## Efficacy of Albit Stimulator on Cotton in Saline Soil Conditions

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Abstract: The article provides information on the effect of Albit stimulator on seed germination, cotton dry mass, and cotton yield when treated with Albit stimulator at rates of 50, 75, and 100 ml/t before planting in the conditions of saline soils of Jizzakh region. According to the obtained results, the seed germination rate of 50-100 ml/t in the conditions of saline meadow gray soil was 5.2-15.6% higher than the control, and it germinated 1-2 days earlier. Albit stimulator has a positive effect on the plant dry mass during the development period of cotton, and at the end of the growing period, in the variants treated with Albit, the leaf 1.8-4.2 g, the stem 1.2-3.7 g, the stalk 1.6-3.5 g, it was observed that cotton was heavier by 2.1-5.2 g, the total mass was 7.5-16.0 g. When treated with albit at the rate of 75 ml/ha for the seed and 40 ml/ha during the weeding period, a yield of 36.7 t/ha was obtained, and an increase in the cotton yield by 2.0-3.6 t/ha was achieved.

# **1 INTRODUCTION**

The demand for agricultural products is increasing as a result of the limited land and water resources in the world and in Uzbekistan, as a result of population growth and industrial development. This requires the development of innovative technologies of modern science and technology, high and quality harvest from crops, reduction of manual labor and costs, economical use of land and water resources, low cost and high income (UzPITI, 2007).

Physiologically active substances that regulate growth are organic additives that have a positive effect on the course of physiological processes in the plant. They are applied to plants as a working mixture, have a positive effect on their vital processes, and provide the opportunity to obtain high and quality crops (Dospekhov, 1985).

Taking into account the above, in order to develop the technology of applying Albit stimulator to seed and cotton in unfavorable natural climate and different soil conditions, laboratory and field experiments were conducted in Jizzakh region in the conditions of grassy gray soils. Field experiments were placed in 3 layers in 3 rows, the options were 2.4-3.6 m wide, 25 m high, and the experimental area was 60 m<sup>2</sup>. In the pre-sowing treatment, Dalbron fungicide and Uzgumi stimulator were used as benchmarks, and Albit, insecticide (Entolucho) mixed with the stimulator, were studied. Indicators such as seed germination, cotton growth, development periods, dry mass, leaf surface, and cotton yield were determined (Dmitriev, 1999).

K.M.Tadjiev (2009) treated the seeds with Vitaros, Bronopol and P-4 drugs, while protecting the seedlings from root rot and gommosis diseases, accelerating their growth and development, and obtaining an abundant and high-quality harvest (Methodological guidelines for testing insecticides, acaricides, biologically active substances, and fungicides, 1994; Methodology of field experiments with cotton, 1981; Ochilov & Toraev, 2009; Sattarov, 2003; Tadjiev, 2009).

O.Sharipov, M.Ikromova, B.Rakhmatov (2009), when the Fitovak stimulator is applied to the seed at 200-400 ml/t and 200-400 ml/ha during the growing season, germination and growth and development of cotton are improved, and cotton is 2.6 A high yield of -6.6 t/ha was obtained.

B.Mukhammadiev, Sh.Abdualimov (2007) in the research conducted in the Khorezm region, when the seeds were treated with growth agents Vitavaks 200 FF, T-86, GMK before planting, germination accelerated, positively affected the growth and development of cotton, and Vitavaks 200 FF 2.9 q/ha, T-86 1.7 q/ha, GMK 1.8 q/ha allowed high yield.

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Abdukarimovich, K. S., Hamadullaevich, A. S., Turaevich, K. I., Kuchkorovich, M. O. and Ugli, R. S. U. Efficacy of Albit Stimulator on Cotton in Saline Soil Conditions. DOI: 10.5220/0013491800004654 Paper published under CC license (CC BY-NC-ND 4.0) In Proceedings of the 4th International Conference on Humanities Education, Law, and Social Science (ICHELS 2024), pages 812-817 ISBN: 978-989-758-752-8 Proceedings Copyright © 2025 by SCITEPRESS – Science and Technology Publications, Lda. In experiments observation and laboratory analyses "UzCRI" methodical manual (1981, 2007) carried out on the basis of K is symbolic substances Use «Growth adjuster substances state from the test transfer according to briefly methodical instructions » (Moscow, 1984), «Insecticide, acaricide, biologically active substances and fungicides to try according to methodical guidelines» (1994) were used. Data were mathematically processed by the method of B.A.Dospekhov (1985).

