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# A History Lesson in Herbicide Resistance

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# A History Lesson in Herbicide Resistance

## **Abstract**

The evolution and spread of glyphosate resistant weeds has increased people's awareness of the threat of herbicide resistance. Participants at a recent series of meetings were asked their perspective of the prevalence of resistance to several herbicide classes in fields they managed. In the survey, 60 percent of farmers reported that waterhemp resistant to Group 2 herbicides (ALS inhibitors) was not present in their fields or they were unsure of its presence. Industry representatives were somewhat more aware of Group 2 resistance, with 38 percent saying resistance was widespread and 42 percent reporting it was isolated in their territories. Both groups reported that glyphosate (Group 9) resistance was more common than Group 2 resistance.

## **Keywords**

Agronomy, Weed Science

## **Disciplines**

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## A History Lesson in Herbicide Resistance

By Bob Hartzler, Department of Agronomy

The evolution and spread of glyphosate resistant weeds has increased people’s awareness of the threat of herbicide resistance. Participants at a recent series of meetings were asked their perspective of the prevalence of resistance to several herbicide classes in fields they managed. In the survey, 60 percent of farmers reported that waterhemp resistant to Group 2 herbicides (ALS inhibitors) was not present in their fields or they were unsure of its presence. Industry representatives were somewhat more aware of Group 2 resistance, with 38 percent saying resistance was widespread and 42 percent reporting it was isolated in their territories. Both groups reported that glyphosate (Group 9) resistance was more common than Group 2 resistance.

This survey suggests that many people involved in crop production are not aware of the history of herbicide resistant weeds in Iowa. The Group 2 herbicides were introduced in the mid 1980s and were widely used in both corn and soybeans. In the early-1990s, Pursuit (imazethapyr) was used on more than 75 percent of the soybeans in Iowa. The popularity of these herbicides was due to broad-spectrum weed control and flexibility in application timing. Among the weeds effectively controlled by Group 2 herbicides was waterhemp.

The widespread use of Group 2 herbicides in the late 1980s and early 1990s resulted in the rapid selection of Group 2 resistant waterhemp. By the mid-1990s Group 2 resistant waterhemp was so widespread that the industry essentially stopped recommending Group 2 herbicides for this weed. Field surveys in Illinois and Iowa have found that over 90 percent of waterhemp populations are resistant to Group 2 herbicides. We don’t have a good handle on how prevalent glyphosate resistance is across the state, but evidence suggests that less than 20 percent of the fields have glyphosate resistant waterhemp populations at this time. We do know glyphosate resistance is increasing rapidly.

The loss of Group 2 herbicides to manage waterhemp isn’t an isolated incident; similar problems can happen with other herbicides. Current weed management programs rely almost entirely on herbicides. This reliance places us in a position where resistance to many herbicide groups could spread rapidly across the region. To reduce the impact of resistance, steps must be made to diversify the types of herbicides used, incorporate other management tactics where feasible, and use cultural practices that enhance the competitiveness of the crop.

*Bob Hartzler is a professor of agronomy and weed science extension specialist with responsibilities in weed management and herbicide use. He can be reached at [hartzler@iastate.edu](mailto:hartzler@iastate.edu) or 515-294-1164.*

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