

# Technological Quality Indicators Of Cotton Yield And Fiber Of Uzpiti-201 Cotton Variety.

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## **Abstract**

*UzPITI-201 cotton variety seeds were sown under a transparent film on March 15-25, 155, 4 thousand seedlings per hectare were left and mineral fertilizers were applied at  $N_{180}P_{125}K_{90}$  kg/ha rate and also in the variant irrigated in the optimal 70-75-60% order compared to LFMC, i.e. due to the soil conditions formed under the positive influence of the transparent film, the highest yield was 41,4 ts/ha, an increase in the cotton fiber technological quality was observed, along with the additional cotton yield cultivation of 5, 6-9,3 s per hectare compared to the control options planted in seeds double row and single row in the usual open method.*

**Keywords:** *UzPITI-201 cotton variety, transparent film, double row, single row, bed, water, fertilizer, soil, seed, LFMC, seedling thickness, cotton, fiber, crop.*

## **1. INTRODUCTION**

The resource-saving technologies' development requires the efficient water, mineral fertilizers and other natural resources use. In order to obtain high yields of new cotton varieties in different soil climatic conditions by sowing seeds in double rows and single rows under a transparent film, which is an important element of water and resource-saving technologies in cotton growing research on the optimal seedling thickness, increasing the efficiency use of mineral fertilizers and the development and irrigation procedures widespread implementation is relevant.

In the experiment conducted in Tashkent region to obtain high yields of Aqdarya-6 cotton variety soil moisture recommended irrigation in a 1-3-1 or 0-4-1 system in the 75-75-60% order relative to LFMC.[6; p. 121-122].

According to the experiment results, in the newly developed irrigated areas of Karshi steppe, where the water level is 1, 9-2, 3 meters in the promising cotton variety "Namangan-77" soil moisture is kept in 70-70-65% range relative to the LFMC, high cotton yield (43, 6 s/ha) is obtained in the variant irrigated 4 times with 1-2-1 system or 60-70-65% relative to LFMC, with an additional 4.7 s/ha yield compared to the 3-1 irrigated variant with 1-1-1 system.[5; p. 28-30].

42.8 s/ha cotton yield was obtained from "Khorezm-127" variety when irrigating cotton with norms (seasonal irrigation rate is 2122 m<sup>3</sup>/ha, irrigation rate is 700-730 m<sup>3</sup>/ha) designed to cover soil moisture deficit and a 6, 3 s/ha increase in productivity compared to the production (control) option. [4; p. 31-33].

The cotton yield elements formation grown under the film and other processes varied depending on the nitrogen fertilizers' rate and duration. Experiments have shown that it is

best to apply 200 kg of nitrogen fertilizer per hectare during the growing season, or 50% of this fertilizer before planting, and 50% during the growing season. Also, the increase in fertilizer rates has led to a decrease in the ripening rate of the cotton crop. [7; p.16].

According to the field experience conducted in Samarkand region to determine the optimal irrigation regime and feeding norms for Bukhara-102 cotton variety, when the soil moisture before irrigation was 65-65-60% relative to LFMC, there was a lack of moisture in the cotton variety and noted that this had a negative impact on cotton yields. This cotton variety is 70-70-60% higher than LFMC in 1-3-1 irrigation system, consuming 4935 m<sup>3</sup>/ha water per season and high cotton yield (38, 4 s/ha) when fertilized with N200, P140 and K100 kg/ha. [8; p. 17-18].

Cotton yield was higher in all film variants of 65-65-60% irrigation regime than in 70-70-60% irrigation regime with respect to soil moisture LFMC. 65-70% of harvest was harvested in the 1st harvest (September 16). At the same time, the mineral fertilizers norm in NPK variants in 200-140-100 and 150-105-75 kg per hectare was 37, 7 and 40, 2 s/ha. [9; p.9].

## **2. EXPERIMENTAL METHODOLOGY.**

Field experiments in 2016-2018, UzPITI-201 cotton seeds were sown in two different sowing periods: the 1st sowing period was planted in 7 variants (variants 1-7) from March 5-15, the 2nd sowing period was planted in 7 variants (variants 8-14) from March 15-25. The experimental field is an old irrigated light gray soil. The mechanical composition is average sand. The groundwater level is 3-4 m below. The experiment consisted of 14 options, located in a three-fold, tier, the total area of each subdivision is 400 m<sup>2</sup>, the calculated area is 200 m<sup>2</sup>. The yield accuracy obtained on the experimental options basis and iterations was analyzed in variance[1]. The agrochemical [3] and agrophysical experimental field soils properties were examined in the prescribed methods.