### 2 RESULT AND DISCUSSION

In spring 2015, in the 0-30 cm driving layer of the soil of the experimental field, the amount of humus was 0.925, total nitrogen was 0.085, phosphorus was 0.092, and potassium was 1.094 percent, while the mobile N-NO  $_3$  -21.8, R  $_2$  O  $_5$  -36.4, and K  $_2$  O-410 mg/kg. Accordingly, humus 0.785, nitrogen 0.060, phosphorus 0.082 and potassium 1.060%, mobile N-NO  $_3$  -24.6, R  $_2$  O  $_5$  -34.8 and K $_2$  O-310 mg/kg and was found to be moderately supplied with phosphorus in mobile form and high with potassium (table 1).

In the fall of 2015, with a slight change in the amount of nutrients in the soil, in the 0-30 and 30-50 layers, humus was 0.855 and 0.721, nitrogen 0.073 and 0.052, phosphorus 0.087 and 0.071, potassium 1.063 and 1.052 percent, N-NO  $_3$ -15.4 and 12, 2, P<sub>2</sub>O<sub>5</sub>-28.8 and 24.4, K<sub>2</sub>O -340 and 220 mg/kg were observed.

It should be noted that similar data were obtained in 2016.

Gumimax-torfogumin in liquid form is a black stimulant, as an adaptogen, it increases the plant's resistance to stress situations, water shortage, heat, extreme cold, and soil salinity, as an antidote, it reduces the harmful effects of pesticides, and its immunomodulatory property increases its resistance to diseases (Ochilov, Toraev, 2009).

When the salinity level of the soil of the experimental field was determined at the beginning of the operational period in 2015-2016, the amount of *Sl* in the 0-40 and 0-100 cm layers was 0.009-0.010%, the amount of *SO*  $_4$  <sup>11</sup> was 0.091-0.110%, and the amount of dry residue was 0.190-0.225% was found to be weakly salted Table 2).

J.Sattarov (2003) admits that biologically active substances that accelerate growth are synthesized from plants, microorganisms and natural raw materials or by chemical means, they are in organic or mineral form, they have a specific effect on soil microflora, and they are used in very small quantities before planting seeds. when processed, the growth and development accelerates, the productivity increases and it is good for the environment.

Q.Kochkarov, A.Kasimov and others. (1997) in the experiments, seeds treated with suspension of ultradisperse iron powder (UDK) had higher germination, sprouts developed vigorously, as a result, the number of pods increased and opening was accelerated by 3-4 days.

U.N.Madraimov (1995), even and healthy sprouts sprouted despite adverse climatic conditions when the seed was treated with Mival stimulator before planting. Especially, when the experiments were conducted in the conditions of saline soils, under the

Soil	Hummus,	In general form, %			H active form, mg/kg					
layer, cm	%	nitrogen	phosphorus	potassium	N -	P <sub>2</sub> O <sub>5</sub>	K 2 O			
					NO <sub>3</sub>					
	2015 year									
			In the spr	ing						
0-30	0.925	0, 0 85	0.092	1,094	21.8	36.4	410			
30-50	0.785	0,060	0.082	1,060	24.6	34.8	310			
	In the fall									
0-30	0.855	0, 0 73	0.087	1,063	15.4	28.8	340			
30-50	0.721	0, 0 52	0.071	1,052	12.2	24.4	220			
2016 year										
In the spring										
0-30	0.912	0, 0 83	0.094	1,088	20.9	35.7	405			
30-50	0.776	0, 0 61	0.086	1,061	23.7	34.2	300			
In the fall										
0-30	0.861	0, 0 70	0.082	1,058	15.1	27.8	335			
30-50	0.718	0, 0 54	0.067	1,050	12.0	24.0	215			

Table 1: Agrochemical description of the soil of the experimental field conducted in Jizzakh region.

