

**WEED MANAGEMENT SYSTEMS IN LIBERTY-  
ROUNDUP, AND BUCTRIL-TOLERANT COTTON**

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**Abstract**

Field experiments were conducted in 2000 and 2001 to evaluate weed management systems in Liberty- (glufosinate) tolerant cotton and compare the efficacy of these systems to weed management in Roundup Ready (glyphosate-tolerant) and BXN (bromoxynil-tolerant) cotton. Experiments were conducted at the Texas Agricultural Experiment Station located near Lubbock on an Acuff clay loam soil with 0.8% organic matter and pH 7.8. Herbicides were applied using a backpack or tractor-mounted compressed air sprayer that delivered 10 GPA at 3 MPH using 80015 spray tips. Cotton was planted on 40-inch rows on May 8, 2000 and May 21, 2001. PM2326RR and BXN47 were used in the Roundup Ready and BXN systems. Within each planted variety, treatments included Treflan (trifluralin) at 0.75 lb ai/A preplant incorporated (PPI) followed by (fb) Caparol (prometryn) at 1.2 lb ai/A preemergence (PRE) fb cultivation, Treflan PPI fb a postemergence-topical (POST) herbicide as needed (ASN), Caparol PRE fb a POST herbicide ASN, Treflan PPI fb Caparol PRE fb a POST herbicide ASN, and a POST herbicide only ASN. The POST herbicides used were Liberty at 0.36 lb ai/A in Liberty-tolerant cotton, Roundup Ultra (glyphosate) at 0.75 lb ae/A in Roundup Ready cotton, and Buctril (bromoxynil) at 0.5 lb ai/A in BXN cotton. Control of Palmer amaranth (*Amaranthus palmeri*), devil's-claw (*Proboscidea louisianica*), and silverleaf nightshade (*Solanum elaeagnifolium*) was monitored throughout the growing season and dictated the POST herbicide ASN applications. In 2000, the Treflan fb Liberty and Treflan fb Caparol fb Liberty used two Liberty applications during the season, whereas the Caparol fb Liberty and Liberty only treatments required three Liberty applications. In the Roundup Ready and BXN cotton systems, the same POST ASN applications were performed. In 2001, all POST ASN treatments in the Liberty, Roundup Ready, and BXN systems used three applications, except for the Treflan fb Caparol fb POST ASN treatment which required only two applications.

On July 20, 2000 (73 days after planting (DAP)), Treflan fb Liberty controlled Palmer amaranth 89%. This control was similar to the Treflan fb Roundup Ultra (93%), but greater than the Treflan fb Buctril (78%). In 2001, the Treflan fb Liberty and Treflan fb Roundup controlled Palmer amaranth 93 to 95%, which was greater than the control observed following the Treflan fb Buctril treatment (80%). Devil's-claw control by Treflan fb Liberty was similar to control achieved by Treflan fb Roundup and Treflan fb Buctril (76 to 85% in 2000 and 94 to 100% in 2001). Silverleaf nightshade control was similar for the Treflan fb Liberty and Treflan fb Roundup Ultra treatments (84 to 88% in 2000 and 70 to 74% in 2001). Similar silverleaf nightshade control was observed in the Treflan fb Buctril treatment in 2001, but less silverleaf nightshade control was observed from this treatment in 2000. These studies were conducted with the goal of controlling the weeds using multiple and timely POST applications to small weeds. Under these conditions, weed control in the Liberty system was comparable to the control achieved in the Roundup Ready and BXN cotton systems. Under less than ideal conditions, weed control by Liberty may decrease.