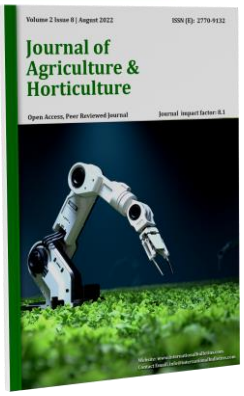

EFFICIENCY OF COTTON CULTIVATION AT DIFFERENT PLANT THICKNESS AND TOPPING METHODS

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Abstract: The article describes the effect of agrotechnical measures - seedling thickness and thinning methods on cotton yield and economic efficiency in the care of thin-fiber cotton varieties in farms specializing in cotton growing in the southern region of the Republic of Surkhondarya. When cotton is maintained at an optimal seedling thickness (120-130 thousand bushels) and chemical topping is carried out with the help of Entojean, the yield is 35.0 tons higher than that of the thin-fiber "Surkhan-103" variety, and an additional cotton yield of up to 4.5 tons is obtained and 3208200 per hectare. It has been scientifically proven that additional income of soums will be obtained and the profitability level will be up to 90.1%.

Key words: "Surkhan-103", seedling thickness, chilpish, entogene, productivity, economic efficiency

Introduction. Uzbekistan is one of the world's leading cotton-growing countries, mainly two types of cotton are grown in our country, medium fiber (Gossipium hirsutum) and fine fiber (Gossipium barbadense). Fine fiber cotton varieties are characterized by high fiber quality. However, cotton varieties belonging to this type are adapted to a hot climate, and it is possible to grow them only in the southern regions of Uzbekistan.

Cotton is one of the most important textile fibers in the world, accounting for about 25% of the total fiber used in the world on average. The United States is the world's third largest cotton producer and leading cotton exporter, accounting for one-third of the world's raw cotton trade. The US cotton industry generates more than $21 billion in products and services annually, creating more than 125,000 jobs in industries ranging from agriculture to textile mills [11; 12].

The thickness of the seedling and tillering is important for obtaining a high and quality harvest from cotton, and a number of scientists have scientifically substantiated it in their research. In recent years, the effect of seedling thickness and topping methods on the loss of herbivorous weevils that damage cotton and cotton-related crops has not been thoroughly studied.

Literature review. Today, about 200 million people in 84 countries of the world cultivate and process cotton by planting seeds on 32-33 million hectares of land. Uzbekistan is the 6th largest producer of cotton in the world after China, India, USA, Pakistan and Brazil. At first, Uzbekistan ranked third after the USA and India in terms of cotton fiber export, but in the following years, as the domestic cotton processing industry developed, it moved to sixth place [10].

By A.Shamsiev and others [3] in the conditions of Surkhondarya region, when studying the norms of feeding with mineral fertilizers and the thickness of seedlings on the development of agrotechnology for growing high cotton yield from thin fiber cotton varieties "Iolotan-14", "Surkhon-103" and "ST-1651" 5.6 compared to control; 4.2; An additional yield of 4.8 ts\ha was obtained.

In our republic, Sojean, Entojean preparations are applied three times at the rate of 15+45+90 g/ha during the cotton vegetation period (nodding, flowering, fruiting) or at the rate of 100-110 g/ha when 12-13 bolls are collected in cotton, Dalpiks 1.0- 1.5 l/ha, Pix 1.5-2.0 l/ha standards do not require hand topping when sprinkled 5-7 days before or after watering cotton [2].

120-130,000 seedlings of "Surkhan-103" variety of cotton were left per hectare, chemical treatment with entogean was carried out, and the tolerance of cotton to herbivorous bollworm was determined. The highest rate of damage to cotton was observed in the non-hand topping option, 3.1% more than the hand topping option and 4.9% more damage than the chemical topping option [7, 8].

The result of each agricultural operation is determined by the cotton yield. M. Avliyokulov and others [1; 6; 9] in the studies of the effect of irrigation duration and norms, water regime on the cotton yield, the "Sultan" variety of cotton was 41.1 ts\ha at a seedling thickness of 80-90 thousand bushels and 43.3 ts at a seedling thickness of 70-80 thousand bushels. It was determined that 70-80 thousand bushels per ha is acceptable for "Sultan" cotton variety.

In the conditions of Surkhandarya region, keeping the optimal number of 90-100,000/ha plants, watering cotton at lower rates, carrying out cotton at the most convenient times and using high-quality cotton, and using Entogean in cotton at convenient times, has been found to be an important factor in reducing the number of bollworms in the cotton plant [4, 5].

Today, the demand for fiber quality in the global cotton industry is increasing. It is an urgent task to apply planting thickness, watering and feeding methods of each cotton variety to the conditions of each region.

Research methodology.The researches were conducted in field conditions, based on methodological manuals such as "Metodika Gosudarstvennogo sortoispytaniya selskohozyaystvennyx kultur", "Methods of conducting field experiments". Productivity indicators were mathematically processed in the dispersion analysis method based on the "Metodika polevogo opyta" manual of B.A. Dospehov.

