



BIOTECHNOLOGICAL INDICATORS OF LOCAL AND FOREIGN SOY VARIETIES

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Abstract.

In the article, the adaptability of domestic and foreign varieties of soybeans in the conditions of grassland gray soils is studied, the yield of early-season Prudens variety is 18.5 t/ha, Solena variety is 18.6 t/ha, Pripyat variety is 18.7 t/ha, and Genetic-1 variety is 18.7 t./ha, 18.8 ts/ha from Menor variety, 19.5 ts/ha from Sirelia variety, 19.6 ts/ha from Pamyati Fadeeva variety, 22.5 ts/ha from mid-early Gavhar variety, 23.2 ts/ha from Sochilmas variety, 25.7 ts/ha from the Diamond variety, 25.8 ts/ha from the Slavia variety, 25.8 ts/ha from the SK Veda variety, 30.2 ts/ha from the Chara variety, 25.8 ts/ha from the Medium Yield variety, Vilana variety Data on the grain yield of 26.6 t/ha, and 32.0 t/ha from the Tomaris Man-60 variety are given.

Key words. Plant, shade, variety, line, soil, adaptability, growth, development, growth period, 1000 grain weight, yield.

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Introduction.

According to the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization, more than 840 million people in the world do not have access to enough food. This is almost one in eight of the world's population.

In addition, more than 30% of the world's population suffers from the problem of malnutrition, the lack of the most basic microelements and vitamins, which clearly shows how urgent the issue of food security is.

Due to the rapid growth of the population of our republic and the increase in the population's demand for food products, a number of urgent issues are put before the representatives of the industry. These are providing the population with ecologically clean agricultural products, improving the livestock feed base, organizing the rational use of land

and water resources.

In our country, the expansion of soybean cultivation areas and the increase of products made from them, the full satisfaction of the population's needs for oil products, and the consistent development of animal husbandry are of great importance.

Soybean is a cultural plant that has been cultivated since ancient times. Soybean was cultivated 6-7 thousand years ago, and today it is grown in 93 countries.

Based on its chemical composition, soybean is an agricultural crop that is used as a versatile food and animal feed, containing oil and protein in its grain, rich in minerals and vitamins.

Soybean contains a number of amino acids, soluble and digestible protein (38-42% in ordinary grain, 44-49% in special food grain).



Also, high quality vegetable oil is 20-25%.

Soybean has a steady growth in terms of production volume and is the 4th largest agricultural crop in the world after wheat, rice and corn.

The order of the President of the Republic of Uzbekistan dated March 14, 2017 "On measures to increase the sowing of soybeans and the cultivation of soybeans in the republic in 2017-2021" on the development of soybean cultivation in our country, the creation of high-yielding varieties of soybeans, the expansion of cultivated areas and the systematic organization of soybean selection and primary seed production Decision No. PD-2832 was adopted. In our republic, since 2017, sowing of soybeans and cultivation of soybeans are being carried out in the main areas.

In this decision, in 2017-2021, the task of gradually expanding the area of planting soybeans and increasing the amount of oil production was assigned.

In the republic during 2017-2021, in order to satisfy the needs of the population for soybean vegetable oil, to strengthen the nutritious feed base for livestock, to create and place soybean varieties suitable for each soil and climate conditions, in order to obtain an abundant and high-quality harvest from soybeans. and organization of the primary seed production system on a scientific basis, in turn, ensures further development of this sector of agriculture.

In the above decisions of the President of the Republic of Uzbekistan, on the basis of cooperation, the selection of soybean varieties with the best indicators of foreign countries, suitable for the conditions of Uzbekistan, serious engagement with their seed production, the establishment of seed production of the highest yielding and oil-yielding varieties, as well as the breeding of local soybean varieties, the preparation of their offspring seeds and for farms commissioned to deliver at low prices.

Meeting the population's demand for food products remains one of the urgent issues of today. Soybeans are important in the fields of food, agriculture and animal husbandry.

