

WISCONSIN WATERHEMP AND DICAMBA RESEARCH AND STAKEHOLDER SURVEYS

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Waterhemp and giant ragweed, respectively, are currently ranked by stakeholders as the most troublesome weed species in corn and soybean production in Wisconsin (Zimbric et al., 2018; Werle and Oliveira, 2018). Due to widespread occurrence of resistance to glyphosate, PPO- and ALS-inhibitors in waterhemp populations across the state accompanied by the shortage of effective POST-emergence herbicide options in conventional and RR2Yield soybean systems, the use of effective PRE-emergence herbicide programs becomes imperative and the adoption of novel herbicide tolerance traits, such as Xtend (dicamba tolerance) or Liberty Link (glufosinate tolerance), appealing for providing additional effective POST-emergence weed control options.

In the fall of 2018, we invited Wisconsin stakeholders to submit waterhemp seed samples from their farms along with the last 5-year crop (e.g., rotation, tillage, manure application) and weed management program records. More than 80 populations were received and will be screened for herbicide resistance in the greenhouse in 2019. From a preliminary analysis of the 5-year management records we have learned that adoption of PRE-emergence herbicides in these farms was low (<30%) 5 years ago (2014) but increased over time (>60% in 2018). Thus, the presence of waterhemp has and will continue to lead to major changes in herbicide programs in these operations and beyond.

From our research evaluating waterhemp control with 29 different PRE-emergence herbicides conducted in 2018 at Lancaster Ag Research Station we were able to demonstrate that simply adding a PRE-emergence herbicide is not enough (Smith et al., 2018); an effective PRE-emergence herbicide program applied at the appropriate label rate is imperative for good early-season waterhemp control in soybeans. From this study we have learned that other than group 2 (ALS-inhibitors) sprayed alone, PRE-emergence herbicides from group 5, 14 and 15 applied at full label rates provided adequate reduction in waterhemp density at 25 days after treatment but a subsequent application POST-emergence would be necessary for complete control in most treatments. Pre-mixes (PRE-emergence herbicides with more than one active ingredient) containing adequate rates of individual active ingredients provided satisfactory waterhemp control.

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In terms of Xtend adoption in Wisconsin, from our recent survey we have learned that it was low in 2017 and 2018 (<25% of total acres represented in the survey); however, likely to increase substantially in 2019 (~50% of total acres represented in the survey; primarily due to challenges associated with waterhemp control POST in soybeans during the 2017 and 2018 growing seasons). Farmers adopting the Xtend technology in 2019 and beyond must be mindful and follow the label when spraying dicamba in soybeans. This season we conducted research trials investigating off-target dicamba movement under large-scale field conditions and in low-tunnels. According to results, proper application and environmental conditions are crucial to minimize off-target particle movement. Results from the low-tunnel trials indicate that tank-mix products containing ammonium salt can increase dicamba volatilization. In conclusion, weed management is becoming more complex and will continue to challenge farmers to modify their management strategies.

References

Smith, D., R. Proost, and R. Werle. 2018. UW waterhemp challenge: comparison of soil residual herbicides (preliminary report). University of Wisconsin-Madison Nutrient and Pest Management Program.

http://www.wiscweeds.info/img/2018%20waterhemp%20challenge/Waterhemp%20Management%20PRE%20Comparison_Lancaster%20WI%202018.pdf

Werle, R., and M.C. Oliveira. 2018 Wisconsin cropping systems weed science survey – where are we at? WiscWeeds Info & Wisconsin Crop Manager Newsletter. UW-Madison Integrated Pest and Crop Management. April 18, 2018.

<http://www.wiscweeds.info/post/2018-wisconsin-cropping-systems-weed-science-survey/>

Zimbric, J., D. Stoltenberg, M. Renz, and R. Werle. 2018. Herbicide resistance in Wisconsin: an overview (December 2018). WiscWeeds Info & Wisconsin Crop Manager Newsletter. UW-Madison Integrated Pest and Crop Management.

December 11, 2018. <http://www.wiscweeds.info/post/herbicide-resistance-in-wisconsin-an-overview/>