



2014

69th Annual Meeting

North Central Weed Science Society

www.ncwss.org

December 1 -4, 2014

Hyatt Regency

Minneapolis, MN

Please bring this program to the conference

President's Welcome

2014 North Central Weed Science Society Meeting

On behalf of the Society's Board of Directors and our Program and Local Arrangements Committees, I welcome you to Minneapolis and the 69th annual meeting of the North Central Weed Science Society. This event provides opportunities to share information and experiences with fellow scientists, to participate in the many informative sessions and symposia, to renew acquaintances and make new friends. Our goal is to provide a conference that meets your expectations for content, quality, venue, and atmosphere.

The Program Committee, chaired by President-Elect John Hinz, has assembled an outstanding program and Eric Spandl and his team on the Local Arrangements Committee have done an excellent job of preparing the hotel for our meeting. The Hyatt Regency in Minneapolis is a wonderful facility and one that I anticipate will meet our expectations.

In addition to the many excellent volunteer paper and poster presentations, the program includes two timely symposia: "Cover Crops" and "The Human Dimension of Managing Herbicide Resistant Weeds". Plan to attend the invited symposium presentations and participate in the discussion on these important topics. This year a new event for Women in Weed Science was initiated by Vice President Anita Dille.

It's never too early or too late to become more involved in the activities of the Society! Volunteer for a committee, run for state/province director or for a position on the Board. Most committees of the Society will be meeting during the conference. Be sure to note the times a committee meets and join the meeting of any committee that interests you. John Hinz will make committee appointments for 2015 soon after this meeting has been completed. Please see him during the meeting or send him a message that you would like to participate as a committee member for the coming year. Both you and the Society will benefit from your involvement.

It has been a great privilege and opportunity to serve as President of the North Central Weed Science Society. I will always treasure this experience. We look forward to seeing you at the meeting and thank you for your continued support of the NCWSS.

JD Green
President

General Information

Conference Headquarters

All sessions of the conference and the banquet will be held at the Hyatt Regency, 1300 Nicollet Mall, Minneapolis, MN 55403; Phone 612-596-4531.

Registration

Registration is required to attend the conference. Pre-registration is **\$240** (includes banquet). Registration at the conference is **\$290**. Honorary members and Fellows pre-registration is **\$170**; registration at the conference is **\$220**.

Student pre-registration is **\$120**; student registration at the conference is **\$170**.

Industry breakfast tickets are available to everyone for **\$35**.

Registration Hours

The registration desk (NIC Promenade) will be open Monday 4 to 6:30 pm, Tuesday 7:30 am to 4 pm, Wednesday 8 to 11 am and 2 to 4 pm, and Thursday 8 to 10 am.

Local Arrangements Headquarters

Skyway Suite AB

Meeting Rooms

All sessions and meetings will be on the 1st and 2nd floor of the hotel. The General Session will be in the Nicollet B/C Room. Additional meetings may be arranged any time during the conference by contacting Eric Spandl, Local Arrangements Chair.

Proceedings

2014 NCWSS Proceedings will be available following the meeting online at the NCWSS website. Hard copies of the Proceedings may be ordered from Curran Associates (<http://www.proceedings.com/>).

Sustaining Members

Sustaining members that have made prior arrangements with the Industry Chair may put up a display in the Union Room. No other displays are allowed.

No Smoking

Smoking is not permitted in the sessions.

Program Symbols

- * Presenting Author
- † Paper or poster in the graduate student contest
- †† Poster in the undergraduate student poster contest

Meetings of the Society 2014

Board of Directors

Monday, 1:00 pm St. Croix
Wednesday, 7:00 pm Minnehaha

Local Arrangements

Monday, 11:00 am Skyway AB
Thursday, noon (with 2015 committee) Skyway AB

Moderator training/slide uploads

Monday, 8:00 pm – 10:00 pm Nicollet A1

Contest Judges for Paper and Poster Contests

Judges breakfast, Tuesday, 7:00 am Minnehaha
Paper Judges, Tuesday, 7:15 am Minnehaha
Poster Judges, Tuesday, 7:15 am Minnehaha
Paper Judges, Tuesday, 5:00 pm Nicollet A3
Poster Judges, Tuesday, 5:00 pm Nicollet A3