According to scientific sources, processing of one ton of soybeans can produce 0.12-0.16 tons of vegetable oil and 0.75-0.80 tons of defatted soybean meal. Belonging to the leguminous family, soybean leaves 2.3-2.7 t/ha of organic products rich in biological nitrogen in the soil, and 70 kg of nitrogen, 30 kg of phosphorus, and 80 kg of potassium are also accumulated in its soil layer.

Soy, like other legumes, increases soil fertility and improves soil structure. It plays an important role in crop rotation. If a proper crop rotation is established, it will improve the nitrogen balance in the soil. It is possible to reduce the consumption of nitrogenous fertilizers in crop care. Expensive nitrogen fertilizer is saved. The amount of protein obtained from arable land will increase. In addition, by improving the health of the soil, it is possible to reduce the number of pathogens in the soil.

Soybean can be the main predecessor crop for cereal crops in a crop rotation system. Soybeans are the best predecessors when planted to grain crops and corn for silage.

In the scientific research of Mominov A.A., Norbutaeva B.Kh. (2020), the rate of mineral fertilizers for soybean varieties is 90 kg of pure phosphorus per hectare, 60 kg of potassium per hectare, and 120 kg/ha of pure nitrogen fertilizer for all varieties of soybeans during the flowering period of the plant. ha, when given 80 kg/ha during the flowering-seeding period, the Tomaris Man-60 variety averaged 31.4 t/ha in 3 years, Oyjamol variety 31.5 t/ha, Selekt-201 variety 12.6 t/ha, Amigo variety 12, Grain yield of 2 t/ha was obtained.

In the research conducted by Mominov A.A., Norbutaeva B.Kh. (2021) in the low salinity soil conditions of the Sirdarya region, the best results in terms of productivity were obtained when the mid-season soybean varieties Tomaris Man-60, Selkta-302, Vilana were planted in the main area on April 20, 30.2 on average in two years according to varieties; 27.0; 28.1 tons/ha of grain yield was achieved.



In the scientific research of Mominov A.A., Yaqubov Z. (2019), when studying the productivity indicators of varieties and lines grown in the nursery of a competitive soybean variety trial, Line 14-0068 had an average of 26.9 t/ha, Line-301 and 27.5 t/ha, the grain yield of 27.8 t/ha was obtained from Line-1254, which was found to be 0.5-1.4 t/ha more than Tomaris Man-60, which was planted as a model.

According to the results of Siddikov R.I., Mominov A.A., Ergashev U.A., Orinboev H.Kh., Norbutaeva B.Kh. (2018-2020), the rate of mineral fertilizers per hectare is 90 kg of phosphorus and 60 kg of potassium, when nitrogen fertilizer is given in two periods at the stages of tillering and flowering-seeding, when all varieties of soybeans are given pure nitrogen fertilizer in the amount of 120 kg/ha, an average of 35.1 ts/ha in 3 years from the Tomaris Man-60 variety, it was determined as a result of the scientific researches that it is the most effective option from the economic point of view, with the grain yield of 27.5 t/ha from the Oyjamol variety, 21.9 t/ha from the Selekt-201 variety, and 18.6 t/ha from the Amigo variety.

Research methodology.

Conducting field experiments, conducting phenological observations, harvesting, counting and laboratory analyzes were performed on the basis of "Generally accepted methods", and biometric analyzes were performed on the basis of the "Method of the State Commission for Variety Testing of Agricultural Crops".

The purpose of the study.

The aim of the scientific research is to study the adaptability of local and foreign soybean varieties to the soil and climatic conditions of our country in cooperation with the All-Russian Research Institute of Oilseed Crops named after V.S.

Research results.

