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Issue Article

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FORMATION OF THE NUMBER OF BOLL FLAPS IN ONE PLANT IN BACKCROSS HYBRIDS OF PERUVIAN COTTON SPECIES

***Abstract**: In an article the research results directed to increase of boll weight by the way of amount boll shutters on the backcross obtaining from crossing an accession «01097»2 with line «T-817» was given. The location of 3-4-5 boll shutters and their ratio in fruit branches of hybrid plants was determined. This result makes it possible to enhance a base element of productivity is the weight of raw cotton per boll.*

***Key words**: Cotton, backcross, hybrid, heterosis, varieties, dominant, interspecific, morphobiological.*

***Language**: English*

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Introduction

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At present, special attention is paid to obtaining high yields from cotton varieties cultivated in the fields of the republic not only with the use of advanced agronomic measures, but also to the creation of new varieties with economically valuable features, especially early maturing, high-yielding, resistant to diseases and pests, with high fiber yield and high technological indicators, meeting the requirements of the world cotton market and the introduction of their production, which is of particular importance in the sustainable development of rural agriculture In particular, the created cotton varieties currently differ from each other in their economic traits and biological properties.

In this connection, it is necessary to recommend new donors of valuable traits and properties obtained on the basis of genetic and breeding research to improve its efficiency in the breeding process as source material.

O.H. Kimsanbaev [3] found that the inheritance of the trait of boll size in F1 hybrids is in full dominance, and in the variation series of F_2 hybrids this indicator slopes toward the parental forms, to obtain transgressive hybrids with large bolls, polygenic influence of genes is observed.

According to A.B.Amanturdiev and R.G.Kim [1], the weight of raw cotton of one boll is a complex trait, and it in F_1-F_3 hybrids, the combinatory ability of parental forms is marked by an intermediate position along with the manifestation of positive and negative heterosis, as well as dominant and superdominant inheritance. Although in literature sources negative correlation between the traits of early maturity and boll size in the studied hybrids is given, in our research the relationship between these traits is weakly correlated, as well as between the weight of raw cotton of one boll with the productivity of one plant a significant positive relationship is noted.

In the studies of H. Saidaliev et al. [4] provide data that the high efficiency of backcross hybrids obtained by interspecific hybridization with varieties for the combination of morphobiological and basic economic traits.

According to studies by R. Berdimuradov, A. Chapau, Sh. Akmuradov, B. Durdiev, R. Meredov [2], the weight of raw cotton of one boll consists of several components, i.e. the number of boll flaps and lobes and they are interrelated with each other. In new varieties, the relationship between these constituents is of particular importance. Fine-fiber cotton varieties mainly consist of three flaps and their number is 70% of the total number. One way to increase the yield of fine fiber cotton varieties is to increase the number of flaps per boll.

This study is aimed at solving the above-mentioned deficiencies - increasing boll weight in long-fiber cotton varieties.

