

## Trivial Sources of Heterosis in Cotton?

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Historically, re-selection, pedigree, and mass selection breeding methods have been used to develop open-pollinated cultivars of Upland cotton (*Gossypium hirsutum* L.). Due to the predominance of these breeding methods, we hypothesize that modern cultivars, as opposed to obsolete cultivars, have accumulated additive genetic effects over time. At the same time, modern cultivars might also possess fewer non-additive gene effects than obsolete cultivars. The objective of this study was to compare the amount of heterosis derived from obsolete and modern cultivars for yield, yield components, and fiber quality. Using a top-cross test design, we found that obsolete cultivar heterosis was greater than modern cultivar heterosis for seed cotton yield, lint yield, lint percent, and boll weight. No significant differences in heterosis were detected for fiber quality. The major yield component associated with lint yield heterosis for both modern and obsolete cultivars was bolls per square meter, although boll weight heterosis also contributed for the obsolete cultivars. Although modern cultivars produced considerable yield heterosis, 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.