JOURNAL OF APPLIED SCIENCE AND SOCIAL SCIENCE
eISSN 2229-3113 pISSN 2229-3205

Volume 14 Issue **10**, **October** 2024

Impact factor: 2019: 4.679 2020: 5.015 2021: 5.436, 2022: 5.242, 2023: 6.995, 2024 7.75

THE EFFECT OF THE APPLICATION OF BIOSTIMULATORS ON THE GERMINATION OF SAREPT MUSTARD (BRASSICA JUNCEAE CZERN.) VARIETIES IN FIELD CONDITIONS

Iminov Abduvali Abdumannobovich,

doctor of agricultural sciences, professor,

Tashkent State Agrarian University, Republic of Uzbekistan,

E-mail: iminov1977@mail.ru

Khamdamova Mairamkhan Rustam kizi,

second course master student,

Tashkent State Agrarian University, Republic of Uzbekistan

Abstract: The article presents data on the effect of pre-sowing stimulator treatment on the germination of Sarept mustard (Brassica junceae Czern.) seeds of "Nika" and "Yunona" varieties in field conditions. Fertilization of Sarepta mustard (Brassica junceae Czern.) seeds in field conditions was treated with Uzgumi stimulator 600 ml/ha before seeding, 200 ml/ha during rosette formation, 400 ml/ha during flower formation and the use of Fitovak stimulator at the norm of 200 ml/t before planting, 300 ml/ha during the period of rosette formation, and 400 ml/ha during the period of flower formation has a positive effect, it is provided 4.5-5.5 percent higher compared to the untreated control option.

Keywords: Sarepta mustard (Brassica junceae Czern.), seed, germination, Nika, Yunona, stimulator, Uzgumi, Fitovak, norm.

Introduction. In agriculture, stimulants are applied to plants for their high efficiency and effectiveness. Stimulants help plants shorten the growing season, change the condition of crops, increase resistance to adverse environmental conditions, protect plants from the negative effects of various diseases and pests, and have a positive effect on plant growth and development. secret shows. Also, the use of stimulants, in some cases, reduces the amount of mineral fertilizers, pesticides, and improves product quality [5].

The level of study of the problem. Stimulators increase the resistance of grain, oilseed, leguminous crops to stress conditions such as low or high temperature, excess water shortage, and drought [4, 6].

According to the results of many researchers, some natural and synthetic plant growth regulators and chemical substances control physiological processes in plants in an anomalous way by mitigating the effects of biotic and abiotic stress on various plants [7 , 8, 9, 12].

In recent years, in order to increase the productivity of agricultural crops and ensure adaptation to adverse environmental conditions, plants are treated with a new generation of biologically

JOURNAL OF APPLIED SCIENCE AND SOCIAL SCIENCE
eISSN 2229-3113 pISSN 2229-3205
Volume 14 Issue **10**, **October** 2024
Impact factor: 2019: 4.679 2020: 5.015 2021: 5.436, 2022: 5.242, 2023: 6.995, 2024 7.75

active substance Gmelin (processed products of flower petals). This drug is an environmentally safe growth agent and has many physiological activities [10].

Biostimulants are environmentally friendly, accelerate the germination of seedlings, increase the biological activity of plants, reduce the amount of chemical substances used in plant protection, and create the possibility of obtaining a stable high yield [13].

Methods and Materials. Our research was conducted in the fields of experimental scientific research and educational experimental farm of Tashkent State Agrarian University during 2023-2024.

The soil of the experimental farm is a typical gray soil that has been irrigated since ancient times. The 0-30 cm layer of the soil contains 0.836% humus, 0.085% nitrogen, 0.158% phosphorus. The 0-50 cm layer contains 0.720% humus, 0.074% nitrogen, 0.142% phosphorus, which indicates that the amount of nutrients used by plants during growth is very small. In the 0-30 cm layer of the soil of the experimental field, the mobile forms of nutrients N–NO3 -16.2 mg/kg, P2O5 -28.2 mg/kg and K2O -190.0 mg/kg; In the 0-50 cm layer, N–NO3 was 11.4 mg/kg, P2O5 was 20.1 mg/kg, and K2O was 170.0 mg/kg.

