COTTON TOLERANCE TO METRIBUZIN

J. M. Kichler
A. S. Culpepper
University of Georgia Cooperative Extension
Monroe, GA

Abstract

Palmer amaranth continues to plague Georgia cotton production but efforts to manage the weed seed bank are being fruitful. Eliminating the ability of Palmer amaranth from emerging after corn harvest to produce seed is a priority of many growers. However, managers realize selecting an herbicide to use for this approach must be well thought out to avoid additional resistance development. Metribuzin offers Georgia growers a unique ability to utilize an herbicide mode of action that currently has limited use in Georgia, but the current label does require a 12-month crop rotation for cotton which is most often grown after corn. Thus, two experiments were conducted to determine cotton sensitivity to metribuzin.

Experiment one included six metribuzin rates (0, 0.031, 0.06, 0.125, 0.25 and 0.5 lb ai/A) applied preemergence after planting cotton or preplant incorporated just prior to planting cotton; the 1x rate was considered to be 0.5 lb/A. Visual cotton injury exceeded 75% at rates of 0.125 lb/A or greater with less than 6% injury noted at 0.031 lb/A. Cotton stand counts noted metribuzin at 0.031 lb/A did have a negative impact while higher rates did. Cotton heights at 36 DAT and cotton seed yield noted no negative impact from metribuzin at 0.031 lb/A for both application methods when compared to no metribuzin; when applied preemergence the 0.06 lb/A rate also did not reduce heights or yield.

In 2018 the experiment was repeated, and again unacceptable injury was observed with all rates of metribuzin of 0.06 lb/A and higher; at 2 rates the preemerence application method was more injurious. Cotton stand loss was 15% or greater with rates of 0.06 lb/A or higher but stand was not influenced at lower rates. Cotton heights were only similar to the control with metrizbuzin applied at 0.031 and 0.062 lb/A at 50 DAT. Cotton yield was not recorded because of Hurricane Michael.

Experiment two was conducted over the fall of 2017 and during 2018 to replicate a true carryover situation. Treatments consisted of applying metribuzin at 0, 0.25 and 1.0 lb/A in the fall after harvesting corn and then planting cotton 150 days later using either a no-till or a strip-till production system. Visual cotton injury (4%) from metribuzin was noted at the 1.0 lb/A rate in the no-till production system only; no other injury was noted. Cotton stand (128 to 99 plants/plot), height (15.9 to 14.2 cm) and seed yield (3581 to 3052 lb/A) was greater with strip-till production when compared to no-till production.

Our research shows that cotton is very sensitive to metribuzin, but the likelihood for the herbicide applied at normal use rates to carryover to cotton planted at least 150 days after the application is not likely, but additional research is needed.