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Results Of Analytical Study Of Growth, Development, Grain Yield And Quality Of Mung Bean Varieties As Main And Reproductive Crops

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Annotation; The article describes the influence of the studied factors on the symbiotic activity and dry matter accumulation of mung bean varieties in the conditions of meadow-swamp soils. Studies have shown that the growth of varieties in mung bean varieties was 2.3-5.2 cm higher when planted on June 20 and July 1 compared to the spring period. the symbiotic activity of the varieties relative to the spring sowing period was mainly higher when repeated on June 20, and slower when sown in July. Also, according to the norms of sowing in the flowering phase of the variety "Navruz", the average amount of dry matter accumulated in three years is 14.2 grams, in the flowering phase - 29.8-28.0, and in the flowering period - 72.7-66. When the Navruz variety was sown again on June 20, July 1 and July 10, the accumulation of dry matter in a single plant was reduced. According to the indicators of productivity, when the grain of the variety "Navruz" is re-sown on June 20, it is 1.5-0.9-1.7 s/ha according to the sowing norms compared to the spring sowing period, and in the variety "Durdona" respectively increased to 2.2–2.8 s/ha.At the same time, the timing and norms of sowing affect the protein content of the grain, and as the sowing rate increases, the amount of protein decreases. 0%, Durdona 0.3-0.5%.

Keywords;mung bean, soybeans, beans, peas, green peas, rye, stems, protein, vitamins, nitrogen, bacteria, meadow marsh soil, cultivar, Navruz, photosynthesis, tuganak, symbiotic, leaf, comb , flowering, legumes, dry matter, yield

Introduction: Legumes account for 135 million tons of land in the world. hectares, of which legumes are 91.6 million hectares as secondary crops. The average grain yield is 12.0 s/ha, with a total yield of 206.4 million hectares. tons. Worldwide, the harvest is 5.3 million tons. India is the leading producer and consumer of mung bean. Moss is also widely grown in the leading countries of Asia: Burma exports 58.5% of its grain, India 39.6% and China 13.5%. India accounts for more than 60% of the world's arable

land. 1.3 million people live in the country every year. t. the crop is harvested. China (920 thousand tons), Myanmar (900 thousand tons), China (600 thousand tons), Thailand (350 thousand tons), Indonesia (250 thousand tons), Pakistan (230 thousand tons) are in the next places. t.), Uzbekistan (200 thousand t). Therefore, in order to ensure food security of the world's population, it is important to expand the area under crops and develop planting timelines and standards from the elements of cultivation technology.

Analysis of the literature on the subject: Among the legumes used for food, mung bean grain is rich in nutrients, protein and vitamins, and high in calories. Moss is 1.5-2 times more nutritious than wheat, beans, peas, green peas and rye, and 1.5 times more nutritious. The digestibility of protein in mosh reaches 86%. Mung bean contains 24-28% protein, 8% lysine, 7% arginine, and vitamins B and RR [2; 50-52-b.].

In the Central Asian and Caucasus republics, mung bean is widely used in the food industry. Adding mosh flour to pasta makes it even more nutritious. Mung bean belongs to the legume group, which contains a large amount of 17-32% protein. It can be used not only in the food industry, but also in the production of nutritious fodder for livestock. The roots of the moss also grow whole bacteria, which absorb free nitrogen and increase soil fertility[1].

PosipanovN.G. [10; 85-94-b.] In soybeans, mung bean and other legumes, the sowing rate affects the process of photosynthesis, when the sowing rate is too low, the photosynthesis productivity increases due to the leaf level of a single plant, but the photosynthesis yield per hectare decreases. Excessive planting rates also reduce photosynthetic productivity, which results in lower leaf levels when planted intensively.

M,F.Turchin [8;19-21-b] MV Fedorov, who studied the absorption of free nitrogen from the air by legumes and the effect of agro-technical measures applied to their care [9; 275] developed the biological, physiological and biochemical basis for the assimilation of free nitrogen from the air by endogenous bacteria living in the roots of legumes.

According to Z.Jumaev and E.Shermatov [4; pp. 57-59], in the conditions of Karakalpakstan, when grown in mung bean, the protein in the grain and beet mass increases significantly, with 100 kg of soil per hectare. pure nitrogen accumulation and 200-300 s/ha blue mass were also grown.

E.N.Mishustin [6; 395] According to the data, after the bacteria enter the root of legumes, they undergo a number of changes, first in the form of rods, and then form bacteroids, through which free nitrogen is assimilated from the air , legumes begin to accumulate in the roots without reserve.

