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AIM™ HERBICIDE/HARVEST AID FOR RAPID WEED CONTROL IN COTTON – RESEARCH AND COMMERCIAL RESULTS

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Abstract

Aim™ (carfentrazone-ethyl) is a new PPO discovered by FMC Corporation that is registered for use in corn (field & sweet), grain sorghum, soybeans, rice, small grains, and for burndown use. The product is characterized by rapid weed control activity that offers other advantages such as a novel mode of action, no soil residual or carryover, activity on Roundup Ready® volunteer cotton, and no systemic off-target potential. Aim™ received federal registration in 2001 for use as a post-directed herbicide and as a harvest aid in cotton. Multi-year research trials have shown significant activity in a post-directed or shielded spray use pattern for the control of key weeds with the product used alone or in an additive combination with other cotton postemergence herbicides. Results from research trials and late season commercial use showed Aim™ has a proven fit in cotton postemergence weed control programs as well as in other cotton use patterns such as preplant burndown and defoliation.

Introduction

Aim™ has shown excellent potential as a new weed control tool in cotton in initial studies as a directed spray in cotton. Research trials from across the Cotton Belt have indicated control or enhancement of control on many troublesome weed species with carfentrazone-ethyl used alone or in combination with standard cotton postemergence herbicides. Several trials were conducted from 1998 through 2001 and results will be given on the summary data from all trials on selected key weeds in cotton.

Materials and Methods

Several post-directed replicated research trials focused on the efficacy of Aim™ on key cotton weeds at locations across the U.S. Trials were evaluated at 3, 7, and 15 DAT. Research in 1998 was concentrated on rate range determination and adjuvant selection for optimization of weed control parameters with the product alone. In 1999 and 2000, evaluation timings were expanded to 3, 7, 15, and 30 DAT to determine both the initial burndown and ultimate control capabilities of the individual herbicides and their mixtures. Targeted optimum Aim™ rates were directed at key weeds in cotton in combination with Roundup Ultra®, Caparol®, Diuron, MSMA, Buctril®, and Staple® to determine additive versus standalone attributes of Aim™ on each species.

Results and Discussion

Summarized weed control data demonstrated that Aim™ was highly effective on species that represent major problem pests in cotton production. Aim™ alone gave excellent control of *Ipomoea spp*. Lanceleaf sage (*Salvia reflexa)*, tall waterhemp *(Amaranthus tuberculatus*), purslane spp. (*Portulaca* spp.), field bindweed (*Convolvulus arvensis*), hemp sesbania (*Sesbania exaltata)*, prickly sida (*Sida spinosa*), velvetleaf (*Abutilon theophrasti*), carpetweed (*Mollugo verticillata*), spurred anoda (*Anoda cristata)*, common lambsquarters (*Chenopodium album*), wild poinsettia (*Euphorbia heterophylla*), and prostrate spurge (*Euphorbia humistrata*).

As an additive to standard rates of registered cotton postemergence herbicides, Aim™ was shown to provide excellent augmentative benefits for efficacy on several weeds. In some cases, the standard herbicides only gave partial control or suppression that was greatly improved with the addition of Aim™.

Roundup Ultra® efficacy data showed enhancement of control with Aim™ on spurred anoda, field bindweed, *Ipomoea* spp., hemp sesbania, and sicklepod with Aim™ rates as low as 0.008 lb ai/A. Of particular significance is the speed of control value that Aim™ addition brings to Roundup Ultra®. Aim™ provided quick burndown efficacy superior to Roundup Ultra® in all cases to more quickly accomplish the removal of weed competition for nutrient and moisture conservation and enhanced yield potential. Aim™ mixture with Diuron delivered enhanced control over Diuron alone on field bindweed,

ivyleaf morningglory, and red morningglory. Caparol mixture with Aim™ gave enhanced control over Caparol alone for field bindweed, ivyleaf, pitted, and red morningglory, hemp sesbania, and sicklepod. Data on MSMA mixtures showed excellent additive activity for cocklebur and velvetleaf control over MSMA alone.

Aim™ provides an excellent addition for post-emergence weed management in cotton, either as a standalone material or to enhance control of several key weeds in mixtures with other herbicides to provide a more complete weed control spectrum at a very economical price.