HERBICIDE COMPARISON FOR RESIDUAL WATERHEMP CONTROL IN CORN

Waterhemp management has become a major challenge for several corn and soybean farmers in Wisconsin and beyond. Waterhemp has an extended emergence window and is a competitive, prolific and genetically diverse weed species which has evolved resistance to commonly used corn and soybean herbicides across the Midwest (see 2019 Wisconsin Waterhemp Herbicide Resistance Project Update). The use of soil residual herbicides is a foundation for waterhemp control and given that several effective and flexible herbicide options in terms of application window (PRE through early-POST) are available for corn, this crop provides farmers with a good opportunity for effective waterhemp management.

To read the rest of this publication, please click here.

WISCONSIN COVER CROP CONFERENCE, FEB 20, STEVENS POINT

DANIEL H. SMITH, NUTRIENT AND PEST MANAGEMENT PROGRAM, UNIVERSITY OF WISCONSIN-MADISON

The 2020 Wisconsin Cover Crop Conference will take place on February 20 (8 am – 4 pm) at the Holiday Inn in Stevens Point. This will be a statewide conference geared toward helping Wisconsin farmers use cover crops more effectively. Many of the presenters will be Wisconsin grain and livestock farmers speaking from experience about what has worked and hasn’t worked in their Wisconsin cropping systems.

Rick Clark, a fifth-generation farmer from Williamsport, Indiana will be the keynote for the event and share how he transformed his 7,000 acre farm into a regenerative system. An Advanced Soil Health session titled "Ice, Water, & Wind: Exploring Soil Diversity in Wisconsin" will feature Holly Dolliver from UW-River Falls the evening prior to the conference (required addition registration fee).

A full agenda and registration information is available: https://fyi.extension.wisc.edu/covercrop/
Waterhemp is a competitive, prolific and genetically diverse weed species which has evolved resistance to commonly used corn and soybean herbicides across the Midwest. In Wisconsin, waterhemp populations have been confirmed resistant to three sites of action (SOA): ALS (acetolactate synthase; Group 2), EPSPS (enolpyruvyl shikimate phosphate synthase; Group 9), and/or PPO-inhibitor herbicides (protoporphyrinogen oxidase; Group 14). Glyphosate resistance has been confirmed in 28 Wisconsin counties and multiple resistance to glyphosate and PPO-inhibitors has been confirmed in 10 of these counties. For more information on the status of herbicide resistance in Wisconsin click HERE.

Identifying the distribution of herbicide resistance in waterhemp to commonly used herbicides is vital for the selection of appropriate management strategies. The objective of this study was to determine the frequency and distribution of glyphosate (EPSPS; Group 9), imazethapyr (ALS; Group 2) and atrazine (photosystem II [PSII]; Group 5)-resistant waterhemp populations in Wisconsin corn and soybean production systems.

RESULTS
• Out of 86 waterhemp populations screened, 95% and 70% were confirmed resistant to 1x and 3x label rate of glyphosate, respectively.

**Imazethapyr** resistance in Wisconsin waterhemp – 2019 update

• Out of 82 waterhemp populations screened, 98% and 93% were confirmed resistant to 1x and 3x label rate of imazethapyr, respectively.

**Atrazine** resistance in Wisconsin waterhemp – 2019 update

Source: University of Wisconsin - Madison
• Out of 80 waterhemp populations screened, 10% and 3% were confirmed resistant to 1x and 3x label rate of atrazine, respectively.

CONCLUSIONS

• Glyphosate and imazethapyr-resistant waterhemp populations are widespread across corn and soybean fields in Wisconsin, requiring awareness and action from stakeholders to mitigate their detrimental impacts.

• Atrazine restrictions in Wisconsin may partially explain the lower than expected resistance frequency. Atrazine resistance in waterhemp populations from other Midwestern states is more common.

• Understanding the distribution of waterhemp resistance and selection of effective PRE and POST emergence herbicides can assist growers develop better management strategies and ameliorate the issues with herbicide resistance.

FUTURE DIRECTIONS

A subset of populations will be selected and further studies will be conducted to evaluate the response of these populations to other herbicides applied POST (lactofen, mesotrione, glufosinate, 2,4-D and dicamba) or PRE (atrazine, mesotrione, metribuzin, sulfentrazone and S-metolachlor).

