

**REPRODUCTIVE RESPONSE OF TRANSGENIC COTTON
TO A PREVIOUSLY NONSELECTIVE HERBICIDE**

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Abstract

Cotton engineered for resistance to Roundup (glyphosate) has been shown to have lower pollen viability, decreased seed set per boll, and altered floral morphology when treated with labeled Roundup treatments. Therefore, studies were initiated to determine whether Liberty applications to Liberty Link Cotton caused similar changes in floral morphology and seed set. Two runs of the experiment were conducted in a phytotron greenhouse with controlled environmental conditions. Liberty treatments were applied at 34 oz per acre (0.44 lbs ai/acre). Treatments included an untreated check, 4 leaf stage foliar application (POST), 8 leaf stage foliar application (POST), 4 leaf foliar (POST) followed by 8 leaf foliar application (POST), and a 4 leaf foliar (POST) followed by 8 leaf stem application (PDS). To assess floral morphology, the anther to stigma distance, stigma height, and length of staminal column were measured. Pollen viability was also determined on the corresponding measured flowers using a Brewbaker and Kwack pollen germination media with 5 percent sucrose (w/v). All plants were mapped at the fifth week of flowering to evaluate numbers of bolls, number of bolls on the first ten nodes, first position bolls, vegetative squares, squares, and cavitated bolls. The first position bolls on the first six fruiting branches were removed and seeds per bolls counted. After statistical analysis, none of the treatments showed significant differences among the measured floral characteristics, pollen viability, or seed set, except for anther to stigma distances. The distance from the top anther to the tip of the stigma was statistically less in plants treated with an 8 leaf (POST) application than untreated plants. However, this difference is not likely to influence pollen deposition, because in both cases anthers reached above the stigma tip. This type of spatial orientation allows pollen to fall by gravity to the stigma surface.