WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 6, June, 2022

THE IMPORTANCE OF WET IRRIGATION OF COTTON IN THE CLIMATIC CONDITIONS OF BUKHARA REGION

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Annotation
The article evaluates the efficiency of the technology of growing cotton using subsurface irrigation with microporous tubes - humidifiers of the Buxara region of the Republic of Uzbekistan. Bukhara region is located in the south-west of the Republic of Uzbekistan, in the lower reaches of the Zarafshan River, in the south-western Kyzylkum desert. It is a short distance from the north-west to the Khorezm region and the Republic of Karakalpakstan. At a great distance from the north and east it is surrounded by the "ring" of Navoi region, and from the south-east it is adjacent to the Karnob Karshi desert of Kashkadarya. The south-western border of the region is connected with the state of Turkmenistan at a great distance.

Keywords: cotton, furrow, irrigation, technology, loam, irrigation rate, coefficient, water distribution.

Introduction

Today, the problem of water scarcity all over the world, especially in the Aral Sea region, is becoming more urgent due to the fact that water is used for many purposes and in various sectors of the economy. Under these conditions, it is necessary to use every drop of water as efficiently as possible. This demand is especially relevant for agriculture, the sector that consumes the most water [1].

The decisions made by the President over the past three years allow the country to develop, improve and introduce promising irrigation methods for the rational use of water and land resources in agriculture, maintaining and increasing soil fertility in order to increase crop yields. Especially wet irrigation is a water-saving method, which is very useful in the dry climate of Bukhara region. Decree of the President of the Republic of Uzbekistan dated February 3, 2021 PF-6159 "On further development of the system of knowledge and innovations in agriculture and the provision of modern services." Based on this, researchers from the Bukhara Institute of Natural Resources Management of the Tashkent Research Institute of Irrigation and Agricultural Mechanization Engineers organized underground irrigation by placing plastic pipes

under the topsoil in the training center of the institute. Subsurface irrigation is the moistening of the plant root spreading layer of soil through underground pipes; one of the promising methods of irrigation. This method is effective in the cultivation of vegetables, industrial crops, orchards, vineyards, etc. Subsurface irrigation saves a lot of water (30-40%). In subsoil irrigation, water is given sparingly but frequently, which facilitates good plant growth. In this method of irrigation, the moisture reserves accumulate the most in the area where the root systems of plants spread, and the top layer (0-15 cm) remains dry or slightly moist. As a result, no crust is formed on the soil surface, good air flow through the top layer is ensured, and there are no conditions for weed growth and reproduction. For subsoil irrigation, the soil must have high capillary properties, and the area to be watered must be flat. Plastic pipes with holes are used as humidifiers. Depending on the method of watering, subsoil irrigation can be pressurized, unpressurized and vacuum [2].

Bukhara region is located in the south-west of the Republic of Uzbekistan, in the lower reaches of the Zarafshan River, in the south-western Kyzylkum desert. It is a short distance from the north-west to the Khorezm region and the Republic of Karakalpakstan. At a great distance from the north and east it is surrounded by the "ring" of Navoi region, and from the south-east it is adjacent to the Karnob Karshi desert of Kashkadarya. The south-western border of the region is connected with the state of Turkmenistan at a great distance. [3].

There is a large groundwater reserve in Bukhara region. According to their hydrogeological properties, they can be divided into two layers. The first is groundwater, which is located close to the surface, up to the first impermeable layer. The second is interlayer waters at different depths. The saturation of groundwater differs in places according to its hydrochemical properties, which can be divided into oasis and desert zone groundwater. In the oases, they are formed mainly due to irrigation water and are distinguished by their proximity to the surface, freshness. Within the oasis, such waters are suitable for consumption in many places. It is also used for partial irrigation in the upper parts of the Bukhara oasis [4]. It is known that soil is one of the most important components of nature, a product that embodies living and non-living natural beings. Although desert-specific soils are scattered throughout the region, they do not form a single integral area. Soils types of soils vary depending on factors such as the nature of the parent rock, topography, chemical composition and depth of groundwater. Soils have two groups (desert and oasis) according to the level of assimilation. Among the desert-dry soils, brown-colored sur, sandy desert, bald, bald soils and saline soils are common. [5].

Field experiments were conducted in the experimental field of scientific production of the Institute for 2021-2022. The soil of the experimental field is brown, medium sandy in mechanical composition, the groundwater level is 2.0-2.5 meters. The soil composition was studied before conducting the experiments (Table 1).

Laboratory Test Results

Table 1.

Name of Parameters	The value of the parameters		Parameter compatibility
	№1 piece	№2 piece	
Humus	0.85	1.02	Appropriate
Dry residue	1.52	1.74	Appropriate
Sulfate	0.045	0.062	Appropriate
Chlorides	0.24	0.18	Appropriate
Nitrate	80	95	Appropriate

The test results obtained are relevant to the sample tested.
Conclusion of the analysis: According to the results of chemical analysis, according to the analysis of soil samples taken from the Bukhara Institute of Natural Resources Management:
№1 piece - strongly salted
№2 piece - strongly salted. Date of study 24.12.2021 year.
Based on the results of laboratory tests, it was not possible to farm the studied plots. Now the next batch of saline washes has been used to irrigate 1,200 cubic meters of water per hectare. The composition of both the water introduced for irrigation and the water discharged from the subsoil through pipes under the drive layer mounted on it were also analyzed in the laboratory. The composition of the water added to the saline wash on the piece: mg-eq. in percentage terms the amount of cations was Na = 45, Ca = 29, Mg = 26 and the amount of anions was SO_4 = 58, HCO_3 = 14, NO_3 = 14, CI = 28 and the dry residue was 1150 mg-liter. The composition of the water coming out of the underground pipes of the section intended for the experiment: mg-eq. The percentage of cations is Na = 39, Ca = 21, Mg = 40 and the amount of anions is SO_4 = 53, HCO_3 = 5, NO_3 = 14, CI = 42. The dry residue is 8850 mg-l. showed that From this it can be concluded that the amount of dry residue in the water introduced into the ground for saline washing increased eightfold, that is, so much salt was removed from the ground. In the saline washing operation, the saline of the soil was washed away and the piece of land was discharged into temporary ditches through pipes laid under the plowing layer. The results of further study of soil composition are given in Table (Table 2).

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Laboratory test results

Table 2.

Name of parametres	The value of the parameters		Parameter compatibility
	№1 piece	№2 piece	
Humus	0.11	0.12	Appropriate
Dry residue	0.22	0.23	Appropriate
Sulfate	0.59	0.62	Appropriate
Chlorides	0.05	0.08	Appropriate
Nitrate	110	115	Appropriate

The test results obtained are relevant to the sample tested.

Conclusion of the analysis: According to the results of chemical analysis on the analysis of soil samples taken around the Bukhara Institute of Natural Resources Management:

№1 piece - moderately salted

№2 piece - moderately salted. Date of study 13.01.2022 year.

Let's make preliminary conclusions and suggestions based on the results obtained.

1. Water saving is achieved if plastic pipes are installed in the subsoil of the soil with strong soil composition, moderately saline soils with the proposed technology..
2. In addition to all types of methods of wet irrigation under the soil, the addition of bio-additives to the water during irrigation gives good effect on root feeding of cotton.
3. Plastic pipes for underground irrigation can also be used as drainage in the saline leaching of the area.

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