Academicia Globe:
Inderscience Research

ISSN: 2776-1010 Volume 2, Issue 6, June, 2021

IMPORTANCE OF DRIP IRRIGATION TECHNOLOGY IN COTTON GROWING

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Abstract
This article presents the analytical results of the use of drip irrigation, starting with the current method of irrigation in the cultivation of cotton. The advantages of using drip irrigation in the efficient and rational use of water resources and the technology used in the cotton field are highlighted. Research has shown that the use of drip irrigation in cotton fields reduces water shortages, saves 31% compared to surface irrigation, increases productivity by 51.5%, ie 4.06 tons of cotton per hectare.
During the season, drip irrigation provided 3510 m3 of water per hectare (12 irrigations), water productivity was 1.1 t / m3, saving 0.57 t / m3 of water compared to surface irrigation.

Keywords: cotton, water resources, irrigation systems, surface irrigation method, drip irrigation, water saving, resource saving, technology.

Introduction

The most important and urgent task in the country is the use of water-saving technologies in obtaining high and high-quality crops, especially cotton, in the conditions of shortage of irrigation water. The President and the government of our country pay great attention to this issue.
On July 10, 2020, the Concept of Water Resources Development of the Republic of Uzbekistan for 2020-2030 was developed. According to the Concept of Water Resources Development of the Republic of Uzbekistan for 2020-2030, the areas where water-saving technologies have been introduced will be 2 million hectares. ha, including drip irrigation technology 600 thousand ha. 35-40% (3.5-4 billion m3) of water saving per year is estimated at 298 thousand ha. areas that are out of use can be redeveloped [1].
According to analytical estimates, 1.1 billion out of 7.5 billion people in the world today suffer from water shortages. By 2025, the number of people living in water shortages is expected to exceed 3 billion and make up 40 percent of the population. That is why the attention to the widespread use of drip

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irrigation systems around the world is growing from year to year. In particular, great achievements have been made in the use of water-saving irrigation technology in Israel, Cyprus, the United States, Italy, Australia and Germany. The fact that Uzbekistan is the sixth largest producer of cotton in the world and the fifth largest exporter of cotton shows that the use of economical irrigation technology, including drip irrigation, is one of the most important aspects of cotton cultivation [2].

Main part: Meadow of "Said Imam Tilav" farm in Vobkent district of Bukhara region - alluvial, medium sandy soil according to mechanical composition, groundwater level 2.0-2.5 m, groundwater mineralization 2.0-3.0 g / l, the effect of drip irrigation on the growth, development and productivity of cotton was studied. Field experiments determined the irrigation regime, mechanical composition of the soil, and moisture levels in the process of irrigating cotton in two different ways (above-ground and drip). The experiments were performed on the basis of the following system (Table 1).

The mechanical composition of the experimental field soil N.A. According to Kachinsky's description, medium sand belongs to the type of soils with mechanical composition. According to the mechanical composition of the soil of the experimental area, the middle sand, medium-fiber cotton variety "Bukhara-8" and the distance between rows of cotton is 60 cm. planted as li.

Table 1 Experimental system.

№	Soil moisture before irrigation,% of ChDNS	Irrigation method	Irrigation rate, m3 / ha
1.	Production control	Surface irrigation method	Actual measurements
2.	70-80-60	Drip irrigation	0-100 cm. on moisture deficit

Note: Field experiments were performed in 3 replicates.

70-80-60% (before flowering of cotton: from flowering to ripening: percentage of moisture retention after ripening, relative to the limit humidity).

The soil moisture in the experimental field using the drip irrigation method is 60 cm, and 100 cm in the field using the traditional irrigation method. soil moisture from depth was constantly monitored.

A soil moisture tensiometer was used to determine the timing of cotton irrigation. During the developmental stages of cotton, its demand for water was studied and the optimal options for irrigating the crop with conventional and drip irrigation methods were tested.

The results of the study on the order of irrigation of cotton using conventional (above-ground) and drip irrigation are given in the table below (Table 2).

Cotton watering procedure.