Meal Functions

Breaks

Tuesday, 2:30– 3:15 pm Nicollet Promenade
Wednesday, 9:15 – 10:00 am
Wednesday, 3:00 – 3:45 pm
Thursday, 9:45 – 10:30 am

Student Mixer and Quiz Bowl

Sponsored by BASF Corporation – Open to all attendees

Monday, 6:30 pm Nicollet B/C

Student Luncheon/Business Meeting

Sponsored by Dow AgroSciences – Open to all students

Tuesday, 12:00 – 1:15 pm Regency Room

Women in Weed Science Networking

Breakfast – Open to all women

Wednesday 6:30-8:00 Lakeshore C

Society Awards Luncheon

MC: Jeff Gunsolus

Wednesday, 11:30 am Nicollet A-C

Society Socials

Tuesday, 5:00 – 7:00 pm Exhibit Hall

Sponsored by Syngenta – Open to all attendees

Wednesday, 5:30 – 7:00 pm Nicollet B/C

Sponsored by Industry – Open to all attendees

Industry Breakfast (Cost \$35)

Thursday, 7:00 am Nicollet A1/A2

Meetings of the Society 2014

The following meetings will take place for the purpose of conducting the business of each respective committee and to elect a new Vice Chair to serve as Chair in 2016. Most meetings are open to members. Please see the committee chair or attend the committee meeting if you are interested in serving the society by being a committee member.

NCWSS Committee Meetings

Program

Monday, 8:00 pm (*section moderators*) Minnehaha

Distinguished Achievement Award

Tuesday, 12:00 pm St Croix

Strategic Planning

Tuesday, 4:30 pm Nicollet D3

Paper Judges

Tuesday, 5:00 pm Nicollet A3

Poster Judges

Tuesday, 5:00 pm Nicollet A3

Finance, Steering, & Policy

Tuesday, 5:30 pm Lake Shore C

Future Site Selection

Tuesday, 5:30 pm Nicollet D3

Nominating

Tuesday, 5:30 pm Minnehaha

Resident Education, Summer Contest, and Contest Rules Joint meeting

Tuesday, 6:00 pm Nicollet A3

Extension (Committee and Business Meeting)

Wednesday, 3:15 pm Nicollet D1/D2

NCWSS Fellow

Wednesday, 5:00 pm Lakeshore C

Resolutions & Necrology

Wednesday, 5:00 pm St. Croix

Invasive Plants

Wednesday, 2:00 pm Nicollet D3

Industry (committee and Business Meeting)

Thursday, 8:00 am Nicollet A1/A2

Meetings of the Society 2014

Program Section Business Meetings

Rangeland, Pastures, and Industrial Vegetation Management	
Tuesday, 3:00 pm	Nicollet D3
Agronomic Crops I (Corn, Sorghum, Cereals)	
Thursday, 11:30 am	Lakeshore AB
Agronomic Crops II (Soybeans, Dry Beans, Sugar Beets)	
Wednesday, 11:15 am	Nicollet D1/D2
Equipment and Application Methods	
Wednesday, 11:00 am	Lakeshore C
Extension	
Wednesday, 2:15 pm	Nicollet D1/D2
Herbicide Physiology	
Tuesday, 3:30 pm	Lakeshore AB
Horticulture & Ornamentals	
Wednesday, 3:15 pm	Nicollet D1/D2
Poster Session	
Monday, 6:00 pm	Exhibit Hall
Weed Biology, Ecology & Management	
Wednesday, 11:00 am	Lakeshore AB
Invasive Plants	
Wednesday, 2:00	Nicollet D3

Special Interest Groups

Graduate Students (at luncheon)	
Tuesday, 12:00 pm	Regency Room
Industry (at breakfast)	
Thursday, 7:00 am	Nicollet A1/A2

Symposia

Cover Crops	
Wednesday, 8:00 – 11:30 am	Nicollet D3
What's New in Industry?	
Wednesday, 3:30 – 5:00 pm	Nicollet A
Roadmap to Success: The Human Dimension of Managing Herbicide Resistance	
Thursday, 9:00 – 11:30 am	Nicollet D1/D2

