



# The effect of agricultural measures on the formation of the yield of cotton variety UzPITI-201

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## Abstract.

The seeds of UzPITI-201 cotton variety were sown under a transparent film during the 2nd planting period between March 15-25, 95.5 and 155.4 thousand seedlings were left per hectare, and mineral fertilizers were used at the rate of  $N_{180}R_{125}K_{90}$  kg/gamer, but 70-75-60% optimal compared to ChDNS. in the regularly irrigated options, the seeds are provided with nutrients at a higher level compared to the control options planted in double rows and single rows in the usual open method and have the characteristic of maintaining soil moisture longer due to the positive effect of the transparent film, 7.2-9.3 tons of additional cotton per hectare due to the favorable soil conditions. It was found that it is possible to grow crops.

**Key words.** cotton, double row, single row black film, mulching, transparent film, watering periods, standard, soil, humus.

**DOI Number:** 10.14704/NQ.2022.20.12.NQ77241

**NeuroQuantology2022;20(12): 2612-2620**

**Introduction.** The entry of our republic into the world market requires the creation of fertile, early-maturing, high-fiber cotton varieties and the development of agrotechnologies suitable for them. It is an urgent issue to research the norms and methods of using mineral fertilizers in the maintenance of new cotton varieties and to develop recommendations suitable for the relevant region. In this regard, the scientific-based developments developed in accordance with the relevant regions in many years of research of a number of scientists are of great importance.

In the conditions of Samarkand region with grassy gray soil, cotton planted by the film method is watered in the order of 65-65-60 percent soil moisture, the watering interval is

19-23 days, and in the order of 70-70-60 percent irrigation 15-20 days, the lowest water consumption was observed in the areas cultivated by the film method.

In the experiments in Surhondarya region, the growth and development of cotton planted by the film method is much faster. Accordingly, the number of cysts increased by 1.8-4.2 units, including the number of opened cysts by 1.7-4.1 units, compared to the normal method. It was also ensured that the total yield per hectare would be 8.1-9.3 centners.

80 thousand bushes of Andijan-35 cotton variety were planted per hectare in light gray soils of Andijan region, fed with mineral fertilizers at the rates of NPK-200-140-100 kg per hectare, and during



the period of operation, soil moisture of 70-70-60% compared to ChDNS according to the season 3832 m<sup>3</sup> per hectare, the average yield of cotton in three years was 36.9-38.2 t/ha compared to 3.2 -3.8 ts/ha additional crop was grown.

In the Fergana region, Fergana-5 cotton variety with a seedling thickness of 80-90 thousand bushels per hectare, in the option of using NRK-200-140-100 kg of mineral fertilizers per hectare, an average cotton yield of 42 centners per hectare was achieved.

By the end of August, the height of the main stem is 105 cm, the number of branches is 17, the number of bolls is 13.3, and the cotton yield is 38.9 centners per hectare.

The main factor for the growth and development of all plant life on earth and high yield depends on soil fertility. Therefore, it is important to select and place all crops according to soil fertility.

K.Mirzajanov, A.Mannanova considered it appropriate that the thickness of cotton seedlings should be 110-130 thousand bushels/ha when the distance between the rows is 90 cm.

#### **Experimental system and research methods.**

The experiment was conducted at the Andijan experimental farm of PSUAITI, Andijan region. The experiment consisted of 14 options, making a total of 42 options in 3 returns, located on one level, the total area of each plot is 400 m<sup>2</sup>, the estimated area is 200 m<sup>2</sup>.

All analyzes were carried out on the basis of "Methods of conducting field experiments" (2007) adopted by UzPITI. All agrophysical and agrochemical analyses "Methods of agrochemical, agrophysical and microbiological research in irrigated cotton areas" (1963) was carried out on the basis of styles. The experimental data were mathematically analyzed based on B.A. Dospheov's (1985) "Metodika polevogo opyta" method.

#### **EXPERIMENTAL RESULTS.**

In the experiment, seeds of cotton variety UzPITI-201 were planted in two different planting periods: the 1st planting material was planted between March 5-15 in 7 options (options 1-7) and the 2nd planting period was planted in 7 options (options 8-14) between March 15-25 .

