

**WEED MANAGEMENT IN ROUNDUP READY
COTTON USING A LIGHT-ACTIVATED SPRAYER**

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These studies indicate that weed control programs utilizing LAS provided weed control similar to that obtained with a conventional sprayer and significant herbicide savings were observed.

Abstract

A field experiment was conducted in 2000 near New Deal, TX to compare weed control in a Roundup Ready cotton production system using mechanical cultivation, a conventional hooded sprayer, and a light-activated hooded sprayer. Treatments included Treflan at 1.5 pt/A applied preplant incorporated (PPI) followed by Caparol at 1.2 qt/A applied preemergence and mechanical cultivation as needed; Treflan PPI followed by a postemergence over-the-top (POT) broadcast application of Roundup Ultra at 1 qt/A at the four leaf growth stage, and Roundup Ultra applied at 1 qt/A with a conventional hooded sprayer (HS) as needed; Treflan PPI followed by Roundup Ultra POT broadcast and Roundup Ultra applied at 1 qt/A with a light-activated hooded sprayer (LAS) as needed; and Treflan PPI followed by a POT application of Roundup Ultra at 1 qt/A on a fourteen inch band over the row at the four leaf stage and Roundup Ultra applied at 1 qt/A with a light-activated hooded sprayer as needed. 'Paymaster 2326 RR' cotton was planted at a seeding rate of 15 lb/A on 40 inch rows on May 9, 2000, and harvested on November 20, 2000. Experimental design was a randomized complete block consisting of four replications. Plots were 8 rows by 600 feet. Preplant incorporated treatments were applied on February 29 and incorporated with a springtooth harrow, and preemergence applications were made on May 10. Postemergence treatments were applied on June 9, July 3, and July 18, when weeds were 1 to 6 inches tall. Control of Palmer amaranth, common cocklebur, and silverleaf nightshade was visually rated on June 23 (early season), July 28 (mid season), and August 14 (late season). The amount of spray solution used by the LAS was determined by subtracting the volume left after spraying a single plot from the initial volume in the tank. Percent herbicide savings was calculated based on the amount of solution required to apply a broadcast treatment.

Control of palmer amaranth ranged from 83-88% for all treatments at the early rating. At the mid and late season ratings, the LAS treatments provided at least 88% control and were similar to HS and greater than cultivation. Common cocklebur control with LAS was similar to HS and greater than cultivation at all rating dates. Silverleaf nightshade was controlled 31-40% by all treatments at the early rating. At the mid and late season ratings, LAS provided control similar to HS and greater than cultivation. At the June Roundup Ultra application, a savings of 85% was observed with LAS. Roundup Ultra savings of 63 and 67% were observed with the July 3 application, and savings of 56 and 71% were observed on July 18. Lint yields ranged from 379-433 lb/A and no differences were observed among treatments.

Additional studies were conducted near Ropesville, TX on a producer's farm. LAS was used to control Palmer amaranth and devil's-claw in Roundup Ready cotton in a minimum tillage field following a POT application of Roundup Ultra. Plot size was 15 acres. Control of Palmer amaranth and devil's-claw was 95 and 80%, respectively, and herbicide savings ranged from 70-78%.