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Effects of mineral fertilizer applications and suspension in cotton on cotton yield and field technological quality indicators

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Abstract

The article provides information on the effect of leaf feeding on cotton yield and technological quality indicators of fiber by means of a suspension prepared on the basis of urea during the period of mating and flowering of 2-3 chin leaves, depending on different feeding norms. Against the background of application of mineral fertilizers N-200, P₂O₅-140, K₂O -100 kg / ha in cotton, the highest cotton yield is 7.0 kg / ha in the period of 2-3 leaves, 9.0 kg / ha in the period of weeding and at the beginning of the flowering period. The urea-based suspension at a rate of 11.0 kg / ha was obtained from the leaf-fed variant and amounted to 37.5 centner / ha.

Against the background of application of mineral fertilizers N-250, P₂O₅-175, K₂O -125 kg / ha, the highest yield of cotton is 5.0 kg / ha in the period of 2-3 leaves, 7.0 kg / ha in the period of weeding and at the beginning of the flowering period. The urea-based suspension at a rate of 9.0 kg / ha was obtained from the leaf-fed variant and amounted to 38.9 centner / ha.

The use of urea-based suspension in cotton against the background of different standards of mineral fertilizers has a different effect on the technological quality of cotton fiber, fiber yield by 0.2-0.6%, weight of 1000 seeds 0.4-2.9 g. e, and the fiber length was 0.3–0.8 mm higher.

Keywords: Cotton, suspension, urea, nitrogen, phosphorus, potassium, mineral fertilizers, cotton yield, fiber yield, length, tensile strength, linear density

Introduction

In recent years, in the 1: 1 (cotton: grain) system of short-rotation crop rotation, successive planting of cotton and winter wheat in one field, inadequate application of mineral and organic fertilizers, reduces soil fertility and nutrient content from year to year. This, in turn, leads to a decrease in crop yields. Therefore, in the process of caring for cotton, it is important to improve the growth and development of the plant through the implementation of measures to feed it from the leaves, as well as to increase its yield.

The relevance of the problem: It is known that sufficient nutrients for nitrogen, phosphorus, potassium, calcium, boron, zinc, magnesium, manganese, iron, copper, sodium, molybdenum and other macro and micronutrients are necessary for the optimal growth and development of cotton. In the conditions of the republic, the cotton plant is fed mainly by its roots. In this case, it has been proven in many years of research that fertilizers should be applied before autumn plowing, before sowing, in conjunction with sowing and during the period of application. However, when cotton is fed with complex nitrogen-phosphorus-potassium liquid suspension complex fertilizers through the leaves during the growing season, the plant is not only

provided with several nutrients at once, but also protected from various diseases and pests, resistance to adverse conditions and productivity increases ^[1].

LNCF - liquid nitrogen calcium fertilizer is applied at a rate of 5-10 l / ha through the leaves during the 3-4 chin leaves and mowing periods of cotton, from the initial periods the growth and development of the plant is accelerated and the shedding of yield elements is reduced. As a result, it is possible to get a high and quality cotton crop ^[2].

An additional cotton yield of 1.6-3.1 centner / ha was obtained when cotton was fed through a leaf with a urea-based suspension of 4 kg / ha during the 2-3 leaf period, 7.0 kg / ha during the weeding period and 10 kg / ha during the flowering period ^[7].

Against the background of application of mineral fertilizers N-250, P-140, K-100 kg / ha in cotton, FSSS fertilizer is applied to 13.3 l / ha during the 2-3 leaf period of the plant, 16.7 l / ha during the mowing period and 23.3 l / ha during the flowering period. l / ha at the rate of 0.8 according to the control option without application of the suspension sprayed through the leaf; Provided additional cotton yields of 0.8, 1.2 and 1.6 centner / ha ^[8].

Cotton fiber and products made in the Republic of Uzbekistan are exported to foreign countries. In the world

market, special attention is paid to the whiteness of the fiber color, especially micronaire, which is one of the most important quality indicators. If the micronaire index is higher than 4.9, the fiber is rough and cannot compete in the world market, the price will also be lower. The main indicators in setting the price for cotton fiber in the world market are 4.3-4.4 micron neurons and specific strength 23.5-26.4 gk / tex ^[4].

Research conditions and methods: Our research was conducted in 2006-2008 in the fields of the experimental plot of the Tashkent State Agrarian University. The soil of the experimental field is a typical gray, which has been irrigated for a long time, the mechanical composition is sandy, the groundwater is located at a depth of 15-18 meters.

