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AGRICULTURAL TECHNOLOGY AND COTTON YIELD

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Abstract. In the conducted field experiment, three different densities of cotton bushes (80, 100 and 120,000 per 1 ha, as well as 7.2, 9.0 and 10.8 plants per 1 running meter, respectively), two types of irrigation depending on the limited field moisture. the power of the soil (NPK) regime (70-70-60 and 75-75-60%, as well as the irrigation regime 2-3-0 and 2-4-0, respectively) and the mutual proportions of fertilizers (NPK) in two standards (1: 0.7:0.5 and 1:1:0.5). The annual fertilizer rates were: N200 P140 and K100 and N200 P200 and K100 kg/ha.

It was taken into account that the yield of cotton grown under the conditions of 70-70-60% of the soil NVAC (limited field capacity) in the irrigation regime was higher than the yield of 75-75-60% of the irrigated options. during the years of experimentation.

At 70-70-60% irrigation regime, depending on the density of the bush and the ratio of fertilizers, the average yield was 35.7-40.9 t/ha, and at 75-75-60% irrigation regime, the average yield by options was 33.2- 36.4 q/ha.

It was found that the microneuron index of cotton fiber harvested from the experimental options was 4.3-4.5, and the microneuron index of cotton fiber harvested from the variants irrigated in the 70-70-60% mode was slightly higher than in the irrigation mode 75-75-60%.

Keywords Fertilizer application rate, irrigation regime, bush density, productivity, quality, limited field moisture capacity, moisture capacity, gross, total, mobile, nitrogen, phosphorus-potassium, humus, economic efficiency, profitability.

1. Introduction

Due to the growth of the population in the world, including in our country, and their demands for food products and industrial raw materials, the large-scale development of the agrarian sector is one of the most important priority problems of our time.

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The decree of the President of the Republic of Uzbekistan dated October 24, 2019 "On the approval of the strategy for the development of agriculture of the Republic of Uzbekistan for 2020-2030" initiated a new stage of economic and organizational development of the agricultural sector of our country. This decree and the decisions adopted on the basis of it, as well as normative documents planned the prospects of further development of agriculture.

Cotton farming is one of the main branches of agriculture. Our main objectives are: firstly, to increase the yield of cotton; secondly, to improve the quality of cotton fiber; thirdly, to increase the cultivation of high-quality seeds and thereby increase the culture of seed production; fourthly, saving water when irrigating crops; the fifth is to improve the health of the environment, to improve the ecological situation.

Taking these into account, cotton productivity is directly related to timely and quality implementation of many agrotechnological activities.

Cotton cultivation technology must be adapted to the soil and climatic conditions of each region of agriculture. In particular, it is necessary to create and apply technology suitable for specific soil and climatic conditions, and constantly improve it when placing each type of cotton. One such measure is to regulate the density of cotton bushes, irrigation regime and nutrients.

2. Materials and methods

Phenological observations, biometric measurements, analyzes and calculations in all conducted laboratory, field and production experiments were carried out on the basis of methods adopted by the Institute of Cotton Research of Uzbekistan.

"Chipoletti" devices were used to calculate the water consumption of the experimental field, and "Thomson" devices were used for waste water. The amount of total nitrogen and phosphorus was determined by the method of K.S. Ginzburg, E.I.shcheglova and S.V. Wilfius, the amount of mobile nitrogen was determined by the method of Granwald-Lyaju, phosphorus by the method of B.P.Machigin, and humus by the method of I.V. Tyurin.

The obtained results were analyzed by the method of B.A. Dospekhov. Fiber and seed quality analyzes Certification of the quality of cotton fiber of Uzbekistan was carried out in the laboratory of the Samarkand network of the "Sifat" Samarkand regional laboratory, the Cotton Research Institute of Uzbekistan.

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In order to study the influence of cotton on the Okdaryo-6 variety by combining these technologies, research work was carried out for three years on meadow-gray soils of the fields of the Samarkand branch of the Cotton Research Institute of Uzbekistan.

The soil of the experimental field was irrigated and cultivated for a long time, and according to its mechanical composition, the average level of seepage water is 7-8 meters. On the experimental field, wide rows (90 cm wide) were planted with cotton seeds of the Okdario-6 variety.

Three different bush densities were used in the experiment (80, 100 and 120 thousand plants/ha), two irrigation regimes (70-70-60 and 75-75-60% compared to NPDS) and two different ratios of fertilizers (1: 0). ,7:0.5 and 1:1:0.5, i.e. N200 P140 K100 and N200 P200 K100).

