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INFLUENCE OF COMPOSTS ON THE GROWTH, DEVELOPMENT AND PRODUCTIVITY OF COTTON

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ABSTRACT

The field experiment was carried out on studying the effectiveness of using different types of composts together with mineral fertilizers in feeding cotton in the conditions of saline soil of the Republic of Karakalpakstan. According to the results of the research the growth, development and productivity of cotton are provided when mineral fertilizers N250 P175 K125 kg/ha were used with rice and wood husk - 25%, manure - 25%, chicken manure - 45% and phosphogypsum in the amount 20 t/ha.

KEYWORDS: *Compost, Mineral And Organic Fertilizers, Saline Soil, Cotton, Productivity.*

INTRODUCTION

Today, the role of agriculture in economics and work is very important. Industry and intellectual level of the country is directly connected with agriculture.

As shown in the world agricultural experiments, crop productivity is dependent on the amount of fertilizers in soil. Chemical agriculture is an important source of increasing crop productivity, the most effective way of fastening agricultural industry economically.

The basis of agricultural politics of the Republic is fastly developing agriculture mainly by mechanizing and meliorating.

In recent years, requirement for ecological free products has been increasing in the world. Therefore, 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 the improvement of ecological free products.

One of the most important agrotechnical actions is providing crop with mineral fertilizers on time and amount. Therefore, the importance of the theme is using composts, which made from organic waste replacing mineral fertilizers and phosphogypsum, at the same time local fertilizers.

Especially, using composts instead of mineral fertilizers is an important task and according to the results of the scientific works:

The method of the research. Field experiment. Effectiveness of different structural composts, mineral and organic fertilizers in feeding cotton was studied comparing with each other.

The object of the research. Saline soil, C-4727 type of cotton, mineral and organic fertilizers, composts.

Results of the research and analyzing them. We prepared three types of composts to feed the cotton.

Compost type 1 contains rice and wood husk – 25%, manure – 25%, chicken manure – 45 %, phosphogypsum – 5%.

Compost type 2 contains rice and wood husk – 25%, manure – 25%, chicken manure – 35 %, phosphogypsum – 15%.

Compost type 3 contains rice and wood husk – 25%, manure – 25%, chicken manure – 25 %, phosphogypsum – 25%.

In the experiment the following methods of feeding were studied: only mineral fertilizers in the amount N250 P175 K125 kg/ha, manure 10 and 20 t/ha with mineral fertilizers, compost types 1, 2, 3 with 10 and 20 t/ha mineral fertilizers.

According to the received results, different types of composts and their amount, mineral and organic fertilizers influence on the growth and development of cotton in various ways.

When the growth and development of cotton were determined on the 1st of September, the height of the main stem was 72,5-82,0 cm, number of fruitful branches - 9,5-11,5 and number of buds - 7,5-8,1, when only mineral fertilizer was used. When organic fertilizer was used together with mineral fertilizer (in variants 2-3), the height of the main stem was 79,0-90,1 cm, 83,0-88,0 cm, number of fruitful branches - 11,0-12,5 pieces, 11,5-14,0 pieces and number of buds - 8,0-8,6 pieces, 8,5-9,3 pieces. There was not many difference when organic fertilizer was used in the amount of 20 t/ha.

When compost type 1 (contains rice and wood husk – 25%, manure – 25%, chicken manure – 45 %, phosphogypsum – 5%) was used with mineral fertilizers in the amount of 10 t, the height of the main stem of cotton was 84,5-92,5 cm, number of fruitful branches - 13,5-15,5 pieces, and the number of buds - 10,0-10,5 pieces. When the amount of compost was used as 20 t/ha (variant 5) the height of the main stem was 91,5-94,5 cm, number of fruitful branches - 14,5-15,1 pieces and the number of buds - 11,0-11,6, so the number of buds increased by 1,0-1,1 pieces.

In compost types 2 and 3, when the amount of chicken manure was decreased, instead the amount of phosphogypsum increased, there was not almost any difference in the growth and development of cotton.

So, it is expedient to use compost type 1 in the amount of 20 t/ha together with mineral fertilizers in the amount of N250 P175 K125 kg/ha.

Influence of compost and mineral fertilizers in different structure and amount on the growth and development of cotton, 2010.

