

**RODRIGO WERLE, Ph.D.*****Curriculum Vitae***

Assistant Professor &amp; Extension Cropping Systems Weed Scientist

Department of Agronomy, University of Wisconsin-Madison

**ADDRESS**

1575 Linden Drive, Madison, WI 53706

Department of Agronomy

University of Wisconsin-Madison

Email: [rwerle@wisc.edu](mailto:rwerle@wisc.edu)

Office Phone: 608-262-7130

Program Webpage: [wiscweeds.info](http://wiscweeds.info)Twitter: [@WiscWeeds](https://twitter.com/WiscWeeds)**EDUCATION AND TRAINING**

Ph.D. May 2016	University of Nebraska-Lincoln	Major: Agronomy Specialization: Weed Science
M.S. December 2012	University of Nebraska-Lincoln	Major: Agronomy Specialization: Weed Science
B.S. December 2009	São Paulo State University, Brazil	Major: Agronomy

**PROFESSIONAL EXPERIENCE**

- *Assistant Professor and Extension Cropping Systems Weed Scientist (Appointment: 70% Extension and 30% Research)*, Department of Agronomy, University of Wisconsin-Madison, January, 2018 to current. Goal: conduct innovative and collaborative research and extension programming in weed biology, ecology and management in annual row crop production systems of Wisconsin and beyond.
- *Adjunct Assistant Professor*, Department of Agronomy and Horticulture, University of Nebraska-Lincoln. June, 2018 to current.
- *Assistant Professor and Cropping Systems Specialist (Appointment: 50% Extension and 50% Research)*, West Central Research and Extension Center & Department of Agronomy and Horticulture, University of Nebraska-Lincoln, April, 2016 to December, 2017. Goal: conduct innovative and collaborative research and extension programming to increase profitability, productivity and sustainability of irrigated and dryland cropping systems with limited water in Nebraska and beyond.
- *Graduate Research Assistant*, Department of Agronomy and Horticulture, University of Nebraska-Lincoln, Lincoln, NE, May, 2010 to April, 2016. Masters and Doctoral research in Weed Biology and Ecology, Integrated Weed Management, Herbicide Resistance Evolution and Management, and Weed Population Dynamics Modeling under Dr. John Lindquist's supervision.
- *Undergraduate Senior Intern*, Department of Agronomy and Horticulture, University of Nebraska-Lincoln, Lincoln, NE, 2009. Field and greenhouse research in Weed Science under Dr. Mark Bernards' supervision.

- *Undergraduate Research Assistant*, College of Agricultural Sciences, São Paulo State University, Botucatu, SP, Brazil, 2005-2009. Field, greenhouse, and laboratory research in soil fertility and cropping systems under Dr. Ciro Rosolem's supervision.

## TEACHING EXPERIENCE

- UW-Madison Informal Prep Course for Weed Contest, Spring-Summer/2018, and Spring-Summer/2019.
- UNL AGRO 496/896 Prep Course for Weed Contest, Spring-Summer/2015.
- UNL AGRO 426/826 Invasive Plants Lab: Spring/2013, Spring/2014, and Spring/2015.
- UNL AGRI/NRES 103 Introduction to Agricultural and Natural Resource Systems Recitation, Fall/2013.

## ACADEMIC HONORS AND AWARDS

- University of Wisconsin-Madison Alfred Toepfer Faculty Fellow Award, 2020-2021
- Wisconsin Association of County Agricultural Agents Second Mile Award, 2020
- American Society of Agronomy, Certificate of Excellence for Extension Educational Materials (Audiovisuals: Using Cover Crops after Corn Silage Harvest Video Series), 2019.
- Weed Science Society of America, **Outstanding Graduate Student Award**, 2016.
- University of Nebraska-Lincoln Dean's Fellowship, 2014-2015 & 2015-2016
- Milton E. Mohr Award (Biotechnology Degree Program Recipient), 2014-2015 & 2015-2016.
- Department of Agronomy and Horticulture Graduate Student Conference Travel Grant, 2015.
- Honorable mention, Outstanding Graduate Research Assistant, University of Nebraska-Lincoln, 2015.
- Weed Science Society of America Meetings, 3<sup>rd</sup> Place Outstanding Poster Presentation, 2015.
- North Central Weed Science Society Meetings, 1<sup>st</sup> place Outstanding Poster Presentation, 2014.
- North Central Weed Science Society Meetings, 2<sup>nd</sup> place Outstanding Paper Presentation, 2014.
- North Central Weed Science Society Meetings, 2<sup>nd</sup> Place Team Quiz Bowl, 2014.
- North Central Weed Science Society Weed Contest, 3<sup>rd</sup> place Overall Graduate Team, 2014.
- North Central Weed Science Society, **Outstanding Graduate Student Award**, 2013.
- Weed Science Society of America, **Outstanding Paper in Weed Technology**, 2013.
- Widaman Trust Distinguished Graduate Assistant Award, 2013-2014.
- North Central Weed Science Society Weed Contest, 3<sup>rd</sup> place Overall Graduate Team, 2013.
- North Central Weed Science Society Contest, 1<sup>st</sup> place Team Sprayer Calibration, 2013.
- University of Nebraska Student Government, **Graduate Student of the Year**, 2012-2013.
- North Central Weed Science Society Meetings, 1<sup>st</sup> Place Outstanding Paper Presentation, 2012.
- North Central Weed Science Society Meetings, 1<sup>st</sup> Place Team Quiz Bowl, 2012.
- North Central Weed Science Society Weed Contest, 3<sup>rd</sup> place Overall Graduate Team, 2012.
- North Central Weed Science Society Weed Contest, 1<sup>st</sup> place Team Sprayer Calibration, 2012.
- APS North Central Division Meeting, 2<sup>nd</sup> place Graduate Student Poster Contest, 2011.

**PROFESSIONAL SOCIETY MEMBERSHIPS**

- International Weed Science Society
- Weed Science Society of America
- North Central Weed Science Society
- Agronomy Society of America
- Crop Science Society of America

**SERVICE**

- University of Wisconsin-Madison Faculty Senate Agronomy Department Representative, 2019 to current.
- University of Wisconsin-Madison, Department of Agronomy Committee Member Assignments: Crop Management and Ecology Departmental Administrative Group, Extension Interest Group, Weed Science Interest Group, Field Day Committee, Hatch Capital Exercise Committee, Community Committee (2019 to current).
- Ad hoc reviewer for Weed Science, Weed Technology, PLOS ONE, Frontiers in Agronomy, Canadian Journal of Plant Science, and Planta Daninha.
- Member of the University of Wisconsin Integrated Crop and Pest Management Advisory Group, 2018 to present.
- Coach of the University of Wisconsin-Madison Badger Weeds Team, 2018 to present.
- Active member of the North Central Weed Science Society (NCWSS student weed contest volunteer [2017, 2018, 2019]; resident education chair [2019], undergraduate student poster contest chair [2019], graduate student poster contest chair [2018]; annual meeting Weed Biology, Ecology and Management section chair [2017]).
- Member of the University of Nebraska-Lincoln Department of Agronomy Faculty Advisory Committee, 2016-2017.
- Member/Coach of the University of Nebraska-Lincoln Weeds Team, 2010 to 2017.
- Member of the Search Committee for the University of Nebraska-Lincoln Beef Cattle Nutritionist - Range Production Systems Specialist Position in the Department of Animal Sciences and West Central Research and Extension Center that resulted in the hiring of Dr. Travis Mulliniks, 2017.
- Graduate Student Representative for the Agronomy and Horticulture Seminar Committee, 2012-2015.
- North Central Weed Science Society Graduate Student Chair, 2014.
- Member of the Search Committee for the University of Nebraska-Lincoln Weed Management Specialist Position in the Department of Agronomy and Horticulture that resulted in the hiring of Dr. Amit Jhala, 2012.

