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Weed Management Strategies in Corn

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Abstract

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

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Weed Management Strategies in Corn

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Weed species were giant foxtail, velvetleaf, common waterhemp, common lamb's quarters, and Pennsylvania smartweed, averaging a population of < 1 to 1 plant/ft².

Introduction

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

Materials and Methods

The crop rotation was corn following soybean. Fertilization included 140 lb/acre N (actual) applied as anhydrous ammonia. The preplant seedbed was prepared in the spring with a field cultivator. Crop residue was 20% at planting. A randomized complete block design with three replications was used. Herbicides were applied in 20 gallons of water/acre. Visual estimates of percentage crop injury and 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 hybrid DKC 50-20 corn was planted at 35,077 seeds/acre in 30-in. rows on May 17. Preemergence (PRE) treatments were applied on May 20. Postemergence (POST1, POST2) and directed postemergence (DPOST) treatments were applied on June 15, June 20, and July 12, respectively. Corn growth stage was V4 to V5 and 9 in. tall, V6 and 13 in. tall, and V10 and 60 in. tall on June 15, June 20, and July 12, respectively. Weeds had cotyledon to numerous leaves and were 0.25–4 in. tall, cotyledon to numerous leaves and were 6 in. tall, and cotyledon to numerous leaves and were 8 in. tall, on June 15, June 20, and July 12, respectively.

Results and Discussion

Summarized in Tables 1, 2, and 3 are the data on corn injury, weed control, and yield as affected by herbicide treatment. There were no significant corn stand differences due to herbicide treatment. No corn injury caused by the PRE applications was observed on June 15. PRE-applied Balance Pro at a reduced rate of 1.5 fl oz/acre provided 90% giant foxtail control, and remaining PRE treatments were providing at least 96% on June 15. PRE G-Max Lite plus Balance Pro, G-Max Lite plus Hornet WDG, Lexar, Lumax, and Balance Pro, alone, provided at least 98% velvetleaf control. No other PRE treatment provided more than 78% control. All PRE treatments provided excellent common waterhemp and common lamb's quarters control. Pennsylvania smartweed control was 80% with PRE Outlook, but 99% with all other treatments.

Five days after application on June 20, 12–17% corn injury caused by POST1-applied Marksman, Hornet plus Callisto plus Atrazine, and Steadfast plus Callisto plus Atrazine was observed. POST2 treatments demonstrated 0–10% corn injury on June 28, eight days after application. Following the application of the POST1, POST2, and DPOST treatments, overall weed control was generally good to excellent when observed on July 12 and August 24. There were no significant corn yield differences between the herbicide treatments, with the exception of the untreated control.