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INFLUENCE OF DEFOLIANTS ON THE TECHNOLOGICAL QUALITY INDICATORS OF MEDIUM-STAPLE COTTON SEEDS

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Annotatsiya. S-8290 g‘o‘za navida Ento-Defol defoliantini 20,0-15,0 l/ga me’yorda qo‘llanilganda 1000 dona chigit vazni defoliatsiya davrlariga (30-40; 50-60%). nazoratga nisbatan 1,3-1,4% ga ko‘p bo‘ldi. Urug‘ tarkibidagi moy miqdori nazoratga nisbatan 0,5-0,3% (22,4-22,3%) ga yuqori bo‘ldi..
Kalit so‘zlar: defoliatsiya va defoliant turlari, urug‘larning moyliligi, oqsil va moy miqdori.

Аннотация. При применении дефолианта Энто-Дефол на хлопчатнике сорта С-8290 в норме 20,0-15,0 л/га масса 1000 семян составляет 120,8-120,9 г пропорционально периодам дефолиации (30-40; 50-60%). , было на 1,3-1,4% больше, чем в контроле. Содержание масла в семенах было на 0,5-0,3% (22,4-22,3%) больше, чем в контроле.
Ключевые слова: дефолиация и виды дефолиантов, масличность семян, содержание белка и масла.

Abstract. When using the defoliant Ento-Defol on cotton variety C-8290 at a rate of 20.0-15.0 l/ha, the weight of 1000 seeds is 120.8-120.9 g in proportion to the periods of defoliation (30-40; 50-60%). , was 1.3-1.4% more than in the control. The oil content in the seeds was 0.5-0.3% (22.4-22.3%) more than in the control.
Keywords: defoliation and types of defoliants, seed oil content, protein and oil content.

INTRODUCTION

In recent years, providing the population with food and raw materials for industry is becoming more complicated on a global scale. Especially in the conditions of the current global financial and economic crisis, the further expansion and radical modernization of agricultural production provides an opportunity to find a solution to these issues. From this point of view, several works are being carried out at the state level in the development of this sector, including cotton growing, on the basis of specific programs, in order to increase the production of exportable products.

In addition to the creation by our scientists of early-maturing, high-yielding, cotton varieties that fully meet the requirements of the world market, resistant to diseases and pests, development of resource-saving agrotechnical measures

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suitable for the soil and climatic conditions of the regions, as well as for quality harvesting during the ripening period. It is important to apply cotton defoliation agro-management depending on various factors depending on the biological characteristics of varieties and to develop their optimal rate and duration.

Also, domestic and foreign scientists have proven in their research that the acceptable standards of defoliants used together with chemical fertilizers for cotton have a positive effect on the quality indicators of the seed and the forms of nitrogen.

After all, nitrogen, phosphorus and potassium fertilizers have a positive effect on the fat and proteins contained in the seed, causing the oil content of the seed to increase by 2-4%.

REVIEW OF LITERATURE

In cotton cultivation, the timely and scientifically grounded implementation of defoliation—the artificial shedding of cotton leaves—is a crucial agrotechnical measure. It accelerates the opening of cotton bolls and facilitates the efficient, high-quality harvesting of the crop within a short timeframe. The effectiveness of defoliants depends directly on their chemical composition, application rate, the developmental stage of the cotton plants, as well as ambient temperature and humidity conditions. Proper execution of defoliation helps minimize crop loss in the field, ensures the complete opening of bolls, and enhances harvesting efficiency.

Research conducted by international scientists has extensively examined the impact of chemical defoliants on cotton yield and fiber quality. For instance, in experiments carried out in the Xinjiang region of China between 2020 and 2021, the application of a preparation containing 10% thidiazuron and 40% ethephon resulted in an 84.9% boll-opening rate, with a cotton fiber yield 14.8% higher than that of the control group. Researchers emphasize that determining the correct timing for the application of defoliants is crucial for preventing crop losses[1]. Other scientific studies have also examined how the timing of defoliant application affects the yield and fiber quality of various cotton varieties. Specifically, in experiments conducted between 2019 and 2020, applying the defoliant at the optimal time resulted in a 97.3% leaf-shedding rate and an 89.8% boll-opening rate, with a cotton yield of 3,991 kg/ha [2].