Variants	1.VIII			1.IX		
	The height of the main stem, cm	Fruitful branches	Number of buds, piece	The height of the main stem, cm	Fruitful branches	Number of buds, piece
1	70,5	7,5	1,5	72,5	9,5	7,5
2	76,4	8,5	2,5	79,0	11,0	8,0
3	80,0	10,5	3,0	83,0	11,5	8,5
4	84,0	12,0	4,0	84,5	13,5	10,5
5	90,5	14,0	4,5	91,5	14,5	11,0
6	86,0	12,5	3,5	87,5	12,5	10,0
7	82,5	13,0	4,0	84,0	13,0	10,5
8	80,5	12,5	3,0	82,5	13,5	9,0
9	84,6	12,5	3,5	85,0	13,0	9,5
in 2011						
1	74,5	10,5	3,5	76,5	11,0	8,0
2	80,4	11,0	4,5	80,0	12,0	8,5
3	86,7	13,0	5,0	87,0	14,0	9,0
4	87,8	14,0	4,5	88,0	14,0	10,0
5	92,1	14,5	5,0	92,0	14,5	11,0
6	86,5	13,0	4,0	87,0	13,0	9,5
7	84,5	14,0	5,5	85,0	14,0	10,0
8	80,0	13,0	4,0	82,0	13,0	9,0
9	86,0	13,0	4,0	86,0	13,0	10,0
in 2012						
1	81,3	11,0	4,0	82,0	11,5	8,1
2	89,4	11,5	4,7	90,1	12,5	8,6
3	88,6	12,7	6,0	88,0	13,0	9,3
4	91,0	15,1	4,7	92,5	15,5	10,2
5	94,3	14,6	6,1	94,5	15,1	11,6
6	88,6	13,0	4,5	89,0	13,5	9,0
7	95,1	14,0	6,1	95,6	14,5	9,7
8	90,4	13,2	5,0	90,0	13,5	9,1
9	88,3	13,5	5,1	87,5	13,5	9,6

One of the factors which influence on the amount of cotton yield is the weight of cotton in one bud. When mineral fertilizers were used in the amount of N250 P175 K125 kg/ha the weight of cotton in one bud was 4,3 g. When 10 and 20 t/ha organic fertilizer was used together with

mineral fertilizer the weight of cotton in one bud was 4,5 and 5,0 g, and it was more by 0,2 and 0,7 g comparing to using only mineral fertilizer.

When different structural composts were used in the amount of 10 and 20 t/ha, it was 5,2-5,4 and 5,3-5,6 g. It was more by 0,9-1,3 g comparing to using only mineral fertilizer.

Cotton yield was 26,4 c/ha when mineral fertilizers were used N250 P175 K125 kg/ha. It was 30,4-33,6 q/ha when different structural composts used additionally to mineral fertilizers. In this, when compost type 1 was used in the amount of 10 t/ha cotton yield was 31,5 q/ha, when used in the amount of 20 t/ha it was 33,6 q/ha, it provided to get 5,1 and 7,2 q/ha additional products comparing to using only mineral fertilizers. When compost types 2 and 3 were used together with mineral fertilizers 4,0 and 6,2 additional products were got comparing to using only mineral fertilizers. In order to get high yield from the cotton it is recommended to use mineral fertilizers in the amount of N250 P175 K125 kg/ha, and compost in the amount of 20 t/ha which is prepared from rice husk, manure, chicken manure and phosphogypsum.

Cotton weight in one bud and influence of different compost and mineral fertilizers on cotton yield (2010-2012)

Variants	Cotton weight in one bud, g	Difference, ±	Cotton yield, q/ha			Average	Difference, ±	
			in 2010	in 2011	in 2012		from NPK	NPK + 10 t manure
1	4,3	00	25,5	26,5	27,4	26,4	00	-2,0
2	4,5	0,2	27,0	28,6	29,6	28,4	2,0	00
3	5,0	0,7	28,6	29,5	30,4	29,5	3,1	1,1
4	5,4	1,1	30,6	31,8	32,1	31,5	5,1	3,1
5	5,6	1,3	32,8	33,5	34,5	33,6	7,2	5,2
6	5,2	0,9	30,8	31,2	32,3	31,4	5,0	3,0
7	5,3	1,0	31,8	32,4	33,6	32,6	6,2	4,2
8	5,2	0,9	29,5	30,7	31,1	30,4	4,0	2,0
9	5,4	1,1	30,7	31,6	32,3	31,5	5,1	3,1

CONCLUSION

The use of composts of different types in combination with mineral fertilizers in feeding cotton has a positive effect on the growth, development and accumulation of high yields and on the improvement of agrophysical, agrochemical and microbiological properties of soil. Soil productivity increases, nutrient, water and air regimes improve, and a favorable environment is created for plant growth.

Due to the low soil fertility of Karakalpakstan, we must first of all think about increasing it. Therefore, we need to think about the use of organic green manure and compost of any composition in the soil.

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