Management of Waterhemp in LibertyLink Soybeans

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Objective

To determine the effect of residual herbicides and timing of Liberty on the control of waterhemp in LibertyLink soybeans

Background

Crop Year: 2017
Location: North of St. Marys, OH
County/Town: Auglaize
Soil Type: Blount Silt Loam
Drainage: Systematic

Previous Crop: Soybean
Tillage: None
Planting Date: June 2, 2017
Nitrogen: None
Seeding Rate: 180,000
Harvest Date: Not harvested

Methods

A weed control trial was established in LibertyLink soybeans. The design was a 2 factor factorial randomized as a complete block design having 4 replications. The plot size was 7.5 feet wide by 40 feet in length. The factors in the trial included residual herbicides and timing of the Liberty application. The five residual treatments were no residual, Valor XLT (4 oz/A), Valor XLT (4 oz/A) plus metribuzin 75 DF (8 oz/A), Fierce XLT (4.5 oz/A), and Valor XLT (4 oz/A) followed by Zidua (2 oz/A) applied postemergence. The Liberty was applied to 3 to 4 inch waterhemp and 6 to 8 inch waterhemp.

Glyphosate was applied to the trial area in early April to control annual bluegrass and other winter annual weeds. Liberty was applied at 29 fluid ounces/A in the burndown on May 16, 2017 and postemergence. Ammonium sulfate was added to all postemergence treatments at 3 pounds/A. The residual herbicides, except Zidua, were applied on May 16, 2017. The postemergence treatments were applied as follows: June 19, 2017 to 3 to 4 inch waterhemp with no residual herbicide applied; June 27, 2017 to 6 to 8 inch waterhemp with no residual herbicide applied; July 2, 2017 to 3 to 4 inch waterhemp following residual herbicides; and July 9, 2017 to 6 to 8 inch waterhemp following residual herbicides.

All treatments were applied with a carbon dioxide propelled 4 nozzle handheld research plot sprayer having a spray width of 6.67 feet. Turbo Teejet 11002 nozzles were used. Spray pressure was 38 pounds per square inch. The spray volume applied was 17 gallons per acre. Travel speed was 3 miles per hour.

LibertyLink Stine 36LE32 soybeans were planted on June 2, 2017 in 15-inch rows.

Results

Table 1. Percent Control of Waterhemp on June 26, 2017 Just Before the Postemergence Application and August 15, 2017, 37 Days After the Last Postemergence application.

	June 26 %	August 15 %
Factor 1 - Residual Herbicides		
No residual herbicide	0 B	70 C
Valor XLT (4 oz/A)	82 A	88 B
Valor XLT (4 oz/A) + metribuzin 75 DF (8 oz/A)	82 A	89 AB
Fierce XLT (4.5 oz/A)	84 A	92 AB
Valor XLT (4 oz/A) followed by Zidua (2 oz/A)	84 A	99 A
Factor 2 - Timing		
3 to 4 inches	N/A	84 b
6 to 8 inches	N/A	91 a

Means Separated by LSD at 0.05

Summary

Glyphosate-resistant waterhemp is increasing in frequency in Auglaize County, Ohio. LibertyLink soybeans with an application of Liberty are an excellent alternative tool to controlling glyphosate-resistant waterhemp. On May 16, 2017 waterhemp was just emerging to having one true leaf. The waterhemp continued to emerge until early August. This study demonstrates the difficulty in controlling waterhemp late into the season.

There was no difference between any of the soil-applied residual herbicides just prior to the postemergence application of Liberty. No soil-applied herbicide(s) provided effective waterhemp control indicating that a postemergence herbicide application is necessary for season-long control. Based upon this one year's trial, adding metribuzin to Valor XLT and using Fierce XLT that contains Zidua did not improve waterhemp control compared to Valor XLT alone.

A single postemergence Liberty application without residual herbicide did not effectively control waterhemp for the season regardless of time of application. Applying Zidua postemergence provided nearly complete waterhemp control and was better than Valor XLT alone. Liberty applied alone following residual herbicides did not provide complete waterhemp control therefore a second postemergence application would have been necessary for complete control.

Applying Liberty to 6 to 8 inch waterhemp provided better control than when applied at 3 to 4 inch waterhemp because more plants were emerged at the time of application due to the later timing.

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