ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 6 | Issue: 9 | September 2020 || Journal DOI: 10.36713/epra2013 || SJIF Impact Factor: 7.032 ||ISI Value: 1.188

DIFFERENT NEW VARIATIES OF SOYBEAN (Glycine hispida L) AND MUNGBEAN (Phaselus aureus Piper) PLANTS' TUBER PRODUCTION ABILITIES AND PRIMARY INDICATORS OF SYMBIOTIC ACTIVITY

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ABSTRACT

The article analyzes the results of research conducted on the selection of varieties of soybean and mungbean in the conditions of meadow-swamp soils of Tashkent region. In the experiments, the highest rates of control over the number and weight of soybean seedlings were observed in the samples, including Choice-73/18, Choice -39/14, Choice -18/18, and the weight of the stems were found to be more than 2.1–3.5 g relative. In the case of mung bean, these figures were relatively low, averaging 8.35% of the total.

KEYWORDS: ***Soil, meadow-swamp. soybean, mung bean, variety, protein, oil, starch, vitamins, bacteria, nutrients.***

INTRODUCTION

According to the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), there are currently more than 840 million people in the world, or one out of eight is malnourishing, especially 30% of the world's population are suffering from malnutrition, namely a lack of micronutrients and vitamins in the most basic nutrients.

In many respects, a balanced diet is a component of the human diet, the food consumed is necessary for the promotion of health, disease prevention, slowing down the aging process and prolonging life by ensuring the completeness and balance of biochemical processes such as normal human development, physiological activity, metabolism. depends on the provision of the required level of nutrients and quality substances.

Nutrients with the above properties, especially protein (rich in essential amino acids) and carbon source (carbohydrates and fats), vitamins, microelements, dietary fiber, legumes, such as mung beans, soybeans, beans, etc., have a special place. Due to the fact that cereals and legumes are the main food of the population, the widespread use of soybean meal, in order to grow export-substituting products in the Republic from 2018 on the basis of special government decrees, cultivation of soybeans as a primary and secondary crop.

Soybeans are grown in more than 60 countries around the world and are widely used, and more than 50 different nutrients are produced and consumed from soybeans.

The U.S. accounts for more than 60% of the soybean crop, which has a unique composition and high level of nutrients. Soybeans are grown in large areas in China, Brazil, as well as South America, Canada, Australia and Western Europe. Brazil and Argentina are the world leaders in soybean cultivation, along with the United States. Two-thirds of exports are sent to China for food production [1.2.B., 128-130.248].

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Butter, margarine, cheese, milk, flour, confectionery are obtained from soybeans. Soybean flour is added to bread and sausage products, and the nutritional power and taste qualities of these products are improved. Soybean products are recommended for the treatment of diabetes.

Soybean oil makes up 40% of the vegetable oil produced and consumed on earth. In addition, soybeans contain large amounts of minerals such as potassium, calcium and phosphorus [1.B., 95].

In addition, all the vegetative parts of these crops, industrial residues are of particular importance in agriculture, especially livestock, poultry, soybeans are the main and high-value unique feed for poultry, which today are imported from foreign countries, including Ukraine, Russia. Therefore, the growing demand for food and feed production for livestock requires the expansion of soybean production.

It should be noted that soybean contains a full-fledged protein, which is not inferior to animal protein in terms of nutritional value. In particular, it contains unique biologically active substances - lecithin, choline, vitamins A, B and E, macro and micronutrients. In soybean-growing countries, it serves as the only source of protein for the food industry. Different varieties of soybean contain up to 57% dietary protein, up to 27% easily digestible unsaturated fats, up to 30% carbohydrates (mainly mono and disaccharides), vitamins: A1, B1, B2, B3, B6, E, C, D, K, PP and others, as well as microelements such as Mn, Mo, Mg, B, Fe, such a unique content is found in livestock, poultry feed, honey. It is very important for poverty.

Due to the short growing season (90-110 days), mungbean cultivation among cereals and legumes has reached 91.6 million hectares worldwide as a secondary crop. The average yield per hectare is 12.0-17 c / ha, and the gross yield is 206.4 million tons / year. In terms of planting area, it is the second largest in the world after soybean, with 5.3 million hectares/tons of total yield is obtained. In our country, mung bean is grown annually on 18-25 thousand hectares as a secondary crop. India is the leading producer and consumer of mung bean, accounting for 54% of the world's arable land and plenary harvest. Uzbekistan also plays an important role in the export of mung bean to the world market, exporting up to 67000 tons of mung bean per year [2.B, .11].

