Effect of Biostimulator Norms on the Growth and Development of Sunflowers

Yuldasheva Zulfiya Kamalovna
Associate Professor of department of Plant Science and Oilseed Crops, Tashkent State Agrarian University

Karabaeva Dilfuza Juraevna
Teacher of the Department of Botany, Termez State University

ABSTRACT

In this article, it was studied the effect of biostimulants "UZGUMI", "Fitovak", "Bioduks" and MERS on the growth and development of oilseed sunflower variety "Dilbar" in the conditions of typical irrigated sierozem soils of Tashkent region. When using MERS micronutrients, it was found that the survival of plants at the time of harvest is high, and the number of seeds in one basket is also high. The application of MERS micronutrient 4.0 ml / t, Fitovak biostimulator 400 ml / t has been scientifically proven to form a complete and abundant number of seeds in the basket.

KEYWORDS: *Oily sunflower, variety, seed, options, biostimulator, micronutrient, spending norm, yield, basket, praxis period.*

INTRODUCTION

In our country, special attention is paid to the consistent development of the chemical industry, the expansion of production of various chemical products for agriculture. Our scientists are creating new types of fertilizers produced on the basis of local raw materials, which accelerate the growth of plants, increase their productivity, resistance to various diseases and frost.

The degree to which the problem has been studied. One of the most advanced technologies of sunflower cultivation is the use of mineral fertilizers, which is one of the main factors in increasing yields. It is important to feed the sunflower in a timely manner according to its requirements, so if great attention is paid to determining the amount and duration of mineral fertilizers applied to it, it is possible to get a quality and high yield [2].

Substances that regulate plant growth cannot replace mineral fertilizers, but replenish them in the plant's feeding system, increasing soil and fertilizer utilization rates. UZGUMI biofertilizer is mainly applied before sowing the seeds and sown when the sunflower produces 3-5 leaves. At the same time, the yield increases by 0.22-0.31 t / ha and the oil content by 0.3-0.5%. [7]

In order to achieve high yields in sunflower cultivation and to obtain a large amount of income and profit from it, it is necessary to use the latest scientific achievements and the use of innovative technologies of our advanced experimental farms [1].

Increases the effectiveness of pesticides applied to seeds and during the growing season under the influence of plant regulators. Some growth regulators reduce the susceptibility of sunflower to white and gray rot, while sugar beet - reduces the underlying disease by 30-50% and more [3,8].

Employees of the Ukrainian Agro-resource Institute (Ponomarenko S.P, 2003] emphasize that

growth regulators for agricultural producers are no less valuable than mineral fertilizers and plant protection products. A new direction in improving sunflower production technology is to develop a system of effective use of modern plant growth regulators that control individual stages of plant growth and development to activate their immunity and consequently separate stages of production to increase the yield and quality of sunflower seeds. (Sonin K.E., 2010; Petrichenko V.N., 2010). Therefore, the development of technology for the use of biostimulants in sunflower - regulating growth and enhancing immunity is of paramount importance. [4,5,6].

METHODS AND MATERIALS

The object and methodology of the experiment. Field experiments were conducted in the conditions of typical irrigated sierozem soils of the experimental field of SUE "Center for Innovative Developments and Consulting in Agriculture" of Tashkent State Agrarian University. The methods of "Field experiments" (T. UzPITI 2007), "Methods of field experiment" (B.Dospekhov, 1985) were used in the research.

In the experiment, the local Dilbar variety of oily sunflower was planted in 2020 on April 14, 2021. The number of repetitions is 3, the number of options is 11, systematically placed, the planted area is 0.20 ha, the number of counted plants is 20. The area to be taken into account is 56 m^2. In the experiment, the biostimulator "UZGUMI" (application rate 0.6 l / t) was used as a standard for seeds of Dilbar variety of sunflower, and "Bioduks" (1,0,2,0,3,0 ml / t), "Fitovak" (200, 300, 400 ml / t) biostimulants and micronutrient "MERS" (2.0, 3.0, 4.0 l / t) were treated and planted, then, when 4-6 leaves were formed, the sunflowerwas treated with "UZGUMI" (application rate 0.4 l / ha), “Bioduks” (1,0,2,0,2,0 ml / ha),“Fitovak” (300 ml / ha) and “MERS” (5,0 l / ha).

The soil was plowed to a depth of 30 cm in autumn, before plowing mineral fertilizers were applied in the amount of $P_{100}K_{80}$ and nitrogen and phosphorus $P_{50}N_{50}$ kg per hectare along with planting, in the basket formation phase N_{75} kg and in the flowering phase N_{75} kg.