Condensed Program – NCWSS 2014

Monday, December 1

1:00 pm	Board of Directors Meeting	St Croix
1:00 – 9:30 pm	Poster Setup	Exhibit Hall
6:30 pm	Student Mixer and Quiz Bowl	Nicollet B/C
8-10:00 pm	Moderator training/slide uploads	Nicollet A1

Tuesday, December 2

8:00 – 10:15	Poster Session I	Exhibit Hall
10:30 – 12:00	NCWSS General Session	Nicollet B/C
12:00 – 1:15	Graduate Student Luncheon	Regency Room
1:15 – 5:00	Agronomic Crops	Nicollet D1/D2
1:15 – 4:45	Weed Biology, Ecology, and Management	Nicollet A1/A2
1:15 – 3:15	Herbicide Physiology	Lakeshore AB
1:15 – 3:15	Equipment and Application Methods	Nicollet A3
5:00 – 6:00	Poster Session II	Exhibit Hall
5:00 – 7:00	Society Social - Sponsored by Syngenta [open to all attendees]	Exhibit Hall

Wednesday, December 3

9:00 – 11:10	Symposium: Cover Crops	Nicollet D3
8:00- 11:15	Soybeans/Dry Beans/Sugarbeets	Nicollet D1/D2
8:30 – 10:45	Equip. & Applic. Methods	Lakeshore C
8:15 – 10:45	Weed Biology & Ecology	Lakeshore AB
11:30-1:30	Awards Luncheon	Nicollet A-C
2:30 - 3:15	Hort., Ornamentals, Turf	Nicollet D1/D2
1:00 – 1:30	Invasive Weeds	Nicollet D3
1:30 – 2:15	Extension	Nicollet D1/D2
3:30 – 5:00	What's New in Industry?	Nicollet A
5:30 – 7:00	Society Social - (open to all attendees)	Nicollet AB
7:00 – 9:00	Board of Directors Meeting	Minnehaha

Thursday, December 4

7:00 – 8:15	Industry Breakfast	Nicollet A1/A2
8:15 – 11:30	Corn/Sorghum/Cereals	Lakeshore AB
9:00 – 11:00	Roadmap to Success: The Human Dimension of Managing Herbicide Resistance	Nicollet D1/D2

Poster Sessions

Room: Exhibit Hall

Chairperson and Moderator: Dave Ruen

Poster Setup

Posters can be set up between 1:00 and 9:30 pm on Monday, December 1. All NCWSS posters will be on display from 8:00 am Tuesday, December 2 through 4:00 pm Wednesday December 3.

Students in the Poster Contest must be with their posters during the morning Poster Sessions on Tuesday for judging. Students in the poster contest are required to bring letter-sized copies of your posters to hand out.

Tuesday, December 2

8:00 – 9:45 am Poster Session I (non-contest authors present at odd numbered posters)

5:00 – 6:00 pm Poster Session II (non-contest authors present at even numbered posters)

Poster Removal

All posters must be removed between 4:00 and 5:00 pm on Wednesday.

Exhibitors

Tuesday & Wednesday NCWSS Exhibit Hall

Program Symbols

- * Presenting Author
- † Paper or poster in the graduate student contest
- †† Poster in the undergraduate student poster contest

Agronomic Crops I (Corn, Sorghum, Cereals)

Enlist Corn Weed Control Systems in Midwest. David C. Ruen*¹, Mike M. Moechnig², Eric F. Scherder³, Kristin Rosenbaum⁴, Laura A. Campbell⁵, Fikru Haile⁶, Leah L. Granke⁷, Jeff M. Ellis⁸; ¹Dow AgroSciences, Lanesboro, MN, ²Dow AgroSciences, Toronto, SD, ³Dow AgroSciences, Huxley, IA, ⁴Field Scientist, Crete, NE, ⁵Dow AgroSciences, Carbondale, IL, ⁶Dow AgroSciences, Carmel, IN, ⁷Dow AgroSciences, Columbus, OH, ⁸Dow AgroSciences, Smithville, MO (1)

††Acuron: A new residual herbicide with four active ingredients for broad-spectrum weed control in corn. Mason Adams*¹, Debalin Sarangi¹, Aaron S. Franssen², Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²Syngenta Crop Protection, Seward, NE (2)