Mung bean seeds are used for food. The grain contains a large amount of valuable protein (24-28%), nitrogen-free extractives, fats (1-2%), fiber (4-6%), sugar, fat (2-4%), starch (46- 50%), contains ascorbic acid, thiamine, provitamin A, E and K and B group vitamins.

It is known that agriculture has been widely used to increase soil fertility and crop yields through the cultivation of legumes (soybeans, peas, mung beans, beans, etc.). At the same time, the effective properties of biological processes in the soil, especially the endogenous bacteria in the rhizosphere of plants, are closely linked with the development and activity of microorganisms in the soil.

Microorganisms in the soil have a high biological (enzymatic) activity, biochemical potential and are actively involved in all processes in the soil. In particular, through the destruction, bioconversion of various organic wastes, even chemicals, pesticides and all substances in the soil, the plant assimilates new organic humus, biogenic elements. It also creates the conditions for optimal growth and development of the crops grown by cleaning the environment using plant residues in the life process. Soil microorganisms play a special role in the formation of humus in the soil and the transition of the chemicals necessary for the plant to a state that the plant can absorb.

The formation and dynamics of soil biochemical, nutrient, air regimes are closely related to the activity of microorganisms. All this indicates that microorganisms are very important in the development of soil fertility [12.B.122].

Legumes in a number of scientific literatures [5.B.200]. in the soybean Bradyrhizobium japonicum SB5, mung bean seeds Phaseolus radiates 148, and bean seeds Rhizobium phaseolus 143 strains treated with nitrogen-fixing bacteria, it is recommended to apply mineral fertilizers NPK 30:90:60 kg / ha in crop care. Turchin [10.B.19-21]. M.V.Fedorov [11.B.275] studied the absorption of free nitrogen in the air by legumes and the effect of agro-technical measures on their care, and the assimilation of free nitrogen in the air by legumes in the roots of legumes. According to Z.Jumaev and E.Shermatov [4.B.18-22], in the conditions of Karakalpakstan, when grown in mung bean, there is a significant increase in protein in the grain and green mass, as well as 100 kg per hectare of soil. pure nitrogen accumulation and 200-300 ts / ha of green manure.

According to E.N.Mishustin [7; C.395], the bacteria undergo several changes after entering the roots of legumes, first forming a plate, and then forming bacteroids, which absorb free nitrogen from the air and begin to accumulate in the roots of legumes. According to B. Mavlonov, A.Khamzayev, Z.Bobokulovs [6;B.36], endogenous bacteria living in the roots of legume crops absorb atmospheric nitrogen and enrich the soil with nitrogen. In Uzbekistan, mungbeans, soybeans and peas accumulate 40 kg to 120 kg of easily assimilated nitrogen per hectare. Most of the nitrogen assimilated by legumes remains in the plant, and after harvesting, part of it returns to the soil through the remains of roots and stalks. Also, According to I.A.Isroilov [8; B.145], due to the good absorption of nitrogen in the air by soybean, it can increase soil fertility several times and accumulate an average of 70-100 kg of nitrogen per hectare.

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OBJECT AND METHODS OF EXPERIMENTS

Experiments are carried out in Rice Research Institute. The experimental area of the Rice Research Institute is 0.4 ha (0.2 ha experiment, 0.2 ha control), in particular, in the south-eastern part of Tashkent region, on the left bank of the Chirchik River 15 km from Tashkent. It is located on the Greenwich scale at $69^0$18', east longitude and $41^0$20' north latitude.

The experimental area is the soil layer meadow swamp, loamy sandy soil and the layers are low humus and gray color typical of swampy soils.

The method of conducting experiments was based on the selection of soybean and mung bean, general techniques for the creation of new varieties of agricultural crops and recommendations developed by RRI, field experimental methods [3; B.185]

RESULTS AND DISCUSSION

In order to create a variety selection nursery in the above experimental areas, experiments were conducted on 9 varieties of soybean and 8 varieties of mung bean (Table 1). “Uzbek-2”, “Uzbek-6” and “Radost” varieties of soybean were planted for control. Experimental area 50 m^2, number of returns 4, placement was carried out in the standard way. Phenological observations were made during the growth of seedlings, taking into account the thickness of seedlings and growth and development of it.

The yield of soybean and mung bean is directly related to the number of plants per unit area and the productivity of plants (average yield per plant), and the experiments determined the number of seedlings per 1m^2 area to determine the yield of samples.

