Spectrum Journal of Innovation, Reforms and Development
Volume 15, May, 2023 | ISSN (E): 2751-1731
Website: www.sjird.journalspark.org

THE EFFECT OF USING DIFFERENT UREA NORMS IN SUSPENSION METHOD ON BIOMETRIC INDICATORS OF SOYBEAN

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ABSTRACT:
This article presents information on the effect of urea application methods in different rates on soybean variety "Sevinch" on biometric parameters. According to him, it was found that when the plants were exposed to urea at different rates, they had an effect on their biometric indicators, and when the urea rate was increased to 15 grams, all biometric indicators were better than other options.

Keywords: growth, development, urea norms, fertilization, plant number, stem height, number of pods, placement of the first pod.

Introduction

Soybean plant is a very important plant in the world today. It is grown in more than 60 areas of the world. Soy is the leading crop among legumes. Today, when there is a protein shortage all over the world, the protein content of soybeans, the presence of all the amino acids useful for humans in the protein content, increases the nutritional value of soybeans even more. It is important to note that the advantage of soybeans is that they can be compared with a number of food products in terms of the richness of lysine, methionine, arginine, leucine and other essential amino acids. In many countries where soybeans are grown, this crop is the only source of protein, and it also provides livestock with nutritious food and increases its productivity. Soybean accounts for 40% of the world's gross vegetable oil production [1].

LITERATURE REVIEW

In connection with the growth of the world's population, providing the population with food becomes an urgent problem. In this regard, it is advisable to create or improve the existing technology for growing soybeans. Today, when protein deficiency is widespread all over the world, the protein saturation of soybeans, the presence in the protein of all amino acids useful for humans, is of particular importance, which further increases the nutritional value of soybeans. It should be noted that the advantage of soybean is that it can be equated to a number of food products in terms of richness in lysine, methionine, arginine, leucine and other essential amino acids. In many countries where soybeans are cultivated, this crop is the only source of protein, providing livestock with nutritious feed and increasing their productivity. Soybean grain is of particular importance due to the high quality of amino

acids, which contain 28-52% protein, 18-27% organic vegetable oil, many mineral salts and nutrients that can be compared with essential foods such as meat, milk and eggs.

Kh.N. Atabaeva., F.B. Namozov., A.A. Kurbanov and S.Sh. Khayrullaev in their experiments conducted in 2018-2020, when they applied micronutrients to the soybean crop, micronutrients affected the height of the soybean stem, leaf, root development, nodule formation, grain quality and yield, and provided a high yield [2].

According to R. Jo'raeva., J. Toshpol'atov., A. Iminov., Kh. Bozorov and L. Zaynitdinova, S. Khatamov and S. Sh. Khayrullaev, in their experiments conducted in 2015-2017, soybean plant mineral fertilizers and belonging to the rhizobium group it was observed that the productivity increased by 12.6-12.8 c/ha when exposed to azotobacteria strains compared to the control option [3, 6].

According to Khayrullayev Sardor Shamsiddin ugli (2021), the application of micronutrients in the suspension method 2 times during the application period of soybean varieties in the conditions of meadow-swamp soils provides an increase in grain quality [8].

According to data of Atabayeva Khalima Nazarovna, Khayrullaev Sardor Shamsiddin o'g'li, and Usmonova Shohista Usmon qizi (2020), sulfur has a positive effect on the branching of soybean varieties on the background of mineral fertilizers, and in 2018 the number of branches in the variety "Orzu" increased by 0.8-1.3 compared to the control option due to the micro element sulfur. In the "Nafis" variety, this figure was 0.3-0.4, and good results were obtained from medium and high sulfur standards. In 2019, these indicators increased by 0.3-0.7 in the variants of sulfur compared to the control in the "Orzu" variety, increased by 0.1-0.3 in the "Nafis" variety, and good results were obtained from the medium and high standards of sulfur [5]. According to Iminov Abduvali Abdumannobovich, Khayrullayev Sardor Shamsiddin ugli, et al, Nitragine treatment of soybean and mung bean seeds before sowing had a positive effect on seed germination under both laboratory and field conditions, the germination rate of seeds in the laboratory under the conditions of cotton cultivation in the following year under the background of non-treatment by nitragine before sowing the seeds of soybean and mung bean crops grown as a secondary crop after winter wheat was 0.3-1.3%, and field fertility was 0.2-0.8% higher. Also, it was found that the use of phosphorus and potassium fertilizers in soybean and mung bean crops grown as a secondary crop was 0.6-1.0% higher in the laboratory, and 0.6-0.7% higher in the field than in the control options without mineral fertilizers in studies [4]. According to Umarova Nigora Sadriddinovna, Bo'riboyev Bekzod Yetmish ugli, Khayrullayev Sardor Shamsiddin ugli, Usmonova Shokhista Usmon kizi, & Turdaliyeva Shokhista Tulkinjon kizi, the demand of the soybean plant for mineral fertilizers, it was observed that when NPK and liquid fertilizer were used together, all the biometric parameters and yields of the plant increased by varieties compared to other methods. The use of mineral fertilizers in different ways in typical sierozem soil conditions affects the grain yield of local and foreign varieties. In other words, the average yield of medium-ripe soybean varieties "Nafis" was 43.4 c / ha, "Vilana" was 42.4 c / ha, and the best way to increase the yield is to apply fertilizers as NPK in combination with liquid fertilizer [9]. According to data of Khayrullayev Sardor Shamsiddin o'g'li and Usmonova Shohista Usmon qizi, the location of the lower first pod in soybean