Field experiments were conducted in the conditions of barren grassland soils of Surkhandarya region during 2018-2020. In the experiment, the effect of agrotechnical measures on the damage of herbivorous caterpillars was studied in the field where cotton with thin fibers "Surkhan-103" was cultivated.

Results and discussion. The growth and development of cotton is affected by soil fertility, planting period and standards, irrigation, feeding, inter-row cultivation, mulching methods, defoliation period and standards, cotton diseases. In our scientific researches, the effect of seedling thickness, topping methods on cotton yield and economic efficiency was studied.

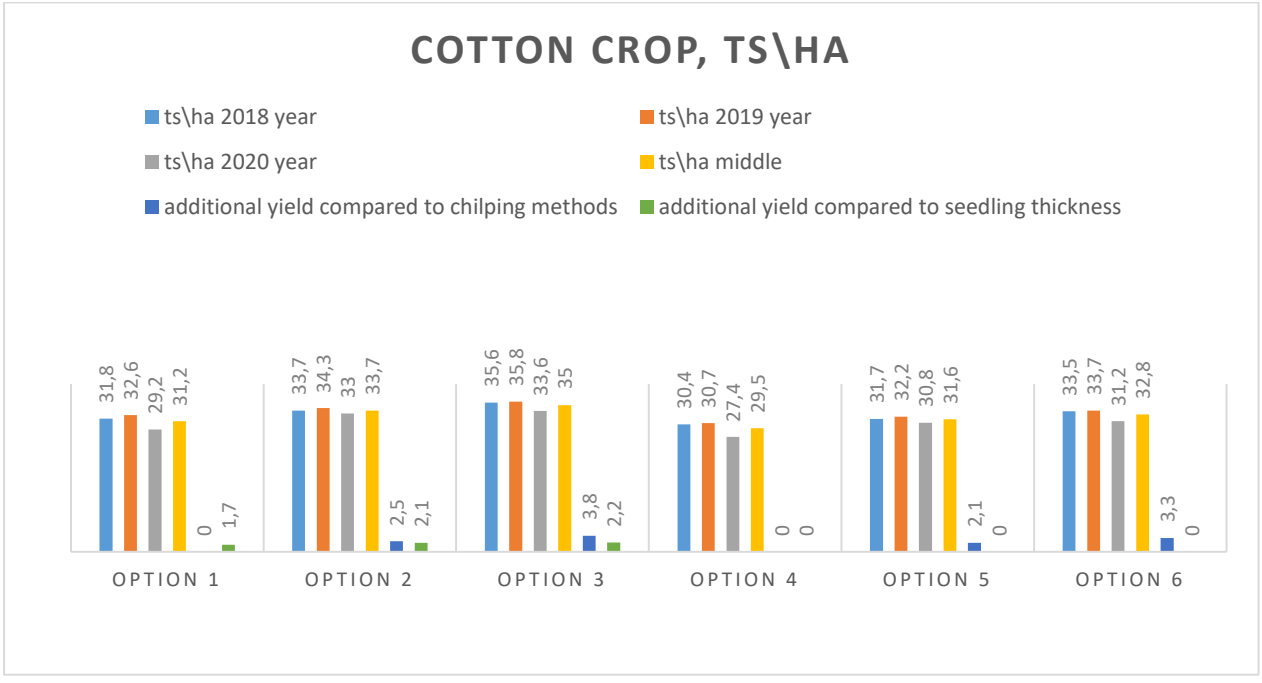
The main task of the research conducted in agriculture, especially in cotton growing, is the scientific justification of the effect of agrotechnical measures and external influencing factors on cotton productivity.

Timely ginning of cotton ensures preservation of crop marks, increase in crop weight, and improvement of fiber quality, but delaying it or not ginning at all can cause the cotton to be shriveled, the shell of the bolls to thicken, and ripening may be delayed for 7-10 days. Also, when chemical spraying is carried out, the cotton bush becomes a compact arch-like shape, and the air exchange between the rows is improved. As a result, the weight of the first harvest increases by 5-6 centners, and it is possible to harvest the crop in a short period of time.

According to the data obtained on cotton productivity in the conditions of barren grassland soils of Surkhandarya region in 2018-2020, the thin-fiber cotton variety "Surkhan-103" averaged 29.5-35.0 t/ha in three years.

When the seedling thickness is high, the indicator of water and nutrient utilization of cotton decreases, and the yield is 15-20% less than that of cotton. In the experiment, the effect of seedling thickness on cotton yield was studied by growing thin-fiber variety "Surkhan-103" in two different seedling thicknesses (120-130; 140-150 thousand bushels/ha). When the plant was planted at a density of 120-130 thousand seedlings per hectare, the average yield in three years was 31.2-35.0 ts/ha, and when there were 140-150 thousand seedlings per hectare, it was 29.5-32.8 ts/ha. Increasing the number of seedlings by 10-20 thousand bushes per hectare caused a decrease in productivity by 1.7-2.2 ts\ha (picture 1).