Local scientists have also conducted research to evaluate the efficacy of new-generation defoliants. For instance, O. Mamatqulov and S. Allanazarov studied the effectiveness of the defoliant "Baystar" on the medium-staple cotton variety S-7303 under varying plant densities. The results indicated that applying Baystar at a rate of 0.600 L/ha with a plant density of 100,000–110,000 plants per hectare yielded high effectiveness. This accelerated both leaf shedding and boll opening, leading to an increase in total cotton yield and a greater volume of cotton harvested during the first picking [3]. Furthermore, Kh.J. Yusupov and D.A. Ergashev... M.Yu. Ismoilov et al. studied the efficacy of the locally produced

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defoliants "Fandef-M" and "Fandef-a'lo" on the S-8290 cotton variety under the conditions of the Fergana region. In these experiments, applying the preparations at a rate of 5.5–6.5 L/ha resulted in a leaf-shedding rate of 86.45–93.3% and a boll-opening rate of 87.3–91.7% after 12 days. The authors note that these local defoliants demonstrate high biological efficacy and suggest that further, more extensive testing across various soil and climatic conditions is warranted [4].

An analysis of the aforementioned scientific sources indicates that the impact of both foreign and local defoliants on cotton yield depends on the type of preparation, the application rate, the biological characteristics of the cotton variety, and the timing of the defoliation treatment. In particular, applying defoliants when the bolls are sufficiently developed and have reached physiological maturity plays a crucial role in preserving the yield, ensuring uniform boll opening, and improving the quality indicators of the cotton fiber. Therefore, comparing local and foreign defoliants and scientifically evaluating their impact on cotton yield across various cotton varieties and soil-climatic conditions constitutes an urgent scientific and practical task.

RESEARCH METHODOLOGY

In connection with the difficult tasks, during the past years, our research has been carried out in the meadow of the Scientific Experimental Station of the Scientific Research Institute of Cotton Selection, Seeding and Cultivation, located in the Kuva District of the Fergana Region. was carried out in the conditions of the soil. In the experiment, separate options for each variety were obtained and placed in 4 rows, 3 repetitions.

The indicated standards of defoliants used in the experiment were applied to the experimental variants, with the bolls of cotton varieties S8290, S6775, S9090, S6770 at 30-40, 45-50%, and 50-60, 60-65% opening period, and their optimal application rate and duration were determined. Scientific research at UzPITI was carried out on the basis of the adopted "Методика полевых опытов с хлопчатником" (1981), "Methods of conducting field experiments" (2007) and "Methodological guidelines for testing cotton defoliants" (1993, 1994, 2004) adopted by the State Chemical Commission of the Republic of Uzbekistan.

RESEARCH RESULTS AND THEIR DISCUSSION

From this point of view, in the experiments of past years in the conditions of meadow-swamp soils of Fergana region, in addition to the effect of defoliants on fiber quality indicators, seed quality indicators, i.e., seed weight of 1000 pieces, germination capacity, fertility, maturity level, moisture and kernel yield, total, protein content of seed and protein-free nitrogen amounts were also determined.

In our research, compared to S-8290 cotton variety, S-6775 cotton variety has slightly higher 1000 seed weight and moisture level. Consequently, the weight of 1000 seeds in the S-8290 cotton variety control options was 119.5-119.7 g in proportion to the defoliation period, while in the S-6775 cotton variety control option, this indicator was 123.6-123.9 g, respectively. formed the whole.

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In the case of liquid XMD (8.0 l/ha), the weight of 1000 seeds was equal to that of the control option or 0.1 g less, that is, up to 118.5-118.7 g in proportion to the defoliation period in S-8290 cotton variety, S-6775 in the cotton variety, it was about 123.6-123.9 g, respectively. In these variants, the seed oil content is also 0.1-1.1% (20.8-20.9; 22.1-22.2) of the control variant (21.9-22.0; 22.2-22.3 g) g) was less. This, in turn, indicates that the defoliant has a strong effect on the young follicles, forcing them to open (incomplete opening).

