Western European Journal of Modern Experiments and Scientific Methods
Volume 1, Issue 3, November, 2023
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

THE EFFECT OF THE APPLICATION OF BIOSTIMULATORS ON PLANT GROWTH AND LEAF FORMATION IN THE INTERCROPPING OF MAIZE AND SOYBEAN CROPS

Iminov Abduvali Abdumannobovich - professor of the Department of Plant Science and Oil Crops, Tashkent State Agrarian University,
Khajiev Tukhtaboy Maratjanovich - Masters' student of Department of Plant Science and Oil Crops, Tashkent State Agrarian University

Abstract: This article presents information on the effect of biostimulants on the growth of plants and the formation of leaves in interplanting of maize "Esdalik-80" and soybean "Uzbek-2" varieties. lib, the highest values were observed in the options where Tandem biostimulant was applied at the rate of 400 ml/t before planting seeds, 300 ml/ha during the period of 3-4 leaf formation, and 500 ml/ha during the period of 8-10 leaf formation. , the height of the plant is 19.1/7.3 cm, the number of leaves in one plant is 5.2/5.6 pieces, compared to the control option by 3.0/2.5 cm, the number of leaves and it was found that it was more than 2.1/2.8 units. It was found that the number of leaves was higher by 0.5/1.0 cm, and by 0.6/1.3, compared to the variant in which Fitovak biostimulator was used

Keywords: Maize, soybean, biostimulant**,** standard, plant height, stem, leaf, tandem, phytovac.

Introduction

Today, it is very important to choose the right types of crops when planting forage crops. All the time one different plant when grown the most high fruit get for plant growth and development for all necessary of circumstances the most comfortable status to the body to bring must will be
If one how many crops together adding when planted removable harvest for one so much better the ground created will be Because, one kind of plant for uncomfortable was conditions, second get up plant for comfortable to be as a result one of the other place cover will receive harvest to get chance is created [1].
Nikashevarov and of others information according to, adding planted *a crops biological diversity very important have and adding planted crops in cultivation varieties right choose big important have grain on and legumes plants together from planting the goal green mass to harvest depends without, food of substances quality high to be provides* [3].
L.N.Shubina says that a *maize with a soybean of blue mass or for silage when cultivated of crops morning varieties is used, in which soybean grain milk to ripen phase Beginning maize of grain milky-waxy ripening from the phase starting from to reap recommendation are, If you are a legume crops later If it is ripe, eat it high the harvest to decrease reason will be [4].*
Intercropping of maize and soybeans plays an important role in increasing the growth and yield of maize, which provides higher maize nutrients and makes the silage process easier [5].
Biostimulants are natural substances that can be used today in the treatment of plant seeds, in different phases of plant development. These substances induce changes in vital and structural processes to affect plant growth by increasing resistance to abiotic factors and increasing seed yield and quality. In addition, biostimulants reduce the need for fertilizers [6].

Western European Journal of Modern Experiments and Scientific Methods
Volume 1, Issue 3, November, 2023
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

Biostimulants are products that reduce the need for fertilizers and increase plant growth, resistance to water and abiotic factors [7].

Methods And Materials

Our research was conducted in the fields of experimental scientific research and educational experimental farm of Tashkent State Agrarian University during 2022-2023.

The soil of the field experiments is a typical gray loam irrigated from the escutcheon, the mechanical composition is medium sand, the seepage water is located at a depth of 15-18 meters , it is not saline.

The experiment includes 15 options. Placed in 3 iterations and options in 3 tiers. The total area of each option is 56 m2 , of which 28 m2 is calculated. The total area of the experiment is 0.252 hectares.

"Esdalik-80" maize and "Uzbek-2" soybean varieties were used in field experiments. According to the experimental system, in the cultivation of maize and soybean crops by separate and combined planting, before planting biostimulants in the seeds of crops, Tandem biostimulant is applied at 300, 400, 500 ml/t, during the period of 3-4 leaves of maize and soybeans, 300 ml/t ml/ha, 500 ml/ha was applied during the period of 8-10 leaves.

Methodological manual "Methods of conducting field experiments" [2], "Brief methodical guidelines for state testing of growth regulators" were used in conducting research.

Results And Discussion

In our research, it was found that the use of biostimulants affected the growth of plants and the formation of leaves in the inter-planting of maize "Esdalik-80" and soybean "Uzbek-2". The height of the plants and the number of leaves in it were determined in the periods of 3-4 leaf formation of maize and soybean.