ACKNOWLEDGMENTS

We would like to thank the Wisconsin Soybean Marketing Board and the Wisconsin Corn Promotion Board for supporting this project. Many thanks to those who contributed to this project by collecting waterhemp seeds (individual reports to collaborators will be submitted in January 2020). Members of the Wisconsin Cropping Systems Weed Science Lab provided technical assistance towards the execution of this project.

RESEARCH METHODS

• 86 waterhemp populations from 27 Wisconsin counties were collected and submitted by stakeholders in the fall of 2018 (many thanks to those who contributed to this project by collecting waterhemp seeds).

• Experimental units consisted of cone-tainers (656 ml) filled with Pro-Mix HP Mycorrhizae potting mix. Plants were maintained in a greenhouse with a controlled environment, watered daily and fertilized once a week.

• Treatments were applied when waterhemp plants reached 2-4 inches in height using a single-nozzle research track spray chamber with AI9502EVS nozzle tips, calibrated to deliver 15 GPA of spray solution.

• Treatments consisted of glyphosate (1X = Roundup PowerMax at 22 fl oz/acre and 3X = Roundup PowerMax at 66 fl oz/acre), imazethapyr (1X = Pursuit at 4 fl oz/acre and 3X = Pursuit at 12 fl oz/acre), atrazine (1X = Aatrex 4L at 2 pts/acre and 3X = Aatrex 4L at 6 pts/acre), and the nontreated control. AMS (2 lbs/acre) was added to the glyphosate treatments. AMS (2 lbs/acre) + COC (0.6% v/v) were added to the imazethapyr treatments. COC (0.8%) v/v was added to the atrazine treatments.

• The experiment was conducted in a completely randomized design with 8 replications per herbicide treatment and two experimental runs.
• 21 days after treatment (DAT) visual evaluation (VE) of plant growth was taken on a scale of 1 to 10 (1 representing a dead plant and 10 a completely healthy plant, Figure 1) and aboveground biomass harvested.

• Waterhemp populations were considered resistant to each treatment if 50% or more of treated plants between experimental runs had VE ≥ 7 (healthy plants completely capable of reproducing).

REGISTRER FOR ORGANIC GRAIN CONFERENCE, JAN 24-25 IN MADISON

ERIN SILVA, ASSOCIATE PROFESSOR, ORGANIC AND SUSTAINABLE CROPPING SYSTEMS SPECIALIST, DEPARTMENT OF PLANT PATHOLOGY, UNIVERSITY OF WISCONSIN-MADISON

Registration is open for UW-Extension OGRAIN Organic Grain Conference. (Early registration with the reduced registration price ends 1/10/20.)

Join us for the 2020 OGRAIN Organic Grain Conference, January 24-25 in Madison, WI! Organic grain continues to be a growing sector of agriculture, offering a strong opportunity for Wisconsin farmers. We have an outstanding line-up of speakers focused on organic grain production addressing broad topics related to the production, marketing, and economics of organic grain production, with workshops relevant to existing organic farmers, those interested in transitioning, and agricultural professionals. Early registration ends January 10. CEUs have been requested.

See the entire workshop schedule (and link to registration) here: https://ograin.cals.wisc.edu/events/ograin-winter-conference/schedule-workshops-and-presenter-bios/

Join the OGRAIN listserv by emailing join-ograin@lists.wisc.edu to enjoy highly informative conversations with experienced growers – or find OGRAIN on Facebook.
2020 WISCONSIN AGRICULTURAL OUTLOOK FORUM, JAN 28, UW-MADISON

Registration is now open for the 2020 Wisconsin Agricultural Outlook Forum, The Business of Hemp in Wisconsin!

The Forum, to be held Jan 28, will continue to include the traditional Situation and Outlook for Wisconsin agricultural commodities (dairy, corn, soybeans, beef) during the morning section. The afternoon section this year will focus on the business and marketing of Wisconsin hemp and will include a panel discussion with experts from other states bringing new perspectives to this growing industry in Wisconsin.

FOLLOW THIS LINK TO THE REGISTRATION PAGE!