Another ALS-resistant species: Common Chickweed and its Control. Dwight D. Lingenfelter*¹, William Curran²; ¹Penn State University, University Park, PA, ²Penn State, University Park, PA (3)

Popcorn, Sweet Corn and Field Corn Inbred Tolerance to Preemergence and Postemergence Acuron Applications. . Tim Trower*¹, Gordon Vail², Ryan D. Lins³, Tom Beckett²; ¹Syngenta, Baraboo, WI, ²Syngenta, Greensboro, NC, ³Syngenta, Byron, MN (4)

†Sequential Herbicide Evaluation in Glufosinate-Resistant Corn in Wisconsin. Devin J. Hammer*¹, Rebecca R. Bailey¹, Thomas R. Butts¹, Daniel H. Smith², Elizabeth J. Bosak¹, Vince M. Davis¹; ¹University of Wisconsin-Madison, Madison, WI, ²University of Wisconsin- Madison, Madison, WI (5)

Acuron Herbicide: Burndown and Residual Weed Control in No-Till Corn. Scott E. Cully*¹, Nicholas A. Frederking¹, Thomas H. Beckett², Gordon Vail³; ¹Syngenta, Marion, IL, ²Syngenta Crop Protection, Greensboro, NC, ³Syngenta, Greensboro, NC (6)

Confirmation and Characterization of ALS-inhibitor Resistance in Henbit (*Lamium amplexicaule*). Vijay K. Varanasi*¹, Amar S. Godar¹, Dallas E. Peterson¹, Doug Shoup², Mithila Jugulam¹; ¹Kansas State University, Manhattan, KS, ²Kansas State University - Southeast Area Extension Office, Chanute, KS (7)

Agronomic Crops I (continued)

SYN-A205: A Technical Overview. Scott Payne*¹, Ryan D. Lins², Gordon Vail³, Tom Beckett³; ¹Syngenta, Slater, IA, ²Syngenta, Byron, MN, ³Syngenta, Greensboro, NC (8)

Acuron Residual weed control. Adrian Moses*¹, Gordon Vail², Scott Cully³, Tom Beckett²; ¹Syngenta, Ames, IA, ²Syngenta, Greensboro, NC, ³Syngenta, Marion, IL (9)

†Carryover of Common Corn and Soybean Herbicides to Various Cover Crop Species in Missouri. Cody D. Cornelius, Jaime Farmer, Mandy Bish, Alex Long, Meghan Biggs, and Kevin Bradley. Cody D. Cornelius*; University of Missouri, Columbia MO, MO (10)

†The impact of fall-planted cover crop monocultures and simple mixtures on weed presence in corn. Victoria J. Ackroyd*¹, Christy L. Sprague²; ¹Michigan State University, 48824, MI, ²Michigan State University, East Lansing, MI (11)

†Dose Response of Selected Glyphosate-Resistant Weeds to Prepackaged Mixture of Fluthiacet-methyl and Mesotrione (Solstice™) Applied at Two Growth Stages. Zahoor A. Ganie*¹, Gail Stratman², Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²FMC Corporation, Stromsburg, NE (12)

††Sweet Corn and Popcorn Tolerance to Postemergence Applications of Revulin Q (nicosulfuron + mesotrione + isoxadifen-ethyl). Danielle R. Cooney*¹, Larry H. Hageman², Helen L. Flanigan³, Scott E. Swanson⁴; ¹University of Illinois, Urbana, IL, ⁴DuPont, Rochelle, IL, ³DuPont, Johnston, IA, ²DuPont, Rochelle, IL (13)

†ALS-Inhibiting Herbicide Dose and Plant Size Influence the Control of ALS-Resistant Shattercane Populations . Rodrigo Werle*¹, Roberto L. Martins², Lowell D. Sandell³, John L. Lindquist¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²São Paulo State University, Botucatu, Brazil, ³Valent USA Corporation, Lincoln, NE (14)

Volunteer Glyphosate and Glufosinate Resistant Corn Competitiveness and Control in Glyphosate and Glufosinate Resistant Corn. Nader Soltani*, Christy Shropshire, Peter H. Sikkema; University of Guelph, Ridgetown, ON (15)

Agronomic Crops II (Soybeans, Dry Beans/Sugar Beets)