**PROFESSIONAL DEVELOPMENT AND NETWORK** (*Event Participation; 2018 Onwards*)

- Growmark & Winfield University Weed Scientist Meeting. Virtual Meeting due to COVID-19. September 21-23, 2020.
- WSSA 2020 Annual Meeting. Hyatt Regency Maui. Maui, HI. March 02-05, 2020.
- NCWSS 2019 Annual Meeting. Hyatt Regency Columbus. Columbus, OH. December 10-13, 2019.

- Dicamba OTM Industry-University Brainstorm Meeting. UW-Madison Pyle Center, Madison, WI. October 24-25, 2019.
- 1<sup>st</sup> UW-Madison Agronomy Department Diversity Retreat. UW-Madison Union South. Madison, WI. October 14, 2019.
- Growmark & Winfield University Weed Scientist Meeting. Holiday Inn City Centre. Lafayette, IN. September 23-25, 2019.
- S1084 Meeting: Industrial Hemp Production, Processing, and Marketing in the US. Hilton Lexington Downtown. Lexington, KY. August 22-23, 2019.
- 2019 Fall IPCM Technical Advisory Committee Meeting. West Madison Agricultural Research Station. Madison, WI. September 06, 2019.
- 2019 UW-Madison Agronomy Faculty Retreat. Round Barn Lodging, Spring Green, WI. June 03, 2019.
- Working Better Together: Everything DiSC Workplace UW-Agronomy Sponsored Workshop. Wisconsin Institutes of Discovery. Madison, WI. April 09, 2019.
- BASF University Weed Management Symposium. Hilton Tampa Westshore. Tampa, FL. January 22-24, 2019.
- University of Wisconsin-Madison Tenure Workshop: Biological Sciences. UW-Madison Union South. Madison, WI. January 15, 2019.
- NCWSS 2018 Annual Meeting. Hyatt Regency Milwaukee. Milwaukee, WI. December 03-06, 2018.
- 2<sup>nd</sup> Monsanto Academic Summit. Marriott St. Louis West. St. Louis, MO. November 07-09, 2018.
- Growmark & Winfield University Weed Scientist Meeting. Sheraton St. Paul Woodbury. Woodbury, MN. September 24-26, 2018.
- 2018 Fall IPCM Technical Advisory Committee Meeting. West Madison Agricultural Research Station. Madison, WI. September 07, 2018.
- UW-Madison New Faculty Welcome and Orientation. Pyle Center, AT&T Lounge. Madison, WI. August 27-28, 2018.
- NCWSS 2018 Weed Contest. Monsanto Water Utilization Learning Center. Gothenburg, NE. July 25-26, 2018.
- 2018 Wisconsin Farm Technology Days. Sterneweis & Weber's Farms. Marshfield, WI. July 10-12, 2018. Represented UW-Extension.
- PAT Field and Vegetable Training. Arlington Agricultural Research Station, Madison, WI. March 29, 2018. Became a Certified Pesticide Applicator in Wisconsin (Category: 001.1).
- UW UAV Pilot Training. West Madison Agricultural Research Station. Madison, WI. March 27, 2018.
- 2018 Spring IPCM Technical Advisory Committee Meeting. West Madison Agricultural Research Station. Madison, WI. March 09, 2018.
- Monsanto New SSR Training. Monsanto Creve Coeur Campus. St. Louis, MO. March 07, 2018.
- UW-Madison Employee Career Conference: "Construct your Career at UW". Union South. Madison, WI. March 06, 2018.
- 2018 Wisconsin Cover Crop Conference. Holiday Inn and Conference Center. Stevens Point, WI. February 27, 2018.

**MENTORSHIP**

- Graduate Students at the University of Wisconsin-Madison, *advised/co-advised*: Sarah Striegel (MS student, 2018-2020), Victor Ribeiro (visiting MS student, 2018-2020), Nikola Arsenijevic (MS student, 2018-current), Felipe Faleco (MS student, 2019-current), Kolby Grint (MS student, 2019-current), Haleigh Ortmeier-Clarke (MS student, 2019-current), Jose Jr Nunes (visiting MS student, 2020-current); *advisory committee member*: Hannah Francis (MS student, 2019-current); Niels Jorgensen (PhD student, 2020).
- Undergraduate Research Scholars at the University of Wisconsin-Madison: Lina Liu (2018-2019) and David Wang (2018-2019)
- Undergraduate Research Intern at the University of Wisconsin-Madison: Rachel Renz (2018), Madison Melms (2019), and Emily Glaeser (2020).
- Outreach Specialist at the University of Wisconsin-Madison: Nicholas Arneson (2019-current).
- Research Specialist at the University of Wisconsin-Madison: Ryan DeWerff (2018-current).
- Postdoctoral Research Associates at the University of Wisconsin-Madison: Maxwel Oliveira (2018-current), and Alexandre Tonon Rosa (2020-current).
- Graduate Students at the University of Nebraska-Lincoln (advised/co-advised or actively mentored): Alexandre Rosa (PhD student, 2017-2020), Samuel Koeshall (MS student, 2017-2020), Adam Striegel (DPH student, 2017), Don Treptow (MS student, 2016-current), Bruno Vieira (PhD student, 2016-2019), Nicholas Arneson (MS student, 2016-2019), Strahinja Stepanovic (PhD student, 2016-2017), Jasreman Singh (MS student, 2016-2017).
- International Undergraduate Research Interns at the University of Nebraska-Lincoln West Central Research and Extension Center: Nikola Arsenijevic from Serbia (2017), Gustavo Vieira from Brazil (2017), Felipe Faleco from Brazil (2016-2017).
- Research Technician at the University of Nebraska-Lincoln West Central Research and Extension Center: Liberty Butts (2016-2017).
- International Undergraduate Research Interns at the University of Nebraska-Lincoln: Roberto Martins from Brazil (2014), Leonardo Perez from Brazil (2012), Bruno Vieira from Brazil (2011), Gustavo Mastria from Brazil (2011).
- Undergraduate Research Interns at the University of Nebraska-Lincoln: Francisco Junior (2015), Bret Rausch (2014-2015).

**STUDENTS' AWARDS***Badger Weeds Team:*

- Second Place Graduate Team, 2018 NCWSS Student Weed Contest, Gothenburg, NE
- First Place Weed ID (Nikola Arsenijevic), 2018 NCWSS Student Weed Contest, Gothenburg, NE

*Haleigh Ortmeier-Clarke (MS Student, University of Wisconsin-Madison):*

- 2019 Graduate Student Travel Award, NCWSS Meetings, Columbus, OH
- First place Graduate Paper Competition, 2019 NCWSS Meetings, Columbus, OH
- Second place Graduate Poster Competition, 2019 NCWSS Meetings, Columbus, OH

*Kolby Grint (MS Student, University of Wisconsin-Madison):*

- 2019 North Central Sustainable Agriculture Research and Education Graduate Student Grant. Project: Assessment of soil management strategies for sustainable crop production, weed management and mitigation of herbicide carryover (\$15,000)

*Sarah Striegel (MS Student, University of Wisconsin-Madison):*

- 2020 Graduate Student Travel Award, WSSA Meetings, Maui, HI
- 2018 Graduate Student Travel Award, NCWSS Meetings, Milwaukee, WI
- 2018 Gordon Harvey Distinguished Fellowship in Weed Science (\$25,000)
- 2018 O.N. Allen Graduate Student Scholarship

*Alexandre Tonon Rosa (PhD Student, University of Nebraska-Lincoln):*

- 2019 Gerald O. Mott Meritorious Graduate Student Award in Crop Science
- 2018-2019 Shear Miles Fellowship, UNL-Agricultural Research Division
- First place Graduate Poster Competition, 2018 NCWSS Meetings, Milwaukee, WI
- Second place on 5-minute rapid talk and third place on poster competitions at the C-3 Division (Crop Ecology, Management and Quality), 2018 ASA, CSSA & CSA, Baltimore, MD
- 2018 Graduate Student Travel Award, UNL-Agricultural Research Division, David H. & Annie E. Larrick Student Travel Funds
- 2018 North Central Sustainable Agriculture Research and Education Graduate Student Grant. Project: Double Cropping Field Peas with Cover Crops, Forages and Short Season Crops in Sub-Humid Climates (\$11,525)
- 2017 Graduate Student Travel Award, NCWSS Meetings, St. Louis, MO

*Italo Kayke Pinho de Faria (Visiting Undergraduate Student, University of Nebraska-Lincoln):*

- Fourth Place Undergraduate Poster Competition, 2018 Corteva Agriscience Plant Sciences Symposia Series, Kansas State University, Manhattan, KS

*Don Treptow (MS Student, University of Nebraska-Lincoln):*

- Second Place Graduate Student Paper Competition, 2017 NCWSS Meetings, St. Louis, MO.

