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THE EFFECT OF BIOSTIMULATOR APPLICATION RATES ON THE FORMATION OF YIELD ELEMENTS IN SESAME VARIETIES

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Abstract: In this article, it was established that the application of the biostimulant Tandem 10% at a rate of 0.4 l/t+0.6+0.8 l/ha to the Qora Shahzoda sesame variety had a positive effect on the number of pods (81.4 pieces), the number of seeds in it (6012.9 pieces), the number of seeds formed in one pod, and the above indicators were higher in the variant with the application of the Immunoaktiv biostimulant in Sadaf variety at a rate of 30 ml/t+35+40 ml/ha.

Keywords: sesame, cultivar, biostimulant, yield elements, pod, seed.

INTRODUCTION. Today, sesame is planted on more than 11.0 million hectares per year in 69 countries of the world, with a total gross yield of 8.2 million tons. The increase in the world population has also led to an increase in the need for oil, "over the past 10 years, sesame areas have expanded by 17.6 percent, compared to previous years by 1.1 percent." It can be seen that the expansion of sesame areas remains significantly lower than the increase in the world's population. This, in turn, makes the creation of high-yielding and high-yielding varieties of sesame and the development and implementation of agrotechnology for producing high-quality seed from them one of the most urgent issues of today.

Experiments were conducted in Egypt to study the effect of nitrogen fertilizers and plant density on sesame yield and yield quality in sandy soils of Ismailia. According to the results of the experiment, it was found that changing the plant density to 10,15,20 cm had a significant positive effect on plant height, first crop branch height, and yield [6].

G.S.Posypanov et al., having studied soybean, sesame, and flax plants in Russian conditions, wrote that the amount of oil obtained per hectare of land is higher in sesame

plants. Since sesame is a plant that requires heat and light, it is recommended to grow it in the southern regions [2].

V.N.Dobrynchenko et al. wrote that sesame is a bad plant for itself, and that a field planted in one year can be replanted after at least 4 years. In irrigated fields, legumes, chickpeas, watermelons, and melons were found to be good predecessors for sesame under dry conditions [1].

It was found that sesame oil content was positively correlated with pod area, pod length, and seed yield, and was not significantly correlated with seeds per pod and 1000-seed weight, but that the yield was higher when harvested at 90, 100, and 110 days after sowing than when harvested at 100 days. It can be concluded that harvesting sesame seeds before 90-100% ripening and before the pods open at 70-80% ripening gave better results [5].

M.N.AlamSarkar, M.Salim and N.Islam sowed sesame on 26 February, 10 March and 22 March and harvested the crop 30, 35, 40 and 45 days after flowering. According to the results, the variant planted on 26 February had the highest biomass (kg/ha), plant height, number of lateral branches per plant, number of panicles per plant and number of seeds per panicle. In the variant planted on 10 March, these indicators: plant height, number of lateral branches and number of capsules were almost the same. In the variant planted on 22 March, lower indicators were recorded. The highest yield was observed in the variant planted on 26 February [4].

According to I.Yu.Romanova, when sesame is sown by hand, seed consumption is high and agrotechnical measures cannot be carried out by mechanization. In fact, when row spacing is worked out, 2-3 times cultivation and fertilizer application are carried out, the yield is 6-8 times higher than when sowing by hand, and applying 60 kg of nitrogen and 40 kg of phosphorus fertilizer per hectare increases sesame yield [3].

Materials and Methods. The scientific research work was carried out in 2023 at the experimental scientific research and educational experimental farm of Tashkent State Agrarian University.

The soil of the experimental farm is a typical non-saline gray soil that has been irrigated since ancient times. This soil contains 0.972-1.187% humus, about 0.098-0.112% nitrogen, about 0.169-0.181% phosphorus and about 1.21-1.33% potassium. The mobile forms of nutrient elements of the experimental field are N–NO3 13.7-16.1 mg/kg, P2O5 38.9-45.4 mg/kg and K2O 358.3-374.5 mg/kg.

