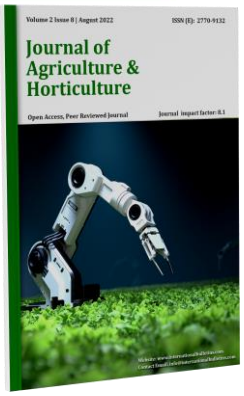

EFFECT OF IRRIGATION PROCEDURE AND APPLICATION OF BENTONITE CLAY TO SEEDS ON WINTER WHEAT PLANT HEIGHT, TOTAL AND PRODUCTIVE STEM NUMBER

Yodgorov Normomin Gulomovich
doctor of philosophy of agriculture, senior researcher
tachnch doctoral student
Togaeva Holida Rajabovna
Southern Agricultural Scientific Research Institute
https://doi.org/10.5281/zenodo.7980216

Аннотация: Ушбу мақолада Қашқадарё вилоятининг оч тусли бўз тупроқлари шароитида кузги буғдойнинг «Шукрона» ва «Сарбон» навлари уруғларини бентонит гиллари билан қобиқлаш меъёри ва суғориш тартибини маҳсулдор элементларига таъсири келтирилган.

Калит сўзлар: кузги буғдой, нав, бентонит гили, қобиқ, уруғ, суғориш меъёри, маҳсулдор, ўсимлик бўйи, маҳсулдор поя.

Аннотация: В данной статье рассмотрено влияние способа покрытия семян озимой пшеницы сортов «Шукрона» и «Сарбон» бентонитовой глиной и режима полива на элементы урожайности в условиях светло-серых почв Кашкадарьинской области.

Ключевые слова: озимая пшеница, сорт, бентонитовая глина, оболочка, семена, оросительная норма, урожайность, высота растений, продуктивный стебель.

Annotation: In this article, the influence of the method of covering the seeds of winter wheat varieties «Shukrona» and «Sarbon» with bentonite clay and the irrigation regime on the yield elements in the conditions of light gray soils of the Kashkadarya region is considered.

Key words: winter wheat, variety, bentonite clay, shell, seeds, irrigation rate, yield, plant height, productive stem.

INTRODUCTION.

The demand for grain products is increasing in proportion to the growing population. This imposes important tasks on the agrarian sector. Therefore, one of the urgent problems is to develop optimal agro-measures to improve the growth and development of plants by covering the seeds with bentonite clay in order to obtain abundant and high-quality harvests from new autumn soft wheat varieties in the production of products.

In the conditions of increasing water scarcity in our region, the stability and development of agricultural production largely depends on the efficiency of irrigation technologies. Therefore, in this research paper, the results of scientific research on the use of bentonite clay, irrigation method and their advantages and disadvantages are presented.

According to D. Mikheev, coating with bentonite increases the field fertility of seeds, including protective and nutritious elements that contribute to the full development of the plant, and as a result, the formation of the crop element increases [1].

Mi Junzhen., G.G.Edward's studies showed that when bentonite clay is applied under the soil to the millet crop, the water retention capacity of the soil increases, and the effect of

bentonite on the plant is determined, and the positive effect on the plant's photosynthesis activity and grain yield is determined [2].

In the researches of I.I.Abdullaev, irrigation was carried out when the soil moisture before irrigation was 60–70–60% and 70–80–70% compared to ChDNS, and in addition to the norms of mineral fertilizers $N_{150}R_{105}K_{75}$ kg/ha, bentonite slurry was applied under plowing in the amount of 3000 kg/ha, control compared to the variant, an additional 13.4–11.9 tons/ha of grain yield was obtained, and it was determined that the yield level was 21.1–18.9% higher [3]. Taking into account the above, scientific research work was carried out in the central experimental field in the area of S. Rahimov, Karshi district. It was found out in the researches that the influence of the method of irrigation and the methods of covering the seeds with bentonite clay in the cultivation of winter wheat in the conditions of pale gray soils had different effects on the formation of the productive element of the plant.

When analyzing the data, it was found that the plant height of winter wheat variety "Shukrona" in wet storage (Background), control (not treated with bentonite) was 52.5 cm, and the number of total and productive stems was 588.4-311.9 m2 determined, seeds with bentonite clay 30; 40; 50 kg/t shelled, plant height 63.3; 67.7; 70.5 cm, the total number of stems is 606.6; 625.3; 629.3 m2 and the number of productive stems 339.7; 356.4; It was observed that it was around 383.9 m2 units. In the "Sarbon" variety, in accordance with the above variety, the plant height is 54.5; 66.6; 68.4; 72.4 cm, total stems 584.1; 602.1; 620.8; 624.6 m2, the number of productive stems is 309.6; 337.2; 353.9; It was found that it was 381 m2 (Table 1).