*Adam Striegel (DPH Student, University of Nebraska-Lincoln):*

- Second Place Graduate Student Poster Competition, 2017 NCWSS Meetings, St. Louis, MO.

*Felipe Faleco (Visiting Undergraduate Student, University of Nebraska-Lincoln):*

- First Place Undergraduate Student Poster Competition, 2016 NCWSS Meetings, Des Moines, IA.

## FUNDED GRANT PROPOSALS & INDUSTRY SPONSORSHIP

**Werle, R.**, and N. Arneson. Integrated management of *Amaranthus tuberculatus* in soybeans. USDA NIFA Hatch funds. \$65,558 (2020-2022).

**Werle, R.** University of Wisconsin-Madison Alfred Toepfer Faculty Fellowship. \$10,000 (2020-2021).

Young, B., W. Johnson, M. Loux, A. Hager, K.L. Gage, K. Bradley, M. Bish, L. Steckel, T. Mueller, D. Reynolds, L. Lazaro, J. Norsworthy, G. Kruger, R. Smeda, **R. Werle**, P. Jha, J. Ikley, S. Lancaster, V. Kumar, T. Legleiter, J. Wallace, and C. Sprague. Integrating best management practices for herbicide-resistant weeds and herbicide stewardship in soybean production. United Soybean Board. \$993,000 (2020-2021).

Johnson, W., K. Bradley, M. Loux, C. Sprague, A. Hager, B. Hartzler, **R. Werle**, D. Peterson, L. Steckel., J.D. Green, T. Legleiter, and J. Ikley. Take Action – Multi State herbicide resistant crops and weeds educational program. United Soybean Board. \$328,789 (2020-2021).

**Werle, R.** Wisconsin Herbicide Evaluation Program - Sponsors: Bayer Crop Science, Syngenta, FMC, BASF, SIMPCAM AGRO, Corteva Agriscience, Valent, West Central, Helm Agro, AMVAC. >\$106,000 final amount pending (2020).

**Werle, R.** Dicamba off-target movement research projects. Bayer Crop Sciences. \$90,155 (2020).

- Werle, R.**, S. Ellison, S. Conley, C. Laboski, D. Smith, J. Gaska, E. Silva, B. Luck, P. Mitchell, I. Goldman, L. Binversie, C. Duley, and J. Clark. Industrial hemp (*Cannabis sativa* L.) adaptation and response to agronomic practices in Wisconsin. UW-Madison Division of Extension and College of Agricultural and Life Sciences industrial hemp capacity funds. \$35,000 + \$100,000 private donation (2019).
- Johnson, W., K. Bradley, M. Loux, C. Sprague, A. Hager, B. Hartzler, **R. Werle**, D. Peterson, L. Steckel., J.D. Green, T. Legleiter, and J. Ikley. Take Action – Multi State herbicide resistant crops and weeds educational program. United Soybean Board. \$328,789 (2019-2020).
- Smith, D., G. Schreifer, J. Kamps, and **R. Werle**. Education on no-till and cover crop management to improve weed control. Wisconsin SARE Mini-Grant. \$1,000 (2019).
- Werle, R.**, M. Oliveira, and D. Smith. Challenging the weed management challenges in Wisconsin corn production. Wisconsin Corn Promotion Board. \$30,000 (2019-2021).
- Werle, R.** Understanding and overcoming the weed management challenges in Wisconsin soybean production. Wisconsin Soybean Marketing Board. \$60,000 (2019).
- Werle, R.** Dicamba off-target movement research projects. Bayer Crop Sciences. \$66,825 (2019).
- Werle, R.** 2,4-D large-scale off-target movement research project. Corteva Agriscience. \$5,000 (2019).
- Werle, R.** Wisconsin Waterhemp Management Educational Efforts. Sponsors: BASF, Bayer, FMC, Syngenta, and Valent. \$25,000 (2019).
- Werle, R.** Wisconsin Herbicide Evaluation Program - Sponsors: Bayer Crop Science, Syngenta, FMC, BASF, SIMPCAM AGRO, Corteva Agriscience, Valent, West Central, Helm Agro, UPL, AMVAC. \$164,686 (2019).
- Johnson, W., K. Bradley, M. Loux, C. Sprague, A. Hager, B. Hartzler, **R. Werle**, D. Peterson, and L. Steckel. Take Action – Multi State herbicide resistant crops and weeds educational program. United Soybean Board. \$270,000 (2018-2019).
- Werle, R.** Optimizing the use of dicamba for management of troublesome weeds in soybean production in Wisconsin. Monsanto Company. \$136,380 (2018-2020).
- Werle, R.** Understanding and overcoming the weed management challenges in Wisconsin soybean production. Wisconsin Soybean Marketing Board. \$25,000 (2018).
- Werle, R.** Dicamba off-target movement research projects. Monsanto Company. \$80,850 (2018).
- Werle, R.** Wisconsin Herbicide Evaluation Program - Sponsors: Bayer Crop Science, Monsanto, Syngenta, FMC, BASF, SIMPCAM AGRO, Dow Agrosiences, Valent, AMVAC, and DuPont. \$118,170 (2018).
- Lindquist, J., A. Jhala, B. Sigmon, B. Tenhumberg, **R. Werle**, and M. Yerka. A risk-assessment model and population genomics tools for monitoring herbicide-resistance evolution in weedy sorghum. USDA-BRAG. \$499,998 (2017-2020).
- Jackson-Ziems, T., and **R. Werle**. Development and implementation of mitigation strategies for the emerging maize pathogen *Xanthomonas vasicola* pv. *vasculorum*. USDA-APHIS. \$70,000 (2017-2018).
- Proctor, C., M. Drewnoski, R. Elmore, S. Everhart, A. McMechan, J. Parsons, D. Redfearn, and **R. Werle**. Optimizing Cropping Systems for Resilience to Stress: The Role of Maturity Group Selection and Cover Crops on Yield, Weeds, Insects, and Microbes. USDA-NIFA. \$500,000 (2017-2019).
- Werle, R.**, S. Stepanovic, A. Adesemoye, H. Blanco, C. Burr, C. Creech, J. Peterson, D. Rudnick, D. Santra, and M. Stockton. Rotational Benefits and Agronomic Evaluation of Field Peas in Cereal

Based Cropping Systems. NCR-SARE Research and Education Grant Program. \$200,000 (2017-2019).

- Werle, R.**, C. Burr, C. Creech, R. Klein, J. Lindquist, D. Rudnick, and S. Stepanovic. Impact of Wheat Stubble Management and Cover Crops on Sustainability of Wheat-Corn-Fallow Rotation in Semi-Arid Nebraska. ARD Innovation Fund for Wheat/Cereal Crops. \$150,000 (2016-2019)
- Lindquist, J.L., A. Jhala, and **R. Werle**. ALS resistance in shattercane and johnsongrass: current status and future predictions. United Sorghum Checkoff Program. \$220,525 (2013-2016).

