

Influence Of Drugs On The Fertility Of Ural Glycoryza (Glycyrrhiza Uralenses)

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Annotation. In the saline lands of Karakalpakstan, special attention should be paid to measures for washing the soil during sowing, and planting by treating licorice seeds with a stimulant "fitovak" gave a good result. So, in the field, with good soil washing and sowing of licorice seeds of the Ural, soaked for 36 hours with 30 ml of the stimulant "fitovak" per 10 liters of water, the germination of the seeds showed high positive indicators compared with other drugs.

Keywords: Ural licorice, licorice biostimulator, phytovac, izabion, Power Mister.

Introduction. "Today, the world medicinal plant Ural licorice has been planted on an area of 43.181 million hectares, the reserve of biological raw materials is 128.109 million tons. The product obtained from this plant is widely used in medicine, food, cosmetics, light industry, as well as in agriculture. high demand for raw materials for the production of Ural licorice on the world market, the area of its natural growth has decreased, including in Ozorbaijan - 2200 hectares (3.6% of the total area), Kyrgyzstan - 902 hectares (1.4%), Kazakhstan - 27315 hectares (62.6%), Russia - 1763 hectares (2.9%), Turkmenistan - 10776 hectares (17.7%), Tajikistan - 142 hectares (0.24%), Mogolistan - 2180 hectares (3.59%), Uzbekistan - 37,46370.1 hectares, or 3.83% of the total area." For this reason, it is important today to improve the agricultural technology for growing Ural licorice.

Research methods. Laboratory and field studies were carried out in accordance with approved methods. Conducting research, biometric measurements and their analysis "Methods of conducting field experiments" (UzPITI, Tashkent, 2007); "Methods of agrochemical, agrophysical and microbiological research in irrigated areas", "Methods of economic efficiency of using in agriculture the results of research and development work, new technology, inventions and rationalization studies" (B.A. Baranov) were also carried out mathematically -statistical analysis of experimental data using Microsoft Word and Excel computer programs based on the methods of B.A. Dospehov.

Research results. The fact that the seeds of Ural licorice (*Glycyrrhiza uralenses*) have a low degree of germination is explained in some studies by the immaturity of the seed, the physicochemical properties of the seed coat, and the lack of starch in the bud seeds, which, according to A.K. Luchinina [5], is due . O.A. Ashurmetov [6] proves the connection with the specific structure of the seminal spermoderm.

Therefore, many scientists such as M.M. Badalov, Kh.K. Karsiboev, M.D. Kamalova [7,8,9] tried to increase its germination by treating the seeds in different ways.

In order to increase seed germination before sowing, bark formation was disrupted (scarification), as a result of which seed germination increased from 15-17% to 30%. Soaking the pureed seed for 24 hours in 0.035% succinic acid also increased its germination by 55-60%. Under the conditions of Turkmenston (B.B. Kerbabaev), germination was 4-16% when planted without seed treatment.

A.Zh.Kuziv [10] germinated seeds placed in a Petri dish in a thermostat (29-30°C) for a month. On the fifth day of the experiment, 38.6% of the seeds sprouted, on the twelfth - 53.0%, on the twentieth - 60.4% and on the thirtieth - 62.1%.

The seeds of Ural licorice (Wild) are not provided with appropriate nutrients; in order to cultivate it, research work has been carried out in laboratory and field conditions to increase germination with the help of various stimulants in order to accelerate the biochemical processes in its seeds. In the greenhouse, Ural licorice seeds are planted at 12; 24; 36 hours; 10 ml of water in 10 liters; 20 ml; 30 ml; Soaked seeds in solution are planted in the soil to a depth of 2-3 cm in a row 60 cm wide by 20 cm. (Table 1)

Table 1

The germination rate of Ural licorice seeds is 100 pieces on various stimulants in laboratory conditions in 2023.

№	Options	Soaking duration hour	Consumption rate of the drug is ml per 10 liters of water	Germination process %		
				10.02	20.02	30.02
1	Control	-	-	6,2	8,2	10,2
2	Fitovac	12	10 ml	32,7	61,4	72,3
3	Isabion			25,6	60,7	70,2
4	Mister Power			18,7	60,3	69,7
5	Fitovac	24	20 ml	40,5	64,6	85,9
6	Isabion			38,6	63,4	84,7
7	Mister Power			36,2	62,8	84,4
8	Fitovac	36	30 ml	46,7	68,7	93,5
9	Isabion			42,4	66,5	91,2
10	Mister Power			40,6	65,4	89,7

7-10 days after planting, the control seeds germinated by 6.2% in option 1, by 32.7% in option 2, by 25.6% in option 3 and by 18.7% in option 4. After another 10 days (20.02) it was found that germination was 53.2%, 52.5% and 52.1% higher than that of the control variant. By the end of the third decade, this figure increased to 62.1%, 60.0% and 59.5%, respectively, and in the variants 5.6.7-34.3%; 32.4%; 30.0% (20.02) 56.4%; 55.2%; 54.6%; (30.02) in 75.7%; 74.4%; 74.2% higher.

