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INFLUENCE OF THE RATE OF SEED DRAPING WITH BENTONITE CLAY AND IRRIGATION REGIME ON THE FORMATION OF THE ROOT SYSTEM OF WINTER WHEAT

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Abstract
In this article, under the conditions of light gray soil of the Kashkadarya region, as a result of the influence of the method of covering the seeds of winter wheat varieties with bentonite clay and irrigation methods on the rood mass, in the Shukron variety up to 32,9-54,2 g and in the Turon variety up to 40,2-68 g.

Keywords: Bentonite clay, winter wheat, irrigatsion rate, seed cover, soil, rood mass,meniral fertilizer, moisture.

Introduction

The root is an important vegetative organ of a plant, which connects the stem or body of the plant to the ground, absorbs water and nutrients dissolved in the soil, and delivers them to the above-ground part of the plant. The better developed the root system in cereal plants, the more significantly it positively affects the growth and development of the plants [1-4].

Н.И.Картамишев and others believe that plant roots accumulate in subsoil where moisture and nutrients are abundant and produce large amounts of dry mass. Therefore, if the crop field is low in fertility and moisture under the soil, the main part of the root is located in the fertile part of the surface of the soil[5]. Ю.А.Киперман, М.А.Комаров and А.И.Ангелова in my opinion, modern agriculture should move to new integrated technologies using local mineral resources. According to scientific studies by a number of scientists, the use of local agrominerals allows improving soil, protecting the environment, and increasing crop productivity [6].

И.И.Бобоходжаев according to information, adding bentonite to the soil improves the water-physical and thermal properties of the soil, increases the moisture capacity of the limited field, and reduces the water permeability of sandy soils. As a result, the conditions for the life activity of microorganisms and the nutrition of cultivated plants are improved [7]. А.Сатже, А.Д.Нобле Bentonite increases soil pH, nutrient retention in the soil, and the ease of absorption by crops, as well as the efficiency of fertilizer use [8- 9].

The formation of the root system of spiked grain crops is significantly influenced by the soil and climate conditions of the region where the crop is grown, the mechanical composition of the soil,

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cultivation conditions, applied agrotechnical measures, as well as various environmental factors.

In the conducted studies, it was found that the dry weight of roots varied according to the development phases of winter wheat under the influence of irrigation regime and the rate of mulching with bentonite clay. Field experiments the root mass in the 0-30 cm soil arable layer was calculated according to the stages of accumulation, tuberization, and heading of winter wheat. It was noted that the root mass (dry) of winter wheat varieties was 40.1-69.6 g/m2, 60.1-116.4 g/m2 in the tillering phase, and 129.8-328.3 g/m2 in the heading phase. Compared to the bunching phase, the root mass in the tillering phase was 20.0 g/m2 to 46.8 g/m2 or 50% to 75% higher, and in the heading phase, it was 69.7 g/m2 to 211 g/m2 or 116% to 182% higher than the tillering phase.

According to the experimental variants, the root mass of the winter wheat variety «Shukrona» under the irrigation regime of 70-75-60% of the LFWC, in the control (untreated) variant 1, was 43.3 g/m2 in the tillering phase, 60.1 g/m2 in the tillering phase, and 129.8 g/m2 in the heading phase, while in the traditional variant 2, where mineral fertilizers NPK:180-90-60-FON were applied, the root mass in the tillering, tillering and heading phases, corresponding to the above indicators, was 53.3; 75.8; 181.8 g/m2, in variant 3 (FON + 30 kg/t bentonite seed coating) 56.2; 80.3; 191.3 g/m2, in variant 4 (FON + 40 kg/t bentonite seed dressing) it was 65.3; 97.1; 245.6 g/m2, in variant 5 (FON + 50 kg/t bentonite seed dressing) it was 59.4; 87.8; 207.5 g/m2. When the above analyses were carried out in the 75-80-70% irrigation regime of the LFWC, in variant 6, where the control treatment was not applied, the root mass of the plants in the stages of accumulation, tube formation and heading was 40.1; 65.8; 142.1 g/m2, in the traditional variant 7, where the mineral fertilizer rate NPK: 180-90-60-FON was used, it was 50.6; 86.9; 223.7 g/m2, (FON+30 kg/t bentonite seed coating) 53.5 in option 8; 93.6; 243 g/m2, (FON+40 kg/t bentonite seed coating) 60.7 in option 9; 108.8; 297.8 g/m2, and 56.5 in 10 options used (FON+50 kg/t bentonite seed coating); 101.8; It was 265.9 g/m2.

The above analyses were conducted on winter wheat of the «Turon» variety, and the following results were recorded. In particular, in the 11th variant with the irrigation regime of 70-75-60% of the LFWC, the root mass was 46.1; 66.5; 143.6 g/m2, in the 12th variant with the traditional mineral fertilizer rate NPK: 180-90-60-FON, it was 43.9; 79.9; 190.7 g/m2, in the 13th variant with the application of (FON + 30 kg / t bentonite seed dressing) it was 60.5; 87.3; 206.5 g/m2, in the 14th variant with the application of (FON + 40 kg / t bentonite seed dressing) it was 69.6; 105.8; 282.6 g/m2, in variant 15 (FON+50 kg/t bentonite seed dressing) it was 64.2; 93.5; 238 g/m2, in variant 16 with 75-80-70% irrigation of the LFWC, the indicators were 43.9; 70.7; 152.8 g/m2, in variant 17 with the traditional mineral fertilizer rate NPK: 180-90-60-FON it was 54.8; 96.6; 250.0 g/m2, in variant 18 with (FON+30 kg/t bentonite seed dressing) it was 57.6; 103.2; 268.0 g/m2, (FON+40 kg/t bentonite seed coating) 65.5 in option 19; 116.4; 328.3 g/m2 (FON+50 kg/t bentonite seed coating) and in option 20, 60.1; 107.9; It was found to be 291.2 g/m2.