Twelve options that were planned to be studied in field experiments were placed in one layer and carried out in four repetitions. The total area of each field (paykal) was 720 m2 (100x7.2), the estimated area was 360 m2. All agrotechnical processes, biometric measurements and phenological observations in the experimental field were carried out on the basis of the recommendations of the Institute of Cotton Growing of Uzbekistan.

Before the experiment, the average content of nitrate nitrogen was 21.4 mg / kg, phosphorus - 32.2 mg / kg, humus - 1.13% in the arable layer (0-30 cm) and 9.2% in the soil layer 30-50 cm respectively. 14.3 mg / kg, humus - 0.80%, and the total amount of nutrients nitrogen - 0.125%, phosphorus - 0.220%, respectively, 0.078-0.155% in a layer of 30-50 cm.

The volumetric mass of the soils of the experimental field is on average 1.28 g. cm in a layer of 0-70 cm, the moisture capacity of a closed field is 21.3%, and in a layer of 0-100 cm this figure is 1.31 g cm3, 22, it turned out to be 4 percent.

Irrigation of cotton was carried out according to soil moisture in the 0-70 cm layer before flowering and ripening and in the 0-100 cm layer during flowering and harvesting. At the same time, soil moisture before irrigation was 14.6-16.3% with a water regime of 70-70-60%, which was 68.3-71.9% compared to the limited field soil moisture capacity. Under the irrigation regime of 75-75-60%, soil moisture varied from 15.7 to 17.4%, which was about 74.1-76.5% of the maximum field moisture capacity of the soil.

3. Results and Discussion

In general, at 70-70-60% irrigation regime of the experiment, the period between irrigation of cotton was up to 18-22 days, and at 75-75-60% irrigation regime - 14-17 days.

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At the same time, the largest amount of water consumed per 1 area for one irrigation was 1290 m3 at 70-70-60% irrigation regime, and the seasonal amount of water (net), on the contrary, water consumption at 75-75% irrigation regime. Irrigation regime options -60% were somewhat high at 5555 m3/ha.

To maintain the 70-70-60% irrigation regime of the experiment, cotton was watered in the order of 2-3-0 during the growing season, using an average seasonal water rate of 5220 m3 per 1 ha. To ensure a 75-75-60% irrigation regime per season, 5440 m3 of water was poured per hectare and watered in the order of 2-4-0.

In conditions when irrigation water becomes more and more scarce every year, it is necessary to take measures for its most economical use. First of all, you need to pay attention to the norms of watering. They should not exceed the insufficient amount of moisture in the soil layer, where the root system is widespread, in a certain period of cotton development, because the excess water will go to waste - the cotton plant cannot use it.

Therefore, to improve cotton yields, it is necessary to water the cotton regularly, rather than watering it when it is thirsty or watering it down later.

On August 1, the number of beans per plant decreases with an increase in the thickness of the shoot.

In variants of the 70-70-60% irrigation regime of the experiment, an average of 5.4-6.8 pods were found on one plant, and in variants with a 75-75-60% irrigation regime - significantly less - 4.9. -6.3 to grain pockets.

It is known that the mutual change in the ratio of fertilizers, i.e., an increase in the element of phosphorus from 1:0.7 to 1:1 in relation to nitrogen fertilizer, had a positive effect on the increase in the number of pods in both studied irrigations. modes.

Taking into account the opening of bolls collected on cotton on September 1, it was found that on the variant irrigated in the 70-70-60% experimental mode, there were more bolls (2.2-2.5) than on other field variants, where 80 000 shoots were grown per hectare of opening, however, with an increase in the number of shoots, a decrease in the number of opened pods was observed. It should be noted that, compared with the feeding of cotton with nitrogen fertilizers in a ratio of 1:0.7 to phosphorus, a positive role was found in the opening of cotton bolls grown under top dressing in a ratio of 1:1.

It was found that due to an increase in the irrigation regime and the thickness of seedlings, the ripening of cotton was delayed, and, on the contrary, equalization of the amount

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of phosphorus fertilizers with nitrogen fertilizers (ratio 1:1) somewhat accelerated the phases of cotton ripening.

