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EVALUATION OF CGA-362622 IN COTTON WEED CONTROL PROGRAMS

L. Thomas Barber, Daniel B. Reynolds, Nathan W. Buehring, Jason C. Sanders, David G. Wilson and Kent M. Bloodworth
Mississippi State University
Mississippi State, MS

Abstract

CGA-362622 (trifloxysulfuron sodium) is a broad spectrum sufonylurea herbicide which controls cocklebur (*Xanthium strumarium L.*), morningglories (*Ipomoea spp*.), pigweeds (*Amaranthus* spp), sicklepod (*Senna obtusifolia L.*), coffee senna (*Cassia occidentalis L.*) and yellow nutsedge (*Cyperus esculentus L.*). With the increase of transgenic cotton cultivars such as Roundup Ready and BXN systems, adequate control of most weeds is available. However, in these systems problem weeds such as pitted morningglory in Roundup Ready cotton and sicklepod in BXN cotton systems may survive herbicide treatment. The purpose of this study was to determine if the addition of CGA-362622 to Roundup Ready and BXN cotton systems would increase control of these problem weeds.

Studies were conducted over two years (2000 and 2001) at the Black Belt Branch Experiment Station near Brooksville, MS on a silty clay loam. Stoneville 4892 BR was planted in the Roundup Ready system and Stoneville BXN 47 in the BXN system. Plots were 12.7 by 40 feet and were arranged in a randomized complete block design with four replications. Treatments were applied with a tractor mounted boom at 15 gallons per acre. Weeds evaluated were pitted morningglory and sicklepod in the Roundup Ready system and pitted morningglory, entireleaf morningglory and sicklepod in the BXN system. Visual ratings for weed control and cotton injury were taken 8, 15 and 40 days after treatment (DAT). Data were subjected to analysis of variance and means were separated by least significant difference at the 0.05 level of significance. Weed control and cotton yield were pooled across years.

Eight days after treatment, CGA-362622 injured cotton 16% with rates of 2.15 and 3.20 g ai/A. However injury decreased to less than 5% by 40 DAT and yield was unaffected. When the rate was increased to 5.34 g ai/A and applied over the top, 38% injury was observed 15 DAT and yield was lower than the untreated. When this rate was post-directed, no injury was observed and yield was unaffected. A blanket application of Cotoran (fluometuron) at 1.5 lb ai/A was applied preemergence to both Roundup Ready and BXN systems. In the Roundup Ready system pitted morningglory control 40 DAT was maintained at 83 to 85% with two applications of Roundup UltraMax (glyphosate) at 0.75 lb ai/A. However, the 93% pitted morningglory control achieved with two applications of CGA-362622 at 2.15 g ai/A was better than that achieved with Roundup UltraMax alone and equal to CGA-362622 and Roundup UltraMax combinations. Sicklepod control in the Roundup Ready system was 90 to 92% with single or sequential applications of Roundup UltraMax and CGA-362622. Seed cotton yield did not differ among treatments; however, all treatments provided higher yield than the untreated check.

In the BXN system at least 90% control of pitted and entireleaf morningglory control was maintained 40 DAT with sequential and single applications of Buctril (bromoxynil) and CGA-362622. Control was increased to 97% with CGA-362622 (2.15 g ai/A) applied to 2-leaf cotton followed by Buctril (0.75 lb ai/A) at 4 leaf. Sicklepod control with Buctril was only 70% by 40 DAT. However, the addition of CGA-362622 significantly increased sicklepod control to 95% by 40 DAT. The highest seed cotton yield of 1499 lb/A occurred with CGA-362622 followed by Buctril. These data suggest that CGA-362622 offers the potential to complement weaknesses such as morningglory control in Roundup Ready systems and sicklepod control in BXN systems, as well as providing effective control of problematic weeds in non-transgenic crop production systems.