Table 1

Seedling thickness in varietal nursery (1 m^2 / piece)

№	Catalog Number	Origin	Seedling Thickness, piece		Saved Percent, %
			After germination	Before harvest	
Soybean					
1	D-ST Uzbek-2	Uzbekistan	25	20	80,0
2	D-ST Uzbek-6	Uzbekistan	26	21	80,1
3	Selection 65/18	K-24 USA	28	24	85,7
4	Selection 64/15	6806 Yugoslavia	30	25	83,3
5	Selection 18/18	8850 Uzbekistan	25	20	80,0
6	Selection 39/14	5382 KNR	26	22	84,6
7	Selection 73/18	514504	27	23	85,2
8	Selection 5/14	3926	27	24	88,8
9	Selection 58/14	K-15	29	23	79,3
Mungbean					
1	Radost	Uzbekistan	30,8	25,2	81,8
2	AG-92265	Selection 34\08	31,6	27,0	85,4
3	AG-92273	Selection 4\08	33,3	29,6	89,0
4	430174	Selection 3\09	33,0	29,3	88,8
5	414360	Selection 5\09	31,0	28,3	91,3
6	567960	Selection 2\11	29,3	24,6	84,1
7.	52273	Selection 12\15	25,3	21,3	84,3
8	Buka	Selection 17\15	29,3	24,6	83,9
9	716	Selection 19\15	30,3	25,0	82,5

The highest number of seedlings in the designated areas after the emergence of soybean and before harvest was observed in the competition "Selection-65/18", "Selection -73/18", " Selection -58/14", " Selection -39/14", Samples of “Selection -18/18” variety were found, and the level of seedling protection was found to be 6-8% higher than the control.

The seedling thickness of mung bean's “Selection 34/08” and “Selection 5/09” varieties was 4.6-9.5% higher than the control. The results showed that the provision of seedling thickness at the

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required level has a positive effect on the good development and yield of the crop.

One of the most important economic characteristics of legumes is the accumulation of biological nitrogen in the soil by assimilation of air nitrogen by endogenous bacteria. The accumulation of biological nitrogen is directly influenced by many factors - plant type, soil-climatic conditions, soil environment, moisture.

Due to the symbiotic activity of soybean and mung bean plant, it absorbs atmospheric nitrogen through its root tubers and increases grain yield, quality and soil fertility due to the accumulation of biological nitrogen in the soil, resulting in increased crop yields. Therefore, in order to assess the symbiotic activity of variety specimens planted in the varietal selection nursery, the number and weight of tubers on their roots were determined (Table 2). At the same time, the highest number of formed tubers and weight relative to the control was observed in the samples of the competition "Selection-73/18", " Selection -39/14", " Selection -18/18", compared to the control of weight by 2.1-3.5 g. increased. In other variety specimens, symbiotic activity was higher than in control variety specimens.

Table 2
Number and weight of root tubers in soybean variety samples.

№	Catalog	Origin	Number of tubers	Weight of tubers, g	
				wet	dry
Soybean					
1	D-ST Uzbek-2	Uzbekistan	91	2,4	1,0
2	D-ST Uzbek-6	Uzbekistan	110	2,9	1,4
3	Selection 65/18	K-24 USA	135	5,4	2,4
4	Selection 64/15	6806 Yugoslavia	131	2,9	1,6
5	Selection 18/18	8850 Uzbekistan	140	3,1	1,3
6	Selection 39/14	5382 KNR	211	3,3	1,5
7	Selection 73/18	514504	177	5,9	3,9
8	Selection 5/14	3926	108	2,2	1,1
9	Selection 58/14	K-15	123	4,5	2,9
Mung bean					
1	Radost	Uzbekistan	47	2,1	0,3
2	AG-92265	Selection 34\08	53	2,3	0,3
3	AG-92273	Selection 4\08	56	2,4	0,4
4	430174	Selection 3\09	59	2,4	0,2
5	414360	Selection 5\09	62	2,5	0,3
6	567960	Selection 2\11	58	2,4	0,3
7	52273	Selection 12\15	51	2,3	0,3
8	Buka	Selection 17\15	64	2,5	0,4
9	716	Selection 19\15	65	2,6	0,5

The taken results showed that it is determined the formation of tubers in all the soybean and mungbean varieties for the experiments, and that these legume varieties have a high degree of symbiotic activity.

CONCLUSION

Thus, in the experimental variety nursery seedlings in the varieties of soybean varieties "Selection-65/18", " Selection -73/18", " Selection -58/14", " Selection -39/14", " Selection -18/18" save the level of work was 6-8% compared to the control, and in the samples of varieties "AG-92273" and "430174" and "414360" compared to the control, this figure was 7.1-9.6%.

The soybean and mung bean varieties obtained for the experiment had the highest control over the number and weight of tubers formed in their roots during the growing season in “Selection-73/18”, “Selection-39/14”, “Selection-18/182” soybean varieties was found an increase to 2.1-3.5 g. In the Mung bean plant, however, these figures were relatively low, averaging 8.35% of the total.

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