GENETIC ASPECTS OF TOTAL AND PERCENT (+)-GOSSYPOL IN COTTON HYBRIDS

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Abstract

We are continuing our studies to develop cotton lines that have a high percentage of (+)-gossypol in the seed. We have determined the total and percentage of (+)- and (-)-gossypol in U.S. accessions and Uzbek varieties, and in F1-F3 hybrids developed in crosses between these varieties. We found an intermediate type inheritance for (+)-gossypol in petals and seeds of F1, and negative transgressive segregation for (+)-gossypol in seeds in F2; however, there appeared to be recombinants with (+)-gossypol of 96.0% (at F2 BC3S1-47-8-1-17 X C-6530).Results showed that the percent (+) gossypol in seeds were lower than the average percentage of this trait in flower petals. The both of USA accessions BC3S1-47-8-1-17 and BC3S1-1-6-3-15 showed a rather stable parameters of (+) gossypol (93,3%) with the respectively dispersion of 1,79 and 2.84%. Almost in all hybrids (except F2C-6532 x BC3S1-1-6-3-15) segregated individual plants with the 92,1% and more (+) gossypol. Among the hybrids comparative high percentage of (+) gossypol were find at F2 C-6530 x BC3S1-47-8-1-17 and F2 C-6530 x BC3S1-1-6-3-15 with respectively dates 84,8% and 80,4 % that probably results of segregation recombinants with the (+) gossypol more than 95 %. Relative high dispersion (13,0%) of percentage (+) gossypol showed F2 C-6524 x BC3S1-1-6-3-15 and low ones F2C-6532 x BC3S1-1-6-3-15 and F2 C-6530 x BC3S1-1-6-3-15 with the parameters of σ=10,1 and σ=10,2%.Also were analyzed inheritance and variability of total gossypol at studied hybrids. We are continuing our research in the greenhouse complex «Fitatron» and in the field, to develop F3 hybrid with a high percentage of (+)-gossypol in seed while retaining superior agronomic traits for developing new breeding lines for Uzbekistan.