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INFLUENCE OF NITROGEN FERTILIZER RATE ON BIOMETRIC AND ECONOMIC INDICATORS OF SOY VARIETIES

Deputy Director for Scientific Affairs and Innovative
Developments: Q/x.f.f.d.KIX, **Jabarov Farrukh Odirovich**
Lalmikor Agricultural Research Institute Bakhmal Scientific Experimental Station

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Abstract:

The article discusses the effect of fertilizer rates on the height of the main stem, the number of branches, the position of the first pod, the number of pods per pod, the number of grains per pod, and the weight of 1000 grains in soybean varieties.

Keywords: soybean, variety, fertilizer, soil, fertility, biometrics, economic indicators, nitrogen, phosphorus, potassium.

INTRODUCTION. Currently, the norms of mineral fertilizer feeding of soybean varieties recommended for planting in various irrigated soil and climatic conditions in the Republic do not fully meet the requirements of the soybean grain industry, since they have not been developed on a fully scientific basis. In this regard, today there is a need to determine the norms and terms of mineral fertilizer feeding of soybean varieties in various soil and climatic conditions of the Republic, study irrigation regimes, scientifically substantiate the influence of factors on the growth and development of soybeans, yield and grain quality indicators, and develop agrotechnology for cultivation, taking into account their biological characteristics.

D.Yormatova emphasizes that based on the experiments conducted, it can be concluded that soybeans will do well in our climatic conditions, it is only necessary to choose the right varieties and teach farmers agricultural techniques. We need to establish the production of nitrogen or biofertilizers [1].

According to the data of H.N. Atabaeva, under the conditions of typical gray soils of the Tashkent region, replanted soybeans were given 120 kg/ha of nitrogen, 90 kg/ha of phosphorus, and 60 kg/ha of mineral fertilizers, and when cultivated, 125 c/ha of silage was obtained from each hectare of land. When soybeans were planted in a mixture with corn, 85.5 c/ha of soybeans and 451.6 c/ha of corn were obtained, for a total silage mass of 537.1 c/ha [2].

According to N. Umarova, R. Saitkanova, H. Idirsov, when growing soybeans, mineral fertilizers N50R100K70 are used, the photosynthetic activity of soybeans is activated; when foliar feeding with microelements along with mineral fertilizers is used in soybean agrotechnology, the grain yield of soybeans increases by 6.2-14.2 c/ha [3].

METHODS OF RESEARCH In our ongoing research, each variety was studied in 5 experimental variants with nitrogen fertilizer: variant 1: no nitrogen fertilizer, variant 2: pure nitrogen fertilizer at 60 kg/ha, variant 3: pure nitrogen fertilizer at 90 kg/ha, variant 4: pure nitrogen fertilizer at 90 kg/ha, variant 5: pure nitrogen fertilizer at 150 kg/ha, pure phosphorus fertilizer at 90 kg/ha, and pure potassium fertilizer at 60 kg/ha.

Of the mineral fertilizers, 100% of the established annual rate of phosphorus and potassium fertilizers was applied under plowing or during land preparation before sowing. 30-35% of the established annual rate of nitrogen fertilizers was applied during the tillering phase of soybeans, and the remaining 65-70% during the full flowering and podding phases.

ANALYSIS AND RESULTS. The experiment was conducted at the Southern Dekhkanchi Scientific Research Institute.

According to the results of the conducted field experiments, the main stem height of soybean varieties and the mass of 1000 grains are determined in Table 1.

It was determined that the height of the main stem was 51.4 cm on average, the number of branches was 2.4, the number of pods in one bush was 83.4, the number of grains in one pod was 1.5, and the mass of 1000 grains was 120.4 g.

In the experiment conducted, it was found that in the 2nd variant, where nitrogen fertilizer was applied in the pure form at a rate of 60 kg/ha, the height of the main stem was 69.9 cm, the number of branches was 3.5, the position of the first pod was 11.6 cm, the number of pods per bunch was 138.3, the number of grains per pod was 1.5, and the weight of 1000 grains was 124.5 g. In the 3rd variant, where nitrogen fertilizer was applied in the pure form at a rate of 90 kg/ha, the height of the main stem was 80.7 cm, the number of branches was 3.9, the position of the first pod was 12.6 cm, the number of beans per bunch was 168.5, the number of grains per pod was 1.7, and the weight of 1000 grains was 126.2 g. In the 4th variant, where nitrogen fertilizer was applied in the pure form at a rate of 120 kg/ha, the height of the main stem was 89 cm, the number of branches was 8.5, the number of grains per pod

was 12.6 cm, the number of beans per bunch was 168.5, the number of grains per pod was 1.7, and the weight of 1000 grains was 126.2 g. The distance of the first pods was 4.3, 13.4 cm, the number of pods in one bush was 179, the number of grains in one pod was 1.8, and the mass of 1000 grains was 129.8 g.

