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Abstract

The purpose of this study was to evaluate preemergence followed by post-emergence applied herbicides for crop phytotoxicity and weed management in an imidazolinone-tolerant corn hybrid.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Pre-emergence and Post-emergence Applied Herbicides for Woolly Cupgrass Management in Corn

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Introduction

The purpose of this study was to evaluate pre-emergence followed by post-emergence applied herbicides for crop phytotoxicity and weed management in an imidazolinone-tolerant corn hybrid.

Materials and Methods

Crop rotation was corn following soybean. The seedbed was prepared in spring 2001 with a field cultivator. Crop residue was 15% at planting. A randomized complete block design with three replications was used. Herbicides were applied at 20 gallons water/acre. Visual estimates of crop injury and percentage weed control were made during the growing season. These observations are compared with an untreated control and rated on a 0–100% rating scale (0% = no control or injury; 100% = complete control or crop kill).

‘Garst hybrid 8590 IT’ corn was planted at 30,200 seeds/acre in 30-inch rows on May 9 and pre-emergence (PRE) treatments followed. Post-emergence (POST) treatments were applied on June 13, when corn was at V5 growth stage and 6–7 inches tall. At that time, Woolly cupgrass was 2–4 leaves with several tillers and 0.25–3.5 inches tall. Common lambsquarters and common waterhemp had cotyledon–numerous leaves and were 0.25–2 inches tall. The average population of woolly cupgrass, common lambsquarters, and common waterhemp was 5, 2, and 1 plant/ft², respectively.

Results and Discussion

Data on corn stand, percentage corn injury, and weed control as affected by herbicide treatment are summarized in Tables 1 and 2. Significant differences in corn stand between treatments were not attributable to herbicides, but were due to variable emergence.

On June 26, 2001, 13 days after application, corn injury of 2–5% was noted with most POST treatments. By June 13, PRE treatments of Outlook (at 21.0 oz/acre alone and tank-mixed with Balance Pro or Atrazine) had provided 82–93% woolly cupgrass control. Other PRE applied treatments provided 50–68% control. Excellent common waterhemp control was achieved with all PRE herbicides, while only PRE Outlook plus Balance Pro and Outlook plus Balance Pro plus Atrazine provided acceptable common lambsquarters control.

As observed July 12, POST following PRE applications generally increased woolly cupgrass control to an acceptable level; however, by August 17, only a few treatments continued to provide acceptable control. These included PRE-applied Outlook plus Balance Pro, Outlook plus Balance Pro plus Atrazine, Outlook PRE followed by POST Distinct, Celebrity Plus, and Lightning plus Distinct.

Both July 12 and August 17, common waterhemp control remained excellent with all treatments. On the same dates, common lambsquarters control was excellent and had significantly improved with the addition of POST treatments following PRE.