In the field experiment, sesame varieties Qora Shahzoda and Sadaf were planted in 16 variants, four replications, totaling 20 hectares. Before sowing sesame, Fitovak

20% (standard) immunostimulant was treated at a rate of 300 ml/t and sprayed at a rate of 300 and 400 ml/ha during the growing season. Tandem 10% biostimulant was treated at a rate of 0.3, 0.4, 0.5 l/t and sprayed at a rate of 0.4+0.6, 0.6+0.8 and 0.8+1.0 l/ha during the growing season. Immunoaktiv biostimulant was treated at a rate of 25, 30, 35 ml/t and sprayed at a rate of 30+40, 35+40 and 40+40 l/ha during the growing season.

Based on the goals and objectives of the experiments, phenological observations and calculations were carried out on the Qora Shaxzoda and the sesame variety.

RESULTS AND DISCUSSION. In the control version of the Qora Shaxzoda variety, the pods formed on one plant were 73.9 pieces, and their weight was determined to be 23.7 grams. In the case where Fitovak 10% immunostimulant was used, the number of cysts increased to 3.8 and the weight increased to 3.6 grams.

Table 1

Formation of yield elements in sesame varieties, 2023

No	Variety name	Name of plant growth regulators	Rates of biostimulants, ml, l/t/ha	In one plant			
				Number of pods, pcs	Weight of pods, g.	Number of seeds in pods, pcs	Weight of seeds, g.
1	Qora Shaxzoda	Control	-	73.9	23.7	4704.3	13.31
2		Fitovak 20% (etalon)	0.3 l/t+ 0.3+0.4 l/ga	77.7	27.3	5292.4	15.29
3		Tandem 10%	0.3 l/t+ 0.4+0.6 l/ga	79.8	32.6	5615.1	16.51
4		Tandem 10%	0.4 l/t+ 0.6+0.8 l/ga	81.4	42.4	6012.9	18.10
5		Tandem 10%	0.5 l/t+ 0.8+1.0 l/ga	80.5	38.0	5751.1	17.02
6		Immunoaktiv	25 ml/t+ 30+40 ml/ga	77.8	30.5	5331.5	15.46

7		Immunoaktiv	30 ml/t+ 35+40 ml/ga	80.9	37.2	5832.4	17.15
8		Immunoaktiv	35 ml/t+ 40+40 ml/ga	79.9	33.3	5599.3	16.35
9	Sadaf	Control	-	67.2	22.8	4598.2	12.28
10		Fitovak 20% (etalon)	0.3 l/t+ 0.3+0.4 l/ga	70.0	26.7	5194.4	14.13
11		Tandem 10%	0.3 l/t+ 0.4+0.6 l/ga	71.9	30.5	5696.3	15.72
12		Tandem 10%	0.4 l/t+ 0.6+0.8 l/ga	74.1	39.4	6190.1	17.39
13		Tandem 10%	0.5 l/t+ 0.8+1.0 l/ga	72.4	35.7	5867.7	16.31
14		Immunoaktiv	25 ml/t+ 30+40 ml/ga	72.2	32.1	5843.6	16.19
15		Immunoaktiv	30 ml/t+ 35+40 ml/ga	74.3	42.7	6223.9	17.80
16		Immunoaktiv	35 ml/t+ 40+40 ml/ga	73.1	38.7	6056.1	17.20

In the variant where Tandem 10% biostimulant was used at the rate of 0.4l/t+0.6+0.8l/ha, the number of pods was 81.4 pieces and their weight was 42.4 grams. compared to the variants, the number of bags is 1.6-0.9 less and the weight is 9.8-4.4 grams lighter. In this variant, the number of cysts is 3.7 more and their weight is 15.1 grams more than the standard variant, while in the control variant, the number of cysts is 7.5 less and their weight is 18.7 grams. We explain this as follows: The Tandem 10% biostimulant helped the sesame roots absorb nutrients, and the humic and fulvic components in it improved the general condition of the plant, positively affected the formation and development of generative organs, and the Qora Shaxzoda variety fully absorbed this biostimulant.

