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EFFICIENCY OF COTTON GROWING BY DRIP IRRIGATION

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Abstract:

In the article alluvial soils of meadows of Bukhara region, when drip irrigation is used in the experimental field planted with cotton with groundwater level 1.5-2.0 m, when the soil moisture before irrigation is 70-80-60% relative to ChDNS, cotton is grown according to the scheme 0-4-0 4 watered once. Cotton was not irrigated during the period from germination to flowering, during the flowering period cotton was irrigated four times with the irrigation rate of 616–651 m3 / ha, and the seasonal irrigation rate was 2521–2537 m3 / ha. or 1594–1633 m3 / ha of irrigation water savings compared to the control option.

Keywords: Cotton, water shortage, drip irrigation, irrigation rate, seasonal irrigation rate, groundwater, mineralization, vegetation period.

The development of world agriculture is directly related to the level of water supply, the emergence of so-called "blue gold" in the field of water use, the rational use of water resources, improving the agricultural system to reduce water use, modern water saving in the system necessitating the introduction of technologies. This is further complicated by the fact that "by 2040, the world's population will reach nine billion, and clean water resources will cover only 70% of human needs" [1].

In order to eliminate these problems, the Decree of the President of the Republic of Uzbekistan No. PF4947 of February 7, 2017 "On the Action Strategy for further development of the Republic of Uzbekistan" [2], No. PP-3405 of November 27, 2017 "On development of irrigation and irrigated lands in 2018-2019 rational and economical use of water resources in the resolutions "On the State Program for Improvement of Land Reclamation" and December 27, 2018 No PP-4087 "On urgent measures to create favorable conditions for the widespread use of drip irrigation technologies in the cultivation of raw cotton" , this research work to a certain extent contributes to the implementation of the identified tasks to further improve the reclamation of irrigated lands [3].

The purpose of the study. The meadows of Bukhara region are alluvial, mechanically heavy sandy soils, groundwater level 1.5–2.0 m, mineralization of 1.0–3.0 g / l. development, development, scientific and practical recommendations for the study of the impact of cotton fiber on quality indicators.

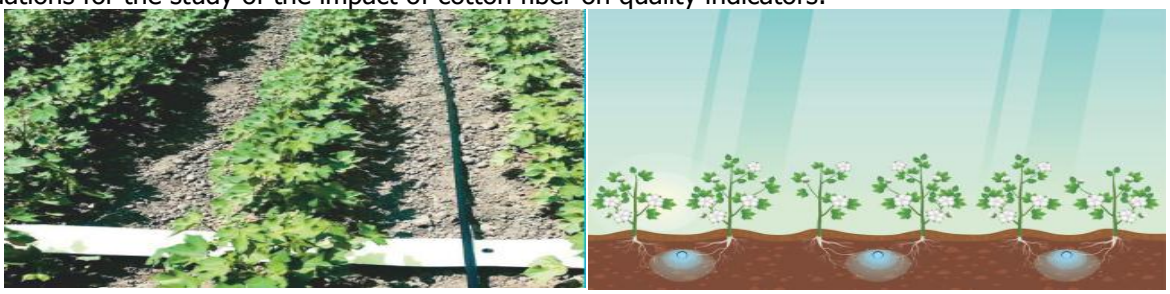

Figure 1. Appearance of drip irrigation of the experimental field

The objectives of the study are as follows:

- determination of soil conditions (type, mechanical composition, water-physical properties and fertility) of experimental fields;
- determination of hydrogeological and reclamation conditions of experimental fields;
- Determination of scientifically based irrigation procedures for drip irrigation of cotton in the conditions of alluvial soils of meadows of Bukhara region with a groundwater level of 1.5-2.0 m mineralization 1-3 g / l;
- Scientifically based drip irrigation of cotton depends on the water and physical properties of the soil, salt regime, changes in groundwater levels and mineralization, their growth and development,

Field experiments Scientifically based drip irrigation of cotton in the conditions of alluvial, mechanically heavy sandy soils with meadows with a groundwater level of 1.5–2.0 m, mineralization of 1.0–3.0 g / l in Vobkent district of Bukhara region , the effect on development and productivity was studied [4,6]. The experiments were performed on the following systems (Table 1).

The mechanical composition of the soil of the experimental field belongs to the type of soils with a heavy sand mechanical composition, as described by N.A. Kachinsky.

Table 1

№	Before watering soil moisture,% of ChDNS	Irrigation method	Irrigation norm. m3 / ha
1	production control	Irrigation	Actual measurements
2	70-80-60%	Drip irrigation	0-100 cm, on the deficit in the layer
3	80-80-60%	Drip irrigation	0-100 cm, on the deficit in the layer

The experimental field showed that the volumetric weight of the soil at the beginning of the growing season was 1.33–1.35 g / cm3 in the 0–30 cm layer, 1.41–1.43 g / cm3 in the 30–50 cm layer below the plowed layer, and 0– 1.39–1.40 g / cm3 in a 100 cm layer [5,7].

According to the data in Table 2, in the 1st control variant of the production of the experiment, cotton was irrigated three times according to the 0-3-0 scheme of irrigation during the growing season

Table 2

The order of drip irrigation of cotton

№	Options	Indicators, m3 / ha	Number of irrigations, m3 / ha					Irrigation scheme	Seasonal irrigation standard, m3 / ha
			1	2	3	4	5		
2016									
1	V-1	irrigation rate	1422	1383	1362			0-3-0	4167
2	V-2	irrigation rate	616	651	631	626		0-4-0	2524
3	V-3	irrigation rate	664	685	676	682	668	1-4-0	3375
2017									
1	V-1	irrigation rate	1362	1446	1313			0-3-0	4121
2	V-2	irrigation rate	621	639	636	642		0-4-0	2536
3	V-3	irrigation rate	653	683	672	679	649	1-4-0	3336
2018									
1	V-1	irrigation rate	1461	1371	1345			0-3-0	4175
2	V-2	irrigation rate	617	635	649	643		0-3-1	2544

3	V-3	irrigation rate	665	672	674	664	622	1-4-0	3297

Based on the study of scientifically based irrigation technology in the technology of drip irrigation of cotton in the alluvial soils of the ancient irrigated meadows of the Bukhara oasis, the following conclusions were drawn:

At the beginning of the growing season in the cotton field, the bulk density of the soil was 1.33–1.35 g / cm3 in the 0–30 cm layer, 1.41–1.43 g / cm3 in the 30–50 cm layer below the plowed layer, and 0–100. cm layer was 1.39–1.40 g / cm3. Towards the end of the growing season, in drip-irrigated variant 2, the bulk density of the soil is 1.34–1.35 g / cm3 in the 0–30 cm layer, 1.42–1.43 g / cm3 in the 30–50 cm layer below the plowed layer, and 1.40–1.41 g / cm3 in the 0–100 cm layer. An increase in the bulk density of the soil by 0.01 g / cm3 was found to be the lowest compared to the other options.

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