Efficacy of Ignite and Ignite 280 Programs on Common Cotton Weeds

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RESEARCH PROBLEM

Greater than 90% of the cotton (*Gossypium hirsutum* L.) produced in Arkansas is glyphosate-tolerant with an average of greater than two applications of glyphosate applied to each acre during the growing season. Glyphosate-resistant weeds such as horseweed, pigweed, and ragweed have proven to be a potential problem in Arkansas. With the arrival of these resistant biotypes comes a need for a herbicide program with alternate modes of action. The objective of this research was to evaluate the efficacy of Ignite® programs on common cotton weeds (Smith et al., 2005).

BACKGROUND INFORMATION

Liberty Link® cotton is a registered trademark for transgenic cotton cultivars developed to be resistant to glufosinate herbicide. Glufosinate is a broad-spectrum herbicide with good activity on many broadleaf and grass weeds. It is sold under the trade names Ignite and Ignite 280® and provides a different site of action than does glyphosate for controlling weeds. This different site of action provides a viable option for controlling glyphosate-resistant weeds such as horseweed, ragweed, and pigweed commonly found in cotton in some areas and provides a tool for resistance management. The FIFRA Section 3 label allows two 0.53 lb ai/acre applications of Ignite 280. The new Special Local Needs FIFRA 24 (c) label for Arkansas allows three 0.53 lb ai/acre applications of Ignite 280, which provides more flexibility in the Liberty Link system.

RESEARCH DESCRIPTION

Three trials were conducted at Rohwer, Ark., in 2005 to compare weed-control systems in Liberty Link cotton. All trials were planted with Fiber Max 966 LL cotton on 9 May, 2005. Plots were arranged in a randomized complete block design and sprayed

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with a small-plot tractor equipped with multi-boom and air mix 110015 nozzles on 19-
in. spacing. The operating pressure was 50 PSI provided by CO₂ gas propellant and the spray volume was 12 GPA. The herbicides used were Ignite and Ignite 280 applied to 2-lf, 6- to 8-lf, and 12-lf cotton at 0.42 lb ai/acre; Cotoran applied preemergence (PRE) at 1 lb ai/acre; Caporal applied PRE at 1 lb ai/acre; Dual Magnum applied to 2-lf and 6- to 8-lf cotton at 0.95 lb ai/acre; and Staple applied to 12-lf cotton at 0.032 lb ai/acre. Visual control ratings were made on pitted morninggory (IPOLA), barnyardgrass (ECHCG), and Palmer pigweed (AMAPA).

RESULTS AND DISCUSSION

Barnyardgrass, Palmer pigweed, and pitted morninggory were controlled better with Cotoran or Caporal applied PRE followed by Ignite at 2-lf or with Ignite plus Dual Magnum combination at 2-lf than with Ignite alone at this stage of growth. Barnyardgrass and pigweed control were similar when a PRE herbicide was applied and equal to that provided by Ignite/Dual Magnum tankmix (Fig. 1). Sequential applications, 2-lf followed by 12-lf, of Ignite or Ignite 280 provided excellent control of morninggory. Caparol and Cotoran applied PRE followed by sequential applications of Ignite provided greater control of pigweed and barnyardgrass than Ignite alone (Fig. 2). However, three sequential applications of Ignite, as allowed by the 24c label, provided control of barnyardgrass and pigweed equal to Cotoran or Caparol PRE followed by two applications of Ignite and greater control of these species than only two sequential applications that are allowed under the federal label (Fig. 3). Cotton yield was a reflection of weed control with treatments that provided the best weed control supporting the greatest yield (Fig. 4).

PRACTICAL APPLICATIONS

Glufosinate is a promising substitute for glyphosate as it provides an alternate site of action. Good weed control can be achieved with Ignite 280 applied sequentially, as allowed by the State Local Needs c label, or used in a program following Caparol or Cotoran applied PRE. Liberty Link programs are a viable replacement for glyphosate when glyphosate-tolerant or -resistant weeds are present. This information also aids in updating the Arkansas weed-control recommendations (Scott et al., 2006).

LITERATURE CITED


Fig. 1. Percent weed control 6 days after 2-lf application of Ignite and Ignite tank-mixes.

Fig. 2. Percent weed control 7 days after 12-lf application in 2005 with Ignite, Ignite tank-mixes, Ignite 280, and Ignite 280 tank-mixes.
**Fig. 3.** Percent weed control 21 days after 12-lf application in 2005 with Ignite and Ignite tank-mixes.

**Fig. 4.** Seedcotton yield (lb/acre) in Ignite system.

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**Fig. 3.** Percent weed control 21 days after 12-lf application in 2005 with Ignite and Ignite tank-mixes.

**Fig. 4.** Seedcotton yield (lb/acre) in Ignite system.