In the studies, when nitrogen fertilizer was applied in pure form at a rate of 150 kg/ha, the height of the main stem was 99.5 cm, the number of branches was 4.8, the first pod was 14.4 cm, the number of pods per stem was 193.1, the number of grains per pod was 1.9, and the mass of 1000 grains was 130.6 g. The first pod was 10.4-14.4 cm across the variants. With an increase in the nitrogen fertilizer rate across the variants, the change in plant height was 48.1 cm higher in 5 variants compared to the control. It was observed that the location of the first pod on the stem differed by 4 cm across the variants. It was found that the weight of 1000 grains was 4.1-10.2 g/ha higher in the variants with fertilizer than in the control variant without nitrogen fertilizer.

In the soybean variety "Oyjamol" in the control version without nitrogen fertilization, the average height of the main stem was 56.3 cm, the number of branches was 2.9, the first pod was 10.1 cm, the number of pods in one bush was 78.2, the number of grains in one pod was 1.6, and the mass of 1000 grains was 109.2 g.

As a result of the research, in 2 options, the height of the main stem was 79.9 cm, the number of branches was 3.5, the number of first pods was 11.3 cm, the number of pods in one bush was 127.7, the number of grains in one pod was 1.9, and the mass of 1000 grains was 112.5 g. In 3 options, the height of the main stem is 89.1 cm, the number of branches is 3.6, the first pod is 12.8 cm. main stem height 99.2 cm, branches number 4.4 first pods 14 number of pods in one bush 172.1 number of grains in one pod 2.2 grains mass of 1000 grains was found to be 117.6 g.

In the study, when nitrogen fertilizer was applied in pure form at a rate of 150 kg/ha, the height of the main stem was 103.4 cm, the number of branches was 5.4, the position of the first pod was 15.4 cm, the number of pods per pod was 197, the number of grains per pod was 2.3, and the weight of 1000 grains was 118.4 g. With an increase in the nitrogen fertilizer rate by variant, the change in plant height was 47.1 cm higher in 5 variants compared to the control, and it was found that the weight of 1000 grains was 3.3-9.4 g higher in the variants with fertilizer than in the control variant without nitrogen fertilizer.

Table 1

The effect of the rates and timing of feeding soybean with mineral fertilizers on biometric and economic indicators of varieties.

	Name of the species	Variant	The height of the main stem, cm	Number of horns, pcs	Place of the first pod, cm	1 bush number of pods, pcs	The number of grains in one pod, grain	1000 grain mass, g
1	Tomaris Man-60	Control	51,4	2,7	10,4	83,4	1,5	120,4
		N_{60} кг/га	69,9	3,5	11,6	138,3	1,6	124,5
		N_{90} кг/га	80,7	3,9	12,6	168,5	1,7	126,2
		N_{120} кг/га	89	4,3	13,4	179	1,8	129,8
		N_{150} кг/га	99,5	4,8	14,4	193,1	1,9	130,6
2	Oyjamol	Control	56,3	2,9	10,1	78,2	1,6	109,2
		N_{60} кг/га	79,9	3,5	11,3	127,7	1,9	112,5
		N_{90} кг/га	89,1	3,6	12,8	149,5	2,1	115,7
		N_{120} кг/га	99,2	4,4	14	172,1	2,2	117,6
		N_{150} кг/га	103,4	5,4	15,4	197	2,3	118,4
3	Selecta-201	Control	39,9	1,6	10,1	55,6	1,9	143,2
		N_{60} кг/га	56,9	3,2	11,1	89,9	1,9	145,7
		N_{90} кг/га	59,2	3,6	11,8	102,3	2	148,1
		N_{120} кг/га	61,6	3,9	12,4	120,2	2,1	149,7
		N_{150} кг/га	66,3	4,6	13,5	130,4	2,2	152,2
4	Amigo	Control	36,5	2,5	10,9	50,4	1,3	128,4
		N_{60} кг/га	54,5	4,7	12	81,3	1,6	129,6
		N_{90} кг/га	58	5,3	12,8	94,4	1,7	130,3

