Special Issue on Basis of Applied Sciences and Its Development in the Contemporary World
Published in Association with
Department of Technology and Organization of Construction, Samarkand State Architectural and Civil Engineering Institute, Uzbekistan
Department of Mechanization of livestock, Samarkand Institute of Veterinary Medicine, Uzbekistan
Novateur Publication India's International Journal of Innovations in Engineering Research and Technology [IJIERT]
ISSN: 2394-3696, Website: www.ijiert.org, 15th June, 2020

TECHNOLOGIES FOR GROWING NEW VARIETIES OF SOYBEANS ON IRRIGATED LANDS OF UZBEKISTAN

Kuldashov Bobomurod Khusanovich,
Applicant for the Department of Plant Growing, Samarkand Institute of Veterinary Medicine. bobomurodqul@gmail.com, tel.: +998995955641

Khalilov Nasriddin,
Doctor of Agricultural Sciences, Professor of the Department of Plant Growing, Samarkand Institute of Veterinary Medicine. xalilov_07@mail.ru tel.: + 998915297620.

Hamzaev Abdushukur Khudaykulovich, professor
Samarkand Institute of Veterinary Medicine, Samarkand, Uzbekistan

Annotation

The article presents the agrotechnical value of soybeans, a brief description of mid-ripening varieties and late-ripening soybean varieties imported from the Russian Federation and local ones. The methods of sowing, seeding rates, seeding depth, seeder brands, inoculants and features of their application, fertilization, watering, measures to combat weeds, diseases and pests, harvesting taking into account the biological characteristics of varieties and soil and climatic conditions are given.

Keywords: soybeans, varieties, bacterial fertilization, grafting, sowing time, seeding rate, fertilization, sowing method, Rizovit-AKS, netragin, main crop.

Introduction

As a result of reforms in the country's agriculture, there is a modernization and diversification of production. In order to increase the efficiency of reforms and ensure food security in the country, the President of the Republic adopted a number of Resolutions and Decrees. In particular, in order to fulfill the Resolution of the Cabinet of Ministers of the

Republic of Uzbekistan PP-2835 of March 14, 2017 "On measures to organize sowing and increase the production of soybeans in the republic in 2017-2021." On February 10, 2018, Resolution No. 105 "On measures to increase the volume of soybean production in the Republic" was adopted.

Soybeans can be grown both as a main crop and as a secondary crop in all regions of the country and in the Republic of Karakalpakstan.

Soybeans are considered a new crop in Uzbekistan. Soybean grain contains 30-52% protein, 18-25% oil and 20% carbohydrates. Soybean seeds are used to prepare dietary meals for diabetics. Soy seeds are used in the confectionery industry, for the preparation of soy milk, kefir, cottage cheese, margarine, flour, various canned and vegetarian sausages and dietary oils.

The main soy protein - glycinin, is well assimilated by the body, water-soluble, during fermentation it turns into kefir, a protein rich in essential amino acids and balanced. Digestibility 86-100%. More than 250 different dishes are prepared from soybeans.

Soybean oil accounts for 40% of the vegetable oils produced in the world. Soybean meal contains 40% protein, 1.4% fat, 30% BEV (nitrogen-free extract substances). Soy can be grown for green and silage mass, as well as with corn. 100 kg of green mass contains 21 c. units, 3.5 kg of protein. Vitamin-herbal flour is prepared from the green mass of soybeans. 100 kg of soybean stalks contain 32 k. units. and 5.3 kg of protein. Oilcake is considered a valuable feed in poultry farming.

Among leguminous crops, soybeans rank first in terms of gross production and acreage. In world agriculture, soybeans are cultivated on an area of 120 million hectares.

With the cultivation of soybeans in our country, the following urgent problems of agriculture are being solved:

- increase in grain production;
- vegetable protein deficiency;
- increasing soil fertility;

Currently, 1 Ph.D. feed for farm animals contains 80-85 g of digestible protein, and according to zootechnical standards it should be 110-120 g. At the same time, a protein

deficiency of 1. to. is 30-35 g. When soybean meal is added to the feed, the digestibility is improved, the digestibility and efficiency of feed are increased.

Soybeans accumulate up to 150-250 kg of nitrogen per season with the help of nodule bacteria per hectare. The accumulation of biological nitrogen depends on the crop yield, with an increase in yield, it rises. Of the total amount of nitrogen accumulated per 1 ha, 60-80 kg remain in the soil, due to the decay of nodules, roots and harvest residues.