## **3. EXPERIMENTAL RESULTS.**

In the experiment, UzPITI-201 cotton variety seeds were sown on March 5-15 in the early sowing variants (variants 1-7) for the reasons described in the above sections, the 1st sowing period was 7-8 days evening cotton crop compared to the variants sown between 5-15 March (variants 8-14). It should be added that in the 1st sowing period terms, in general, the cotton harvest in these options is not in the evening, but only in the evening compared to the periods. Because in these variants the seeds are sown very early, the growing season is prolonged under the above-mentioned weather and other negative factors influence.

During the second sowing period from March 15 to 25, UzPITI-201 cotton variety seeds were sown in double rows under a transparent film with an average seedling thickness of 95.5 and 155.4 thousand bushes/ha in 3 years, although the annual rate of mineral fertilizers is reduced by 10-15%, N-180, P-125, K-90 kg norms per hectare were applied and 70-75-60% cotton yield optimally irrigated variants (variants 11-12) relative to LFMC was 39, 3 and 41, 4 s/ha, respectively, due to the soil temperature, moisture, volume mass, nutrient-rich soil composition improvement and other properties of the soil in the double-row and single-row piles under the film the seeds were sown in the usual open method in 3 years average compared to the variant with a seedling thickness of 91.3 thousand bushes /ha (options 8) 7, 2 and 9, 3; 4.3 and 6.4 compared to the variant with a seedling thickness of 150 thousand bushes/ha per hectare sown in the usual open method; an additional 5, 2 and 7, 3 s/ha cotton crop was grown, respectively, compared to the control option, which was covered with black film with a seedling thickness of 90, 2 thousand bushes/ha.

Another aspect of these options should be noted, for example, seeds were planted in double rows under a transparent film in 38 years in variant 11 with an average seedling thickness of 95.5 thousand bushes/ha in 3 years; 40, 2 in 2017; 39.7 s/ha of cotton was grown, in the film-

covered mounds, as mentioned above, we can see that the soil conditions have improved from year to year under the positive influence of the film.

The same pattern is observed in the 12th variant with an average seedling thickness of 155.4 thousand bushes/ha in 3 years, 2016 йили 39,8; 41,5 in 2017; in 2018, 42,9 s/ha of cotton was grown. This means that as the transparent film's soil mass result, porosity, water permeability, accelerating the nutrients movement, the annual rate of mineral fertilizers is reduced by 10-15%, N-180, P-125, K-90 kg/ha norms were found to have an effective effect on cotton growth, development and cotton yield.

Table 1 Influence of water and resource-saving technologies on cotton yield of UzPITI-201 cotton variety. s/ga average 3 years

| V ar. №                                | Plant ing meth od | Plantin g in the bed | Seedling thickness, thousand bushes/ha | Cotton harvest |       |       |                  | Fib er out put, % | Fib er leng th, mm | Met ric num ber | Fiber stren gth, g/k | Relat ive brea king lengt h of fiber, gk / tex |
|--|-------------------|----------------------|--|----------------|-------|-------|------------------|-------------------|--------------------|-----------------|----------------------|--|
|  |                   |                      |  | 20 16          | 20 17 | 20 18 | Aver age 3 years |                   |                    |                 |                      |  |
| <b>1st sowing period (March 5-15)</b>  |                   |                      |  |                |       |       |                  |                   |                    |                 |                      |  |
| 1                                      | Dou ble row       | Open                 | 74,0                                   | 28, 1          | 29, 0 | 30, 8 | 29,3             | 37,2              | 33, 0              | 570 0           | 4,5                  | 27,3   |
| 2                                      | Dou ble row       | Open                 | 124,2                                  | 29, 2          | 29, 8 | 31, 3 | 30,1             | 37,0              | 33, 3              | 572 0           | 4,6                  | 27,0   |
| 3                                      | Singl e row       | Black film           | 75,3                                   | 29, 8          | 30, 1 | 31, 0 | 30,3             | 36,9              | 32, 8              | 568 0           | 4,5                  | 26,6   |
| 4                                      | Dou ble row       | Transp arent film    | 84,3                                   | 32, 0          | 29, 6 | 32, 0 | 31,2             | 37,3              | 33, 1              | 566 0           | 4,6                  | 26,9   |
| 5                                      | Dou ble row       | Transp arent film    | 133,6                                  | 31, 3          | 32, 9 | 31, 8 | 32,0             | 37,2              | 32, 2              | 570 0           | 4,5                  | 27,7   |
| 6                                      | Singl e row       | Transp arent film    | 82,7                                   | 30, 7          | 31, 9 | 32, 5 | 31,7             | 37,0              | 32, 7              | 578 0           | 4,6                  | 27,6   |
| 7                                      | Singl e row       | Transp arent film    | 130,7                                  | 28, 7          | 29, 5 | 28, 8 | 29,0             | 36,8              | 33, 0              | 575 0           | 4,6                  | 26,9   |
| <b>2nd sowing period (March 15-25)</b> |                   |                      |  |                |       |       |                  |                   |                    |                 |                      |  |
| 8                                      | Dou ble row       | Open                 | 91,3                                   | 31, 4          | 32, 6 | 32, 3 | 32,1             | 37,4              | 33, 3              | 578 0           | 4,7                  | 27,8   |
| 9                                      | Dou ble           | Open                 | 145,5                                  | 33, 9          | 35, 8 | 35, 3 | 35,0             | 37,5              | 33, 4              | 579 0           | 4,8                  | 27,9   |

