

**GENOTYPE X ENVIRONMENT INTERACTION OF  
COTTON YIELD AND FRUIT RETENTION**

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**Abstract**

Fruit retention for early and late season nodes varies among cultivars. To determine the genetics of early and late season fruit retention, an early maturing cultivar DES 119 was crossed with three later maturing cultivars DP 90, DP 5415, and PM 1244, and with an early cultivar SG 501. The F<sub>2</sub> and parental generations were grown in replicated plots in 1997, 1998, and 1999 at Mississippi State, MS. Mixed linear model approaches were utilized to determine genetic contributions for distribution of lint yield across nodes, total yield, boll size, and lint percentage. Dominance X Environment (DXE) variance accounted for >50% of the variation for lint yield at nodes 5-7 and for 32 to 38% of the variation at nodes 8-24. Dominance variance accounted for 23% of the lint yield variation at nodes 8-24. At nodes 5-11 additive variance was smaller but significant with the greatest effect at node 7. Positive heterosis was observed in all F<sub>2</sub> populations for the distribution of lint among nodes. Dominance variance was larger than additive for boll size. Dominance variance was >50% for total lint yield and lint percentage. Since the largest proportion of the variance was due to D and DXE, selection for plants that retain more bolls at all positions should be delayed until later generations and based on multiple environments or, perhaps, F<sub>2</sub> hybrids could be used.