



## INFLUENCE OF LOCAL POTASSIUM FERTILIZER ON GROWTH, DEVELOPMENT AND YIELD OF COTTON VARIETIES "BUKHARA-102" AND "OMAD".

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Article history:	Abstract:
<p><b>Received:</b> September 11<sup>th</sup> 2021 <b>Accepted:</b> October 24<sup>th</sup> 2021 <b>Published:</b> November 30<sup>th</sup> 2021</p>	<p>70-80% of typical grounds and pastures of the Republic of Uzbekistan is considered to be not so large <math>K_2O</math>, and its norms are insufficient and couldn't compensate <math>K_2O</math> to gather a good harvest of cotton. According to the demands highly qualified cotton can be grown and used from potassium fertilizers. That's why we've learned the influence of potassium fertilizers (Unitary enterprise Dehkanabad potash fertilizer plant) of the cotton production on 60-210 kg/ha in the case of low soil <math>K_2O</math>, 120-150 kg/ha, are used in form <math>N_{250}P_{175}</math> 7,1-9,2 s/ha. Grass soils in middle meaning with <math>K_2O</math> (201-300 mg/kg) <math>K_2O</math> provides extra gathering good harvest of cotton on 5.4-7.1 s/ha and indicates on <math>K_2O</math> 90-120 kg/ha.</p>
<p><b>Keywords:</b> Typical Grounds And Pastures, Grass Soils, Cotton, Potassium Fertilizers, Growth, Developing, Yield.</p>	

### INTRODUCTION.

At present, according to the results of agrochemical studies of soils of regional agrochemical stations of the Republic of Uzbekistan, the content of exchangeable  $K_2O$  in the area of 3.3 million / ha of irrigated land in the republic is 27.5 percent (0-200 mg / kg  $K_2O$ ) is the most scarce and low-income, 32.5 percent average (201-300 mg / kg  $K_2O$ ) and 40 percent high (301-400 > 401 mg / kg  $K_2O$  and above) are provided [6]. The main reason for this is that the norms of potash fertilizers used in the conditions of soils of cultivated cotton are insufficient, and this does not compensate for the assimilable potassium introduced by the crop from the soil (removal from the soil is on average 50-60 kg / ha from 1 ton of raw cotton), and secondly, a sharp decrease in the amount of potash fertilizers imported from the CIS countries. In this regard, the determination of the correct ratios of nitrogen and phosphorus with the norms of applied potash fertilizers in cotton growing is an important task of studying how to increase the efficiency of potash fertilizers produced in the only Central Asia unitary enterprise of the Dekhkanabad Potash Fertilizer Plant, increasing the yield and quality of cotton fiber remains one of the main tasks. in cotton growing.

### MATERIALS AND METHODS.

To solve the above problems, we carried out field experiments in meadow gray soils of the farm "Farkhod" of the Payaryk district of the Samarkand region in 2007-2010, as well as on typical gray soils of the farm "Samargand sara boshok" of the Pastdargom district of the Samarkand region in 2010-2014.

The soil of the experimental plot is meadow sierozem, medium loamy in granulometric composition, the groundwater level is 3-5 m, the availability of exchangeable  $K_2O$  was average (210-300 mg / kg  $K_2O$ ), and on typical sierozem, the granulometric composition is light, the groundwater level is 14- 16 meters, and these soils are included in the poorly supplied (0-200 mg / kg  $K_2O$  in the soil) group of exchangeable potassium.

On typical and meadow sierozem soils, where scientific research was carried out, cotton varieties "Bukhara-102" and "Omad" were sown. The experiments were repeated 4 times, all variants of the experiments were arranged systematically in one tier. In the experiment, the following norms were studied: 1) control - without fertilizers; 2)  $N_{250}P_{175}$  - background; in 3-8 variants background +  $K_2O$  from 60 to 210 kg / ha. All phenological observations and biometric records when growing cotton in the field, harvesting cotton were carried out on the basis of the methodological manuals "Methodology of field experiments with cotton" [4], " Methods of conducting field experiments " [2], statistical analysis of variance of cotton yield by options and replicates were carried out according to B.A. Dospekhov [3].

