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CENTER FOR INTERNATIONAL SCIENTIFIC PUBLICATIONS
JOURNAL OF AGRICULTURE AND LIFE SCIENCES
ISSN(Online): 2984-6706
SJIF Impact Factor |(2024): 6.578|
Volume-7, Issue-2, Published |20-02-2024|

EFFECTIVENESS OF DEFOLIATION IN COTTON

https://doi.org/10.5281/zenodo.10720111

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ANNOTATION

This paper presents data on the effect of defoliants on defoliation, boll opening and cotton yield by using PRO-ULTRA SC cotton defoliant at 45-50 % boll opening at different rates. It was found that the application of PRO-ULTRA SC defoliant at 200 ml/ha per hectare was acceptable when cotton bolls were 45-50 % open, defoliation was 75,6 %, boll opening was 88, 1 %, and boll opening rate was 40,5 %. At the same time, it was observed that the cotton yield was 35,4 ts/ha, which was 1,7 ts/ha higher than the control.

Keywords

typical gray soil, UzPITI-103 cotton variety, PRO-ULTRA SC and "Ento-Defol" defoliants, cotton, leaf, boll, productivity.

Access: In the field of cotton, although fast-growing, high-yielding varieties are being created, the need for defoliation remains one of the most important measures. Because, due to the increase in rainfall in the spring months, the extension of the sowing period or the replanting of the seeds due to the disease of the seedlings will delay the opening of the pods and lead to incomplete ripening. In return for the defoliation event, the shedding of cotton leaves is ensured and the opening of the pods is accelerated. Creating new preparations by changing the active ingredients of defoliants and their optimal use development of standards is one of the urgent problems of the cotton industry.

One of the main reasons for the change in the climatic conditions of our country is the fact that it is located at the northernmost border of the subtropical latitude, which provides a lot of heat from the sun, the peculiarity of atmospheric changes that often create clear and less cloudy air, and the distance of these areas from the oceans. Early cotton varieties need a useful total temperature of around 1700 ^{0}C for the first boll opening, while fine fiber cotton varieties need 2000-2200 ^{0}C [1].

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R.Ochilov, M.Toraev emphasized that it is necessary to pay attention to the temperature of the air and soil moisture of the cultivated cotton field during defoliation. Most of the defoliants are effective when the air temperature is 20 ^{0}C and higher and the soil moisture is 65-68 % compared to ChDNS, only Rivet produced by the US company "FMS" is 24 % e.c. and the product of the Swiss company "Singeta" is 15 % water. Reglon super preparations in solution and defoliants based on chlorinated salts (Sardor, Magnesium Chlorate, Sadaf, Sahavat, Sihat) are known to show high efficiency even when the average daily air temperature drops to 17 ^{0}C [2].

Due to the fact that defoliants with a mild effect ensure a rapid and long-term redistribution of nutrients compared to defoliants with a strong effect, the effectiveness of the extra defoliant Avguron, which has a mild effect on cotton, at the rate of 0,10-0,20 l/ha was studied, and it has been determined that the yield was increased to 1,0-2,0 ts/ha. A decrease or increase in soil moisture also has a negative effect on leaf shedding. If the soil becomes too dry, the effectiveness of defoliants decreases. Cottons are almost unaffected by defoliants when soil moisture is 35-40 % of field moisture capacity [3].

Scientists of the Institute of Genetics and Experimental Biology of Plants L.G.Krylova, S.B.Monakovlar took into account the strong effect of magnesium chlorate defoliant (active substance 60 %) on cotton, that is, the burning of small pores located in the upper layer and, as a result, the deterioration of fiber quality indicators. when new preparations were tested, natural leaf shedding did not exceed 18-20 % in the control variant, 70 % leaf shedding was observed when magnesium chlorate defoliant was applied at the rate of 10 kg/ha, Khazon 7,0 l/ha, Kuzak 4,0 l/ha, When Sardar 7,0 l/ha and Sikhat (96 %) 8,0 l/ha were used, it was determined that leaf shedding was 70-75 %. When using these drugs, it was observed that the number of dried leaves was 5-15 % less than the option using magnesium chlorate [4].

It is known that defoliants have different effects on the morphobiology of cotton varieties, depending on the soil climatic conditions and, moreover, feeding methods. For this reason, scientific research was carried out to determine the effectiveness of defoliants depending on feeding procedures in the conditions of Kashkadarya region. Accordingly, it was determined that the efficiency of defoliants increased when the feeding rates were at the optimal level, that is, $N_{200}P_{140}K_{100}$ kg/ha, and it was observed that when Auguron-extra was sprayed at the rate of 0,250 l/ha, leaf shedding was 86,5 % [5].