		N_{120} кг/га	60,2	5,6	9,6	112,2	1,8	131,5
		N_{150} кг/га	63,5	5,9	13,5	121,3	1,9	132,7

In the soybean variety "Selecta-201" in the control option without nitrogen fertilization, the average height of the main stem was 39.9 cm, the number of branches was 1.6, the number of first pods was 10.1 cm. In the study conducted, in the 2nd variant, where nitrogen fertilizer was applied in pure form at a rate of 60 kg/ha, the height of the main stem was 56.9 cm, the number of branches was 3.2, the position of the first pod was 11.1 cm, the number of pods per bunch was 89.9, the number of grains per pod was 1.9, and the weight of 1000 grains was 145 g. In the 3rd variant, where nitrogen fertilizer was applied in pure form at a rate of 90 kg/ha, the height of the main stem was 59.2 cm, the number of branches was 3.6, the position of the first pod was 11.8 cm, the number of beans per bunch was 102.3, the number of grains per pod was 2, and the weight of 1000 grains was 148.1 g. In the 4th variant, where nitrogen fertilizer was applied in pure form at a rate of 120 kg/ha, the height of the main stem was 61.6 cm, the number of branches was 3.9. It was found that the location of the first pod was 12.4 cm, the number of pods in one bush was 120.2, the number of grains in one pod was 2.1, and the mass of 1000 grains was 149.7 g.

In the study, it was found that when nitrogen fertilizer was given in pure form at 150 kg/ha, the height of the main stem was 66.3 cm, the number of branches was 4.6, the first pod was 13.5 cm, the number of pods in one bush was 130.4, the number of grains in one pod was 2.2, and the mass of 1000 grains was 152.2 g.

With increasing nitrogen fertilizer rates across variants, the change in plant height was 26.4 cm higher in 5 variants compared to the control, and the weight of 1000 grains was found to be 2.5-8.5 grams higher in the variants that received fertilizer compared to the control variant that did not receive nitrogen fertilizer.

In soybean variety "Amigo" in the control variant without nitrogen fertilization, it was found that the height of the main stem was 36.5 cm, the number of branches was 2.5, the number of first pods was 10.9 cm, the number of pods in one bush was 50.4, the number of grains in one pod was 1.3, and the mass of 1000 grains was 128.4 g.

In the study, in the 2nd variant, where nitrogen fertilizer was applied in pure form at a rate of 60 kg/ha, the height of the main stem was 54.5 cm, the number of branches was 4.7, the first pod was 12 cm, the number of pods per cluster was 81.3, the number of grains per cluster was 1.6, and the weight of 1000 grains was 129.6 g. In the 3rd variant, where nitrogen fertilizer was applied in pure form at a rate of 90 kg/ha, the height of the main stem was 58 cm, the number of branches was 5.3, the first pod was 12.8 cm, the number of beans per cluster was 94.4, the number of grains per cluster was 1.7, and the weight of 1000 grains was 130.3 g. In the 4th variant, where nitrogen fertilizer was applied in pure form at a rate of 120 kg/ha, the height of the main stem was 60.2 cm, the number of branches was 5.6, the first pod was 12.8 cm. height 9.6 cm, the number of pods in one bush is 112.2, the number of grains in one pod is 1.8, the mass of 1000 grains is 131.5 g.

The experimental results showed that when nitrogen fertilizer was applied in pure form at a rate of 150 kg/ha, the height of the main stem was 63.5 cm, the number of branches was 5.9, the first pod was 13.5 cm, the number of pods per pod was 121.3, the number of grains per pod was 1.9, and the weight of 1000 grains was 132.7 g. With an increase in the nitrogen fertilizer rate across the variants, the change in plant height was 27 cm higher in 5 variants compared to the control.

It was determined that the weight of 1000 grains was 1.2-4.3 grams more in the fertilized variants than the control variant without nitrogen fertilization.

Conclusion. It is worth drawing conclusions from the conducted studies. When feeding soybean varieties planted as the main crop in the conditions of irrigated light gray soils of the Kashkadarya region with mineral fertilizers, it was found that the height of the main stem of the "Tomaris Man-6" variety was 48.1 cm and the weight of 1000 grains was 10.2 g compared to the control, the height of the main stem of the "Oyjamol" variety was 47.1 cm and the weight of 1000 grains was 9.2 g, and the height of the stem of the "Selekt-201" variety was 26.4 cm.

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