Ammonium nitrate (N 33-34%), superphosphate (N 5-6%, P₂O₅-22-23%) and potassium chloride (K₂O -60%) fertilizers were used in the care of cotton. Urea (N 46%) fertilizer was used to feed the cotton through the leaves. According to the experimental system, mineral fertilizers in cotton are N-150, P-105, K-75 kg / ha, N-200, P-140, K-100 kg / ha and N-250, P-175, K-125 kg / ha. 3.0, 5.0, 7.0 kg / ha during the 2-3 leaf period of the plant, 5.0, 7.0, 9.0 kg / ha during the mowing period at the beginning of the flowering period. Fed from a cotton leaf with a suspension prepared on the basis of urea at the rate of 7.0, 9.0, 11.0 kg / ha. In the control options, the cotton leaf was treated with water.

Placement, calculations and observations of field experiments were carried out on the basis of methodical manuals "Methods of conducting field experiments", "Methods of field experience", "Methodology of State Variety Testing of Agricultural Crops" ^[3, 5, 6].

Research results: It is known that the effectiveness of all agrotechnical factors used in the care of cotton is measured by its effect on the cotton crop. In our study, it was also found that the standards of suspensions and mineral fertilizers used in the care of cotton affected the yield of cotton.

According to the data obtained from the study, the norm of mineral fertilizers N-150, P-105, K-75 kg / ha was 3.0, 5.0, 7.0 kg / ha in the period of 2-3 leaves of cotton, cotton yield in the variants fed from the leaves of cotton with a suspension prepared on the basis of urea at the rate of 5.0, 7.0, 9.0 kg / ha and at the beginning of the flowering period 7.0, 9.0, 11.0 kg / ha 31.4-34.2 centner / ha. Against this background, the highest cotton yield was obtained from a cotton leaf-fed variant with a urea-based suspension at a rate of 7.0 kg / ha during the 2-3 leaf period, 9.0 kg / ha at the beginning of flowering and 11.0 kg / ha at the beginning of the flowering period. provided an additional cotton yield of

2.8 centner / ha compared to the control option.

Against the background of application of mineral fertilizers N-200, P-140, K-100 kg / ha in cotton, the plant has 3.0, 5.0, 7.0 kg / ha in the period of 2-3 leaves, 5.0, 7.0, 9.0 kg / ha, Cotton yield is 34.9-37.5 centner / ha in the variants fed on cotton leaf with a suspension prepared on the basis of urea at the rate of 7.0, 9.0, 11.0 kg / ha at the beginning of the flowering period. did. Against this background, the highest yield of cotton was obtained from the leaf-fed variant by means of a suspension prepared on the basis of urea at a rate of 7.0 kg / ha in the period of 2-3 leaves, 9.0 kg / ha in the period of mowing and 11.0 kg / ha at the beginning of the flowering period. 37.5 centner / ha. This, in turn, provided an additional cotton yield of 2.6 centner / ha compared to the control option.

Against the background of application of mineral fertilizers N-250, P-175, K-125 kg / ha in the care of cotton 3.0, 5.0, 7.0 kg / ha in the period of 2-3 true leaves of the plant, 5.0, 7.0, 9.0 kg / ha in the period of weeding and at the beginning of the flowering period 7.0, 9.0, 11.0 kg / ha in the form of urea-based suspension fed to the leaves of cotton 36.0-38.9 centner / ha formed. Against this background, the highest yield of cotton is obtained from the leaf-fed variant by means of a suspension prepared on the basis of urea at the rate of 5.0 kg / ha in the period of 2-3 leaves, 7.0 kg / ha in the period of mowing and 9.0 kg / ha at the beginning of the flowering period. 38.9 centner / ha. This, in turn, provided an additional cotton yield of 2.9 centner / ha compared to the water-treated control option.

The quality of cotton fiber depends on its navigation and full adherence to the maintenance agrotechnics developed for each variety. This requires timely and proper conduct of each agro-technological event.

It was found that the norms of mineral fertilizers used in cotton and the suspension prepared on the basis of urea had an impact on the technological quality of cotton fiber.

Against the background of application of mineral fertilizers N-150, P-105, K-75 kg / ha in cotton, 3.0, 5.0, 7.0 kg / ha in the period of 2-3 true leaves of cotton, 5.0, 7.0, 9.0 kg / ha and at the beginning of the flowering period 7.0, 9.0, 11.0 kg / ha in fiber-fed versions with a suspension prepared on the basis of urea fiber yield 37.0-37.6%, weight of 1000 seeds 123.1-126.0 g., Tensile strength 4.4-4.5 gs, linear density 180-185 m / tex, relative tensile strength 24.3-24.7 gk / tex, fiber length 33.0- 33.8 mm. Against this background, the fiber yield of cotton in the version fed with urea-based suspension at a rate of 7.0 kg / ha in the period of 2-3 true leaves, 9.0 kg / ha at the beginning of flowering and 11.0 kg / ha at the beginning of the flowering period is 37.6%. The weight of 1000 seeds was 126.0 g., The tensile strength was 4.5 gs, the linear density was 185 m / tex, the relative tensile strength was 24.3 gk / tex, and the fiber length was 33.8 mm.

