



INFLUENCE OF HUMIC-BASED STIMULANTS ON THE GROWTH, DEVELOPMENT AND HARVEST OF RAW COTTON GERMINATION

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Article history:	Abstract:
Received: 1 st May 2022 Accepted: 1 st June 2022 Published: 6 th July 2022	Under the conditions of typical sierozem soils of the Tashkent region, pre-sowing seed treatment and spraying during the budding - flowering period of plants at optimal times and norms with humic-based stimulants improves germination, growth and development, physiological processes, and also increases the yield of raw cotton by 3.4- 6.6 c/ha

Keywords: stimulants, Uzgumi, Gummi-20, Geogumat, Relect, seed germination, plant height, sympodial branches, bud, flower, boll, leaf, raw cotton yield

INTRODUCTION

In the agriculture of the Republic, the most important tasks are the improvement of agrotechnical measures for cultivating crops, the development of technology for obtaining environmentally friendly products while spending less money and resources, using less mineral fertilizers or in general without the use of fertilizers, obtaining a high and high-quality crop, widespread introduction into production of highly effective modern innovative technologies, increasing the economic efficiency of grown products.

One of the main ways to obtain early friendly seedlings, improve plant growth and development, as well as obtain a high and high-quality crop under extreme weather conditions and stressful conditions, an important measure is the treatment of soil and seeds before sowing, as well as during the growing season of plants with humic stimulants. Humic stimulants are environmentally friendly and economically cheap.

OBJECT OF RESEARCH

The object of the study is the medium-fiber cotton varieties UzPITI-103 and Andijan-37, the soil is typical of gray soils of the experimental field of the Research Institute of Breeding, Seed Production and Agricultural Technology of Cotton Growing.

LITERATURE REVIEW

In the studies conducted by Sh. Abdualimov (2013, 58-60 p) in extreme natural climatic conditions, treatment with physiologically active substances T-86, Roslen, Nitrolin, TJ-85, XC-2, Oxygumat, Vitavax 200ff, increased seed germination, growth and development, number and area of leaves, photosynthesis productivity and cotton yield. Humic stimulators produced from the remains of peat and coal (Uzbekistan-Russia) in liquid form and are environmentally friendly; they contain the most important biologically active substances important for plants such as potassium, sodium humate, humic acids, enzymes, amino acids and trace elements [1].

In studies conducted by Sh. Abdualimov (2013 113-116 p) in the conditions of Tashkent and Jizzakh regions, when seeds were treated before sowing with the Uzgumi stimulator at a rate of 0.7-0.8 l / t, high germination was observed. Under field conditions, the Uzgumi stimulant has a positive effect on the germination of cottonseeds. According to the results of studies in 2013, on the control variant, seed germination was 76.3%, and when using the Uzgumi stimulant at a rate of 0.7-0.8 l / t, germination was 83.3-87.6%, where it increased by 7.2-11.2% compared with the control [2].

According to F. Khasanova, Sh. Abdualimov, B. Niyozaliev (2015, 4-5 p.), seed treatment with stimulants Humimax with a norm of 0.8-1.0 l / t, Uzgumi 0.7-0.8 l / t, Fitavakom 200-300 ml / t, Albit 50-75 ml / t in place with moistening the seeds before sowing accelerates the germination of seeds, and spraying with a suspension prepared

by mixing the mineral fertilizer urea with a stimulant at a rate of 5-7 kg / ha in the phases of budding and flowering of cotton improves growth and development and increases productivity by 10-15% [6].

B.Tillabekov, J.Ismayilov and others (2016, 354-357 p.) note that when applying fertilizers (NPS) by the suspension method in the budding and flowering phases of cotton at a rate of 10 kg/ha, the yield on strongly eroded soils amounted to 36.5 c / ha (centners / hectare), on average washed away soils 37.0 c/ha and on the washed-out part 38.8 c/ha [5].

MATERIALS AND METHODS

Field studies were carried out in accordance with the methodological manual "Methodology for conducting field experiments", mathematical processing of the data obtained was carried out according to the method of B.A. Dospekhov (1985).

In the experiments carried out during 2012-2020, the effectiveness of the stimulants Uzgumi, Gummi-20, Relect, Geohumat on cotton was studied. The experiments were carried out under the conditions of typical serozem soils of the Tashkent region on medium-fiber cotton varieties UzPITI-103 and Andijan-37, the area of the plots was 60 m² in three repetitions.

In studies, treatment with the Uzgumi stimulant was carried out at rates of 0.6; 0.7 and 0.8 l/t with Gummi-20 0.5; 1.0 l / t, Relect 200-400 ml / t, Geohumate 1.0 l / t -500 kg / ha in the phases of butanization and flowering, the treatment was carried out with the Uzgumi stimulant at a rate of 0.3-0.4 l / ha, with Gummi -20 0.5-1.5 l/ha, with Relect 200-400 ml/ha, Geohumate 1.6 l/ha. In the phases of budding and flowering, the processing of cotton was carried out by spraying with a manual apparatus with a liquid solution prepared in accordance with the consumption rate of 300-500 l/ha.