## REFEREED PUBLICATIONS

### *In Preparation (Expected Submission: Spring 2021):*

- Smith, D., M.C. Oliveira, M. Renz, M. Ruark, V. Davis, L. Bosak, F. Arriaga, and **R. Werle**. Herbicide carryover evaluation following commonly applied silage corn and soybean herbicides. *Target Journal: Agronomy*.
- Striegel, S., M.C. Oliveira, R.P. DeWerff, D.E. Stoltenberg, S.P. Conley, and **R. Werle**. Influence of timing and inclusion of acetochlor as a layered residual to dicamba/glyphosate applied POST on control of diverse weed communities and soybean grain yield. *Target Journal: Weed Science*.

### *Submitted:*

- Striegel, S., R. DeWerff, N. Arneson, M. Oliveira, and **R. Werle**. Preemergence herbicide selection, not spray carrier volume, impacted soil residual weed control in conventional tillage systems. *Submitted to Weed Technology*.
- Rosa, A.T., C.F. Creech, R.W. Elmore, D.R. Rudnick, J.L. Lindquist, M. Fudolig, L. Butts, and **R. Werle**. Cover crop planting and termination time implications on agronomic aspects of rainfed maize production in semi-arid cropping systems. *Submitted to Field Crops Research*.
- Rosa, A.T., C.F. Creech, R.W. Elmore, D.R. Rudnick, J.L. Lindquist, I.K.P. Faria, and **R. Werle**. Contributions of individual cover crop species to rainfed cropping systems in semi-arid regions of the Central Great Plains. *Submitted to Field Crops Research*.

### *Published (40 Journal Articles and 1 Book Chapter):*

- Holmes, K.H., J.L. Lindquist, R. Rebarber, **R. Werle**, M. Yerka, and B. Tenhumberg. Modeling the evolution of herbicide resistance in weed species with a complex life history. *Accepted with Revisions in Ecological Applications*.
- Ribeiro, M.C. Oliveira, D.H. Smith, J.B. Santos, and **R. Werle**. Response of four weed/cover crop species to 11 preemergence soybean herbicides using field treated soil in greenhouse bioassays. *Accepted in Weed Technology*.
- Ribeiro, V.H.V., L.S.G. Maia, N.J. Arneson, M.C. Oliveira, H.W. Read, J.M. Ané, J.B. dos Santos, and **R. Werle**. 2021. Influence of PRE-emergence herbicides on soybean development, nodulation and nitrogen fixation. *Accepted in Crop Protection*.
- Koeshall, S., A. Easterly, **R. Werle**, S. Stepanovic, and C. Creech. 2021. Planting date and seeding rate of field pea in the semi-arid high plains. *Accepted in Agronomy Journal*.
- Arsenijevic, N., M. de Avellar, L. Butts, N. Arneson, and **R. Werle**. 2021. Influence of sulfentrazone and metribuzin applied preemergence on soybean development and yield. *Weed Technology (In Press)*. <https://doi.org/10.1017/wet.2020.99>



- Oliveira, M.C., A.L. da Silva, A.R. Ulguim, and **R. Werle**. 2021. Assessment of crop and weed management strategies prior to introduction of auxin-resistant crops in Brazil. *Weed Technology* 35:155-165 <https://doi.org/10.1017/wet.2020.96>
- Striegel, S., M.C. Oliveira, N. Arneson, S.P. Conley, D.E. Stoltenberg, and **R. Werle**. 2021. Spray solution pH and soybean injury as influenced by synthetic auxin formulation and spray additives. *Weed Technology*, 35:113-127. <https://doi.org/10.1017/wet.2020.89>
- Oliveira, M.C., D. Giacomini, N. Arsenijevic, G. Vieira, P. Tranel, and **R. Werle**. 2021. Distribution and validation of genotypic and phenotypic glyphosate and PPO-inhibitor resistance in Palmer amaranth (*Amaranthus palmeri*) from southwestern Nebraska. *Weed Technology*, 35:65-76. <https://doi.org/10.1017/wet.2020.74>
- Bagavathiannan, M., H. Beckie, G. Chantre, J.L. Gonzalez-Andujar, R. Leon, P. Neve, S. Poggio, B.J. Schutte, G.J. Somerville, R. Werle., and R.C. Van Acker. 2020. Simulation models in weed ecology and management: structure, quantitative insights, and applications. *Agronomy*. 10(10), 1611. <https://doi.org/10.3390/agronomy10101611>
- Oliveira, M.C., O.A. Ospitan, K. Begcy, and **R. Werle**. 2020. Cover crops, hormones and herbicides: Priming integrated weed management strategies. *Plant Science*. 301:110550 (*Invited submission*). <https://doi.org/10.1016/j.plantsci.2020.110550>
- Soltani, N., M.C. Oliveira, G.S. Alves, **R. Werle**, J.K. Norsworthy, C.L. Sprague, B.G. Young, D.B. Reynolds, A. Brown, and P. Sikkema. 2020. Large-scale off-target movement assessment of dicamba in North America. *Weed Technology*. 34:318-330. <https://doi.org/10.1017/wet.2020.17>
- Sciarresi, C., C. Proctor, E.R. Haramoto, L.E. Lindsey, G.I. Carmona, R. Elmore, S. Everhart, W. Looker, M. Marroquin-Guzman, J. McMechan, J. Wehrbein, **R. Werle**, and M. Salmeron. 2020. Evaluating short-season soybean management adaptations for cover crop rotations with a crop simulation model. *Field Crops Research*. 250:107734. <https://doi.org/10.1016/j.fcr.2020.107734>
- Vieira, B.C., J.D. Luck, K.L. Amundsen, **R. Werle**, T.A. Gaines, and G.R. Kruger. 2020. Herbicide drift exposure leads to reduced herbicide sensitivity in *Amaranthus spp.* *Scientific Reports*. 10:2146. <https://doi.org/10.1038/s41598-020-59126-9>
- Vieira, B.C., J.D. Luck, K.L. Amundsen, T.A. Gaines, **R. Werle**, and G.R. Kruger. 2019. Response of *Amaranthus spp.* following exposure of sublethal herbicide rates via spray particle drift. *PLoS ONE*. 14(7) <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0220014>
- Oliveira, M., L. Butts, and **R. Werle**. 2019. Assessment of cover crop management strategies in Nebraska, US. 2019. *Agriculture*. 9(6):124. <https://www.mdpi.com/2077-0472/9/6/124>
- Lo, T.H., D.R. Rudnick, C.A. Burr, M.C. Stockton, and **R. Werle**. 2019. Approaches to evaluating grower irrigation and fertilizer nitrogen amount and timing. *Agricultural Water Management*. 213:693-706. *Accepted Directly by the Editor Due to High Quality and Relevance to Readers*. <https://doi.org/10.1016/j.agwat.2018.11.010>
- Werle, R.**, M.C. Oliveira, A.J. Jhala, C.A. Proctor, J. Rees, and R. Klein. 2018. Survey of Nebraska farmers' adoption of dicamba-resistant soybean technology and dicamba off-target movement. *Weed Technology*. 32:754-761. <https://doi.org/10.1017/wet.2018.62>
- Butts, T.R., B.C. Vieira, D.O. Latorre, **R. Werle**, and G. Kruger. 2018. Competitiveness of herbicide-resistant waterhemp (*Amaranthus tuberculatus*) with soybeans. *Weed Science*. 66:729-737. <http://dx.doi.org/10.1017/wsc.2018.45>

- Oliveira, M.C., G.A.M. Pereira, E.A. Ferreira, J.B. Santos, S.Z. Knezevic, and **R. Werle**. 2018. Additive design: the concept and data analysis. *Weed Research*. 58:335-347.  
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## EXTENSION ARTICLES AND TECHNICAL PUBLICATIONS

