Proceedings of International Scientific-Practical Conference «Sustainable Development Goals: Youth Policy and Innovative Technologies», February 15-16, 2023, Oguz Han Engineering and Technology University of Turkmenistan, Ashgabat, Turkmenistan

# MAIN RESULTS OF COTTON GROWING USING DRIP IRRIGATION

**Dovlet Taganov[1*], Mekan Allyev[2], Amangeldi Ybadullayev[3]**

[1,2]*Oguz Han Engineering and Technology University of Turkmenistan, Ashgabat, Turkmenistan.*
[3]*Yagshygeldi Kakayev International Oil and Gas University, Ashgabat, Turkmenistan.*

[*]Corresponding author

DoI: https://doi.org/10.5281/zenodo.7779057

Drip irrigation is currently the most efficient way to irrigate crops. With the traditional method of irrigation, the number of irrigations, that is, necessary to ensure normal moisture during irrigation, ranges from 700-800 $m^3$/ha to 1000-1200 $m^3$/ha, unlike the drip method, water is used to moisten the area of the root system of the plant, and its the amount is from 50 to 200 $m^3$/ha. This situation creates a favorrable water-climatic regime in the area where the root system of the plant is located, and there are no cases of waterlogging or lack of moisture, which often occur in areas irrigated by conventional irrigation. As a result, the establishment of the necessary nutrition regime with the drip irrigation method creates conditions for obtaining the highest possible crop yield [1-3].

In 2018-2021, scientific research was carried out at the experimental site of the Turkmensuvylymtaslama Institute, located in the Gokdepe etrap of the Akhal velayat, to study the effect of water-saving irrigation methods on cotton cultivation.

The experiment was carried out with three repetitions of two types of irrigation, drip and sprinkler irrigation, and the effect on cotton yield was studied. The options are based on the percentage of soil moisture before watering, in the first option the moisture content was 70-75%, in the second 80-85%.

The area of each experiment is 2800 $m^2$. Different types of irrigated cotton applied organic and mineral fertilizers in the appropriate norms. All agrotechnical activities were carried out according to the rules adopted in the economy. For drip irrigation of one hectare of a cotton field in 90 cm interrow, 6160 m of drip hoses were installed.

Studies have shown that with drip irrigation there is no row tillage of cotton. Thus, cotton receives less water, which gives us a chance to increase the number of irrigations. The value of each irrigation water was determined based on the moisture deficit on the roots, determined by the depth of the spread of the roots in different vegetative phases.

In the first variant of the experiment, the cotton field was watered 47 times on average. The amount of water supplied each time from the initial growing phase until the moment of harvesting varied from 70-80 $m^3$ to 220 $m^3$ per hectare. In the second variant of the experiment, the cotton field was watered 54 times on average. The amount of water supplied each time from the initial growing phase to the time of harvest varied from 60-70 $m^3$ to 145 $m^3$ per hectare.

In the experiment, based on the study of the effect of cotton on the growth and yield of the Yoloten-7 variety, the following results were obtained:

With drip irrigation, according to the first variant, irrigation was applied at the rate of 6479 $m^3$/ha per hectare during the entire growing season, and according to the second variant, at the rate of 6596 $m^3$/ha. The average yield of cotton under drip irrigation was 59.5 c/ha. Compared to conventional surface irrigation, the yield with the drip method increased by 2.5 times. At the same time, the amount of water used per ton of crop with the drip method was 1005 $m^3$/t, which decreased by 3 times compared to the corresponding indicator of the irrigation method with conventional containers.

Regular watering with a small amount of water, without row tillage, helps the cotton grow well and produce a large crop. When irrigating crops with water-saving methods, mineral fertilizers are not washed out and are not absorbed to the depth of the soil, water flows to all parts of the crop evenly, a balanced distribution of mineral fertilizers improves the water-fertilization regime, which provides conditions for the growth, development and productivity of cotton throughout the cultivated area.



## REFERENCES

[1]. D. Taganov, “Soil moisture contours for drip irrigation,” Science and technology in Turkmenistan, vol. 2022, no. 4, pp. 57-61.
[2]. D. Taganov. (2022). Main results with drip irrigation of cotton pots. Science and technology of youth, vol. 2022, no. 3, (in press)
[3]. H. Bouwer, “Integrated water management emerging issues and challenges,” Agricultural Water Management, vol. 45, pp. 217-228, 2000