Also, in the control option (option 3), where black film was laid as mulch between the rows and mineral fertilizers were applied at the rate of NRK-200-140-100 per hectare (option 3), nutrient consumption decreased under favorable soil temperature and moisture conditions under the film, and UzPITI-201 cotton It was observed that compared to the period of the first planting of the variety, the nutrients increased by 1.5-2.0 times, and the amount of humus increased by 0.04% in the tillage layer (0-30 cm).

If we talk about options (options 4-7 and 10-14) where seeds of the UzPITI-201 cotton variety are planted under a transparent film in a double row and a single row (options 4-7 and 10-14), in the options of the first term (options 1-7) where the seeds are sown early, at the beginning of the period 0-30 cm it was determined that the amount of humus in the driving layer of the soil was 0.693%. At the end of the operation period, due to the positive effect of the above-mentioned soil environment under the film, the amount of humus in the options planted in double rows (options 4-5) increased by 0.01-0.02%, in the options planted in a single row (options 6-7) by 0.01 It was observed that it increased by %.

UzPITI-201 cotton seeds were sown in double rows and single rows under a transparent film in the second period (options 11-14) at the beginning of the operation period, with the amount of humus in the 0-30 cm layer of the soil being 0.693%, by the end of the operation period due to the positive effect of the soil environment under the passed film, it was observed that the amount of humus increased by 0.05-0.03% in the double-row planting options (options 11-12), and by 0.03% in the single-row planting options (options 13-14).

If we talk about the options where the seeds are planted under a transparent film in a double row and a single row, in these options too, the 1st water is calculated using the method of determining the moisture content of the 0-50 cm soil layer, at 17.1% soil moisture, compared to ChDNS, the soil moisture is 71.2 % was given. Further water was also calculated by the method of determining the moisture content of the 0-50 cm soil layer recommended for the film method, as mentioned above. The



2nd water was given when the moisture content of the 0-50 cm soil layer was 18.0% and reached 75% compared to ChDNS. Compared to the 1st water, the 2nd water was placed at an interval of 29 days, and the 3rd water at an interval of 25 days. During the season, water was applied 4 times and 2538 m<sup>3</sup>/ha of water was used. Or, the seedlings were watered 7-10 days later than in conventional open-planted options. In other words, due to the extension of irrigation periods by 10-15 days and the reduction of water consumption, it was possible to save 1874 m<sup>3</sup>/ha of water compared to the control options where seeds were planted in the usual way, and it allowed to reduce 1.5-2.0 water in the irrigation of cotton during the growing season. Such patterns were also noted in 2017-2018, and in the 2017 experiment, in the 1st planting period, in the options where the seeds were planted under a transparent film, compared to the options planted in the usual way (options 1 and 8), 2219 m<sup>3</sup>/ha, compared to the black film, 476 m<sup>3</sup>/ha, In the experiment of 2018, 2386 and 226 m<sup>3</sup>/ha were achieved, and in the 2nd planting period of 2017, 2676 and 509, and in 2018, 2628 and 402 m<sup>3</sup>/ha. It was found that the number of waterings was reduced to 1-2 times, and the watering interval was extended to 10-15 days.

In conclusion, in the options where seeds are planted under a transparent film, it is worth noting another important aspect of the film. Irrigation intervals were lengthened, and it was found that irrigation mayors decreased by 1.5-2.0 times compared to the control option, and by 1.0-1.5 times compared to options with black film between cotton rows.

During the 2nd planting period, between March 15-25, air and soil temperature moderated conditions showed the high efficiency of water and resource-saving technologies in double-row and single-row options (options 11-14) planted under a transparent film. That is, if the seedlings germinated in 18-19 days even if they were planted under a film in these options planted early, the 2nd planting period was March 15-25, and in the options planted in double rows and single rows under a transparent film (options 11-14) favorable conditions - under the positive influence of air and soil conditions, healthy and vigorous sprouts sprouted in 14-15 days. These

positive features of water- and resource-saving technology continued throughout the entire life cycle of cotton and were reflected in plant growth, development and cotton yield.