According to the data obtained from our research, it was found that during the period of 3-4 leaves of soybean, the height of the plant was 5.1 cm in the control (with water) variant, while the number of leaves was 2.9 . 200 ml/ha before sowing Fitovak seeds, 300 ml/ha during the period of 3-4 compound leaves, 500 ml/ha during the period of 8-10 leaves, plant height 6, 8 cm, the number of leaves was 4.1 pieces, compared to the control version, it was found that the height of the plant was 1.7 cm, and the number of leaves was 1.2 pieces more.

Table 1

Effects of Biostimulants on Growth and Development of Maize and Soybeans (2022)

No	Crop types	Periods and norms of using stimulants in crops			Yield, 3-4 leaf formation and budding periods	
		Seed treatment before planting	During the period of 3-4 leaf formation	During the period of 8-10 leaf formation	Plant height, (cm)	Number of leaves (pieces)
1	Soybean	Control (with water)	Control (with water)	Control (with water)	5.1	2.9
2		Fitovak-200 ml/t	Fitovak - 3 00 ml / ha	Fitovak - 5 00 ml / ha	6.8	4.4
3		Tandem - 300 ml/t	Tandem - 300 ml/ha	Tandem- 5 00 ml/ha	6.4	4,0
4		Tandem-400 ml/t	Tandem - 3 00 ml/ha	Tandem -5 00 ml/ha	7.9	5.2
5		Tandem-500 ml/t	Tandem - 300 ml/ha	Tandem - 500 ml/ha	6.5	4.6

Western European Journal of Modern Experiments and Scientific Methods
Volume 1, Issue 3, November, 2023
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

6	Maize	Control (with water)	Control (with water)	Control (with water)	17.4	3.4
7		Fitovak-200 ml/t	Fitovak - 3 00ml / ha	Fitovak - 5 00ml / ha	18.8	4.7
8		Tandem - 300 ml/t	Tandem - 300 ml/ha	Tandem- 5 00 ml/ha	18.1	4.4
9		Tandem-400 ml/t	Tandem - 3 00 ml/ha	Tandem -5 00 ml/ha	20.8	5.6
10		Tandem-500 ml/t	Tandem - 300 ml/ha	Tandem - 500 ml/ha	19.6	5.5
11	Maize + soybean	Control (with water)	Control (with water)	Control (with water)	16.1/4.8	3.1/2.8
12		Fitovak-200 ml/t	Fitovak - 3 00ml / ha	Fitovak - 5 00ml / ha	18.6/6.3	4.6/4.2
13		Tandem - 300 ml/t	Tandem - 300 ml/ha	Tandem- 5 00 ml/ha	17.5/5.9	4.2/3.8
14		Tandem-400 ml/t	Tandem - 3 00 ml/ha	Tandem -5 00 ml/ha	19.1/7.3	5.2/5.0
15		Tandem-500 ml/t	Tandem - 300 ml/ha	Tandem - 500 ml/ha	18.5/6.2	4.4/4.2

The highest rates during the period of 3-4 leaf formation of soybean plant are 400 ml/t before planting Tandem biostimulant into seeds, 300 ml/ha during the period of 3-4 compound leaves, 500 ml/ha during the period of 8-10 leaf formation It was found that the number of leaves was 7.9 cm, and the number of leaves was 5.2, compared to the control option, it was 2.8 cm, and the number of leaves was 2.3 more. It was found that the number of leaves increased by 1.1 cm, and by 1.1 pcs. It was found that the height of the maize plant during the period of 3-4 leaf formation was 5.4 cm in the control (with water) variant, while the number of leaves was 3.2. 200 ml/ha before planting Fitovak seeds, 300 ml/ha during the period of 3-4 compound leaves, 500 ml/ha during the period of 8-10 leaves, plant height 6, 8 cm, the number of leaves was 3.7 pieces, compared to the control version, it was found that the height of the plant was 1.4 cm, and the number of leaves was 0.5 pieces more.

The highest rates during the period of 3-4 leaf formation of the maize plant are 400 ml/t of Tandem biostimulant before planting seeds, 300 ml/ha during the period of 3-4 compound leaves, 300 ml/ha during the period of 8-10 leaves 500 ml/ha was observed in the options used in the norm, it was 7.8 cm, and the number of leaves was 4.6, which compared to the control option by 2.4 cm, and the number of leaves was 1.4 it was found that there were many. It was found that the number of leaves increased by 1.0 cm and the number of leaves by 0.9 in comparison with the variant in which Fitovak biostimulator was used.

that the height of the plant was 16.1/4.8 cm, while the number of leaves was 3.1/2.8 in the control (with water) option when planting maize and soybean crops together. Fitovak is applied at the rate of 200 ml/t before planting seeds, 300 ml/ha during the period of 3-4 compound leaves, and 500 ml/ha during the period of 8-10 leaves, the height of the plant is 18.6/ 6.3 cm, the number of leaves was 4.6/4.2, compared to the control version, the height of the plant was 2.5/1.5 cm, and the number of leaves was found that 1.5/1.4 p.

