

**PREEMERGENCE-POSTEMERGENCE
HERBICIDE COMBINATIONS FOR
ECONOMICAL WEED CONTROL**

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Abstract

With Staple, Buctril/BXN, and Roundup/Roundup Ready weed control programs, there was some potential to reduce either the amount(s) of soil-applied herbicide(s) or the amount of the postemergence herbicide. However, the cost savings from herbicide reductions were small in comparison many yield differences.

Introduction

Staple (pyrithobac sodium), Buctril/BXN (bromoxynil in bromoxynil-tolerant cotton and Roundup/Roundup Ready (glyphosate in glyphosate-tolerant cotton) offer growers new options for weed control. These herbicides offer improved flexibility with their over-the-top selectivity and may also offer improved weed control; however, they may also be more expensive than traditional herbicides. An often-asked question is if these herbicides will allow the grower to reduce or eliminate the use of soil-applied herbicides and reduce those chemical costs. Because late, POST-directed herbicides can offer powerful weed control, given a height differential, another approach is to reduce the rate and the cost of the new postemergence options.

Materials and Methods

Three studies, one with Staple, one with Buctril and one with Roundup, were conducted which compared combinations of four preemergence herbicide programs with four postemergence herbicide programs. The preemergence programs in all three studies were 1) Treflan (trifluralin) at 0.75 lb ai/A, pre-plant incorporated (PPI) (1.5 pt/A for all treatments); 2) Treflan, PPI, followed by Cotoran (fluometuron), preemergence (PRE) at 0.5 lb ai/A; 3) Treflan followed by Cotoran at 1.5 lb ai/A, PRE and 4) Treflan, PPI, followed by Cotoran at 1.5 lb ai/A plus Command (clomazone) at 0.75 lb ai/A, PRE. The postemergence programs in all three studies were 1) Cotoran at 1 lb ai/A plus MSMA at 2 lb ai/A applied in a directed spray (DIR) 2) a "full" rate of the respective postemergence herbicide for the individual study (1 oz ai/A of Staple or 1 lb ai/A of Buctril or 0.75 lb ai/A (1 qt/A) of Roundup), applied over the top (POST); 3) a half rate of the respective herbicide, POST, and 4) a quarter rate of the respective herbicide, POST. The postemergence treatments were applied when cotton was 4 to 5 inches tall.

Preemergence and postemergence treatments were applied in all of the possible factorial treatment combinations (4 PRE's times 4 POST's = 16). All treatments also received Bladex (cyanazine) at 1 lb ai/A plus MSMA at 2 lb/A when cotton was 6 to 8 inches tall.

Results and Discussion

A statistical analysis indicated that there were few interactions between the preemergence and postemergence herbicide programs in the three studies. When Treflan was the only soil-applied herbicide weed control was often inadequate. There were few weed control and yield differences between Treflan + Cotoran at 1.5 lb ai/A and Treflan + Cotoran + Command. When Treflan + Cotoran at 0.5 lb ai/A was followed with a full rate of Staple, Buctril or Roundup, weed control was generally excellent and there was generally no yield loss. When averaged over preemergence treatments, crop yield generally declined as the rate of the postemergence herbicide was reduced. Although some yield reductions were not statistically significant, the observed difference cost much (2 to 50 times) more in monetary terms than the savings from the reduced rate. Line graphs of cotton yield versus dollars spent on the herbicide treatments generally indicated cotton yields did not respond to POST-herbicide rate when the full Treflan + Cotoran + Command PRE treatment was used- and vice versa- cotton yields generally did not respond to the cost of the preemergence program when the full rate of the respective POST herbicide was used. Cotton yield was generally lower when Cotoran + MSMA was the early, POST-directed treatment; however, wet and cool growing conditions delayed cotton growth and resulted in the typical condition of a poor height differential.

Conclusions

Staple, Buctril and Roundup offer some potential for reduced preemergence herbicide use and conversely the rates of Staple, Buctril and Roundup may be reduced if a solid preemergence herbicide program is used. However, a \$20 dollar savings in herbicide costs can easily be lost in \$250 to \$600 yield reductions. Also, since many weed problems occur in portions of fields instead of the whole field, the most economical option may be to treat those areas with full rates of Staple, Buctril or Roundup.