

## **1291 Effects of heterosis in Upland cotton**

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Historically, re-selection, pedigree, and mass selection breeding methods have been used to develop open-pollinated cultivars of cotton (*Gossypium hirsutum* L.). As a result, modern cultivars should have accumulated additive genetic effects over time, while also possessing fewer non-additive gene effects than obsolete cultivars. The objective of this study was to use a topcross test to compare the heterotic effects derived from obsolete and modern cultivars for yield, yield components, and fiber quality using a topcross test. As predicted, heterotic effects of obsolete cultivars were higher than modern cultivars for seed cotton yield, lint yield, lint percent, and boll weight. No significant heterotic effects were detected for fiber quality. The major yield component associated with lint yield heterosis for both modern and obsolete cultivars was bolls m<sup>-2</sup>, although boll weight heterosis also contributed to lint yield heterosis for the obsolete cultivars. Although modern cultivars produced considerable heterotic effects for yield, this study demonstrates that obsolete cultivars may provide an additional source of non-additive genetic effects that can be exploited in a hybrid production system.