Weed management with tankmixes of S-metolachlor, imazethapyr and linuron in dry bean. Nader Soltani*¹, Rob E. Nurse², Peter H. Sikkema¹; ¹University of Guelph, Ridgetown, ON, ²Agriculture Canada, Harrow, ON (16)

DuPont Trivence: A Second Year Review of a New Preemergence Herbicide in Soybean. Kelly Barnett*¹, Helen A. Flanigan², Kevin L. Hahn³, J. Dan Smith⁴; ¹DuPont Crop Protection, Whiteland, IN, ²DuPont, Greenwood, IN, ³DuPont Crop Protection, Bloomington, IL, ⁴DuPont Crop Protection, Madison, MS (17)

†Comparison of Herbicide and Cover Crop Utilization for Horseweed Suppression Before and During a Soybean Crop . Andi M. Christenson*¹, J. Anita Dille², Kraig L. Roozeboom¹, Dallas E. Peterson¹; ¹Kansas State University, Manhattan, KS, ²Agronomy Department, Kansas State University, Manhattan, KS (18)

DuPont Afforia Herbicide: New Burndown Option for Variable pH Soils. Keith A. Diedrick*¹, Helen A. Flanigan², Keith D. Johnson³, Bruce W. Carlson⁴; ¹DuPont Crop Protection, Madison, WI, ²DuPont, Greenwood, IN, ³DuPont Crop Protection, Grand Forks, ND, ⁴DuPont Crop Protection, Lindstrom, MN, MN (19)

Enlist™ and Enlist E3™ Soybean Crop Tolerance. Joe Armstrong*¹, Patricia L. Prasifka², David C. Ruen³, Mike M. Moechnig⁴, David M. Simpson⁵; ¹Dow AgroSciences, Davenport, IA, ²Dow AgroSciences, West Fargo, ND, ³Dow AgroSciences, Lanesboro, MN, ⁴Dow AgroSciences, Toronto, SD, ⁵Dow AgroSciences, Indianapolis, IN (20)

Enlist E3™ Soybean Weed Control Systems in Midwest. Jeff M. Ellis*¹, David C. Ruen², Mike M. Moechnig³, Eric F. Scherder⁴, Kristin Rosenbaum⁵, Laura A. Campbell⁶, Fikru Haile⁷, Leah L. Granke⁸; ¹Dow AgroSciences, Smithville, MO, ²Dow AgroSciences, Lanesboro, MN, ³Dow AgroSciences, Toronto, SD, ⁴Dow AgroSciences, Huxley, IA, ⁵Field Scientist, Crete, NE, ⁶Dow AgroSciences, Carbondale, IL, ⁷Dow AgroSciences, Carmel, IN, ⁸Dow AgroSciences, Columbus, OH (21)

Tolerance of Banana Pepper (*Capsicum annuum*) to s-metolachlor and clomazone. Mohsen Mohseni Moghadam, Douglas Doohan, Andrea S. Leiva Soto*; The Ohio State University - Ohio Agricultural Research and Development Center, Wooster, OH (22)

Agronomic Crops II (continued)

†Relating dicamba injury and residue to yield reduction in dry bean. Theresa A. Reinhardt*, Rich Zollinger; North Dakota State University, Fargo, ND (23)

††Cover crop species response to simulated half-life doses of soybean and corn herbicides. Brittany Parker*, Brent S. Heaton, Mark L. Bernards; Western Illinois University, Macomb, IL (24)

††Summer annual weed control as affected by fall, preplant and PRE timing of soybean residual herbicides. Kyle R. Russell*¹, Mark L. Bernards¹, Bryan Young², Aaron G. Hager³; ¹Western Illinois University, Macomb, IL, ²Purdue University, W. Lafayette, IN, ³University of Illinois, Urbana, IL (25)

††Soybean yield response to cover crop and winter annual weed removal time and soybean planting date. Aaron P. Prins*, Brent S. Heaton, Mark L. Bernards; Western Illinois University, Macomb, IL (26)

†Full Rates, Multiple Herbicides, or Both? Considerations for Best Management Practices for Residual Control of Waterhemp in Soybean. Nick T. Harre*¹, Joseph L. Matthews², Julie M. Young², Mark Bernards³, Aaron G. Hager⁴, Bryan Young⁵; ¹Purdue University, West Lafayette, IL, ²Southern Illinois University, Carbondale, IL, ³Western Illinois University, Macomb, IL, ⁴University of Illinois, Urbana, IL, ⁵Purdue University, W. Lafayette, IN (27)