In the conditions of barren soils of Kashkadarya region, the effectiveness of Sardar defoliant was studied in thin fiber Kashkardarya-1 cotton variety, when this defoliant was used at the rate of 7,0 l/ha, leaf shedding was 75,4-81,4 %, boll

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opening 92,8-90,1 % and productivity was 46,3-46,5 ts/ha. It was determined that it was 10kg/ha, compared to the application of magnesium chlorate defoliant at the rate of 10 kg/ha, the shedding of leaves increased by 5,6-6,4 %, opening of the buds increased by 10,9-6,3 %, and the yield was 0,7-0,4 ts/ha [6].

According to the research conducted by U.Z.Abdurakhmanov, Sh.J.Teshaev, F.J.Teshaev, 20-30-day-old pods are physiologically and biologically immature, i.e., due to the low level of formation and chaining of cellulose, which is considered the main structure of fiber, defoliants improve fiber quality indicators. It has been found that the formation and chaining of cellulose is high when the cotton bolls are 40-50 days old, and the soft and semi-soft defoliants have a positive effect on the cotton fibers in such bolls [7].

Dropp-Ultra using foliantin even when the air temperature is low makes it possible to get high results. In other words, the "temperature barrier" characteristic of "tidiazuron" is not taken from this drug [8].

When Z.Kh.Adilov studied the effectiveness of a defoliant based on sodium and magnesium chlorate, urea, sodium triurea chlorate, acephate, acetamiprid, ethanol and cypermethrin, the shedding of leaves 12 days after defoliation was 86-87 %, the opening of cysts was 88-89 %, observed a 100 % loss of sucking insects [9].

When M.Kh.Yuldashov conducted scientific research on the effectiveness of Dropp 50 SP, Drop Ultra, DEF-6, Ethephon defoliants and their mixtures in medium-fiber Bukhara-6 and S-7510 cotton varieties in the conditions of Bukhara region, the highest efficiency was Dropp Ultra and Dropp SP, mixtures prepared with DEF-6 (0,3+0,3 kg·l/ha) and 18 days after defoliation, leaf shedding was proportionally 92,7-98,9 % and 90,8-98,6 % was determined to be. However, it was observed that increasing the DEF-6 preparation to the standard of 1,0 l/ha in this mixture does not have a good effect on leaf shedding [10].

In scientific research conducted by H. Polvonov in order to create liquid and solid calcium chlorate-based defoliant from soda production residues, it was proved that calcium chlorate can be obtained through the conversion process of sodium chlorate and chloral alkali in soda production. It was found that this created defoliant has sufficient defoliant properties and when it is applied, leaf shedding is 83,7 % and pod opening is 84,5-88,7 % [11].

According to O.Sindarov's research on determining the effectiveness of defoliants depending on the irrigation regime in the conditions of Tashkent region, when S-6524 and Okdarya cotton varieties are cared for in the order of 65-65-60 % compared to ChDNS, Sardar defoliant at the rate of 8,0 l/ha compared to ChDNS It is recommended to use sardar defoliant at the rate of 7,0 l/ha when taking care in the order of 70-70-65 % [12].

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When studying the effectiveness of PoliDEF defoliant by R.Nazarov, M.Latipov, A.Holboev, depending on the state of development of the cotton, using PoliDEF defoliant at the rate of 6-8 l/ha provides complete leaf shedding in 12-13 days, while the defoliant has a mild effect. and determined that cotton raw material does not pollute with dry elements [13].

UzDEF defoliant was created under the leadership of S.Tukhtaev, and its effectiveness in cotton defoliation was studied with the participation of a number of scientists. UzDEF preparation is made from complex compounds on the basis of SuyuqXMD and has a mild effect on cotton. Its level of toxicity is class IV, that is, it is considered to be low toxicological, and the LD50 for experimental animals is 6726-5470 mg/kg. Based on the results of the research, it was determined that it is acceptable to use when the bolls open at 45-55 % for medium-fiber cotton varieties, and 60-65 % for fine-fiber cotton varieties. Also, the advantage of this drug is that it affects the plant even if the air temperature drops below 17 0C. However, when the air temperature drops, the rate of consumption should be increased by 15-20 % [14].

Research methodology: Field experiments were conducted in 2021 at the central experimental site of the Cotton Breeding, Seeding and Cultivation Agrotechnological Research Institute comparing the new Pro-Ultra SC defoliant to the Ento-defol defoliant in the UzPITI-103 cotton variety.

The researches were carried out based on the manuals "Methods for Conducting Field Experiments" (2007) and "Methodological Guidelines for Testing Defoliants" (2004) adopted by UzPITI. The obtained yield data were mathematically processed in the dispersion analysis method based on the manual "Metodika polevogo opyta" (1979) by B.A.Dospehov [15, 16, 17].