Moon	Surface irrigation method		Drip irrigation	
	Irrigation norm, m3 / ha	Number of irrigations	Irrigation norm, m3 / ha	Number of irrigations
May	1850	2	310	1
June	950	1	580	2
July	1350	1	1490	5
August	880	1	1130	4
Total:	**5030**		**3510**	

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Inderscience Research

ISSN: 2776-1010 Volume 2, Issue 6, June, 2021

Experimental field soil bulk density At the beginning of the growing season, the bulk weight of the soil in the drive layer (0-30 cm): 1.37-1.40 g / cm3, in the subsoil layer (30-50 cm): 1.45-1.48 g / cm3 and 0 -100 cm layer was 1.43-1.45 g / cm3. In drip-irrigated variant 2, the volumetric weight of the soil at the end of the growing season is the volumetric weight of the soil at the beginning of the vegetation in the driving layer (0-30 cm): 1.38-1.40 g / cm3, in the subsoil (30-50 cm): 1.46-1.48 g / cm3 and 1.44-1.46 g / cm3 in the 0-100 cm layer, or 0.01 g / cm3 in the 0-100 cm layer compared to option 1. Drip-irrigated field can be observed to have a positive change in the water-physical properties of the soil compared to ordinary irrigated field, including the fact that the volume weight and water permeability of the soil have improved.

Using optional irrigation in the 1st variant of the experiment, cotton was irrigated 5 times according to the scheme 1-3-1 during the growing season under production control, due to the large irrigation norms of cotton (1250-1350 m3 / ga) provided. The period between irrigations was 21-26 days. Using optional irrigation, in the 1st option, according to the analysis of irrigation terms, norms, cotton varieties "Bukhara-8" were irrigated 5 times in the order of 70-80-70% irrigation compared to ChDNS. Irrigation interval is 21-25 days, the irrigation rate is 1006 m3 per 1 hectare on average. The seasonal irrigation norm was 5030 m3 / ga.

In option 2, where drip irrigation was used, the cotton was irrigated 12 times according to schemes 3-6-3. According to the analysis of irrigation time norms, cotton varieties "Bukhara-8" were irrigated 12 times in the order of 70-80-70% irrigation compared to ChDNS. Irrigation interval is 5-14 days, the irrigation rate is 292 m3 per 1 hectare on average. The seasonal irrigation norm is 3510 m3 per hectare. Compared to drip irrigation and drip irrigation (control option), water consumption was saved by 50% compared to 5030 m3.

In cotton irrigation, the yield of cotton obtained from surface and drip irrigation and the amount of water consumed per 1 ton of cotton (1000 m3) were determined (water productivity) (Table 3).

Table 3 Dependence of water productivity on irrigation method.

Irrigation method	Seasonal irrigation norm, m3/ ha	Cotton yield, t/ha	Water productivity, *t / м³*	The difference + *t / м³*
Surface irrigation method	*5030*	*2,68*	*0,53*	
Drip irrigation	3510	*4,06*	*1,10*	*0,57*

As a result of the application of the irrigation method, water productivity was achieved through the use of drip irrigation technology, ie 0.57 tons more was obtained due to the consumption of 1000 m3 of water by analyzing the experimental data.

In the process of drip irrigation compared to drip irrigation, not only water wastage was avoided, but also the yield of raw cotton increased by 51.5% compared to the previous indicators. According to the results, the number of seedlings by drip irrigation was 89,000 per hectare, and the average yield of cotton was 4.06 tons per hectare. The thickness of seedlings under irrigation was 62,000, and the average yield of cotton was 2.68 tons per hectare. Studies have shown that drip irrigation not only saves water, but also increases productivity. The main reasons for this are a uniform wetting of the soil layer

ISSN: 2776-1010 Volume 2, Issue 6, June, 2021

in which the root system of the plant is distributed, and an increase in the efficiency of feeding cotton as a result of the delivery of mineral fertilizers in water to the root system. the ground was laid.

Conclusion:

With drip irrigation, the cotton was watered 12 times according to the 3-6-3 irrigation system. According to the analysis of watering time norms, cotton varieties Bukhara-8 retained 70-80-65% of the moisture capacity of the border steppe. Irrigation interval is 5-14 days, the irrigation rate is 292 m3 per 1 hectare on average. During the season, a total of 3510 m3 of water was poured on 1 hectare. Compared to drip irrigation and traditional irrigation method (control option), 31% of water was saved per hectare.

Compared to the traditional irrigation method, drip irrigation not only prevented water wastage, but also increased the yield of raw cotton by 51.5% compared to the traditional irrigation method. According to the results, the number of seedlings by drip irrigation was 89,000 per hectare, and the average yield of cotton was 4.06 tons per hectare.

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