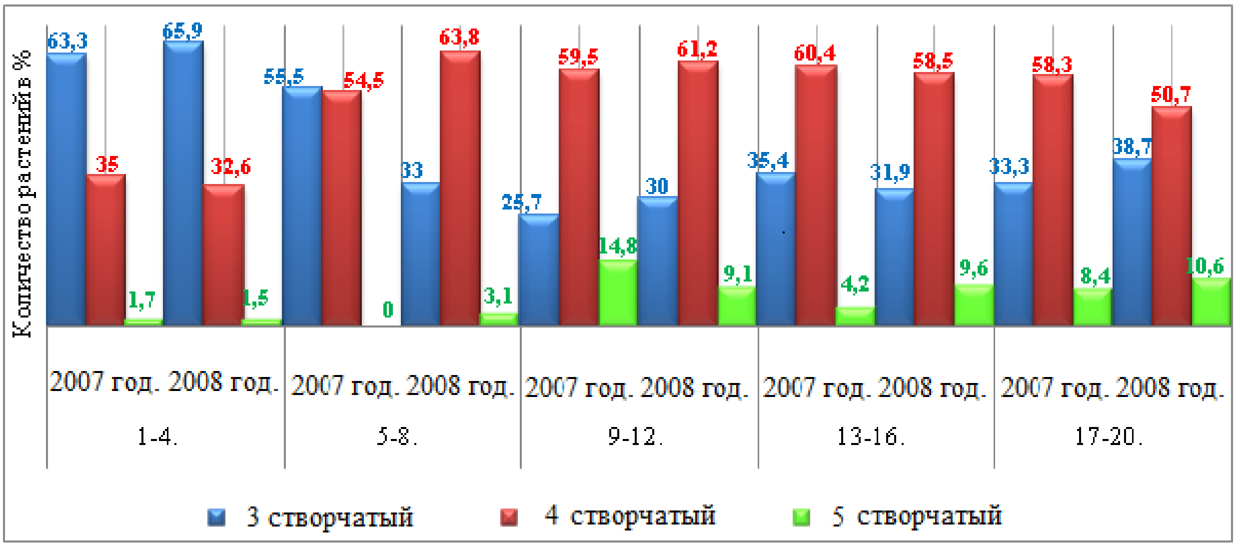
Material and methods of research: Collection sample “010972” and line “T-817” belonging to the species *G.barbadense* L., which were involved in crosses among themselves and backcross hybrids were obtained, were used in the research. These hybrids were analyzed for the arrangement of three-four-five flaps and their ratio in the plant (Figures 1-3).

In the initial stage of research, all having fruiting branches were categorized into 5 classes (fruiting branches 1-4; 5-8; 9-12; 13-16; 17-20) according to the location of 4 fruiting branches.

Research results and discussion: In all variants, the formation of the number of tricuspid bolls in plants was noted in the 1st class, i.e. they were found in the 1st-4th fruiting branches, this phenomenon is explained by the fact that it occurs due to its historical (phylogeny) origin. Thus, long-staple cotton varieties were mainly tricuspid, during phylogenetic development this trait was formed in the lower fruit branches of the plant, later during ontogenesis it was observed that the higher the bolls were located on the plant, the higher the number of flaps in the bolls.

According to the results of two-year data of the research in the first variant (sowing seeds of tricuspid bolls) 1-4th fruit branches (1-class) tricuspid bolls made up 63.3-65.9% of the total number of bolls, in the second variant - 49.3-52.9% and the third variant - 36.4-43.9%, respectively (1- figure).

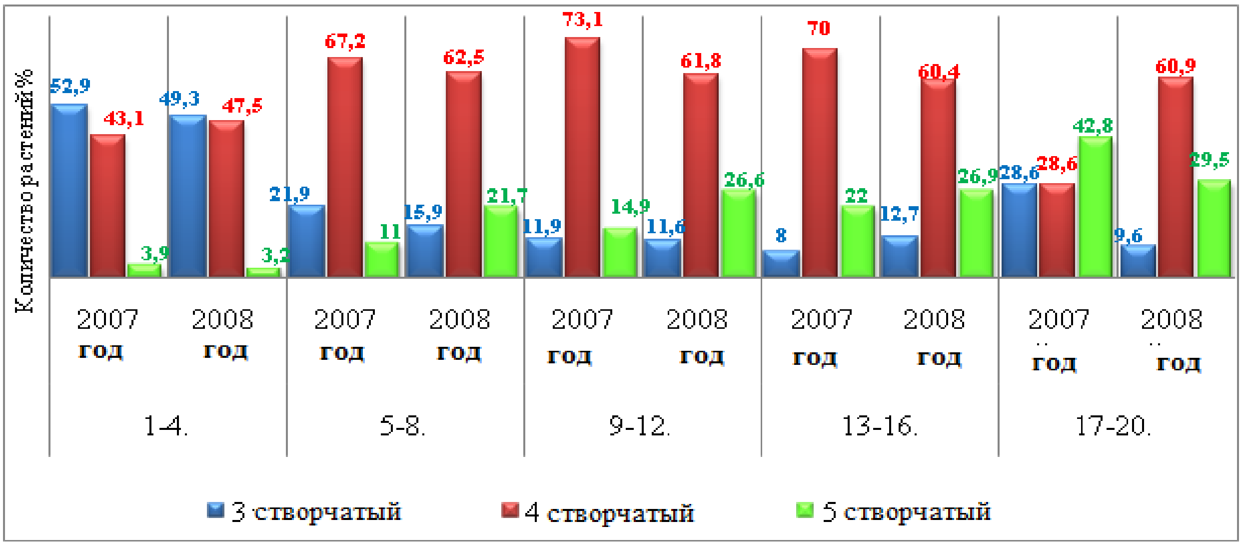
1 figure. Formation of multiflap bolls in fruiting branches on the main stem when sown with tricuspid bolls of the I-variant



