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Evaluation of Herbicides in Corn and Soybean

Abstract

Experiments were conducted during the 2000 growing season to demonstrate the performance of several herbicides available for use in corn and soybeans. Only the soybean experiment will be discussed in this report.

Keywords

Agronomy

Disciplines

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Evaluation of Herbicides in Corn and Soybean

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Introduction

Experiments were conducted during the 2000 growing season to demonstrate the performance of several herbicides available for use in corn and soybeans. Only the soybean experiment will be discussed in this report.

Materials and Methods

Roundup Ready soybeans were planted no-till with a drill on May 4. Immediately prior to planting the area was treated with 1 qt Roundup Ultra to control winter annuals and emerged annual weeds. Preemergence herbicide treatments were applied on May 5. Early postemergence treatments were applied on June 5 when foxtail was 4 in., common sunflower was 8 in. and soybeans were at V2 stage. Postemergence treatments were applied on June 16 when foxtail was 6-12 in., sunflower was 8-16 in. and soybeans were at the V4 stage. Plot size was 10 ft by 30 ft, and all treatments were replicated three times. Herbicides were applied with a backpack sprayer in 20 gallons of water per acre at 40 PSI. Weed control was evaluated on July 6.

Results and Discussion

Treatments including a postemergence application of glyphosate (Roundup Ultra or Touchdown 5L) provided excellent control of both giant foxtail and common sunflower (Table 1). The only treatment including glyphosate that did not provide greater than 95% giant foxtail control was the early application of Roundup Ultra (Treatment 9). The reduction in control probably was due to foxtail that emerged after the application. Touchdown 5 is a different formulation of glyphosate than found in

Roundup Ultra. There has been discussion whether the increased burning of Roundup Ready soybeans observed occasionally with Touchdown 5 compared with Roundup Ultra is an economic concern. No significant injury with Touchdown 5 was observed in this experiment or in other trials at different locations. Syngenta will release a new formulation of Touchdown (IQ) in 2001 that has a reduced risk of crop injury.

Several preemergence treatments were used in combination with post applications of Roundup Ultra. Boundary (Trt 1 & 2) is a combination of Dual and Sencor whereas Domain (Trt 3) contains a different ration of the products found in Axiom (flufenacet and Sencor). The primary purpose of including a preemergence treatment in a weed management program built around post applications of Roundup Ultra is to reduce the likelihood of soybean yield losses due to early season competition and to provide greater flexibility in application timing. No advantages were observed in terms of weed control with the preemergence treatment, but yields were not taken so it is not known if soybean yields were affected by early-season competition in the total post treatments.

Several of the traditional herbicide programs caused significant crop injury (Trts 7, 14, 15, 16 and 17). The undesirable crop response may have been due to unseasonably cool temperatures at the time of application (night temps below 50 F). In most instances the treatments that caused significant crop injury also had reduced levels of weed control. The reductions in weed control probably were due to the delay in development of the crop canopy, therefore allowing late-emerging weeds to receive enough sunlight to get above the crop canopy.

Table 1. Performance of several herbicide treatments in drilled Roundup-Ready soybeans.

Treatment	Crop Injury (%)	% Control	
		Giant Foxtail	Sunflower
1 1.25 PT BOUNDARY (PRE) + ROUNDUP ULTRA + AMS (POST)	0	99	99
2 2 PT BOUNDARY (PRE) + 24 OZ ROUNDUP ULTRA + AMS (POST)	2	99	99
3 1 LB DOMAIN (PRE) + 24 OZ ROUNDUP ULTRA + AMS (POST)	2	99	99
4 2.5 PT PURSUIT PLUS (PRE) + 24 OZ ROUNDUP ULTRA + AMS (POST)	3	99	99
5 2.4 PT PENDIMAX + 1 OZ PYTHON (PRE) + 24 OZ ROUNDUP ULTRA + AMS (POST)	7	99	99
6 4 OZ AUTHORITY + COMMAND 3ME (PRE) + 24 OZ ROUNDUP ULTRA + AMS (POST)	5	98	99
7 4 OZ AUTHORITY (PRE) + [0.5 OZ SYNCHRONY STS + 8 OZ ASSURE II + 1 PT COC + 3 PT 28% N (POST)]	30	83	99
8 24 OZ ROUNDUP ULTRA + AMS (POST)	0	98	99
9 24 OZ ROUNDUP ULTRA + AMS (EARLY POST)	0	89	99
10 32 OZ ROUNDUP ULTRA + AMS (POST)	7	99	99
11 21 OZ TOUCHDOWN 5SL + AMS (POST)	5	99	99
12 28 OZ TOUCHDOWN 5 + AMS (POST)	8	99	99
13 0.3 OZ FIRST RATE + 24 OZ GLYPHOMAX + AMS (POST)	3	99	99
14 1.5 QT EXTREME + 1.25 PT NIS + AMS (POST)	13	99	99
15 8 OZ ASSURE II + 0.5 OZ SYNCHRONY STS + 1 PT COC + 3 PT 28% N (POST)	15	72	99
16 1.5 PT POAST PLUS + 2 PT GALAXY + 1 PT COC + 2 QT 28% N (POST)	30	43	66
17 6 OZ SELECT + 5 OZ STELLAR + 2 PT COC + 2 QT 28% N (POST)	33	53	60
18 UNTREATED CHECK	0	0	0
LSD _{0.05}	12	9	19