WEED CONTROL IN ROUNDUP READY™ CONSERVATION TILLAGE COTTON

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Abstract

Prowl (pendimethalin) + Cotoran (fluometuron) applied preemergence (PRE) and Prowl + Cotoran PRE followed by (fb) a postemergence treatment provided excellent (≥ 92%) control of Palmer amaranth (Amaranthus palmeri) 7 weeks after planting (WAP). Roundup Ultra (glyphosate) applied postemergence over-the-top (POST) without a soil-applied residual herbicide was less effective, and provided only 82 to 89% control. Roundup Ultra applied POST provided excellent control of Palmer amaranth that was present at the time of application, but the lack of residual activity resulted in substantial weed populations later in the growing season. Best control of ivyleaf morningglory (Ipomoea hederacea) was attained with systems that included Prowl + Cotoran PRE fb a postemergence treatment.

Introduction

Interest in conservation-tillage production systems for cotton has increased dramatically in recent years. However, cotton growers have been reluctant to adopt reduced-tillage production systems due to problems associated with weed control. The availability of selective postemergence herbicides such as Staple, Buctril in BXN™ cotton, and Roundup Ultra in Roundup Ready™ cotton should increase the likelihood of successful weed control in these systems. However, weed scientists and growers are challenged to develop cost-effective weed management systems for conservation-tillage cotton.

Materials and Methods

Weed control in conservation-tillage Roundup Ready™ cotton was evaluated at the Edisto Research and Education Center, Blackville, SC. Roundup Ready Coker 312X1445 cotton was planted June 5, 1996, with a John Deere Maxi-Merge planter. Plots were four 30-inch wide rows, 30 ft long, and were arrange in a randomized complete block design. Herbicides evaluated were Prowl + Cotoran applied PRE (1.0 + 2.0 lb ai/ac, respectively), Roundup Ultra applied POST @ 0.375, 0.56, and 0.75 lb ae/ac), and Prowl + Cotoran PRE fb Roundup Ultra applied POST at the three above rates. Standard treatments included were Prowl + Cotoran PRE fb Staple (pyrithiobac) @ 0.063 lb ai/ac POST, and Prowl + Cotoran PRE fb Bladex (0.8 lb ai/ac) + Bueno 6 (MSMA) @ 2.0 lb ai/ac applied late postemergence-directed (LPD). PRE treatments were applied immediately after planting. POST treatments were applied when cotton, Palmer amaranth, and ivyleaf morningglory seedlings were 5.5, 4, and 3 inches tall, respectively. When Bladex+Bueno 6 was applied, cotton, Palmer amaranth, and ivyleaf moringglory were 9, 7, and 5 inches tall, respectively.

Results and Discussion

Prowl + Cotoran PRE provided 92% control of Palmer amaranth 7 WAP. Systems that included Prowl + Cotoran PRE fb a POST treatment controlled Palmer amaranth 95 to 97% 7 WAP; POST applications of Roundup Ultra at all rates provided less control (82 to 89%) than these systems. Prowl + Cotoran PRE alone and fb by a POST treatment reduced Palmer amaranth biomass 8 WAP 97 to 100%. Roundup Ultra @ 0.375, 0.56, and 0.75 lb ae/ac reduced Palmer amaranth biomass 8 WAP 0.45, and 57% respectively. Prowl + Cotoran PRE fb Bladex + MSMA, provided similar control (83 to 87%) of ivyleaf morningglory 7 WAP. Excellent (92 to 96%) ivyleaf morningglory was observed 7 WAP with Prowl + Cotoran fb Staple or Roundup Ultra. All herbicides increased lint cotton yield compared to the untreated check. Greatest lint yields were generally attained with Prowl + Cotoran PRE fb Roundup Ultra POST. Lint yields were similar with Prowl + Cotoran alone, Roundup Ultra alone at all rates, and Prowl + Cotoran PRE fb Staple POST.

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