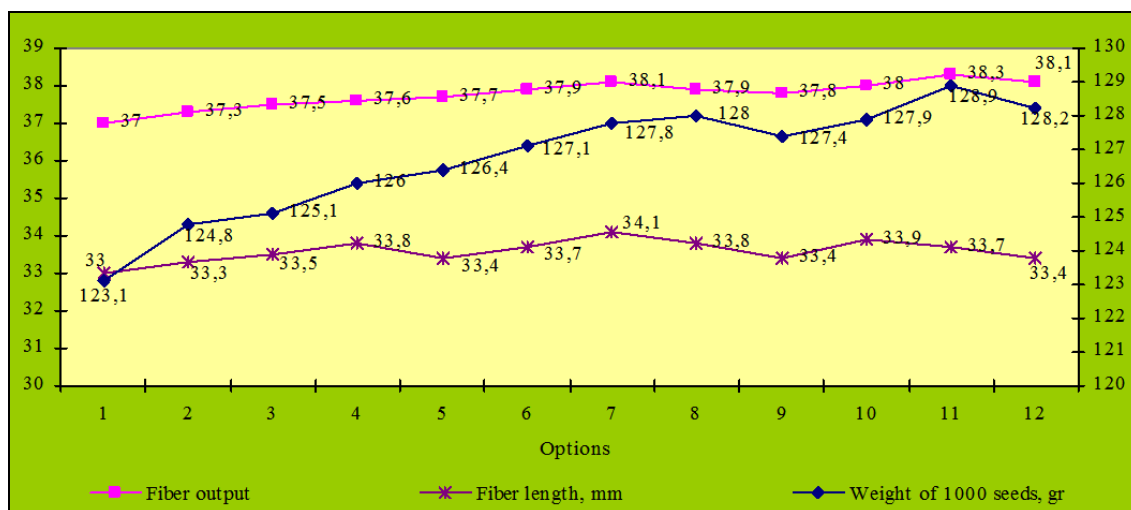


Fig 1: Effects of repeated and mixed siderate crops on technological quality indicators of cotton fiber application of mineral fertilizers norms and suspensions in cotton

The norm of mineral fertilizers N-200, P-140, K-100 kg / ha is 3.0, 5.0, 7.0 kg / ha in the period of 2-3 leaves of cotton, 5.0, 7.0, 9.0 kg / ha in the period of weeding and 7.0, 9.0, 11.0 kg / ha at the beginning of the flowering period in fiber-fed variants of cotton leaf with a suspension prepared on the basis of urea 37.7-38.1%, weight of 1000 seeds 126.0-127.8 g., Tensile strength 4.5-4.6 gs, linear density 185-187 m / tex, relative tensile strength 24.2-24.7 gk / tex, fiber length 33.4-33.8 mm. Against this background, the fiber yield in the variant fed to the cotton leaf with a suspension prepared on the basis of urea at a rate of 5.0 kg / ha in the period of 2-3 chin leaves, 7.0 kg / ha in the period of flowering and 9.0 kg / ha at the beginning of the flowering period., 1000 grains weighed 127.8 g, breaking strength 4.6 gs, linear density 187 m / tex, relative breaking strength 24.6 gk / tex, fiber length 34.1 mm.

The norm of mineral fertilizers N-250, P-175, K-125 kg / ha is 3.0, 5.0, 7.0 kg / ha in the period of 2-3 leaves of cotton, 5.0, 7.0, 9.0 kg / ha in the period of weeding and 7.0, 9.0, 11.0 kg / ha at the beginning of the flowering period 127.4-128.9 g., Tensile strength 4.5-4.6 gs, linear density 185-187 m / tex, relative tensile strength 24.2-24.7 gk / tex, fiber length 33.4-33.9 mm. Against this background, the highest values were observed in the variant of cotton fed with urea-based suspension at the rate of 5.0 kg / ha during the 2-3 leaf period of cotton, 7.0 kg / ha during the flowering period and 9.0 kg / ha at the beginning of the flowering period. fiber yield 38.3%, weight of 1000 seeds 128.9 g, tensile strength 4.6 gs, linear density 186 m / tex, relative tensile strength 24.7 gk / tex, fiber length 33.7 mm.

Conclusion

The use of urea-based suspension against the background of different standards of mineral fertilizers in cotton has a different effect on the technological quality of cotton and fiber, increasing the yield of cotton by 2.6-2.9 centner / ha, fiber yield by 0.2-0.6%, 1000 seeds. weight 0.4-2.9 g / ha and the fiber length was 0.3-0.8 mm higher.

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