RESULTS AND DISCUSSION

When studying the effect of the Gummi-20 stimulator (2016) on seed germination, it was revealed that the germination rate in the control was 76.0%, and when using the Gummi-20 stimulant, 81.1-84.4% when using the Uzgumi stimulator, 86.2% when using stimulant Gummi-20 with a norm of 0.5-1.0 l/t, this figure was equal to 85.6-86.8%, which is 9.6-10.8% higher compared with the control.

When studying the effect of the stimulant Geogumat (2019) on the germination of seeds in the control, it was equal to 67.6%, and when applied at a rate of 1.0 l / t, it was 75.7%, which is 8.1% higher than the control when applying other norms, close results were obtained result with control. When using the Uzgumi stimulant, the germination rate was 77.2%, which is 9.6% higher than the control. The Relect stimulant had a positive effect on the field germination of seeds. According to the results obtained in 2019, when using different norms on the control variant, the germination of seeds was 159.7 pcs, when using different norms (200-400 ml / t) of the Relect stimulator, the germination, respectively, was 173.3-181.3-204.3 pcs, which 13.7-21.7-44.7 units more than control and in 2020 accelerated by 6.2-10.5-11.1% compared to control in 2021 accelerated by 8.7-12.3% compared to control.

When seeds were treated with the Uzgumi stimulator at a rate of 0.6-0.8 l/t and in the budding-flowering phase at a rate of 0.3-0.4 l/ha, the height of the cotton stem as of June 1, according to the options, was 8.7-10.3 cm , the number of true leaves is 3.4-4.0 pieces, the height of the stem on July 1 in the control was 33.2 cm, the number of sympodial branches was 5.9 pieces, when treated with the Dalbron stimulant, these figures were 35.5 cm and 6, respectively, 2 pieces, when treated with Humimax 37.1 cm and 6.6 pieces on 5-12 variants with treatment with the Uzgumi stimulant with different norms, the height of the cotton plant was 33.0-38.1 cm, the number of sympodial branches was 5.6-6.7 pieces, and buds 4.2-5.8 pieces, which had a positive effect on growth, the formation of sympodial branches and fruit elements, where the height of the stem was 4.9 cm higher, the number of sympodial branches by 0.8 pieces, compared with the control.

At the end of the cotton growing season, the height of the stem in the control was 96.0 cm, the number of sympodial branches was 16.3, the number of bolls was 10.8, and when using the Dalbron stimulant, these indicators were respectively 99.8 cm, 16.7 and 11.1 pieces when using Humimax 100.6 cm, 17.0 and 12.1 pieces, on variants with Uzgumi treatment with different norms 99.5-112.0 cm, 16.8-18.4 pieces, 12.6-13, 9 pieces, when compared with the indicators of the control variant, the height of the stem was 16 cm higher, the number of sympodial branches by 2.1 pieces, the number of boxes by 3.1 pieces.

In those studied to study the effect of the Gummi-20 stimulator on the growth and development of cotton, the height of the stem on June 2 was 9.4 cm, the number of true leaves was 2.8 pieces, in the variants with the use of the Gummi-20 stimulator for seeds with a norm of 0.5-1, 0 l / t and in the phases of budding and flowering with a norm of 1.0-1.5 l / ha, the height of the stem was 9.9-9.4 cm, the number of true leaves was 2.8 pieces; seeds with a norm of 0.5-1.0 l / t, and in the phases of budding and flowering with a norm of 1.0-1.5 l / ha, the height of the stem was 9.4-9.9 cm, the number of true leaves was 3.1 pieces, where the difference was 0.5 cm and 0.3 pieces, when comparing the variant with the use of Uzgumi with the control variant, the height of the stem was higher by 1.4 cm, and the number of true leaves by 0.4 pieces, at the end of the cotton growing season (4, 09), the difference between the variants was somewhat more significant in comparison, with the control in 4-6 variants, the height of the plants, respectively, was 81.6-86.3-86.4 cm, the number of sympodial branches 13.0-13.7 pieces, the number of buds 5.4-5.9 pieces and flowers 2.1-2.3 pieces, bolls 7.4-8.9 pieces, it should be noted that when treated with stimulants, the

height of the plants was more by 4.8 cm the number of sympodial branches by 0.7 pieces, the number of buds by 0.5 and boxes by 1.5 pieces, compared with the control.

When applied to the seeds of the Relect stimulant in variants 4-7 with a norm of 200-400 ml/t and in the phases of true leaves and butanization with a norm of 200-400 ml/ha, the height of the plants was 8.4 cm, the number of true leaves was 2.4 pieces, in the control these figures were respectively equal to 8.3 cm and 2.4 pieces, the difference was 0.1 cm in the fruiting phase of cotton (1.08), the difference between the options was somewhat more significant. In particular (1.08.2019) in options 5-7, the height of the cotton was 84.1-88.4 cm, the number of sympodial branches 14.2 pieces, buds 7.5 pieces, ovaries c 3.4 pieces, bolls 5.5 things. It should be noted that when cotton was treated with stimulants, the height of the plants was higher by 5.4 cm, however, the number of sympodial branches of buds and bolls was almost the same as in the control variant; the same results were obtained at the end of the growing season.