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## EXTENSION PRESENTATIONS

- Ikley, J. and **R. Werle**. 2020. Weed management in soybean production systems in the United States. Travelite Online Agricultural Council Virtual meeting with Ukrainian farmers and crop consultants organized. October 26, 2020. (*Presented via Zoom and broadcasted live via YouTube, 120 minutes, >200 participants*).
- Werle, R.** 2020. Considerations for herbicide-tolerant trait selection and weed management in 2021. September 29, 2020. (*Presented via videoconference, 20 minutes, 120 participants*).
- Werle, R.** 2020. POST-emergence weed control considerations for corn and soybeans. 2020 UW-Extension Badger Crop Connect. June 17, 2020. (*Presented via videoconference, 25 minutes, 100 participants*).
- Werle, R.** 2020. Early season weed control considerations for corn and soybeans. 2020 UW-Extension Badger Crop Connect. May 20, 2020. (*Presented via videoconference, 25 minutes, 120 participants*).
- Werle, R.** 2020. Waterhemp resistance and considerations for Enlist applications. 2020 Golden Ear Meeting. Prairie du Chien, WI. March 11, 2020. (*90 minutes, 50 participants total*).
- Werle, R.** 2020. Waterhemp management: winning the war. 2020 Sheboygan County Agronomy Day. Random Lake, WI. February 20, 2020. (*60 minutes, 100 participants*).
- Werle, R.** 2020. Value of pre-emergence herbicides for waterhemp and giant ragweed control. 2020 United Soybean Board Take Action Weed Management Series. February 13, 2020. (*Presented via videoconference; 30 minutes*).  
<https://www.youtube.com/watch?v=nSLrUhCRMqs&feature=youtu.be>
- Werle, R.** and N. Arneson. 2020. What have we learned in 2 years of waterhemp and dicamba research. Wisconsin Corn-Soy Expo. Wisconsin Dells, WI. February 06, 2020. (*2 presentations, 60 minutes each, 300 participants total*).

- Werle, R.,** N. Arneson, and S. Striegel. 2020. Resistant waterhemp and giant ragweed control. 2020 Premir Co-Op Grower Meeting. Prairie du Chien, WI. January 30, 2020. *(90 minutes, 50 participants total)*.
- Werle, R.** 2020. Palmer amaranth: it comes herbicide proof and adapts well to Wisconsin. 2020 Wisconsin Agribusiness Classic. Madison, WI. January 15, 2020. *(30 minutes, 250 participants total)*.
- Arneson, N., and **R. Werle.** 2020. Waterhemp management: some lost the battle in 2019, but can still win the war! 2020 Wisconsin Agribusiness Classic. Madison, WI. January 15, 2020. *(30 minutes, 150 participants total)*.
- Striegel, S., and **R. Werle.** 2020. Enlist E3 – what applicators should know about this new trait. 2020 Wisconsin Agribusiness Classic. Madison, WI. January 15, 2020. *(50 minutes, 150 participants total)*.
- Werle, R.** 2020. Update on 2 years of waterhemp and dicamba research in Wisconsin. 2<sup>nd</sup> Northwest Illinois Agronomy Summit. Highland Community College, Freeport, IL. January 14, 2019. *(60 minutes; 60 participants)*.
- Werle, R.** and N. Arneson. 2019. Considerations for 2020 Weed Management Programs. 2019 Columbia County Corn Growers Meeting. Columbus, WI. December 19, 2019. *(60 minutes; 50 participants)*.
- Werle, R.** and N. Arneson. 2019. Industrial hemp weed science update. 2019 Hemp End of Season Educational & Networking Meeting. De Pere, WI. December 05, 2019. *(30 minutes; 400 participants)*.
- Werle, R.,** and N. Arneson. 2019. Corn and soybeans weed management research update. 2019 Wisconsin Pest Management Update Meetings. November 4, 2019 at Marshfield, WI, November 5, 2019 at Chippewa Falls, November 6, 2019 at Darlington and Janesville, WI, November 7, 2019 at Fond du Lac and Appleton, WI, and November 8, 2019 at Bangor, WI. *(7 presentations, 40 minutes each)*.
- Smith, D., N. Arneson and **R. Werle.** 2019. Diagnostic training: preventing the spread of troublesome weed seeds. 2019 Wisconsin Pest Management Update Meetings. November 4, 2019 at Marshfield, WI, November 5, 2019 at Chippewa Falls, November 6, 2019 at Darlington and Janesville, WI, November 7, 2019 at Fond du Lac and Appleton, WI, and November 8, 2019 at Bangor, WI. *(7 presentations, 30 minutes each, 400 participants total)*.
- Werle, R.,** F. Faleco, N. Arsenijevic, and K. Grint. 2019. Research update on weed management for annual cropping systems. 2019 Agronomy and Soils Field Day. UW-Arlington Agricultural Research Station. Arlington, WI. August 28, 2019. *(2 presentations, 30 minutes each, 150 participants total)*.
- Werle, R.,** S. Ellison, and L. Sandler. 2019. Updates from research throughout the state. 2019 Industrial Hemp Educational Webinar: Trouble-shooting and Harvest Considerations. Madison, WI. August 07, 2019. *(30 minutes; 300 participants online; recording available via YouTube)*.
- Werle, R.,** N. Arneson, and D. Smith. 2019. Limit the spread of weed seeds. 2019 Combine Cleaning Clinic. July 16, 2019 at Marshfield Ag Research Station, Marshfield, WI, and August 12, 2019 at Seed Concepts, Pulaski, WI. *(2 presentations, 150 minutes each, 50 participants total)*.
- Werle, R.** 2019. Systems approach for giant ragweed and waterhemp control. 2019 BASF Agronomy Field Day. Janesville, WI. July 11, 2019. *(2 presentations, 30 minutes each; 100 participants total)*.

- Werle, R.** 2019. UW-Madison industrial hemp research program plans for 2019. 2019 Agronomics of hemp webinar. Madison, WI. April 18, 2019. (30 minutes; 300 participants online; recording available via YouTube).
- Werle, R.** 2019. Integrated waterhemp management. 2019 Wisconsin Regional Waterhemp Workshops. March 19, 2019 at Chippewa Falls, WI, March 20, 2019 at Bangor, WI, March 25, 2019 at Janesville, and March 26, 2019 at Appleton, WI. (4 presentations; 15 minutes each; 220 participants total).
- Werle, R.** 2019. Waterhemp management in soybeans and corn. 2019 Wisconsin Regional Waterhemp Workshops. March 19, 2019 at Chippewa Falls, WI, March 20, 2019 at Bangor, WI, March 25, 2019 at Janesville, and March 26, 2019 at Appleton, WI. (4 presentations; 15 minutes each; 220 participants total).
- Werle, R.** 2019. Herbicide SOA vs effective SOA. 2019 Wisconsin Regional Waterhemp Workshops. March 19, 2019 at Chippewa Falls, WI, March 20, 2019 at Bangor, WI, March 25, 2019 at Janesville, and March 26, 2019 at Appleton, WI. (4 presentations; 15 minutes each; 220 participants total).
- Werle, R.** 2019. Application parameters for liberty efficacy. 2019 BASF Wisconsin Innovation Conference. Wisconsin Dells, WI. February 21, 2019. (60 minutes, 350 participants).
- Werle, R.** 2019. Waterhemp, Waterhemp, Waterhemp. 2019 Sheboygan County Agronomy Day. Random Lake, WI. February 21, 2019. (60 minutes, 110 participants).
- Werle, R.** 2019. Herbicide resistance and spray considerations. UW PAT Field and Vegetable Training. February 18, 2019 at Wisconsin Dells and March 21, 2019 at Arlington. (2 presentations, 45 minutes each; 160 participants total).
- Werle, R., and S. Striegel.** 2019. Waterhemp and giant ragweed management from the group up. 2019 Wisconsin Corn-Soy Expo. Wisconsin Dells, WI. February 01, 2019. (60 minutes, 250 participants).
- Werle, R.** 2019. Wisconsin waterhemp and dicamba research and stakeholder survey. 2019 Wisconsin Agribusiness Classic. Madison, WI. January 17, 2019. (30 minutes, 300 participants total).
- Werle, R.** 2018. Waterhemp and Palmer amaranth Update & Value of PRE-emergence herbicides. BASF Take Control NOW by Planning for 2019 Winter Meeting. UW-Arlington Agricultural Research Station Arlington, WI. December 18, 2018. (45 minutes; 85 participants).
- Werle, R.** 2018. Waterhemp and Other Resistant Weed Management Programs for 2019. 2018 Columbia County Corn Growers Meeting. Columbus, WI. December 13, 2018. (45 minutes; 65 participants).
- Werle, R.** 2018. Corn and soybeans weed management research update. 2018 Wisconsin Pest Management Update Meetings. November 12, 2018 at Marshfield, WI, November 13, 2018 at Chippewa Falls, November 14, 2018 at Platteville and Janesville, WI, November 15, 2018 at Fond du Lac and Kimberly, WI, and November 16, 2018 at Bangor, WI. (7 presentations, 40 minutes each, 350 participants total).
- Werle, R., R. DeWerff, and M.C. Oliveira.** 2018. WiscWeeds Soybean Research Update. WSA and WSMB in-field plot tour. UW-Arlington Agricultural Research Station. Arlington, WI. September 11, 2018. (30 minutes, 30 participants).
- Werle, R., and D. Smith.** 2018. Limit the spread of weed seeds. 2018 Combine Cleaning Clinic. August 30, 2018 at Monticello, WI and September 05, 2018 at Columbus, WI. (2 presentations, 90 minutes each, 50 participants total).