In the conducted experiments, the effect of topping methods along with seedling thickness on cotton yield was studied. In the cultivation of fine fiber cotton variety, in the background of 120-130 thousand seedlings per hectare, in the options where there was no topping, manual topping and chemical topping with the help of Entogene, the average cotton yield was 31.2-35.0 t/ha in three years. in the 3rd option, where chemical spraying was carried out with the help of the preparation, it was 35.0 ts\ha. This variant yielded 3.8 ts\ha of extra cotton compared to the control option without tying and 1.3 ts\ha compared to option 2 with manual tying.



Explanation: *2018* year *2019* year *2020* year
For factor A: HCP_{05}=0.22 ts\ha; HCP_{05}=0.40 ts\ha; HCP_{05}=0.87 ts\ha;
Sx =0,7 Sx =1.2 Sx =2.8
For factor B: HCP_{05}=0.26 ts\ha; HCP_{05}=0.49 ts\ha; HCP_{05}=1.06 ts\ha;
Sx =0.8 Sx =1.5 Sx =3.4
Sx =1.1 Sx =2.1 Sx =4.9

Figure 1. Cotton seedling thickness and topping methods impact on productivity. "Surkhan-103" cotton variety

Table 1

Economic efficiency of thin-fiber cotton variety, "Surkhan-103" cotton variety, cultivated in different seedling thicknesses and topping methods

№	Pruning methods	Productivity, ts/ha		Income from cotton, soum/ha	Costs for crop cultivation, soums/ha			Conditional net profit, soum/ha	Additional income, soum/ha	Profitability, %
		Average in 3 years	In addition harvest		Total	To chirp	Additional harvesting and transportation			
seedling thickness is 120-130 thousand/ha										
1	Control	31.2		41034240.0	22420600			18613640		83.0
2	Topping by hand	33.7	2.5	44322240.0	23658600	110000	1128000	20663640	2050000	87.3
3	Chemical tickling	35.0	3.8	46032000.0	24210160	75000	1714560	21821840	3208200	90.1
seedling thickness is 140-150 thousand/ha										
4	Control	29.5		38798400.0	22420600			16377800		73.0
5	Topping by hand	31.6	2.1	41560320.0	23478120	110000	947520	18082200	1704400	77.0
6	Chemical tickling	32.8	3.3	43138560.0	23984560	75000	1488960	19154000	2776200	79.9

Based on the analysis of the data presented above, it can be concluded that in the conditions of the barren meadow soils of Surkhondarya region, thin-fiber cotton varieties are planted at a thickness of 120-130 thousand bushels, and when chemical spraying with Entojean drug is used, it provides an additional yield of up to 4.5 t/ha.

At present, agriculture, which is the main branch of the national economy of our country, is aimed at increasing the economy, forming it based on new principles, reducing the cost of production, attracting new innovative technologies, and increasing the quantity and quality of products. That is why the main basis of the economy is to spend less money on production and get a higher profit.

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Currently, it is aimed to increase the economy in agriculture, which is the main branch of the national economy of our country, to form it based on new principles, to reduce the cost of production, to attract new innovative technologies, and to increase the quantity and quality of products. That is why the main basis of the economy is to spend less money on production and get a higher profit.

It is known that the development of agrotechnics for the maintenance of each cotton variety in different soil and climate conditions, pest and disease control, and recommendations for production also ensure high economic efficiency in crop production.

In the experiments carried out in 2018-2020, the highest economic efficiency was observed in an average of three years in the option where the thin-fiber cotton variety "Surkhan-103" was maintained at a thickness of 120-130 thousand bushels per hectare, and during the growing season, chemical topping was carried out with the help of Entojean. In this option, the conditional net profit was 21821840 soums/ha, the additional income was 3208200 soums/ha, and the profitability level was 90.1%.

In medium-fiber "Surkhan-103" cotton variety, when the seedling thickness was increased to 10-20 thousand bushels per hectare, in the option of applying entogene, the conditional net profit was 19154000 soums/ha, the additional income was 2776200 soums/ha, and the profitability level was 79.9%. With the increase in the number of seedlings, the cotton yield decreased by 2.2 tons per hectare, which led to a decrease in the level of profitability to 10.2%.

The influence of ginning methods on the economic efficiency of the cotton harvest was also observed. When ginning was carried out by hand, conditional net profit was 20663640 soums, additional income was 2050000 soums, and the profitability was 87.3%. Additional income was 1158200 soums less than the option of chemical ginning.

Conclusions. In the conditions of the barren meadow soils of the southern region of the Republic of Surkhondarya, it is possible to achieve high economic efficiency due to the reduction of the number of herbivorous caterpillars and the increase of cotton productivity, when the optimal thickness of seedlings and the method of topping are carried out in a timely manner.

In order to obtain a high and high-quality cotton crop from thin-fiber cotton varieties and to achieve high economic efficiency, it is recommended to maintain it at a thickness of 120-130 thousand bushels per hectare, and carry out chemical topping with the help of entogene drug.

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