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Weed Management in Corn

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Abstract

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

Keywords

Agronomy

Disciplines

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Weed Management in Corn

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Introduction

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

Materials and Methods

The crop rotation was corn following soybean. The seedbed was prepared in the spring with a field cultivator. Crop residue was 15% at planting. A randomized complete block design with three replications was used. Herbicides were applied in 20 gallons of water/acre. Visual estimates of crop injury and percentage weed control were made during the growing season. These estimates were compared with estimates on an untreated control and recorded 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 32,454 seeds/acre in 30-inch rows on May 16, and PRE treatments followed. Early post-emergence (EPOST) and POST treatments were applied June 20 and 22, respectively. On June 20, corn growth stage was V4 and 4–5 inches tall; while on June 22, corn was V4–V5 and 8–9 inches tall.

On June 20 and 22, weeds had cotyledon to numerous leaves and were 0.25–4 inches tall. Weed species occurring in this study included giant foxtail, common lambsquarters, common waterhemp, Pennsylvania smartweed, and

velvetleaf, with an average population of 5, 5, 2, 1, and 2 plants/ft², respectively.

Results and Discussion

Data on percentage corn injury and weed control as affected by herbicide treatment are summarized in Tables 1 and 2. Differences in corn stand between treatments were not significant. All soil applied PRE treatments exhibited excellent crop safety when evaluated on June 1 and June 15, prior to sequential post-emergence applications. PRE treatments provided excellent giant foxtail and common waterhemp control when observed on June 15. However, Velvetleaf and Pennsylvania smartweed control was unacceptable with these treatments. Common lambsquarters control was good to excellent, with Outlook at 21 ounces/acre, Guardsman MAX, and Degree. Nearly all EPOST- and POST-applied treatments had caused corn injury when observed on June 28 and July 6. Giant foxtail, velvetleaf, common waterhemp, common lambsquarters, and Pennsylvania smartweed control was good to excellent with nearly all PRE, followed by EPOST, POST, and total EPOST treatments when observed on July 6, 27, and August 22. PRE-applied Dual II Magnum, followed by EPOST Aim plus Hornet WDG, did not provide acceptable velvetleaf control on August 22, and Aim plus Accent Gold applied EPOST did not effectively control common waterhemp. PRE-applied Dual II Magnum followed by POST Permit did not provide acceptable velvetleaf and common lambsquarters control.