- Werle, R.,** V.H. Ribeiro, S. Striegel, and N. Arsenijevic. 2018. Research update on weed management for annual cropping systems. 2018 Agronomy and Soils Field Day. UW-Arlington Agricultural Research Station. Arlington, WI. August 22, 2018. *(2 presentations, 20 minutes each, 150 participants total)*.
- Werle, R.** 2018. Recap of 2018 weed management season, systems approach to weed management, waterhemp and dicamba updates. 2018 Western Wisconsin Crop Management Field Days. August 15 at Chippewa Falls, Waumandee and La Crosse, WI, and August 16 at Tomah and Viola, WI. *(5 presentations, 40 minutes each, 150 participants total)*.
- Werle, R.,** and C.A. Proctor. 2018. Integrating weed management strategies in soybeans. 2018 Nebraska Soybean Management Field Days. August 07, 2018 at Kenesaw, NE, August 08, 2018 at Albion, NE, August 09, 2018 at Hartington, NE, and August 10 at Cedar Bluffs, NE. *(14 presentations, 60 minutes each, 420 participants total)*.
- Werle, R.** 2018. 2018 Update on herbicide resistant in Wisconsin corn and soybeans. 2018 BASF Agronomy Field Day. Janesville, WI. July 12, 2018. *(3 presentations, 30 minutes each; 150 participants total)*
- Werle, R.** 2018. Developing a spray program to combat herbicide-resistant weeds. 2018 Summer Field Day: Grain Crop Management. Sturgeon Bay, WI. June 12, 2018. *(30 minutes, 15 participants total)*.
- Werle, R.** 2018. Distribution and management of herbicide-resistant weeds in Wisconsin. John Deere Tractor Central – 2018 Westby Spring Expo. Westby, WI. March 14, 2018. *(40 minutes, 100 participants total)*.
- Werle, R.** 2018. Herbicide resistance update and management of herbicide-resistant weeds. Crop Management Meeting, Trempealeau County. Centerville, WI. March 08, 2018. *(40 minutes, 15 participants total)*.
- Werle, R.** 2018. Weed science program update. Grains Team Wisline (conference call). March 02, 2018. *(20 minutes, 10 participants total)*.
- Werle, R.** 2018. Weed management and herbicide resistance update. 2018 Winter Crops Update. Sparta, WI. February 15, 2018. *(40 minutes, 15 participants total)*.
- Werle, R.** 2018. Dissecting dicamba and other spray issues. 2018 Wisconsin Corn-Soy Expo. Wisconsin Dells, WI. February 01, 2018. *(2 presentations, 60 minutes each, 250 participants total)*.
- Werle, R.** 2018. Tips on waterhemp management in soybeans. 2018 Wisconsin Agribusiness Classic. Madison, WI. January 09, 2018. *(30 minutes, 300 participants total)*.
- Werle, R.** 2018. Weed management in corn and soybeans. 2018 Wisconsin agronomy update meetings. January 02, 2018 at Janesville, WI; January 03, 2018 at DeForest and Fond du Lac, WI; January 04, 2018 at Kimberly and Wausau, WI; January 05, 2018 at Eau Claire and Sparta, WI; January 08, 2018 at Belmont, WI. *(8 presentations, 40 minutes each, 380 participants total)*.
- Werle, R.** 2017 Survey of Nebraska soybean farmer's adoption of Xtend technology and off-site dicamba movement. Nebraska Farm Bureau Dicamba Industry Roundtable. Lincoln, NE. October 10, 2017.
- Werle, R.** 2017. Overview of cover crops and weed management in Nebraska. University of Nebraska WCREC Educational Travel to NDSU Extension Personnel and ND stakeholders. North Platte, NE. August 15, 2017.



- Elmore, R., and **R. Werle**. 2017. Maturity group and traits, cover crops and weed management. August 08, 2017 at North Platte, NE; August 09, 2017 at Ord, NE; August 10, 2017 at Auburn, NE; August 11, 2017 at Tekamah, NE.
- Werle, R.** 2017. Research update – cover crops after wheat harvest. 2017 Nebraska Extension rainfed cropping systems field day. West Central Research and Extension Center, North Platte, NE. June 19, 2017.
- Werle, R.** 2017. Research update – cover crops after wheat harvest. 2017 Nebraska Extension field pea, forages, and cover crops field day. Bladen, NE. June 16, 2017.
- Werle, R.**, and C. Proctor. 2017. Using knowledge on plant morphology and a seedling identification key to ID weeds. University of Nebraska-Lincoln Extension, Introductory Level Field Scout Training. Agricultural Research and Development Center, Ithaca, NE. May 10, 2017.
- Werle, R.** 2017. Termination of cover crops – what if the plan does not work? Developing a plan for grain crop herbicide management. 2017 Cover Crop Conference. UNL Agricultural Research and Development Center, Ithaca, NE. February 14, 2017.
- Werle, R.**, and C. Creech. 2017. Weed control in grain sorghum and update on herbicide-resistant weeds. 2017 Sorghum Symposium. UNL West Central Research and Extension Center, North Platte, NE. January 25, 2015.
- Werle, R.** 2016. Palmer amaranth and other weed issues headed our way. 2016 Wilber Crop Clinic. Wilber, NE. February 12, 2016.
- Werle, R.** 2016. Herbicide-resistance management: grain sorghum as a case study. 2016 Pest Resistance Workshop. Grant, NE. March 10, 2016.
- Werle, R.**, C. Proctor, and J. Miller. 2016. Using knowledge on plant morphology and a seedling identification key to ID weeds. University of Nebraska-Lincoln Extension, Introductory Level Field Scout Training. Agricultural Research and Development Center, Ithaca, NE. May 11, 2016.
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- Arneson, and **R. Werle.** 2020. 2020 Rock County Farm WiscWeeds Giant Ragweed Management Virtual Plot Tour: Comparison of PRE-emergence soybean herbicides. @WiscWeeds Twitter. June 12, 2020. <https://twitter.com/WiscWeeds/status/1271484177075109888?s=20>
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- Werle, R.** 2020. Agronomic Update from the Home Office: Can any 2,4-D product be used for burndown weed control ahead of Elist E3 soybeans? @WiscWeeds Twitter. April 13, 2020.  
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- Werle, R.** 2018. 2018 herbicide resistance update in Wisconsin. University of Wisconsin Integrated Pest and Crop Management. March 12, 2018. <https://www.youtube.com/watch?v=HR1KFvHgYr0>