At the Scientific Research Institute of Cereals and Legumes in 2021, under the conditions of irrigated meadow gray soil, soybean imported from the Krasnodar Territory

of the Russian Federation, Fadeeva, Pripyat, Solena, Chera-1, Menor, Protina, Arleta, Amigo, Sparta, Sirelia, Prudence, Sultana, Shuna, Sfroza, Meruen, Lumaria, ES Mentor, SK Riana, SK Veda, SK Optima, Selekt-201, Chara, Slaviya, Vestochka, Selekt-302, Vilana varieties and 5 lines in total 31, belonging to local selection To'maris Man- 60, Oyjamol, Ustoz MM-60, Baraka, Hasildor, Gavhar, Zamin, Olmos, Orzu, Nafis, Genetik-1, Sochilmas, a total of 12 varieties were planted in the demonstration nursery as the main crop.

According to the experimental system, the area of the field of each variety was 960 m², between the fields there were 0.6 meter protection zones and they were arranged in one layer.

In the experiment, soybean seeds were sown on April 20, 2021 at a depth of 4-5 cm in a SPCh-4 pneumatic seeder in a 60 cm x 5 cm x 1 scheme. The sown soybean seeds were collected to the natural moisture of the soil.

100 percent of the annual rate of phosphorus and potassium from mineral fertilizers was given to the soybean crop in the period of land preparation before planting, at the rate of 90 kg of pure phosphorus and 60 kg of potassium fertilizer per hectare.

Feeding with nitrogen fertilizers during the crop maintenance period was mainly carried out in two stages. In this case, during the growing season of the plant, 50 kg/ha of pure carbamide fertilizer was applied to the depth of 10-12 cm between the rows of the soybean crop.

In the period of flowering and podding, 70 kg/ha ammonium nitrate fertilizer was applied to a depth of 14-16 cm between the cultivator fertilizer and the second feeding was carried out.

Soybeans were watered after feeding with nitrogen fertilizers. Depending on the condition of the crop and soil moisture, 700-750 m³ per hectare was irrigated during the period of filling and ripening of soybeans. During the field experiment, soybean varieties were irrigated 4 times in total.



Interrow cultivation of soybeans with a cultivator accomplishes two tasks. First, existing weeds between the rows are killed. Secondly, as a result of softening the soil surface, air exchange improves and helps to maintain moisture in the soil for a long time.

During the growing period of soybean varieties, the cultivator worked 3 times at a depth of 12-14 cm between the rows. In order to remove weeds, two times with the help of manual hoeing and chemical treatment against harmful insects (spider mite, cotton mite, white wing, leaf eaters).

According to the data of Table 1, plant height of 39-50 cm in Pamyati Fadeeva, Pripyat, Protina, Sfroza, Sultana, Chera-1, Solena, Menor, ES Mentor, Meruen, Lumaria, Genetic-1 varieties of soybean, Selekt-201, 53-58 cm in Sparta, SK Riana, SK Optima, Shuna, Sirelia

varieties, 61-95 cm in Arleta, Prudens, Amigo, Slavia, Orzu, Gavhar, Sochilmas, Hasildar varieties, SK Veda, Zamin, Chara, Selekt-302, Olmos, Nafis, Ustoz MM-60, Vilana varieties 98-110 cm, Tomaris Man-60, Oyjamol, Baraka, Vestochka varieties 114-125 cm.

In the experiment, Prudence, Sirelia, Meruen, Lumaria, Amigo, Chera-1, Pamyati Fadeeva, Pripyat, Arleta, Sparta varieties were early in 87-91 days, Menor, Solena, Protina, Sfroza, Sultana, Shuna, ES Mentor, SK Optima, Genetik-1, Sochilmas, Selekt-201, SK Riana, Chara, Slaviya, Gavhar, SK Veda, Olmos, Orzu varieties are mid-early in 94-114 days, Hasildor, Zamin, Selekt-302, Vilana, Vestochka, To'maris Man-60 It was found that mid-ripening varieties are fully ripened in 125-130 days, Ustoz MM-60, Oyjamol, Nafis, Baraka varieties are late-ripening in 132-142 days.

