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Weed Management in Soybeans

Michael D. Owen

Iowa State University, mdowen@iastate.edu

James F. Lux

Iowa State University, jlux@iastate.edu

Damian D. Franzenburg

Iowa State University, dfranzen@iastate.edu

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Abstract

The purpose of this study was to evaluate various preemergence and postemergence herbicides for crop phytotoxicity and weed control in soybeans.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Weed Management in Soybeans

Micheal D. K. Owen, professor
James F. Lux, ag specialist
Damian D. Franzenburg, ag specialist
Department of Agronomy

Introduction

The purpose of this study was to evaluate various preemergence and postemergence herbicides for crop phytotoxicity and weed control in soybeans.

Materials and Methods

The crop rotation was soybeans following corn. The seedbed was prepared before planting with a field cultivator. Crop residue was 50% 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 variety 92B38 RR’ soybeans were planted at 189,417 seeds/acre in 30-inch rows on May 17. Preemergence (PRE) treatments followed. Postemergence (POST1, POST2 and POST3) treatments were applied on June 24, July 1, and July 11, respectively. Soybean growth was V3 and 7 inches tall, V6 and 11 inches tall, and R1 and 20 inches tall on June 24, July 1, and July 11, respectively. Weeds had two to numerous leaves and were 0.5–10 inches tall, numerous leaves and 3–12 inches tall, and numerous leaves and 3–14 inches tall on June 24, July 1, and July 11, respectively. Weed species occurring in this study included: giant foxtail, velvetleaf, common waterhemp, common

lambsquarters, and Pennsylvania smartweed with an average population of 1 to 2 plants/ft².

Results and Discussion

Summarized in Tables 1, 2, and 3 are the results of the study. Preemergence (PRE) treatments caused little or no soybean injury, when observed on June 24 (data not shown). PRE Gauntlet and Valor treatments demonstrated acceptable overall weed control, whereas FirstRate and Domain provided unacceptable common waterhemp and velvetleaf control, respectively (data not shown). They did, however, demonstrate acceptable control of the remaining weeds.

On July 1, POST1 applied FirstRate plus Flexstar plus Select, and Roundup UltraMAX plus Aim demonstrated 10 and 17% soybean injury, respectively. Injury from POST1 Phoenix plus FirstRate treatments was 17 to 20%. POST1 applications of Cobra plus FirstRate resulted in 25% injury and Phoenix plus Harmony GT, 32% injury. All treatment applications of PRE followed by POST1 provided excellent overall weed control on July 11, 26, and August 23. POST1 and POST1 plus POST3 application timings that included Glyphomax Plus, Roundup UltraMAX, or Touchdown IQ provided excellent overall weed control on these dates as well. Several treatments did not achieve acceptable overall weed control including POST1 Flexstar, Phoenix or Cobra plus FirstRate, and POST1 Phoenix plus Harmony GT. Soybean yields ranged from 46–59 bushels/acre. POST1 Cobra plus FirstRate followed by POST2 Select and POST1 FirstRate plus Flexstar plus Select yielded significantly less than a number of treatments. All treatment yields were significantly higher than the untreated control.