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RESEARCH ON THE DEVELOPMENT OF IRRIGATION PROCEDURES FOR SOYA CULTIVARS ON DESIRABLE SOILS PROTECTED FROM DEFLATION BY BACKHOE BARRIERS

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Abstract

Research was conducted to study the irrigation regimes of soybean varieties in areas protected from wind erosion by cover barriers in 2021-2023 on deflated barren soils of the "At the Level of Opportunity" farm in the Koson district of the Kashkadarya region.

Keywords: Deflation, granulometric, soil, erosion, clay particles, till layer, genetic layer, middle loam, shade, backfill.

Introduction

In order to determine the granulometric composition of the experimental field, soil sections were excavated and soil samples were taken from genetic layers.

When the granulometric composition of deflated barren soils was analyzed in laboratory conditions in 2021, it was determined that the amount of large sand (1-0.25mm) particles in the 0-34, 34-60, 60-85, 85-115cm layers of soil was 2.71; 2.95; 2.83; 3.01%, medium sand (0.25-0.1mm) particles were 9.02; 8.98; 9.00; 9.38%, and fine sand (0.01-0.05mm) particles were 3.61; 3.53; 3.57; 3.40%. The highest indicators of mechanical particles were observed in large dust particles with a size of 0.05-0.01mm and were 49.82; 49.83 49.11; 49.47; It was recorded to be 42.24% (see table). When determining the amount of medium dust and fine dust and silt particles in the soil, $< 0{,}001$мм) it was found that the amount of medium dust (0.01-0.005mm) varies from 12.27% to 12.55%, fine dust (0.005-0.001mm) from 13.23% to 15.02%, and silt (from 12.42% to 14.40%). The amount of physical clay (($< 0{,}01$мм) particles in the 0-34, 34-60, 60-85cm layers of the soil is 38.84; 39.43; 38.14%, respectively, and consists of medium sand, and in the 85-115cm layer it is 41.97%, consisting of heavy sand. It was determined that the soil of the experimental field is classified as layered soils. According to the above data, the decrease in physical clay particles in the plowed layer of the soil compared to the plowed layer can be explained by the fact that the clayey soils were subjected to deflation processes. Similar data were obtained in subsequent years of research.

Table 1 Granulometric composition of barren soils subjected to deflation (wind erosion) by year, %

Genetic layer of soil, cm	Soil particle size, mm							Physical clay, < 0.01	Naming of soils according to the NAKachinsky classification
	1-0.25	0.25-0.1	0.1-0.05	0.05-0.01	0.01-0.005	0.005-0.001	< 0.001		
2021 (First Field)									
0-34	2.71	9.02	3.61	49.82	12.27	13.23	13.34	38.84	medium loam
34-60	2.95	8.98	3.53	49.11	12.44	13.48	13.51	39.43	medium loam
60-85	2.83	9.00	3.57	49.47	12.35	13.36	12.42	38.14	medium loam
85-115	3.01	9.38	3.40	42.24	12.55	15.02	14.40	41.97	heavy sand
2022 (Second field)									
0-34	2.83	8.81	3.48	47.63	11.11	13.08	13.06	37.25	medium loam
34-60	3.05	9.03	3.61	46.34	11.32	13.37	13.28	37.97	medium loam
60-85	3.11	9.14	3.39	46.23	12.44	13.18	12.51	38.13	medium loam
85-115	3.07	8.47	2.74	44.01	13.05	1489	13.77	41.71	heavy sand
2023 (Third Field)									
0-34	2.56	7.94	2.78	49.96	10.62	13.26	12.80	36.68	medium loam
34-60	2.73	8.26	2.91	49.01	10.84	13.28	12.97	37.09	medium loam
60-85	2.91	8.74	3.03	47.87	11.16	13.24	13.05	37.45	medium loam
85-115	2.10	7.06	2.59	46.24	12.91	14.76	14.24	42.01	heavy sand

Data on the effect of irrigation regimes on the composition and quantity of soil aggregates in open fields not protected from deflation processes in barren soils and against the background of winter wheat hedges are presented in Table 1.

Table 1 shows that at the beginning of the 2021 period, the amount of particles larger than 10 mm in the arable (0-30 cm) and sub-arable (30-50 cm) layers of deflated soils was 10.1 and 9.8%, respectively, the amount of particles with a size of 10-0.25 mm, which is considered valuable from an agronomic point of view, was 64.2 and 63.4%, and the amount of particles smaller than 0.25 was 25.7 and 26.8%.

In the open field not protected from deflation (control option 1), the mid-season soybean variety Nafis was irrigated with soil moisture of 65-70-65% compared to the CHDNS. In the control option 1, at the end of the application period, agronomically valuable particles (10-0.25 mm) in the 0-30 cm and 30-50 cm soil layers were 60.7 and 60.1%, respectively, or a decrease of 3.5 and 3.3% compared to the beginning of the application period. In the 2nd variant, protected by shade barriers, irrigated with a soil moisture content of 65-70-65% compared to the CHDNS, the amount of particles with a size of 10-0.25 mm was 62.1 and 60.5%, in the 3rd variant, irrigated with a soil moisture content of 70-75-70% compared to the CHDNS, it was 62.7 and 61.4%, in the 4th variant, irrigated with a soil moisture content of 75-80-75% compared to the CHDNS, it was 63.2%. Although these indicators decreased by 2.1 and 2.9%; 1.5 and 2.0; 1.0

and 1.1% compared to the beginning of the period, they increased by 1.4 and 0.4; 2.0 and 1.3; It shows that 2.5 and 2.2% more were saved.

