



**“SHIMOLIY MINTAQALARDA QISHLOQ XOJALIGINI
RIVOJLANTIRISHNING DOLZARB MASALALARI VA
ULARNING INNOVATSION ECHIMLARI”
mavzusidagi Respublika ilmiy-amaliy konferensiya**



UDK: 631.8:633.511

**IMPACT OF ORGANO-MINERAL COMPOSTS ON COTTON GROWTH AND
DEVELOPMENT OF COTTON**

Zinatdinov Kamalatdiyin Mnajatdin uli,

PhD,

Phone number: +998913035359

Email: kamalatdiyinzinatdinov@gmail.com

Satbaeva Guljamal Abatbay qizi,

2nd year student of the “Agronomy” speciality,

Institute of Agriculture and agrotechnologies of Karakalpakstan.

<https://doi.org/10.5281/zenodo.19458201>

Abstract: The article studies the effects of organo-mineral compost, manure, and mineral fertilizers on the growth and development of cotton. The use of different types of compost and amounts of manure increased soil fertility and had a positive effect on the growth and development of cotton. In this study, the effect of organo-mineral composts on the growth and development of cotton under saline soil conditions was investigated.

Key words: Soil, cotton, organo-mineral compost, manure, mineral fertilizers, stem, leaf, branch and crop elements.

Annotatsiya: Maqolada g‘o‘zaning o‘sishi va rivojlanishiga organo-mineral kompost, go‘ng va mineral o‘g‘itlarning ta‘siri o‘rganilgan. Turli xildagi kompost va go‘ngdan foydalanish tuproq unumdorligini oshirib, g‘o‘zaning o‘sishi va rivojlanishiga ijobiy ta‘sir ko‘rsatdi. Ushbu tadqiqotda organo-mineral kompostlarning sho‘rlangan tuproq sharoitida g‘o‘zaning o‘sishi va rivojlanishiga ta‘siri o‘rganildi.

Tayanch so‘zlar: Tuproq, g‘o‘za, organo-mineral kompost, go‘ng, mineral o‘g‘itlar, poya, barg, shox va ekin elementlari.

Аннотация: В статье изучается влияние органико-минерального компоста, навоза и минеральных удобрений на рост и развитие хлопчатника. Использование различных видов компоста и количества навоза повысило плодородие почвы и положительно повлияло на рост и развитие хлопчатника. В данном исследовании было изучено влияние органоминеральных компостов на рост и развитие хлопчатника в условиях засоленных почв.

Ключевые слова: Почва, хлопок, органоминеральный компост, навоз, минеральные удобрения, стебель, лист, ветви и элементы культуры.

Introduction. The use of composts in agriculture can solve a number of problems, because when composts are used, they improve soil fertility and also ensure the rapid growth and development of planted crops. For the growth and development of cotton, it is important to provide them with a certain amount of nutrients. In this case, of course, the use of mineral fertilizers and the widespread use of organic fertilizers is necessary.

S.Boltaev [2; p. 55-56] states that in order to prevent the decline in soil fertility, scientifically based recommendations require the application of 20-30 tons of manure or organo-mineral compost per hectare of land once every two or three years.



“SHIMOLIY MINTAQALARDA QISHLOQ XOJALIGINI RIVOJLANTIRISHNING DOLZARB MASALALARI VA ULARNING INNOVATSION ECHIMLARI” mavzusidagi Respublika ilmiy-amaliy konferensiya



Scientists have noted that an excess or deficiency of nutrients negatively affects the growth, development and productivity of agricultural crops [1; 5;].

According to A. Sayimbetov [6; p. 10], the use of organic fertilizers, mainly composts, in addition to mineral fertilizers, in addition to increasing soil fertility, in increasing the growth and productivity of cotton has been proven in many studies. In addition to mineral fertilizers, the application of compost prepared in a ratio of 1:1:1.4:0.6 at a rate of 20 t/ha resulted in an additional cotton yield of 6.7 t/ha compared to the control option.

According to S. Boltaev and A. Normamatov [3; pp. 18-19], under conditions of moderately saline solonchak soils, the application of an unconventional organo-mineral compost ameliorant at a rate of 21.0 t/ha (composed of 15.0 t semi-decomposed cattle manure + 6.0 t bentonite clay) resulted in a more rapid growth and development of cotton during the later stages of the growing season compared to other treatments.