### RESEARCH RESULTS.

According to research data, the application of local potash fertilizers from 60 kg to 210 kg / ha against the background of  $N_{250}P_{175}$  in the conditions of typical gray soils, showed an effective effect on the growth, development and yield of cotton. For example, in the control variant where fertilizers were not used, the height of the main stem on August 1 was 62.5 cm, in the variant where only  $N_{250}P_{175}$  was used (background), this figure was 69.8 cm, against the indicated background NP, jointly introduced into the soil 60-90 kg / ha  $K_2O$ , the height of the stem in comparison with the absolute control was 8.8-13.1 cm, and with the introduction of 120-150 kg / ha  $K_2O$  the norms of potash fertilizers provided an increase of 17.7-20.9 cm higher, and the application of increased norms of potash fertilizers 180-210 kg / ha against the background of  $N_{250}P_{175}$  kg / ha, a decrease in these indicators was observed. This is explained by the fact that the introduction of increased norms of potash fertilizers increases the stock of exchangeable  $K_2O$  in the soil, and weakens the nutrition of plants with nitrogen and phosphorus.

The effectiveness of identifying the applied local potash fertilizers in the field was revealed not only in the growth of cotton, but also in the formation of fruit branches and fruit elements. For example, in the plots of the experiment without fertilizers on August 1, the fruit branches were 7.4 pieces and on September 1, the pods were 7.1 pieces, and only in the variant where  $N_{250}P_{175}$  (background) were used, these indicators were 9.2 and 8.8 pieces, respectively. When 60-90 kg / ha of potash fertilizers were applied against the background of NP, the number of bolls and fruit branches, relative to the background option (NP), provided an increase of 1.3-3.1 and 0.8-2.6 pieces. With an increase in the norms of potash fertilizers, an increase in the number of bolls and fruit branches was also observed. The positive effect of potash fertilizers was observed up to the norm of 120-150 kg / ha  $K_2O$ , and even an increase in the amount of  $K_2O$  (180-210  $K_2O$ ), on the contrary, led to a decrease in these indicators. This shows that the use of 120-150 kg / ha of  $K_2O$  potash fertilizers against the background of  $N_{250}P_{175}$  kg / ha under the conditions of typical gray soils led to the creation of better conditions for the growth, development and accumulation of fruit elements and fruit branches.

In the conditions of typically gray soils, due to potassium, it was determined that the yield of raw cotton increased, and especially for the use of fertilizer rates. For example, in experiments where fertilizers were not used in the control variant for 3 years, the yield of raw cotton was 19.4 c / ha, in plots where only  $N_{250}P_{175}$  kg / ha was used 25.6 c / ha, in plots with nitrogen phosphorus background where 60 kg / ha of  $K_2O$  was used, an average yield of 27.5 c / ha was obtained, an increase in yield due to potassium was 1.9 c / ha.

With the introduction of 90 kg / ha of  $K_2O$  in the field against the background of  $N_{250}P_{175}$  kg / ha with a yield of 30.2 c / ha, the increase in the yield increase was 4.6 c / ha, with the indicated background NP, the introduction of  $K_2O$  120-150 kg / ha, the yield increased, respectively, amounted to 32.7-34.8 centners per hectare, the increase in the yield of raw cotton due to potassium amounted to 7.1-9.2 centners / ha.

The introduction of potash fertilizers into meadow gray earth soils provided an intensive supply of nutrients to cotton, the movement of plant organs, as well as an improvement in the period of growth and development of plants. For example, on plots where mineral fertilizers  $N_{250}P_{175}$  kg / ha (background) were used, the height of cotton, in comparison with the option where no fertilizers were applied - the control option, provided 7.3 cm higher, and when applying 60-90 kg / ha  $K_2O$  against the background nitrogen-phosphorus fertilizers, the height of the stem compared to the control was 9.2-14.1 cm, and compared to the background was 1.9-6.8 cm higher. The applied potash fertilizer against the background of  $N_{250}P_{175}$  kg / ha, in the calculation of 120, 150, 180 and 210 kg / ha  $K_2O$ , the height of cotton in the plots in relation to the control was 17.9, respectively; 18.7; 15.4 and 13.5 cm, compared with the growth of plants against the background, their height was observed, which was 10.6; 11.4; 8.1 and 6.2 cm. This situation can be seen in the number of fruit branches and bolls.