varieties is 12.8-15.9 cm in Orzu variety, 3-3.1 cm in Radimax stimulator, 2.2-2.4 cm in Gummat stimulator, 2.1 cm in Tecamin stimulator and 3.1 cm in Algora stimulator was found to be high. The most effective results were observed in Radimax, Gummat and Algora bio-simulators, and the location of the lower first pod was detected 14.7-17.6 cm in the "Nafis" variety, which was 2.5-2.9 cm higher in the Radimax stimulator, 2.2-2.5 cm higher in the Gummat stimulator, 2.1 cm higher in the Tecamine stimulator, and 2.4 cm higher in the Algora stimulator than in the control variant. The most effective results were observed in Radimax, Gummat and Algora biosimulators [7]. According to Atabayeva, K. N., Umarova, N. S., Yakubov, S., & Khayrullaev, S. S, positive results were obtained from moderate levels of sulphur and manganese, and low levels of iron. Macro and micronutrients had a positive effect on soy yield. An additional 7.6 quintals (q)/ha was harvested in exchange for macro fertilizer. Compared to the background variant, the yield was 4.6-8.3 q/ha for sulphur and 4.9-9.8 q/ha for manganese. The yield of the iron element was lower than that of the background variant. Grain quality has changed in exchange for macro and micronutrients. In exchange for mineral fertilizers, this figure increased by 2.4%. In exchange for the element sulphur, the protein increased by 3.1-5.8%; an increase of 4.4-8.4% was observed in exchange for the element manganese. It was noted that the protein increased by 7.9-8.7% in exchange for the element iron [10]. According to Ugli Khayrullayev, S. S., & Kizi Usmonova, S. U., mineral fertilizers and sulfur microelements activate the symbiotic activity of soybean variety "Orzu", averaging 32.4-42.3 million nodules per hectare, the number of nodules due to the background of mineral fertilizers increased by 13.6%, and there was an increase of 19.4-23,4% due to sulfur, as well as an average weight of nodules was 6.46-9.56 c / ha, the weight of nodules increased by 5.3% due to mineral fertilizers, and 17.1-32.4% due to sulfur. During the application period, 6.46-9.56 c / ha of nodules mass was accumulated per hectare according to the studied variants, which contributes to the increase of nitrogen and organic matter in the soil and a slight increase in biological efficiency [11]. According to Usmonova Sh.U, Khayrullaev S.Sh, Shomuqimov N.N, & Gaynanova A.F, the influence of stimulants on soybeans affected the weight of 1000 grains of Vilana cultivar, under the influence of Gummat stimulator this figure was 2.2-7.4 grams higher than on basis of mineral fertilizers (Background), and under the influence of Rival stimulator-3.0-6.0 grams [12]. According to Khayrullaev S. S, In the variant, where not used mineral fertilizers and micronutrients, the leaf area in the control variant of the Orzu variety of soybean was 51.1 thousand m^2 / ha. Under the influence of microelements, the leaf area of Orzu was 59.1-64.6 thousand m^2 / ha. The highest rates of exposure to micronutrients were observed with medium use of sulfur and manganese. Under influence macro and micro fertilizers, the leaf area of Orzu variety increased from 4.0 to 13.5 thousand m^2 / ha, or from 7.3 to 20.9% [13].

