

2004

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Recommended Citation

Owen, Michael D.; Lux, James F.; and Franzenburg, Damian D., "Woolly Cupgrass Control in Corn with Preemergence and Postemergence applied Herbicides" (2004). *Iowa State Research Farm Progress Reports*. 1319.

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Abstract

The purpose of this study was to evaluate preemergence and postemergence applied herbicides for crop phytotoxicity and weed management in a glufosinate-tolerant corn.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Woolly Cupgrass Control in Corn with Preemergence and Postemergence applied Herbicides

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Introduction

The purpose of this study was to evaluate preemergence and postemergence applied herbicides for crop phytotoxicity and weed management in a glufosinate-tolerant corn.

Materials and Methods

The crop rotation was corn following soybeans. Fertilization included 120 lb/acre actual N applied as anhydrous ammonia. The seedbed was prepared with two passes of a field cultivator. Crop residue was 10% 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).

‘Dekalb 33R79’ corn was planted at 31,000 seeds/acre in 30-inch rows on May 22, and preemergence (PRE) treatments were applied on May 22. Early-postemergence (EPOST) and mid-postemergence (MPOST) treatments were applied on June 18 and 21, respectively. Corn was V4 growth stage and 6 inches tall on June 18. Woolly cupgrass was 1–3 leaves and 1–2 inches tall. Common waterhemp and common lambsquarters had numerous leaves present and were 0.5–4 inches tall. On June 21, corn was V4 to V5 growth stage and 8 inches tall. Woolly cupgrass was 1–4 leaves with several tillers and 1–5 inches tall. Common waterhemp and common lambsquarters had numerous leaves present and were 1–5 inches tall. Average populations of woolly cupgrass, common waterhemp, and common lambsquarters on the two postemergence timing dates were 10, 10, and 2 plant/ft², respectively.

Results and Discussion

Summarized in Tables 1–3 are data on corn stand, percentage corn injury, and weed control as affected by herbicide treatment. No significant differences between treatments in corn stand were determined on June 12. No corn injury resulted from the PRE applied treatments when observed on June 4 and 12. PRE treatments of Balance Pro plus Lumax, Degree Xtra or Keystone, Epic, Balance Pro plus Atrazine, and Balance Pro plus Define plus Atrazine provided good to excellent woolly cupgrass control on June 12. These treatments also achieved excellent common waterhemp and common lambsquarters control.

EPOST and MPOST treatments caused corn injury when observed on June 21 and 27, three and six days after application, respectively. Injury remained from some EPOST and MPOST treatments when observed on July 11. Woolly cupgrass control ranged from 80–95% with the treatment combinations and application timings on July 11. When observed on August 27, MPOST applied Steadfast plus Atrazine plus Callisto, EPOST Prowl plus Steadfast plus Callisto and MPOST Celebrity Plus provided 75% or less woolly cupgrass control. All treatment combinations and application timings provided good to excellent common waterhemp and common lambsquarters control on July 11 and August 27 except EPOST Prowl plus Steadfast plus Callisto.