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INFLUENCE OF NUTRITIONAL REGIMES ON THE GROWTH AND DEVELOPMENT OF COTTON

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ABSTRACT

In the conditions of saline lands of the Republic of Karakalpakstan, field experiments were carried out in 2017 and 2018 for the improvement of saline lands based on the use of local mineral fertilizers. By experience, the study of various rates of organic fertilizers and from local mineral fertilizers glauconite. The results of the study have established a positive effect of the combined use of organic fertilizers at the rate of 20 t / ha and glauconite 1.5-2.0 t / ha on the growth and development of cotton. At the same time, the water-physical properties, nutritional and salt regimes of the soil have significantly improved.

KEYWORDS: *Local Mineral Fertilizer, Glauconite, Improvement, Saline Soils, Organic Fertilization, Cotton Growth And Development, Nutrient And Salt Regimes Of The Soil.*

INTRODUCTION

The main task of agriculture is to constantly increase the production of agricultural products, improve their quality, preservation, and processing.

The intensification of agricultural production, like cotton growing, requires an increase in yields based on the effective use of mineral fertilizers. In addition to the well-known nitrogen, phosphorus and potassium fertilizers, the use of microelement containing (Fe, Cu, Cn, Mo, B, Zn, Co) fertilizers is of great importance, which enhance plant growth, increase the efficiency of

enzymes that contribute to the intensity of photosynthesis, and therefore increase plant productivity by drought, cold and some diseases.

Scientific institutions are required to develop new methods for the production and use of effective mineral fertilizers, as well as the development of technology for their application.

In this, much attention is paid to the problem of the development and use of unconventional fertilizers obtained on the basis of local natural raw materials, which include glauconite, containing up to 15 different microelements.

The use of glauconite sands directly as fertilizer and on the basis of them the preparation of mixed microelements containing fertilizers is of great economic importance for our region, as it leads to a decrease in the cost of mineral fertilizers.

Research methodology

The experiment consists of 10 options, the plot area is 392 m² (2.4x40 m). The area under the experiment is 5760 m², the total area of the site is 1.5 hectares. Cotton variety C-4727.

Scheme of the experiment

Number of variants	Variants
1.	Leaching and pre-sowing treatment in production conditions
2.	Autumn leaching after plowing, pre-sowing glauconite application 1 t / ha
3.	Autumn leaching after plowing, pre-sowing glauconite application 1 t / ha
4.	Autumn leaching after plowing, pre-sowing glauconite application 2.0 t / ha
5.	Autumn leaching after plowing, pre-sowing application of 1.0 t of glauconite +10 tons of manure
6.	Autumn leaching after plowing, pre-sowing application of 1.5 tons of glauconite + 10 tons of manure
7.	Autumn leaching after plowing, pre-sowing application of 2.0 tons of glauconite + 10 tons of manure
8.	Autumn leaching after plowing, pre-sowing introduction of 1.0 tons of glauconite + 20 tons of manure
9.	Autumn leaching after plowing, pre-sowing application of 1.5 tons of glauconite + 20 tons of manure
10.	Autumn leaching after plowing, pre-sowing application of 2.0 tons of glauconite + 20 tons of manure

Note: in variant 1 the norm is N250, P175, K125 kg / ha in variants 2, 3 and 4 without NPK in variants 5, 6, 7, 8, 9, 10 the norm is N185, P130, K90 kg / ha

RESULTS AND ITS DISCUSSION

To determine the effect of various norms of organic fertilizers and glauconite on the growth and development of cotton, we carried out phenological observations on July 1, August 1, and September 1. The height of the main stem, the number of fruit branches and the number of bolls were taken into account.

When taking into account the growth of cotton development on September 1 (tables 1 and 2), it was found that in all variants there were no significant differences in the height of the main stem and the number of sympodial branches, which was on August 1. The number of bolls has increased. In terms of the number of bolls, variants 2, 3 and 4 (4.8-5.6 pieces) have comparatively low rates where only glauconite was introduced without organic and mineral fertilizers. When applying mineral fertilizers with the rate of N250 P175 K125 kg / ha (variant 1), the number of bolls was 7.6 pcs.

The use of organic fertilizers with glauconite (version 5-10) increased the number of bolls by 2.2-3.8 pcs. The largest number of bolls is observed in variants 7, 8 and 9, where organic fertilizer with glauconite was applied - 8.0-8.3 pcs. The increase in the rate of glauconite did not contribute to the increase in the number of bolls. The increase in the rate of glauconite to 2000 kg / ha, the number of bolls remained almost at the same level with variant 8.