A live video stream of the presentations will be available those who are unable to attend the 2020 Wisconsin Agricultural Outlook Forum in person. This option is offered through YouTube, and can be found at this link: https://go.wisc.edu/h1h87g

Videos of the Forum presentations will also be preserved within the Renk Agribusiness Institute YouTube account, which can be found here: https://www.youtube.com/channel/UCiagfZwekHZBdHWAW4XGrTA

Parking for the 2020 Wisconsin Agricultural Outlook Forum will be facilitated with a FREE Shuttle Bus service between the State Street Capitol Parking Ramp and Union South. For more information, CLICK HERE!

QUESTIONS? Contact Jeremy Beach at jpbeach@wisc.edu or 608-262-9485

**Agenda is attached below.
2020 Wisconsin Agricultural Outlook Forum

The Business of Hemp in Wisconsin

9:30-10:00 Registration

10:00-10:15 Introduction and Overview
10:00-10:10 Abigail Martin, 72nd Alice in Dairyland
10:10-10:15 UW-Madison CALS Update (Dean Kate VandenBosch)

10:15-12:00 Agricultural Situation and Outlook
10:15-10:25 Farm Income (Paul Mitchell, UW-Madison)
10:25-10:35 Contribution of Agriculture to the WI Economy (Steve Deller, UW-Madison)
10:35-10:45 Wisconsin Economy Situation and Outlook (Tessa Conroy, UW-Madison)
10:45-11:00 Questions and Panel Discussion

11:00-11:15 Break

11:15-11:30 Dairy Situation and Outlook (Mark Stephenson, UW-Madison)
11:30-11:45 Grain and Livestock Situation and Outlook (Brenda Boetel, UW-River Falls)
11:45-12:00 Questions and Panel Discussion

12:00-1:00 Lunch

Shelby Ellison, Division of Extension, afternoon moderator

1:00-2:45 Hemp Situation and Outlook
1:00-1:20 Kentucky Perspective (Tyler Mark, University of Kentucky)
1:20-1:40 Colorado Perspective (Dawn Thilmany, Colorado State University)
1:40-2:00 Canadian Perspective (Ted Haney, Canadian Hemp Trade Alliance)
2:00-2:15 Wisconsin Perspective (Paul Mitchell, UW-Madison)
2:15-2:45 Questions and Panel Discussion

3:00-4:00 Reception: Varsity Hall 3
Farmers and agricultural professionals from around the state are coming together again to share and learn about all things cover crops. Whether you’re a seasoned cover crop expert or an absolute beginner, there will be something for everyone!

**Keynote Speaker: Rick Clark**

2019 American Soybean Association Conservation Legacy Award Winner
2019 Land O’ Lakes Sustainable Stewardship Award Winner
Presented at the United Nations, countries abroad, & numerous farmer to farmer discussions

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**REGISTRATION:**
Registration open until February 14, 2020

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For more information & registration: [http://fyi.uwex.edu/covercrop/](http://fyi.uwex.edu/covercrop/)
Wisconsin Cover Crop Conference Agenda

Wednesday, February 19th

5:00 - 8:00 Pre-Conference Dinner & Discussion
   Holly Dolliver, UW-River Falls
   Ice, Water, & Wind-Exploring Soil Diversity in Wisconsin

Thursday, February 20th

8:00 - 9:00 Early Riser - Farmers Figuring it Out Discussions
   • Adding Small Grains to Your Crop Rotations
   • 60 Inch Corn - Why & How?
   • Grazing Cover Crops
   • Cover Crops in Processing Vegetable Rotation
   • Question & Answer: Weed Control and Covers

9:00 - 9:30 Break and Registration for Conference Attendees

9:30 - 10:30 Keynote Speaker: Rick Clark
   Getting the Most From Your Land: Regenerate Your Bottom-Line, Reduce Your Risk

10:45 - 12:00 Concurrent Sessions: Select a Session
   Session 1: Herbicides, Cover Crops, and Weed Management
   Session 2: Maintaining Soil Health While Managing Manure
   Session 3: Building a Soil Health System - Easy Points of Entry

12:00 - 1:00 Lunch and Time to Visit With Exhibitors

1:00 - 2:15 Concurrent Sessions: Select a Session
   Session 4: Planting Green
   Session 5: Assessing Soil Health
   Session 6: Getting More Out of Cover Crops - Using as an Alternative Forage

2:45 - 3:45 Summary Session
   Soil Health Systems & Weather Extremes - Lessons Learned in 2019