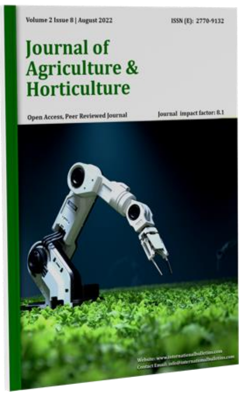


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# EFFICIENCY OF USE OF NATURAL AGRO-ORES IN COTTON CULTIVATION

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**Abstract.**
The article presents the results of an experiment conducted to study the effect of planting cotton seedlings covered with bentonite clay powder at different rates and using suspensions of different compositions for foliar feeding during the growth period on plant height, the number of yield branches and yield elements, and yield indicators.
**Keywords:** Cotton, bentonite clay powder, suspension, mineral fertilizer, seed coating, foliar feeding, productivity.

According to the results of scientific research conducted in our country, the type and rate of plant nutrition have different effects on the germination capacity and fertility of seeds. If the nutrients given to the seedlings are repeated only in the same way (in the form of minerals), the quality of the seeds will decrease from year to year. It has been proven that not only the rate of fertilizer, but also all agrotechnical measures have an effect on the fertility of the seeds.

As is known, Uzbekistan is the northernmost cotton-growing country, and therefore the problem of early maturity is quite relevant today. Also, the treatment of seeds of agricultural crops with special preparations before sowing is very effective in ensuring the full germination of seedlings. In order to achieve good success in the treatment of seed, it is important to choose the right method, taking into account the established standards.

Among the physiological processes occurring in green plants, photosynthesis is considered the most important. The effect of minerals applied to plants during foliar feeding on the intensity of photosynthesis was first observed in the works of D.A. Komissarov [1].

G.M. Oganov conducted research on foliar feeding of cotton in Azerbaijan [2].

In 1941, it was found that foliar feeding has an effect not only on photosynthesis, but also on other physiological processes [3].

When monitoring the experimental plots of seedlings covered with bentonite powder, it was found that the number of cotyledons in the seedlings differed from those planted in the usual way. This in itself has a significant impact on cotton yield.

According to the results of a study conducted by Egyptian scientists, it was found that in the variants where 2 kg of bentonite was used for foliar feeding of cotton, growth parameters, i.e. plant height, number of yield branches increased compared to the variants where 4 kg of bentonite was used. Also, a lower dose increased the number of yield elements of the plant and accelerated ripening [4].

The test experiments were conducted in 2024 in moderately saline soil conditions at the Navoi Experimental Station of the PSUEAITI. The climatic conditions of the Karmana district, where the experimental station is located, are very favorable for planting, growing and harvesting high-quality crops. The soils of the experimental field are typical gray soils, with a groundwater level of 2.5-3.0 m and rising at different times during the season.

Also, when the soil of the experimental field was analyzed before the experiment, the amount of humus in the 0-30 cm layer of the soil was 1.22%, total nitrogen-0.15%, total phosphorus-0.25%, nitrate nitrogen-13.1 mg/kg, mobile Phosphorus was 23.7 mg/kg and exchangeable potassium was 187 mg/kg, while the amount in the 30-50 cm layer of the soil was respectively It was found to be 0.78%, 0.04%, 0.16%, 7.3 mg/kg, 15.9 mg/kg and 166 mg/kg. According to the results of the analysis, the amount of these ions does not have a harmful effect due to the correct use of agrotech measures in cotton care.

Experiments on the use of bentonite clay powder in cotton cultivation were conducted in 2 layers, 12 variants, 4 replicates.

**Experimental structure**

| Options | Seed dressing rate with bentonite clay, kg/t | Rate of bentonite clay used in foliar feeding, kg/ha |
|---|---|---|
| **1** | Control (0) | |
| **2** | | 1 |
| **3** | | 1,5 |
| **4** | | 2 |
| **5** | 50 | |
| **6** | | 1 |
| **7** | | 1,5 |
| **8** | | 2 |
| **9** | 100 | |
| **10** | | 1 |
| **11** | | 1,5 |
| **12** | | 2 |

In order to determine changes in the growth and development of cotton variety S-01 planted in the experimental fields, phenological observations and biometric measurements were conducted on the 1st of each month. As a result of the observations, it was determined that the height of the cotton at the beginning of June, July and August was 17.8, 66.5, and 102.4 cm in the control plots, respectively, 20.5, 67.8, and 115.4 cm in the plots planted with 50 kg/t bentonite clay, and 21.6, 69.6, and 121.6 cm in the plots planted with 100 kg/t bentonite clay.