Layers, cm	Amal period degree of soil mineralization at the beginning, %								
	Cl <sup>1</sup>	SO 4 <sup>11</sup>	seed residual						
	5.0	05.2015							
0-20	0.012	0.092	0.195						
20-40	0.009	0.129	0.256						
40-60	0.009	0.110	0.240						
60-80	0.010	0.092	0.187						
80-100	0.010	0.076	0.150						
0-40	0.010	0.110	0.225						
0-100	0.010	0.099	0.205						
	2.05.2016								
0-20	0.01 0	0.090	0.19 0						
20-40	0.009	0.120	0.250						
40-60	0.009	0.110	0.235						
60-80	0.010	0.092	0.185						
80-100	0.010	0.072	0.150						
0-40	0.00 9	0.10 5	0.220						
0-100	0.010	0.091	0, 190						

Table 2: The salinity level of the soil of the experimental field conducted in the conditions of Jizzakh region.

Table 3: The effect of Albit stimulator on the degree of seed germination in the conditions of saline soils of Jizzakh region, cotton variety Pakhtakor-1, average 2015-2017.

No	Options	Pre-sowing treatment	Processing during the cotton vegetation period norm		Seed germination rate, %			Average in	Differenc e from
			in polishing	in bloom	2015	2016	2017	5 years, 70	control, %
1	Control				72.8	70.6	77.2	73.5	-
2	Dalbron	6.5 kg/t	-	· ·	70.2	69.2	82.0	73.8	0.3
3	An example	0.8 l/t	0.3 l/ha	0.4 l/ha	84.4	88.4	92.4	88.4	14.9
4	Albit	50 ml/t	40 ml/ha	<u></u>	80.8	80.2	88.8	83.3	9.8
5	Albit	75 ml/t	40 ml/ha	-	84.6	90.8	92.0	89.1	15.6
6	Albit	100 ml/t	40 ml/ha	-	70.2	76.2	89.6	78.7	5.2
7	Albit+ Insecticide	-	40 ml/ha+ insect.	-	54.4	66.8	79.6	66.9	-6.6

influence of Mival, the flowering and the opening of the bolls accelerated, and the technological quality indicators of the fiber improved, and the fiber yield increased by 1-3%.

In the experiment, Pakhtakor-1 cotton seed, which was considered promising for the Jizzakh region, was planted on April 17, 2015, April 24, 2016-2017, and sprouts began to sprout in 7-8 days (Table 3). Albit stimulator has been found to accelerate seed germination even in saline soils. In 2015, it was found that 72.8% of control, 70.2% of dalbron, 84.4% of Uzgumi, and 80.8-84.6% when treated with Albit at the rate of 50-75 ml/t.

Also, full germination of the seed took 15-16 days (2-3.V) in control, 14 days (1.V) in Uzgumi, Albit stimulators and germinated 1-2 days earlier.

B.A.Khasanov, M.A.Zuparov, R.A.Gulmurodov (2004), two or three fungicidal mixtures or insecticides, as well as those that accelerate the germination and growth of seedlings, are applied to the soil heavily infected with plant diseases. It has been found that planting with various wetting agents and substances that ensure the adhesion of the drug to the seed is effective.

In 2016, 70.6% of seeds germinated in control, 69.2% in Dalbron, 88.4% in Uzgumi, 76.2-90.8% of seeds germinated when treated with 50-100 ml/t of Albit, 17.8% in Uzgumi, 5% in Albit compared to

		Actual planting density of cotton, thousand bushels/ha							
No	Experience options	2015	year	2016	o year	2017 year			
		after yagana	before my skin	after yagana	before my skin	after yagana	before my skin		
1	Control	85.3	80.1	83.6	78.6	81.5	76.7		
2	Dalbron 6.5 kg/t	86.6	81.3	85.2	79.4	83.6	77.3		
3	The yield is 0.8 l/t, 0.3+0.4 l/ha	85.9	79.5	84.4	80.1	82.1	76.6		
4	Albit 50 ml/t, 40 ml/ha	84.2	77.9	83.2	78.7	81.8	77.1		
5	Albit 75 ml/t, 40 ml/ha	87.1	81.6	85.1	79.5	83.2	78.2		
6	Albit 100 ml/t, 40 ml/ha	85.4	80.5	83.7	78.8	82.4	77.6		
7	Albit+ insecticide	86.3	81.4	84.5	80.2	81.3	76.8		

Table 4: In the experimental field, the thickness of the cotton seedlings after sowing and before harvesting, Pakhtakor-1 variety, Jizzakh, 2015-2017.

control. ,6-20.0 percent higher. In 2016, it was observed that the seed germinated 1 day earlier when Albit stimulator was used in the experimental field.