RESULTS AND THEIR DISCUSSION

According to the results of the study, when seeds of "Dilbar" variety of sunflower sown experimentally, it was observed that the effect of biostimulants on germination was not significantly greater. 50,000 seeds were sown per hectare.

Table 1: Influence of norm of biostimulants on growth and development of sunflower

Options	Seed processing rate ml, l/t	When 4-6 leaves formed, plant treatment, ml, l/ha	Number of sprouted plants, thousand pieces / ha	The number of plants preserved at the end of the growing season, thousand / ha	Stem height, cm	Number of leaves in one plant, pieces	Number of seeds in one basket, pieces	Praxis period, day
Control (st)								
1	-	-	49200	47108	196.6	20,1	1182.2	128
UZGUMI (standard)								
2	0,6 l/t	0,4 l/ha	49600	47842	208.5	23,1	1265,8	126
Fitovak								
3	200 ml/t	300 ml/ha	49600	48422	220.0	23,3	1300,5	126
4	300 ml/t	300 ml/ha	49680	48442	225.0	23,6	1324,7	120
5	400 ml/t	300 ml/ha	49800	48500	228.0	23,9	1520,0	120
Bioduks								
6	1,0 ml/t	1,0 ml/ha	49550	49000	220,9	22,0	1297,1	124
7	2,0 ml/t	2,0 ml/ha	49634	49050	226,5	22,5	1313,1	120
8	3,0 ml/t	2,0 ml/ha	49745	49100	229,8	22,9	1217.3	124

microfertilizer MERS								
9	2,0 ml/t	0 ,5l/ha	49680	49200	223,9	22,3	1319,4	126
10	3,0 ml/t	0,5 l/ha	49830	49350	228,5	23,3	1390,1	120
11	4,0 ml/t	0,5 l/ha	49900	49560	228,9	23,7	1486,0	126

While 98.4% of seed germination was observed in the control variant, 99.2% seed germination was observed in the variant using the UZGUMI (standard) biostimulator, or 0.8% higher than in the control variant. In the variant treated with Fitovak biostimulator in the amount of 200 ml / t, germination of 99.2% of seeds was observed, in the variant applied with 300 ml / t, the germination of seeds increased to 99.4%. 99.6% of the seeds germinated in the variant using 400 ml / t, increasing the rate of spending of biostimulants.

Seed germination of 99.1% of seeds was observed in the treated variant of Bioduks biostimulator in the amount of 1.0 ml / t, while in the variant applied with 2.0 ml / t the germination of seeds increased to 99.4%. 99.5% of seeds germinated in the variant using 3.0 ml / t, increasing the rate of spending of biostimulants.

In the variant treated with MERS micronutrient in the amount of 2.0 ml / t, germination of 99.4% of seeds was observed, in the variant applied with 3.0 ml / t, the germination of seeds increased to 99.7%. 99.8% of seeds germinated in the variant using 4.0 ml / t, increasing the rate of biostimulator spending.

Experimental results show that in the variants using biostimulants, the germination of seeds was higher than in the control, compared to the control, the UZGUMI standard was increased by 400 units or 0.8% in the variant used. In the variants using Fitovak, Bioduks biostimulator and MERS micronutrient, it was observed that the germination of seeds was high in the variant with high application rate. Fitovak 400 ml / t for 600 units or 1.2% compared to control, Bioduks for 2.0 ml / t for 545 units or 1.1%, MERS 4.0 ml / t for 700 units, or an increase of 1.4% in the number of grasses.

According to the data obtained during the harvest period, the number of plant bushes decreased. In the control variant, 2092 plants, or 4.3%, were perished. In variants using biostimulants, plant perishing was found to be reduced relative to control. In the variant in which UZGUMI (standard) was used, 1758 plants or 3.5% of plants perished during the harvest period and 334 plants or 0.8% more plants survived than the control.

The number of plants preserved when the Fitovak biostimulator was applied at 400 ml / t was found to be 48500, with 58.0-78.0 more plants preserved than the low-consumption options.

The number of plants preserved when using the Bioduks biostimulator 3.0 ml / t was found to be 49100, with 50.0-100.0 more plants preserved than the low-consumption options.

The number of plants preserved when MERS micronutrient was applied at 4.0 ml / t was 48560, and 210.0-360.0 more plants were found to be preserved compared to the low-consumption options.

