

# **POTENTIAL USE OF BULKED-POLLEN METHODOLOGY IN COTTON**

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## **Abstract**

Collection, evaluation, development, and maintenance of crop germplasm are priorities in the public sector. Genetic diversity provides protection against disease or insect epidemics and is the basis for future genetic gain. Genetic variation and genetic relationship between genotypes are important considerations for germplasm improvement. They play an important role in plant breeding programs by influencing the choice of genotypes to cross for the development of new populations. Presently, many cotton breeding programs are confronting serious challenges due to the extensive use of backcross breeding in transgenic conversion programs, with many transgenic cotton cultivars tracing back to a narrow germplasm base. In addition, linkage as well as pleiotropic effects are responsible for the negative correlation in cotton between agronomic and fiber traits. Intermating and random mating have been used successfully to break the linkage between fiber strength and lint yield. The objectives of this study were to evaluate the utility of bulked-pollen methodology in cotton. Pollen from Stoneville 213 glandless (*gl*) and TM-1 glanded (*GL*) were mixed at five different ratios. The following ratios 1:13, 1:26, 1:39, 1:52, and 1:65 were developed by dusting pollen from blooms of Stoneville 213 *gl* and TM-1 *GL* into a beaker. Emasculated flowers from the Stoneville 213 (*gl*) were pollinated with each one of the mixed pollen ratios. The percentage of boll set, total number of seeds and number of glandless seeds in each ratio were determined. Results indicated that ratios 1:13 and 1:65 segregated as expected. Ratio 1:26 showed significant Chi square due to a larger number of *gl* seeds than expected. Ratios 1:39 and 1:52 also did not segregate as expected because of a low number of *gl* seeds recovered. This result may be due to the limited number of crosses that were set for these ratios. Cotton pollen mixed well and the boll and seed set were excellent. Bulk-pollen method is a good tool that can be used in the development of breeding population in cotton.