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1- Table The effect of bentonite clay seed coating rates and irrigation regimes on the development of the winter wheat root system

№.	Winter wheat varieties	Irrigation procedures in relation to LFWC, %	Application rate of bentonite clay, kg/t	Development phases, g/m²		
				Accumulation	Tube	Spike
1	«Шукрона»	The 70-75-60 of the LFWC	Control (unprocessed)	43,3	60,1	129,8
2			NPK:180-90-60-FON	53,3	75,8	181,8
3			FON + 30 kg/t bentonite (seed coating)	56,2	80,3	191,3
4			FON + 40 kg/t bentonite (seed coating)	65,3	97,1	245,6
5			FON + 50 kg/t bentonite (seed shelling)	59,4	87,8	207,5
6		The 75-80-70 of the LFWC	Control (unprocessed)	40,1	65,8	142,1
7			NPK:180-90-60-FON	50,6	86,9	223,7
8			FON + 30 kg/t bentonite (seed coating)	53,5	93,6	243
9			FON + 40 kg/t bentonite (seed coating)	60,7	108,8	297,8
10			FON + 50 kg/t bentonite (seed shelling)	56,5	101,8	265,9
11	«Турон»	The 70-75-60 of the LFWC	Control (unprocessed)	46,1	66,5	143,6
12			NPK:180-90-60-FON	57,4	79,9	190,7
13			FON + 30 kg/t bentonite (seed coating)	60,5	87,3	206,5
14			FON + 40 kg/t bentonite (seed coating)	69,6	105,8	282,6
15			FON + 50 kg/t bentonite (seed shelling)	64,2	93,5	238
16		The 75-80-70 of the LFWC	Control (unprocessed)	43,9	70,7	152,8
17			NPK:180-90-60-FON	54,8	96,6	250
18			FON + 30 kg/t bentonite (seed coating)	57,6	103,2	268
19			FON + 40 kg/t bentonite (seed coating)	65,5	116,4	328,3
20			FON + 50 kg/t bentonite (seed shelling)	60,1	107,9	291,2

According to the results of scientific research, it was found that the root system of winter wheat is significantly influenced by factors such as variety, irrigation regime, and treatment of seeds with bentonite clay. It was noted that in the cross-section of varieties, the root dry mass of the winter wheat variety «Turon» was higher than that of the winter wheat variety «Shukrona» by 2.8-4.8 g/m2 in the accumulation phase, by 4.1-9.7 g/m2 in the tuberization phase, by 8.9-37.0 g/m2 in the earing phase, and by 8.9-37.0 g/m2 in the earing phase.

Also, due to the change in the irrigation regime of wheat varieties from 70-75-60% of the LFWC to 75-80-70% of the LFWC, it was noted that the root mass index was higher than the norm due to the increased moisture supply of plant roots. It was found that in wheat varieties with the LFWC

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irrigation regime of 75-80-70% of the LFWC, compared to the 70-75-60% irrigation regime, the root mass was 4.2-16.7 g/m2 higher in the tuberization phase and 9.1-61.4 g/m2 higher in the earing phase. Since seasonal irrigation was not carried out until the accumulation phase, the difference was not observed. The control in the study was not treated; NPK: 180-90-60-FON; FON+30 kg/t bentonite seed dressing; FON+40 kg/t bentonite seed coating) increased the root mass of plants in the stages of tillering, tuberting, and spike, and it was found that the root mass decreased in the case of FON+50 kg/t bentonite seed coating.

In this case, in the control (untreated) variants 1; 6; 11 and 16, the root mass in the heading phase was 129.8; 142.1; 143.6 and 152.8 g/m2, respectively, while in the traditional variants 2; 7; 12 and 17, the root mass was 10.0-11.3 g/m2 more than in the control (untreated) variants, in which the mineral fertilizer rate NPK: 180-90-60-FON was used, compared to the traditional variant (FON + 30 kg/t bentonite seed dressing); 3; 8; In options 13 and 18, 2.8-3.1 g/m2 (FON+40 kg/t bentonite seed coating) was used 4; 9; In options 14 and 19, 10.1-12.2 g/m2 and (FON+50 kg/t bentonite seed coating) were applied 5; 10; In options 15 and 20, it was noted that it was 5.3-6.8 g/m2.

Thus, if we conclude from the conducted scientific research, the «Shukrona» and «Turon» varieties of wheat, when irrigated with mineral fertilizers at the rate of NPK: 180-90-60 (FON) at a rate of 75-80-70% of the total annual rainfall, and coated with 40 kg/t of bentonite clay, further increase the possibility of forming a high and high-quality grain yield, with the dry mass of the plant in the 0-30 cm arable layer of soil corresponding to the indicators of 65.3-69.6 g/m2.

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