

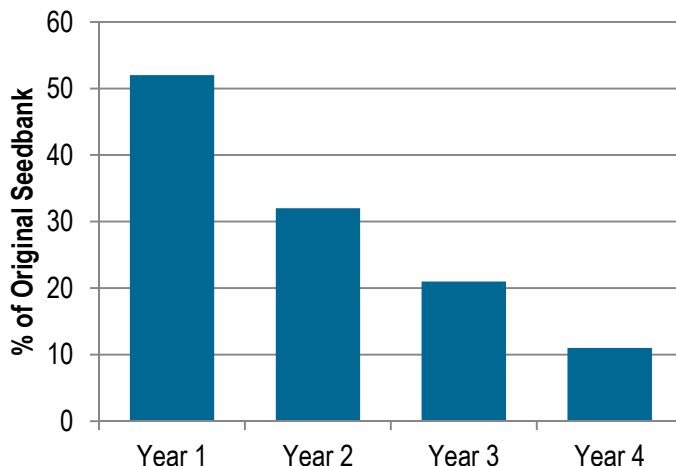
Effective Management of Waterhemp

Introduction

- Adequate control of waterhemp* is a large concern among farmers in the Midwestern U.S.
- This update will review some recent advances in waterhemp management with tips to improve control.



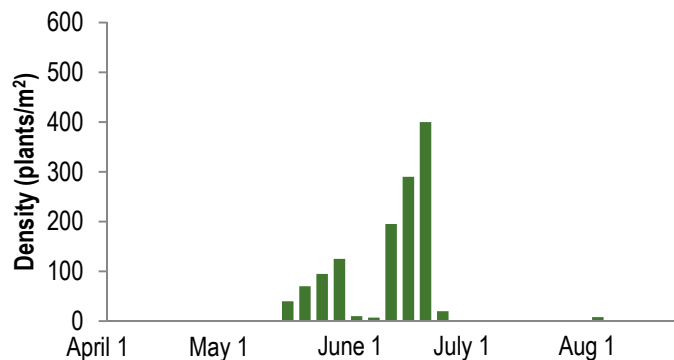
Figure 2. Percentage of waterhemp seedbank that remained viable after being buried for 1, 2, 3, and 4 years in a study near Ames, IA (Buhler and Hartzler, 2001).



1. Understand waterhemp biology

- Waterhemp has an extended germination period relative to many other common weed species (Figure 1).
- Seed viability declines rapidly with time (Figure 2).
- Waterhemp is very competitive for yield in soybeans.
- Only seeds in the top inch of soil will successfully germinate and emerge.
- Herbicide resistant populations can spread rapidly, so cultural control is very important.

Figure 1. Emergence of waterhemp in no-till plots in a study near Ames, IA (Refsell and Hartzler, 2009).

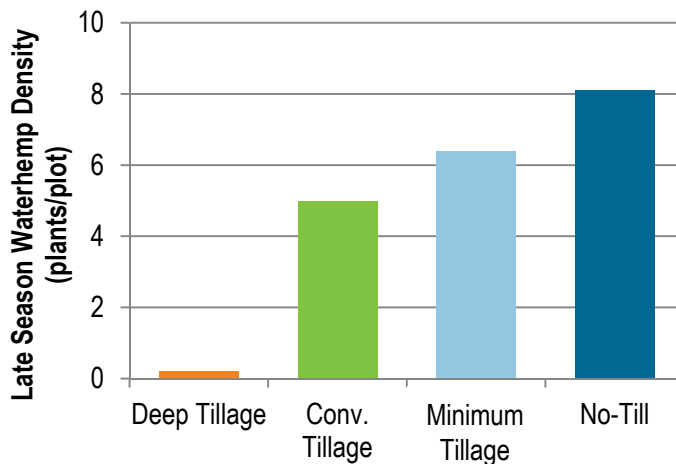


2. Include cultural practices in your management strategy

Tillage

- Because waterhemp emerges only in shallow soil and the seedbank is relatively short lived, tillage practices can reduce waterhemp populations.
- A University of Missouri field study showed a large reduction in late-season waterhemp density associated with deep or conventional tillage (Figure 3).
- Tillage may not be a practical method to help manage waterhemp on farms vulnerable to soil erosion.

