

RESOURCE-EFFICIENT IRRIGATION PROCEDURES FOR SOYBEAN VARIETIES

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Abstract

This article presents information about the preliminary results of the research work carried out to develop optimal irrigation procedures using the method of drip irrigation of soybean varieties, taking into account the growing demand for food in the world and our country, and the increase in the cost of environmentally friendly protein.

Keywords: Soybean varieties, water physical properties of the soil, soil moisture, irrigation method, irrigation procedure, soybean varieties growth, development, grain yield, climate change.

1.Introduction.

35 percent of the vegetable oil, which is developed around the world, is obtained from soybeans. Soybean meal and isolates are the best raw materials in the food industry, protein-rich nutritious food in shrimps livestock, poultry, fish farming. According to the data, today the world's soy is worth 107 million hectares grown on an area of more than hectares. Of these, about 36.3 million. hectare USA, 33,7 million. hectare falls on Brazil. Soy is important in farming because it is rich in cheap protein in its composition and enriches the soil with a pure nitrogen element, absorbing free nitrogen in nature. In crops, none of them store as much protein as soy Dogi in its composition [1].

The cost of soybean protein cultivation is very low, and the calculation per hectare is the most abundant. Among the cultural plants, according to the chemical composition of soybeans, it is a plant rich in protein, high-calorie, has a special significance in the development and productivity of the food industry around the



world. Soy contains 40-45 % protein, 22-25 % vegetable oil and 12 different vitamins necessary for the human body [2]. The shade acts as a binding in the middle by absorbing additional nitrogen from the atmosphere and absorbing it through the soil by the plant. On account of the symbiotic activity of the soybean plant collects biological nitrogen in the soil through the endings in the root. Many factors influence the accumulation of biological nitrogen, such as the type of plant, soil-climatic conditions, soil environment, irrigation method, irrigation technique, irrigation procedure, number and standard of irrigation. The fact that the soy plant is supplied with water is an important physiological indicator.

The shade is a moisture-loving, in turn drought-resistant plant, which, when provided with moisture, absorbs nutrients from the roots in water and soil solution and delivers them to the upper parts of the Earth. And in this process, the plant undergoes many physiological, biochemical processes. The total water resources in Uzbekistan are 56,19 km³, of which 17,28 km³ are in Sirdarya and 38,91 km³ in Amudarya. The population of Uzbekistan is 39 million by 2030. Due to the increase in population and climate change, the water resources of Uzbekistan have reached 7 billion cubic meters. It is expected to decrease to m³ [3]. The annual water resources of such are 44 billion. It is predicted that water in the amount of m³ and as a result, 1130 m³ per capita. The main volume of Water Resources in the Republic corresponds to agriculture, where about 70 percent of the consumed water or 13,4 km³ per year is spent on the need. Large water loss in agriculture is explained by the poor condition of irrigation systems, and although there is a shortage of Water Resources and according to forecasts, by 2040, the country may experience significant water shortages [4].

2. Material and Methods

Agricultural food systems one of the principles put forward by the FAO is: increasing the efficiency of the use of resources ensuring the stability of Agriculture also takes into account the fact that each drop of irrigation water in the Oasis is delivered to a thousand gallons of water, reducing the consumption of fuel oil products, resource (labor), with the use of drip irrigation reduce consumption, collar lubrication plays an important role in the oasis of saving products.

V.O.Peshkova, V.A.Shadskix, V.I.Kijaeva, N.A.Timofeeva, A.F.Alshovas together carried out research on soybean irrigation procedures in 2017-2020 years. Such received irrigation when the wet capacity of the field was 70-80-70 % compared to boundary field wet capacity by saving one-time irrigation without increasing the first



irrigation to practice, while the seasonal irrigation standard was 350-550 m³/hectare in the 1st Year of the experiment was 900 m³/ hectare, seasonal irrigation standard was 250-550 m³/hectare in the 2nd year at the same time, it was noted that in the development phases of the shade, the moisture layer of the soil should be 0-50, 50-80, 80-100 centimeter [2].

