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EFFECTS OF NUTRITION NUMBERS AND TERMS ON THE PRODUCTION OF SOYA VARIETIES IN THE CONDITIONS OF THE REPUBLIC OF KARAKALPAKSTAN

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ANNOTATION
There was a research about the impact of the norms of mineral fertilization on the yield of soybeans in the article and the results of the field experiment conducted on the application of various norms of mineral fertilizers in the feeding of 4 soybean variety Támaris man-60, Ayjamol, Selekta-201, Amigo varieties in the Kashkadarya branch of the scientific research institute of grain and leguminous crops and at Karakalpakstan research stations in the conditions of the northern and southern regions for 2018-2020.
KEYWORDS: *Soy, variety, mineral fertilizers, yield, nitrogen, nutrition, quantity, option.*

INTRODUCTION

The soybean crop, which is a legume, is expanding day by day in agriculture around the world.

Today, 109.7 million soybeans area are grown in the world. hectares are being planted. Brazil, the United States and Argentina are the leaders in terms of gross soybean production. Soybeans are second only to wheat, rice and corn. More than four hundred different products are made from soybean grain and protein, and they are used in all sectors of the national economy.

The main sector that determines the economy of our country is agriculture, and its leading sectors are cotton and grain. Today, a number of works are being carried out to include soybeans in the main crop and to grow crops from them. Without the development of key sectors in agriculture, it is impossible to meet the demand for agricultural products of both the population and industry.

There was a resolution of the President of the Republic of Uzbekistan dated March 14, 2017 №2832 "On measures to increase the sowing of soybeans and soybean crops in the country in 2017-2021." The resolution instructs to gradually expand the area under soybeans in 2017-2021 and increase oil production. In order to ensure the fulfillment of this task, in 2021 it is planned to cultivate soybeans on 17.3 thousand hectares in the country.

At present, soybean varieties recommended for planting in different irrigated soil climatic conditions in the Republic do not fully meet the requirements of industrial production due to incomplete scientific standards and timing of sowing. There is a need to determine the norms and timing of feeding with mineral fertilizers, to scientifically substantiate its impact on the growth and development of shade, productivity and grain quality, to scientifically substantiate the placement of biological properties and the development of agricultural technology.

According to scientists (Spijevskaya and Tojiev, 1970), legumes compact the soil to a lesser extent than alfalfa. Their small root systems rot a certain amount during the period of plant growth and increase the organic matter in the soil, improving the water-physical condition of the soil.

In a single plant of the soy, the leaves are 7-140 and more, 15-200 cm in height and the number of pods in the joints is 1-3 to 6-8, in the interior 5-8 and more (Baranov, Dovydenko and Kochegura 2005).

In order to maintain soil fertility, legumes, especially soybeans, are considered suitable, as before the experiments the soil contained 0.65-0.72% of humus, but after the experiment it was observed that its content reached 0.95-1.03% (D.Yormatova 2013).

The widespread introduction of soybean cultivation in the country, along with increasing soil fertility, strengthens the fodder base of livestock and poultry and provides valuable raw materials for food industry enterprises (H. Ergasheva 2013).

Soybean grain is an environmentally friendly quality raw material used in the food industry. Currently, 35-40% of vegetable oil, which does not contain harmful substances in

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human consumption, is obtained from soybeans (J.Husanbaev 2017).

Grown grain yields were also lower at 3.2 quintals per hectare than in the late sown variant. It was found that the timing and norms of sowing of soybean varieties had a significant impact on biometric indicators (T.Oserbaeva 2017).

THE FOLLOWING METHODS WERE USED IN THE RESEARCH

Phenological Observations Methodological Manual of the Botanical Research Institute (VIR) (1977), Mathematical Analysis of Field Experiments Dospekhov (1985) new technical, inventions and rationalization proposals (M. Kolos, 1987).

The research was conducted in 2018-2020 in the northern and southern regions at the Kashkadarya branch of the Research Institute of Cereals and Legumes and at the Karakalpak research stations in 4 varieties of soy Tomaris Man-60, Oyjamol, Selekta-201 and Amigo.

RESULTS OF THE RESEARCH

The following results were obtained in the experiments conducted in the conditions of the Republic of Karakalpakstan, the northern region of the Republic of Uzbekistan (Table 1).

In the experiments conducted in 2020, the average yield of Tomaris Man-60 was 10.1 c/ha in the absence of nitrogen fertilizer (control) in the cultivation of soybean varieties, 13.2 c/ha in 2 variants using the norm of 60 kg/ha Nitrogen fertilizer rate was 90 kg/ha in 3 variants 15.4 c/ha, nitrogen fertilizer rate was 120 kg/ha in 4 variants 17.9 c/ha, nitrogen fertilizer rate was 150 kg/ha in 5 variants 18.4 c/ha grain yield in the amount of.