The seeds of the UzPITI-201 cotton variety were seriously damaged in the germination of the seeds of variants 1-7 planted in the period of March 5-15 in unstable weather conditions, low soil temperature and high humidity. As a result, the number of seedlings compared to the number of theoretical seedlings It led to a reduction of 15-25%. Especially planted outdoors 74.0 per hectare on average in 3 years in options 1-3, respectively; 124.2; 75,3 bushels were reduced by 20-23% compared to the theoretical number of seedlings. In the options where seeds are planted under a transparent film in a double row and a single row method (options 4-7), the positive effect of the film is on average 84.3 per hectare; 133.6; 82.7; Although it was 130.7 thousand bushes, it was found that it decreased by 12-15% compared to the theoretical number of seedlings. UzPITI-201 cotton variety seeds 2nd planting period between March 15-25 in the variant planted in double rows under a transparent film (option 11) compared to the theoretical number of seedlings of 90-100 thousand bushes/ha in 2016 97.1% (92.3 thousand bushes /ha), 90.3% (85.8 thousand bushes/ha) in 2017, 97.0% (97.3 thousand bushes/ha) in 2018, average 91.0% (91.3 thousand bushes/ha) organized the number of seedlings.

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Planted in a double row under a transparent film (option 12) 93.7% (151.2 thousand bushes/ha) in 2016, 98.7% (158.3 thousand bushes/ha) in 2017, 2018 98.1% (156.7 thousand bush/ha) and average 97.1% (155.4 thousand bush/ha) seedlings were achieved. In the option planted in a single row under a transparent film (option 13), compared to the theoretical number of seedlings of 90-100 thousand bushes/ha, 96.0% in 2016 (96.1 thousand bushes/ha), 91.0% in 2017 (86.5 thousand bushes/ha), in 2018, 94.2% (89.5 thousand bushes/ha) and 97.0% (92.2 thousand bushes/ha) on average were planted. 96.5% in 2016 (154.4 thousand bushes/ha), 94.2% in 2017 (150.7 thousand bushes/ha), in 2018 97.5% (156.0 thousand bushes/ha) on



average 97.5% (153.7 thousand bushes/ha) were planted.

Therefore, in all three years of experiments, the seedling thicknesses of the methodical demand level were achieved. In the experiments, the UzPITI-201 cotton variety grew faster in the variants whose seeds were sown between March 15-25 in the 2nd sowing period (options 8-14), compared to the variants whose seeds were sown in the 1st sowing period between March 5-15.

The seeds of UzPITI-201 cotton variety were sown in double rows under the film,

mineral fertilizers were applied at the rate of NPK-180-125-90 kg/ha per hectare and the number of seedlings was 95.5 on average in 3 years when cotton was irrigated in the optimal order of 70-75-60% compared to ChDNS. and the average number of seedlings in each plant of the options (options 11 and 12), which amounted to 155.4 thousand bushes/ha, was 9.0 in the thinned option (option 11), and 7.2 in the thickened option (option 12) 0.5 and 0.6 more than the control options used in NPK-200-140-100 kg/ha norms of mineral fertilizers.

**Table 1**  
**Effect of agricultural measures on seedling thickness of UzPITI-201**

№	Planting method	Planting cotton	By years			Average 3 years
			2016	2017	2018	
	Double line	open	70,5	76,6	80,2	74,0
	Double line	open	121,8	127,0	138,3	124,2
	A single row	Black film	78,7	73,2	85,8	75,3
	Double line	Transparent film	81,4	85,1	96,9	84,3
	Double line	Transparent film	125,5	130,0	158,3	133,6
	A single row	Transparent film	83,9	79,3	86,5	82,7
	A single row	Transparent film	132,3	123,8	150,7	130,7
	Double line	open	89,3	80,2	104,4	91,3
	Double line	open	151,7	138,3	146,5	145,5
0	A single row	Black film	92,9	85,8	91,9	90,2
1	Double line	Transparent film	92,3	96,9	97,3	95,5
2	Double line	Transparent film	151,2	158,3	156,7	155,4
3	A single row	Transparent film	96,1	86,5	89,5	92,2
4	A single row	Transparent film	154,4	150,7	156,0	153,7