The field experiment included 14 options, and the mustard plant was planted in the spring period. The occupied area of each option was 54 m2, of which 27 m2 were taken into account. Experiments are conducted in four replicates, and the total area of the experiment is 3024 m2, arranged in four tiers.

Researches were conducted in field and laboratory conditions, in which field experiments placement, calculations and observations were carried out on the basis of methodological manuals "Methods of conducting field experiments", plant analyzes "Metodika gosudarstvennogo sortoispitaniya selskohozyaystvennix kultur" [1, 11].

In the experiment, sarept mustard (Brassica junceae Czern.) varieties "Nika" and "Yunona" were sown in the first ten days of March at the rate of 1.5 million viable seeds at a depth of 2-3 cm.

Results and Discussion. Mustard seeds belong to the group of plants that germinate quickly and grasses are formed quickly. The larger the seeds, the higher the germination energy. Mustard is grown in temperate climates [2, 3].

In our research, it was found that the application of biostimulants influenced the germination of seeds of "Nika" and "Yunona" varieties of mustard planted in spring.

It is worth noting that in our research mustard varieties "Nika" and "Yunona" were planted in the first ten days of March. Germination rate of seedlings started 5-7 days after sowing and observations were made every 2 days.

According to the results of the observation carried out in 2023, the highest rates of germination of mustard seeds in field conditions are 600 ml/t of Uzgumi stimulator per hectare in all varieties before planting the seeds, 200 ml during the period of budding. /ha, 400 ml/ha in the period of

JOURNAL OF APPLIED SCIENCE AND SOCIAL SCIENCE
eISSN 2229-3113 pISSN 2229-3205
Volume 14 Issue **10**, **October** 2024
Impact factor: 2019: 4.679 2020: 5.015 2021: 5.436, 2022: 5.242, 2023: 6.995, 2024 7.75

flower formation and 200 ml/ha to the seed before planting Fitovak stimulator, 300 ml/ha in the period of flower formation, and 400 ml/ha in the period of flower formation It was observed in the variants used in the fields, and in the 1st period (09.03) of the observation, it was found that 14.5-14.8% of seedlings sprouted in the Nika variety, and 14.8-14.9% in the Yunona variety.

500 ml/t of Uzgumi stimulator before planting the seeds, 200 ml/ha during the budding period, 400 ml/ha during the flowering period and 100 ml/t per seed before planting the Fitovak stimulator. In the options used at the rate of 300 ml/ha during leaf formation and 400 ml/ha during flower formation, the number of germinated seedlings was 14.1-14.2 percent in the Nika variety, and 14.3-14.3 percent in the Yunona variety. It was found that it was 14.4 percent.

700 ml/ha of Uzgumi stimulator before sowing seeds, 200 ml/ha during the period of budding, 400 ml/ha during flowering and 300 ml/ha of Fitovak stimulator before sowing, In the options used at the rate of 300 ml/ha during leaf formation and 400 ml/ha during flower formation, the number of germinated seedlings was 14.3-14.4 percent in the Nika variety, and 14.6-14.6 percent in the Yunona variety. It was found that it was 14.7 percent (Table 1).

In the 2nd period of observation (11.03), the highest indicators of the germination of seeds of mustard varieties in field conditions are 600 ml/t of Uzgumi stimulator before planting the seeds, 200 ml/ha during the period of leaf budding, 400 ml/ha during flower formation and 200 ml/t of Fitovak stimulator for seeds before planting, 300 ml/ha during leaf formation, and 400 ml/ha during flower formation variants were observed, and it was found that it was 31.2-31.9 percent in the Nika variety, and 31.4-32.3 percent in the Yunona variety.

