



Influence of covering soybean seeds with bentonite clay on biometric parameters under different irrigation regimes.

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ABSTRACT

In the bottom article, the effect of encapsulation of soybean seeds with bentonite clays in the amount of 30, 40 and 50 kg/t is shown . on the biometric indicators of the plant under different irrigation regimes.

Keywords:

Bentonite, soybean, variety, plant height, irrigation regime, biometric indicators, productive stalk, number of beans.

Several factors such as soil, climate, fertilizers and water affect the growth and development of plants. That is, under the influence of these factors, a common unity arises in the growth and development of plants, and the sum of all processes associated with the physiological and biochemical processes occurring in the body of plants, their nutrition through the roots and from the air, energy supply, assimilation and dissimulation as a whole become optimal.

Bentonites are natural clay minerals containing a lot of montmorillonites. Bentonites contain up to 14% or more of aluminum oxide, up to 56% or more of silica, up to 4% or more of iron oxide, and more than 30 different trace elements and oxides of other metals. There are many macro-microelements in the chemical composition of bentonites.

According to D. Tungushova, L. Slesarev, E. Belousov, about 200 deposits and deposits of bentonite clay with estimated reserves of more than 2 billion tons have been discovered on the territory of Uzbekistan . To date, only the Navbakhor, Azkamar, Kattakurgan, Lagan, and Shorsu mines are being operated on an

industrial scale. The total volume of bentonite clay extracted and processed at these mines is still 30-40 thousand tons per year.

In various regions of Russia, bentonites, glauconites, phosphorites and other ores rich in macro-microelements are widely used from non-traditional agro-ores for plant nutrition, including for retaining moisture and cleaning the soil from pollution by heavy metals and radionuclides.

The use of bentonite clay, which is a natural resource, is one of the ecological and physiological methods for increasing soil fertility in the cultivation of grain and leguminous crops.

The main purpose of using bentonite in agriculture is not as a fertilizer, but by applying it to the soil, it is important to improve the water-holding capacity of the soil and use it as a catalyst in the storage of nutrients moving through the land. soil ¹. and in addition to the norms of mineral fertilizers N 150 R 105 K 75 kg / ha, bentonite was applied for plowing in the amount of 3000 kg / ha when using the solution, in comparison with the control, the actual seedling capacity of winter wheat is up to 33-46

¹ <https://www.jnjresources.com.au/downloads/bentonite-and-its-uses.pdf>

m²/piece, the height is up to 4.3-8.2 cm, the total number of stems is up to 994.0-608.0 thousand/ha, and the number of productive stems reached 1.003-0.796 million/ha.

According to D. Mikheev, now the leading agrochemical companies of the West produce ready-made mixtures for seed coating, in most cases such mixtures consist of bentonite clay. Bentonite contains many minerals that have a positive effect on the plant, reacts well with water and can form a fairly strong shell on the surface of the seeds during the peeling process. In addition, the shell, containing protective and nutritious elements that contribute to the full development of the plant, increases the field fertility of seeds, resulting in an increase in yield and its quality.

Under the conditions of light-serozem soils of the Kashkadarya region, for the periods of their development, the seeds of sow varieties were planted with bentonite clay and irrigation methods for the growth and development of soybean crops were carried out. Based on the analysis of the results of biometric measurements taken on May 1, June 1, July 1 and August 1 in crop growth studies, plant biometrics also increased with increasing speed when covering soybean seeds with bentonite clay and the order of watering, an increase was observed.

At the same time, on August 1, the soybean variety "Arleta" PSV with an irrigation system of 60-70-70% in the control (untreated) variant had a plant height of 43 cm, a productive branch of 3.1 pcs. and the number of beans amounted to 30.5 pieces, plant height 50.2 cm in the variant using 30 kg/t; plant height 7.2 cm, plant height 0.6 units. and the number of pods is 8.4 units, compared with the control variant, the plant height is 10.8 cm, the plant height is 0.8 cm, the number of pods is 0.8 in total. when applying 40 kg/t, the number of pods was 12.7 pcs., and when applying 50 kg/t, the plant height was 17.3 cm, the yield of branches was 1.1 pcs., the number of pods was 16 pcs.

This law is repeated in the system of 70-75-75% irrigation of the FPV, in terms of plant height 5.7; 9.5; 14.7 cm, fruit branches 0.5; 0.7; 1.0 pieces, and the number of boxes is 8.7; 14.0;

18 pcs., and in the irrigation system 75-80-80% FPV plant height 5.9; 9.8; 14.2 cm, fruit branches 0.4; 0.7; 1.0 per piece and the number of pods 9.0; 14.6; It is noted that it is higher by 18.7 units.

Table 1
The method of coating seeds with bentonite clay and watering procedures
influence on the growth and development of soybeans

