



# INFLUENCE OF ORGANIC, MINERAL FERTILIZERS AND BIOLOGICAL PREPARATIONS ON THE GROWTH AND DEVELOPMENT OF COTTON

**Uzakbay Embergenovich Ismailov<sup>1</sup>, Makhsetbay Perdebaevich Tursinov<sup>2</sup>**

<sup>1</sup>*Doctor of Agricultural Sciences, Professor,  
Karakalpakstan Institute of Agriculture and Agrotechnologies, Nukus, Uzbekistan*

<sup>2</sup>*Master Student, Karakalpakstan Institute of Agriculture and Agrotechnologies,  
Nukus, Uzbekistan*

## ABSTRACT

*The field experiment was carried out about defining the influence of organic, mineral fertilizers and biological preparations on the growth and development of cotton in saline soil conditions of the Republic of Karakalpakstan. On the basis of the results of the research it was determined that using 40 t/ha organic fertilizer, decreasing the amount of mineral fertilizer to 25% and using in the amount of N125 P90 K60 and from biological preparations using 2 l/ha of phytovar, influence positively on the growth and development of cotton. In this, the growth and development of cotton was higher than other variants.*

**KEYWORDS:** *Mineral and organic fertilizers, biological preparation, cotton, growth and development.*

## INTRODUCTION

Soil of the Republic of Karakalpakstan is characterized with low productivity and saltiness. In order to get high yield from any kind of agricultural crops, actions on increasing its productivity should be carried out. Also, it is necessary to improve meliorative condition of the soil.

In agriculture it is important to use all of the resources, carry out scientifically based agrotechnologies of growing crops, producing high qualitative product by spending little expenses and work. Meliorative and agrotechnical works are being conducted in our Republic in order to improve soil productivity. In recent years using organic fertilizers as an additional feeding in different soil conditions is giving good results.

As shown in the agricultural experiments of the world, the productivity of crops is directly connected with the amount of fertilizers in the soil. The effectiveness of fertilizers usually indicated with the amount of additional product received from crops.

Based on the above mentioned opinions we should also pay attention to the following views. In recent years, requirement for ecological free products has been increasing in the world, mainly in Uzbekistan. Today, working by planning beforehand

is the demand of the time. Using mineral fertilizers and at the same time, giving organic green manure crop fertilizers to agricultural crops provides increasing productivity and improvement of ecological free products.

According to the opinions of researchers from various regions, using composts, which made from different types of waste, in a clear form together with mineral fertilizers creates an opportunity of collecting lots of organic elements in soil. In the experiments it was achieved to decrease harmful cations in the soil by using composts. This shows that used natural nutritions and composts influenced positively on the peculiarities of soil.

As mentioned by the researchers, increasing the amount of humus in the soil, not only plays an important role in the peculiarities of the soil, but also in increasing productivity of agricultural crops. Organic elements, which were brought with the product, cause to the decrease of humus, nitrogen and other nutrition elements in the soil. Decrease of the humus, cultivation also influences on the physical condition of the soil. Their density increases, the ability of air and water transferring decreases. Using large norms of mineral fertilizers, herbicides, harmful chemical elements brings into the collection of their residues in the soil. Character of the soil humus changes and its function of protection decreases.



As a result of increasing the amount of humus in the soil by using composts, actions of micro organisms and productivity of soil increase. This creates an opportunity of producing ecological free product, productivity will be high.

A lot of researches about widening the production of ecological free products are being carried out in our Republic and conducting further researches and investigations on this field is the demand of the time.

As a result of using mineral fertilizers and additionally using natural elements and various composts, soil structure, meliorative condition, water physical and agrochemical peculiarities can be improved, productivity can be increased, the quality of the product can be improved and through this way

we can reach to economical effectiveness, this is the actual problem of today.

### THE METHOD OF THE RESEARCH

Field method. C-4727 type of cotton was sown in the experiment. Research works were conducted according to the scheme of the experiment. There were 10 variants in the experiment and they were placed to two stages, the field of each variant is 120 m<sup>2</sup> (4.8 × 25), 60 cm interrow of cotton, number of plants 100-120 thousand, the field is medium salty, underground water is situated at 1.5-2.0 m depth.

The experiment was carried out in central soil climate condition of the Republic of Karakalpakstan (Khojeli region, "Ak altin" village, "Orazimbet ata" farm). The field experiment was carried out according to the scheme.

