

THE EFFECT OF GIANT RAGWEED ON COTTON MATURITY, YIELD, AND FIBER QUALITY

**Kelly A. Barnett
Lawrence E. Steckel
University of Tennessee
Jackson, TN.**

Abstract

Glyphosate-resistant (GR) weeds are the most problematic weeds species for Tennessee cotton growers. GR giant ragweed is typically considered a major issue for Mid-Western corn and soybean growers, but can also be found throughout the cotton growing areas of Tennessee, Missouri, and Arkansas. GR giant ragweed was first confirmed in 2007 in Tennessee and has continued to become more problematic throughout this region (Norsworthy et al. 2010). Previous work in the Mid-West has evaluated the effects of GR giant ragweed competition in corn and soybean where one plant per 30 foot plot can reduce yields by 13-25% (Baysinger and Sims 1991; Harrison et al. 2001). However, little is known about the effects of giant ragweed in cotton. Therefore a study was conducted to demonstrate the effect of giant ragweed on cotton maturity, lint yield, and fiber quality. Giant ragweed densities were 0, 1, 2, 4, 8, and 16 weeds per 4 row by 30 ft. plot. Plots were maintained weed free throughout the growing season. Cotton heights, NACB (node above cracked boll) ratings were assessed, lint yield was determined, and fiber quality characteristics (micronaire, fiber strength, fiber length, uniformity). The objective of this study was to determine how giant ragweed would potentially delay maturity, reduce yield and fiber quality at each of these populations. Early in the growing season, cotton height was an indicator of giant ragweed competition. At the 4-leaf stage, cotton height was significantly reduced where 2 or more giant ragweed plants were present. However, statistical height reductions were not seen at later cotton growth stages (8-leaf and 12-leaf) except with the highest giant ragweed populations (8 or 16 plants). NACB ratings were not statistically significant at $p \leq .05$. Giant ragweed significantly reduced yield at $p \leq .05$. One giant ragweed plant per plot reduced cotton lint yield by 400 lbs/A, respectively. Yields continued to decrease with 2, 4, 8, and 16 giant ragweed plants with almost no crop harvested for the plots with 16 plants. The outer two rows of each plot were also harvested to determine if giant ragweed reduced yields there as well. Plots with 8 and 16 giant ragweed plants had significantly lower lint yield for the outer two rows when compared with plots that had less than 4 giant ragweed plants. These results indicate the giant ragweed is a strong competitor in cotton. With few current control options for glyphosate-resistant giant ragweed, obtaining acceptable control is challenging. However, to prevent cotton yield loss, controlling scattered plants will be necessary.

References

- Baysinger, J. A. and B. D. Sims. 1991. Giant ragweed (*Ambrosia trifida*) interference in soybeans (*Glycine max*). Weed Sci. 39:358-362.
- Harrison, S. K., E. E. Regnier, J. T. Schmoll, and J. E. Webb. 2001. Competition and fecundity of giant ragweed in corn. Weed Sci. 49:224-229.
- Norsworthy, J. K., P. Jha, L. E. Steckel, and R. C. Scott. 2010. Confirmation and control of glyphosate-resistant giant ragweed (*Ambrosia trifida*) in Tennessee. Weed Technol. 24:64-70.