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- Werle, R. 2017. Terminating cover crops. University of Nebraska-Lincoln Market Journal. March 10, 2017. <https://www.youtube.com/watch?v=mf5Jq8PYJ5g>
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#### HOSTED EXTENSION EVENTS (e.g., Workshops, Clinics, Field Days, Plot Tours; 2018 Onwards)

- No events held in 2020 due to Covid-19 (2020 Wisconsin Regional Herbicide Resistance Workshops and all WicsWeeds Management Plot Tours were cancelled).
- Dicamba OTM Industry-University Brainstorm Meeting. UW-Madison Pyle Center, Madison, WI. October 24-25, 2019. (15 participants).
- Cover Crops Workshop. Lancaster Ag Research Station. Lancaster, WI. September 04, 2019. (180 minutes; 30 participants).
- UW-Madison Industrial Hemp Research Plot Tour. Special Afternoon Tour – 2019 Agronomy and Soils UW Arlington Agricultural Research Station Field Day. Arlington, WI. August 28, 2019. (150 minutes; 250 participants).
- Dicamba off-target research trials plot tour. UW-Arlington Agricultural Research Station and O'Brien Hybrids Farms. Arlington and Brooklyn, WI. August 13, 2019. Brazilian Soybean Producers Association-APROSOJA USA Dicamba Tour. (360 minutes; 20 participants total).
- Limit the spread of weed seeds. 2019 Combine Cleaning Clinic. July 16, 2019 at Marshfield Ag Research Station, Marshfield, WI, and August 12, 2019 at Seed Concepts, Pulaski, WI. (2 presentations, 150 minutes each, 50 participants total).
- Waterhemp Management Challenge – Plot Tour. O'Brien Hybrids Farms. Brooklyn, WI. July 18, 2019. (120 minutes; 80 participants; **18.6k acres managed; 1.4M acres influenced; value of gained knowledge ~\$17/acre**).
- Waterhemp Management Challenge – Plot Tour. Lancaster Ag Research Station. Lancaster, WI. July 10, 2019. (180 minutes; 50 participants; **7.4k acres managed; 1.2M acres influenced; value of gained knowledge ~\$18/acre**). August 06, 2019. (Valent Company; 120 minutes; 30 participants).
- Giant Ragweed Management Challenge – Plot Tour. Rock County Research Farm. Janesville, WI. June 26, 2019. (180 minutes; 35 participants; **7.4k acres managed; 1.7M acres influenced; value of gained knowledge ~\$18/acre**). August 21, 2019. (Valent Company and Premier Cooperative; 90 minutes; 10 participants).
- 2019 Wisconsin Regional Waterhemp Workshops. March 19, 2019 at Chippewa Falls, WI, March 20, 2019 at Bangor, WI, March 25, 2019 at Janesville, and March 26, 2019 at Appleton, WI. (4 events; 180 minutes each; 220 participants total; **650K acres influenced; 95% of participants indicated they will incorporate knowledge gained; value of gained knowledge ~\$8/acre**).
- Limit the spread of weed seeds. 2018 Combine Cleaning Clinics. August 30, 2018 at Monticello, WI and September 05, 2018 at Columbus, WI. (2 events, 120 minutes each, 50 participants total).

- Dicamba off-target large-scale and low-tunnel trials. UW-Arlington Agricultural Research Station. Arlington, WI. August 02, 2018 (Monsanto Team and stakeholders) and August 20, 2018 (Dekalb Team and stakeholders). (2 events; 120 minutes each; 50 participants total).
- Waterhemp Management Challenge Plot Tour. UW-Lancaster Agricultural Research Station. Lancaster, WI. July 17, 2018 (open to the public), August 02, 2018 (DeLong Company), and August 06, 2018 (Valent Company). (3 events; 120 minutes each; 180 participants total).
- Weed Science Plot Tour. UW-Arlington Agricultural Research Station. Arlington, WI. July 17, 2018. (180 minutes, 60 participants total).
- UW-Weed Science Tour – Corteva (Dow AgroSciences and DuPont). UW-Arlington Agricultural Research Station. Arlington, WI. July 09, 2018. (180 minutes, 30 participants).
- Herbicide Plot Tour – Sipcam. Rock County Farm. Janesville, WI. June 19, 2018. (90 minutes; 10 participants)
- Columbia County Corn Growers Association Early-Season Weed Management Field Day. UW-Arlington Agricultural Research Station. Arlington, WI. June 06, 2018. (90 minutes, 20 participants total).

#### INVITED PRESENTATIONS (CLASSROOM & SYMPOSIUM)

- Werle, R.** 2020. Synthetic Auxin-Resistant Crops – Status in the United States and What to Expect in Brazil. I Weed.Con, 1<sup>st</sup> Virtual Meeting, Brazilian Weed Science Society. November 16, 2020. *Presented via videoconference due to COVID-19.*
- Werle, R.** 2020. Weed management in soybean production systems in the United States – Overview of Research and Extension efforts. XIII CONINCE Scientific Conference Eduvale University, Brazil. October 26, 2020. *Presented via videoconference due to COVID-19.*
- Werle, R.** 2020. Weed control in the United States: history, current and future challenges. 3<sup>rd</sup> SIMAL (Latin America Symposium) Evolution: Management of Challenging Weeds. July 23, 2020. *Presented via videoconference due to COVID-19.*
- Werle, R.** 2020. Two years of dicamba off-target movement research in Wisconsin. US Environmental Protection Agency and Weed Science Society of America Dicamba Research Update. January 16, 2020. *Presented via videoconference.*
- Werle, R.** 2019. Weed resistance and off-target herbicide movement: weed management challenges in North America. 3<sup>rd</sup> Plant Protection Symposium: New Challenges and Solutions for Resistance. Federal Institute of Goias, Urutai, GO, Brazil. September 19, 2019. *Keynote Speaker.*
- Werle, R.** 2019. Challenges with the dicamba-tolerant soybean technology in the Midwest United States. Brasilia, Federal District, Brazil. September 17, 2019. Brazil Ministry of Agriculture.
- Werle, R.** 2019. Dicamba technology round table discussion. National Confederation of Agriculture of Brazil. Brasilia, Federal District, Brazil. September 17, 2019.
- Werle, R.** 2019. What have we learned in two years of waterhemp research and extension efforts in Wisconsin? 2019 Fall IPCM Technical Advisory Committee Meeting. West Madison Agricultural Research Station. Madison, WI. September 06, 2019.
- Werle, R.** 2019. Uso da tecnologia dicamba na producao de soja na regioao centro-oeste dos Estados Unidos (Use of dicamba technology on soybean production in the Midwest United States). 12<sup>th</sup> Congresso Brasileiro do Algodao (Brazilian Cotton Congress), Goiania, GO. August 27, 2019. *Presented via videoconference.*
- Oliveira, M., and **R. Werle.** 2018. From herbicide resistance to dicamba off-target management: the weed



