

2003

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Recommended Citation

Owen, Michael D.; Lux, James F.; and Franzenburg, Damian D., "Woolly Cupgrass Management in Corn" (2003). *Iowa State Research Farm Progress Reports*. 1446.

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Abstract

The purpose of this study was to evaluate crop phytotoxicity and weed control in glufosinate-tolerant corn from various preemergence and postemergence applied herbicides.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Woolly Cupgrass Management in Corn

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Introduction

The purpose of this study was to evaluate crop phytotoxicity and weed control in glufosinate-tolerant corn from various preemergence and postemergence applied herbicides.

Materials and Methods

The crop rotation was corn following soybeans. Fertilization included 140 lb/acre actual N applied as anhydrous ammonia. The seedbed was prepared with two passes of a field cultivator. Crop residue was 11% 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 observations are compared with an untreated control and made on a 0–100% rating scale (0% = no control or injury; 100% = complete control or crop kill).

‘Pioneer 33P69 LL’ corn was planted at 30,000 seeds/acre in 30-inch rows on May 15 and preemergence (PRE) treatments were applied May 16. Early-postemergence (EPOST) and mid-postemergence (MPOST) treatments were applied June 13 and 18, respectively. Corn was V4 to V5 growth stage and 9 inches tall on June 13. Woolly cupgrass was 3–4 leaves with several tillers and 0.25–3.5 inches tall. Velvetleaf, common waterhemp, and common lambsquarters had cotyledon to numerous leaves present and were 0.5–4 inches tall. On June 18, corn was V6 growth stage and 10 inches tall. Woolly cupgrass was 3–4 leaves with up to six tillers and 2–7 inches tall.

Velvetleaf, common waterhemp, and common lambsquarters had three to numerous leaves present and were 2–8 inches tall. Average populations of woolly cupgrass, velvetleaf, common waterhemp, and common lambsquarters on the two postemergence timing dates were 15, 2, 5, and 2 plant/ft², respectively.

Results and Discussion

Summarized in Tables 1–4 are data on corn stand, percentage corn injury, and weed control as affected by herbicide treatment. No significant differences in corn stand between treatments were observed. PRE Balance Pro plus Atrazine resulted in 10% corn injury when observed on June 5. Several other PRE treatments also caused corn injury. All PRE treatments except Define provided excellent woolly cupgrass and broadleaf weed control on June 5. Define applied at 18 oz/acre provided 80 and 85% control of woolly cupgrass and common waterhemp, respectively. No rate of PRE Define gave acceptable common waterhemp control.

Most EPOST and POST treatments caused corn injury when observed on June 25 and July 16. PRE Balance Pro plus Atrazine followed by MPOST Liberty plus Atrazine provided excellent woolly cupgrass, velvetleaf, common waterhemp, and common lambsquarters control on July 16. Other treatments providing good to excellent overall weed control on July 16 included PRE Balance Pro plus Define, PRE Define plus MPOST Liberty plus Atrazine, and PRE Balance Pro plus MPOST Buctril plus Atrazine. Control with remaining treatments was poor to good, woolly cupgrass; good to excellent, velvetleaf; poor to excellent, common waterhemp; and excellent, common lambsquarters.