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EFFECT OF APPLICATION OF TECHNOLOGICAL FACTORS ON COTTON

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Abstract:

It was taken into account that the yield of cotton grown in conditions where the irrigation regime is 70-70-60% relative to the limited field moisture capacity of the soil (LFMCS) is higher than in the years of experiments compared to the yield in the 75-75-60% regime.

In the 70-70-60% irrigation regime, the average yield was 35.4-40.5 ts/ha, depending on the thickness of the bush and the ratio of fertilizers, while in the 75-75-60% irrigation regime the yield was 33.5-36.5 on average ts/ha.

It was found that the micronaire value of fiber in cotton harvested from experimental variants was 4.3-4.5, which is slightly higher than the micronaire index of cotton fiber harvested from 70-70-60% of irrigated variants compared to 75-75-60% irrigation regime.

Keywords: Fertilization ratio, watering regime, bush thickness, fertility, the quality, limited field moisture capacity, wet capacity, gross, general, mobile, nitrogen, phosphorus, potassium, humus, economic efficiency, profitability.

Water shortages are growing from year to year, the lack of mineral fertilizers and non-compliance with the requirements for their application due to plant demand affect the complexity of environmental conditions in our country.

Cotton cultivation technology should be adapted to soil climatic conditions for each farming region. In particular, in the placement of each variety of cotton, it will be necessary to create and implement technology that is suitable for certain soil and climatic conditions, to constantly improve it. One such measure is the management of cotton bush thickness, irrigation, and feeding regimes, the study of which is of great practical importance based on its varietal characteristics.

Taking this into account, as a result of studying the irrigation and nutrition regimes of the Zarafshan variety of cotton, which is widely cultivated in several regions of the country, including Samarkand region, it is possible to make full use of the potential of this variety. For this purpose, to study the different irrigation regimes about the norms of mineral fertilizers, field experiments were conducted in the conditions of meadow-gray soils of SRICBSPA (Scientific Research Institute of Cotton Breeding, Seed Production and Agrotechnology) Samarkand SRS (Scientific Research Station).

The description of the water-physical and agrochemical properties of the soil of the experimental field is as follows: before sowing the seeds in the spring, the volume mass of the soil averaged 1.27 in the 0-70 cm layer and 1.30 g / cm3 in the 0-100 cm layer.

Limited field moisture capacity of the soil (LFMCS) was found to be 21.0% on average in the 0–70 cm layer and 22.0% in the 0–100 cm layer. It was noted that the agrochemical condition of the soil of the experimented field in the spring before the experiment was on average in the following amounts: humus 1.13% in 0-30 cm layer, 0.80% in 30-50 cm, total nitrogen 0.125, 0.078%, gross phosphorus-0.220, 0.155%, nitrogen in the form of nitrate-21.4, 9.2, mobile phosphorus 32.2, 14.3 mg/kg.

In the experiment, three different bushes thickness of cotton (80; 100 and 120 thousand per hectare, as well as 7.2; 9.0 and 10.8 plants per meter, respectively), two different irrigation regimes relative to the limited field moisture capacity of the soil (LFMCS) (70 -70-60 and 75-75-60%, as well as the order of irrigation (2-3-0 and 2-4-0, respectively) and the ratio of the two forms of fertilizer (NPK) (1: 0.7: 0.5 and 1 : 1: 0.5), were studied. The annual norm of fertilizers was: N200 P140 and K100 and N200 R200 and K100 kg/ha (Table 1).

Along with increasing the yield of cotton in the complex of applied agro-technologies, one of the important tasks is to ensure that the fiber quality is competitive following world standards.

By the end of the cotton-growing period, irrigation regimes were distributed as follows according to plant development phases. In the 70-70-60% irrigation regime of the experiment, cotton was irrigated 5 times during the season in 2-3-0 order, ie 2 times before the flowering phase of cotton, 3 times during flowering and harvest (no irrigation during ripening, ie soil moisture field moisture seasonal water consumption per hectare averaged 5,110 m3.

In the 75-75-60 percent irrigation regime, the cotton was irrigated 6-4 times in the 2-4-0 period, with seasonal water consumption of 5,330 m3 per hectare.

When analyzing the results of phenological observations during the growing season of cotton in the experimental field, it was found that the irrigation regime, the thickness of the bush, as well as the different norms and proportions of fertilizers have a significant impact on plant growth and development.

Observations made on September 1 also found that with the increase in the number of seedlings in all studied variants, the number of pods per plant increased to 2.1 and their opening to 1.2.