This means that when biostimulants are applied to sunflowers, the survival of the plants at the end of the growing season is greater.

Plant height was found to be lower (196.6 cm) in the control variety than in the variants using biostimulants. In the variant using UZGUMI (standard), the plant height was 11.9 cm higher than the control.

In the variants of biostimulants used in small quantities (200, 1.0 and 2.0 ml / t), the plant height was low, in the variants with increased dose (400, 3.0 and 4.0 ml / t), it was 228.0, 229.8 and 228.5 cm.

When using the Bioduks biostimulator 3.0 ml / t, it was found that the plant height was higher than

all the experimental options.

The number of leaves, as well as the height of the plant, was also found to be lower (20.1) compared to the variants using biostimulants in the control variety. In the variant in which UZGUMI (standard) was used, the average number of leaves on the plant was 23.1, which was 3.0 more than in the control.

The number of leaves on the plant was low in the variants, which biostimulators used in small quantities (200, 1.0 and 2.0 ml / t), while the number of leaves in the variants with increased application rate increased (400, 3.0 and 4.0 ml / t) to 23.9, 22.9 and 23.7 cm.

When using the Fitovak biostimulator 400 ml / t, it was found that of all the options in the experiment, the plant had more leaves.

In terms of the number of seeds in one basket, the formation of the smallest seeds in the control variant was determined (1182.2 pieces). When using the UZGUMI (standard) biostimulator, the number of seeds in one basket increased to 1265.8, which is 83.6 more than in the control.

In the variants using low amounts of biostimulants (200, 1.0 and 2.0 ml / t), the number of seeds in one basket was low (1319.4, 1297.1, 1300.5), while in the variants with higher application rates the number of seeds increased (400, 2, 0 and 4.0 ml / t) were 1520.0, 1313.1 and 1486.0 units, respectively.

When using MERS micronutrient and Fitovak biostimulator, it was found that the number of seeds in one basket was higher than other biostimulants used in the experiment.

The average duration of growth of Dilbar variety of sunflower was 120-128 days. In the control variant, the crop was ripened in 128 days and 2 days before the use of UZGUMI (standard) biostimulator. The Fitovak biostimulator was delayed by 120 days at 300 and 400 ml / t and at 126 days at 200 ml / t. Bioduks bisotimulator matured in 124 days at 1.0 and 3.0 ml / t, and matured in 120 days at 2.0 l / t. The same pattern was repeated when using Bioduks biostimulator in the application of MERS microfertilizer, which was 126 and 120 days.

CONCLUSION

The use of biostimulants has a positive effect on the growth and development of oily sunflower. It has been scientifically proven that when MERS fertilizer is applied, the survival of the plants at the time of harvest is high, and the number of seeds in one basket is also high. Application of MERS micronutrient 4.0 ml / t, Fitovak biostimulator 400 ml / t allowed to obtain a positive result.

REFERENCES

1. Varshavskaya V.B. Stimulation of seed germination of sugar beet by growth regulators and other physiologically active substances / Physiology of seeds: formation, germination, applied aspects. - Dushanbe, 1990. - P. 311–314
2. Nurmatov Sh.N., Azizov T.B, Tursunov L., Anarboev I.U, etc. // Recommendations on agrotechnology of high yields of oilseeds. Tashkent. 2012. Turo-Iqbol Publishing House - pp. 56–57
3. Melnikov N.N. Pesticides and plant growth regulators / M .: Chemistry, 1995. - 576 p.
4. Petrichenko V.N. The influence of plant growth regulators and microelements on sunflower productivity and seed oil content / Agrar. Russia. - 2010. - No. 4. - P. 24–26.
5. Ponomarenko S.P. Plant growth regulators // - K .: 2003. - 319 p.
6. Sonin K.E. Influence of the preparation furolan on the formation of the quality of seeds of three

varieties of sunflower // Food technology. - 2010. - No. 1. - P. 13-15.

7. Khalikov BM, Abdualimov Sh and others. Recommendations to farmers on the use of biofertilizer "UZGUMI". Tashkent, 2013, 4 p.
8. Chukhlantsev A.Y. Elements of an integrated system for protecting sunflower plants from diseases in the Tambov region [The effectiveness of pre-sowing treatment of seeds with tank mixtures of dressing agents, biological products and growth regulators in the fight against white rot and fusarium] // Oil crops. - VNIIMK. - 2010. - Issue. 2. - P. 90–93.