BIOMETRIC INDICATORS OF COTTON

Boboyeva Nodira To'xtamishovna - Termez State University, Teacher(PhD). Surkhandarya, Uzbekistan

Abstract. This article presents the results of scientific research on the cultivation of fine fiber cotton. Biometric and fertility indicators of promising varieties were compared.

Keywords. Cotton varieties, biometric indicators, productivity indicators, entogene, 1000 seed weight.

БИОМЕТРИЧЕСКИЕ ПОКАЗАТЕЛИ ХЛОПЧАТНИКА

Аннотация. В данной статье представлены результаты научных исследований по выращиванию тонковолокнистого хлопка. Сравнены биометрические показатели и показатели плодовитости перспективных сортов.

Ключевые слова. сорта хлопчатника, биометрические показатели, показатели продуктивности, энтоген, масса 1000 семян.

In recent years, along with medium-fiber cotton varieties belonging to Gossypium hirsutum L., fine-fiber cotton varieties belonging to Gossypium barbadense L. have also been included in the State Register of agricultural crops recommended for cultivation in the territory of the Republic of Uzbekistan. In particular, according to Resolution No. 47 of the Cabinet of Ministers dated January 30, 2020, fine-fiber cotton varieties that have been grown as "promising varieties" were evaluated based on their performance in production, and it was decided to include them in the State Register of agricultural crops recommended for cultivation in Uzbekistan. In accordance with Decision No. 41 of the Crop Variety Testing Center dated 27 December 2019, the varieties Surxon-14, Surxon-16, and Surxon-103 were included in the State Register for the Surkhandarya region.

This, in turn, increases competition among fine-fiber varieties and ultimately contributes to the development of cotton varieties possessing valuable agronomic traits such as high yield, superior fiber quality, and resistance to pests.

The removal of the apical growth point of the cotton plant to stop the growth of the main stem and monopodial branches is termed “topping,” and it is considered one of the most important agrotechnical measures for achieving high yield. When performed on time and with proper quality, topping prevents premature shedding of fruiting organs, promotes the formation of more mature bolls, accelerates ripening, increases yield by 3–4 centners per hectare, and improves fiber quality. Based on long-term scientific research, topping was officially introduced in Uzbekistan in 1939 as a mandatory agricultural practice in cotton cultivation.

When topping is carried out correctly and on time, shedding of fruiting elements decreases, cotton growth and development accelerate by 7–8 to 10 days, 3–4 more bolls are produced, the weight of a single boll increases by 0.3–0.5 g, yield increases by 3–5 to as much as 8 centners per hectare, cotton can be harvested completely within one to two pickings, fiber quality improves by 25–30%, seed weight increases, oil content rises by 1–2%, and bollworm infestation decreases by 50–60% [6,8,9].

According to available data, in Uzbekistan the use of the preparations Sojean and Entojean during cotton vegetation (square formation, flowering, and boll-setting stages) at application rates of 15 + 45 + 90 g/ha, or a single application of 100–110 g/ha at the stage of 12–13 fruiting branches, as well as Dalpix at 1.0–1.5 L/ha and Pix at 1.5–2.0 L/ha—sprayed 5–7 days before or after irrigation—eliminates the need for manual topping.

Throughout the vegetation period, cotton can form numerous fruiting bodies, and yields of 150–200 centners per hectare are theoretically achievable. However, due to various natural and anthropogenic factors, it is impossible to preserve all fruiting elements. F. Teshaev et al. studied the effect of plant density and topping on shedding of fruiting elements. In the O‘zPITI-202 cotton variety, at a density of 100–110 thousand plants per hectare, the least shedding occurred when topping was performed at the stage of 13–14 fruiting branches, amounting to 6.6%, which was 7.1% lower than in the untreated variant. Delaying topping, performing it poorly or carelessly, or failing to carry it out reduces yield by 20–25%, delays ripening by 10–15 days, results in smaller and lighter bolls, causes excessive leaf growth, and increases susceptibility to pests.

Increasing output and improving quality in cotton production largely depend on timely irrigation and fertilization, as well as proper scheduling of topping to direct the plant toward boll formation. In Sh. Rakhmonov's experiments, topping at the stage of 14–15 fruiting branches resulted in 11.1–12.2 bolls per plant and the highest yields.

When applying defoliants to cotton, it is essential to determine application timing and methods based on the topping schedule and technique. According to the recommendations of X. Abdurakhmonov et al., conducting chemical topping at the stage of 13–14 fruiting branches ensures optimal defoliant effectiveness.

