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Effects of Irrigation Regimes on Stem Height and Leaf Number of Replanted Sunflower Varieties

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ABSTRACT

In the article, the pre-irrigation soil moisture of sunflower varieties “Jahongir” and “Yangi zamon” repeatedly planted in Ulughnor district of Andijan region in 2020-2022 in the conditions of long-irrigated grassland soils of Central Fergana is 70-70-60, 70-75-65 and 70-80-70% were studied. It is reported that the most positive results regarding stem height and number of leaves of sunflower varieties were obtained when the soil moisture before irrigation was 70-75-65% relative to the marginal field moisture capacity.

KEYWORDS: Central Fergana, grassland soils, repeated cropping, sunflower, variety, water, irrigation, MFMC, stem height, number of leaves.

Introduction

Due to many factors, such as annual degradation of arable land in agriculture, unfavorable weather conditions, water scarcity, decreasing water level of the Aral Sea, global climate warming, salinization of soil, loss of arable land and desertification. the limited possibility of growing the expected harvest is causing the price of some types of food products to increase. In this regard, meeting the needs of the population for oilseeds in the world market and in our country is one of the urgent issues.

After all, palm, soy, sunflower and rapeseed oils make up 87% of the vegetable oils produced in the world, while the remaining 13% are peanut, cotton, olive, coconut and other oils. In our country, the sunflower crop remains among the main oil crops.

Analyzing the results of the research conducted in our country and abroad on obtaining high and quality grain yield from sunflower, it should be noted that 47,3 million tons of sunflower are produced annually on the globe. Ukraine is the world's largest producer of sunflowers, with annual production of 13,6 million. tons, the Russian Federation takes the second place with 11,0 million tons per year. About 9,9 million tons of sunflower raw materials are grown in the countries of the European Union. This is 13% more than last year, that is, 4,42 million hectares of sunflower seeds are planted in the EU member states, and an average of 2,23 tons of harvest per hectare is harvested [4].

According to K. V. Vedmedeva [1], sunflower makes up about 75,8% percentage of the total vegetable oil production of the main oil crops of the CIS countries. In the last 30 years, the sunflower cultivation area has doubled to 25 million hectares.

According to R.Casadebaig [1], A.I.Orlov [3], the sunflower plant is considered to be a crop adapted to the hot and dry conditions of deserts, steppes and forest steppes of North and South America, and he correctly determined the procedures for watering this crop in water-scarce areas of our republic and allows to grow a high quality grain crop. B. Khalmuratova [5], in conditions of water scarcity in medium-saline meadow alluvial soils of the Republic of Karakalpakstan, the soil moisture before irrigation of the Navroz variety of sunflower was 70-70-60% relative to MFMC in the order of 0-1-0 irrigation system, seasonal irrigation was

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628-1138 m^3/ha when irrigated at the rate, 14,5 quintals of seeds were harvested per hectare, and the yield rate was 39,6%.

It is known that increasing the yield and quality of oilseed crops, especially sunflower, has a positive effect on the quality and quantity of the crop, as well as on the quality and quantity of the crop.

Materials and Methods

Our scientific research, in the conditions of grassland soils of Central Fergana with a water level of 1,5-2,0 meters, repeated crops in Ulughnor district of Andijan region in the years 2020-2022 compared to MFMC of sunflower varieties 70-70-60%, 70-75-65% and Scientific research has been conducted on 70-80-70% irrigation procedures.

Soil moisture was collected from 0-50 cm before flowering, 0-70 cm before flowering and 0-70 cm before ripening and full ripening. In the sunflower crop, the growth phases - until the appearance of the basket, from the appearance of the basket to the ripening period and the full ripening period were determined.

In the experiment, options are placed in 4 returns, 1 tier. Each section is 100 m long and 5,6 m wide. Each option consists of 8 rows, the surface of the field is 560 m2, the accounting area is 280 m^2. Agrochemical and agrophysical research of soil (UzCRI) "Methods of agrochemical, agrophysical and microbiological research in irrigated cotton areas", "Methods of agrochemical analyzes of soils and plants", "Methods of agrophysical research" (1973), "Methodology of field experience" and "Methods of conducting field experiments" (2007) was carried out according to the methods specified in the sources.