According to data obtained in laboratory conditions, higher rates were observed with the phytovac stimulator compared to control and other drugs.

In laboratory conditions, to determine the germination of licorice seeds, they were soaked at different times and the germination of phytovac, isabion stimulants and the Mister Power biofertilizer was determined. The highest germination is achieved by mixing stimulants 30 ml/ha per 10 liters of water and soaking sweet seeds for 36 hours. Germination for many years under the influence of phytovac is 84.7-85.9-84.4%. When the isabion stimulator is used 63.4-64.6-62.8%, under the influence of Mister Power biofertilizers 60.7-61.4-60.3% seed germination (Table 2).

Table 2

Germination of Ural licorice seeds under the influence of stimulants in laboratory conditions (2023rd)%.

Options	Soaking duration Hour	Water	Fitovac	Isabion	Mister Power
		Средний			
1	12	10,1	23,9	14,5	12,3
2	24	39,1	57,6	48,6	43,3
3	36	54,1	85,0	63,6	60,8

The data obtained over the years were close to each other, and in comparison with control phytovacs, seed germination over the years of exposure to stimulants when soaking seeds for 36 hours 30.0-32.9-32.6 seed germination under the influence of Isabion-stimulant is 8.7-11.3-8.5%, when applying Mister Power biofertilizers it was found that it was higher by 6.0-8.1-6.0%. Among stimulants, high rates were observed in the stimulant phytovac. A higher indicator for the duration of seed soaking was obtained when seeds were soaked for 36 hours.

In 2021-2023, experiments were conducted to determine the dependence of the germination of Ural licorice (*Glycyrrhiza uralenses*) seeds on the degree of soil salinity using various stimulants in laboratory conditions. On saline soils, seed germination is very low; on highly saline soils, sweetened seeds germinate by 1.0-1.3%, sometimes they do not germinate at all; on moderately saline soils, seed germination slows down. In this case, a decrease in germination weakened the development of sprouts (Fig. 1).

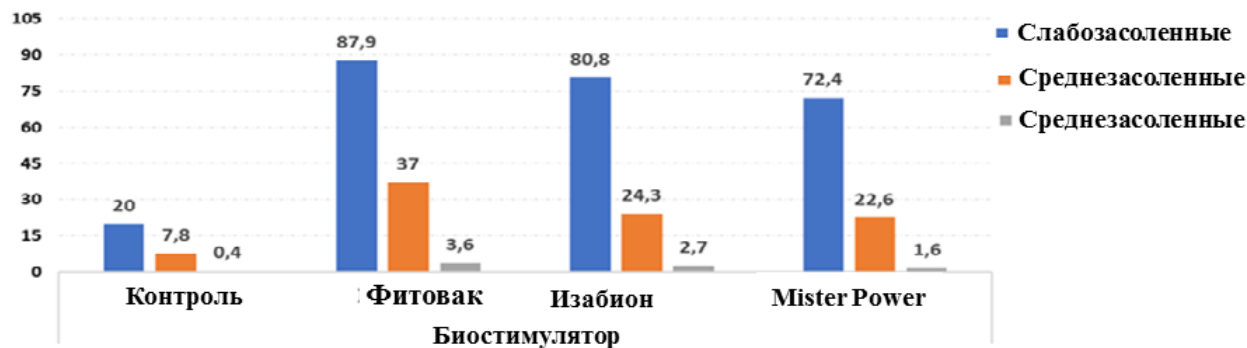


Figure 1. Germination of Ural licorice seeds under the influence of stimulants and bioavailability at soil salinity level, %

On slightly saline soils, seed germination under the influence of stimulants in the control variant is 20% on slightly saline soils, 7.8% on moderately saline soils, 0.4% on highly saline soils; under the influence of phytovac 87.9% in slightly saline soil, 37.0% in moderately saline soil, 3.6% in highly saline soil, under the influence of the isabion stimulator in slightly saline soil it is 80.8%, in moderately saline soil - 24.3 %, in highly saline soil - 2.7%. The share of Mister Power biofertilizer is 72.4% in slightly saline soil, 22.6% in moderately saline soil and 1.6% in highly saline soil.

Thus, on the saline lands of Karakalpakstan, when sowing licorice seeds, special attention should be paid to salt washing measures, and good results were obtained by treating licorice seeds with the stimulant “fitovak”.

The germination of licorice seeds was studied in a thermostat at different temperatures.

The data obtained are shown in Table 3. Peak germination according to Table 3 when using the phytovac stimulator, depending on the increase in temperature, was 7.0% when controlled after three days at 10°C, 27.3%, 20.0% when using the Isabion stimulator , 17.3% when using Mister Power biofertilizer option.

