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Research Article

THE EFFECT OF LASER RADIATION ON THE PRODUCTIVITY OF THIN FIBER COTTON

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ABSTRACT

The effect of laser radiation on the germination, development and yield of cotton seed was studied on the basis of experiments, and it was found that laser light has a positive effect on the yield of cotton.

KEYWORDS

Laser radiation, multiple radiation, positional radiation, thin fiber cotton, experiments, laser.

INTRODUCTION

It is known that increasing the productivity of agricultural crops, including cotton, accelerating the harvest and improving the quality of fiber is one of the most important issues facing scientific production. In this regard, one of the great achievements in the field of science and technology in our time is the discovery and creation of optical power generators-lasers.

The effectiveness of laser irradiation before planting seeds was recorded in experiments conducted in different growing regions. The "Termiz-14" variety achieves the highest yield in 15-20 minutes of exposure, 5-7 times of irradiation. Irradiation of seeds has a therapeutic effect on uniform germination, development and growth of seedlings. In the conditions of the southern desert zone of the Surkhandarya region, the effect of laser irradiation on

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germination, growth, and productivity of "Termiz-14", "Termiz-16" thin-fiber cotton varieties before planting is being studied for the first time.

The procedure of irradiation for the purpose of selection differs from the procedure of irradiation for the purpose of increasing productivity. It is necessary to carefully select the irradiation method for each crop and analyze many years of generations. The results of experiments conducted on some vegetables and grain crops show that it is desirable to carry out wider and deeper researches in laboratory and production conditions.

The data obtained from the experiment carried out by the scientists of our republic showed that seed irradiation in such varieties as "Druzhba-60", "9647-I", "Sharof-81" has a significant effect on the technological properties of the fiber. Currently, as a result of research, it was found that "9647-I", "Drujba-60" varieties are more sensitive to radiation than other cotton varieties. When the seed was irradiated, the fiber thickness and breakage rate of all types of cotton decreased and the strength increased significantly. It should also be mentioned that the fiber length of "Sharof-81" variety increases significantly under the influence of laser light.

Irradiation of thin fiber cotton seeds "Termiz-14", "Termiz-16", "9871-I" will be carried out in March and early April from 2015 to 2020 in the laboratory of the physics department of Termiz State University.

In our experiment, when the dynamics of cotton seedlings were studied. The seeds of "Termiz-14" and "Termiz-16" varieties are naturally hairless, and there is a significant difference in germination depending on the period of irradiation of the seeds. By April 30, 76.1 percent of non-irradiated seeds will germinate, and 81.7 to 86.0 percent of irradiated varieties will germinate. Among the options studied, the best result was achieved when the seed was irradiated from 10 to 40 minutes, even 83.1-85.5 percent.

It is necessary to mention that in all the options where the seed was irradiated, the seedling germinated and developed in a uniform thickness compared to the usual one. It should be recognized that in the varieties that were irradiated for 40 minutes and seven times, the seedlings germinated with a uniform thickness compared to the normal and all other varieties. However, it usually did not exceed 79.5 thousand per hectare. Observing the state of the cotton before starting to harvest shows that the long and short period of seed fertilization has different effects on the structure of the cotton.

(Table 3)

The results of experiments conducted on cotton showed that seed irradiation before planting has a positive effect on the opening of bolls. The number of opened pockets was from 18.5 to 23.2 units, depending on the options. The seeds opened 1.0-4.7 more pods in the irradiated options compared to the control.

Thus, laser irradiation of "Termiz-14" and "Termiz-16" fine-fiber cotton seeds before sowing has a positive effect on the germination of seeds with a uniform thickness compared to the usual one, good growth and development of the plant.

Our experiments showed that laser irradiation of cotton seed with thin fibers has a positive effect on its germination, stalk thickness, plant growth and development, and ensures high cotton yield. (Table 4) The yield was higher in all variants where the seed was irradiated with laser compared to the control. The highest cotton yield was obtained in 30.40 minutes in

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the laser device and 7-10 times irradiated, and was 37.9-39.0 centners per hectare.

Cotton yield by harvesting, centner per hectare

№	Options	Cotton harvest terms			Cotton picked before it gets cold		Total cotton crop	Out of control	
		first	second	third	A quintal per hectare	Percent		A quintal per hectare	Percent
1.	Seedless cotton (control)	23,2	5,7	5,0	28,9	85,5	33,9	-	-
2.	The seed was irradiated for five minutes before sowing	24,2	6,7	5,0	30,9	86,0	35,9	2,0	5,9
3.	The seed is irradiated for ten minutes	25,5	7,0	4,1	32,5	88,2	36,6	2,7	7,9
4.	The seed is irradiated for fifteen minutes	27,0	7,0	3,1	34,0	91,6	37,1	3,2	9,4
5.	The seed is irradiated for twenty-five minutes	28,2	7,0	2,0	35,2	94,6	37,2	3,3	9,8
6.	The seed is irradiated for thirty minutes	29,2	7,0	2,1	36,2	94,5	38,3	4,4	12,9

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7.	The seed is irradiated for forty minutes	30,5	6,5	1,8	37,0	95,4	38,8	4,9	14,4
8.	The seed is irradiated seven times	30,2	6,7	2,1	36,9	95,0	39,0	5,1	15,1
9.	The seed was irradiated ten times before sowing	29,2	6,5	2,2	35,7	94,2	37,9	4,0	11,7

CONCLUSION

In conclusion, it can be said that in "Termiz-14" and "Termiz-16" thin-fiber cotton varieties, laser irradiation of seeds before planting has a positive effect on seedling germination, growth and development, productivity. In places where fine fiber cotton is planted, this event will speed up the harvest and increase the weight of the first harvest cotton. It was observed that the technological quality of cotton fibers improved slightly when lasered before seeding.

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