Options for controlling glyphosate-resistant kochia preplant. Brian M. Jenks*; North Dakota State University, Minot, ND (28)

†Volunteer Corn Competes with Sugarbeet for Nitrogen. Amanda C. Harden*, Christy L. Sprague; Michigan State University, East Lansing, MI (29)

†Cover Crops and Herbicide Programs for Management of Palmer Amaranth (*Amaranthus palmeri*) in Soybean Systems Resistant to Glyphosate and Glufosinate. Douglas J. Spaunhorst*, William G. Johnson; Purdue, West Lafayette, IN (30)

Agronomic Crops II (continued)

†**Influence of Herbicide Programs on Glyphosate-Resistant Common Waterhemp Control in Glyphosate Tolerant Soybean.** Debalin Sarangi*¹, Lowell D. Sandell¹, Amit J. Jhala²; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, USA, Lincoln, NE (31)

†**Influence of late season herbicide application on seed production and fecundity of glyphosate-resistant giant ragweed (*Ambrosia trifida*).** Simranpreet Kaur*¹, Roger Elmore², Zac J. Reicher³, Amit J. Jhala⁴; ¹University of Nebraska Lincoln, Lincoln, NE, ²University of Nebraska lincoln, Lincoln, NE, ³University of Nebraska-Lincoln, Lincoln, NE, ⁴University of Nebraska-Lincoln, USA, Lincoln, NE (32)

†**Influence of preharvest herbicide applications on color retention of canned black beans.** Amanda M. Goffnett*¹, Christy L. Sprague¹, Karen A. Cichy²; ¹Michigan State University, East Lansing, MI, ²USDA-ARS, East Lansing, MI (33)

Edamame tolerance to bentazon, fomesafen, imazamox, linuron, and sulfentrazone. James L. Moody*¹, Martin M. Williams II², Randall L. Nelson²; ¹University of Illinois, Urbana, IL, ²USDA-ARS, Urbana, IL (34)

Technical attributes of Fierce XLT. Eric J. Ott*¹, John A. Pawlak², Dawn E. Refsell³, Lowell Sandell⁴, Trevor Dale⁵; ¹Valent USA Corporation, Greenfield, IN, ²Valent USA Corporation, Lansing, MI, ³Valent USA Corporation, Lathrop, MO, ⁴Valent USA Corporation, Lincoln, NE, ⁵Valent USA Corporation, Plymouth, MN (35)

††**Investigation of Fluridone as a Preemergent herbicide in soybean.** Austin H. Straatmann*¹, Mandy D. Bish², Alex R. Long², Meghan E. Biggs², Kevin W. Bradley²; ¹University of Missouri, Villa Ridge, MO, ²University of Missouri, Columbia, MO (36)

Performance of a New Clethodim Formulation. Laura Hennemann*, Gregory Dahl, Joe Gednalske, Eric Spandl, Lillian Magidow; Winfield, River Falls, WI (37)

††**Monitoring the Changes in Glyphosate-resistant Weed Populations in Continuous Dicamba-resistant Soybean for Four Years.** Isaiah L. Akers*, Meghan E. Biggs, Alex R. Long, Mandy D. Bish, Kevin W. Bradley; University of Missouri, Columbia, MO (38)

Agronomic Crops II (continued)

††**Winter annual weeds and cereal rye suppression of waterhemp in soybean.** Kristina Simmons*, Brent S. Heaton, Mark L. Bernards; Western Illinois University, Macomb, IL (39)

Herbicide Physiology

†**2,4-D Uptake and Translocation in Enlist™ Crops.** Joshua J. Skelton*¹, David M. Simpson², Mark A. Peterson³, Dean E. Riechers⁴; ¹University of Illinois, Champaign, IL, ²Dow AgroSciences, Indianapolis, IN, ³Dow AgroSciences, Indianapolis, IL, ⁴University of Illinois, Urbana, IL (40)

†**Effect of Foliar Fertilizers, Water pH, and Plant Height on Horseweed Control with Mesotrione.** Pratap Devkota*¹, William G. Johnson²; ¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN (41)

