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Weed Management Strategies in Soybean

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Abstract

The purpose of this study was to evaluate various herbicides and application timings including preplant incorporated, preemergence, and postemergence for crop phytotoxicity, weed control, and soybean yield.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Weed Management Strategies in Soybean

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Introduction

The purpose of this study was to evaluate various herbicides and application timings including preplant incorporated, preemergence, and postemergence for crop phytotoxicity, weed control, and soybean yield.

Materials and Methods

The crop rotation was soybean following corn. The pre-plant seedbed was prepared with a tandem disking and field cultivation. Crop residue was 65% 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 to 100 rating scale (0%=no control or injury; 100%=complete control or crop kill). Herbicide treatment soybean yields were taken and adjusted to 13% moisture.

Preplant (PPI) treatments were applied on May 9 and incorporated one pass with a tandem disk operating 3 to 4 in. deep. Crow's variety C2317 soybean was planted at 196,433 seeds/acre in 30-in. rows on May 9. Pre-emergence (PRE) treatments were applied following soybean planting. Postemergence (EPOST, POST and SPOST) treatments were applied on June 9, 19, and July 7, respectively. Soybean growth was V2 and 4 in. tall, V4 and 6 in. tall, and V7 to R1 and 14 in. tall on June 9, 19, and July 7, respectively. Weeds had cotyledon to numerous

leaves and were 0.25 to 4 in. tall, cotyledon to numerous leaves and 0.25 to 7 in. tall, cotyledon to numerous leaves and 0.25 to 12 in. tall on June 9, 19, and July 7, respectively. Weed species were giant foxtail, velvetleaf, common waterhemp, common lamb's quarters, and Pennsylvania smartweed averaging a population of <1 to 2 plant/ft².

Results and Discussion

Summarized in Tables 1, 2, and 3 are the results of the study. PRE applied treatments did not cause soybean injury when observed on May 21. PRE Python, Gangster V + Gangster FR provided 55 and 63% giant foxtail control, respectively, when observed on June 9. Most other PRE treatments gave at least 87% control. No PRE treatments provided acceptable velvetleaf or Pennsylvania smartweed control. PRE Python provided 78% common waterhemp control, compared with at least 90% control by remaining PRE treatments. Common lamb's quarters control ranged from 68 to 87% with the PRE treatments. EPOST applied Extreme and Phoenix caused 50 and 37% injury, respectively, when observed on June 19. EPOST Flexstar plus Fusion caused 30% injury. In general, good to excellent overall weed control was observed on July 7 and 28 following the EPOST, POST, and SPOST application timings. An exception was PRE Define followed by EPOST Phoenix for common lamb's quarters and Pennsylvania smartweed control. Weed pressure overall was generally light in the study area, and several treatment yields of 55 bushels/acre or less were not significantly different from the untreated control. Remaining treatments yielded 62 bushels/acre and higher and were different from the untreated control.