Table 1

Agricultural biological indicators of foreign and domestic soybean varieties.

| No | Soy varieties | Plant height, cm. | growth period, day | Harvest needs/ha | Weight of 1000 grains, g. |
|---|---------------------|-------------------|--------------------|------------------|---------------------------|
| Soybean varieties of the Krasnodar region of the Russian Federation | | | | | |
| 1 | SK Riana | 54 | 105 | 20,1 | 180 |
| 2 | SK Veda | 98 | 108 | 25,8 | 183 |
| 3 | SK Optima | 56 | 94 | 17,6 | 170 |
| 4 | Sparta | 54 | 91 | 18,3 | 160 |
| 5 | Line-94 | 63 | 90 | 21,1 | 155 |
| 6 | Line -98 | 63 | 91 | 20,5 | 160 |
| 7 | Line -108 | 82 | 107 | 26,0 | 162 |
| 8 | Line -116 | 80 | 110 | 27,6 | 162 |
| 9 | Line -116/1 | 71 | 110 | 24,6 | 158 |
| 10 | Arleta | 61 | 88 | 19,8 | 162 |
| 11 | Amigo | 76 | 87 | 16,2 | 182 |
| 12 | Selecta -201 | 53 | 104 | 12,9 | 160 |
| 13 | Selecta -302 | 103 | 127 | 23,9 | 191 |
| 14 | Vilana | 110 | 127 | 26,6 | 135 |
| 15 | news | 114 | 127 | 23,2 | 168 |
| 16 | In memory of Fadeev | 38 | 88 | 19,6 | 165 |
| 17 | Pripyat | 40 | 88 | 18,7 | 164 |
| 18 | Protina | 46 | 93 | 16,4 | 158 |
| 19 | Sfroza | 48 | 93 | 15,7 | 165 |
| 20 | Sultana | 41 | 93 | 13,8 | 156 |



| | | | | | |
|---|----------------|-----|-----|------|-----|
| 21 | Shuna | 57 | 93 | 14,5 | 160 |
| 22 | prudence | 62 | 87 | 18,5 | 156 |
| 23 | Chera-1 | 40 | 87 | 18,2 | 140 |
| 24 | Sirelia | 58 | 87 | 19,5 | 155 |
| 25 | Solena | 42 | 93 | 18,6 | 150 |
| 26 | EC Mentor | 39 | 94 | 23,8 | 190 |
| 27 | Chara | 102 | 107 | 30,2 | 150 |
| 28 | Slavia | 89 | 107 | 25,8 | 130 |
| 29 | Menor | 44 | 93 | 18,8 | 160 |
| 30 | Meruen | 40 | 87 | 15,7 | 183 |
| 31 | Lumaria | 40 | 87 | 14,9 | 170 |
| Local soybean varieties created in Uzbekistan | | | | | |
| 1 | Tomaris Man-60 | 114 | 130 | 32,0 | 170 |
| 2 | Oyjamol | 120 | 137 | 21,4 | 175 |
| 3 | Master MM-60 | 110 | 132 | 21,6 | 196 |
| 4 | A blessing | 125 | 142 | 22,8 | 174 |
| 5 | The floor | 100 | 126 | 24,9 | 164 |
| 6 | Productive | 95 | 125 | 25,8 | 192 |
| 7 | A dream | 82 | 114 | 19,8 | 155 |
| 8 | Elegant | 106 | 135 | 24,4 | 160 |
| 9 | Diamond | 104 | 109 | 25,7 | 200 |
| 10 | Gem | 86 | 107 | 22,5 | 151 |
| 11 | Unbreakable | 88 | 105 | 23,2 | 160 |
| 12 | Genetic-1 | 45 | 94 | 18,7 | 155 |

In the year of the experiment, the growth and development of soybean varieties was seriously affected due to the sharp increase in the weather temperature in July and August. As a result, grain yield from soybean varieties was not as expected. It was observed that the yield of varieties was less than other years up to 5-6 centners.

