

THE DEPENDENCE OF DEVELOPMENT PERIODS AND YIELD INDICATORS OF BEAN AND MUNG BEAN ON THE NORMS OF FEEDING WITH MINERAL FERTILIZERS

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Abstract. *In this article, in the field experiments carried out in the conditions of the typical gray soils subjected to irrigation erosion of Samarkand region, the influence of the level of soil leaching and mineral fertilizers (N90P63K45 and N60P42K30) on the growth and duration of the development phases of beans and mash crops planted as repeated crops and the obtained data were determined. analysis is described.*

Keywords: *bean, mung bean, plant, growth, development phase, budding, flowering, podding, ripening, irrigation erosion, soil, seed, pod, yield.*

INTRODUCTION. In the experiment carried out on typical gray soils subjected to irrigation erosion of Samarkand region, it was found that nutritional conditions have a significant effect on the growth and yield of repeated crop beans. Looking at the scientific sources, scientific research works on increasing the soil fertility of beans in the conditions of Samarkand region by stated that high efficiency can be achieved in the work carried N. Khalilov, N. Ravshanova and others [10; p. 21], N. Ravshanova, G. Otayarova [5; p. 86-87], K.N.Atabaeva, J.B.Khudaykulov in the conditions of the Tashkent region [1; p. 407; 2; p. 398], O.S.Amirkulov, A. Shokirov in Kashkadarya region [3; p. 529], B. Tokhtashev, U.Norkulov, J.Aliev [9; 116 p.].

According to the results of the study, when beans were planted as a repeated crop on June 18-19 in 2016, 20-23 in 2017 and 24-25 in 2018, 25% of the seeds were germinated after 6-8 and 75% after 8-10 days. In the heavily washed part of the experimental field N60P42K30 kg/ha, the height of the plant during the ripening period of the grains was 52.4 cm, the number of pods was 25.5, the number of grains per pod was 3.6, and the mass of 1000 grains was 324.5 grams. Under these conditions, when the rate of mineral fertilizers is increased and applied to N90P63K45 kg/ha, the above indicators are 2.2 cm, 1.7, respectively; 0.6 pieces and 10.6 g. was found to be more.

In the unwashed part of the experimental area, the above-mentioned indicators were 53.5 cm, 26.3 units, 3.9 units and 330.2 g, respectively, in the options where mineral fertilizers were applied at the rate of N60P42K30 kg/ha, indicators are 1.8 cm, respectively; It was taken into account that 1.7 and 0.6 pieces were more than 7.5 grams.

Table 1

Effect of nutritional conditions on the growth and development of repeated crop bean and mung bean in a typical gray soil subject to irrigation erosion (2016-2018 average)

Variants	Types of crop	Тупроқни ювилдиш даражаси	NPK standart, kg/ha	Real leaves	Budding period		Glowering period			The period of podding		Ripening period				
				Plant height, cm	Plant height, cm	number of harvest branches, pcs	number of combs, pcs	Plant height, cm	number of harvest branches, pcs	number of flowers, pcs	Plant height, cm	number of pods, pcs	Plant height, cm	number of pods, pcs	the number of grains in a pod, pcs	Mass of 1000 grains, g
1	Bean	unwashed	N ₉₀ P ₆₃ K ₄₅	12,7	27,4	2,5	14,4	38,0	4,7	13,1	46,5	14,7	55,3	28,0	4,5	337,7
2			N ₆₀ P ₄₂ K ₃₀	11,2	25,3	2,1	12,6	36,4	3,9	11,4	44,6	13,0	53,5	26,3	3,9	330,2
3		Intensive washed	N ₉₀ P ₆₃ K ₄₅	12,0	26,6	2,3	13,2	37,2	4,4	12,2	45,6	13,9	54,4	27,2	4,2	335,1
4			N ₆₀ P ₄₂ K ₃₀	10,5	24,6	1,9	11,5	35,6	3,6	10,4	43,7	12,1	52,4	25,5	3,6	324,5
5	Mung bean	unwashed	N ₉₀ P ₆₃ K ₄₅	13,2	33,3	3,0	16,3	44,3	5,4	14,6	58,4	11,8	67,5	12,5	11,7	41,1
6			N ₆₀ P ₄₂ K ₃₀	12,2	31,0	2,6	15,5	42,8	5,0	13,7	56,5	10,6	66,0	11,4	10,6	40,0
7		Intensive washed	N ₉₀ P ₆₃ K ₄₅	12,6	32,4	2,7	16,0	43,5	5,2	14,1	57,3	11,2	66,8	12,1	11,2	40,4
8			N ₆₀ P ₄₂ K ₃₀	11,4	29,8	2,5	15,3	41,8	4,8	13,2	55,6	10,3	64,6	10,8	10,1	39,3

Under the same conditions, when mineral fertilizers are used in excess, the indicators are 1.8 cm, respectively; It was taken into account that 1.7 and 0.6 pieces were more than 7.5 grams. In our research, it was found that the grain yield of beans planted as a repeated crop was 23.5 t/ha in the heavily washed part of the experimental field where mineral fertilizers were applied at the rate of N60P42K30 kg/ha and 24.5 t/ha in the unwashed part.

In field experiments, the effectiveness of mineral fertilizers was more significant in the variants applied at the rate of N90P63K45kg/ha on strongly washed land, and the grain yield of beans provided an average grain yield of 25.5 t/ha, while the above mentioned fertilizers provided 26.3 t/ha in the non-washed part of the field. it was found that it made it possible to grow grain crops.

