

**LONG TERM STUDY OF CROSS-POLLINATION
IN OKLAHOMA COTTON**

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Abstract

Cross-pollination in cotton (*Gossypium hirsutum* L.) was estimated at seven locations in Oklahoma for up to 22 years per location using a homozygous glandless line, 21D111-112, grown as a single progeny row and surrounded by glanded cotton. The objectives of the study were to describe the variation in cross-pollination of cotton among locations in the state and over years at each location and to characterize the degree of cross-pollination in cotton as a crop.

No advantage of field counts over seed counts was noted after the first 6 years. All further counts were made on seed. Cross-pollination counts at Perkins, OK were very high. On dryland, they ranged from 50.9 to 72.6% (averaging 62.7%). Under irrigation, they varied from 43.9 to 75.4% (excluding 1996 when multiple insecticide applications were made) and averaged 63.2%. Counts at Chickasha were high. On dryland, they ranged from 28.1 to 56.7% (averaging 43.8%). Under irrigation, they varied from 35.0 to 48.9% (averaging 43.2%). Counts at Altus under irrigation were very low ranging from 0.1 to 3.8% (averaging 1.2%). In 5 of 10 years, they were less than 0.5%. In 7 of 10 years, they were 1.1% or less. Counts at Mangum, Canute, Tipton, and Hollis were erratic...neither dependably high nor consistently low. Clearly, the best location for conventional cotton breeding (without selfing) is Altus. Perkins and Chickasha offer the greatest promise for hybrid production.

Cotton cross-pollination ranged widely from 0.1 to 75.4%. It was never completely absent nor uniformly complete. The crop is clearly intermediate between the self- and cross-pollinated categories. At Perkins, it more closely resembled a cross-pollinated crop. At the other locations, it more closely approximated a self-pollinated crop.