Ukrainian scientist F.F.Yuximchuk [12; p. 258] also found that legumes are accelerated and increased in the absorption of nitrogen in the air when the flowers, buds and pods are well developed, and therefore depend on planting at the right time and in the right way. kidladi.

Thus, the activity and activity of endogenous bacteria living in the roots of legumes and assimilating free nitrogen in the air is closely related to the life of the host plant, and their activity depends on the degree of care for crops, agro-technical measures. It depends on the timeliness, especially in terms of soil and climatic conditions, the correct timing and standards of planting.

According to the scientific experiments of Sh.Ernazarov, S.Negmatova and N.Nortoshev, when sowing on July 1 at the rate of 400 thousand pieces per hectare, 18.6-19.3 s, at the same thickness on July 15, 17.2-18.4 s. When planted on August 1, they yielded 15.3-17.6 s [11; 13-b.].

According to N.Ibragimov, N.Nurmetov [5; pp. 20-22], the cultivation of mung bean as a secondary crop in the winter wheat field allows to get a harvest 2-3 times a year, and 60% of the winter wheat. 70 s, and 15-20 s from the mung bean, which is grown as a secondary crop, provides a grain yield of 75-90 s per season. As a result, the efficiency of using 1 hectare of land will increase by 100% and the cost of the product will increase by 30-40%. The rate of return will increase by 20-25%. This, in turn, will ensure the maintenance and increase of soil fertility of farms operating in the country, more fully meet the needs of the population in food and fodder products, increase the income and welfare of farms. is important.

Research methodology: Phenological observations and biometric measurements in scientific research “MetodikaGosudarstvennogosortoisptaniyaselskoxozyaystvennixkultur” and “Methods of conducting field experiments” (UzPITI, 2007) based on. Determination of net productivity of photosynthesis (weight method of A.A.Nichiporovich), as well as the results obtained were analyzed and calculated mathematically statistically with the help of Microsoft Excel program "Methods of field experiments" by B.A Dospekhov[3,7; 8-51-b].

The research was conducted in the experimental fields of the Rice Research Institute. The soil layer in the experimental area is meadow-swampy, loamy sandy soil. It is known that meadow-swamp soils are less stratified and characterized by a lack of humus. The driving layer of the experimental farm of the institute is 0-30 cm, below the driving layer there is a layer of gel 30-40 cm thick, at a depth of 60-70 cm there is a layer of sand and small stones.

Scientific research was carried out by field and laboratory methods. Seed quality and calculated plants were analyzed in the laboratory. Field experiments were performed in four rounds, four tiers, and the options were randomized. The rows are 4 rows, with 2 rows in the middle, the outer rows are protective rows, row spacing is 60 cm, planting scheme is 60x10 cm. It is 20 m long and 48 m^2 in area. The number of plants is 25.

Analysis and results: Vegetative organs play a special role in improving the productivity of the plant, including the height of the stem. The height of the stem is one of the main sources of yield. If the stem of the plant is close to the size of the variety, then the variety will grow well.

The mung bean varieties studied in the experiment are quite different in this respect. When Navruz was planted on May 12, the height of the stems was 12.4-15.5 cm. Due to the increase in planting rates, stem height increased by 1.4-3.1 cm. During the flowering phase, the stem height was 43.7-46.8 cm according to the planting norms, and increased by 1.8-3.1 cm due to the increase in the planting norm. During the budding phase, the height of the stems was 92.4-96.4 cm according to the planting norms, and the height of the stems increased by 1.7-4.0 cm due to the increase in the planting norms.

When the Navruz variety was planted on June 20, the height of the stems was 15.3-19.0 cm. Due to the increase in planting rates, stem height increased by 1.9-2.7 cm. Durdona the flowering phase, the height of the stems was 45.3-49.0 cm according to the planting norms, and increased by 1.6-3.7 cm due to the increase in the planting norms. Durdona the budding phase, the height of the stems was 95.0-98.7 cm according to the planting norms, and the height of the stems increased by 2.0-3.7 cm due to the increase in the planting norms.

