THE ROLE OF COMMAND IN CONTROLLING WEEDS IN CONVENTIONAL AND TRANSGENIC COTTON

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Abstract

Field studies were conducted at Alexandria and St. Joseph, LA in 1999 to evaluate Command (clomazone) applied preemergence (PRE) alone and in conjunction with Cotoran (fluometuron) in conventional and transgenic cotton. Herbicide programs included Command at 1.33, 2.0, or 2.66 pt/a alone and with Cotoran at 1.5 pt/a followed by banded postemergence (POST) treatment of Staple (pyrithiobac) at 1.2 oz/a, Roundup Ultra (glyphosate) applied sequentially at 1.5 pt/a, or Buctril (bromoxynil) at 1.0 pt/a. Staple and Buctril were applied 3 wk after planting while Roundup Ultra was applied 3 and 4 wk and 4 and 6 wk after planting at Alexandria and St. Joseph, respectively. Stoneville 474, BXN 47, and Deltapine 458 B/RR (Alexandria) and 5415 RR (St. Joseph) varieties were used to evaluate Staple, Buctril, and Roundup Ultra herbicide programs, respectively. Treatments were applied in 15 GPA at both locations. POST applications were to 2 node cotton at Alexandria with the sequential application of Roundup Ultra at the 5 node stage. At St. Joseph, initial POST treatment was applied to 3 node cotton while sequential post directed treatment was delayed to 10 node cotton. Annual grasses evaluated included large crabgrass (*Digitaria sanguinalis* L.), barnyardgrass (*Echinochloa crus-galli* L.), broadleaf signalgrass (*Brachiaria platyphylla*), and browntop millet (*Brachiaria ramosa* L). Broadleaf weeds, smooth pigweed (*Amarantus hybridus* L.), entireleaf morningglory (*Ipomoea hederacea*), hemp sesbania (*Sesbania exaltata*), hophornbeam copperleaf (*Acalypha ostryifolia*), and smellmelon (*Cucumis melo*), were also evaluated. Weed sizes at both locations at initial POST application were 1 to 4 in with 1-6 leaves. At the second Roundup Ultra application, weed sizes were essentially the same as the first at Alexandria due to regrowth or stunting from the first application. At St. Joseph, weed size was more varied and larger ranging from 2 to 15 in. The use of Command benefited weed control programs, especially Buctril, which is poor in controlling annual grasses. Rates of Command were similar in controlling grass species. Limited smooth pigweed control ranging from 56 to 80% was obtained when using Command followed by Buctril. Weeds escaping Command treatment tend to be large at POST application time and more difficult to control. Good to excellent hemp sesbania control ranging from 83 to 94% was attributed mainly to POST treatments as Command has limited activity on hemp sesbania. Command at the highest rate (2.66 pt/a) in combination with Cotoran, followed by either Staple or Buctril, was required to provide 90% control of entireleaf morningglory. All other treatments provided entireleaf morningglory control ranging from 79 to 89%. Hophornbeam copperleaf control of at least 99% was obtained following PRE treatments and subsequent POST application of Roundup Ultra. Command/Cotoran followed by Staple provided only 55 to 80% control. PRE treatments of Command/Cotoran followed by Buctril controlled hophornbeam copperleaf 96%, whereas control when applying only Command was 71%. Limited activity of Command on hophornbeam copperleaf may allow this weed to grow too large to be adequately controlled with POST treatments on a timely basis. Control of smellmelon was excellent (92 to 99%) with all treatments except Command followed by Buctril, where control was only 75%. Cotton injury consisted mostly of bleaching and slight chlorosis and was not above 10% when rated 3 weeks after planting at both locations. Eight weeks after planting no visible injury was evident. Due to heavy population of broadleaf weeds, the untreated plots were not harvestable. Command followed by Staple provided inadequate weed control and competition reduced yields compared to remaining treatments. Cotoran was needed in this case to help control broadleaf weeds. However, Command applied alone followed by either Roundup Ultra or Buctril was sufficient to result in cotton yields equivalent to treatments that included Cotoran. Command can provide a good PRE herbicide foundation for controlling a broad spectrum of grass and broadleaf weeds in conventional and transgenic cotton. Annual grass control is excellent with Command, which is especially important in conventional cotton when utilizing Staple and in transgenic cotton when using Buctril. Entireleaf morningglory control is enhanced when Command is applied as a PRE treatment and followed by Staple, Roundup Ultra, and Buctril.

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