|                                  |                   |                         |       |          |          |          |      |      |          |          |     |      |
|----------------------------------|-------------------|-------------------------|-------|----------|----------|----------|------|------|----------|----------|-----|------|
|                                  | row               |                         |       |          |          |          |      |      |          |          |     |      |
| <b>10</b>                        | Singl<br>e<br>row | Black<br>film           | 90,2  | 33,<br>2 | 34,<br>9 | 34,<br>2 | 34,1 | 37,2 | 33,<br>4 | 583<br>0 | 4,9 | 28,2 |
| <b>11</b>                        | Dou<br>ble<br>row | Transp<br>arent<br>film | 95,5  | 38,<br>0 | 40,<br>2 | 39,<br>7 | 39,3 | 37,7 | 34,<br>0 | 590<br>0 | 4,9 | 28,0 |
| <b>12</b>                        | Dou<br>ble<br>row | Transp<br>arent<br>film | 155,4 | 39,<br>8 | 41,<br>5 | 42,<br>9 | 41,4 | 37,9 | 33,<br>8 | 585<br>0 | 4,9 | 28,3 |
| <b>13</b>                        | Singl<br>e<br>row | Transp<br>arent<br>film | 92,2  | 34,<br>8 | 36,<br>2 | 35,<br>8 | 35,6 | 37,5 | 33,<br>3 | 580<br>0 | 4,6 | 26,1 |
| <b>14</b>                        | Singl<br>e<br>row | Transp<br>arent<br>film | 153,7 | 33,<br>9 | 35,<br>0 | 34,<br>0 | 34,3 | 37,4 | 33,<br>2 | 577<br>0 | 4,6 | 26,8 |
| HCP <sub>05</sub> 1,49 1,17 1,52 |                   |                         |       |          |          |          |      |      |          |          |     |      |

UZPITI-201 cotton variety seeds were planted in single rows under a transparent film at an average seedling thickness of 92,2 and 153,7 thousand bushes/ha in 3 years, although the annual rate of mineral fertilizers was reduced by 10-15%, NRK-180-125-90 kg norms per hectare were applied and 70-75-60% cotton yield optimally irrigated variants (variants 13-14) relative to LFMC averaged 35, 6 and 34,3 s/ha in 3 years, when the seeds were sown in the usual open method, an average yield of 3,5 and 2,2 s/ha was obtained in 3 years compared to the variant with a seedling thickness of 91,3 thousand bushes/ha (variant 8). Seeds were sown in the usual open method, with a seedling thickness of 150,000 bushes/ha compared to the variant (option 9) of 0, 6 and -0,7 s/ha, with no additional yield. Compared to the control option (option 10), which was covered with a black film with a seedling thickness of 90, 2 thousand bushes/ha, the additional cotton yield was 1,5 and 0,2 s/ha, which was not significant.

The control variant's cotton yield (variant 8) with a seedling thickness of 91,3 thousand bushes/ha sown in double rows in the usual open method averaged 32,1 s/ha in 3 years, the seedlings number planted in double rows was 35,0 s/ha in the control variant (option 9) with a seedling thickness of 145,5 thousand bushes/ha thickened, the cotton yield of the control variant covered with black film with a seedling thickness of 90.2 thousand bushes/ha was 34,1 s/ha.