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In the 12th option with a relatively small number of pods, it was observed that the pattern of the opening of the pods was accelerated by 25-30% compared to the 11th option with a sparse number of seedlings, as well as compared to the control options that used mineral fertilizers at the rate of NPK-200-140-100 kg/ha per hectare. Also, depending on the number of seedlings in these options, the weight of the cotton formed in 1 bag also differs, while the number of seedlings in the thinned option (option 11) was 5.1 g, while the number of seedlings in the thickened option

(option 12) decreased by 1.2 g, was 3.9 g. The number of bolls formed in the plants of 92,200 bushels/ha and 153,7 bushels/ha where the seeds were planted in a single row under a transparent film and the cotton yield formed in one boll was reduced by 0.9 and 1.1 grains compared to the options planted in pairs under a transparent film. observed. The weight of cotton in 1 bag of plants of the 14th variant with a thickened number of seedlings was 3.3 g, and it consisted of the lightest bags.

UzPITI-201 cotton seeds were sown under a transparent film in a water- and



resource-saving technology at a seedling thickness of 95.5 and 155.4 thousand bushes/ha, and mineral fertilizers were applied at the rate of NPK-180-125-90 kg/ha per hectare, reducing the annual rate by 10-15%.

the highest results were obtained for the increase of pods in the options compared to the control options, which used NPK-200-140-100 kg/ha of mineral fertilizers per hectare.

**Table 2**  
**The effect of water and resource-saving technologies on the increase of bolls of the UzPITI-201 cotton variety, 3-year average (2016-2018)**

	Planting method	Planting cotton	Number of seedlings, thousand bush/ha	September 1		
				Number of cells, d	Including the opening, d	Weight of 1 cotton bag, g
The planting date is March 15						
	Double line	open	74,0	9,5	5,2	4,8
	Double line	open	124,2	6,1	3,6	3,9
	Double line	Black film	75,3	10,5	4,2	4,1
	Double line	Transparent film	84,3	9,1	3,6	3,9
	Double line	Transparent film	133,6	6,5	3,0	3,5
	A single row	Transparent film	82,7	9,2	3,2	4,0
	A single row	Transparent film	130,7	6,5	3,0	3,5
The planting date is March 25						
	Double line	open	91,3	8,5	3,6	5,0
	Double line	open	145,5	6,6	3,0	3,5
0	A single row	Black film	90,2	9,0	5,4	5,0
1	Double line	Transparent film	95,5	9,0	4,5	5,1
2	Double line	Transparent film	155,4	7,2	5,5	3,9
3	A single row	Transparent film	92,2	8,1	4,5	4,6
4	A single row	Transparent film	153,7	6,1	4,2	3,3

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Because the UzPITI-201 cotton variety has a stronger root system than other standard cotton varieties, the plants of this variety show strong growth and development characteristics and have a unique external morphological structure. UzPTIT-201 cotton variety was planted in the 2nd planting period, with an average of 3 years and 95.5 and 155.4 thousand bush/ha seedling thickness per hectare, at the rate of N180R125K90 kg/ha and 70-75-60% optimal compared to ChDNS. in the irrigated

variants, the highest quality fiber was obtained with indicators of 4.3 and 4.4 micron (Table 4.10.1). So, in the water and resource-saving technology, the annual rate of mineral fertilizers can be reduced by 10-15% and determined as N-180, R-125, K-90 kg per hectare, regardless of the thickness of seedlings, by the method of double-row planting of the UzPTIT-201 cotton variety under a transparent film.



The seeds of cotton variety UZPITI-201 were planted in a single row under a transparent film in an average of 92.2 and 153.7 thousand bushels/ha in 3 years, although the annual rate of mineral fertilizers was reduced by 10-15%, NRK-180-125-90 kg per hectare. The cotton yield of the options (options 13-14) that were irrigated in the optimal order of 70-75-60% compared to ChDNS and applied the standards was 35.6 and 34.3 t/ha in 3 years, and in the average of 3 years when the seeds were sown in the open method 3.5 and 2.2 ts/ha additional yield was obtained compared to the option with 91.3 thousand bushes/ha seedling thickness (variants 8). Compared to the option with a seedling thickness of 150 bushes/ha (option 9), the seeds were sown in the usual open method, making 0.6 and -0.7 ts/ha, and almost no additional yield was obtained. Compared to the control option (option 10) with a thickness of 90.2 thousand bushels/ha of seedlings, additional cotton yield was 1.5 and 0.2 ts/ha and was not significant. Therefore, it is not advisable to plant seeds under a transparent film in single-row bushes under a transparent film, as the efficiency of single-row bushes is low compared to double-row bushes.