Entodefol defoliant was used in different rates (10.0-15.0-20.0 l/ha) among the variants, as in the above laws, in S-8290 and S-6775 cotton varieties, when the bolls were opened by 30-40%, Entodefol was applied at 20.0 l/ha 50- At 60% opening, good results were obtained when applied at a rate of 15.0 l/ha. For example, when Entodefol is applied at the rate of 20.0-15.0 l/ha in the S-8290 cotton variety, the weight of 1000 seeds is 120.8-120.9 g in proportion to the defoliation periods (30-40; 50-60%). was 1.3-1.4% more than the control variant. Seed oil content was 0.5-0.3% (22.4-22.3%) more than the control.

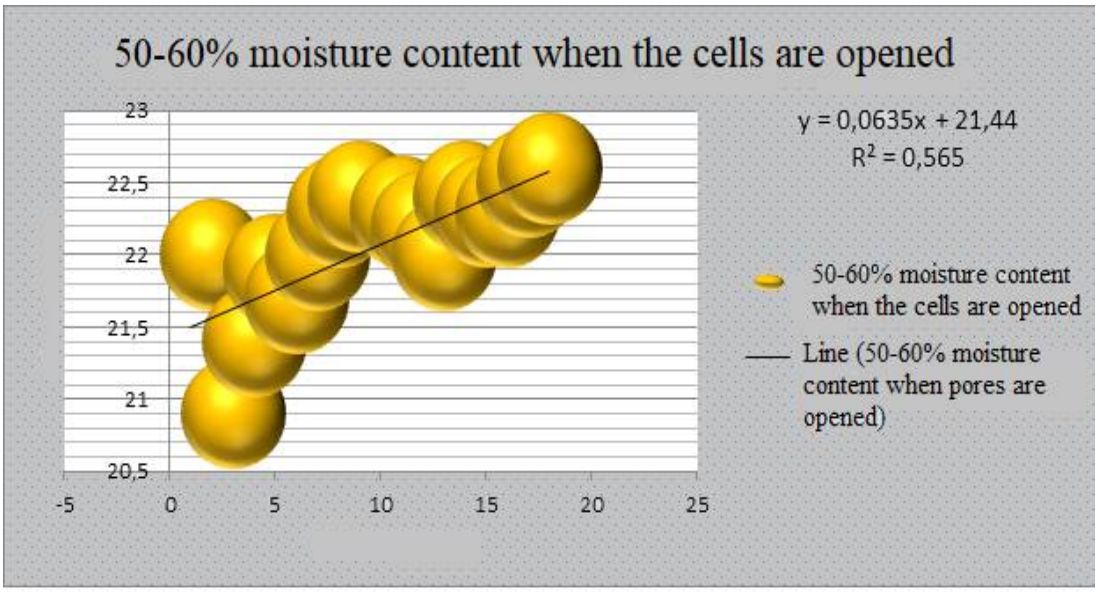


Figure 1. Effect of defoliants on seed quality indicators

In the S-6775 cotton variety, the weight of 1000 pieces of seed was 125.8-126.0 g, which was 2.3-2.2 g more than the control, and the seed oil content was 22.2-22.3%. It turned out to be high around 0.5-0.2%.

Significantly, we can see that the 1000 seed weight and oil content of cotton variety S-6775 is slightly higher than that of cotton variety S-8290. This is proof that the variety is biologically different from each other.

In other words, the indicators of germination capacity, germination, maturity level of the seed did not differ much from the control options, but it was equal to it or a little more or less by 0.8-0.5%. These indicators indicate that the biological value of the seed in this aspect does not differ sharply in positive or negative direction.

However, it should be noted that the biological value of the seed of agricultural crops is determined by the amount of kernel in its seed. Because the

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amount of kernel in the seed is a necessary source of nutrients for the healthy growth and development of the sprout (Teshaev 2008).

