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The effect of irrigation regimens on the growth and development of replanted shade and sunflower

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Abstract: Irrigation regime of “Arleta” and “Navruz” varieties of soybean, seasonal water consumption is a comparative study of “Orzu” and “Navruz” varieties of sunflower in different soil and climatic conditions of the Republic.

Keywords: shade, sunflower, repeat crop, light gray soil, irrigation schedule, groundwater, soil moisture.

Introduction

Today, when there is a shortage of water, the role of irrigation in the production of high quality crops is invaluable. Delayed and poor quality irrigation in the care of agricultural crops not only reduces yields, but also has a negative impact on crop quality. The plant thrives only when the soil moisture is moderate. This can be achieved by organizing irrigation on a scientific basis.

The purpose of the study is to develop an economical irrigation regime that provides optimal growth, development and harvesting of soybean and sunflower crops grown after winter wheat in different soil climatic conditions of the Republic.

Our research was conducted at the farm “Al-Ashur al karomat” Jalal-Abad district of Andijan region. The soil of the farm is light gray soil, the parent rock of the soil is not uniform, and the groundwater level is less than 15 meters. The soil is light gray soil, irrigated from the old. According to M.A. Pankov (1935), P.N. Besedin and P.Suchkov (1939), one third of the soils of Central Asia are composed of gray soils.

Prospective varieties of soybean and sunflower crops were planted in the experiments. The shade was studied by comparing the Orzu variety with the Arleta variety. The sunflower was studied by comparing the Jahongir variety with the Navruz variety. In the care of soybean and sunflower crops, irrigation was carried out in the

calculated layers of soil in the order of 65-65-60% and 75-75-65% relative to the limited field moisture capacity (ChDNS). At the same time, crops were irrigated in the order of 0-50 cm and 0-70 cm of soil. The experiment consisted of 10 variants, each delyanka area was 168 m², placed in three rounds, three tiers by randomization method. ”(2007).

Table 1

Experimental system

№	Type and variety of replanted crops	Pre - irrigation soil moisture CHDNS %	Calculated soil layer in irrigation
1	Shadow (Dream)	Accepted on the farm	Accepted on the farm
2	Soy (Arleta)	65-65-60	0-50
3	Soy (Arleta)	75-75-65	0-50
4	Soy (Arleta)	65-65-60	0-70
5	Soy (Arleta)	75-75-65	0-70
6	Sunflower (Jahongir)	Accepted on the farm	Accepted on the farm
7	Sunflower (Navruz)	65-65-60	0-50
8	Sunflower (Navruz)	75-75-65	0-50
9	Sunflower (Navruz)	65-65-60	0-70
10	Sunflower (Navruz)	75-75-65	0-70

In field experiments, the timing and rate of irrigation of replanted shade and sunflower were determined by soil moisture. Prior to each irrigation, soil samples were taken from every 0–10 cm layer to a depth of 0–100 cm and determined using the thermostat scale method. Water consumption for each irrigation was measured using a chepolette and 900-degree Thomson water meters.

Areas vacated from winter wheat planted in the experimental field were irrigated

on the basis of the established moisture content of repeated crop shade and sunflower plant. During the implementation period, the number of irrigations in each option and the total amount of water supplied differed significantly from each other. Moisture before watering is determined. Achieved to maintain around + - 2%.

Irrigation periods, irrigation intervals, the amount of water given, the amount of moisture in the soil were determined before each flow irrigation, and irrigation was carried out based on the moisture tank in the 0-50 and 0-70 cm layer of soil. Each plant species has a different requirement for soil moisture, and on this basis the conditions of growth, development, as well as soil composition. Varieties of soybean and sunflower cultivated in the experiment in 1-2 variants 2 times with 1-1-0 system based on production methods, 3-4 variants irrigated on the basis of 65-65-60% soil moisture with 0-50 cm and 5-6 variants 0-70 cm on the basis of the calculated layer 1-1-1 system 3 times, before irrigation the soil moisture level is kept in the range of 75-75-65% to ChDNS in 7-8 variants irrigated with the calculated layer of 0-50 cm 1-2 Irrigated 4 times with the -1 system, 3 times with the 1-1-1 system in 9-10 variants irrigated at the same soil moisture, but on the basis of the calculated layer of 0-70 cm. Regular irrigation water in 1-2 options 1123.0-1359.0 m³ / ha,

