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EFFECT OF WATER-SAVING IRRIGATION TECHNOLOGIES ON SOIL AGROCHEMICAL PARAMETERS IN SOYBEAN CULTIVATION

S. X. Isayev
Doctor of agricultural sciences, professor, National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers"

Z. Z. Qodirov
Doctor of Philosophy in Agricultural Sciences, Associate Professor "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University Bukhara Institute of Natural Resources Management University

M. M. Avliyoqulov
Assistant "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University Bukhara Institute of Natural Resources Management

M. Shodmonova
Bachelor student, "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University Bukhara Institute of Natural Resources Management

Annotation
The scientific research illustrates that in the conditions of irrigated meadow-alluvial soils of the Bukhara region, methods of irrigation of late soybean varieties "Baraka" and "Uzbek-6" and their soil structure, as well as the effect of irrigation methods on the agrochemical parameters of the soil will be discussed. According to the results of the conducted scientific research, it was found that the agrochemical parameters of the soil in the soybean field grown on the basis of the technologies of drip irrigation and drip irrigation under the film are relatively higher than those of horizontal irrigation.

Keywords: irrigation methods, drip irrigation method, irrigation rate and order, soil moisture depth, soybean root system, soybean yield, irrigation technique.

Аннотация:
В статье рассмотрены способы орошения поздних сортов сои «Барака» и «Узбек-6» в условиях орошаемых аллювиально-луговых почв Бухарской области и их структура почвы, а также влияние способов орошения на агрохимический состав почвы. параметры почвы. По результатам проведенных научных исследований установлено, что агрохимические показатели почвы на поле сои, выращенной на основе технологий капельного орошения и капельного орошения под пленку, оказались относительно высокими по сравнению с орошением почвы

Ключевые слова: способы полива, способ капельного орошения, норма и порядок полива, глубина увлажнения почвы, корневая система сои, урожайность сои, техника полива.

Introduction

Today's high consumption of water resources in the world leads to its global shortage. Developing new water resources and maintaining water management systems in good condition requires huge investments. The price of each cubic meter of water is becoming more expensive, causing problems in the water supply of developing countries. It was considered important to carry out significant scientific research to eliminate the shortage of water resources while maintaining the model of water use and taking into account the per capita water consumption.

It is known that 3/2 of the earth is covered with water. 97% of this water is salt water and is unsuitable for irrigation and drinking purposes. Only about 3.0% of the world's water resources are fresh water resources, 79.0% of which belong to permafrost, 20% to underground water, and 10% to river and lake water. According to the United Nations, by 2050, the main water problems that can be observed on the globe, the need for water resources for irrigation of agricultural crops will increase by 20%, the world's population will need municipal and drinking water. demand for water will double, 40% of grain production may be at risk due to drought and water shortage, 45% of gross drinking product production may be at risk due to drought and water shortage, global food 40 percent of food and 60 percent of grain comes from irrigated land.

Research and Methods

The optimal solution to eliminate and reduce the above risks requires a wider introduction of scientifically based innovative technologies in the field. For this purpose, in 2021-2022, various water-saving technologies were used to irrigate soybean varieties "Uzbek-6" and "Baraka" at the "Zarif Ota" farm in the Bukhara district of the Bukhara region. In this case, if there is horizontal irrigation as a control option, option 2 drip irrigation and option 3 drip irrigation under the film were used. Before planting soybeans, soil samples were taken from the experimental field and studied in laboratory conditions.

The melioration conditions of the soil of the experimental field are the main criteria for the growth and development of the soybean crop and obtaining a high and stable yield. Therefore, in the cultivation of agricultural crops, the methods of selective planting and placement of crops according to soil reclamation and fertility are an important factor. The field where we conducted the experiment is located in the Bukhara district of the Bukhara region, and the hydro module is included in M-II-A-v-V according to the region. When agrochemical indicators of the soil of the experimental field were studied, the following was revealed.

Mineralization of the soil of the experimental field table 1

Line	Depth, sm	Alkalinity		Cl		SO_4		Dry residue	Sum of salts	CL
		Total HCO_3 %. at	Total HCO_3 m.e. at	%	milligram equivalent	%	milligram equivalent			SO_4
1	0-20	0,034	0,56	0,018	0,49	0,048	1,00	0,148	0,124	0,49
	20-40	0,039	0,64	0,011	0,30	0,048	1,00	0,128	0,113	0,30
	40-60	0,040	0,66	0,018	0,49	0,048	1,00	0,142	0,127	0,49
	60-80	0,035	0,58	0,014	0,39	0,048	1,00	0,140	0,118	0,39
	80-100	0,043	0,70	0,018	0,49	0,057	1,19	0,172	0,142	0,42
2	0-30	0,039	0,64	0,014	0,39	0,054	1,12	0,144	0,129	0,35
3	0-30	0,043	0,70	0,021	0,59	0,048	1,00	0,148	0,135	0,59
4	0-30	0,034	0,56	0,018	0,49	0,060	1,25	0,162	0,142	0,39
5	0-30	0,038	0,62	0,016	0,44	0,051	1,06	0,144	0,127	0,42

If we look at the data in Table 3.2.1, it was found that the concentration of salts was 0.124 in the 0-20 cm layer, that is, in the active layer, and 0.142 in the 80-100 cm layer.

Table 2

Line	Depth, sm	P_2O_5 mg/kg	Guaranteed	K_2O mg/kg	Guaranteed
1	0-20	13,0	Very little	149,3	Few
	20-40	12,5	Very little	132,4	Few
2	0-30	10,5	Very little	132,4	Few
3	0-30	16,0	Few	185,4	Medium
4	0-30	10,5	Very little	130,0	Few
5	0-30	8,5	Very little	115,6	Few

Soil samples were taken and analyzed at the beginning of vegetation and at the end of vegetation in the experimental field planted with SOYA plant. It was found that the amount of humus in the soil is 33% less compared to options 2-3. The main reason for this is that a large amount of water is given when the ground is irrigated, which causes the mineral substances and humus in the soil to be washed away and added to the seepage water level. In drip and under-the-film versions, it was observed that due to frequent and little watering, more nutrients were preserved in the surface layer of the soil (in the active layer) compared to the drip-irrigated version. This had a positive effect on the growth and productivity of the soybean plant.

Conclusion

Concluding of the view that it should be said that when agricultural crops are irrigated with water-saving technologies, not only water resources are saved, but also nutrients in the soil. Little and frequent watering of the soil prevents sudden changes in the soil structure. During the experiments, it was proved that the nutrients in the soil were relatively more preserved in the variants irrigated by drips and drips from under the film.

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