500 ml/t of Uzgumi stimulator before planting the seeds, 200 ml/ha during the budding period, 400 ml/ha during the flowering period and 100 ml/t per seed before planting the Fitovak stimulator. The number of germinated seedlings was 30.3-30.8 percent in Nika variety and It was found that it was 30.6-31.1 percent.

700 ml/ha of Uzgumi stimulator before sowing seeds, 200 ml/ha during the period of budding, 400 ml/ha during flowering and 300 ml/ha of Fitovak stimulator before sowing, In the options used at the rate of 300 ml/ha during leaf formation and 400 ml/ha during flower formation, the number of germinated seedlings was 30.9-31.5 percent in the Nika variety, and 31.2-31.2 percent in the Yunona variety. It was found that it was 31.8 percent.

Fertilization of mustard seeds in field conditions in the 3rd period of monitoring (13.03) Uzugumi stimulator 600 ml/ha before seeding, 200 ml/ha during the period of budding, 400 ml/ha during the period of flower formation and Fitovak stimulator was observed in the variants that used 200 ml/t per seed before planting, 300 ml/ha during the period of leaf formation, and 400 ml/ha during the period of flower formation. It was found that it was 55.1 percent, and 54.8-55.5 percent in Yunona variety.

500 ml/t of Uzgumi stimulator before planting the seeds, 200 ml/ha during the budding period, 400 ml/ha during the flowering period and 100 ml/t per seed before planting the Fitovak stimulator. In the options used at the rate of 300 ml/ha during the leaf formation period and 400 ml/ha during the flower formation period, the number of germinated seedlings was 53.2-53.7

JOURNAL OF APPLIED SCIENCE AND SOCIAL SCIENCE
eISSN 2229-3113 pISSN 2229-3205
Volume 14 Issue **10**, **October** 2024
Impact factor: 2019: 4.679 2020: 5.015 2021: 5.436, 2022: 5.242, 2023: 6.995, 2024 7.75

percent in the Nika variety, and 53.6-53.6 percent in the Yunona variety. It was found that it was 53.9 percent.

700 ml/ha of Uzgumi stimulator before sowing seeds, 200 ml/ha during the period of budding, 400 ml/ha during flowering and 300 ml/ha of Fitovak stimulator before sowing, The number of germinated seedlings was 54.0-54.6 percent in the Nika variety, and it was found that it was 54.2-54.9 percent.

By the 4th observation period (15.03), the germination of mustard seeds in field conditions is 600 ml/ha of the seed stimulator before sowing, 200 ml/ha during the budding period, 400 ml/ha during the flowering period. ha and before planting Fitovak stimulator at the rate of 200 ml/t per seed, 300 ml/ha during the period of leaf formation, and 400 ml/ha during the period of flower formation, in Nika variety, it was found that it was 69.8-70.9 percent, and 70.1-71.2 percent in Yunona variety.

500 ml/t of Uzgumi stimulator before planting the seeds, 200 ml/ha during the budding period, 400 ml/ha during the flowering period and 100 ml/t per seed before planting the Fitovak stimulator. The number of germinated seedlings in the Nika variety was 67.4-68.2 percent, and in the Yunona variety, it was found that it was 67.6-68.6 percent.

Table 1

Effect of biostimulators application on seed germination of Sarept mustard (Brassicajunceae Czern.) varieties in field conditions, % (2023)

No. options	Varieties of Sarepta mustard (Brassicajunceae Czern.).	Biostimulator name	seed treatment norm	rosette formation period	the flowering period	Observation dates				
						09.03.	11.03.	13.03.	15.03.	17.03.
1	Nika	Control	Treated with water			13.8	28.2	51.3	65.2	76.8
2		Uzgumi	500 ml/t	200 ml/ha	400 ml/ha	14.1	30.3	53.2	67.4	79.3
3		Uzgumi	600 ml/t	200 ml/ha	400 ml/ha	14.5	31.2	54.5	69.8	81.4

JOURNAL OF APPLIED SCIENCE AND SOCIAL SCIENCE
eISSN 2229-3113 pISSN 2229-3205
Volume 14 Issue **10**, **October** 2024
Impact factor: 2019: 4.679 2020: 5.015 2021: 5.436, 2022: 5.242, 2023: 6.995, 2024 7.75