**Table 1**  
**Scheme of the experiment**

Order of variants	Amount of used mineral (kg/ha), organic (t/ha) fertilizers and biological preparations (l/ha)
1	N250 P175 K125 kg/ha
2	N185 P130 K90 kg/ha (Phon)
3	Organic fertilizer 20 t/ha
4	Organic fertilizer 40 t/ha
5	Organic fertilizer 20 t/ha + Phon
6	Organic fertilizer 40 t/ha + Phon
7	Organic fertilizer 20 t/ha + Phon + Phytovak 1 l/ha
8	Organic fertilizer 40 t/ha + Phon + Phytovak 1 l/ha
9	Organic fertilizer 40 t/ha + Phon + Phytovak 2 l/ha
10	Organic fertilizer 40 t/ha + Phon + Phytovak 3 l/ha

**Note.** Organic fertilizers were used fully, 70% of phosphorus under ploughing, mineral fertilizers and phytovak were used 3 times in the vegetation period.

### THE OBJECT OF THE RESEARCH

Cotton, mineral and organic fertilizers, biological preparation, saline soil, central soil climate region of the Republic of Karakalpakstan.

### RESULTS OF THE RESEARCH AND ANALYZING THEM

In order to define influence of mineral, organic fertilizers and biological preparations on the growth and development of cotton counting works were carried out on the 1st July, 1st August and 1st September. In this, the height of the main stem of the plant, fruitful branches and number of buds were taken into account.

On the 1st September the height of the main stem of the plant was 70.0-92.0 cm, number of fruitful branches 11.0-14.0 and the number of buds 7.0-11.5. From these, in the 1st variant, when mineral fertilizers were fully used, the height of the plant was 74.0 cm, fruitful branches - 13.5 and number of buds - 8.5. When mineral fertilizers decreased by 25% and

used in the amount of N185 P130 K90 kg/ha, the indicators were 71.0 cm, 12.5 and 7.0 pieces.

When 20 and 40 t/ha (variants 3 and 4) organic fertilizers were used without mineral fertilizers the height of the plant was 70.0 and 75.0 cm, fruitful branches - 11.0 and 14.0 pieces and number of buds - 7.5 and 8.5. Indicators, which got when organic fertilizer was used in the amount of 40 t/ha, were the same as the 1st variant, when mineral fertilizers were fully used and when only 20 t/ha of organic fertilizers was used these indicators were low.

When N185 P130 K90 kg/ha of mineral fertilizers was used together with 20 t/ha of organic fertilizer, the height of the plant was 78.0 cm, number of fruitful branches - 13.5 and number of buds was 9.0. And, when mineral fertilizers were used in this amount and additionally 40 t/ha organic fertilizer was used (variant 6), the height of the plant was 81.0 cm, number of fruitful branches - 14.0 and number of buds - 9.5. When mineral fertilizers, phytovak were



used in this norm, and organic fertilizer was used in the amount of 40 t/ha, the number of buds increased to 1 number.

When 40 t/ha organic fertilizer N185 P130 K90 kg/ha mineral fertilizers and 2 l/ha biological preparations were used (variant 9) the height of the

plant was 92.0 cm, number of fruitful branches - 14.0 and number of buds - 11.5. When we did not change the amount of organic and mineral fertilizers and increased the amount of phytovak by 3 l/ha, indicators were not high, and the number of buds increased to 0.5 (variant 10).

**Table 2**

**Influence of mineral, organic fertilizers and biological preparations on the growth and development of cotton**

Order of variants	1.VII		1.VIII			1.IX		
	Height of the main stem, cm	Number of fruitful branches, piece	Height of the main stem, cm	Number of fruitful branches, piece	Number of buds, piece	Height of the main stem, cm	Number of fruitful branches, piece	Number of buds, piece
1	43,5	3,5	73,5	12,5	4,5	74,0	13,5	8,5
2	40,0	3,0	70,6	11,0	3,5	71,0	12,0	7,0
3	36,5	3,0	68,5	10,5	4,0	70,0	11,0	7,5
4	45,4	3,7	74,6	13,0	4,5	75,0	14,0	8,5
5	47,8	4,5	78,5	12,5	5,2	78,0	13,5	9,0
6	54,6	5,1	82,3	13,5	6,0	82,0	13,5	10,5
7	50,5	4,8	80,5	13,0	6,0	81,0	14,0	9,5
8	54,8	6,1	84,6	13,5	7,3	85,0	14,0	10,5
9	56,7	7,0	91,7	14,0	8,0	92,0	14,0	11,5
10	56,0	7,0	90,6	13,5	7,8	91,0	14,0	11,0

## CONCLUSIONS

It is expedient to use 40 t/ha of organic fertilizers, mineral fertilizers in the amount of N185 P130 K90 kg/ha and biological preparations - 2 l/ha phytovak in order to improve the growth and development of cotton in the saline soil conditions of the Republic of Karakalpakstan.

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