According to the results of the conducted research, it was observed that in all defoliated variants, except for SuyuqXMD defoliant, seed yield did not decrease.

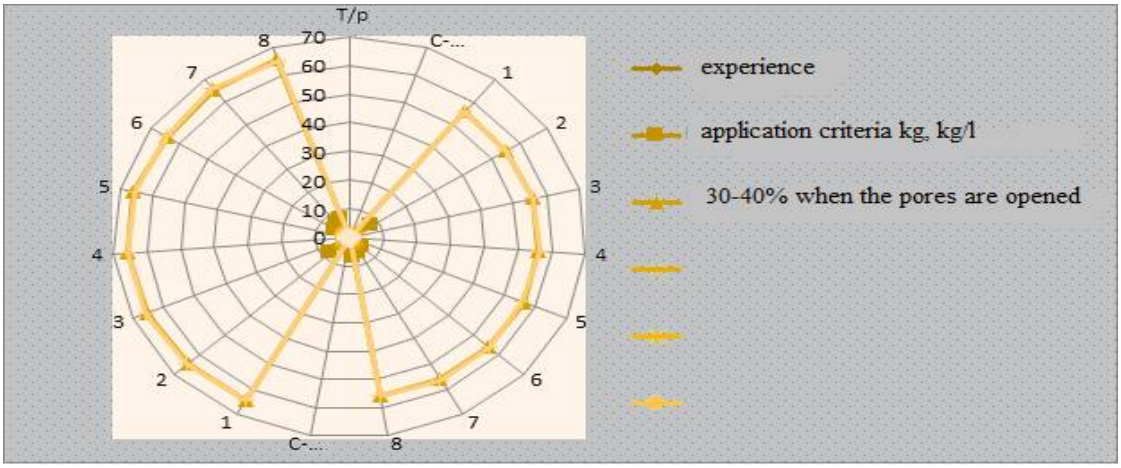


Figure 2. Effect of defoliants on seed quality indicators

In the control version of the S-8290 cotton variety, the yield of kernels was 55.4-55.5% in proportion to the periods of defoliation application (30-40; 50-60%), while in the version where SuyuqXMD (8.0 l/ha) was used, this indicator It decreased by 0.4-0.3% and amounted to 55.0-55.2%. When Entodefol is used at the rate of 10.0-15.0-20.0 l/ha, this indicator is 55.7-55.9-56.1, respectively; 56.1-56.3-55.8%, the highest result was obtained from the variant using Entodefol 20.0-15.0 l/ha and was 56.1-56.3%, respectively.

It should be said that in background 2 (50-60%) slightly lower standards of defoliants showed good results, i.e., in the options where EntoDefol 0.150 l/ha and FanDEF-excellent 6.0 l/ha were used, the indicators were 95.1-90.0, respectively; 38.7-34.8; 22.0-16.9%; 21.8-17.9; 22.0-16.9; It was 8.3-4.4%. Another reason for this result is that during this period, the content of cotton and seed in cotton was almost full, and natural sunlight, heat and light had a positive effect, and the low rate of defoliants we used was also natural. it was also positive enough for the seeds that could not fully assimilate the factors.

The following conclusions can be made based on the results of scientific research conducted in the conditions of meadow-swamp soils of Fergana region.

CONCLUSIONS

In general, in the conditions of the grassland soils of the Fergana region, cotton bolls are 30-40 in S-8290 and S-6775 cotton varieties; The pods of the defoliated variants at 50-60% opening (especially at 50-60% opening) efficiently used the heat of the sun (30-35 C0) and light, and a slight increase in fat (kernel) and proteins was found.

In conclusion, it can be said that the use of Entodefol and FanDEF-excellent defoliant in acceptable standards in S-8290 and S-6775 cotton varieties grown in the conditions of meadow-swamp soils of Fergana region does not worsen the

biological and chemical properties of the next generation seeds. On the contrary, it was found that the quality of the seeds under the influence of defoliants was equal to or slightly higher than the control.

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