4		Uzgumi	700 ml/t	200 ml/ha	400 ml/ha	14.3	30.9	54.0	68.9	80.1
5		Fitovak	100 ml/t	300 ml/ha	400 ml/ha	14.2	30.8	53.7	68.2	81.4
6		Fitovak	200 ml/t	300 ml/ha	400 ml/ha	14.8	31.9	55.1	70.9	82.5
7		Fitovak	300 ml/t	300 ml/ha	400 ml/ha	14.4	31.5	54.6	70.1	81.6
8	Yunona	Control	Treated with water			13.9	28.4	51.6	65.6	77.3
9		Uzgumi	500 ml/t	200 ml/ha	400 ml/ha	14.3	30.6	53.6	67.6	79.6
10		Uzgumi	600 ml/t	200 ml/ha	400 ml/ha	14.8	31.4	54.8	70.1	81.8
11		Uzgumi	700 ml/t	200 ml/ha	400 ml/ha	14.6	31.2	54.2	69.5	80.4
12		Fitovak	100 ml/t	300 ml/ha	400 ml/ha	14.4	31.1	53.9	68.6	81.9
13		Fitovak	200 ml/t	300 ml/ha	400 ml/ha	14.9	32.3	55.5	71.2	82.8
14		Fitovak	300 ml/t	300 ml/ha	400 ml/ha	14.7	31.8	54.9	70.4	82.3

700 ml/ha of Uzgumi stimulator before sowing seeds, 200 ml/ha during the period of budding, 400 ml/ha during flowering and 300 ml/ha of Fitovak stimulator before sowing, The number of germinated seedlings was 68.9-70.1 percent in the Nika variety, and It was found that it was 69.5-70.4 percent.

Fertilization of mustard seeds in field conditions in the 5th period of monitoring (17.03) Uzugumi stimulator 600 ml/ha before seeding, 200 ml/ha during budding, 400 ml/ha during flower formation and Fitovak stimulator was applied at the rate of 200 ml/t per seed before planting, 300 ml/ha during the period of leaf formation, and 400 ml/ha during the period of

JOURNAL OF APPLIED SCIENCE AND SOCIAL SCIENCE
eISSN 2229-3113 pISSN 2229-3205
Volume 14 Issue **10**, **October** 2024
Impact factor: 2019: 4.679 2020: 5.015 2021: 5.436, 2022: 5.242, 2023: 6.995, 2024 7.75

flower formation in Nika variety 81.4-82, it was found that it was 5 percent, and it was 81.8-82.8 percent in Yunona variety.

500 ml/t of Uzgumi stimulator before planting the seeds, 200 ml/ha during the budding period, 400 ml/ha during the flowering period and 100 ml/t per seed before planting the Fitovak stimulator. The number of germinated seedlings was 79.3-81.4 percent in the Nika variety, and It was found that it was 79.6-81.9 percent.

700 ml/ha of Uzgumi stimulator before sowing seeds, 200 ml/ha during the period of budding, 400 ml/ha during flowering and 300 ml/ha of Fitovak stimulator before sowing, The number of germinated seedlings was 80.1-81.6 percent in the Nika variety and It was found that it was 80.4-82.3 percent. In the 2024 year of the experiment, the above laws were preserved.

Conclusion. Based on the information given above, it can be concluded that during the years of our research, treatment with stimulators before sowing of seeds of mustard varieties in field conditions, application of stimulators during the period of formation of leaves and inflorescences of the plant was found to be affected. Fertilization of mustard seeds under field conditions was treated with Uzgumi stimulator 600 ml/ha before seeding, 200 ml/ha during the budding period, 400 ml/ha during flower formation and Fitovak stimulator before sowing. Application at the rate of 200 ml/t, 300 ml/ha during the period of leaf formation, and 400 ml/ha during the period of flower formation has a positive effect, compared to the control option without stimulants applied 4.5-5.5 percent.

