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EFFICACY OF TRIFLOXYSULFURON-SODIUM (ENVOKE™) IN BXN™ AND ROUNDUP READY™ COTTON SYSTEMS

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Abstract

Two experiments were conducted in Jackson, TN testing the efficacy of Envoke™ in Roundup Ready™ and BXN™ cotton systems. 'PM 1218 B/R' and 'Stoneville BXN 49B' cotton were planted April 29, 2002 and May 7, 2002, respectively. PRE and POST treatments were applied using a tractor-mounted CO_2 boom sprayer and post-directed (PD) treatments were applied using a four-row CO_2 layby sprayer. Plots for the test were 3 m wide and 7.6 m long. Treatments were replicated four times in a randomized complete block design. An untreated plot was included in the test for rating comparisons. Treatments for Roundup Ready™ cotton included sequential POST Touchdown IQ (glyphosate diammonium salt) applications, Touchdown IQ POST followed by Envoke at 0.1 oz/A POST to 5-6 LF cotton and Envoke at 0.2 oz/A PD to 7-8 LF cotton, Prowl (pendimethalin) PRE followed by previous treatments, and combinations of Touchdown IQ POST followed by Suprend (prometryn plus trifloxysulfuron-sodium). Treatments for BXN™ cotton included Caparol (prometryn) PRE and Caparol and Prowl PRE followed by Envoke at 0.1 and 0.15 oz/A, Suprend at 16 oz/A, and Staple (pyrithiobac) at 1.2 oz/A. A separate weed-free test was conducted evaluating cotton injury. The test evaluated Envoke at 0.1, 0.15, 0.2, and 0.25 oz; Envoke 0.1 oz and Staple 0.3, 0.6, and 1.2 oz; and Staple 1.2 oz. Cotton was treated at 2-3 LF, 5-6 LF, 5-6 LF PD, 8-9 LF, and 8-9 LF PD.

Visual evaluations of cotton injury and control of Palmer amaranth (*Amaranthus palmeri*), pitted morningglory (*Ipomoea lacunosa*), and common cocklebur (*Xanthium strumarium*) were recorded at the 4-LF stage, 10 days after the PD treatment, the 17-LF stage, and prior to harvest. Cotton yield was determined by spindle picking, ginning a grab sample, and calculating lint yield. Data was subjected to analysis of variance and means were separated using Fischer's Protected LSD test at the 0.05 level of probability.

Since season-long weed control is the primary emphasis, discussion will focus on the end-of-season evaluations. In the Roundup Ready system, Touchdown IQ POST with no soil residual activity did not provide season-long weed control, but when the overtop treatments were followed by a layby, control of both IPOLA and AMAPA was about 80%. However, where Touchdown IQ was followed by Envoke layby, AMAPA was not controlled, and IPOLA was improved to 89%. When Touchdown IQ was followed by Suprend at 20 ounces per acre, AMAPA control increased to 83% and IPOLA was controlled 87%.

In the BXN system, Caparol or Caparol + Prowl pre followed by Envoke POST did not control AMAPA (58%), only controlled IPOLA 75%, but controlled XANST 93%. However, when these treatments were followed by Suprend layby, IPOLA control increased to 88 to 91%, however AMAPA was not controlled (<62%). In similar treatments where Staple replaced Envoke, IPOLA control was <42% and XANST control was <77%, and AMAPA was <54%. When Direx + MSMA layby was added to this treatment control was 66, 73, and 75% for AMAPA, IPOLA, and XANST, respectively. Neither Caparol nor Caparol plus Prowl preemergence will provide season long control of AMAPA, IPOLA, or XANST. Both Envoke and Staple failed to provide season long control of AMAPA. Envoke was more effective than Staple on IPOLA and XANST. The most effective systems included a layby application of either Suprend or Direx plus MSMA.

Younger, smaller cotton was injured more by Envoke than older, taller cotton. Higher Envoke rates caused greater injury. When Envoke was post-directed to avoid contact with the cotton plant, injury was greatly reduced compared with POST overtop application. Staple was less injurious than Envoke to cotton. The combination of Staple and Envoke POST was more injurious than either product applied alone. Lint yield was reduced by Envoke POST at the 2 to 3 LF stage and at the higher Envoke rates. Early season applications likely had higher levels of injury than expected due to cool temperatures at the time of application. The cooler temperatures would increase the level of stress on cotton, which would make the crop more susceptible to injury.

Envoke provides >89% control of IPOLA and XANST. IPOLA was controlled more effectively with Envoke (>89%) than Staple (<42%). Injury did occur with Envoke 2-3 LF POST applications and caused significant yield reduction. Also, yields were reduced at some of the higher rates.