

# DOCUMENTING THE EXTENT OF RESISTANCE TO GROUP 15 HERBICIDES IN ILLINOIS WATERHEMP POPULATIONS

## PROJECT SUMMARY

To better understand the frequency of resistance to Group 15 herbicides, this project will collect and screen waterhemp populations from Illinois soybean fields. Results will be used to provide farmers with recommendations on how best to incorporate these herbicides into integrated weed management programs. Resistant populations will be used in subsequent research to identify the gene(s) conferring the metabolism-based resistance.

## QUESTIONS THIS PROJECT WILL ADDRESS

- ① How widespread is Group 15 herbicide resistance in waterhemp populations across Illinois?
- ① What level of resistance is present in Group 15-resistant waterhemp populations?

## WHY THIS RESEARCH IS IMPORTANT

- ⚠ Waterhemp populations in Illinois have evolved resistance to herbicides from more site-of-action-groups than any other weed species.
- ⚠ The confirmation of resistance to Group 15 herbicides in 2019 makes managing this weed one of the most daunting challenges Illinois soybean farmers face. Noticing potential resistance to this group of chemistry is more difficult because they are residual herbicides, and resistance could exhibit as shorter length of control rather than lack of control common with other classes of chemistry.
- ⚠ In addition, fields can contain waterhemp populations resistant to herbicides from multiple herbicide groups, with individual plants carrying genes for resistance to multiple herbicides.

## HOW THIS RESEARCH BENEFITS THE FARMER

- 🎯 Understanding the frequency of Group 15-resistant waterhemp will give farmers, their advisors and Extension the ability to refine integrated weed management recommendations to help slow resistance development in more waterhemp populations.
- 🎯 After gaining a better understanding of how extensive Group 15 resistance is in Illinois waterhemp populations, researchers intend to conduct a genome-wide association study to identify the gene(s) responsible for Group 15 resistance. This data could lead to rapid molecular assays for future resistance diagnosis.

## ABOUT THE LEAD RESEARCHER

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### DR. AARON HAGER

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While his childhood dream was to dive for treasures hidden in ocean waters, Dr. Hager has been firmly planted on land searching for solutions to managing weeds while fending off resistance. He's been an integral part of the world-renowned weed science program at UIUC for 30 years. His extension program is keenly focused on addressing the evolving weed management challenges across Illinois farm fields, providing farmers with research-based solutions that are sustainable and economically viable. When he's not helping farmers, he enjoys woodworking, cloudless evenings on the deck, spoiling his granddaughter and summertime sunset drives along country roads.

## RESEARCH TEAM

- **Dr. Patrick Tranel**, Professor, UIUC
- **Travis Wilke**, Master's Student, UIUC

## TRIAL LOCATIONS

- **Waterhemp seeds will be collected from at least 100 locations across the state**



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