The height of the variants that were fed with a suspension prepared from bentonite clays at 1, 1.5 and 2 kg/ha of bentonite clay without coating the seeds with bentonite clays was 18.8, 19.2 and 18.2 cm, respectively, when monitored on June 1. This indicator was 70.4, 71.8 and 68.3 cm on July 1, and 108.2, 113.5 and 104.6 cm on August 1.

The results of the variants that were fed with a suspension of bentonite clays at 1, 1.5 and 2 kg/ha of bentonite clay with coating the seeds with 50 and 100 kg/t of bentonite clays and foliar feeding were significantly higher than the control. The variant that gave relatively high results was the one in which the seedlings were covered with 100 kg/t of bentonite clay and foliar feeding with 1.5 kg/ha of bentonite suspension was used. In this variant, the plant height was 22.4 cm on June 1, 72.7 cm on July 1, and 123.4 cm on August 1 (Fig. 1).

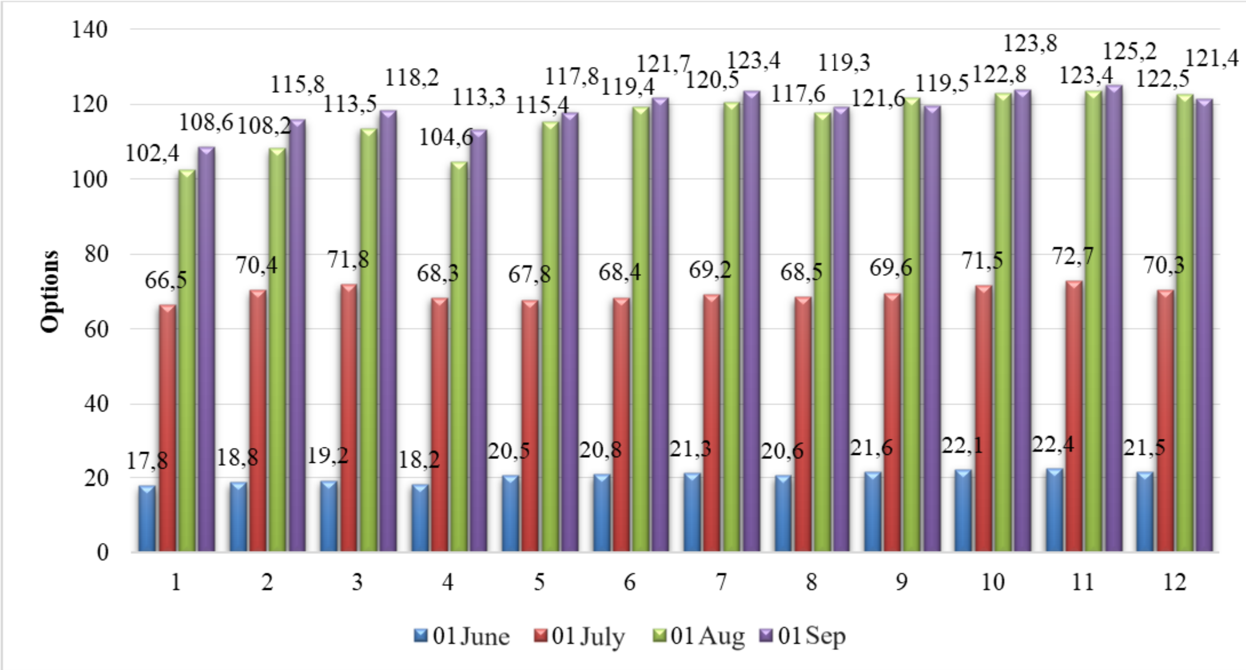


**Figure 1. Effect of bentonite clays on plant height.**

The number of cotyledons per plant was found to be 2, 2.1, and 1.4 more in the variants where the seed was hulled at 50 kg/t and fed with 1, 1.5, and 2 kg/ha of bentonite suspension per leaf than in the control, respectively. The same indicator was found to be 2.3, 2.4, and 2.2 more in the variants where the seed was hulled at 100 kg/t and fed with 1, 1.5, and 2 kg/ha of bentonite suspension per leaf.