Soybean crops improve the water-physical properties of the soil, its ameliorative state, increase fertility, reduce the microflora that causes pathogenic diseases, and the number of beneficial microorganisms increases, the ecological state of the soil changes in a positive direction.

Relevance

The yield of crops placed after soybeans increases by 20-30%, the phytosanitary condition of grain crops is improved. Weed plants such as wild oats, perennial wild barley, broadsides, ryegrass, stellate, perennial weeds of pigs, gumay, sow thistle, creeping bitterweed and others, more and more littering the fields of grain crops in recent years, are sharply decreasing. Yellow and brown rust, powdery mildew, fusarium, septoria, found in wheat, harmful turtle, thrips, aphids, drunken does not occur on soybeans, the harmfulness and yield of grain crops when sown after soybeans decreases. At the same time, when growing wheat, the yield increases, the quality improves, the cost of grain decreases, and grain growing turns into a profitable industry. There is an opportunity to create and introduce new scientifically grounded crop rotation systems with short rotation on irrigated lands.

The technology of cultivation of soybeans on irrigated lands in our country has been studied by researchers [1, 2, 3, 4, 5, 6, 7] from the 1930s to the present. To date, 16 varieties of soybeans created by the breeders of the republic are included in the State Register. Among them there are early ripening, mid-ripening and late-ripening varieties. However, due to the insufficient amount of seed material this year, early maturing, early maturing and mid-maturing elite soybean varieties were imported from the SOKO company of the Krasnodar Territory of the Russian Federation. At the same time, the technology of cultivation of newly

imported varieties in accordance with the biological properties and soil and climatic conditions of the region has not been developed.

During the study years, the duration of the growing season of the mid-ripening varieties of soybean Select 201, Select 302, brought from the Krasnodar Territory of the Russian Federation, was 108-112 days, for the local mid-season variety Nafis 115-120 days, the late-ripening variety Uzbekska-6 140-145 days, plant height 125-160 cm, the lowest beans were located at a height of 13-17 cm from the ground. The protein content in the grains was from 39 to 43%, the oil content from 19 to 24%, the resistance to lodging and shedding was 4-5 points. The maximum yield was 4.0-5.37 c / ha. Ripening of grain of mid-season varieties sown as the main crop was observed in the third decade of August, 1-2 decade of September, and in the Uzbek-6 variety in October.

For the formation of nodules on the soybean roots in the soil where the soybean seeds will be sown, there must be nodule bacteria. Due to the fact that soybeans have not been cultivated in the soils of Uzbekistan, there are no nodule bacteria. Therefore, to ensure the formation of nodules on the roots of soybeans, the seeds were treated with bacterial fertilizers Rizotorfin, Nitrofix P, Nitrofix Zh Rizoazot, Rizovit-AKS before sowing. The most effective were Nitrofix P, Nitrofix Zh.

In recent years, a powdery preparation Nitrofix P has been developed in the Russian Federation, which is produced from peat in the form of a powder and can be stored for up to 2 years, even on saline and acidic soils, it gives good results. Powder consumption per 50 kg of seeds is 100 g. Nitrofix Zh is a liquid inoculant, with a shelf life of up to 2 years, treated seeds can be sown within 20-25 days. The application rate is 2 kg per 1 ton of seeds.

For the proper functioning of nodule bacteria in the soil, there must be a sufficient amount of phosphorus, potassium, boron, molybdenum, trace elements, as well as the appropriate temperature and humidity.

If the nodule bacteria are red or pink inside, then they accumulate nitrogen, if they are colorless or filled with green liquid, they do not accumulate nitrogen. This is due to the presence of the heme-globulin substance in them.

Research methods and results

In experiments with soil cultivation, a field cleared of weed roots was plowed to a depth of 28-30 cm. Before plowing, manure, an annual rate of potash and 70-80% of phosphorus fertilizers were applied.

Manure was applied at the rate of 30-40 tons per hectare. Nitrogen fertilizers 30-50 kg, phosphorus 90-100 kg and potash 40-60 kg per 1 ha. For the formation of 1 centner of grain and, accordingly, stems and leaves, soybeans assimilate on average 8.8 kg of nitrogen, 2.8 kg of phosphorus and 3.6 kg of potassium. If nodules have not formed on the roots of soybeans, 180 kg / ha of nitrogen must be added to the soil to obtain 2.0 tons of grain. This amount corresponds to 529 kg of ammonium nitrate or 391 kg of carbamide. If we take the coefficient of assimilation of the applied nitrogen as 50%, to obtain 2.0 tons of grain yield, it is necessary to apply nitrogen fertilizers (1058 kg of ammonium nitrate or 782 kg of carbomide). Therefore, in the cultivation of soybeans, seed treatment with nodule bacteria is considered an important technological process. It is not possible to expect positive changes in the soil if you do not use bacterial fertilizers when growing soybeans. It should be noted that the use of inoculants is 10-11 times cheaper than the use of nitrogen fertilizers.