According to X. Egamov and colleagues, topping of the "Andijon-35" cotton variety should be carried out by taking into account the plant density in each specific field. When plant density is 80–90 thousand plants per hectare, topping should be performed when 14–15 fruiting branches have formed; at 90–100 thousand plants per hectare, when 13–14 fruiting branches appear; and at 100–120 thousand plants per hectare, when 12–13 fruiting branches are formed. If the variety is cultivated in accordance with scientific recommendations, it is possible to obtain 40–45 centners of high-quality cotton per hectare.

The effect of plant density on the weight of lint per boll, along with other factors, was also determined. In the medium-fiber variety "Bukhara-102," when plant density was 90–100 thousand plants/ha, the weight of lint per boll during the first harvest ranged from 5.0 to 5.9 g. When plant density was increased by 10–20 thousand plants/ha, boll weight decreased to 4.5–5.5 g, i.e., by 0.4–0.5 g.

When studying the effect of topping methods on boll weight in addition to plant density, it was found that in the "Bukhara-102" variety at a plant density of 90–100 thousand plants/ha, the highest boll weight (5.9 g) was achieved in the variant treated with the chemical topping agent Entojean. This was 0.9 g higher than the untreated control and 0.5 g higher than the manually topped variant.

In the fine-fiber variety “Surxon-103,” boll weight ranged from 3.2 to 3.6 g at a density of 120–130 thousand plants/ha, and from 2.8 to 3.2 g at 140–150 thousand plants/ha. As plant density increased, boll weight decreased by 0.3–0.4 g. Among the topping methods tested at a density of 120–130 thousand plants/ha, the highest boll weight (3.6 g) was again observed in the variant treated with Entojean.

In the medium-fiber “Bukhara-102” variety, the 1000-seed weight over three years averaged 118.7–122.4 g. At a density of 90–100 thousand plants/ha, the 1000-seed weight was 120.6–122.4 g, whereas at 110–120 thousand plants/ha it was 118.7–120.5 g. Increasing plant density by 10–20 thousand plants/ha resulted in a reduction of up to 1.9 g in 1000-seed weight.

In the fine-fiber “Surxon-103” variety, the 1000-seed weight over three years averaged 124.6–120.6 g, which was 2.0–2.7 g higher than in the medium-fiber “Bukhara-102” variety. However, a decrease in 1000-seed weight was also observed with increasing plant density. At 120–130 thousand plants/ha, the 1000-seed weight ranged from 122.6 to 124.6 g. In the untreated control, the weight was 122.6 g, while manual topping increased it to 123.4 g, and chemical topping with Entojean increased it by 2.0 g compared to the control, reaching 124.6 g.

References:

1. Boboeva N. T. et al. The fight against avena fatua in the middle of a wheat field //International Journal on Integrated Education. – T. 3. – №. 2. – C. 62-64.

2. Teshaev Sh., Xoliqov B. va boshqalar. Jizzax viloyatida ekilayotgan g’o’za navlarini yetishtirish agrotexnologiyasi. Toshkent-2017. B. 39.

3. Teshaev Sh., Teshaev F., Allanazarov S., Abdurahmonov U. Defoliantlarning turli chilpish muddatlari va usullariga bog’liq holda chigit moydorligiga ta’siri. Agro ilm- O’zbekiston qishloq va suv xo’jaligi jurnali ilovasi. №3 (53). 2018. B. 16-17.

4. Boboeva N. T. Negmatova ST Effects of Improved Agrotechnical Measures on Harmful Harvesting of Medium-Fiber Cotton Varieties //Texas Journal of Multidisciplinary Studies. SJIF Impact Factor. – 2021. – T. 5.

5. Boboeva N. et al. The influence of agrotechnical measures on the damage of boilers in the cultivation of strong cotton varieties //Journal of Pharmaceutical Negative Results. – 2022. – С. 3170-3175.

6. Kholmatov B. R., KhalillaevSh.A., Musaev *D.M.* Form of membership of bugs Hemiptera, which belong to the family Miridae and their some biological properties in condition of Tashkent region // European science review Scientific jurnal. – Vienna, 2016. – Vol. 4. – Issue 5-6. – P. 112–117.

7. ZHI Xiao-yu, HAN Ying-chun. Effects of plant density on cotton yield components and quality. Journal of Integrative Agriculture. 2016, 15 (7): 1469-1479

8. Schuh R.T. Plant bugs of the world (Insecta: Heteroptera: Miridae): systematic catalog, distributions, host list, and bibliography. New York Entomological Society. –New York, 1995. – 1329 pp.

9. Egamov X., Qosimov B., Komilov B.. G’o’zaning yangi “Andijon-35” navi morfologiyasi, biologiyasi va qisqacha parvarishlash agrotexnikasi. Agro ilm. №5, 2020. B 8-9.