When using the Geohumate stimulant on seeds with a norm of 1.0 l / t-500 kg / ha and in the phases of budding and flowering with a norm of Geohumat 1.6 l / ha, the height of the plants was 8.5 cm, the number of true leaves was 2.3 pieces, in control these figures respectively amounted to 8.3 cm and 2.1 pieces, which is less by 0.2 cm and 0.2 pieces. When comparing the variant with the use of the Uzgumi stimulant with the control, there is no difference in plant height and the number of true leaves; at the end (1.09), almost identical data were obtained. On experimental variants, when treating seeds before sowing with the Geohumate preparation at a rate of 1.0 l / ha and 500 kg / ha and spraying plants in the budding and flowering phases with a Geohumate rate of 1.6 l / ha, the height of the plants was 102.8-103.7 cm, the number of sympodial branches is 16.4-16.5 pcs, the number of bolls is 14.7-15.7 pieces, where the plant height was 4.7-5.6 cm higher, the number of sympodial branches is 0.8-0.9 pcs, the number of boxes by 2.2-3.2 pieces, compared with the control variant.

In the experiment with the use of the Uzgumi stimulator, the yield of raw cotton in the control variant was 38.1 c/ha; in the variant with the treatment with Dalbron, 39.6 c/ha, using Humimax 42.3 kg/ha, treatment with different norms and terms with the preparation Uzgumi 42.9-43.1 c/ha, where the yield of raw cotton with the use of Dalbron was higher by 1.5 c/ha. Humimax by 4.2 centners/ha, Uzgumi by 4.8-5.0 centners/ha compared with the control.

When applying the Gummi-20 stimulant before sowing at a rate of 0.5-1.0 l / t and in the phases of budding and flowering at a rate of 1.0-1.5 l / ha, they had a peculiar effect on the yield of raw cotton in the control variant, the cotton yield - raw material amounted to 41.8 c/ha on the reference version of the Uzgumi stimulant 45.0 c/ha, when using the Gummi-20 stimulant on seeds before sowing, the norm was 0.5-1.0 l/t, and also in the budding and flowering phases, the norm was 1 0-1.5 l/ha, the yield of raw cotton was 45.7-46.6 c/ha, where an increase in yield of 3.9-4.8 c/ha was obtained compared to the control variant.

When applying the stimulant Relect (2019) to seeds before sowing at a rate of 200-400 ml/t and in the phases of budding and flowering at a rate of 200-400 ml/ha, it had its own effect on the yield of raw cotton in the control variant, the yield was 35.6 c/ha when using the Uzgumi preparation 37.9 c/ha, when using the Relect stimulant with different norms, the yield was higher by 3.6-4.4 c/ha compared to the control variant. In the experience of 2020, when using the Relect stimulant for seeds and in the budding phases, the yield in the control variant was 26.4 c/ha, and when using the Relect stimulator, the yield of raw cotton was 30.8-32.6 c/ha, which is 6. 2-6.3 c/ha higher than the control variant.

In the experience of 2021, when using the Relect stimulant for seeds and in the budding phases, the yield in the control variant was 26.4 c/ha, and when using the Relect stimulator, the yield of raw cotton was 36.6-37.7 c/ha, which is 5. 0-5.4 c/ha is higher compared to the control variant.

There was a peculiar effect of the use of the Geohumate preparation on seeds at a rate of 1.0 l/t and spraying of 500 kg / ha in the phases of budding and flowering at a rate of 1.6 l/ha on the yield of raw cotton in the control variant, the yield was 33.2-34.5- 37.6 c/ha, with the use of Uzgumi stimulant 37.8-38.1 c/ha with the use of the preparation Geogumat on seeds, as well as spraying in the budding and flowering phases, the yield was 39.6-39.8-41.0 c/ha ha, where the yield increase was 3.4-5.1-6.6 c/ha compared to the control variant (2019-2020-2021).

CONCLUSIONS

In conditions of typical sierozem soils, the use of the humic-based Uzgumi stimulant on seeds before sowing with a rate of 0.7-0.8 l / t and spraying in the budding and flowering phases with a rate of 0.3-0.4 l/ha of the Gummi-20 preparation on seeds with a norm of 1.0 l/ha and in the phases of budding and flowering with a norm of 0.5-1.0 l/ha of Relect preparation on seeds with a norm of 200-400 ml/ha, Geogumat preparation for seeds with a norm of 1.0 l/t and spraying in phases of budding and flowering at a rate of 1.6 l/ha provides an acceleration of seed germination by 8.7-10-15%, improved growth and development of plants, as well as the passage of physiological processes, increasing the yield of raw cotton by 3.4-6.6 c/ha.

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