Table 1.
Influence of mineral fertilizer norms on productivity indicators in the conditions of the northern region. (2018-2020)

№	Name of varieties	Variants	Yield by years, c/ha			Average yield, c/ha	Difference +,-
			2018	2019	2020		
Karakalpakstan							
1	Tomaris Man-60	1	12.5	16.1	10.1	12.9	-
		2	14.1	18.5	13.2	15.3	2.4
		3	16.3	19.3	15.4	17.0	4.1
		4	18.8	19.8	17.9	18.8	5.9
		5	19.3	20.3	18.4	19.3	6.4
2	Oyjamol	1	11.6	15.3	9.6	12.2	-
		2	13.9	17.2	12.8	14.6	2.4
		3	15.5	20.0	14.7	16.7	4.5
		4	17.7	20.7	16.9	18.4	6.2
		5	18.0	21.0	17.3	18.8	6.6
3	Selekta-201	1	3.8	4.3	3.8	4.0	-
		2	6.5	6.3	5.9	6.2	2.2
		3	7.5	7.9	7.8	7.7	3.7
		4	8.0	9.6	9.8	9.1	5.1
		5	8.6	10.1	10.2	9.6	5.6
4	Amigo	1	3.6	6.1	3.2	4.3	-
		2	5.2	7.7	5.4	6.1	1.8
		3	7.4	9.5	6.8	7.9	3.6
		4	7.9	10.2	8.9	9.0	4.7
		5	8.2	11.6	9.3	9.7	5.4
1	Tomaris Man-60	NSR (05)	1.07	0.59	0.66		
2	Oyjamol	NSR (05)	1.14	1.26	0.61		
3	Selekta-201	NSR (05)	0.84	0.86	0.73		
4	Amigo	NSR (05)	0.73	0.55	0.60		

In the Oyjamol variety, the average yield was 9.6 c/ha in the non-nitrogen fertilizer (control) variant, 12.8 c/ha in 2 variants with 60 kg/ha nitrogen fertilizer, and 14 in 3 variants with 90 kg/ha nitrogen fertilizer. 7 c/ha, nitrogen fertilizer rate was 120 kg/ha in 4 variants 16.9 c/ha, nitrogen fertilizer rate was 150 kg/ha in 5 variants 17.3 c/ha, Selekta-201 nitrogen fertilizer was not applied (control) the average grain yield was 3.8 c/ha, nitrogen fertilizer rate was 60 kg/ha in 5 variants, 5.9 c/ha in 2 variants, nitrogen fertilizer rate was 90 kg/ha, 7.8 c/ha in 3 variants, nitrogen fertilizer rate was 120 kg/ha in 9 variants 9.8 c/ha, nitrogen fertilizer rate 150 kg/ha in 5 variants 10.2 c/ha, in Amigo variety without nitrogen fertilizer (control) the average yield was 3.2 c/ha , nitrogen fertilizer rate of 60 kg/ha was 5.4 c/ha in 2 variants, nitrogen fertilizer rate of 90 kg/ha was 6.8 c/ha in 3 variants, nitrogen fertilizer rate of 120 kg/ha was 8.9 c/ha in 4 variants. ga, Nitrogen in 5 variants with a fertilizer rate of 150 kg/ha, a grain yield of 9.3 c/ha was obtained.

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In the 3-year research conducted in 2018-2020, the average grain yield for 3 years from the soybean varieties planted in the main areas was as follows, the average grain yield from the Tomaris Man-60 variety without nitrogen fertilizer (control) was 12.9 c/ha. Nitrogen fertilizer was applied at 60 kg/ha in 2 variants at 15.3 c/ha, nitrogen fertilizer at 90 kg/ha at 3 variants at 17.0 c/ha, nitrogen fertilizer at 120 kg/ha at 4 variants at 18.8 c/ha, nitrogen fertilizer rate of 150 kg/ha was achieved in 5 variants with an average grain yield of 19.3 c/ha.

Oyjamol variety yielded an average of 12.2 c/ha in the non-nitrogen fertilizer (control) variant, 14.6 c/ha in 2 variants with 60 kg/ha nitrogen fertilizer, 16 kg in 3 variants with 90 kg/ha nitrogen fertilizer. 7 c/ha, nitrogen fertilizer rate 120 kg/ha in 4 variants 18.4 c/ha, nitrogen fertilizer rate 150 kg/ha in 5 variants 18.8 c/ha, Selekta-201 nitrogen fertilizer not applied (control) The average yield of grain was 4.0 c/ha, the norm of nitrogen fertilizer was 60 kg/ha in 6 variants of 6.2 c/ha, the norm of nitrogen fertilizer was 90 kg/ha in 7 variants of 7.7 c/ha, the norm of nitrogen fertilizer was 120 kg. kg/ha in 4 variants 9.1 c/ha, nitrogen fertilizer rate 150 kg/ha in 5 variants 9.6 c/ha, in the case of non-nitrogen fertilizer of Amigo variety (control) the average grain yield was 4.3 c/ha , nitrogen fertilizer rate was 60 kg/ha in 2 variants 6.1 c/ha, nitrogen fertilizer rate was 90 kg/ha in 3 variants 7.9 c/ha, nitrogen fertilizer rate was 120 kg/ha in 4 variants 9.0 c/ha, the grain yield was 9.7 c/ha in 5 variants with the application rate of 150 kg/ha.