With a 70-70-60% irrigation regime of the experiment, the yield of cotton is from 35.4 to 40.5 centners per hectare, depending on the thickness of the shoots and the ratio of fertilizers. The yield is medium high (40.5 centners per hectare). is 97 c/ha, from the option with a ratio of fertilizers (N:R:K) 1:1:0.5, 4 thousand units remained. Under the same irrigation regime (70-70-60 percent), with an increase in the thickness of seedlings to 119.2 thousand pieces / ha and a ratio of NRC 1: 1: 0.5, the yield is 3.8 q, and the thickness of seedlings is left at the level of 79.8 thousand pieces. per 1 ha, a decrease in yield by 2.8 centners was taken into account (Table 1).

Table 1. Cotton yield, s/ha in different bush thickness, irrigation and nutrition regimes

Experiment options	Irrigation regime relative to limited field moisture capacity of the soil (LFMCS),%	Thickness before harvest, thousand pieces/ha	The ratio of NPK	Years of experience						Average	
				2005 y.		2006 y.		2007 y.		Total yield	in the form of cotton ball
				total yield	in the form of cotton ball	total yield	in the form of cotton ball	total yield	in the form of cotton ball		
1(c)	70-70-60	80,6	1:0,7:0,5	36,4	4,1	37,2	4,0	35,1	4,5	36,2	4,2
2		99,5		38,8	4,6	39,5	5,3	37,4	4,9	38,5	4,9
3		118,5		35,7	4,7	36,1	4,9	34,6	5,5	35,4	5,0
4		79,8	1:1:0,5	38,2	3,3	38,5	3,6	36,4	4,1	37,7	3,6
5		97,4		40,9	3,8	41,2	4,2	39,5	4,4	40,5	4,1
6		119,2		37,3	4,4	37,3	5,2	35,7	5,2	36,7	4,9
7	75-75-60	79,9	1:0,7:0,5	34,7	6,3	36,9	3,8	34,5	4,2	35,3	4,7
8		100,7		35,8	6,1	35,8	4,9	33,2	4,6	34,9	5,2
9		118,6		33,2	6,4	35,2	4,7	32,1	4,9	33,5	5,3
10		81,5	1:1:0,5	35,2	6,1	38,2	3,4	36,1	3,8	36,5	4,4
11		99,6		36,4	5,8	36,1	3,7	34,5	4,1	35,6	4,5
12		118,0		34,6	6,6	35,4	4,8	33,6	4,6	34,5	5,3

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2005 y.:	**A(water).** $TSD_{0,5}$=1,22s/ha	**B(NPK).** $TSD_{0,5}$=1,22 s/ha	**C(thickness).** $TSD_{0,5}$=1,0 s/ha
2006 y.:	**A(water).** $TSD_{0,5}$=1,59s/ha	**B(NPK).** $TSD_{0,5}$=1,59 s/ha	**C(thickness).** $TSD_{0,5}$=1,3 s/ha
2007 y.:	**A(water).** $TSD_{0,5}$=1,25s/ha	**B(NPK).** $TSD_{0,5}$=1,25 s/ha	**C(thickness).** $TSD_{0,5}$=1,02 s/ha

Compared with cotton irrigated according to the 75-75-60% regime, it was believed that with a 70-70-60% irrigation regime, depending on the seedling density and fertilizer rates, the yield increases to 4.9 centners per hectare.

When irrigating cotton in the 70-70-60% mode, it was seen that the mass of the harvested crop was higher than when irrigating in the 75-75-60% mode. It has also been observed that increasing the thickness of seedlings from 80,000 to 120,000 on average leads to an increase in the proportion of the harvested crop in the form of pods in the structure of the total harvested.

The largest conditional net profit of 390,724 soums was obtained from the option of caring for cotton in an irrigation regime of 70-70-60%, with an average consumption of 100,000 bushels per hectare and fertilization at a ratio of 1:1:0.5. , and the level of profitability was 34.0%. Organized was determined as the most cost-effective option. Also, relative to the control variant, a conditional net profit of 76,503 UZS / ha was obtained, and the level of profitability was higher by 4.3%.

4. Conclusion

It is known that excessive watering, waterlogging of the zone of distribution of the root system, leaching of nutrients from it and their entry into the lower layers, determining the thickness of the stem and the ratio of fertilizers without taking into account soil and climatic conditions, as well as a sharp decrease in cotton yields as a result of inefficient use of land happened. On the other hand, the combined, efficient and economical use of cotton will not only increase the yield of cotton, but also ensure a high level of agricultural culture. Inefficient use of these factors destroys the quality of the most fertile irrigated lands, which are the priceless wealth of our republic, and leads to their salinization and waterlogging.

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