INFLUENCE OF IRRIGATION METHODS AND REGIMENTS ON THE QUANTITY OF GRAIN GLEUKOVINA OF WINTER WHEAT VARIETIES

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Abstract: *This research work describes the influence of irrigation methods and regimes on the gluten content of winter wheat varieties under the conditions of irrigated light gray soils of the Kashkadarya region. According to the results of 2023, high indicators of gluten content in the grain were observed in all irrigation regimes with a pre-irrigation soil moisture regime of 70-75-65 LFC.*

Keywords: *light gray soils, soil moisture, winter wheat, gluten content in grain, indicator, agricultural technology, irrigation, irrigation methods, irrigation procedures.*

Аннотация: *В данной исследовательской работе изложено влияние способов и режимов орошения на содержание клейковины зерна при возделывании сортов озимой пшеницы в условиях орошаемых светлых сероземных почв Кашкадарьинской области. Согласно результатам, проведенным в 2023 году, высокие показатели содержания клейковины в зерне наблюдались при всех способах орошения по режимам орошения с предполивной влажностью почвы 70-75-65 ППВ.*

Ключевые слова: *светлые сероземы, влажность почвы, озимая пшеница, содержание клейковины в зерне, показатели, агротехника, орошение, способы орошения, порядок орошения.*

Annotatsiya: *Mazkur tadqiqot ishida Qashqadaryo viloyatining sug‘oriladigan och tusli bo‘z tuproqlari sharoitida kuzgi bug‘doy navlarini yetishtirishda sug‘orish usullari va tartiblarining donning kleykovina miqdoriga ta’siri bayon qilingan. 2023 yilda amalga oshirilgan natijalarga ko‘ra, donning kleykovina miqdorining yuqori ko‘rsatkichlari sug‘orish tartiblari bo‘yicha barcha sug‘orish usullarida ham sug‘orishdan oldingi tuproq namligi ChDNS 70-75-65 tartibda kuzatildi.*

Kalit so‘zlar: *och tusli bo‘z tuproqlar, tuproq namligi, kuzgi bug’doy, don kleykovina miqdori, ko‘rsatkich, agrotexnika, sug’orish, sug’orish usullari, sug’orish tartiblari.*

INTRODUCTION

Wheat ranks first among other crops in terms of cultivated area in world agriculture. Countries that grow a lot of wheat include Russia, Canada, Argentina, France, Kazakhstan, and several other countries. The main part of the world's population (70%) consumes products made from wheat flour. Wheat grain also contains vitamins B1, B2, PP and calcium, iron and phosphorus necessary for the body. Starch and dextrin are obtained from wheat grain, and straw and husks are used as livestock feed [1].

Currently, the yield of winter wheat on irrigated lands in many farms of the republic averages 30-40 centners per hectare, but the potential yield of intensive wheat varieties reaches 100-120 centners per hectare. One of the main reasons for such a large difference

between potential and actual yields is the lack of scientific foundations for cultivation technology, including fertilization and irrigation of winter wheat. Providing the plant with sufficient moisture during the growing season, obtaining a rich and high-quality harvest without harming the yield with minimal water consumption is one of the main problems of grain farming in our country today. Therefore, taking into account the biological characteristics of winter wheat and the soil and climatic conditions of the region, determining the optimal norms of mineral fertilizers - nitrogen, phosphorus, and potassium, as well as irrigation regimes, and introducing them into production is the most pressing issue in grain production [2].

The most important indicators in wheat are protein and gluten. Wheat grain is used depending on the protein content; if the protein content is very low, 11-13% of feed is prepared for livestock, 14-15% for bread, and 17-18% for pasta. Based on protein and gluten levels, wheat is classified as abundant, valuable, and durum. Depending on its strength, soft wheat is divided into strong, medium, and weak. Strong wheat is divided into medium and weak, depending on the gluten level. Wheat with a protein content of more than 14% and a gluten content of more than 28, capable of producing high-quality bread (with rising dough, swelling, and porosity), and which, if necessary, can be added to weak wheat flour to improve its quality, are called strong wheat. Medium-sized wheat includes wheat with a protein content of 11.0-13.9% and gluten content of 25-27%. Their bread baking rate is low and they are considered the second grade, with poor dough rising. Weak wheat refers to a third-grade wheat with a protein content of less than 11% and a gluten content of less than 25%. Flour made from weak wheat is used to make low-tasting, poorly leavened bread and other products. Valuable wheat refers to varieties that are similar to strong wheat in terms of technological processes and chemical composition of the grain [3].