Materials and methods. The experiment was conducted using the field method. The growth and development of cotton were determined using the methodological manual “Methods of conducting field experiments (Tashkent, 2007)” [4].

Results and discussions. In our experiments, phenological observations were made on the growth and development of cotton during the growing season, and the results of phenological observations in the field experiments conducted are shown in Table 1.

In the experiment, according to the data obtained from phenological observations on August 1, in the control variant where only mineral fertilizers were used, the height of the main stem of cotton was 87.6 cm, the number of yield branches (1.09) was 11.8, and the number of total (1.09) was 8.3 grains.

In variants 2-3-4, where 10, 15, 20 tons of manure were applied per hectare in combination with a reduced rate of mineral fertilizers, the results were 94.2-95.0-96.1 cm, 9.6-10.3-10.9 grains, respectively, and 6.6-7.4-8.5 cm, 1.3-2.2-2.6 more than the control.

When we analyzed the variants where organo-mineral composts were used in different proportions, the growth and development of cotton differed depending on their proportions and rates. In addition to the reduced rates of mineral fertilizers, compost-1 12 t/ha and compost-2 14 t/ha were applied (in variants 5-6), as of August 1, the height of the main stem of cotton was 96.1-95.3 cm, the number of yield branches (1.09) was 13.8-13.6, the number of bolls was 10.0-9.8. These indicators were 7.7-7.3 cm, 2.0-1.8; It is higher by 1.7-1.5.

Thus, in variant 7, where compost-3 was applied at 20 t/ha, the height of the main stem of cotton as of August 1 of the observation was 97.8 cm, the number of yield branches, total bolls (1.09) was 14.9 and 11.3, which was 10.2 cm, 3.1 and 3.0 grains higher than the control, and 1.7 cm, 0.2 and 0.4 grains higher than the variant where fertilizer was applied at 20 t/ha. When compost-4 was applied at 22 t/ha, the height of the main stem of cotton was 98.5 cm, 15.1 and 11.5 grains, which was 10.9 cm, 3.3 and 3.2 grains higher than the control, and 2.4 cm, 0.4 and 0.6 grains higher than the fertilizer applied at 20 t/ha. When Compost-5 was applied at 24 t/ha, it was 96.4 cm, 14.8 and 11.1 grains higher than the control, and did not differ much from the fertilizer applied at 20 t/ha.

Based on these indicators, the most favorable composition and application rate among the compost variants was Compost-4 applied at 22 t/ha, where the accumulation of yield components in cotton was higher compared to other compost and manure treatments. It was found that the

optimal ratios in the compost prepared by mixing manure, glauconite, and red mud waste showed greater effectiveness, which also depends on the field soil properties and the availability of nutrients.

