

**TOLERANCE OF ROUNDUP READY COTTON
TO MID AND LATE POST APPLICATIONS
OF ROUNDUP**

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These studies suggest an unpredictability in the response of RR cultivars to Roundup applications. Over-the-top applications after node 4 adversely affected yield for some but not all treatments. Of concern also was the observance of a significant yield reduction with the standard Roundup program.

Abstract

One of the outstanding questions regarding Roundup Ready (RR) technology is the response of RR cotton to Roundup (glyphosate) applications after the fourth leaf stage. In a few studies, over-the-top applications after the fourth leaf have resulted in significant yield losses. These experiments were conducted to examine this response, to determine the effects within the cotton fruiting profile and the overall effects on yield.

Two experiments were conducted in Tifton, Georgia, in 1997. The first involved two RR varieties (Paymaster 1215 RR and DP 5690 RR), various application times (nodes 6, 9, and 12), and various Roundup Ultra rates (16, 24, 32, and 64 oz/A). Data included "box picking" selected treatments (32 oz/A @ nodes 6, 9, and 12) and machine harvest. A second experiment included a standard Roundup program (an over-the-top application prior to node 5 followed by a post-directed application at node 7 to 8) and over-the-top applications at node 7 to 8 and/or node 12. The rate of each application was Roundup Ultra @ 1 qt/A. Data included machine and hand harvest. Both experiments were maintained weed free with conventional measures and hand removal.

In the initial study, Roundup Ultra application significantly affected the fruiting profile (probability of an open boll at a particular node and individual boll weight as measured by box picking selected treatments) in Paymaster 1215 RR but not in DP 5690 RR. In Paymaster 1215 RR, application at node 12 had a deleterious effect on fruit at nodes 8 through 12. Lint yields of Paymaster 1215 RR ranged from 1200 to 1520 lb/A but were not statistically different ($P=0.05$). Yields of DP 5690 RR ranged from 1040 to 1430 lb/A; applications of Roundup Ultra at 64 oz/A at node 6 plus node 9 significantly reduced yields compared to the control (1040 versus 1360 lb/A).

In the second experiment, all Roundup Ultra treatments reduced first pick (machine harvest) lint yields compared to the control (average of 1360 versus 1510 lb/A). After a follow-up second picking (hand harvest), total yields from the standard Roundup program were significantly less than the control (1520 versus 1720 lb/A).