Our studies in the conditions of meadow-sierozem soils, where fertilizers were not used - control, the yield of cultivated cotton in 3 years was 20.5 c / ha, only in the variant where  $N_{250}P_{175}$  kg / ha (background) were used, the yield of cultivated cotton was 28.3 c / ha. The efficiency of potash fertilizers was higher when applied to the NP background. For example, it was determined that when potassium was applied at a rate of 60 to 210 kg / ha against the background of  $N_{250}P_{175}$  kg / ha, the increase in the yield of raw cotton was, in comparison with the control option - without fertilizers, amounted to 9.1-14.9 c / ha, compared only where the NP version of the background was used, this figure was an increase of 1.3-7.1 c / ha. The influence of the norms of potash fertilizers on the yield of cotton, in our studies, averaged over 3 years, are shown in Figure 1

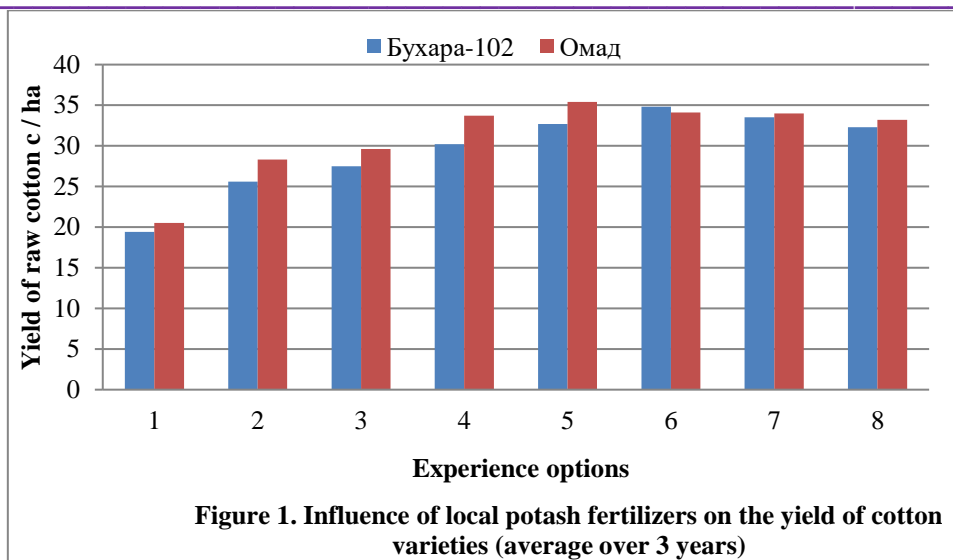


Figure 1. Influence of local potash fertilizers on the yield of cotton varieties (average over 3 years)

### CONCLUSIONS:

Based on the research results, it was determined that, in the conditions of typical serozem soils of the Samarkand region, with poorly supplied (0-200 mg / kg K<sub>2</sub>O in the soil) potassium, the introduction of local potash fertilizers at a rate of 120-150 kg / ha against the background of N<sub>250</sub>P<sub>175</sub> kg / ha, application in the ratio NPK 1: 0.7: 0.5; 1: 0.7: 0.6 was obtained per hectare 32, -34.8 centners, and this makes it possible to obtain an increase in the yield of raw cotton, due to potassium, on average 7.1-9.2 centners / ha.

In the conditions of meadow - sierozem soils of farms of the region, specialized in cotton growing, the use of potash fertilizers (90-120 kg / ha K<sub>2</sub>O) against the background of N<sub>250</sub>P<sub>175</sub> kg / ha, an increase in the amount of exchangeable K<sub>2</sub>O in the soil, create the best conditions for the growth and development of cotton varieties " Omad ", and this ensures the receipt of high-quality and high yields from cotton (33.7-35.4 centners / ha).

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