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EFFECT OF IRRIGATION REGIMES ON PLANT HEIGHT

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ABSTRACT

Depending on the climatic conditions of the region where agricultural crops are grown, the amount of soil moisture reserve, and the variety, soybeans require 3-4 irrigations during the growing season. The growth, development, and yield of soybean plants depend on the agrotechnical measures applied under weather and climatic conditions, the daily water consumption depends on the phases of soybean growth, and the maximum water consumption is observed in the pod formation phase. The level of provision with nutrients and water during soybean cultivation is considered a limiting factor for growth and development.

Keywords: Light gray soils, soybean, growth, development, agricultural techniques, main crop, repeated crop, agriculture, plant height.

ВЛИЯНИЕ РЕЖИМОВ ПОЛИВА НА РОСТ РАСТЕНИЙ

АННОТАЦИЯ

В зависимости от погодных условий региона выращивания сельскохозяйственных культур, запаса влаги в почве и сорта, сои необходимо поливать 3-4 раза в течение вегетационного периода. Рост и развитие растений сои, урожайность зависят от агротехнических мероприятий, применяемых в погодных и климатических условиях, суточный расход воды зависит от фаз роста сои, а максимальный расход воды наблюдается в фазе формирования бобов. Уровень обеспеченности питательными веществами и водой в период выращивания сои считается фактором, ограничивающим рост и развитие.

Ключевые слова: светлые сероземы, соя, рост, развитие, агротехника, основная культура, повторная культура, земледелие, высота растений.

SUG‘ORISH TARTIBLARINING O‘SIMLIK BO‘YIGA TA’SIRI

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Qarshi davlat texnika universiteti

Annotatsiya:

Qishloq xo‘jalik ekinlari yetishtiriladigan mintaqaning ob-havo sharoiti, tuproqdagi zahira nam miqdori va navga bog‘liq holda o‘suv davri davomida soya o‘simligini 3-4 marta sug‘orish talab etiladi. Soya o‘simligi o‘sishi va rivojlanishi, hosildorligi ob-havo va iqlim sharoitlari qarotida qo‘llaniladigan agrotexnik tadbirlarga bog‘liq bo‘lib, sutkalik suv sarfi soyaning o‘sish fazalariga bog‘liq holda bo‘lib, maksimal suv sarfi dukkaklarni shakillanish fazasida

kuzatilgan. Soya yetishtirish davrida oziqa moddalar bilan va suv bilan ta'minlanganlik darajasi o'sish va rivojlanishni cheklovchi omillar sanaladi.

Kalit so'zlar: och tusli bo'z tuproqlar, soya, o'ssh, rivojlanish, agrotexnika, asosiy ekin, takroriy ekin, dehqonchilik, o'simlik bo'yi.

INTRODUCTION

Many scientists believe that irrigation standards are one of the factors that significantly affect the growth, development, and productivity of plants grown in agriculture, and that changes in irrigation regimes result in changes in plant height, number of leaves, branches, and yield elements [1; p. 433, 2; p. 136, 3; p. 51-55, 5; p. 17-22].

that in determinant varieties, the number of bushes increased , that is, when there were up to 70 plants per ^{1} m ^{2} , the height of the Ros' variety, with a number of bushes of 30-40 per 1 m^{2} , did not increase , and the plant height reached its maximum when the number of bushes per 1 m^{2} was increased to 70. When the number of bushes per 1 m 2 was increased to 80, 90, 100, the number of leaves and the height of the plant did not increase, but rather decreased to 2-4 [4; pp. 74-78].

According to MN L'gov, studying the irrigation regimes of soybean in the Volgagrad and Zavod'ya regions of Russia, to produce 2 t/ha of grain from soybean, the soil moisture content before irrigation in the 0.4-0.7 m layer of soil was 70-80-70% and 70-80-80% relative to the ChNS, 4516-5109 m^{3} /ha of water was required. Maintaining soil moisture at 80% relative to the ChNS led to an increase in relative water consumption. Daily water consumption, depending on the growth phases of soybean, was 22.7-65.9 m^{3} /ha, with the maximum water consumption observed in the pod formation phase (65.9 m ^{3} /ha) [6; S-40.].

As part of the study, based on the results of three years, the effect of irrigation methods and procedures on plant height in repeated soybean crop maintenance was studied, and phenological observations were carried out to measure plant height during the growing season 4 times (July 1; August 1; September 1; October 1). According to the data obtained, depending on the water supply conditions, the soybean plant was in the range of 8.3 - 11.7 cm during the phenological observation on July 1. The lowest result was recorded in the standard tillage option, when the soil moisture content before irrigation was 6 0-7 0 - 60 , and the soybean plant height was 8.3 cm, while the highest result was recorded in the inter-row film irrigation option , when the soil moisture content before irrigation was 7 0-7 5 - 75 , and it was found that the plant was 3.4 cm taller than the control option.