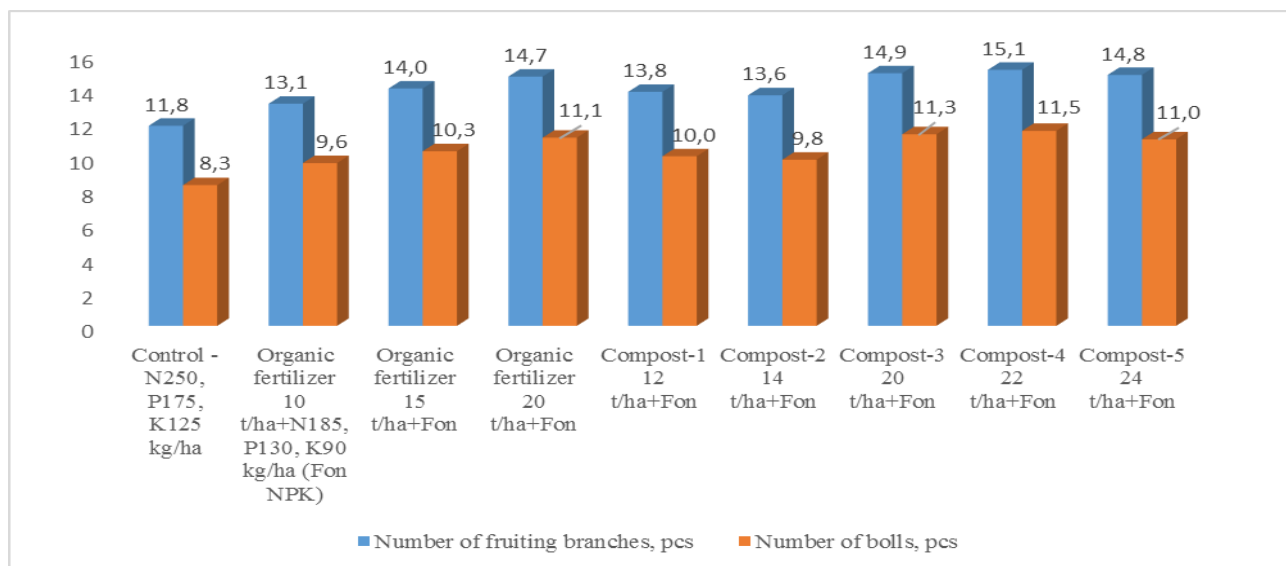


Figure 1. Effect of applied composts on the number of fruiting branches and total bolls of cotton.

According to the research results, the number of fruiting branches in the control variant was 11.8, and the number of bolls was 8.3. In variants 2–4, where organic fertilizers were applied at doses of 10, 15, and 20 tons, with an additional 25% reduction of the annual norm, the number of fruiting branches ranged from 13.1 to 14.7, and the number of bolls ranged from 9.6 to 11.1. In variants 5–9, where composts of various doses combined with additionally reduced mineral fertilizers were used, the number of fruiting branches ranged from 13.8 to 15.1, and the number of bolls ranged from 10.0 to 11.5. The best results indicated in the data were observed in variant 8, where 22 tons of compost per hectare were applied. Compared to the control variant, the number of fruiting branches increased by 3.3, and the number of bolls increased by 3.2 per plant. Additionally, compared to the variant with 20 tons of organic fertilizer per hectare, the number of fruiting branches and bolls increased by 0.4.

Conclusion. The results of the conducted field experiments confirmed the positive effects of organo-mineral composts on the growth and development of cotton under moderately saline soil conditions. The findings demonstrated that the application of composts prepared from organic fertilizer (well-decomposed manure), glauconite, and licorice processing waste significantly improved key growth parameters such as main stem height, number of fruiting branches, and number of bolls.

Especially, the best indicator in our experiment was found in option 8, that is, when compost-4 was applied at a rate of 22 t/ha, the height of the main stem of cotton was 98.5 cm, 15.1; 11.5 and 3.8 grains and 3.75 grams, which was 10.9 cm, 3.3; 3.2 and 1.2 grains and 0.55 grams higher than the control.

Moreover, the use of these composts in combination with a 25% reduced rate of mineral fertilizers also yielded effective results. This indicates their agronomic efficiency and highlights their relevance from both economic and environmental perspectives. The study shows that organo-



**“SHIMOLIY MINTAQALARDA QISHLOQ XOJALIGINI
RIVOJLANTIRISHNING DOLZARB MASALALARI VA
ULARNING INNOVATSION ECHIMLARI”
mavzusidagi Respublika ilmiy-amaliy konferensiya**



mineral composts can serve as an important tool for increasing cotton productivity and expanding sustainable cultivation practices in saline-affected soils.

References

1. Belousov M.A., Madraimov I.I. Physiological role of potassium and the importance of potassium fertilizers in obtaining a high yield and improving the quality of raw cotton. Tashkent. Union NIHI 1960.
2. Boltaev S. Effect of organomineral composts on soil fertility. Agroilm jurnali. 2016, No. 2 (40), pp. 55-56.
3. Boltaev S., Normamatov A. The effect of unconventional organo-mineral compost ameliorants on cotton productivity under moderately saline soil conditions. // Agroilm Journal. Tashkent. 2017. No. 2(46). pp. 18-19.
4. Methods of conducting field experiments (UzNIXI). -Tashkent. 2007. P. 145.
5. Nosirov T.S. Efficiency of different rates of potassium fertilizers on cotton depending on the level of nitrogen and phosphorus nutrition in conditions of irrigated typical sierozems. // Abstract of diss. for a Ph.D. in Biology. - Tashkent. 1994.
6. Sayimbetov A. “The effect of composts of different compositions on cotton yield” //Agro science journal 2020. -No. 2. B.10.