An analysis of the opening of cotton pods collected on September 1 showed that the opening of pods grown in 75-75-60% of irrigated variants was significantly 1.5 lags behind that of cotton in 70-70-60% of irrigated variants. However, in the experiment, it was found that the cocoon collected in the cotton in the variants fed in the ratio of 1: 1: 0.5 with fertilizers opened up to 0.6 units faster than the cocoons in the variants fed in the ratio 1: 0.7: 0.5.

Field experiments have shown that cotton yields are affected by a combination of environmental factors.

It was taken into account that the yield of cotton grown under conditions where the irrigation regime was 70-70-60% relative to the limited field moisture capacity of the soil (LFMCS) was higher than in the years of experiments compared to the yield in the 75-75-60% regime (Table 1).

In the 70-70-60% irrigation regime, the average yield was 37.2-42.3 ts/ha, depending on the thickness of the bush and the ratio of fertilizers, while in the 75-75-60% irrigation regime the average yield was 36.3-39.3. ts / ha (Table 1).

Table 1

Cotton yield in different bush thickness, irrigation and feeding regimes, ts / ha

Experiment options	Irrigation regime relative to limited field moisture capacity of the soil (LFMCS),%	Thickness before harvest, thousand pieces / ha	The ratio of NPK	Average	
				Total yield	in the form of cotton ball
1 (control)	70-70-60	80,4	1:0,7:0,5	38,3	4,0
2		99,1		40,6	5,3
3		118,9		37,2	4,9
4		79,2	1:1:0,5	39,6	3,6
5		98,1		42,3	4,2
6		118,2		38,4	5,2
7	75-75-60	78,9	1:0,7:0,5	38,0	3,8
8		99,6		36,9	4,9
9		118,5		36,3	4,7
10		81,2	1:1:0,5	39,3	3,4
11		99,1		37,2	3,7
12		118,9		36,5	4,8

A (water). EKF0.5 = 1.59 ts / ha, V (NPK). EKF0.5 = 1.59 ts / ha, S (bush number). EKF0.5 = 1.3 ts / ha

Fertilization is carried out in the ratio of 1: 0.7: 0.5, irrigation in the mode of 75-75-60%, with the average number of bushes leaving 80 thousand / ha, while the average yield of cotton was 38.0 ts / ha, when the thickness of the bushes was increased to 100 thousand, the yield was 36.9 ts/ha, and in the variant where the number of bushes increased to 120 thousand, it was 36.3 ts/ha. A similar situation was observed when fertilizers were applied in a 1: 1: 0.5 ratio (Table 1).

During the years of the experiment, the average highest yield (42.3 ts/ha) during the growing season of cotton was irrigated at a rate of 70-70-60% of the soil relative to the limited field moisture capacity of the soil (LFMCS), the ratio of fertilizers was 1: 1: 0.5 and seedling thickness was 100 thousand / ha. were obtained under the following conditions (Table 1).

When fertilizers were applied in the ratio of 1: 1: 0.5, when cotton was irrigated at the rate of 70-70-60%, positive changes in fiber yield, fiber length, and mass of 1000 seeds were found in the variants with a bush thickness of 80-100 thousand per hectare. The decrease in these indicators was taken into account with the increase.

When irrigation is carried out in 75-75-60% mode, the fiber length should be 33.5-33.6 mm with a bush thickness of 80,000 to 100,000, the average weight of 1000 seeds should be 120-121.1 g, but the bush thickness should be increased to 120,000. with a significant decrease in fiber yield percentage, fiber length, fiber maturation coefficient, as well as the mass of 1000 seeds compared to other studied variants (Table 2).

It was found that the micronaire value of fiber in cotton harvested from experimental variants was 4.3-4.5, which is slightly higher than the micronaire index of cotton fiber harvested from 70-70-60% of irrigated variants compared to 75-75-60% irrigation regime.

There was also a decrease in the industrial-grade of cotton when cotton was irrigated at 75-75-60% and 70-70-60%.

Thus, based on the results of the experiment, it can be concluded that the interaction of agro-technological elements is a key factor in improving productivity and crop quality.

Depending on the fertilizer ratio and irrigation regimes, as the bush thickness increased from 80,000 to 120,000 per hectare, fiber yield decreased by 1.6%, fiber length by 0.6 mm, and seed mass by 3.4 g per thousand seeds.

Cotton was cultivated at 70-70-60% irrigation regime, with an average of 100,000 bushes per hectare, and the highest yield was 42.3 t / ha, with a yield of 34.0%. was found to be the most cost-effective option. Also, the profitability rate was 4.3% higher than the control option.