Thus, for the normal growth and development of cotton, a more favorable nutritional regime is created with the combined use of organic, mineral fertilizers and glauconite. Increasing the rate of glauconite is not beneficial, since there is no significant difference in the number of bolls.

TABLE 1 GROWTH AND DEVELOPMENT OF COTTON ON 1.IX

Number of variants	Height of the main stem, cm		Number of sympodial branches, piece		Amount of bolls, piece	
	2017	2018	2017	2018	2017	2018
1	71,5	67,0	10,5	11,1	7,6	8,9
2	60,0	55,0	7,4	7,8	5,1	6,6
3	59,8	58,6	7,9	7,0	4,8	6,7
4	57,6	64,0	7,8	7,8	5,6	6,8
5	70,5	67,5	8,0	9,4	7,0	8,6
6	70,5	66,3	8,0	10,0	7,2	8,3
7	67,1	74,3	9,6	10,0	7,7	8,5
8	75,5	79,8	10,5	11,5	8,0	9,2
9	73,5	77,2	11,6	12,9	8,8	9,8
10	77,5	78,0	11,7	12,0	8,3	9,6

For normal growth and development of cotton, it is necessary to jointly apply mineral (reduced rates by 25%), organic fertilizers (20 t / ha) and glauconite at the rate of 1.5-2.0 t / ha.

TABLE 2 GROWTH AND DEVELOPMENT OF COTTON ON 1.IX (AVERAGE OVER 2 YEARS)

Number of variants	Height of the main stem, cm	Number of sympodial branches, piece	Amount of bolls, piece
1	69,3	10,8	8,2
2	57,5	7,6	5,8
3	59,2	7,4	5,2
4	60,8	7,8	6,2
5	69,0	8,7	7,8
6	68,4	9,0	7,8

7	70,7	9,8	8,1
8	77,7	11,0	8,6
9	75,4	12,2	9,6
10	77,8	11,8	8,0

The nutrient regime of the soil in a particular world affects the growth and development of cotton. When determining the onset of 50% of cotton flowering, it was found that the dynamics of cotton flowering is more intensive in those variants where cotton is provided in sufficient quantities of macro and microelements.

As the data in Tables 3 and 4 show, in terms of the dynamics of cotton flowering, variants 2, 3 and 4 are leading, where only glauconite was used, i.e. by July 11, they amounted to 58.5-61.0, and in other variants 50.0-54.0%. The dynamics of cotton flowering by the last date of observation amounted to 50.0-61.0%. In the variants where organic, mineral fertilizers and glauconite were applied, a more favorable nutritional regime is created. Therefore, the development of plants is slow in those variants (variants 2, 3 and 4) where these elements are insufficient.

TABLE 3 DYNAMICS OF COTTON FLOWERING, 2017.%

Number of variants	Dates of observation					
	1.VII	3.VII	5.VII	7.VII	9.VII	11.VII
1	-	7,5	19,0	36,5	44,0	53,5
2	1,5	11,0	21,0	39,5	47,0	61,0
3	3,0	13,0	24,0	41,0	46,0	60,0
4	1,5	11,0	23,0	40,0	47,0	58,5
5	1,5	6,5	17,5	32,5	37,0	52,0
6	-	5,5	18,0	33,0	41,0	53,0
7	-	7,5	17,0	33,0	39,0	54,0
8	-	7,0	17,0	34,0	39,0	52,0
9	-	7,0	17,0	33,0	38,0	51,0
10	-	7,0	17,0	32,0	37,0	50,0

The obtained data on the dynamics of cotton flowering in 2018 confirm the data of 2017 (table 4).

TABLE 4 DYNAMICS OF FLOWERING OF COTTON VARIETIES S-4727, 2018, %

Number of variants	Dates of observation					
	2.VII	4.VII	6.VII	8.VII	10.VII	12.VII
1	-	2,5	9,0	24,5	39,0	50,0
2	2,0	5,5	18,5	37,5	47,5	60,0
3	2,0	5,0	17,5	33,5	47,5	56,5
4	1,5	5,5	20,5	37,0	42,0	58,0
5	0,5	2,5	16,0	32,5	39,5	50,0
6	-	3,5	15,5	32,5	40,0	50,5

7	-	3,0	15,0	33,0	38,0	48,5
8	-	4,5	15,5	32,0	41,0	50,5
9	-	3,0	16,0	32,5	39,5	52,0
10	-	3,0	16,0	33,5	39,5	49,5

CONCLUSIONS

In saline lands, the use of organic fertilizers at the rate of 20 t / ha, mineral fertilizers N185 P130 K90 kg / ha and glauconite 1.5-2.0 t / ha have a positive effect on the growth and development of cotton. At the same time, the water-physical properties, nutrient and salt regimes of the soil are improved.

LITERATURE

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