The second phenological observation was conducted on August 1 and revealed that irrigation regimes had different effects on soybean plant height. For example, in the drip irrigation (standard) agrofon, the soil moisture before irrigation was 15.2 cm in wet conditions at a ratio of 6 0-7 0 - 60 , 22.1 cm at a ratio of 6 0-7 0 - 70 , 21.7 cm at a ratio of 7 0-7 5 - 75 and 22.1 cm at a ratio of 7 0- 80 - 80 , which was the lowest result among the studied agrofons. However, it should be noted that the improvement in soil moisture before irrigation had a positive effect on plant development.

When soybean was grown as a repeated crop, it was observed that under the studied agronomic conditions, the plant height was in the range of 22.3-33.3 cm, depending on the soil moisture

before irrigation, and according to the phenological observations, the plant height was 7.1; 10.0; 7.3; 11.2 cm higher than the result recorded under the control agronomic conditions.

Table 1 Effect of irrigation methods and procedures on plant height, cm (2022)

Options	ChDNS	Plant height , cm.			
		July 1	Aug 01	Sep 01	Oct 01
Remember irrigation (standard)	60-70-60	8.3	15.2	29.9	47.3
	60-70-70	11.0	22.1	39.0	54.7
	70-75-75	10.6	21.7	44.6	58.2
	70-80-80	10.3	22.1	40.9	58.1
Egat occasionally irrigation	60-70-60	8.0	22.3	44.0	58.3
	60-70-70	11.2	32.1	59.2	73.5
	70-75-75	10.7	29.0	53.2	70.0
	70-80-80	10.5	33.3	52.0	70.0
Row between film bed irrigation	60-70-60	8.2	26.0	47.9	70.1
	60-70-70	11.0	36.1	66.8	83.9
	70-75-75	11.7	33.2	59.4	73.4
	70-80-80	10.4	36.9	55.9	73.4
Drip irrigation	60-70-60	8.2	33.3	55.7	80.6
	60-70-70	11.0	41.1	69.7	88.3
	70-75-75	10.7	37.0	62.2	77.2
	70-80-80	10.4	40.7	59.3	77.8
Mulchalab irrigation	60-70-60	8.2	28.5	52.2	73.5
	60-70-70	11.0	45.7	73.7	92.6
	70-75-75	9.8	38.0	59.5	67.8
	70-80-80	9.8	41.9	56.4	67.6

As part of the research, it was found that the results obtained under the agrophon conditions in which soybeans were irrigated by placing a film between the rows were higher than the results of the control (irrigation) agrophon conditions, and that the height of the plants before irrigation was 26.0-36.9 cm, depending on the soil moisture, and the height of the plants was 10.8-14.8 cm higher than the control option.

When studying the effect of drip irrigation, which is considered an economical method of irrigation, on the development of soybean plants under repeated agrophon conditions, it was found that this modern method had a significant difference in plant height compared to the control (control) irrigation, inter-row irrigation, and inter-row film irrigation. In particular, depending on soil moisture, the pre-irrigation distance was 33.3-40.7 cm, compared to the control agrophon by 18.1-18.6 cm; inter-row irrigation by 7.4-11.0 cm; and inter-row film irrigation by 3.8-7.3 cm.

When studying the effect of repeated soybean cultivation on the plant under the conditions of mulch irrigation agrophony, it was found that, as in the conditions of other irrigation methods studied in the experiment, the pre-irrigation soil moisture remained 28.5-41.9 cm, depending on the soil moisture. However, when comparing the results obtained under this irrigation method with the results recorded under other irrigation methods, it was significantly higher than the results obtained under the methods of furrow irrigation (control), inter-furrow irrigation and inter-row film irrigation, i.e., it was superior, but no significant differences were found when comparing it with the option using the economical method of irrigation.

The next phenological observation analysis was conducted on September 1, and it was found that the growth trend of the repeated soybean plant height was in the range of 29.9-69.7 cm, depending on the irrigation regime, that is, methods, and soil moisture before irrigation. Also, the highest result was recorded when the soil moisture before irrigation was in the ratio of 60-70-70 (69.7 cm) under the economical irrigation method (drip irrigation).

According to the results of phenological observations conducted on October 1 to study the dynamics of soybean development, the growth and development trend of the repeated soybean plant was between 47.3 cm and 92.6 cm, depending on irrigation (wet) conditions.

In 2022, when analyzing the results of phenological observations (July 1, August 1, September 1, October 1) depending on the irrigation methods studied in the experiment and the soil moisture before irrigation, it was noted that drip irrigation had a positive effect on the growth and development of soybean under agronomic conditions when the soil moisture before irrigation was in the ratio of 60-70-70 (1.0; 41.1; 69.7; 88.3 cm).