On average, in 3 years, 73.5% in control, 73.8% in Dalbron, 88.4% in Uzgumi, 78.7-89.1% of seeds germinated when treated with Albit at 50-100 ml/t, and 14.9% in Uzgumi compared to control. Albite was found to be 5.2-15.6% higher.

In the experimental field, after weeding and at the end of the growing season, when we calculated the actual thickness of cotton seedlings, after weeding, according to options, 2015, 83.2-85.1, 2016, 81.3-83.7 thousand bushels per hectare established, at the end of the growing season, due to the implementation of agrotechnical measures, under the influence of soil reclamation conditions, the thickness of seedlings decreased by 5-10 thousand bushes per hectare, according to the options 2015 77.9-81.6 thousand, 2016 78.6-80.2, 2017 76.7-78.2 thousand bushes were found. In this case, there was no significant difference between the experimental options, and close to each other data were obtained (Table 4).

A.V.Blagoveshchensky (1978) studied various chemicals. Among them, organic acids such as asporogen, gelutamen, malic, amber, vinnaya, fumarova acids are stimulants, increase the activity and quality of enzymes, and accelerate the growth and development of plants as a result of accelerating the most important process in plant life.

In the researches of F.A.Abdullaev, Sh.Kh.Abdualimov (2016) in the conditions of typical gray soils, the germination of seedlings is accelerated by 10-15% when treated with humicbased Gumimax, Uzgumi and Kgmu stimulators to the seed and during the flowering and flowering periods of cotton. as a result of the increase in the mass and leaf surface, the net productivity of photosynthesis increased, and ultimately the cotton yield was 4.2-5.4 t/ha.

When Sh. Abdualimov, D. Rakhimova (2021) determined the effectiveness of the Boms microbiological preparation in cotton, it had a positive effect on plant growth, development and productivity, (Abdualimov, Sulaymanova, 2022) various microelements in Lebozol stimulants increase the dry mass of cotton, led to acceleration of physiological processes.

In the experiment, the dry mass of cotton was determined at the end of the period of heading, flowering and growth. According to the obtained data, it was observed that the dry weight of one plant during the cotton picking period of 2015 was 30.3 g in control, 32.7-40.1 g in Albit, and 2.4-9.8 g heavier in Albit compared to control.

During the flowering period of cotton, the mass of the leaf is 20.5-24.5 g, the stem is 22.0-26.2 g, the stalk and flowers are 4.0-4.9 g, and the total dry mass of one plant is 46.5-55.6 g. It was observed that the dry mass was more at the expense of generative and vegetative organs in the options where Albit stimulator was used.

At the end of the growing period of cotton, the dry mass of the leaf is 41.3, the stem is 57.7, the stem is 29.1, the cotton mass is 40.2 g and the total dry mass of one plant is 169.3 g. 60.7; 30.2; 43.1 and 176.2 g, 45.7 in Uzgumi; 60.1; 32.4; These indicators are 46.4 and 184.6 g, in Albita leaf 1.8-4.2 g, stem 1.2-3.7 g, stalk 1.6-3.5 g, cotton 2.1- 5.2 g, total dry mass of 7.5-16.0 g was observed to be heavier than the control.