The results of the experiment show that with the increase in the amount of nitrogen fertilizer applied to all varieties of soybeans, an increase in the average grain yield from soybean varieties was observed. Soybean varieties Tomaris Man-60, Oyjamol, Selekta-201, Amigo averaged 2.4 in 2 variants with 60 kg of nitrogen fertilizer per hectare compared to the variant without nitrogen fertilizer; 2.4; 2.4; 2.2; 1.8 centners of grain was harvested, in the remaining variants the rate of nitrogen fertilizer was increased from 30 kg per hectare to 1.7 in 3 variants, respectively, compared to 2 variants; 2.1; 1.5; 1.8 quintals, 3.5 in varieties according to 2 variants in 4 variants; 3.8; 2.8; 2.9 quintals, 4.0 according to varieties compared to 2 variants in 5 variants; 4.0; 4.4; 3.4; t 3.6 centners of grain was grown.

According to the results of 3-year field experiments, when the annual nitrogen fertilizer rate was given during the mowing and flowering stages of the plant, the Tomaris Man-60 variety yielded an average of 18.8 c/ha of grain in 4 variants given pure nitrogen fertilizer at 120 kg/ha. In the 5 variants of the experiment, the norm of nitrogen fertilizer was 30 kg more than in the 4 variants, but the additional grain yield per hectare was only 0.5 quintals.

Therefore, it was found that the application of nitrogen fertilizer rate of 120 kg/ha in the conditions of the Northern region (Karakalpakstan) is the most cost-effective among the options for planting in the main area for Tomaris Man-60 variety.

When feeding Oyjamol variety, the average yield was 18.4 c/ha in 4 variants with 120 kg/ha of pure nitrogen fertilizer, and 18.8 c/ha with 150 kg of nitrogen fertilizer in 5 variants. Although the nitrogen fertilizer rate was increased by 30 kg/ha compared to option 4 in option 5, it was found that the average grain yield obtained in addition to option 4 was 0.4 quintals higher. It was found that the application of nitrogen fertilizer at a rate of 120 kg / ha was the most cost-effective option for growing oyjamol in the main area.

An average of 9.1 c/ha was obtained in 4 variants with 120 kg/ha of pure nitrogen fertilizer and 9.6 c/ha with 150 kg of nitrogen fertilizers in 5 variants. Although the nitrogen fertilizer rate was increased by 30 kg/ha compared to option 4 in option 5, it was found that the additional grain yield obtained compared to option 4 was only 0.5 quintals more. It was found that the application of nitrogen fertilizer rate of 120 kg/ha was the most effective among the options in the cultivation of Selekta-201 cultivar in the main field.

When feeding the Amigo variety, an average of 9.0 c/ha was obtained in 4 variants with 120 kg/ha of pure nitrogen fertilizer, and an average of 9.7 c/ha with 150 kg of nitrogen fertilizer in 5 variants. Although the nitrogen fertilizer rate was increased by 30 kg/ha compared to option 4 in option 5, it was found that the additional grain yield obtained was 0.7 quintals more. Thus, the application of nitrogen fertilizer at 120 kg/ha was found to be the most effective among the options for growing the Amigo variety of soybean in the main area.

CONCLUSION

Analyzing the 3-year data obtained as a result of the experiments, we come to the following conclusions.

Early-maturing varieties Selekta-201 and Amigo are not adapted to the soil and climatic conditions of the Republic of Karakalpakstan. yielded and showed that these varieties would not be economically viable in the conditions of the northern region.

In our experiment, the norm of mineral fertilizers for soybeans is 90 kg of pure phosphorus per hectare, 60 kg of potassium per hectare, the annual rate of nitrogen fertilizers is 120 kg / ha for all varieties of soybeans in two periods during the mowing and flowering stages 18.8 c/ha, Oyjamol variety 18.4 c/ha, Selekta-201 variety 9.1 c/ha, Amigo variety 9.0 c/ha were found to be the most economically viable option.

After in-depth analysis of the results of the experiments, the planting of soybean varieties Tomaris Man-60, Oyjamol and Selekta-201 in the conditions of the Republic of Karakalpakstan is economically viable.

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