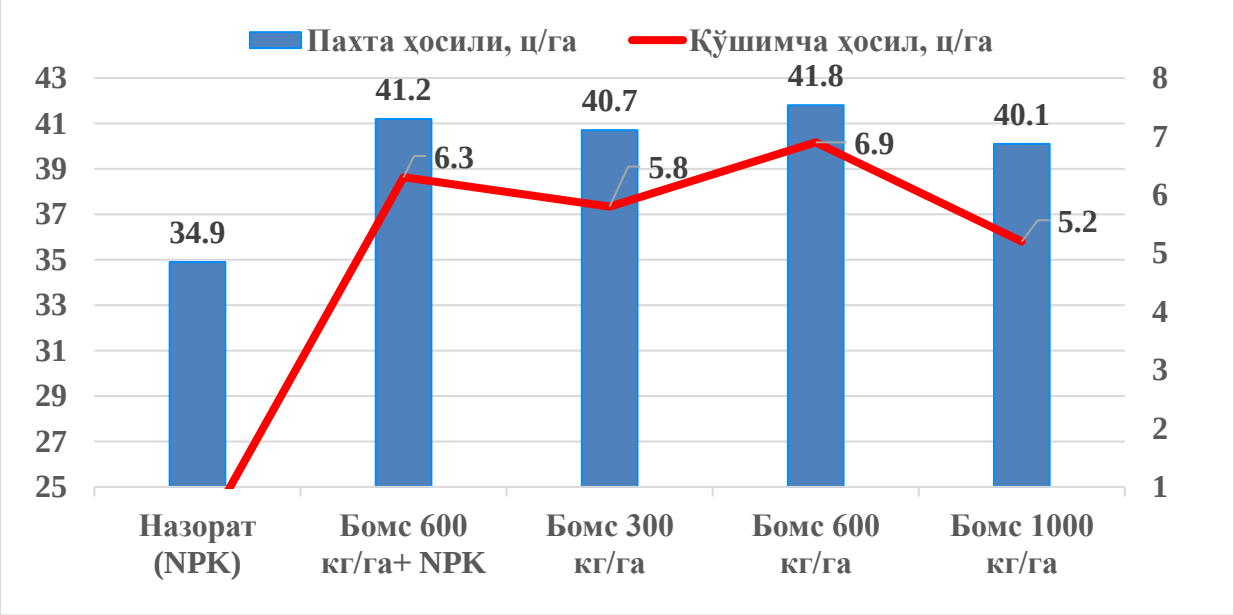


Figure 1. Effect of Boms organic preparation on cotton yield, Andijan-37 variety, Tashkent 2019

In the control variant of the experiment, 34.9 c/ha of cotton was obtained when cotton was cultivated for in conventional agrotechnics, while Boms preparation was applied at 600 kg/ha before seeding, and mineral fertilizers N-200, P-140 and K-100 kg/ha were fed at the rate of 41, 2 c/ha or 6.3 c/ha more than control. For the purpose of growing organic cotton, chemical mineral fertilizers were not used at all, only Boms organic preparation was applied before sowing at the rate of 300 kg/ha at 40.7 c/ha, Boms at 600 kg/ha at 41.8 c/ha

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and Boms at 1000 kg/ha in the used option, 40.1 c/ha of cotton was grown, compared to the control option, 5.2-6.9 c/ha of additional cotton was obtained.

It should be noted that higher results were obtained in the norms of 300-600 kg/ha of Boms compared to its standard of 1000 kg/ha, as a result of the use of Boms, the yield index increased by 16.6-19.8%, and mineral fertilizers were saved. This shows that the use of organic-based stimulants and biofertilizers is important in growing organic cotton in our republic in the future.

## CONCLUSION

In the conditions of typical sierozem soils of the Tashkent region, when the organic preparation Tevevit Boms is used in the period of preparing the land for planting before sowing, the germination of seeds was accelerated, favorable conditions for the growth and development of the plant are created, and the yield of cotton was 40.7-41.8 c/ha, chemical mineral fertilizers are saved, the possibility of growing organic cotton was scientifically based.

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