

4-8-2002

Factors leading to inconsistent waterhemp control

Robert G. Hartzler

Iowa State University, hartzler@iastate.edu

Follow this and additional works at: <http://lib.dr.iastate.edu/cropnews>

 Part of the [Agricultural Science Commons](#), [Agriculture Commons](#), [Agronomy and Crop Sciences Commons](#), and the [Weed Science Commons](#)

Recommended Citation

Hartzler, Robert G., "Factors leading to inconsistent waterhemp control" (2002). *Integrated Crop Management News*. 1836.
<http://lib.dr.iastate.edu/cropnews/1836>

The Iowa State University Digital Repository provides access to Integrated Crop Management News for historical purposes only. Users are hereby notified that the content may be inaccurate, out of date, incomplete and/or may not meet the needs and requirements of the user. Users should make their own assessment of the information and whether it is suitable for their intended purpose. For current information on integrated crop management from Iowa State University Extension and Outreach, please visit <https://crops.extension.iastate.edu/>.

Factors leading to inconsistent waterhemp control

Abstract

Waterhemp continues to be one of the most problematic weeds for Iowa farmers. A higher frequency of waterhemp escapes was observed in Roundup Ready soybean fields during 2001 than in previous years. Control failures may be caused by unfavorable weather, tolerant/resistant biotypes, improper application timing, poor spray coverage, and late emergence. Sorting through these variables can be difficult, but is important in adjusting management programs to avoid repeat problems.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences | Weed Science

INTEGRATED CROP MANAGEMENT

Factors leading to inconsistent waterhemp control

Waterhemp continues to be one of the most problematic weeds for Iowa farmers. A higher frequency of waterhemp escapes was observed in Roundup Ready soybean fields during 2001 than in previous years. Control failures may be caused by unfavorable weather, tolerant/resistant biotypes, improper application timing, poor spray coverage, and late emergence. Sorting through these variables can be difficult, but is important in adjusting management programs to avoid repeat problems.



Waterhemp seedling leaves are long, narrow and shiny.

[Enlarge](#) [1]

There has been considerable discussion the past several years as to whether the amount of glyphosate needed to kill waterhemp has increased due to the widespread use of Roundup Ready soybean. A recent study showed relatively small differences in glyphosate tolerance among waterhemp collected from 14 randomly selected fields in west central and southwestern Iowa. Seed from single plants was grown in the greenhouse and the plants were treated with Roundup Ultra when 3 to 4 inches in height. Survival of plants treated with 1 pint of Roundup Ultra per acre ranged from 10 to 100 percent (Figure 1). Increasing the Roundup Ultra rate to 2 pints per acre provided complete control of nine populations, whereas survival rates of the other populations ranged from 5 to 35 percent. A majority of plants that survived the application were severely injured and would have died or been noncompetitive in the field. No correlation was indicated between the number of years Roundup Ready soybean had been planted in the field and waterhemp survival rate. In addition, there was as much variation in survival from plants collected from the same field (populations 1-10) as there was from plants collected in different fields. The field in which 10 plants were collected had never been planted to Roundup Ready crops. Although the number of plants and populations examined was small, this research shows no increase in waterhemp tolerance to glyphosate due to repeated use of Roundup Ready crops.