Table 1 Dynamics of stem growth of Navruz variety, cm (average three-year 2016-2018) 1 plant per plant

Sowing time A	Planting rate is one thousand B	Development cycles		
		honing	flowering	thump
12 may	200	12,4	43,7	92,4
	300	13,8	45,5	94,1
	400	15,5	46,8	96,4
20 June	200	15,3	45,3	95,0
	300	17,2	46,9	97,0
	400	19,0	49,0	98,7
1 July	200	17,2	47,1	96,1
	300	19,0	48,9	97,6
	400	21,0	50,8	99,8
10 July	200	17,7	45,8	92,0
	300	19,3	48,0	92,7
	400	21,0	50,3	96,6

When the Navruz variety was planted on July 1, the height of the stem was 17.2-21.0 cm according to the planting norms in the development phase of 4 true leaves. Due to the increase in planting rates, stem height increased by 1.8-3.8 cm. During the flowering phase, the stem height was 47.1-50.8 cm according to the sowing norms, and increased by 1.8-3.7 cm due to the increase in the sowing norm.

Durdona the budding phase, the height of the stems was 96.1-99.8 cm according to the planting norms, and the height of the stems increased by 1.5-3.7 cm due to the increase in the planting norms.

When the Navruz variety was planted on July 10, the height of the stems was 17.7-21.0 cm according to the planting norms in the development phase of 4 true leaves. Due to the increase in planting rates, stem height increased by 1.9-3.3 cm. Durdona the flowering phase, the stem height was 45.8-50.3 cm according to the sowing norms, and increased by 2.2-3.8 cm due to the increase in the sowing norm. Durdona the budding phase, the height of the stems was 92.0-96.6 cm according to the planting norms, and the height of the stems increased by 0.7-4.6 cm due to the increase in the planting norms.

It was found that the height of the stems of the Navruz variety increased with the delay of planting. The highest stem height was observed when planted in July. Mung bean planted in the second half of the summer grew better than in the spring. So, bottom line is that we're really looking forward to it.

Legumes absorb air nitrogen in symbiosis with bradyrisobium bacteria, an important biological property. Certain conditions are required for the growth of these bacteria. The accumulation of biological nitrogen is influenced by many factors-plant type, soil-climatic conditions, soil environment, humidity. Accordingly, in our experiments, observations were made on the number of buds accumulated in the roots of mung bean varieties and showed that the condition changes with increasing seedling thickness and planting rate (Table 2).Bacterial fertilizers were not used in the cultivation of mosh varieties in the experiment, and the symbiosis process was caused by the formation of nodules in the roots due to the presence of bacteria in the soil under natural conditions.

In the experiments of Navruz, when planted in the spring, the process of development of the finished products was brought in stages, the number of finished products in the honoring phase was 14-12 units, in the flowering phase 21.2-17.5 units and in the pulverization phase 29.5-23.8 units.

Table 2 Influence of time and norm of sowing of Navruz variety on the dynamics of development of tubers per 1 plant

Sowing time A	**The sowing rate is one thousand bushels per hectare**	**Development cycles**		
		honing	**flowering**	**thump**
12 may	**200**	14,0	21,2	29,5
	300	13,2	19,6	25,9
	400	12,0	17,5	23,8
20 June	**200**	10,9	17,3	30,6

	300	10,3	15,1	28,4
	400	9,8	14,9	24,2
1July	**200**	10,1	14,8	28,7
	300	9,6	14,7	26,5
	400	9,3	13,9	24,5
10 July	**200**	9,1	15,6	23,8
	300	8,3	13,4	20,7
	400	8,1	11,8	18,3
EKF_{05}		1,3	1,1	1,5
%		2,41	2,41	2,65
Atimeframes		0,8	0,7	0,9
%		3,20	3,50	2,0
Bnorm s%		0,67	0,56	0,75
		4,0	3,10	2,10

When the mung bean variety was re-planted, there was a decrease compared to the spring term in all development phases: when planted on June 20, it reached 3,0-2,2 units in the shunning phase; in the flowering period it decreased to 3,9-6,6 units and in the budding period to 0,9-0,4 units. When planted in the last term, it was found that in the flowering phase the yield decreased by 4,9-5,9 units compared to the spring term, in the flowering phase by 5,6-5,7 units and in the cultivation phase by 7,8-5,9 units.

On average, according to three-year data, when the Navruz variety was planted in the spring, when the plant entered the shunting phase, the number of endings was 11,8-9,2 grains in the case connected to the norm of planting; in the flowering phase 19,9-16,8 pieces and in the budding phase 27,8-23,1 grains.