METHODS AND MATERIALS

Experiments are carried out in field and laboratory conditions. In the research "Methods of conducting field experiments" (T.UzPITI 2007), "Method of field experiments (B. Dospehov, 1985), "Methodology of the State variety testing of agricultural crops" (1985,

1989), “Methods of agrochemical, agrophysical soil research in Central Asia” (1988) methods are used .

Place of experiment, conditions and agrotechnical measures

The experiments were conducted in the scientific experimental fields of the Rice Research Institute in Tashkent region.

The soil layers are swamp type soils characteristic of an oasis. There are also large and small stones and sand mixtures in different depth layers. These soils derive from the typical excess moisture conditions of the left bank of the river and are ideal for rice cultivation. The soil is grassland. The soil of the experimental field is not saline, the arable layer is 30- 40 см. The pH of the solutions in the soil is 6.8-7.3 units, and it is heavy clay according to its mechanical composition. Experiments are being conducted in 4 checks of 12 maps.

Planting method is wide rows, row spacing is 70 cm, bush spacing is 5 cm. Nitragin was not used because soybeans are always grown at the Rice Institute and the soil contains Rhizobium bacteria.

The experimental field was irrigated 2 times during the period of operation. Cultivation was carried out 2 times in the experimental field with the help of equipment. Soy varieties were fed in 3 different ways, suspension was used.

RESULTS AND DISCUSSION

Biometric indicators in the plant indicate the yield in the plant. In 2022, as a result of research on the influence of urea norms on the Sevinch variety of soybean, the number of plants in the control option was 20 units, and in the remaining options, 4-5 plants were kept more than the control option. Biometric indicators change depending on each other. The height of the plant is 135.7 cm in the Control variety, and as the number of plants increases, it can be seen that the height also increases. In the $N_{50}P_{100}K_{75}$ variant, the length of the plant height was 9.1 cm more than the control variety, in the $N_{50}P_{100}K_{75}+N_{10}$ (suspension) variant by 12.0 cm, in the $N_{50}P_{100}K_{75}+N_{15}$ (suspension) variant by 14.7 cm, the $N_{50}P_{100}K_{75}+N_{20}$ (suspension) variant increased by 8.3 cm, the $N_{50}P_{100}K_{75}+N_{10}$ (complex fertilizer) variant increased by 13.3 cm. The number of branches in a plant is also one of the important indicators of fertility.

Table 1 Biometric indicators soybean variety “Sevinch”, 2022

No	Variant	Number of plants, pcs	Height, cm	Plant branches, pcs	Placement of first pod, cm	The number of pods, pcs
1	CONTROL	20	135,7 _	2	11	47
2	$N_{50}P_{100}K75$	27	144.8	2	13	48
3	$N_{50}P_{100}K_{75}+N_{10}$ (suspension)	28	147.7	3	15	50
4	$N_{50}P_{100}K_{75}+N_{15}$ (suspension)	29	150.4	4	16	53
5	$N_{50}P_{100}K_{75}+N_{20}$ (suspension)	24	141.0	2	14	49
6	$N_{50}P_{100}K_{75}+N_{10}$ (complex fertilizer)	25	149.0	3	15	50

In our biometric indicators, the number of branches varied between 2-4 units. In the option $N_{50}P_{100}K_{75}+N_{15}$ (suspension), the number of kings is the best, i.e. 4, which is 2 more than the control option. Another biometric indicator is the height of the first leg. This biometric indicator represents the reduction of inviolability when harvesting the plant with the help of mechanization. If the location of the first pod is high, it is possible to harvest the plant without wastage with the help of mechanization, and the harvest is saved by an additional 2-3 ts. In the control variety, the height of the first pod is 11 cm, and it can be seen that the remaining variants have increased by 2-5 cm. A good indicator was recorded with 16 cm in the $N_{50}P_{100}K_{75}+N_{15}$ (suspension) option. The number of pods is one of the yield elements, in our experiment it was 47 pieces in the Control variant, and in the other variants the number of pods was 1-5 more than the control variant (Table 1).

CONCLUSIONS

When the plants were exposed to urea at different rates, it was observed that the biometric parameters were affected, and when the urea rate was increased to 15 grams, compared to other options, all the biometric parameters were observed to be better.

