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DO BROADCAST APPLICATIONS OF GLYPHOSATE DURING LATE BLOOM PERIOD AFFECT ROUNDUP READY COTTON?

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Abstract

Cotton growers commonly use glyphosate for pre-harvest weed control in Roundup Ready cotton. The current Monsanto label for Roundup Ready cotton permits applications after twenty percent cracked boll. Depending on the severity of late season weed pressure and crop maturity, current practices may not adhere to this restriction. The research question raised is: At what late season reproductive growth stage is it safe to apply glyphosate to Roundup Ready cotton? Field experiments were conducted in 2002 and 2003 in Goldsboro and Clayton, North Carolina, respectively. Cotton variety 'Suregrow 125RR' was planted in 2002 and 'Stoneville 4892BR' was planted in 2003. Treatments were arranged in a randomized complete block design replicated four times. Treatments consisted of three broadcast applications of glyphosate at 0.75 lb ae/A delivered at 15 GPA along with an untreated check (UTC). The first treatment was applied at seven nodes above white flower (7 NAWF). The remaining glyphosate treatments were applied two weeks and four weeks after initial treatment (WAIT).

Ten plants of uniform maturity were tagged in each plot at the time of application. Prior to harvest, the tagged plants were box mapped grouping bolls into node zones 3-5, 6-10, 11-15, and 16-20 by position, with all boll weights recorded as grams of seedcotton. The two middle rows of four row plots were spindled picked and seedcotton samples were ginned for lint turnout. Lint samples were subject to high volume instrument analysis to obtain fiber quality. Data were analyzed with the general linear model in SAS and means separated according to Fisher's Protected LSD at α=0.05. There was a significant year by treatment interaction, so data is reported separately by year.

In 2002, UTC produced 167 pounds more lint per acre than 4 WAIT treatment; whereas no yield differences in 2003 were found. Mean boll weights by position were not different between treatments in either year, however there were trends that glyphosate reduces boll weight on all positions for both years compared to UTC. In 2003, UTC boll weight of 3.7 g/boll was greater than glyphosate treatments in node zone 11-15 and 2002 showed similar numerical trends. In 2003, micronaire was increased with the 2 WAIT treatment over all others and above the premium micronaire upper limit of 4.2. Plant heights, node counts, and remaining fiber quality parameters showed no differences in either year.

Variable environmental conditions attributed to the inconsistency of these field trials. In 2002, cotton was stressed under hot and dry conditions, and 2003 was more optimal with good moisture conditions promoting rapid growth. Producers should use caution in making pre-harvest management decisions with glyphosate in Roundup Ready cotton due to the unpredictable results.