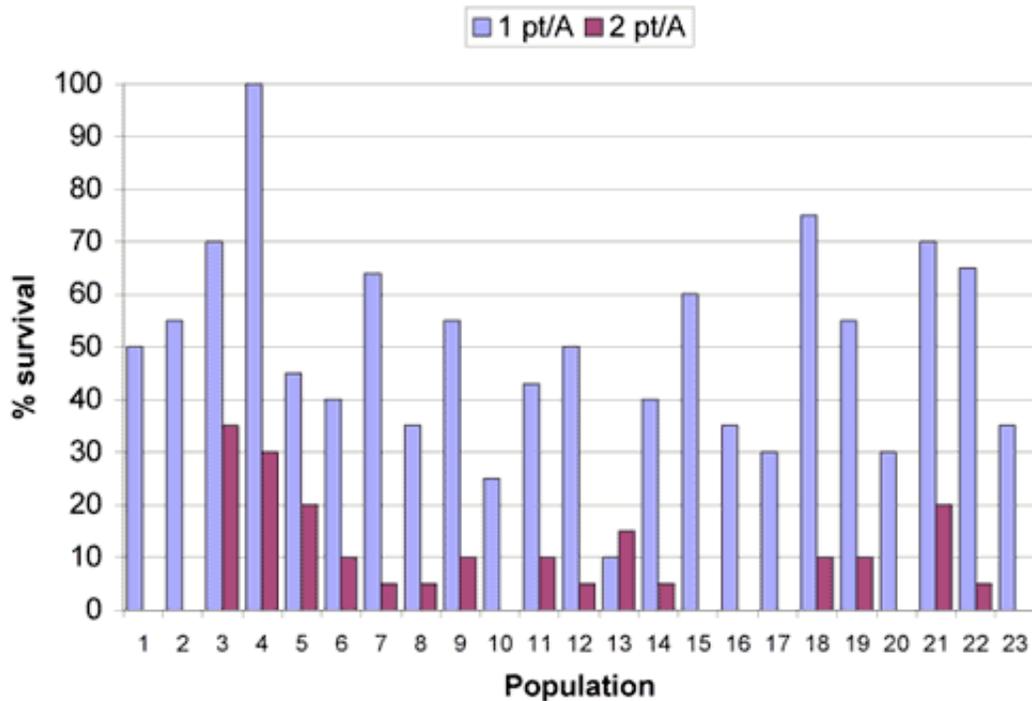


Figure 1. Survival rates of 23 Iowa waterhemp populations treated with Roundup Ultra.

Source: Hartzer, B., J. Kolln, and D. Refsell. 2002. [Iowa State University Weed Science Online](#) [2].

Several of the control failures in 2001 may have been associated with weather patterns during the spray season. For many applicators, the highest concentration of control failures occurred with glyphosate applications made between June 24 and July 7. In the days preceding this period much of Iowa experienced a cold period with temperatures 10 to 15°F below average. In addition, much of the state had gone 10 to 14 days without rain at this time, placing shallow-rooted weeds under water stress. These two environmental factors have a strong influence on postemergence herbicide effectiveness, and probably contributed to many of the control failures.

Some waterhemp control failures may be associated with insufficient coverage of the target, especially in situations with high weed densities or large variances in size of waterhemp and the crop. Drift reduction nozzles (air induction, Turbo TeeJet, TurboDrop) have occasionally reduced weed control in these situations, but the benefit of reduced off-target movement outweighs the small risk of reduced control with this technology. Timely applications and the use of preemergence herbicides to reduce weed populations can minimize problems associated with incomplete spray coverage.

In summary, waterhemp continues to cause management problems for Iowa farmers. Although isolated waterhemp populations have been identified with relatively high tolerance to glyphosate, there is no evidence that the use of Roundup Ready crops has resulted in an increased tolerance of waterhemp in Iowa fields. However, the presence of these tolerant populations emphasizes the importance of using this technology wisely (i.e., rotating herbicides annually). Consistent control is best achieved by using an integrated program, combining preemergence and postemergence herbicides and mechanical strategies.

This article originally appeared on pages 33-34 of the IC-488 (4) -- April 8, 2002 issue.

Source URL:

<http://www.ipm.iastate.edu/ipm/icm//ipm/icm/2002/4-8-2002/inconsistent.html>

Links:

[1] <http://www.ent.iastate.edu/imagegal/plants/weeds/waterhemp/1353.21waterhemp.html>

[2] <http://www.weeds.iastate.edu/>

IOWA STATE UNIVERSITY
University Extension