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)
County:                  Van Wert
Nearest Town:       Van Wert
Soil Type:              Hoytville silty clay loam
Insecticide:        None applied
Drainage:            Tile - nonsystematic
Variety:             Seed Consultants
Previous Crop:        Corn
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 CO2 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

<table>
<thead>
<tr>
<th>Time of Application</th>
<th>Dew</th>
<th>Wind Speed (mph), Direction</th>
<th>Air Temperature (°F)</th>
<th>Weed Control (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Flexstar</td>
</tr>
<tr>
<td>6:00 a.m.</td>
<td>no dew</td>
<td>0-5, west-southwest</td>
<td>77</td>
<td>69 c</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>no dew</td>
<td>0-5, west</td>
<td>85</td>
<td>77 ab</td>
</tr>
<tr>
<td>12:00 p.m.</td>
<td>no dew</td>
<td>0-5, west</td>
<td>93</td>
<td>75 abc</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>no dew</td>
<td>4-8, west</td>
<td>94</td>
<td>80 a</td>
</tr>
<tr>
<td>6:00 p.m.</td>
<td>no dew</td>
<td>5-10, west</td>
<td>96</td>
<td>76 abc</td>
</tr>
<tr>
<td>9:00 p.m.</td>
<td>no dew</td>
<td>0-5, west</td>
<td>90</td>
<td>60 d</td>
</tr>
</tbody>
</table>

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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