ChDNS: 60-70-60 ; 60-70-70 ; 70-75-75 ; 70-80-80) and methods (sowing, inter-row, film-laying between rows, drip and mulch irrigation) on the yield of soybeans under repeated irrigation and maintenance for three years (July 1, August 1, September 1, October 1), it was found that the average plant height was 14.1-88.6 cm, depending on the water supply conditions (Figure 1).

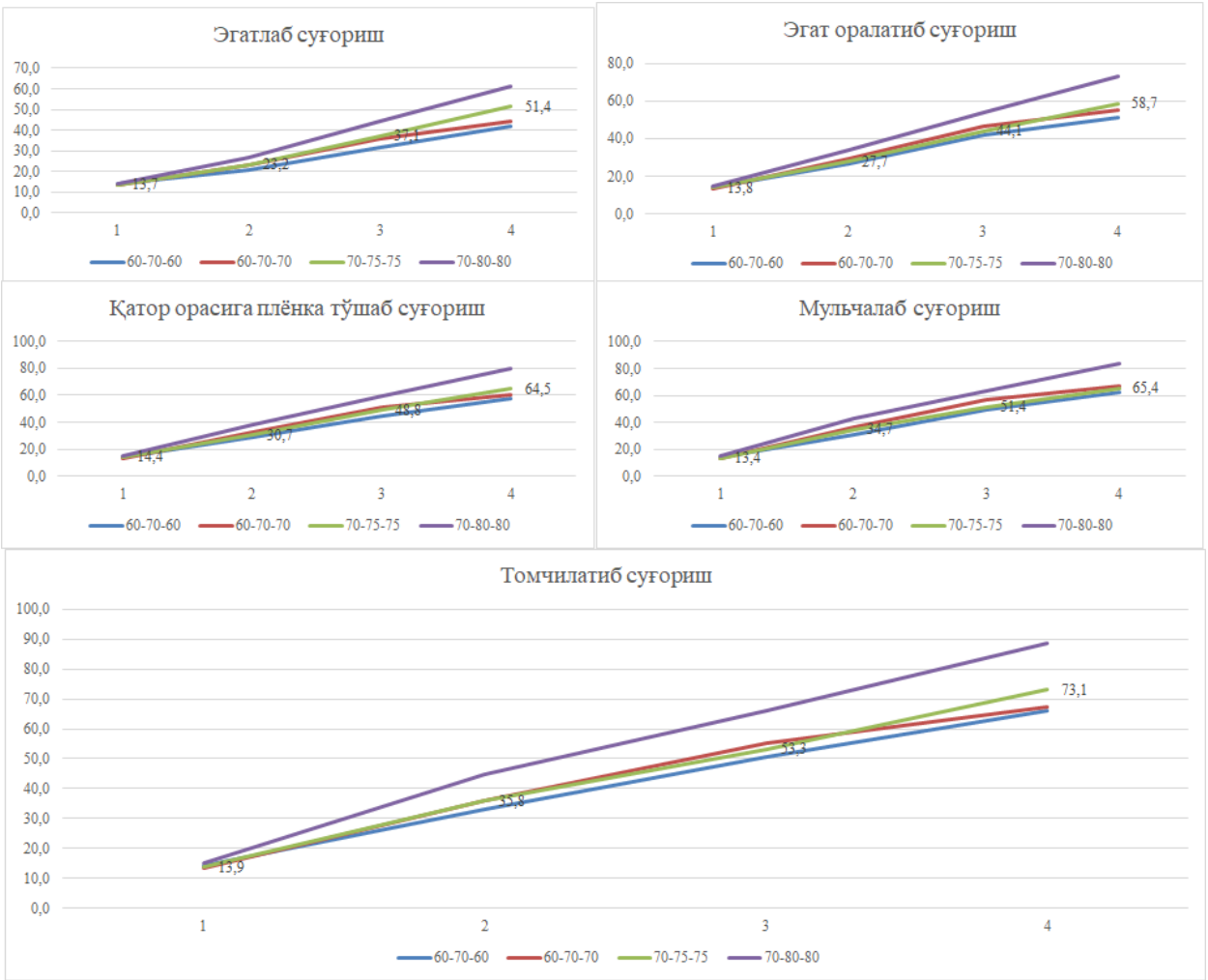

Figure 1. Growth dynamics of soybean under the influence of irrigation regimes

The level of water supply during the cultivation of soybean as a repeated crop was positive when the soil moisture before irrigation was 70-80-80 in all irrigation methods. However, excessive water supply increased the plant height (88.6 cm at the ripening stage) and the tendency to lie down.

Based on the results of a three-year average analysis , the use of modern agrotechnologies that save water resources in the cultivation of soybean as a repeated crop, namely drip irrigation in agronomic conditions with a pre-irrigation soil moisture ratio of 70-75-75 per repeated soybean plant height (13.9; 35.8; 53.3; 73.1 cm), was found to be the optimal irrigation method compared to other agronomic and pre-irrigation soil moisture options.

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