

LACK OF CORRESPONDENCE BETWEEN EARLY GENERATION F₂ TESTING AND PEDIGREE SELECTION RECORDS IN THIRTY PIMA COTTON POPULATIONS

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Abstract

Pedigree selection has been the primary breeding method used in cotton breeding efforts. Among its many modifications, one that has gained favor is early generation testing accompanied by deferred individual plant selection. The present investigation was conducted to determine the correspondence of results from F₂ generation bulk population testing and historical pedigree selection records. Thirty F₂ populations of crosses made in 1983 and 1984 were recreated and tested at Maricopa and Safford, AZ. Fifteen F₂ populations from 1983 crosses were tested in 2000, and fifteen F₂ populations from 1984 crosses were tested in 2002. Yield, plant height, and fiber traits of F₂ populations were compared to pedigree selection records, summed over F₂, F₃, and F₄ generations, using correlation analyses. No correlation occurred between F₂ population yields at Maricopa or Safford and the number of field selections made in the 1983 or 1984 cross populations. Plant heights of F₂ populations at Safford, AZ in 2000 and at Maricopa, AZ in 2002 were negatively correlated with the number of field selections made within the 1983 and 1984 cross populations, respectively. Midparent yields were positively correlated with fiber lab selection numbers in the 1984 cross populations at both the Maricopa and Safford. No correlation occurred between the fiber traits lint percent, length, strength, and micronaire of F₂ populations grown at Maricopa and the pedigree selection numbers of 1983 cross populations. Fiber strength of F₂ populations grown at Safford, AZ was negatively correlated with the fiber lab selection numbers of 1983 cross populations. In 1984 cross populations, fiber micronaire values of F₂ populations grown at both Maricopa and Safford, AZ were negatively correlated with field selection numbers. Lint percent values of F₂ populations at both locations were positively correlated with fiber lab selection numbers. No consistent correlations between F₂ population traits and pedigree selection records were observed across the 1983 and 1984 cross populations and locations.