

**ALLELIC AND LINKAGE ANALYSES
OF THE CMS-D8 RESTORER GENE OF COTTON**
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Abstract

The objective of this research was to determine if the D8 restorer was linked to any of several morphological markers, and to determine if the D2 (*G. harknessii*) and D8 (*G. trilobum*) restorers are allelic. Previously we showed that male fertility in the D8 cytoplasm is conditioned by one dominant restorer gene. To develop the test populations, D8R (restorer line) was crossed with TM-1 genetic standard, T-586 multiple dominant line, and T-582 multiple recessive line. The resulting F₁s were backcrossed to the parents and as male parent to cms-D8. Chi-squared analyses indicated that the D8 restorer was not linked to any of seven A subgenome markers, as expected. Additionally, the restorer gene was not linked to L^o, Lg, R₁, v₁, cl₁, cu, or gl₁. As previously reported, the D2 restorer will restore fertility to the D8 cytoplasm but the D2 restorer will not restore the D2 cytoplasm. Evaluations of F₂ derived from D8R x D2R, F₁ x B (maintainer line), and cms-D8 x F₁ populations indicated that the two restorer genes are very closely linked but not allelic. Preliminary distance is estimated to be <2cM.