In the variant where the Immunoaktiv biostimulant was applied to the Qora

Shaxzoda variety at a rate of 30 ml/t + 35 + 40 ml/ha, 80.9 pods were produced, weighing 37.2 grams. Compared to the variants with increased and reduced biostimulant rates, the number of pods was 1.0-3.1 fewer and their weight was 3.9-6.7 grams lighter.

In the control version of the Sadaf variety, the number of cysts was 67.2 pieces and their weight was 22.8 grams. When Fitovak 20% immunostimulator was used at the rate of 0.3 l/t + 0.3+0.4 l/ha, the number of cysts was 70.0 pieces and their weight was 26.7 grams. It weighed 3.9 grams.

Tandem 10% biostimulant was used at the rate of 0.4 l/t+0.6+0.8 l/ha and the number of pods was 74.1, their weight was 39.4 grams. It was found to be light at 3.3 grams.

After extracting the seeds from the pods formed in one plant, they were counted and weighed on an electronic scale. In the variant where Tandem 10% biostimulant was used at the rate of 0.4 l/t+0.6+0.8 l/ha, 6190.1 seeds were formed in one plant and their weight was 17.39 grams. If it was 16.31 grams, reducing the rate of biostimulant to the rate of 0.3 l/t+0.4+0.6 l/ha, the number of seeds was 493.8 less than the acceptable rate, and the weight was also 1.67 grams lighter. A high result was obtained in the variant of Immunoaktiv biostimulant of 30 ml/t+35+40 ml/ha, the number of seeds was 6223.9, the weight was 17.80 grams.

The number of seeds in one plant is 720.5 more than the standard version of the Qora Shaxzoda variety when the optimal rate of Tandem 10% biostimulant is applied to 0.4 l/t+0.6+0.8 l/ha, 1308.6 more than the control option and the optimal rate of Immunoaktiv biostimulator is applied to the option of 30 ml/t+35+40 ml/ha It was determined that 180.5 units will be produced more.

In the control version of the Sadaf variety, the number of seeds per plant was 4598.2, weighing 12.28 grams, and in the version using Fitovak 20% immunostimulant at the recommended rate, the number of seeds increased to 5194.4 and weighed 14.13 grams.

In the variant where Tandem 10% biostimulant was applied to Sadaf variety at the rate of 0.4 l/t+0.6+0.8 l/ha, 6190.1 seeds were formed in one plant and their weight was 17.39 grams. The Immunoaktiv biostimulator had a positive effect on this variety, and in the variant that used the biostimulator rate of 30 ml/t+35+40 ml/, the number of seeds was 6223.9 and the weight was 17.8 grams. Compared to the acceptable rate of the Tandem 10% biostimulator, the number of seeds was 33.8 more and the weight was 0.41 grams. it happened.

The number of seeds per plant increased by 1029.5 seeds per plant compared to the reference version of the Sadaf variety, and 33.8 seeds more than the optimal rate of

Tandem 10% biostimulant 0.4 l/t+0.6+0.8 l/ha. was determined to be. We note that the Immunoaktiv biostimulant Sadaf strengthened the root system, helped improve the absorption of water and nutrients, and helped make the variety stronger and more active by increasing its biological adaptability to stress.

CONCLUSION. It can be concluded from the above results: the use of Tandem 10% biostimulant at the rate of 0.4 l/t+0.6+0.8 l/ha to the Qora Shaxzoda variety has a positive effect on the number of pods (81.4 pieces), the number of seeds in it (6012.9 pieces), the number of seeds formed in one pod, and the above indicators make the Immunoaktiv biostimulant of the Sadaf variety 30 ml/t+35+40 ml/ha was found to be higher in the standard option.

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