References

1. Field methods of conducting experiments - Tashkent. 2007. 180 p .
2. Iminov A.A., Ochilova U.D., Yusupov U.M. “The effect of sowing rates on the varieties of green and dry mass collections of carept mustard (Brassica Junceae Czern)” International Scientific Journal Theoretical Applied Science Published: 30.09.2021, P.737-740 http://T-Science.org.

3. Iminov A.A., Ochilova U.D., Yusupov U.M., M.A.Karimova “Effects of sowing norms on germination in field condition of carept mustrad (Brassica Junceae Czern) variety seeds” International Scientific Journal Theoretical Applied Science Published: 30.09.2021, P.744-746 http://T-Science.org.

4.Valkov V.F., Shtompel Yu.A., Tyulpanov V.N. Pochvovedenie (Pochvi Severnogo Kavkaza). Krasnodar: Izd-vo «Sovetskaya Kuban», 2002, -S. 722.

5. Vasin A.V., Vasina N.V., Trofimova Ye.O. Effektivnost primeneniya stimulyatorov rosta pri vozdelivanii zernofurajnix kormosmesey / Vklad molodix uchenix v agrarnuyu nauku: mat. Mejdunar. nauchno-praktich. konf. Kinel: RIS SGSXA, 2015. -S. 96-103.

6. Vilson L.A. Produkti pitaniya iz soi / Rukovodstvo po pererabotke i ispolzovaniyu soi // Per. s angl. / Pod red. V.V Yupochkina i M.l. Domoroshenkovoy. M.: Kolos, 1998. - 48 s.

JOURNAL OF APPLIED SCIENCE AND SOCIAL SCIENCE
eISSN 2229-3113 pISSN 2229-3205
Volume 14 Issue **10**, **October** 2024
Impact factor: 2019: 4.679 2020: 5.015 2021: 5.436, 2022: 5.242, 2023: 6.995, 2024 7.75

7. Farooq, M., Aziz, T., Wahid, A., Lee, D.-J., Siddique, K.H.M. Chilling tolerance in maize: Agronomic and physiological approaches. Crop Pasture Sci. 2009, 60(6). -P. 501–516.

8. Foidl, N., Makkar, H., Becker, K. The potential of Moringa oleifera for agricultural and industrial uses. In What Development Potential for Moringa Products; The Miracle Tree: The Multiple Attributes of Moringa: Danbury, CT, USA, 2001. -P. 45–76.

9. Kamran, M.; Cheema, Z.A.; Farooq, M. Influence of foliage applied allelopathic water extracts on the grain yield, quality and economic returns of hybrid maize. Int. J. Agric. Biol. 2016, 18. -P. 577–583.

10. Kuznesova V.A., Ostronkov V.S., Mixaylova M.P., Ivachenko L.E. Vliyanie digidrokversetina na aktivnost peroksidaz, kolichestvo izoflavonov, biometricheskie pokazateli i urojaynost soi //Perspektivi ispolzovaniya novix form udobreniy, sredstv zashiti i regulyatorov rosta rasteniy v agrotexnologiyax, selskoxozyaystvennix kultur: sb. materialov 8-oy konferensii «Anapa-2014». M.: VNII Agroximii, 2014. -S.163-165.

11. Metodika gosudarstvennogo sortoispытaniya selskoxozyaystvennых kultur. Zernovые, zernobobovые, maslichnые i kormovые kulturы. – M.: Kolos, 1971. – 240 s.

12. Yasmeen, A.; Basra, S.; Farooq, M.; Ur Rehman, H.; Hussain, N. Exogenous application of moringa leaf extract modulates the antioxidant enzyme system to improve wheat performance under saline conditions. Plant Growth Regul. 2013, 69. -P. 225–233.

13. Radkowski, A.; Radkowska, I. Effect of foliar application of growth biostimulant on quality and nutritivevalue of meadow sward. Ecol. Chem. Eng. A 2013, 20. -P. 1205–1211.