Analysis and results. During the conducted scientific studies, the effect of the new drug "Pro Ultra SC" on shedding cotton leaves, opening pods and productivity was determined. According to this, when defoliation was carried out in the period when cotton bolls were 45-50 % open, 14 days after defoliation, in the control option, the natural shedding of cotton leaves was 8,1 %, the opening of bolls was 66,8 %, and the remaining 91,9 % of the leaves remained green on the bush. was determined. As a benchmark, in the version where the defoliant "Ento-Defol" was used at the rate of 0,200 l/ha, the number of fallen leaves 14 days after defoliation was 74,7 %, the opening of pods was 87,9 %, and the yield was 35,1 ts/ha it was determined that it was 1,4 ts/ha higher than the control variant.

Acceleration of the opening of the cysts after defoliation is explained by most authors as the effect of drugs on the physiological-biological-chemical processes in the shedding leaves and in the sheaths of the cysts [18].

In the research, when the newly studied defoliant "Pro Ultra SC" was applied at the rate of 0,200 l/ha, the number of leaves shed 14 days after defoliation was

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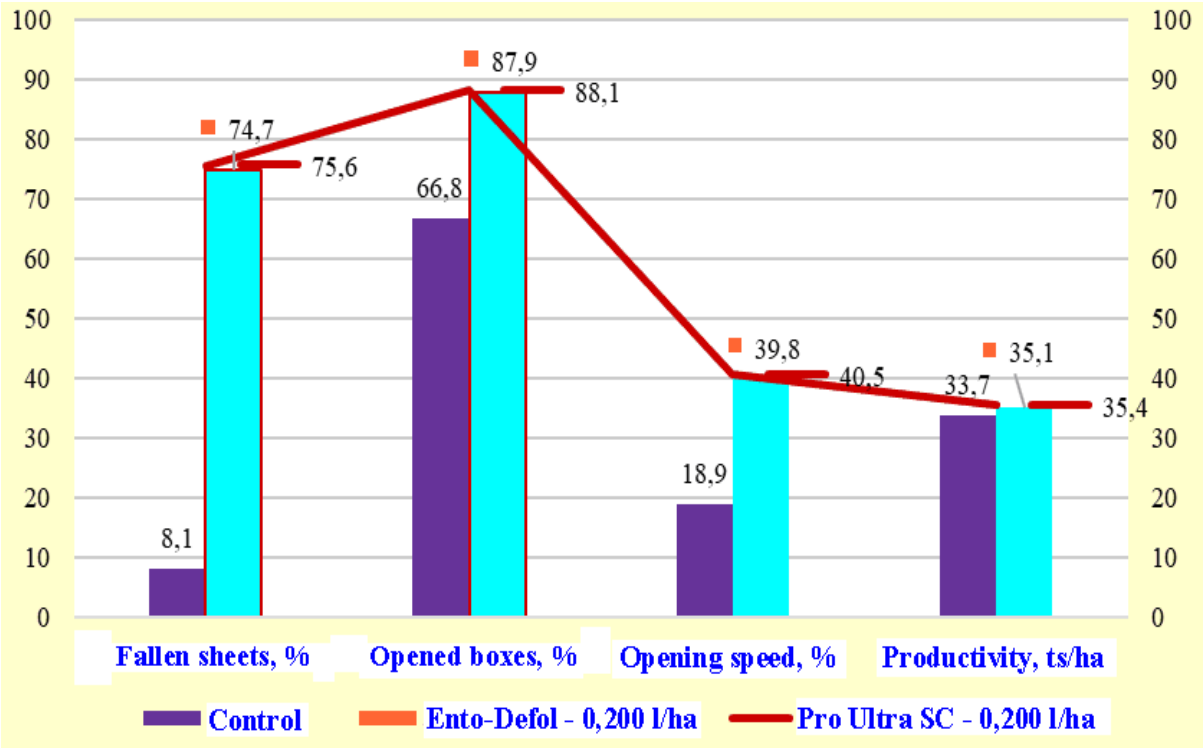
75,6 %, the opening of pods was 88,1 %, and the rate of pod opening was 40,5 %. The yield was also observed that it was 1,7 ts/ha higher than the control amounting to 35,4 ts/ha. These obtained data are presented in picture 1.



1-picture. Effect of defoliation on cotton leaf shedding, boll opening and yield

To sum up, in order to obtain a high and high-quality cotton yield from the medium-fiber cotton variety "S-6524" cultivated in the conditions of the Tashkent region, the use of the new "Pro Ultra SC" defoliant at the rate of 0,200 l/ha during the opening period of 45-50 % of the bolls on the cotton bush is highly effective, and it was found to increase the weight of the pick and slightly increase the total cotton yield.

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ISSN(Online): 2984-6706
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