In the variants where the seed was hulled at 50 kg/t and fed with 1, 1.5, and 2 kg/ha of bentonite suspension per leaf, the number of cotyledons per plant was found to be 1.6, 1.8, and 1.4 more in the variants where the seed was hulled at 50 kg/t and fed with 1, 1.5, and 2 kg/ha of bentonite suspension per leaf than in the control, respectively. The yield elements increased by 2.7, 2.8 and 2.1.

In the variants with foliar feeding of 1, 1.5 and 2 kg/ha of bentonite suspension along with 100 kg/t of seed husking, the yield increased by 2.1, 2.3 and 2. The yield elements increased by 3.3, 3.5 and 2.6.

In the variants fed with 1, 1.5 and 2 kg/ha of bentonite suspension per foliar application in August, the number of branches increased by 2.2, 3.1 and 1.7 compared to the control. The number of yield elements increased by 3.2, 3.5 and 3, respectively.

In the variants where the seeds were hulled at 100 kg/t and fed with bentonite suspension at 1, 1.5 and 2 kg/ha per foliar application, the yield increased by 4.2, 4.5 and 4.1 units. The yield elements increased by 5.5, 5.7 and 5 units. (Fig. 2).

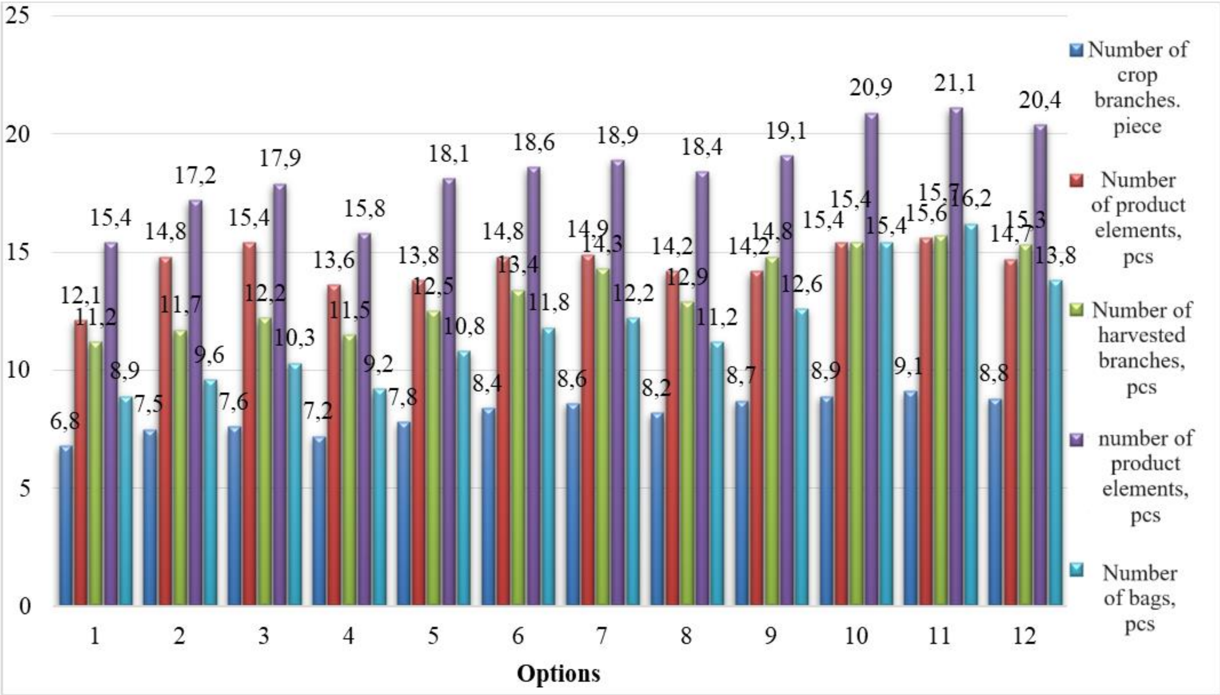


**Figure 2. Effect of bentonite clays on cotton development.**

Cotton yield is directly affected by factors such as seed quality, seed sowing date and quantity, soil amelioration status, and productivity, as well as agrotechnical measures carried out during the growing season.