Table 1

Effects of irrigation pattern and seed application of bentonite clay on winter wheat plant height, total and number of productive stems

№	Irrigation procedure,%	Bentonite standards	Winter wheat varieties	Plant height, cm	Total stems, pieces/m²	Productive stems, pieces/m²
1	Moisture accumulation	Control (unprocessed)	«Shukrona»	52,5	588,4	311,9
2			«Sarbon»	54,5	584,1	309,6
3		30 kg/t Bentonite (Seed Shelling)	««Shukrona»	63,5	606,6	339,7
4			«Sarbon»	66,6	602,1	337,2
5		40 kg/t Bentonite (Seed Shelling)	«Shukrona»	67,7	625,3	356,4
6			«Sarbon»	68,4	620,8	353,9
7		50 kg/t Bentonite (Seed Shelling)	«Shukrona»	70,5	629,3	383,9
8			«Sarbon»	72,3	624,6	381
9	BFWC 70-75-60%	Control (unprocessed)	«Shukrona»	95,4	656,5	374,2
10			«Sarbon»	98,7	651,6	371,4
11		30 kg/t	«Shukrona»	102,5	676,4	453,2

12		Bentonite (Seed Shelling)	«Sarbon»	104,3	671,4	449,8
13		40 kg/t	«Shukrona»	105,4	691	476,8
14		Bentonite (Seed Shelling)	«Sarbon»	106,3	686	473,3
15		50 kg/t	««Shukrona»	106,2	695,3	521,5
16		Bentonite (Seed Shelling)	«Sarbon»	108,6	690,3	517,7
17	BFWC 75-80-70%	Control (unprocessed)	«Shukrona»	102,4	678,1	413,6
18			«Sarbon»	106,8	673	410,5
19		30 kg/t	«Shukrona»	107,3	699,7	510,8
20		Bentonite (Seed Shelling)	«Sarbon»	108,5	694,8	507,2
21		40 kg/t	«Shukrona»	110,6	711,7	590,7
22		Bentonite (Seed Shelling)	«Sarbon»	114,5	705,1	585,2
23		50 kg/t	«Shukrona»	111,3	713,9	628,2
24		Bentonite (Seed Shelling)	«Sarbon»	115,7	706,9	622,1

BFWC it was found that in the 70-75-60% irrigation regime, plant height, total and number of productive stems of winter wheat were higher compared to wet storage (FON). For example, the plant height of the "Shukrona" variety is 40.9; 36; 36.7; 33.7 cm high, total stems 68.1; 69.8; 65.7; 66 pieces/m2 are more, and productive stems are 62.3; 113.5; 120.4; More than 137.6 units/m2, these indicators are also found in "Sarbon" variety of winter wheat, plant height is 46.2; 40.7; 38.9; 38.3 cm high, total stems 67.5; 69.3; 65.2; 65.7 units/m2 more, and the number of productive stems is 61.8; 112.6; 119.4; It turned out that it was higher by 136.7 units/m2.

BFWC of 75-80-70% in the irrigation system compared to wet accumulation (FON) in the variety "Shukrona" 47.9; 40.9; 41.9; 45.4 cm high, total stems 89.7; 93.1; 86.4; increased by 82.3 units/m2, of which the number of productive stems is 101.7; 171.1; 234.3; It was found that it was more than 241.1 units/m2. Also, in the "Sarbon" variety, in proportion to the above, the plant height is 54.3; 44.9; 47.1; 45.4 cm, total stems 88.9; 92.7; 84.3; 82.3 pieces/m2, of which the number of productive stems is 100.9; 170; 231.3; It was found to be higher than 241.1 units/m2. It was observed that the height of the plant increased with the increase in the watering schedule, and the stem formation accelerated.

It can be seen that in the cultivation of winter wheat, irrigation should be in high order and seeds should be treated with bentonite clay 30; 40; When 50 kg/t shelling rate is applied, the productive elements are highly developed, and the plant height is higher by 36-54.3 cm,

the total number of stems is 65.2-92.7, and the number of productive stems is 61.8-244. It was found to be higher than 3 units/m2.

Thus, when we applied the method of watering and encapsulating seeds with bentonite clay, depending on the plant variety, cultivation conditions and agrotechnics, it had a positive effect on the plant height, total and number of productive stems of winter wheat.

According to the data of our research carried out in the conditions of the light gray soils of the desert region of Kashkadarya region, ChDNS is the highest in the 75-80-70% irrigation system, in the options where the seeds are shelled with bentonite clay at 40-50 kg/t, and it is slightly lower when the seeds are shelled at 30 kg/t. and in the control (untreated) variant, the plant height, total and number of productive stalks of winter wheat were sharply reduced.

References:

1. Михеев Д. Исследование нанесения сухого порошка на основе бентонитовой глины на поверхность семян сахарной свеклы при дражировании. УО «Белорусская государственная сельскохозяйственная академия» Горки, Беларусь, 213407. 2018 г.

181-185 с.

2. Junzhen Mi., Edward G, G., Shengtao Xu., and others. Effect of bentonite as a soil amendment on field water-holding capacity, and millet photosynthesis and grain quality. Scientific Reports. 18282 (2020). 26 Oct. P. – 17.

3. Абдуллаев И.И. «Бентонит лойқаси, маъдан ўғитлар меъёрлари ҳамда суғориш тартибларининг кузги буғдой дон ҳосилдорлигига таъсирини баҳолаш». Автореферат. Тошкент. 2018 й. – Б. 48.