V.V.Tolokonnikov, A.A.Novikov, O.P.Camera, T.S. Koshkarova developed optimal irrigation procedures by improving irrigation procedures in the cultivation of medium-ripening soy varieties, bunda soy received irrigation of medium-ripening varieties "VNIOZ –31" and "VOLGAGRAT –2" in the ratio of 70-80-70, 80-80-70 and 80-80-80% compared to boundary field wet capacity before fertilization with nitrogen (rhizotorphine) 20 % and bimofit 0.01% li when the soil is chemically treated with when N90-P90-K60 is applied in an amount of 28-32 c/hectare, the yield is obtained, the irrigation standard was 300-3700 m³/hectare in VNIOSIS-31 and 2600-400 m³/hectare in VOLGOGRAD-2 varieties, while the growth period was 113-124 days [3].

Y.V.Umakova, V.V.Melikhov noted that drip irrigation achieved high yields by reducing the distance between rows of shade and widening the distance between drip irrigation pipes, including drip irrigation of double shade varieties VNIOZ-31 and VNIOZ-86. Drip irrigation pipes of VNIOZ-31 shade were tested in the order of 70-80-70 %, 70-80-80 %, 80-80-80 % of soil moisture before irrigation. The maximum yield of 45.5 s / hectare was achieved when the soil moisture before irrigation was 70-80-80 % compared to boundary field wet capacity, with 9-16 irrigations during the season 250-270 m³/hectare, and the norm of seasonal irrigation is 4320 m³/hectare [4].

3.Results and Discussion

Scientific research on the development of irrigation procedures by drip shade as the main crop in the Republic has not been conducted. It is from this that the field of experience in irrigation and erosion laboratories of Research Institute of agrotechnologies of cotton selection, seed growing and cultivation is carried out in the conditions of light coarse soils according to the alluvial mechanical composition of the meadow of Zarifota farmer farm of Bukhara region, which is located below 2 meters.

The main purpose of our conducted experiment is that today, where the shortage of protein is prevailing all over the world, the protein richness of soy grain, the presence of all amino acids useful for man in the composition of protein, is of particular



importance, and further increases the nutritional importance of soy grain in livestock from soy protein, poultry is used as a Soybeans improve the soil micro flora by providing the soil with pure nitrogen [5]. Further increase of the crop grown from the shade is mainly due to the study and introduction into production of optimal irrigation procedures with the use of water-saving drip irrigation method in irrigation along with climatic varieties in the Republic [6].

In order to develop optimal irrigation regimens using drip irrigation methods of Uzbek-6 “Tumaris” and “Nafis” varieties of soybeans in different irrigation regimes, pre-irrigation soil moisture was higher than in boundary field wet capacity. The experiments have been going on since 2021, using 65-70-70 %, 70-75-75 %, 75-80-80 % irrigation control methods and experimental drip irrigation [7].

In the control variants, the soil moisture before irrigation using the traditional method of drip irrigation was 65-70-70 %, 70-75-75 %, 75-80-80 % in relation to the boundary field wet capacity in the irrigation regime, drip irrigation in the experimental variants. Soil moisture before irrigation using the method of irrigation was irrigated in the order of 65-70-70 %, 70-75-75 %, 75-80-80 % relative to boundary field wet capacity.

4. Conclusion

In the options irrigated using the drip irrigation method, the soybean yield increases by 35-40 %, and 40-50 % of water is saved compared to the drip irrigation method. The growing season of soybeans is reduced by 10-20 %, the cost of fuel and lubricants is reduced by 30-40 %, and labor costs and labor costs are achieved in the field of irrigation.

Currently, research is underway to study the role of drip irrigation in increasing soil fertility, ensuring the growth and development of soybean varieties planted as the main crop in the alluvial soils of irrigated grasslands of Bukhara region, providing high grain and seed yields an optimal irrigation schedule is developed and water consumption is determined.

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