

A 2-YEAR REGIONAL EVALUATION OF ZORIAL AND POSTEMERGENCE HERBICIDES IN BXN™ COTTON

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Abstract

Weed management systems comprised of various soil-applied and postemergence herbicide options were evaluated in 15 trials over a 2-year period (1995 and 1996) in five southeastern states. Systems that included soil-applied and postemergence treatments provided better broad-spectrum weed control and resulted in greater lint cotton yields than soil-applied or postemergence herbicides alone. Greatest cotton injury was observed with Command (clomazone) compared to other soil-applied herbicides. Best broad-spectrum weed control was observed with combinations of Zorial (norflurazon) or Command plus Cotoran (fluometuron) compared to Zorial or Cotoran alone.

Introduction

The availability of new postemergence over-the-top (POST) selective herbicides provides new weed management options for cotton growers. Buctril (bromoxynil) was available for use in BXN™ cotton in 1995, Staple (pyrithiobac) was introduced commercially in 1996, and Roundup Ready™ cotton will be available in 1997. However, most evaluations of this new technology indicate a need to include soil-applied residual herbicides in these weed management programs. Weed scientists and cotton growers are challenged to develop cost-effective weed management systems that optimize the potential benefits of standard soil-applied herbicides used in conjunction with the new POST herbicides.

Materials and Methods

Fifteen trials were conducted over 2 years in North Carolina, South Carolina, Georgia, Alabama, and Florida to evaluate weed management systems in BXN™ cotton utilizing soil-applied and postemergence herbicides. Treflan (trifluralin) was applied pre-plant incorporated

(PPI) and Bladex (cyanazine) + MSMA was applied late-postemergence-directed (LPD) as blanket treatments on all trials. Treatments were arranged in a split plot design. The main plot treatment factor was postemergence herbicide, and the split plot treatment factor was soil-applied herbicide. Soil-applied herbicides evaluated were none, Zorial applied PPI (0.75 lb ai/ac) followed by Zorial applied preemergence (PRE) @ 0.75 lb ai/ac (Zorial split), Zorial split + Cotoran PRE (1.5 lb ai/ac), Zorial (1.5 lb ai/ac) + Cotoran (1.5 lb ai/ac) PRE, Command (1.0 lb ai/ac) + Cotoran (1.5 lb ai/ac) PRE, and Cotoran (1.5 lb ai/ac) PRE. Postemergence herbicides evaluated were none, Cotoran + MSMA (1.0 + 2.0 lb ai/ac) applied early postemergence-directed (EPD), Staple (0.063 lb ai/ac) applied POST, and Buctril (0.75 lb ai/ac) POST. Treatments were arranged factorially (in all possible combinations). Temik (aldicarb) was applied in-furrow at planting to all treatments except Command + Cotoran, where Di-Syston (disulfoton) was applied in-furrow.

Control of sicklepod (*Senna obtusifolia*) (9 trials), morningglory species (*Ipomoea spp.*) (8 trials), yellow nutsedge (*Cyperus esculentus*) (4 trials), pigweed species (*Amaranthus spp.*) (4 trials), sida species (*Sida spp.*) (4 trials), common cocklebur (*Xanthium strumarium*) (3 trials), tropic croton (*Croton glandulosus* var. *septentrionalis*) (3 trials), Florida beggarweed (*Desmodium tortuosum*) (2 trials), and Florida pusley (*Richardia scabra*) (2 trials) was evaluated.

Results and Discussion

Greatest cotton injury was observed with Command + Cotoran (10% early-season). This was attributed to Command injury and greater thrips damage with Di-Syston compared to Temik. No postemergence treatment caused significant crop injury.

Best early-season (prior to postemergence herbicide application) sicklepod control (85-90%) was generally attained with Zorial split + Cotoran PRE, Zorial + Cotoran PRE, and Command + Cotoran PRE. Treatments that included Zorial provided better early-season morningglory (87-90%), common cocklebur (93-97%), tropic croton (81-92%), and yellow nutsedge (65-69%) control than Command + Cotoran and Cotoran alone. All soil-applied herbicides provided excellent ($\geq 96\%$) early season control of pigweed species and Florida beggarweed. The excellent early-season pigweed control was largely attributable to the use of Treflan PPI on all test sites. Early-season Florida pusley control ranged from 91 to 95% with soil-applied herbicides alone.

Averaged across all weed species, best mid-season control (1 to 4 weeks after postemergence herbicide application) was achieved with Zorial split + Cotoran PRE, Zorial + Cotoran PRE, and Command + Cotoran PRE. With these three soil-applied options, mid-season control was generally

similar with Cotoran + MSMA EPD, Staple POST, and Buctril POST. Systems that included a soil-applied and postemergence herbicide provided better mid-season weed control and greater lint cotton yields than soil-applied or postemergence herbicides alone. Averaged across years and locations, no soil-applied treatment alone allowed cotton to attain lint yields > 885 lb/ac. In contrast, all systems that

included a soil-applied and postemergence herbicide except Zorial split and Zorial split + Cotoran followed by Cotoran + MSMA resulted in lint cotton yields > 910 lb/ac. Lint cotton yields were similar with postemergence applications of Staple and Buctril, and were generally greater than lint cotton yields achieved with Cotoran + MSMA EPD.