In summary, cotton was grown in 70-70-60% irrigation mode, leaving an average of 100,000 bushes per hectare, and fertilizers were applied in a 1: 1: 0.5 ratio (N200 P140 and K100 and N200 R200 and K100 kg/ha). the option was found to be the most efficient option in terms of economic and all technological quality indicators of cotton fiber. It was found that the micron air index of fiber in cotton harvested from experimental variants was 4.3-4.5, which is slightly higher than the micronair index of cotton fiber harvested from 70-70-60% of irrigated variants compared to 75-75-60% irrigation regime.

There was also a decrease in the industrial-grade of cotton when cotton was irrigated at 75-75-60% and 70-70-60%.

Table 2

Irrigation, feeding regimes and bush thicknesses of cotton fiber effect on technological indicators

Experiment options	Fiber output, %	Fiber length, mm	Breaking force, gk	Microneer index	Maturity coefficient	Industrial type	1000 pieces of seed mass, g
1(control)	36,8	33,5	4,6	4,4	2,0	I	121,4
2	36,5	33,4	4,4	4,4	2,0	I	120,0
3	35,2	33,0	4,4	4,3	2,0	I	118,0
4	36,8	33,6	4,6	4,5	2,0	I	121,9
5	36,8	33,6	4,5	4,4	2,0	I	121,2
6	35,4	33,1	4,5	4,4	2,0	I	119,0
7	36,4	33,6	4,4	4,3	2,0	I	120,9
8	36,0	33,5	4,3	4,4	1,9	II	120,0
9	35,0	33,0	4,3	4,3	1,9	II	118,0
10	36,5	33,6	4,5	4,4	2,0	I	121,1
11	36,2	33,6	4,5	4,4	1,9	II	120,3
12	35,0	33,1	4,3	4,4	1,9	II	118,2

LIST OF USED LITERATURE

1. Jumanov D.T. Irrigation rate. Journal of Agriculture of Uzbekistan 2007 №4 p.18.
2. Jumanov D.T., Rizaev A., Oripov R., Toshtemirov A. - Substantiation of the elements of harmonized technology. Scientific application of the journal AGRO ILM "Agriculture of Uzbekistan", Target issue, 2007 № 1 (1), pages 2-3.
3. Jumanov DT, Tukhtameshova M., Nazarova A., U. Bakhromov - The influence of technological factors on cotton yield. Tashkent Magazine "Agriculture of Uzbekistan" 2011 .11. Page 26.
4. Jumanov D.T., Evka V. - Produced in harmonized technology. Journal of Agriculture of Uzbekistan. 2007 son No. 12 p.21.
5. Jumanov DT, Evka V.- Optimal technology and productivity. Proceedings of the Republican scientific-practical conference "Problems of potato selection, seed production and cultivation, storage technology development" Samarkand Sam Warehouse 2007 pp. 33-35.
6. Jumanov D.T. The advantage of integrated technology. Samarkand Sam Warehouse "Problems in Agricultural Development and Research of Young Scientists" Scientific-practical conference of postgraduate, doctoral students and researchers dedicated to the 2009 "Year of Rural Development and Prosperity" April 22-23, 2009 pages 5-9.
7. Jumanov D.T., Oripov R. Combination of agro-technologies and cotton yield. Proceedings of the scientific-practical conference "Prospects for improving production efficiency on farms" dedicated to the "Year of Rural Development and Prosperity of Professors and Teachers" Samarkand Sam Warehouse Part 1 Part 6-7 May 2009 pages 30-33.
8. Jumanov D.T., Qulatov B. The effect of water and nutrient regimes on the yield of a lucky cotton variety. Samarkand Sam Warehouse "Achievements and Problems of Young Scientists in Deepening Agricultural Reforms" Proceedings of the Scientific-Practical Conference of Trainee Researchers and Young Scientists Dedicated to the 2011 "Year of Small Business and Private Entrepreneurship" Part 1 April 26-27, 2011 Pages 9-11.
9. Jumanov D.T. Influence of technological processes on growth, development and productivity of Akdarya-6 cotton variety. 06.01.09 - Botany. Dissertation for the degree of Candidate of Agricultural Sciences. Samarkand-2008. 178 pages.

10. Jumanov D.T., Qodirov A.A., Jahonov S.G. Influence of irrigation and feeding regimes and bush thicknesses on technological parameters of cotton fiber. 2020. http://t-science.org/arxivDOI/2020/04-84.html
11. Jumanov D.T. Monograph. 2021.
12. Dospexov B.A. Methodology of field opyta. - M .: «Agropromizdat», 1985.
13. Method of field experiments with xlopchatnik. - T .: 1981. (Methods of conducting field experiments. - T .: 2007.)