Time of Day Post-Emergence Application of Selected Herbicides in Soybeans

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Objectives

To evaluate weed control effectiveness of three different postemergence herbicides based on the time of day in which applications were completed in soybeans. This study will help to show farmers the effect different time of the day applications can have on weed control when these specific herbicides are used.

Background

Cooperator:	Marsh Foundation/ Farm Focus	Fertilizer:	None applied
		Herbicides:	8 oz/A Fusion+ 1% v/v COC (June 24) See Methods (July 1)
County:	Van Wert		
Nearest Town:	Van Wert		
Soil Type:	Hoytville silty clay loam	Insecticide:	None applied
Drainage:	Tile - nonsystematic	Variety:	Seed Consultants SC9302 RR
Previous Crop:	Corn		
Tillage:	Fall disk/ripper, spring field cultivate (2 times)	Row Width:	15 inch
		Planting Rate:	200,000 seeds/A
Soil Test (2002):	pH 6.1, P 45 ppm K 161 ppm	Planting Date:	June 1, 2002

Methods

There are a total of 18 different treatments in this study involving three different postemergence herbicide programs applied at six different times during the day. The study is set up in a randomized complete block design with four replications. The study was planted using a John Deere 7000 Maxemerge six-row planter with a splitter attachment to obtain a 15-inch row spacing. Herbicide treatments are:

1. Flexstar @ 1.33 pt/A + MSO @ 1% v/v + UAN @ 2% v/v
2. FirstRate @ 0.3 oz/A + NIS @ 0.25% v/v + UAN @ 2.5% v/v
3. Roundup UltraMax @ 26 oz/A + AMS @ 17 lb/100 gallons

Seven days prior to the application of the treatments, a post-emergence application of Fusion @ 8 oz/ A was sprayed perpendicular to all the plots with a 45' Great Plains field sprayer to control grasses. Applications of the treatments were made on July 1 at 6 a.m., 9 a.m., 12 noon, 3 p.m., 6 p.m., and 9 p.m. The following weeds were present at the time of application (weed size in parenthesis): lambsquarters (4 to 6"), velvetleaf (4 to 6"), common cocklebur (4 to 6"), and common ragweed (2 to 4"). All herbicides were applied in 15 gallons of spray solution per acre with 36 to 40 psi pressure using flat fan nozzles with a CO_2 delivery system on an ATV. Plot spray size is 12.5 feet wide by 535 feet long with a 2.5 foot running check between each plot. The plots were visually evaluated on August 29 for control of lambsquarters, velvetleaf, and

pigweed. Each weed species in a plot was evaluated on its percent control between 0 and 100. One hundred percent represents perfect control, while 0 represents no control. Ohio State University Extension personnel conducted the evaluations.

Results

Table 1. Environmental Conditions and Visual Evaluation of Control of Velvetleaf in Soybeans.[a]

Time of Application	Dew	Wind Speed (mph), Direction	Air Temperature (°F)	Weed Control (%)		
				Flexstar	FirstRate	Roundup UltraMax
6:00 a.m.	no dew	0-5, west-southwest	77	69 c	59 d	100
9:00 a.m.	no dew	0-5, west	85	77 ab	63 cd	100
12:00 p.m.	no dew	0-5, west	93	75 abc	75 b	100
3:00 p.m.	no dew	4-8, west	94	80 a	76 ab	100
6:00 p.m.	no dew	5-10, west	96	76 abc	81 a	100
9:00 p.m.	no dew	0-5, west	90	60 d	67 c	99
		LSD (0.05)		7.6	5.6	NS
		F-test		8.2	20.3	1

[a] Means followed by the same letter in the same column are not significantly different. NS = not significant

Summary

Only velvetleaf control was summarized in the results section, as velvetleaf distribution was very consistent throughout the plots. Pigweed distribution was much lower than that of velvetleaf, and several plots could not be rated for pigweed control, so it was not included in the results. Lambsquarters control was also not included in these results, since the use of FirstRate and Flexstar do not provide effective control of lambsquarters.

FirstRate and Flexstar showed similar trends for velvetleaf control based on time of day for herbicide application. For Flexstar, application times between 9 a.m. and 6 p.m. provided greater control of velvetleaf than the application times of 6 a.m. and 9 p.m. For FirstRate, application times between noon and 6 p.m. provided greatest control of velvetleaf compared to application times of 6 a.m., 9 a.m., and 9 p.m. Roundup UltraMax performance on velvetleaf was unaffected by time of day of application for this study.

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