No. Var	Variety	Irrigation method, (%)	Degree of encapsulation of seeds by bentonite clay, %	1st of May		June 1			July 1			August 1					
				Height, cm	Leaf chin grain	Height, cm	Harvest horn, grain	Flower, pcs.	Number of beans, pcs.	Height, cm	Harvest horn, grain	Flower, pcs.	Number of beans, pcs.	Height, cm	Harvest horn, grain	Flower, pcs.	Number of beans, pcs.
1	"Arlita"	PSV (60-70-70%)	Control (raw)	13.2	1.85	31.1	2.3	14.3	8.6	43.0	3.0	15.4	26.4	43.0	3.1	15.7	30.5
2			30 kg/t bentonite (seed coating)	15.3	1.87	39.4	3.0	18.1	13.7	50.2	3.5	19.5	33.7	50.2	3.7	19.9	38.9
3			40 kg/t bentonite (seed coating)	17.5	1.93	43.3	3.2	19.9	15.6	53.8	3.8	21.4	37.2	53.8	3.9	21.8	43.2
4			50 kg/t bentonite (seed coating)	20.2	2.00	46.6	3.5	21.4	18.4	57.3	4.0	23.0	40.3	57.3	4.2	23.5	46.5
5		PSV (70-75-75%)	Control (raw)	13.6	1.90	33.3	2.5	15.3	9.2	45.9	3.2	16.5	28.1	45.9	3.3	16.8	32.5
6			30 kg/t bentonite (seed coating)	16.2	1.98	42.2	3.2	19.4	14.9	51.6	3.6	20.9	35.5	51.6	3.8	21.3	41.2
7			40 kg/t bentonite (seed coating)	18.4	2.02	45.5	3.4	20.9	16.8	55.4	3.9	22.5	39.8	55.4	4.0	22.9	46.5
8			50 kg/t bentonite (seed coating)	21.3	2.11	48.6	3.6	22.4	19.7	59.6	4.2	24.0	43.2	59.6	4.3	24.5	50.5
9		PSV (75-80-80%)	Control (raw)	14.1	1.97	34.5	2.6	15.9	9.6	47.5	3.3	17.0	28.8	47.5	3.5	17.4	33.8
10			30 kg/t bentonite (seed coating)	16.8	2.05	43.7	3.3	20.1	15.5	53.4	3.7	21.6	36.4	53.4	3.9	22.0	42.8
eleven			40 kg/t bentonite (seed coating)	19.0	2.09	47.1	3.5	21.7	17.5	57.3	4.0	23.3	40.8	57.3	4.2	23.8	48.4
12			50 kg/t bentonite (seed coating)	22.0	2.18	50.3	3.8	23.1	20.5	61.7	4.3	24.9	44.3	61.7	4.5	25.4	52.5
13		"Nafi"		Control (raw)	15.1	2.11	46.4	3.5	21.3	3.4	75.1	5.3	22.9	15.3	75.1	5.5	23.4

14	PSV (60-70-70%)	30 kg/t bentonite (seed coating)	17.3	2.11	53.2	4.0	24.5	6.8	86.6	6.1	26.3	25.1	86.6	6.3	26.8	36.2
15		40 kg/t bentonite (seed coating)	20.4	2.24	57.4	4.3	26.4	8.0	92.3	6.5	28.4	28.6	92.3	6.7	29.0	40.2
16		50 kg/t bentonite (seed coating)	22.5	2.23	60.3	4.5	27.7	9.6	98.1	6.9	29.8	30.8	98.1	7.1	30.4	43.2
17	PSV (70-75-75%)	Control (raw)	16.2	2.27	48.2	3.6	22.2	4.5	78.9	5.5	23.8	16.6	78.9	5.7	24.3	30.2
18		30 kg/t bentonite (seed coating)	18.6	2.27	55.3	4.1	25.4	7.6	89.4	6.3	27.3	27.0	89.4	6.5	27.9	38.3
19		40 kg/t bentonite (seed coating)	21.5	2.37	58.7	4.4	27.0	8.8	96.3	6.7	29.0	29.2	96.3	7.0	29.6	43.2
20		50 kg/t bentonite (seed coating)	22.8	2.26	61.5	4.6	28.3	10.2	101.1	7.1	30.4	31.5	101.1	7.4	31.0	47.0
21	PSV (75-80-80%)	Control (raw)	16.8	2.35	49.9	3.7	22.9	4.7	81.7	5.7	24.7	17.0	81.7	5.9	25.2	31.4
22		30 kg/t bentonite (seed coating)	19.3	2.35	57.2	4.3	26.3	7.9	92.5	6.5	28.3	27.7	92.5	6.7	28.9	39.8
23		40 kg/t bentonite (seed coating)	22.3	2.45	60.8	4.6	27.9	9.2	99.7	7.0	30.0	30.0	99.7	7.3	30.6	45.0
24		50 kg/t bentonite (seed coating)	23.6	2.34	63.7	4.8	29.3	10.6	104.6	7.3	31.5	32.3	104.6	7.6	32.1	48.8

In the studied soybean variety Nafis, on August 1, with watering 60-70-70% in the control (untreated) variant, the plant height was 75.1 cm, the number of pods - 5.5, the number of pods - 5.5 cm. 28.4 plant height 86, 6 cm when using a peel of 30 kg/t bentonite clay; branch yield 6.3 units. and the number of beans 36.2 units, or plant height 11.5 cm, branch yield 0.8 units. and the number of pods 7.8 units. compared with the control variant, in accordance with the above, when peeling seeds in the amount of 40 kg/t, the height of the plant is 17.2 cm, the yield of branches is 1.2 units. and the number of pods 11.8 units. and plant height 23.0 cm, branch yield 1.6 units. and the number of pods when applying 50 kg/t compared to the control variant (without treatment), respectively, and it was noted that the number was higher by 14.8 units. The specified law is repeated in 70-75-75% of the order of irrigation of the FPV, in terms of plant height 10.5; 17.4; 22.2 cm, fruit branches 0.8; 1.3; 1.7 pcs. and the number of pods 8.1; 13.0; 16.8 pcs., and in the irrigation system 75-80-80% FPV plant height 10.8; 18.0; 23.5 cm, fruit branches 0.8; 1.4; 1.7 pcs. and the number of pods 8.4; 13.6; It is noted that it is higher by 17.4 units (Table 1).

Based on the results of the experiment, it can be concluded that soybean seed coverage with bentonite gels in the amount of 30, 40 and 50 kg/t and cultivation in the irrigation mode in a high state has a positive effect on plant height and yield. number of collected branches and pods.

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