Table 3 Dynamics of dry matter accumulation in Navruz variety g/bush (2016), 1 bush per plant

Planting durationA	**Planting norm thousand Bush B**	**Periods of development**		
		honing	**flowering**	**thump**
12 may	**200**	14,0	32,1	73,2
	300	13,4	28,9	70,0
	400	12,1	27,6	67,8
20 June	**200**	13,4	31,1	71,2
	300	12,6	29,2	69,3
	400	11,5	28,6	66,3
1 July	**200**	12,5	27,7	69,4

	300	11,7	25,3	68,2
	400	11,2	24,1	66,8
10 July	**200**	11,8	23,8	67,8
	300	11,2	22,6	65,4
	400	10,6	20,6	63,6
EKF_{05}		0,6	2,0	1,6
%		1,65	3,78	2,47
Atimeframes/ga		1,0	1,0	0,9
%		4,20	3,60	1,20
Bnorms		0,83	0,98	0,79
%		3,40	3,0	1,70

The process of accumulation of the crop in the dry state, which is formed under the influence of the planting norm and duration of technological activities studied in the practical period of mung bean varieties, has been studied. These calculations were conducted during periods of flowering, flowering and pickling. In the calculation of grams of dry matter, the amount corresponding to one Bush is given (Table 3.).

In Navruz experiments, when planted in the spring, it was observed that this indicator decreased in all remaining planting periods by 14,0-12,1 grams in the honoring phase, 32,1-27,6 grams in the flowering phase and 73,2-67,8 Gramm in the salting phase. To honour oneself 13,4 11,5 grams grams to phase; phase to flowering 31.1 grams grams 28,6 up phase had decreased from grams to grams thump 71,1 determined that 66,3.

The studied technological activities influenced the yield of mung beanvarieties.On average, the yield of the Navruz Variety, obtained from three years of experiments, was 23,8 s/Ha when planted in the minimum norm. When the norm of planting was 300 thousand units, the yield increased to 2,4 C or 6,7 %.It was found that the yield decreased by 400% compared to the first option when the planting norm was 7,6 thousand units. When the Navruz variety is repeatedly planted 200 thousand seeds per hectare on June 20, the yield increased by 6,3%. It was observed that the yield increased by 300% when the planting norm was 9 thousand/ha. When the norm of planting is 400 thousand units, the yield has increased to 1,7 s/ha, or this is 7,7 %.

When the planting period was delayed and planted on July 1, the planting rate was less than the planting rate, the yield decreased by 2,4% compared to the previous planting period, when the planting rate was an average of 300 thousand seeds, it was observed that the planting rate decreased by 2,7% compared to the previous period. When planted 400 thousand seeds per hectare in the highest planting norm, it decreased by 3,8%. The last planting period was 10 July, when

Table 4 The yield of the Navruz variety

Duration of planting A	Planting norm thousand Bush B	Years of research			Average
		2016	2017	2018	
12 may	200	24,6	23,1	23,7	23,8
	300	26,0	24,9	25,3	25,4
	400	22,6	21,8	21,8	22,0
20 June	200	26,0	25,3	24,8	25,3
	300	27,0	25,9	26,2	26,3
	400	24,4	23,4	23,4	23,7
1 July	200	25,4	24,2	24,7	24,7
	300	26,2	25,3	25,5	25,6
	400	23,2	22,3	22,9	22,8
10 July	200	21,8	20,6	21,4	21,2
	300	20,2	18,6	19,9	19,5
	400	19,2	17,5	18,7	18,4
$EKF_{05}s$		1,06	0,61	1,43	
%		4,40	2,65	3,51	
Alifetimes		0,53	0,35	0,83	
%		2,21	1,52	3,10	
Bnorms/ga		0,61	0,31	0,71	
%		2.54	4.35	2.70	

200 thousand seeds were planted , 21.2 s/ha was harvested, which decreased by 14.2% compared to the previous planting period, 300 thousand seeds when planted by 23.9% and 400 thousand seeds when planted by 19,3%. In May (25,4 s/ha) and in June (26,3 s/ha) Navruz obtained a high yield, planted 300 thousand units of seeds.