560.1-589.6 m³ / ha in 3-4 variants, 397.9-368.5 m³ / ha in 5-6 variants, 815.1-804.7 m³ / ha in 7-8 variants and 598 in 9-10 variants , 4-577.8 m³ / ha. Optionally 2842 per hectare in accordance with the general order of irrigation water provided during the season; 1761.4; 2277.3; 1311.7 and 1919.1 cubic meters. The days between irrigations are 29 according to the above condition; 16-22; 25; 15-19 and 19-28. Based on the data obtained from irrigation on the basis of soil moisture, it should be noted that the increase in the number of small-scale irrigation depends on the total amount of irrigation water (option 1-2) per hectare of irrigation system 562 meters to 1170.3 cubic meters, and finally these irrigation norms had a

positive effect on the amount of moisture in the reserve or did not leave the need to use the moisture in the reserve.

Duration of development of soybean varieties on the farm. The development period of soybean varieties is given in Table 2. The period of validity was 84-96 days in the varieties "Dream" and "Arleta". In the "Arleta" variety of shade, 0-50 cm early ripening in the calculated layer of soil before irrigation was 84 days compared to 65-65-60% of ChDNS. (agrotechnics is written).

TABLE 2

The duration of the development period of shade varieties, days.

Nº	Variety name	Pre-irrigation soil moisture ChDNS relative%	Layer, cm	From planting to weeding	From weeding to flowering	From flowering to legume	From ripening to ripening	Period of validity
1	Dream	Farm	0-50	12	24	26	34	96
2	Arleta	65-65-60	0-50	12	19	15	38	84
3	Arleta	75-75-65	0-70	12	18	21	39	90
4	Arleta	65-65-60	0-50	12	19	15	40	86
5	Arleta	75-75-65	0-70	12	19	18	38	87

Duration of development of sunflower varieties on the farm. The development period of sunflower varieties is given in Table 3. Growth period 85 – 100 days, was included in the list of medium-ripe varieties. In the Navruz variety of sunflower, 0-50 cm early ripening in the calculated layer of soil before irrigation was 65-65-60% compared to ChDNS for 85 days. In the shade varieties studied in the experimental variants, the height of the plant stem after 4-leaf germination was calculated using a ruler in the field. It was observed that the height of the stem ranged from 8.9 cm to 11.6 cm during the development of the 4th leaf in the plant. In the "Orzu" variety of shade, before the irrigation adopted on the farm, the calculated layer of soil increased from 0-50 cm to 11.6 cm.

Sunflower morphology in our study. The highest plant height in the Jahongir variety was 0-50 cm 162.0 cm in the calculated layer of soil before irrigation adopted on the farm. In the highest Navruz variety in terms of the diameter of the basket, 65-65-60% of the

calculated layer of soil before irrigation is 0-50 cm 20.5 cm, 2.2 cm in diameter of the stem, 22.5 in the number of leaves, the length of the leaf surface before irrigation. 24.0 cm in width and 18.9 cm in width of the leaf surface.

Table 3

The duration of the development period of sunflower varieties.

	№ Variety name	Pre-irrigation soil moisture relative to ChDNS %	Layer, cm	Growth period of sunflower samples, days			
				From germination to budding	From budding to flowering	From flowering to ripening	From seed to germination
1	Jahongir	Farm	0-50	14	35	51	100
2	Navruz	65-65-60	0-50	10	31	44	85
3	Navruz	75-75-65	0-70	12	34	48	94
4	Navruz	65-65-60	0-50	12	24	52	87
5	Navruz	75-75-65	0-70	11	30	48	89

Experimental data show that the yield of soybean varieties was 19.5-24.5 ts / ha. In terms of high yield, the following Arleta cultivar was 0-6 cm 24.5 ts / ha in the calculated layer of soil before irrigation with 65-65-60% relative to ChDNS

In conclusion, based on the results of field experiments, the analysis of productivity indicators shows that the use of resource-saving methods of irrigation is recommended in the repeated cultivation of soybeans and sunflowers.

At the same time, 29% and 28% or 1523 m³ and 1443 m³ of irrigation water per hectare, respectively, were saved compared to the control (agricultural machinery accepted on the farm).

During the repeated cultivation of soybeans on irrigated lands, the water-physical properties of the soil improved somewhat, and as a result, the yield increased by 25%, or an additional 6.1 quintals of yellow grain per hectare.

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