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INFLUENCE OF NORMS OF FERTILIZATION AND IRRIGATION OF PROMISING AUTUMN WINTER VARIETIES

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Abstract:

The article presents ideas about the need for agricultural technology for growing early-ripening varieties of winter wheat, taking into account soil and climatic conditions, individual feeding norms, and irrigation regime. Soil moisture has been studied as the main factor affecting the yield of winter wheat under irrigated agriculture.

Keywords: early ripening varieties of wheat, irrigation regime, feeding norms, density of soil moisture.

This article sets out ideas about the need for a particular agrotechnical cultivation of early ripening winter wheat taking into account the soil and climatic conditions, individual feeding norms, irrigation regime. Also, emphasis is placed on soil moisture as the main factor affecting the yield of winter wheat under irrigated agriculture.

The Decree of the President "On approval of the strategy for the development of agriculture of the Republic of Uzbekistan for 2020-2030" allows reforming agriculture, increasing the yield of grain plants through the use of innovative solutions, as well as increasing efficiency and phased redistribution of public spending through the development of sectoral programs aimed at increasing productivity labor in farms, improving product quality, creating high value added. The measures taken make it possible to strengthen legal relations between the entities producing and processing, engaged in the sale of agricultural products by increasing the flow of private investment capital to modernize, diversify and support the stable growth of the agri-food sector[1].

This document focuses on improving the system for ensuring the rational use of natural resources and environmental protection, which provides for the rational use of land and water resources, as there is an increase in water demand around the world (by 2050, water needs may amount to 4.5 billion cubic meters). cube per year). Preservation and improvement of soil fertility with the introduction of the practice of efficient use of fertilizers depending on soil and climatic conditions through the purchase of mobile laboratories for soil analysis.

It is planned to achieve an average grain yield of up to 75c/ha by 2030, with a total share of up to 15% relative to the entire sown area (Appendix No. 2, [1]).

Of the 20.2 million hectares of agricultural land, only 20.7 percent is irrigated. Over the past 15 years, the availability of irrigated land per capita has decreased by 24 percent (from 0.23 ha to 0.16 ha).

Information on the state of food supply in the world gives the following conclusions:

- in the world under the threat of poverty for 1.7 billion people;
- Turkey is the most dependent on wheat supplies from Russia and Ukraine;
- Egypt in 2019 received 70% of the total grain purchased from Russia, and in 2021 41% of Egyptians at times did not have enough money to buy food. A much more deplorable situation is observed in Kenya, also dependent on Russian supplies: there, and in 2021, 69% of the population at times could not afford to buy food.

All this is due to the fact that the share of the Russian Federation in the production of wheat and barley is 30%, corn - 20% and sunflower oil - more than 50%, and the products of the two countries serve as a source of food for the poorest inhabitants of the planet [8].

It is important to study the irrigation regime in the agricultural technology of winter wheat, since the effectiveness of the applied mineral fertilizers directly depends on the optimal soil moisture. As is known from scientific sources, the need for water and the development of winter wheat, based on biological characteristics, is different in different soil conditions and in different phases of development. Based on this, in 2008-2010. on the fields of the educational and experimental farm of the Andijan Agricultural Institute, experiments were carried out to determine the norms of top dressing and the irrigation regime for early-ripening varieties of winter wheat [2,3].

The soil on the experimental plot is partly light gray soil, mostly meadow, the depth of groundwater is 1.5..1.7 m. 70–70–60; 65–65–60% of the field limiting capacity (FWC). The experimental plot was located in the first department of the educational and experimental farm of the Andijan Institute of Agriculture and Agrotechnologies (Table 1).

Table 1

Experimental results

Option	Scheme of pre-irrigation soil moisture, %	Amount of mineral fertilizers applied to the soil, kg/ha	Calculated moisture density, cm		
			Sowing, tillering	Flowering, heading	Maturation
1	70-70-70	Control - no fertilizer	0…50	0…70	0…100
2	70-70-70	Na -180; P_2O_5-120; K_2O-60	0…50	0…70	0…100
3	70-70-60	Control - no fertilizer	0…50	0…70	0…100
4	70-70-60	Na -180; P_2O_5-120; K_2O-60	0…50	0…70	0…100
5	65-65-60	Control - no fertilizer	0…50	0…70	0…100
6	65-65-60	Na -180; P_2O_5-120; K_2O-60	0…50	0…70	0…100

For agricultural crops, especially for winter wheat under irrigated agriculture, the main factor affecting yield is soil moisture. With normal humidity (optimal humidity) of the soil, wheat will "survive" the heat of 45 ° C (this temperature regime is almost normal in Uzbekistan).

At 50 ° C, wheat begins to wither after 30 minutes. According to [3,4], for each variety, the appropriate soil and climatic conditions, separate fertilizing norms, and irrigation regime should be observed (the type of soil, the level of water layers and other factors are taken into account).

The studies show the influence of the irrigation regime and norms of mineral fertilizers for winter wheat varieties on the yield of grain and straw in the conditions of meadow gray soils of the Andijan region. The obtained averaged data for three years of research (2014-2016) (Table 2). From the above, the following conclusions can be drawn. Under the variant of pre-irrigation soil moisture of 65-65-60% of the FPV with the norm of mineral fertilizers Na - 180, P2O5 - 100, K2O - 60 kg/ha, the grain yield for three years was 70.2 q/ha, respectively; 74.5 q/ha; 71.2 centners/ha, on average for three years - 71.4 centners/ha. In the variant "Without fertilizers", the results were respectively 36.7 q/ha; 38.1 q/ha; 36.4 c/ha, on average for three years - 37.3 c/ha. The difference in yield is the result of applying irrigation at the time of greatest need for irrigation, taking into account the rationing of water supply. There was observed savings in water consumption of about 5-6% relative to the total water consumption.

Under the variant of irrigation with mineral fertilizers with pre-irrigation soil moisture of 65–65–60% of the FPV, the grain yield for three years was 58.5 c/ha, respectively; 60.6 q/ha; 60.6 centners/ha, on average for three years -59.9 centners/ha. Additional yield due to the use of irrigation amounted to 11.1 c/ha. The highest yield for three years averaged 80.7 c/ha, the highest yield from irrigation was 37 c/ha.

Table 2

Таблица №2

Productivity of grain and straw of winter wheat

Yield	Option					
	1	**2**	**3**	**4**	**5**	**6**
Grain, c/ha	34,8	59,8	35,5	60,0	37,3	71,3
Straw, c/ha	61,4	79,6	58,1	78,8	61,0	80,5

The additional yield of straw compared to the option "Without fertilizer" was 20.7 c/ha. Based on three years of research, we can say the following: the highest yield of winter wheat was obtained with a pre-irrigation soil moisture of 65–65–60% of the FPV and with mineral fertilizers with an annual rate of Na - 180 kg/ha, P2O5 - 100 kg/ha, K2O - 60 kg / ha.

In conclusion, we note that the yield depends directly on the irrigation regime while maintaining the rate of mineral fertilizers, as well as taking into account the characteristics of the soil and natural conditions. It is necessary to constantly develop technical equipment and carry out analytical work with information on the effect of mineral fertilizers on the development of crops.

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