In the experiment, soybean SK Optima, Sparta, Arleta, Amigo, Selekt-201, Pamyati Fadeeva, Pripyat, Protina, Sfroza, Sultana, Shuna, Prudens, Sirelia, Meruen, Lumaria, Chera-1, Solena, Dream, Genetic-1, Menor varieties Grain yield was obtained in the range of 13.8-20.0 t/ha,

Soybean varieties SK Riana, Selekt-302, Vestochka, ES Mentor, Oyjamol, Ustoz MM-60, Baraka, Gavhar, Sochilmas, Nafis, Zamin yielded 20.1-25.0 tons/ha.

Soybean SK Veda, Slaviya, Vilana, Productive, Diamond, Chara, Tomaris Man-60 varieties yielded 25.8-32.0 tons/ha of grain.

As a result of scientific research, the highest grain yield of foreign and local soybean varieties is 18.5 t/ha from Prudens variety, 18.6 t/ha from Solena variety, 18.7 t/ha from Pripyat variety, 18.7 t/ha from Genetic-1 variety. /ha, 18.8 ts/ha from Menor variety, 19.5 ts/ha from Sirelia variety, 19.6 ts/ha from Pamyati Fadeeva variety, 22.5 ts/ha from mid-early Gavhar variety, 23.2 ts/ha from Sochilmas variety, 25.7 ts/ha from the Diamond variety, 25.8 ts/ha from the Slavia variety, 25.8 ts/ha from the SK Veda variety, 30.2 ts/ha from the Chara variety, 25.8 ts/ha from the Medium Yield variety, Vilana variety It was found that 26.6 ts/ha, and 32.0 ts/ha were obtained from To'maris Man-60 variety.

According to the laboratory analysis, when studying the weight of 1000 grains of soybeans, Slavia, Vilana, Chera-1, Solena, Chara, Gavhar, Orzu, Genetik-1, Sireliya, Prudens, Sultana, Protina, Line-94, Line-116/1, Sparta, Line-98, Selekt-201, Shuna, Menor,



Nafis, Chihilmasas varieties and lines with a weight of 1000 grains in the range of 151-160 grams, Arleta, Line-108, Line-116, Zamin, Pripyat, Pamyati Fadeeva, Vestochka, SK Optima, Lyumaria, To'maris Man-60 varieties have a weight of 1000 grains in the range of 161-170 grams, Baraka, Oyjamol, SK Riana, Amigo, SK Veda, Meruen varieties have a weight of 1000 grains 171-185 in the range of grams, it was found that the remaining Selekt-302, ES Mentor, Ustoz MM-60, Diamond varieties were higher than 190 grams.

As it can be seen from the given data, although the same agrotechnics were used in the cultivation of the crop in the experimental area, it was found that the weight of 1000 grains measured by varieties was different due to the biological characteristics of each variety and line.

Conclusion.

According to the results of the study, soy SK Optima, Sparta, Arleta, Amigo, Selekt-201, Pamyati Fadeeva, Pripyat, Protina, Sfroza, Sultana, Shuna, Prudens, Sirelia, Meruen, Lumaria, Chera-1, Solena, Orzu, Genetic-1, 13.8-20.0 t/ha from Menor varieties, 20.1-25 from Sochilmas, Nafis, Zamin varieties in the range of 0.0 t/ha, SK Veda, Slaviya, Vilana, Hosildor, Olmos, Chara, Tomaris Man-60 varieties received grain yield in the range of 25.8-32.0 t/ha.

In conclusion, it can be said that domestic To'maris Man-60, Harvester, Diamond, Gavhar, Genetic-1, foreign Vilana, Chara, SK Veda Slaviya, Pamyati Fadeeva, Sireliya, Menor, Pripyat, Solena, Prudens varieties of soybeans should be planted in the main fields in the spring period ensures an abundant harvest of grain from them.

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