The highest indicators of plant height and number of leaves in the combined planting of maize and soybean crops are 400 ml/t of Tandem biostimulant before planting seeds, 300 ml/t during the

Western European Journal of Modern Experiments and Scientific Methods
Volume 1, Issue 3, November, 2023
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

period of 3-4 compound leaves. ha, in the period of 8-10 leaves formation, it was observed in the variants used at the rate of 500 ml/ha, it was 19.1/7.3 cm, and the number of leaves was 5.2/5.6, which compared to the control version, it was found that the number of leaves was 2.1/2.8 more, and 3/2.5 cm. It was found that the number of leaves increased by 0.5/1 cm, and the number of leaves increased by 0.6/1.3, compared to the variant in which Fitovak biostimulator was used

Conclusion

The highest rates during the period of 3-4 leaf formation of soybean plant are 400 ml/ha before planting Tandem biostimulant into seeds, 300 ml/ha during the period of 3-4 compound leaves, 500 ml/ha during the period of 8-10 leaf formation It was found that the number of leaves was 7.9 cm, and the number of leaves was 5.2, compared to the control option, it was 2.8 cm, and the number of leaves was 2.3 more. . It was found that the number of leaves increased by 1.1 cm, and the number of leaves increased by 1.1 in comparison to the variant in which Fitovak biostimulator was used.

The highest rates during the period of 3-4 leaf formation of the maize plant are 400 ml/t of Tandem biostimulant before planting seeds, 300 ml/ha during the period of 3-4 compound leaves, 300 ml/ha during the period of 8-10 leaves 500 ml/ha was observed in the options used in the norm, it was 7.8 cm, and the number of leaves was 4.6, which compared to the control option by 2.4 cm, and the number of leaves was 1.4 it was found that there were many. It was found that the number of leaves increased by 1.0 cm, and the number of leaves increased by 0.9, compared to the variant in which Fitovak biostimulator was used.

The highest indicators of plant height and number of leaves in the combined planting of maize and soybean crops are 400 ml/t of Tandem biostimulant before planting seeds, 300 ml/t during the period of 3-4 compound leaves. ha, in the period of 8-10 leaves formation, it was observed in the variants used at the rate of 500 ml/ha, it was 19.1/7.3 cm, and the number of leaves was 5.2/5.6, which compared to the control version, it was found that the number of leaves was 2.1/2.8 more, and 3/2.5 cm. It was found that the number of leaves increased by 0.5/1 cm, and the number of leaves increased by 0.6/1.3, compared to the variant in which Fitovak biostimulator was used.

Referances

1. Andrusenko, VA Urojaynost zelenoy massi odnovidovikh i smeshannix kultur pri raznix urovnyakh mineralnogo pitaniya / VA Andrusenko, I.Yu. Kuznesov, GA Davletchurina // VI Vserossiyskaya nauchno-prakticheskaya 131 conference molodix uchenix "Nauka molodix – innovationnomu razvitiyu APK", - Ufa, 2013, - P. 8-13.
2. *Methods of conducting field experiments. UzPITI. T.: 2007. 147 p.*
3. *N.I.Kashevarov, V.S.Ilyin, N.N.Kashevarova, I.V Maize in Siberia / Ilyin. - Novosibirsk, 2004. - 400 p.*
4. Shubina L.N Characteristics of growth and development of maize and soybeans in mixed planting // Ilmiy.technologiya. Bulletin / VASHNIL. Sib. Section SibNIIK. - 1984. - Publication. 17: Intensification of field fodder production. - pp. 43-47.
5. Mao, L.; Zhang, L.; Lee, W.; Werf, WVD; Sun, J.; Spiertz , H.; Long, L. Yield advantage and water saving in maize/pea intercrop. FieldCropsRes . 2012, 138, pp. 11–20. [GoogleScholar] [CrossRef]
6. Du Jardin P. Plant biostimulants: Definition, concept, main categories and regulation. Scientia Horticulturae. 2015; 196 : 3-14 p.
7. Yakhin O.I, Lubyanov A.A, Yakhin I.A, Brown P.H. Biostimulants in plant science: A global perspective. Frontiers in Plant Science. 2017; 1-32 p.