Results and Discussion

In our research, the stem height and number of leaves of the sunflower grown as a repeated crop were determined by measuring the height of the stem and counting the number of leaves in 100 plants at 3 points of each variant every 20 days.

Table 1. Depending on the watering regime, stem height and number of leaves of "Jahongir" and "Yangi zamon" varieties of replanted sunflower

(2020-2022 annual average)

Varieties	Soil moisture before irrigation relative to MFMC, %	01 August.		20 August.		10 September.		Ripen	
		height, cm	leaf, pcs	height, cm	leaf, pcs	height, cm	leaf, pcs	height, cm	leaf, pcs
Jahongir	70-70-60	34,6	8,6	81,1	12,9	165,4	18,2	167,8	5,9
	70-75-65	36,7	10,1	84,6	15,0	171,7	20,6	174,1	6,6
	70-80-70	36,3	9,4	83,0	14,0	169,5	19,7	173,4	6,3
Yangi Zamon	70-70-60	32,1	8,4	58,9	11,8	137,7	16,5	155,0	5,3
	70-75-65	34,8	9,3	63,3	14,3	145,4	18,7	164,2	6,1
	70-80-70	34,7	8,7	62,1	13,2	144,9	17,4	161,8	5,6

According to the results of monitoring, the height of the "Jahongir" variety of sunflower cultivated as a repeated crop was 34,6 cm on August 1, and the number of leaves was 8,6 when the soil moisture before irrigation was 70-70-60% compared to MFMC. These values were 81,1 cm, 12,9 units on August 20 – 165,4 cm, 18,2 units on September 10 and 167,8 cm, 5,9 units at maturity. Soil moisture before irrigation is 70-75-

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65% relative to MFMC when irrigated according to the observation dates 36,7 cm, 10,1 pcs., 84,6 cm., 15,0 pcs., 171,7 cm., 20,6 pcs and 174,1 cm., 6,6 pieces. When the soil moisture before irrigation is 70-80-70% relative to MFMC, these indicators are 36,3 cm, 9,4 cm, 83,0 cm, 14,0 cm, 169,5 cm, 19,7 cm and 173,4 cm, made 6,3 pieces.

Before watering the replanted sunflower of the "Yangi zamon" variety, ыoil moisture before irrigation is 70-70-60% relative to MFMC when irrigated, its height was 32,1 cm on August 1, the number of leaves was 8,4 and on August 20 it was 58,9 cm, 11,8 pieces, 137,7 cm, 16,5 pieces on September 10 and 155,0 cm, 5,3 pieces at maturity. When the soil moisture before irrigation was irrigated in the order of 70-75-65% relative to MFMC, these indicators were 34,8 cm, 9,3 cm, 63,3 cm, 14,3 cm, 145,4 cm, 18,7 pieces and 164,2 cm, made 6,1 pieces. Soil moisture before irrigation is 70-80-70% relative to MFMC when irrigated 34,7 cm, 8,7 units, 62,1 cm, 13,2 units, 144,9 cm, 17,4 units, 161,8 cm, 5,6 units when irrigated in the order of 70-80-70% compared to MFMC.

In both varieties of sunflower, the height and number of leaves of the plants were recorded in the irrigated options in the order of 70-75-65% relative to MFMC before irrigation.

Conclusion

In our experiments, the varieties of sunflower "Jahongir" and "Yangi zamon", which have been irrigated for a long time and are cultivated as a repeated crop in the conditions of the grassland soils of Central Fergana, were irrigated in the order of 70-75-65% relative to MFMC. Compared to MFMC, 70-70-60 and 70-80-70% irrigated options, stem height and number of leaves at maturity were 6,3-0,7 and 9,2-2,4 cm higher. It was found that 0,7-0,3 and 0,8-0,5 pieces were more.

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