The cotton yield of the control option (variant 8) is 32.1 t/ha in the average 3 years, the number of seedlings planted in double rows is thickened 145 bushes/ha in option (option 9) 35.0 ts/ha, the cotton yield of the control variant covered with a black film with a thickness of 90.2 thousand bushes/plant was 34.1 tons/ha.

In general, it should be said that according to the planting dates, the cotton crop grown in all options in the 2nd planting period was 7-8 days earlier than the options in the 1st planting period.

Thus, based on the results of a 3-year scientific research, it is inappropriate to plant the cotton variety UZPITI-201 under a transparent film between March 5-15 in water and resource-saving technology.

The seeds of UzPITI-201 cotton variety were sown under a transparent film during the 2nd sowing period between March 15-25, 95.5 and 155.4 thousand seedlings were left per hectare, and mineral fertilizers were applied at the rate of  $N_{180}R_{125}K_{90}$  kg/ha, 70-75-60% compared to ChDNS. in the optimally irrigated

options, the seedlings are provided with nutrients at a higher level and retain soil moisture for a longer period of time compared to the control options planted in double rows and single rows in the usual open method (options 8-9-10) it was determined that there is a possibility of growing 7.2-9.3 tons of additional cotton per hectare due to the soil conditions.



**Table 3.11.1**  
**Effect of water and resource-saving technologies on cotton yield of UzPITI-201 cotton variety, ts/ha**

№	Planting method	Planting cotton	Seedling thickness, thousand bush/ha	Cotton crop				Additional yield compared to control variants			
				2016 йил	2017 йил	2018 йил	Ўрта-ча 3 йил-лик	Compared to 95 bushels planted outdoors	Compared to 150 bushels planted outdoors	Compared to the black film covered option	Compared to NRK-200-140-100 kg/
The planting date is March 15											
	Double line	open	74,0	28,1	29,0	30,8	29,3	-	-	-	-
	Double line	open	124,2	29,2	29,8	31,3	30,1	-	-	-	-
	A single row	Black film	75,3	29,8	30,1	31,0	30,3	-	-	-	-
	Double line	Transparent film	84,3	32,0	29,6	32,0	31,2	1,9	1,1	0,9	1,9
	Double line	Transparent film	133,6	31,3	32,9	31,8	32,0	2,7	1,9	1,7	1,9
	A single row	Transparent film	82,7	30,7	31,9	32,5	31,7	2,4	1,6	1,4	1,4
	A single row	Transparent film	130,7	28,7	29,5	28,8	29,0	0,3	1,1	-0,7	-07
The planting date is March 25											
	Double line	open	91,3	31,4	32,6	32,3	32,1	-	-	-	-
	Double line	open	145,5	33,9	35,8	35,3	35,0	-	-	-	-
0	A single row	Black film	90,2	33,2	34,9	34,2	34,1	-	-	-	-
1	Double line	Transparent film	95,5	38,0	40,2	39,7	39,3	7,2	4,3	5,2	7,2
2	Double line	Transparent film	155,4	39,8	41,5	42,9	41,4	9,3	6,4	7,3	6,4
3	A single row	Transparent film	92,2	34,8	36,2	35,8	35,6	3,5	0,6	1,5	1,5

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4	A single row	Transparent film	153,7	33,9	35,0	34,0	34,3	2,2	-0,7	0,2	-07
HCP <sub>05</sub>		1,491,17	1,52								



It was found that the economic efficiency of all options planted in the 1st planting period between March 5-15 of UZPITI-201 cotton variety seeds under a transparent film decreased by 40-50% compared to the options planted in the 2nd planting period between March 15-25. It was found that even the double-row varieties under the transparent film had a yield rate of 18.0 and 19.8%, and the economic efficiency was reduced by 17.4 and 17.9% compared to the varieties planted in the 2nd planting period.

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