Gluten is a protein complex that provides an elastic structure when combined with water. Especially in bread production, it ensures the swelling and elasticity of the dough. The gluten content in durum wheat is higher than in soft wheat [4].

Analysis of the research. This research work was carried out in the conditions of irrigated light sierozem soils of the Kashkadarya region. According to the results of research conducted in 2023 on the study of irrigation methods and regimes of winter wheat varieties Tanya, Asr, and Yaksart in the study area, the gluten content in the grain of winter wheat varieties averaged from 26.0% to 31.8% (table 1).

In the research work, the soil moisture before irrigation using the furrow irrigation method of winter wheat with an irrigation regime of 65-70-60% of FC was on average 26.4% for the "Tanya" variety, 28.1% for the "Asr" variety, and 27.2% for the "Yaksart" variety. Soil moisture before irrigation in the order of 70-75-65% of FC was 29.8% for the "Tanya" variety, 31.8% for the "Asr" variety, and 30.6% for the "Yaksart" variety. It was established that the soil moisture before irrigation in the 75-80-70% regime of FC was on average 28.4% for the "Tanya" variety, 30.0% for the "Asr" variety, and 28.9% for the "Yaksart" variety.

Table 1

Influence of irrigation on the gluten content of winter wheat varieties, % (2022y)

№	Irrigation	Irrigation regime	Variety	Repeat 1	Repeat 2	Repeat 3	Average

	method		name				
1	Furrow irrigation (standard)	65-70-60 LFC	Tanya	26,4	25,7	27,1	26,4
2			Asr	26,9	28,4	28,9	28,1
3			Yaksart	28,1	26,7	26,9	27,2
4		70-75-65 LFC	Tanya	28,6	28,6	32,1	29,8
5			Asr	31,7	31,6	32	31,8
6			Yaksart	30,9	30	31	30,6
7		75-80-70 LFC	Tanya	28,2	28,1	29	28,4
8			Asr	28,8	32,1	29,1	30,0
9			Yaksart	30	28,9	27,8	28,9
10	Raindrop irrigation	65-70-60 LFC	Tanya	26,1	27	24,9	26,0
11			Asr	28,6	26,8	28	27,8
12			Yaksart	28,6	25,7	26,6	27,0
13		70-75-65 LFC	Tanya	30	27,8	30,6	29,5
14			Asr	31,4	31	31,7	31,4
15			Yaksart	30,8	31,1	31,7	31,2
16		75-80-70 LFC	Tanya	26,8	28,5	28,8	28,0
17			Asr	28,7	29	30,5	29,4
18			Yaksart	29,3	30,5	25,3	28,4

When irrigating winter wheat varieties using the sprinkler irrigation method with an irrigation regime of 65-70-60% of FC, the soil moisture content averaged 26.0% for the "Tanya" variety, 27.8% for the "Asr" variety, and 27.0% for the "Yaksart" variety. Soil moisture before irrigation in the order of 70-75-65% of FC was 29.5% for the "Tanya" variety, 31.4% for the "Asr" variety, and 31.2% for the "Yaksart" variety. It was established that the soil moisture before irrigation in the 75-80-70% regime of FC was on average 28.0% for the "Tanya" variety, 29.4% for the "Asr" variety, and 28.4% for the "Yaksart" variety.

In conclusion, it should be noted that in the conditions of light gray soils, the highest protein content in the grain according to irrigation methods was determined in the order of 70-75-65% of FC for all irrigation methods. It was established that under the influence of irrigation methods and regimes, the protein content of winter wheat varieties varied on average from 26.0% to 31.8%.

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