In our experiments, significant changes in cotton yield were observed in the variants using the methods of covering the seeds with bentonite clay powder and spraying bentonite clay powder mixed with a suspension prepared from mineral fertilizer during foliar feeding, compared to the control variant.

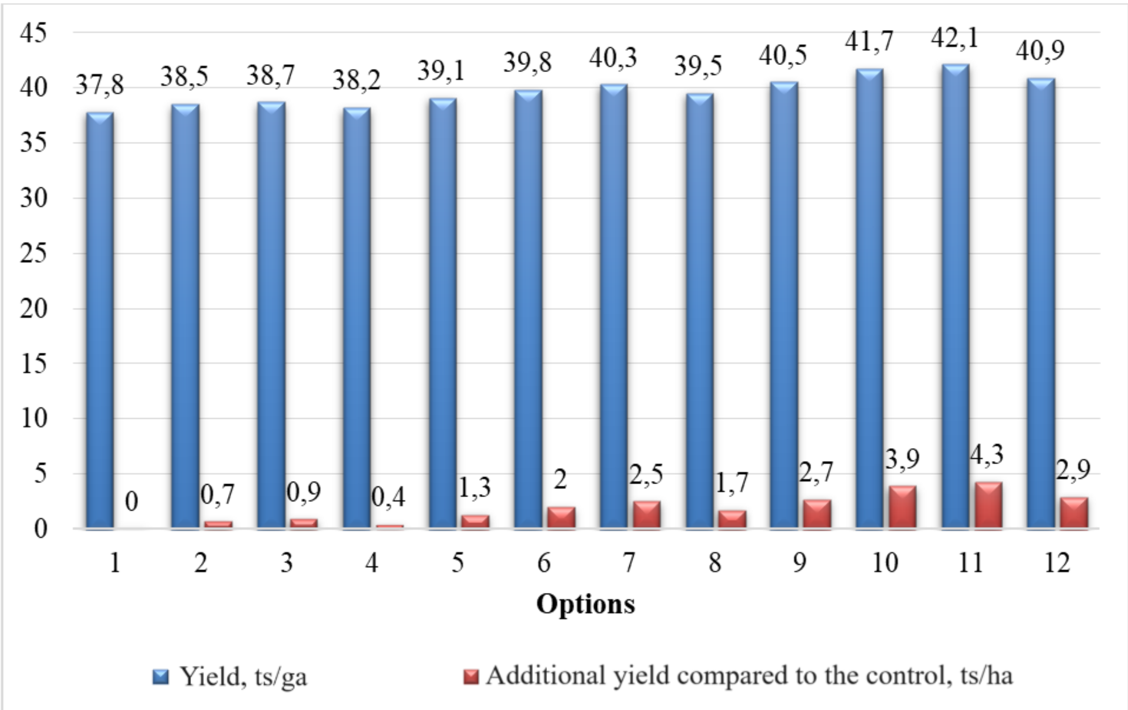


**Figure 3. Effect of bentonite clays on cotton yield**

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In the experiments, the yield indicator in the control variant was 37.8 c/ha, in the variant in which the seeds were covered with 50 kg/t of bentonite clay, it was 39.1 c/ha, and in the variant in which the seeds were covered with 100 kg/t of bentonite clay, the yield reached 40.5 c/ha. In the variants in which the seeds were covered with 50 kg/t of bentonite clay and foliar feeding with 1, 1.5, and 2 kg/ha of bentonite suspension three times, the results were 39.8, 40.3, and 39.5 c/ha, respectively. The subsequent variants, mulched with 100 kg/t bentonite clay and fed with 1, 1.5 and 2 kg/ha bentonite suspension, yielded 41.7, 42.1 and 40.9 c/ha of cotton. This, in turn, indicates an additional yield of 3.9, 4.3 and 2.9 c/ha or 10.3, 11.3 and 7.6%, respectively, compared to the control (Fig. 3).

In conclusion, it can be said that the above-mentioned properties of bentonite clays also gave positive results in cotton yield in experiments.

While the optimal rate for seed dressing was 100 kg/t, it was proven that the optimal rate of bentonite in combination with urea for foliar feeding was 1.5 kg/ha. In experiments, the highest yield indicators were achieved by using both rates together.

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