Taking into account the growing seasons of soybean varieties in Uzbekistan, sowing begins when the soil temperature reaches 14-150C in the second and third ten days of April, the first ten days of May. With insufficient soil moisture, water-charging irrigation is carried out 7-12 days before sowing. On the areas where water-charging irrigation was carried out, friendly and full-fledged shoots are obtained.

On the irrigated lands of Uzbekistan, soybeans are sown mainly in a dotted manner in row spacing of 60 and 70 cm. The seeding rate for early-ripening varieties is 500 thousand seeds / ha, for mid-ripening, mid-ripening and late-ripening sores, 400 thousand seeds / ha. The seeding depth, with sufficient soil moisture of 4-5 cm, when the topsoil dries to a depth of 6-7 cm. On light-textured soils, the seeding depth can be increased. Sowing is carried out with seeders SZU-3.6, SZT-3.6, SON-2.4, SPCh-6, SPCh-8A, SST-12A, SUK-24.

On irrigated lands in soybean crops, inter-row cultivation, plant fertilization, weed removal, watering, and work to combat diseases and pests are carried out. Inter-row treatments are

usually carried out every 10-15 days, their number is determined by the state of the crops. The first cultivation is carried out to a depth of 6-8 cm, followed by 10-15 cm.

When cultivating soybeans, as the main crop, taking into account the depth of groundwater and the mechanical composition of the soil, 4-6 irrigations are carried out, when the physical ripeness of the soil is reached, cultivation is carried out.

When the moisture content of the grains reaches 14-15%, harvesting is carried out using the Case, Class, Dominator, John Deere combines. When harvesting commercial grain, the drum speed is set at 350-400 rpm, when harvesting seed grain, 300-400 rpm, the mowing height is 10-12 cm, the distance between the drums at the entrance is 36-40 mm, the output is 10-12 cm. Harvesting is carried out with combines in a single-phase method. Seed cleaning is carried out by machines "Petkus-giant", "Super-Pectus". The seeds are stored at a moisture content of no more than 14%.

Conclusions

On the irrigated lands of Uzbekistan If the above mentioned technology of cultivation of new soybeans brought from abroad is observed, it is ensured that the main crop is 2.5-3 t / ha, and the repeated 1.5-2 t / ha of grain yield. The yield of local varieties of soybean "Nafis", "Uzbek-6" was 3.5-4.0 t / ha, respectively.

References

1. Kots S., Mamenko P. // Special. issue w. Proposition. Modern agricultural technologies for the use of biological products and growth regulators / 2015, pp. 24-28.

2. Varieties, biological products, growth regulators, agrochemicals and technologies. Krasnodar: 2017.- 43 p.

3. Technology of growing soybeans on irrigated lands (Recommendations). Samarkand: 2017.-12 p.

4.Khalilov N., Panzhiev A. Soybean sowing rates. Agriculture of Uzbekistan, 1989, No. 2

5. Khalilov N., Rakhimov A. Biological efficiency of nitrogen and environmental problems. Abstracts of the republican scientific-practical conference "Problems of agricultural development in the environmental conditions of the Aral Sea region". May 20-21. 2005.

6.Khalilov N., Z. Islomova. "Soybeans sown on stubble increases soil fertility, increases fodder production." Republican scientific and practical conference "Achievements and prospects of animal husbandry and veterinary science." Samarkand, 2010.-162-165 p.

7. Makhonin Vasily Leonidovich "Modern agricultural technologies for growing soybeans, the use of biological products and agrochemicals" 5-December. 2017.

8. Yamaya-Ito, H., Shimoda, Y., Hakoyama, T., Sato, S., Kaneko, T., Hossain,M.S., Loss-of-function of ASPARTIC PEPTIDASE NODULE-INDUCED 1 (APN1) in *Lotus japonicus* restricts efficient nitrogen-fixing symbiosis with specific *Mesorhizobium loti* strains. // Plant J. -2018. –V.93. -№1. –P.5–16.

9. Jozefkowicz, C., Brambilla, S., Frare, R., Stritzler, M., Puente, M., Piccinetti, C., Microevolution rather than large genome divergence determines the effectiveness of legume rhizobia symbiotic interaction under field conditions. // J.Mol. Evol. -2017. –V.85. -№3-4. –P. 79–83.