UTILITY OF ISOXAFLUTOLE FOR WEED CONTROL IN ISOXAFLUTOLE-TOLERANT COTTON SYSTEMS

RB Farr
JK Norsworthy
JW Beesinger
JA Fleming
GL Priess
University of Arkansas
Fayetteville, AR

Abstract

Herbicide resistance in weeds has become a menace to cotton producers, particularly when it relates to Palmer amaranth (*Amaranthus palmeri* S Wats.). Palmer amaranth has developed resistance to at least six herbicide sites of action in the Cotton Belt, leaving producers with few options to effectively manage the troublesome weed. Research done in corn and newly-commercialized soybean systems have shown that the use of 4-hydroxyphynlpyruvate dioxygenase herbicides such as isoxaflutole (IFT) has been effective at managing Palmer amaranth, especially when used in a diverse herbicide program. BASF is currently developing cotton with tolerance to IFT, which will allow for in-crop applications of the herbicide. A study was conducted in the summers of 2019 and 2020 in Marianna, AR to investigate the utility of IFT when used in cotton herbicide programs. The study conducted as a randomized complete block design with four replications and 10 separate treatments including a nontreated control that compared 9 separate herbicide programs that utilized IFT in either a preemergence application or an early postemergence application. Programs also varied in their use of residual herbicides or the presence or absence of a layby application. Results from the study showed that there was not a significant difference in Palmer amaranth control between treatments utilizing IFT as either a preemergence or early postemergence application. The use of residual herbicides in conjunction with glyphosate and glufosinate were found to provide greater control than applications made without the added residual herbicides, increasing efficacy from 69 to 92%. The use of layby applications were also found to be imperative to season-long weed control, increasing Palmer amaranth efficacy from 35 to 85%. Overall, this study showed that IFT can be an effective tool for managing Palmer amaranth that will add an additional site of action to cotton herbicide programs and potentially delay herbicide resistance when used in diverse weed management programs. The use of sequential herbicide applications and overlaying residual herbicides were found to be paramount for managing Palmer amaranth throughout the season.