This is the basis for our conclusion that the Albit stimulator had a positive effect on the growth,

No	Experience options	Seed processing standard	The norm of application during the period of	Weight of cotton in one bag, g	Cotton yield by year, q/ha			Average in 3 years,	N azorate,
			pruning and flowering		2015	2016	2017	q/ha	T
1	Control	-	-	4.0	30.3	33.8	35.3	33.1	-
2	Dalbron	6.5 kg/t	-	4.1	31.6	35.0	36.6	34.4	1.3
3	An example	0.8 l/t	0.3+0.4 l/ha	4.2	33.8	37.1	38.5	36.5	3.4
4	Albit	50 ml/t	40 ml/ha	4.1	31.7	35.8	36.8	34.8	1.7
5	Albit	75 ml/t	40 ml/ha	4.2	34.0	37.3	38.8	36.7	3.6
6	Albit	100 ml/t	40 ml/ha	4.1	32.9	35.7	38.1	35.6	2.5
7	Albit+ insecticide	-	40 ml/ha+ insecticide	4.1	32.5	35.4	37.5	35.1	2.0
			NSR 0 NSR	5 q/ha 05 %	0,78 2,39	0.64 1.77	0.73 1.94		

Table 5: Effect of Albit stimulator on cotton yield in saline soils of Jizzakh region, q/ha. Pakhtakor-1 variety, Jizzakh 2015-2017.

development and accumulation of dry mass of cotton under the conditions of saline soils.

It should be noted that the above laws regarding changes in the dry mass of cotton during the development period were also determined in the 2016-2017 years of the experiment.

S.B.Monakov, N. I.Borovinskaya and others. (2004) expressed the following points based on their many years of experience, that is, biologically active substances accelerate the growth and development of agricultural crops and increase productivity. When treated with the drug No. 26 at the rate of 10-100 mg/t before sowing, cotton yield increases by 4-7 t/ha, and winter wheat grain yield increases by 8-10 t/ha.

According to F.A.Mustaev (2012), when treated with Novroz stimulator at the rate of 75 ml/ha at the rate of 75 ml/ha at the beginning of the cotton flowering period, the yield increased by 5.2-5.7 t/ha. it was observed that the cotton yield increased by 5.0-5.7 t/ha compared to the control option.

B.Khaitov, Sh.Abdualimov, Kh. Allanov and others. (2024) when treated with Sila silicon stimulator developed on the basis of nano silicon at the rate of 100 ml/t per seed, 150 ml/ha during the heading period of cotton and 210 ml/ha during the flowering period, the growth and development of cotton accelerated and the cotton yield increased by 5.0 t/ha, high-quality fiber was grown.

Sh.Karimov, Sh.Abdualimov, I.Karabaev (2023) 3.8 ts of cotton as a result of the growth and development of the boll of cotton when treated with Biodux stimulator at the rate of 3.0 ml/t before planting and 2.0 ml/ha during the flowering period of cotton A high yield was achieved.

The effect of Albit stimulator on cotton yield was determined in the conditions of saline soils of Jizzakh region. 30.3-34.0 t/ha in 2015, 33.8-37.3 t/ha in 2016, 38.8 t/ha in 2017 and 33.1 in control, 34 in dalbron, 4, 36.5 in Uzgumi, Albit 50 ml/t per seed, 34.8 when applied at 40 ml/ha during the planing period, Albit 75 ml/t per seed, 40 ml/ha during planing period 36.7, Albit 100 ml/t per seed, 35.6 tons/ha of cotton were grown in the treatment of 40 ml/ha in the heading period, and 35.1 tons/ha in the case of mixed application of Albit insecticides (table 5).

In the experiment, compared to the control option, the additional yield was 1.3 t/ha in Dalbron, 3.4 in Uzgumi, and 1.7-3.6 t/ha in Albit. It was found that it was 36.7 t/ha, and the productivity increased by 2.0-3.6 t/ha.

#### 3 CONCLUSIONS

1. Germination was 5.2-15.6% higher in Albit compared to the control when seeds were treated with Albit at the rate of 50-100 ml/t in the conditions of the gray soil of the saline meadow of Jizzakh region, and it germinated 1-2 days earlier.

2. Albit stimulator had a positive effect on the accumulation of dry mass in cotton during the development periods of cotton. At the end of the growing season, in the variants treated with Albit, the leaf 1.8-4.2 g, stem 1.2-3.7 g, pod 1.6-3.5 g, cotton 2.1-5.2 g, total mass 7.5-16.0 g was observed to be heavier.

3. Albit stimulator increased cotton yield by 2.0-3.6 t/ha in the conditions of saline soils of Jizzakh region. The highest yield was 75 ml/t per seed with Albit, and 36.7 t/ha when treated at the rate of 40 ml/ha during the tillering period.

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