During the research years, the various agro-measures effect on cotton cultivation applied in practice on the cotton variety fiber quality UzPITI-201 planted in the early and late periods was unique.

The second sowing period is from March 15 to 20, when the seeds are sown in the furrows under a transparent film at an average seedling thickness of 95, 5 and 155,4 thousand bushes/ha in 3 years per hectare at the rate of mineral fertilizers N<sub>180</sub>P<sub>125</sub>K<sub>90</sub> kg/ha UzPITI-201 cotton variety received pre-irrigation soil moisture 70-75-60% in relation to LFMC in optimally irrigated variants (options 11 and 12) the absolute weight of 1000 seeds in three years on average in the same soil conditions period 1 is 2 and 4 g, compared to options 4 and 5, planted between March 5-15, the seeds were sown in double rows in the open method (option 8-9) with an average seedling thickness of 91.3 and 145.5 thousand bushes/ha in 3 years compared to its control variant, where the norms of mineral fertilizers were applied NPK-200-140-100 kg/ha, on average it weighed more than 2 g in 3 years and amounted to

110 and 106 g. It was observed that the control (option 10) with a thickness of 90.2 thousand bushes/ha seedlings covered with a black film between the rows of cotton was 1 and 2 g more than in the variant. The same patterns were observed in fiber output. At the same time, in the variant with a seedling thickness of 95.5 thousand bushes/ha, the fiber yield decreased by 2% compared to the variant of 155.4 thousand bushes/ha, observed that the fiber length was lengthened by 0.2 mm. In these variants, the metric number of cotton fiber is 5900 and 5850 on average in 3 years, fiber break length 28.0-28.3 gk / tex, micronaire allowed to obtain the highest quality fiber with a value of 4.3-4.4.

1000 seeds weight in individual rows planted under a transparent film (options 13 and 14), the 1st period was sown between 5-15 March, with an average weight of 82.7 and 130.7 thousand bushes/ha of seedlings in the 6th and 7th variants with a seedling thickness of 108 and 103 g, respectively. This is because, as mentioned above in these variants, due to the strong competition between plants for growth and development due to the nature of individual rows, a decrease in all indicators was observed.

Seeds are sown in double rows in the open method and an average of 91.3 in 3 years covered with a black film between cotton rows; in the control options with seedling thickness of 145,5 and 90,2 thousand bushes/ha (options 7-9), in the control options with seedling thickness of 145,5 and 90,2 thousand bushes/ha (options 7-9), the fiber yield was 0,4; 0,7; decreased by 0,5%, fiber length 0,7; 0,4; 0,6 mm shrinkage was observed, the seeds were observed to have a lower quality than the double row planted options under the transparent film.

In general, in water and resource-saving technologies, the amount of nutrients in the soil has increased over the years in double-row planting options under a transparent film, which has a positive effect on fiber qualities due to improved soil water and other physical properties. In particular, during the 2nd sowing period, UzPTIT-201 cotton variety was planted as a cocoon, Mineral fertilizers  $N_{180}P_{125}K_{90}$  kg/ha were applied at an average of 95.5 and 155.4 thousand bushes/ha in 3 years per hectare and the highest quality fiber with micronaire 4.3 and 4.4 was obtained in 70-75-60% optimally irrigated variants relative to LFMC.

#### 4. CONCLUSIONS

So, based on field experiments, we can say that , water and resource-saving technology UzPITI-201 cotton seeds 2nd sowing period from March 15 to 25, planted under a transparent film, 95.5 and 155.4 thousand seedlings per hectare were left and mineral fertilizers were applied at the rate of  $N_{180}P_{125}K_{90}$  kg/ha and in 70-75-60% of the irrigated variants optimally in relation to LFMC, the seeds were sown in double row and single row in the usual open method provided with higher levels of nutrients and longer soil moisture retention than control options (options 8-9-10), due to the favorable soil conditions under the film, formed under the positive influence of the transparent film, 5.6-9.3 quintals of additional cotton were grown per hectare and as a result of its positive effect on fiber qualities, its quality has improved and its fineness has increased. In particular, the highest quality fiber was obtained, with a fiber yield of 0.5% and a fiber length of 0.7 mm with a micronaire of 4.3 and 4.4.

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