Table 2 Aggregate composition according to irrigation regimes of soybean varieties in barren soils where silt was used as a means of combating deflation, % (2021)

Bar dance	**Variant name**	**Soil moisture before irrigation relative to CHDNS,%**	**Soil layer, cm**	**Particles Size, mm**		
				>10	**10-0.25**	**<0.25**
	At the beginning of the action period (against the general background)		0-30	10.1	64.2	25.7
			30-50	9.8	63.4	26.8
At the end of the action period						
Medium shade ball Fine variety						
1	An open field without protection from shadow deflation	65-70-65	0-30	13.4	60.7	25.9
			30-50	13.0	60.1	26.9
2	Shadow protected from deflation by the backstage	65-70-65	0-30	11.9	62.1	26.0
			30-50	11.7	60.5	27.8
3	Shadow protected from deflation by the backstage	70-75-70	0-30	11.6	62.7	27.4
			30-50	11.2	61.4	25.5
4	Shadow protected from deflation by the backstage	75-80-75	0-30	11.3	63.2	25.5
			30-50	10.8	62.3	26.9
Late ripening soybean variety Uzbekskaya-6						
	An open field without protection from shadow deflation	65-70-65	0-30	13.1	61.0	26.9
			30-50	12.7	60.4	26.9
6	Shadow protected from deflation by the backstage	65-70-65	0-30	11.6	62.3	26.2
			30-50	11.2	60.7	28.1
7	Shadow protected from deflation by the backstage	70-75-70	0-30	11.3	62.8	25.9
			30-50	10.8	61.3	27.9
8	Shadow protected from deflation by the backstage	75-80-75	0-30	10.9	63.4	25.7
			30-50	10.3	62.4	27.3

Aggregate composition according to irrigation regimes of soybean varieties on barren soils where cullis was used as a means of combating deflation, % (2022)

Table 3

There is dance	Variant name	Soil moisture before irrigation relative to CHDNS,%	Soil layer, cm	Particles size, mm		
				>10	10-0.25	<0.25
	At the beginning of the action period (against the general background)		0-30	11.6	63.8	24.6
			30-50	10.9	62.7	26.4
At the end of the action period						
Mid-ripening Nafis variety of soybeans						
1	An open field without protection from shadow deflation	65-70-65	0-30	14.3	59.3	26.4
			30-50	14.0	58.5	27.5
2	Shadow protected from deflation by the backstage	65-70-65	0-30	13.8	60.9	25.3
			30-50	13.6	59.7	26.7
3	Shadow protected from deflation by the backstage	70-75-70	0-30	12.7	61.4	25.9
			30-50	121	60.9	27.0
4	Shadow protected from deflation by the backstage	75-80-75	0-30	12.3	62.1	25.6
			30-50	11.8	61.3	26.9
Late ripening soybean variety Uzbekskaya-6						
	An open field without protection from shadow deflation	65-70-65	0-30	14.2	60.1	25.7
			30-50	13.9	59.7	26.4
6	Shadow protected from deflation by the backstage	65-70-65	0-30	13.6	61.2	25.2
			30-50	13.3	60.3	26.4
7	Shadow protected from deflation by the backstage	70-75-70	0-30	12.5	61.7	25.8
			30-50	11.9	61.1	27.0
8	Shadow protected from deflation by the backstage	75-80-75	0-30	11.8	62.3	25.9
			30-50	11.2	61.6	27.2

However, it was found that the amount of aggregates with a size of 10-0.25 mm was 1.3 and 0.3; 1.8 and 0.9; 2.4 and 2.0% higher in options 6, 7, and 8, which were protected from deflation, compared to the control option 5, which was not protected from deflation, according to the irrigation regime.

Conclusion

In the control, the amount of agronomically valuable particles with a size of 10-0.25 mm in the upper (0-30 cm) and lower (30-50 cm) layers of the soil at the end of the application period was 61.0 and 60.4%, respectively, or 3.2 and 3.0% less than at the beginning of the application period, while in, respectively, was 62.3 and 60.7% less than at the beginning of the application period, and in the control, the amount of agronomically valuable particles with a size of 10-0.25 mm in the lower (30-50 cm) layers of the soil at the end of the application period, respectively, was 65.0 and 65.0% less than at the beginning of the application period, respectively, or 6.0% less than at the beginning of the application period, respectively, and in the control, the amount of agronomically valuable particles with a size of 10-0.25 mm in the upper (0-30 cm) and lower (30-50 cm) layers of the soil at the end of the application period, respectively, and 62.3 and 60.7% less than at the beginning of the application period, respectively, and in the control, the amount of agronomically valuable particles with a size of 10-0.25 mm in the lower (30-50 cm) layers of the soil at the end of the application period, respectively, and 62. 62.8 and 61.3%, and in variant 8, irrigated in the order of 75-80-75% compared to CHDNS, it was 63.4 and 62.4%, or the amount of agronomically valuable particles with a size of 10-0.25 mm decreased by 1.9

and 2.5; 1.4 and 2.1; 0.8 and 1.0%, respectively, compared to the beginning of the period of application.

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