REFERENCES

1. Б.Доспехов "Методика полевого опыта, 1985 й
2. Nazarovna, AK, Bakhromovich, NF, Alavkhonovich KA, Ugli KSS. Effects of Sulfur and Manganese Micronutrients on the Yield of Soybean Varieties. Agricultural Sciences, 2020;11: 1048-1059. https://doi.org/10.4236/as.2020.1111068
3. JURAEVA R., TASHPULATOV J., IMINOV A., BOZOROV X., ZAYNITDINOVA L., & KUKANOVA S. (2020). EFFICIENCY OF SYMBIOTIC NITROGEN FIXATION OF SOY NODULE BACTERIA AFTER PRESERVATION. PLANT CELL BIOTECHNOLOGY AND MOLECULAR BIOLOGY, 21(61-62), 7279. Retrieved from https://www.ikprress.org/index.php/PCBMB/article/view/5644.
4. ABDUMANNOBOVICH, I. A., UGLI, K. S. S., ERGASHBOYEVNA, K. D., UGLI, H. S. R., & TURSINALIEVICH, K. S. (2021). EFFECTS OF NITRAGINE AND MINERAL FERTILIZER RATES USED ON REPEATED LEGUME CROPS ON SEED GERMINABILITY. PLANT CELL BIOTECHNOLOGY AND MALECULAR BIOLOGY, 22(35-36), 251-258. Retrieved from https://www.ikprress.org/index.php/PCBMB/article/view/6342.
5. Atabayeva Khalima Nazarovna1, Khayrullaev Sardor Shamsiddin o'g'li, and Usmonova Shohista Usmon qizi, "THE EFFECT OF SULPHUR ON THE BRANCHING OF SOYBEAN VARIETIES", STJITT, vol. 1, no. 2, pp. 4-6, Aug. 2020.
6. Iminov, A. A., Hatamov, S. R. O., & Khayrullaev, S. S. O. (2020). Effect Of Nitragine And Mineral Fertilizers On Soil Microbiological Properties In Planted As Secondary Legume Crops. The American Journal of Agriculture and Biomedical Engineering, 2(08), 169-172. https://doi.org/10.37547/tajabe/Volume02Issue08-22

7. Khayrullayev Sardor Shamsiddin o'g'li and Usmonova Shhista Usmon qizi, "THE EFFECT OF STIMULATORS ON THE LOCATION OF THE FIRST POD OF SOYBEAN VARIETIES", STJITT, vol. 1, no. 2, pp. 7-9, Aug. 2020.
8. Khayrullayev Sardor Shamsiddinugli. Effect Of Sulfur And Manganese Micro Nutrients On Grain Quality Of Soybean Varieties. ACADEMICIA: An International Multidisciplinary Research Journal https://saarj.com. Vol. 11, Issue 3, March 2021. DOI: 10.5958/2249-7137.2021.00582.6. P.63-68.
9. Umarova Nigora Sadriddinovna, Bo'riboyev Bekzod Yetmish ugli, Khayrullayev Sardor Shamsiddin ugli, Usmonova Shokhista Usmon kizi, & Turdaliyeva Shokhista Tulkinjon kizi. (2021). EFFECT OF MINERAL FERTILIZERS ON MORPHOPHYSOLOGICAL CHARACTERISTICS OF LOCAL AND FOREIGN SOYBEAN VARIETIES. European Journal of Agricultural and Rural Education, 2(4), 39-42. Retrieved from https://scholarzest.com/index.php/ejare/article/view/611.
10. Atabayeva, K. N., Umarova, N. S., Yakubov, S., & Khayrullaev, S. S. (2021, December). Influence of trace elements on soybean yield in grassland-swamp soils. In IOP Conference Series: Earth and Environmental Science (Vol. 939, No. 1, p. 012049). IOP Publishing.
11. Ugli Khayrullayev, S. S., & Kizi Usmonova, S. U. (2021). Effect Of Sulfur Micronutrient On Symbiotic Activity Of "Orzu" Variety Of Soybean. The American Journal of Agriculture and Biomedical Engineering, 3(05), 49–59. https://doi.org/10.37547/tajabe/Volume03Issue05-10
12. Usmonova Sh.U, Khayrullaev S.Sh, Shomuqimov N.N, & Gaynanova A.F. (2022). Effect Of Stimulators On Thousand Piece Grain Weight Of "Vilana" Cultivar Of Soybean. Central Asian Journal of Theoretical and Applied Science, 3(4), 153-157. Retrieved from https://cajotas.centralasianstudies.org/index.php/CAJOTAS/article/view/467
13. Khayrullaev S. S. Influence of sufur and manganese micronutrients on formation of leaf area of "Orzu" cultivar of soybean //ISJ Theoretical & Applied Science, 03 (107). – 2022. – C. 287-191.