Table 2

Repetitive crop bean grain yield on typical gray soil subject to irrigation erosion, c/ha (2016-2018 average)

Variant	Repetitive type of crop	Level of soil leaching	NPK standart, kg/ha	Year			Average yield, c/ha
				2016	2017	2018	
7	Bean	Unwashed	N ₉₀ P ₆₃ K ₄₅	26,2	24,5	28,2	26,3
8			N ₆₀ P ₄₂ K ₃₀	24,8	22,2	26,6	24,5
9		Intensive washed	N ₉₀ P ₆₃ K ₄₅	25,4	23,7	27,4	25,5
10			N ₆₀ P ₄₂ K ₃₀	23,6	21,3	25,6	23,5
<i>EKF₀₅ = c/ha</i>				<i>0,50</i>	<i>0,55</i>	<i>0,76</i>	
<i>EKF₀₅ = %</i>				<i>2,02</i>	<i>2,39</i>	<i>2,82</i>	

Mung bean (maash). As a repeated crop, winter wheat produces 300-400 c/ha of green mass when it is grown in the field, and if it is plowed there, 90-100 kg of biologically pure nitrogen per hectare of land, followed by 2.5-3.0 t/ha of roots and increase soil fertility by leaving manure residues were emphasized by such scholars as R.Siddikov, I.Egamov and others [8; p. 32], S.Negmatova, B.Shavkatov [4; p. 31], I.A.Rakhmanov [6; p. 268]. Y.D. Soriev, A.D. Udaev [7; p. 86].

In 2016, 2017-2018, when field experiments were carried out, mung was sown as a repeated crop on June 20-24-26, and 75% of the seeds germinated after 5-6-7 days. As a result of phenological observations, the soil of the experimental field was strongly washed with an average average (2016-2018) the height of the plant in years, 11.4-12.6 cm in the leaf period, 29.8-32.4 cm in the budding period, 2.5-2.7 branches of the crop, the number of branches 15.3-16.0 pieces, flowering during the period of plant height is 41.8-43.5 cm, the number of branches and flowers is 4.8-5.2 and 13.2-14.1, respectively, during the period of podding, the plant height is 55.6-57.3 cm, the number of pods 10.3-11.2 grains, the height of the plant during the ripening period is 64.6-66.8 cm, the number of pods and grains in the pod is 10.8-12.1 and 10.1-11.2 grains, respectively, If the mass of 1000 grains was 39.3-40.4 grams, in the unwashed part of the experimental field, these values were 12.2 cm in the case where mineral fertilizers were applied at the rate of N60P42K30 kg/ha; 31.0 cm; 2.6 and 15.5 pieces, 43.3 cm during flowering, 5.4 and 14.6 pieces, 58.4 cm during podding, 11.8 pieces, 66.0 cm during ripening, 11.4 and 10, It was noted that 6 grains and 1000 grains provided a mass of 40.0 grams. In the years of the researches, the productivity of repeated crop mash was 16.4 t/ha in the case of mineral fertilizers applied at the rate of N60P42K30 kg/ha, and when the fertilizer rate (N90P63K45 kg/ha) was applied, it was 17.2 ts/ha on average. It should be noted that in July 2017, as a result of a sharp rise in air temperature, many crop pods (buds) fell off, and the yield in these years was slightly lower than in other years.

It was noted that in typical gray soils subjected to irrigation erosion, mineral fertilizers at the rate of N60P42K30 kg/ha made 15.9 c/ha, and in the option where mineral fertilizers (N90P63K45 kg/ha) were used in excess, it was noted that 16.8 c/ha made it possible to grow grain.

In this case, 8.7 kg of mash was grown for 1 kg of NPK applied in non-washed areas, while this indicator was 8.5 kg in heavily washed areas, and the effectiveness of mineral fertilizers was higher in heavily washed areas.

Table 3

Grain yield of repetitive crop mung bean under conditions of typical gray soils subject to irrigation erosion, ts/ha (2016-2018)

Variant	Repetitive type of crop	Level of soil leaching	NPK rate is kg/ha	Year			Average yield c/ha
				2016	2017	2018	
11	Mung bean	unwashed	N ₉₀ P ₆₃ K ₄₅	17,5	15,7	18,4	17,2
12			N ₆₀ P ₄₂ K ₃₀	16,6	14,6	17,6	16,4
13		intensive washed	N ₉₀ P ₆₃ K ₄₅	17,2	15,2	18,2	16,8
14			N ₆₀ P ₄₂ K ₃₀	16,3	14,3	17,2	15,9

<i>EKF05 = c/ha</i>	0,61	0,55	0,85
<i>EKF05= %</i>	3,60	3,70	4,74

CONCLUSION. In conclusion, in the conditions of typical gray soils of Samarkand region subject to irrigation erosion, when beans are planted as a repeated crop and to grow a rich harvest from it, mineral fertilizers are applied stratified at the rates of N60P42K30 in unwashed fields and N90P63K45 kg/ha when the soil is strongly washed, creating optimal conditions for the growth and development of the plant. , respectively, it was found that 26.3-25.5 ts/ha will ensure the cultivation of grain crops and improve the water-physical, agrochemical and microbiological properties of the soil, creating favorable conditions for the growth and development of winter wheat, which will be planted after that.

To increase the productivity of typical gray soils subjected to irrigation erosion and to grow mush as the most suitable predecessor crop for winter wheat, the stratification of mineral fertilizers at the rate of N60P42K30 kg/ha in the unwashed part of the field and N90P63K45 kg/ha in the heavily washed part of the field, effective effect on the growth and development of repeated crop mush showing, it was found that in unwashed and heavily washed areas, it provides an average yield of 17.2-16.8 ts/ha and creates favorable conditions for the growth, development and high grain yield of winter wheat planted after it.

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