Figure 3. Effect of tillage on late-season density of pigweed species (Bradley, 2014).

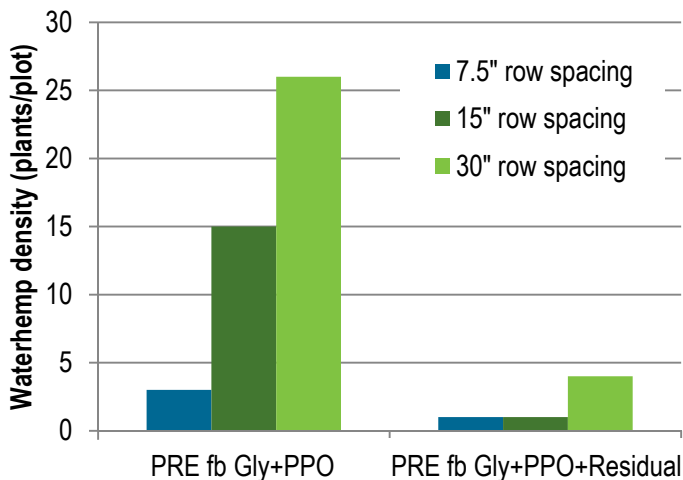


* Some taxonomic references recognize two waterhemp species, tall waterhemp and common waterhemp. From a management standpoint, the two species are indistinguishable and here are referred to collectively as waterhemp.

Row Spacing and Population

- Narrower row spacing can help suppress waterhemp growth.
- In a University of Missouri research study, late-season waterhemp density in no-till soybean production was significantly reduced with narrower rows (Figure 4).
- Greater soybean plant density can also reduce waterhemp growth.
- A seeding rate of 160,000 seeds/acre reduced end of season waterhemp density by 50% compared to a seeding rate of 130,000 seeds/acre (data not shown).

Figure 4. Effect of soybean row spacing and herbicide program on late-season pigweed density (Bradley, 2014).



Good to excellent control of waterhemp is possible with the help of soil applied herbicides.

3. Use soil-applied herbicides

- Use of a soil residual herbicide applied pre-plant or pre-emergence, or as a layered residual tankmixed with a post-emergence application, can greatly improve waterhemp management (Bradley 2013).
 - **Pre-plant or Pre-emergence (before cracking stage):** DuPont™ Enlite®, DuPont Envive®, Zidua®, Fierce®, Outlook PRO®, Authority® or Valor products®.
 - **Layered or Post-Emergence Residual (before V3 stage):** DuPont Cinch®, Zidua, Anthem™, Prefix®
- Use of full labeled rates is recommended to improve the consistency and duration of control. Always read and follow product label guidelines.

Low carrier volume can reduce control as taller weeds prevent adequate herbicide coverage of smaller weeds.



4. Carefully manage postemergence herbicide applications

- **Timing:**
 - Target applications to 3-6\" tall weeds.
- **Tankmixes:**
 - PPO Group 14 (Flexstar®, Ultra Blazer®) herbicides can improve broadleaf control if applied properly.
 - Minimum of 15 GPA (Figure 4).
 - Addition of NIS at 1 qt/100 gallons has been shown to improve consistency of control.
- **Spray Pressure:**
 - Use spray pressure that will assure optimum coverage while minimizing off-target movement.
- **Full labeled rates:**
 - Improves consistency of control.

Bradley, K. 2014. Recommendations for the Management of Resistant Weeds in 2014 and Beyond. Univ. of Missouri Extension.

<http://weeds.cscience.missouri.edu/extension/pdf/resistant%20weed%20management%202014.pdf>

Bradley, K. 2013. Waterhemp Management in Soybeans. United Soybean Board.

<http://takeactiononweeds.com/wp-content/uploads/2014/01/waterhemp-management-in-soybeans.pdf>

Buhler, D.D. and R.G. Hartzler. 2001. Emergence and persistence of seed of velvetleaf, common waterhemp, woolly cupgrass, and giant foxtail. Weed Science 49:230-235.

Refsell, D.E. and R.G. Hartzler. 2009. Effect of tillage on common waterhemp (*Amaranthus rudis*) emergence and vertical distribution of seed in the soil. Weed Technol. 23:129-133.