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Abstract

The purpose of this study was to evaluate two-pass and single-pass corn herbicide programs for crop phytotoxicity and weed control.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Weed Management in Corn with Preemergence- and Postemergence-Applied Herbicides

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Introduction

The purpose of this study was to evaluate two-pass and single-pass corn herbicide programs for crop phytotoxicity and weed control.

Materials and Methods

The crop rotation was corn following soybean. The seedbed was prepared in the spring with a field cultivator. Crop residue was 20% at planting. A completely randomized block design with three replications was used. Herbicides were applied in 20 gal of water/acre. Visual estimates of percentage crop injury and weed control were made during the growing season. These observations were 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 hybrid DKC 53-34 corn was planted at 33,674 seeds/acre in 30-in. rows on May 7 and preemergence (PRE) applied treatments followed. Early-postemergence (EPOST) and mid-postemergence (MPOST) treatments were applied on June 11 and June 17, respectively.

Corn growth stage was V5 and 6 in. tall on June 11, whereas on June 17 corn was V6 and 13 inches tall. Weeds had cotyledon to numerous leaves and were 0.5–5 in. tall on June 11. On July 5, weeds had cotyledon to numerous leaves and were up to 7 in. tall. Weed species occurring in this study included giant foxtail, velvetleaf,

common waterhemp, common lamb's quarters, and Pennsylvania smartweed with an average population on June 11 of 10, 1, 1, 3, and 1 plant/ft², respectively. Average populations of giant foxtail, velvetleaf, common waterhemp, common lamb's quarters, and Pennsylvania smartweed on June 17 were 2, 1, <1, <1, and <1 plant/ft², respectively.

Results and Discussion

Summarized in Tables 1, 2, and 3 are the data on corn injury and weed control as affected by herbicide treatment. Significant differences in corn stand among several treatments on July 29 were due to variability in seeding rate and not from the herbicides. No corn injury resulted from PRE applied treatments when observed on June 10. Giant foxtail and common waterhemp control was good to excellent on June 10 with the PRE treatments. Velvetleaf and Pennsylvania smartweed control was poor to excellent and dependent upon the selectivity of the herbicide and rates applied.

Corn injury was observed on June 17 and July 1 from several EPOST and MPOST treatments. Following the EPOST and MPOST applications, good to excellent giant foxtail, velvetleaf, common waterhemp, common lamb's quarters, and Pennsylvania smartweed control was observed on July 1 and July 20. Exceptions, however, were PRE Keystone plus Hornet WDG and Radius plus Atrazine. These treatments provided fair to good velvetleaf control.