- management challenges in the United States. 2<sup>nd</sup> International Meeting of Agrarian Science and Technology (IMAST). Dracena, SP, Brazil. September 27, 2018.
- Werle, R.** 2018. Dicamba and crop status update for the United States northwestern soybean production region. Bayer Academic Summit. St Louis, MO. November 08, 2018.
- Werle, R.** 2018. My career path: experiences from a Weed Specialist and hints for UW-Madison undergraduate students. Badger Crops Club meeting. University of Wisconsin-Madison, Madison, WI. March 19, 2018.
- Werle, R.** 2018. Agronomic factors influencing cover crop adoption and use. Symposium: Influence of cover crops on insect management. 2018 Entomological Society of America - North Central Branch Meeting. Madison, WI. March 18, 2018.
- Werle, R.** 2015. Modeling weedy sorghum population dynamics in a stochastic herbicide-tolerant sorghum cropping system. Agronomy 824 Advanced Weed Ecology (taught by Dr. Anita Dille). Kansas States University, Manhattan, KS. October 07, 2015.
- Werle, R.** 2015. Modeling the evolution of shattercane resistance to ALS-inhibiting herbicides in ALS-tolerant grain sorghum cropping systems. MathBio Seminar. University of Nebraska-Lincoln, Lincoln, NE. April 02, 2015.
- Werle, R.** 2013. Predicting emergence of annual weed species. Agronomy 824 Advanced Weed Ecology (taught by Dr. Anita Dille). Kansas States University, Manhattan, KS. October 21, 2013.
- Werle, R.** 2013. Path to grad school and hopes for what the advanced degree will do for my career. AGRO 201 Agronomic Internship and Career Preparation (taught by Drs. Dennis McCallister and Thomas Hoegemeyer). University of Nebraska-Lincoln, Lincoln, NE. September 24, 2013.
- Werle, R.** 2013. What to expect and how to prepare for your last year in the DPH Program. Plant Health Club Seminar. University of Nebraska-Lincoln, Lincoln, NE. February 11, 2013.

#### **ON THE MEDIA** (*Selected Media Interviews; 2018 Onwards*)

- Badger Bean Blog: Impact of EPA dicamba announcement to Wisconsin soybean farmers.  
<https://badgerbean.com/resources/dicamba-announcement/> (October 29, 2020)
- Weed Science Society of America Cambridge Core Blog: Are spray additives a factor in the off-target movement of dicamba and 2,4-D? <https://www.cambridge.org/core/blog/2020/09/14/are-spray-additives-a-factor-in-the-off-target-movement-of-dicamba-and-24-d/> (September 14, 2020)
- GROW Wisconsin's Magazine for the Life Sciences: The hype, the hope, and the reality of hemp. Fall 2020. <https://grow.cals.wisc.edu/departments/features/the-hype-the-hope-and-the-reality-of-hemp>
- Brownfield; Ag news for America: Amaranth is getting more resistant to dicamba.  
<https://brownfieldagnews.com/news/amaranth-is-getting-more-resistant-to-dicamba/> (March 03, 2020)
- Brownfield; Ag news for America: Researchers to share dicamba data with EPA.  
<https://brownfieldagnews.com/news/researchers-to-share-dicamba-data-with-epa/> (January 16, 2020)
- Brownfield; Ag news for America: Stopping weeds now will prevent yield losses in 2020:  
[https://brownfieldagnews.com/managing-for\\_profit/stopping-weeds-now-will-prevent-yield-losses-in-2020/](https://brownfieldagnews.com/managing-for_profit/stopping-weeds-now-will-prevent-yield-losses-in-2020/) (August 26, 2019)
- Brownfield; Ag news for America: The battle against weed resistance (Audio Interview with Weed Scientist Rodrigo Werle): [https://brownfieldagnews.com/managing-for\\_profit/the-battle-against-weed-resistance/](https://brownfieldagnews.com/managing-for_profit/the-battle-against-weed-resistance/) (August 21, 2019)

- Brownfield; Ag news for America: Wet spring is giving weeds the advantage (Audio Interview with Weed Scientist Rodrigo Werle): [https://brownfieldagnews.com/managing-for\\_profit/wet-spring-is-giving-weeds-the-advantage/](https://brownfieldagnews.com/managing-for_profit/wet-spring-is-giving-weeds-the-advantage/) (May 27, 2019)
- WORT FM; Hemp Can Do it! Podcast: The Wisconsin Idea: UW Experts team up on new hemp project (Audio Interview with Weed Scientist Rodrigo Werle and Shelby Ellison): <https://www.wortfm.org/new-hemp-project/> (May 18, 2019)
- Wisconsin Public Radio-NPR: State weed management experts say more farmers interested in non-chemical strategies (Audio Interview with Weed Scientist Rodrigo Werle): <https://www.wpr.org/new-survey-data-finds-many-wisconsin-fields-treated-disputed-herbicide> (May 17, 2019)
- Spectrum News 1: University of Wisconsin announces hemp research project (Video Interview with Weed Scientist Rodrigo Werle and Shelby Ellison): <https://spectrumnews1.com/wi/madison/news/2019/04/30/university-of-wisconsin-announces-hemp-research-project> (April 30, 2019)
- WI Farm Report Radio Network; Farm Report with Pam Jahnke: Dicamba use survey open (Audio Interview with Weed Scientist Rodrigo Werle): <http://www.fabulousfarmbabe.net/2018/09/04/dicamba-use-survey-open/> (September 04, 2018)
- WI Farm Report Radio Network; Farm Report with Pam Jahnke: Waterhemp war (Audio Interview with Weed Scientist Rodrigo Werle): <http://www.fabulousfarmbabe.net/2018/08/27/waterhemp-war/> (August 27, 2018)
- PAT CHAT Newsletter; UW-Extension Pesticide Applicator Training Program: Waterhemp and Palmer amaranth: an interview with Dr. Rodrigo Werle (Audio Interview): [http://ipcm.wisc.edu/tools/Newsletter/013\\_18\\_Aug.html#TOP](http://ipcm.wisc.edu/tools/Newsletter/013_18_Aug.html#TOP) (Issue: August, 2018)
- NTV's Grow: Wisconsin Weed Scientist Rodrigo Werle shares his thought on dicamba use in soybeans (YouTube Video). [https://www.youtube.com/watch?time\\_continue=2&v=cJVr7ggzHAE](https://www.youtube.com/watch?time_continue=2&v=cJVr7ggzHAE) (August 12, 2018)
- NTV's Grow: Wisconsin Weed Scientist Rodrigo Werle talks about value of integrated weed management (YouTube Video): <https://www.youtube.com/watch?v=rvHjfriEGpc> (August 19, 2018)
- Brownfield; Ag news for America: Dicamba test plots demonstrate volatility and drift results. <https://brownfieldagnews.com/news/dicamba-test-plots-demonstrate-volatility-and-drift-results/> (August 02, 2018)

#### **PROFESSIONAL MEETING ABSTRACTS** (*Poster and Paper Presentations; 152 Total*)

- Werle, R.**, N. Arneson, R. DeWerff, D. Smith, N. Arsenijevic, and M. Bernards. 2020. Influence of glufosinate tank-mix combinations with PPO-inhibitors and other herbicides on waterhemp control, crop injury and yield in Enlist E3 soybeans. Proceedings of the North Central Weed Science Society of America Annual Meetings, Virtual Conference.
- Nunes, J. J., A. T. Rosa, N. Arneson, J. Laufenberg, and **R. Werle**. Response of a putative ALS-resistant fall panicum accession from Wisconsin to nicosulfuron and other POST herbicides. Proceedings of the North Central Weed Science Society of America Annual Meetings, Virtual Conference.
- Arsenijevic N., R. DeWerff, M. Ruark, S. Conley, and **R. Werle**. 2020. Influence of agronomic practices on soybean canopy development and PRE-emergence herbicide fate. Proceedings of the North Central Weed Science Society of America Annual Meetings, Virtual Conference.

- Arsenijevic N., N.J. Arneson, M. C. Oliveira, and **R. Werle**. 2020. Crop canopy development influences waterhemp (*A. tuberculatus*) growth. Proceedings of the North Central Weed Science Society of America Annual Meetings, Virtual Conference.
- Striegel, S., R.D. Langemeier, B.C. Vieira, S. Li, G.R. Kruger, **R. Werle**. 2020. Evaluation of dicamba vapor reducing agents across different environments. Proceedings of the North Central Weed Science Society of America Annual Meetings, Virtual Conference.
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