When sowing seeds of tricuspid capsules (the first variant), a decrease in the number of tricuspid capsules was observed during the transition to the upper (5-20th) fruit branches. In particular, compared to the number of tricuspid capsules in the 1st-4th fruiting branches, the number of tricuspid capsules in the 17th-20th fruiting branches decreased by 27.3-30.0%. The number of five flaps in 9-12th fruiting branches (9.1-14.8%), as well as the number of five flaps in 1-4th fruiting branches (7.7-13.1%) of the main stem were observed to increase.

In the second variant (sowing seeds of four flaps), the number of four flaps compared to the other studied variants (first and third variants), high values of indicators were obtained. When sowing four flaps in the 1st-4th fruiting branches of the main stem, there was a sharp increase in the number of tricuspid capsules (49.3-52.9%) compared to four (43.1-47.5%) and five (3.2-3.9%) flaps, but a comparative decrease in the number of tricuspid capsules formed in the fruiting branches of the upper nodes of the main stem. Similarly, in this variant, the highest number of four-leaf bolls was found in the sowing of five-leaf bolls (the third variant), where their number was 61.8-73.1% in the 9-12th fruit branches, five-leaf bolls were more formed in the 13-16th and 17-20th fruit branches of the main stem. In particular, the number of five-flap bolls in 17-20th fruiting branches was higher compared to other fruiting branches and amounted to 29.5-42.8% (2- fiure).

2 -figure. Formation of multiflap bolls in fruit branches on the main stem when sowing four flaps of II-variant bolls



In the third variant (sowing seeds of five flaps), a different pattern was observed compared to the other variants. Here, tricuspid capsules were mainly formed in the 1st-4th fruiting branches (36.4-43.9%), and the highest number of four flaps was formed in the 9th-12th fruiting branches (64.1-65.5%). Also, a high number of five flap bolls was found in the 13th-16th and 17th-20th fruiting branches of the main stem (third variant, grades 4-5). It should be noted that there was a sharp decrease in the number of three-forked bolls formed in the 9-20th (3-5 classes) fruiting branches (3.5-6.9%, 8.8-9.1%, 4.7-14.3%, respectively), and mainly four- and five-forked bolls developed in the upper fruiting branches (3-figure).

3- figure. Formation of different flaps in fruiting branches on the main stem when sowing five flaps of the III-variant

The following conclusions can be drawn on the basis of the analyzed research results: 1) tricuspid capsules are formed in the lower 1-4th fruiting branches; 2) in the second variant (sowing of four capsules) almost equal distribution of four capsules in the fifth and higher fruiting branches of the main stem is observed; 3) formation of five capsules is observed exactly in the 13-16th and 17-20th fruiting branches of the main stem.

Combining all the results obtained and summarizing the results we can say that the studied interrelationships of plant variants tricuspid bolls are located mainly on the initial shrubs 1-4 fruiting branches, four flap bolls in sowing five and higher fruiting branches, four flap bolls are distributed evenly, and five flap bolls their growth is observed mainly in 17-20 fruiting branches.

According to the results of the conducted research, to increase one of the main elements of productivity - the weight of raw cotton of one boll, it is recomended to select for four and five bolls in long-fiber cotton varieties.

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