Table 3

Germination of Ural licorice seeds under different temperature conditions (2021-2023),%

T/p	Options	Air temperature °C			
		10 °C	15 °C	20 °C	25 °C
1	Control	7,0	12,7	16,7	20,6
2	Fitovac	27,3	56,1	69,5	91,0
3	Isabion	20,0	40,2	64,2	77,3
4	Mister Power	17,3	32,0	54,3	69,2

It was observed that seed germination in the control was 12.7% at a temperature of 15°C; in the phytovac stimulator - 56.1%, in the izabion stimulator - 40.2%; 32.0% higher when exposed to Mister Power biofertilizer. It was found that in the control at a temperature of 20°C, germination was 16.7%, 69.5% in the variant with the use of the phytovac stimulator, 64.2% when exposed to the izabion stimulator and 54.3% when exposed to the Mister Power biofertilizer. When the temperature in the thermostat increased to 25°C, the germination of Ural licorice seeds was 20.6% in the control variant, 91.0% when exposed to the stimulant "Fitovac", 77.3% when exposed to the stimulant "Isabion" and 69.2% in the variant , in which Mister Power biofertilizers were used. Among medications, the highest rates are observed in phytovac stimulants, and the lowest in Mister Power biofertilizers. It was found that when using the phytovac stimulator, the preservation of the grass was high.

According to the analysis of the research results, the growth and development of Ural licorice seeds when treated with various stimulants and biofertilizers depends on the degree of soil salinity and the dynamics of seed germination; the experiment on seedling viability was sown on 02/15/2021 in greenhouse conditions.

At the end of February, on unsightly saline soils, 18.7-25.6-32.7% germinated to 11.9-19.7-21.6% on moderately saline soils. By the beginning of March, this figure on non-saline soils reached 70.4-72.3-83.5%, on moderately saline soils on average up to 52.5-74.1%, and by the end of March the germination of seedlings on low-saline soils was 71.2 -80.7-90.5% and on moderately saline soil 60.5-62.5-81.6% (Table 4).

Table 4

Effect on the dynamics of growth and development of Ural licorice seeds when treated with various preparations depending on the degree of soil salinity (in greenhouse conditions)

№	Options	Soil salinity %	Germination, %		Sprout survival, %
			25.02	5.03	1.04
1	Fitovac	slightly saline	32,7	83,5	90,5
2		moderately saline	21,6	74,1	81,6
3		highly saline	-	-	-
4	Isabion	slightly saline	25,6	72,3	80,7
5		moderately saline	19,7	65,6	62,5
6		highly saline	-	-	-
7	Mister Power	slightly saline	18,7	70,4	71,2
8		moderately saline	11,9	52,5	60,5
9		highly saline	-	-	-

Thus, Ural licorice was able to demonstrate its positive effect as part of phytovac stimulants according to the analysis of the results of experiments conducted in greenhouse conditions on the levels of seed germination and sprout survival when seeds were treated with various stimulants depending on the level of soil salinity.

The quality of Ural licorice seeds depends on the level of soil salinity, when treated with various stimulants and biofertilizers, the effect on the formation of leaves and plant growth was carried out in greenhouse conditions, according to the analysis of the research results, on slightly saline and moderately saline soils, on which the stimulant "fitovak" was used, by the end In March, 2.0-13.1% of true leaves bloomed in mid-season shoots, the stem height was 7.2-6.1 cm (Table 5).

Table 5

The effect on the formation of leaves and plant growth of treating Ural licorice seeds with various preparations depending on the degree of soil salinity (in greenhouse conditions))

Options	Options	Soil salinity %	Actual sheet, pcs.	Height, cm	Actual sheet, pcs.	Height, cm
			30.03		30.04	
1	Fitovac	slightly saline	13,1	7,2	21,2	42,3
2		moderately saline	2,0	6,1	18,5	36,5
3		highly saline	Undeveloped-			
4	Isabion	slightly saline	2,4	5,3	24,3	38,3
5		moderately saline	2,0	4,8	15,6	-
6		highly saline	Undeveloped-			

7	Mister Power	slightly saline	1,3	5,3	20,5	36,5
8		moderately saline	1,1	4,5	13,2	-
9		highly saline	Undeveloped-			

In the variant with the use of the stimulator "Fitovac" at the end of April, the actual leaf on slightly and moderately saline soil is 18.5-21.2 pieces, the height of the stem is 36.5-42.3 cm, when using isabion the actual leaf is 15.6 -24.3 pieces, height - 32.7-38.3 cm, and in the version in which Mister Power biofertilizer was used, the actual leaf was 13.2-20.5 pieces, height - 30.7-36.5 cm .

Conclusion. According to the analysis of the research results, when using a phytovac stimulator, the growth and development of licorice on slightly saline and moderately saline soil is higher.

Thus, in field conditions, with good soil washing and sowing of Ural licorice seeds, soaked for 36 hours with 30 ml of the phytovac stimulant per 10 liters of water, germination showed high positive indicators compared to other preparations.

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