When evaluating legumes, mainly the protein content of the grain is taken into account. Protein formation depends on external factors, and the amount of protein increases with increasing temperature. Therefore, it was found that the amount of protein increased when planted again on June 20 compared to the spring sowing period. Average data for three years

Table 5 The amount of protein in the grain of Navruz variety of mung bean planted at different times and in different norms,%

T/r	Navruz of planting	Planting norm thousand Bush B	Protein content, %			
			2016	2017	2018	average
1	12 may	200	26,2	27,1	25,2	26,1
2		300	25,3	25,7	24,4	25,1
3		400	24,3	23,8	22,0	23,3
4	20 June	200	27,4	28,3	27,9	27,8
5		300	26,5	26,1	26,6	26,4
6		400	24,7	24,5	23,8	24,3
7	1 July	200	26,5	27,4	25,6	26,5
8		300	25,1	26,5	24,8	25,4
9		400	24,7	24,3	22,4	23,8
10	10July	200	25,5	26,9	25,3	25,9
11		300	23,7	23,2	23,8	23,5
12		400	21,6	22,1	21,4	21,7

The amount of protein in the spring sowing of Navruz varieties is 26.1-23.3% according to the sowing norms, in the repeated sowing on June 20-27.8-24.3% compared to the spring, 1.7-1. It was found that it was more than 0%, and when planted on July 1, the protein content was 0.3-0.5% higher than in spring.

When mosh varieties were planted on July 10, protein content was found to be lower than spring sowing by all planting norms. Planting norms also affect the amount of protein, which is associated with a reduction in nutrient intake. The decrease in protein due to the increase in sowing rates is due to changes in the microclimate in the crop. Light when the crop is thicklight and sufficient temperature are required for protein formation. In our opinion, the decrease in protein in the thick-planted variants is due to insufficient light (Table 6). The above-mentioned pattern of Navruz was observed in the Durdona variety as well. The protein content of Durdona variety in spring sowing was 25.3-

Table 6 The amount of protein in the grain of Durdona variety of moss planted at different times and in different doses,%

T/r	Durdona of planting	Planting norm thousand Bush B	Protein content, %			
			2016	2017	2018	average
1	12 may	200	25,4	25,8	24,7	25,3
2		300	23,7	23,9	23,5	23,7
3		400	22,5	22,4	22,1	22,3
4	20 June	200	25,1	24,7	26,7	25,5
5		300	23,8	23,2	25,0	24,0
6		400	22,9	21,8	23,4	22,7
7	1 July	200	24,5	24,2	24,9	24,5
8		300	23,1	22,3	23,2	22,8
9		400	22,9	20,0	21,2	21,3
10	10 July	200	24,6	23,2	22,8	23,5
11		300	23,8	22,5	21,3	22,5
12		400	22,1	19,6	20,3	20,6

22.3% according to sowing norms, and in repeated sowing on June 20 it was 25.5-22.7%, which is less than in spring. , Which is more than 4%; When planted on July 1, protein content was observed to be lower than in spring. The protein content of Durdona was high only during the spring sowing period (Table 6). The protein content of Durdona was 0.8-1.1% lower than that of Navruz.

Conclusions and suggestions 1.The dynamics of growth of mosh varieties was influenced by the studied technological factors. In terms of sowing time, the growth of varieties was found to be 2.3-5.2 cm higher than the spring period when planted on June 20 and July 1. The growth rate of both varieties was significantly affected by the sowing rate. As the sowing rate increased, the stem height increased by 0.9-4.6 cm. found to be much lower.

2.Planting norms and timing significantly affected the symbiotic activity of mosh varieties. It was found that the development of tubers in mung bean varieties decreased with increasing sowing rate, the symbiotic activity of varieties was mainly higher when repeated on June 20 than during spring sowing, and slower when planted in July.

3.It has been found that the accumulation of dry matter in a single plant decreases as the

planting rate of mosh varieties increases; dry matter accumulation was found to be higher in a single plant when planted in the spring, but lower when replanted. According to the sowing norms of the “Navruz” variety, the average amount of dry matter accumulated in three years is 14.2 grams, in the flowering phase - 29.8-28.0, and in the flowering period - 72.7-66.8. When the “Navruz” variety was sown again on June 20, July 1 and July 10, it was observed that the accumulation of dry matter in a single plant decreased.

4.When the grain of “Navruz” variety is re-sown on June 20, it is 1.5-0.9-1.7 s/ha according to the sowing norms compared to the spring sowing period, and 2.2-2 in Durdona variety. Increased to 8 s/ha. When sown in July, the yield decreased by 2.1-2.9 s/ha and 8.1-9.1 s/ha. “Navruz” variety in May (25.4 s/ha) and June (26.3 s/ha), “Durdona” variety in May (28.1 s/ha), June (28.4 s/ha), On July 1 (27.3 s/ha) 300 thousand seeds were sown and high yields were proved.

5.Sowing times and norms affect the protein content of the grain. Durdona ”variety increased by 0.3-0.5%.

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