†**The EPSPS Pro106Ser substitution solely accounts for glyphosate resistance in a goosegrass population from Tennessee.** Janel L. Huffman*¹, Chance W. Riggins², Lawrence E. Steckel³, Patrick J. Tranel²; ¹University of Illinois, Champaign/Urbana, IL, ²University of Illinois, Urbana, IL, ³University of Tennessee, Jackson, TN (42)

Role of Absorption, Translocation, and EPSPS Sensitivity in the Mechanism of Glyphosate Resistance in Wisconsin Giant Ragweed. Courtney E. Glettner¹, Christopher R. Van Horn², Melinda K. Yerka³, Philip Westra², David E. Stoltenberg*¹; ¹University of Wisconsin-Madison, Madison, WI, ²Colorado State University, Fort Collins, CO, ³USDA-ARS, Lincoln, NE (43)

†**Characterization of Wisconsin Giant Ragweed Resistance to Cloransulam-Methyl.** Stacey M. Marion*, Vince M. Davis, David E. Stoltenberg; University of Wisconsin-Madison, Madison, WI (44)

†**HPPD Resistance in Nebraska's Waterhemp: Enhanced Metabolism or Target Site Mutation.** Maxwell C. Oliveira*¹, Todd Gaines², Stevan Z. Knezevic³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²Colorado State University, Fort Collins, CO, ³University of Nebraska-Lincoln, Concord, NE (45)

Extension

2014 NCWSS Weed Contest. Dave Johnson*; DuPont Pioneer, Johnston, IA (46)

Weed Control and Crop Tolerance with HPPD-Tolerant Soybeans in Northeast Nebraska. Jon E. Scott*¹, Aaron S. Franssen², Stevan Z. Knezevic¹; ¹University of Nebraska-Lincoln, Concord, NE, ²Syngenta Crop Protection, Seward, NE (47)

†Herbicide Options to Control HPPD Resistant Waterhemp in Nebraska. Maxwell C. Oliveira*¹, Jon E. Scott², Aaron S. Franssen³, Stevan Z. Knezevic²; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Concord, NE, ³Syngenta Crop Protection, Seward, NE (48)

Weed Control and Crop Tolerance with New Soybean Traits in Northeast Nebraska. Jon E. Scott*¹, Leo D. Charvat², John Frihauf³, Kevin Watteyne⁴, Stevan Z. Knezevic¹; ¹University of Nebraska-Lincoln, Concord, NE, ²BASF Corporation, Lincoln, NE, ³BASF Corporation, Research Triangle Park, NC, ⁴Bayer CropScience, Lincoln, NE (49)

Volunteer Roundup Ready Soybean Control in Roundup Ready Corn. Stevan Z. Knezevic*¹, Amit J. Jhala², Greg R. Kruger², Lowell D. Sandell³, Maxwell C. Oliveira⁴, Jeffrey A. Golus⁵, Jon E. Scott¹; ¹University of Nebraska-Lincoln, Concord, NE, ²University of Nebraska-Lincoln, USA, Lincoln, NE, ³Valent USA Corporation, Lincoln, NE, ⁴University of Nebraska-Lincoln, Lincoln, NE, ⁵University of Nebraska-Lincoln, North Platte, NE (50)

How do growers' current practices relate to proposed label requirements for upcoming herbicide-resistant crop technologies? Lizabeth Stahl*¹, Lisa M. Behnken², Fritz Breitenbach³, Ryan P. Miller⁴, David Nicolai⁵; ¹University of MN Extension, Worthington, MI, ²University of Minnesota, Rochester, MN, ³University of Minnesota, St. Paul, MN, ⁴University of MN Extension, Rochester, MN, ⁵University of MN Extension, Farmington, MN (51)

Take Control - Herbicide systems to control SOA 2 and 9 resistant giant ragweed in soybean. Lisa Behnken*, Fritz Breitenbach, Jeffrey L. Gunsolus; University of Minnesota, St. Paul, MN (52)

Extension (continued)

†**Late season weed escape survey identifies increasing numbers of herbicide-resistant *Amaranthus spp.* in Wisconsin.** Thomas R. Butts*¹, Ross A. Recker², Vince M. Davis¹; ¹University of Wisconsin-Madison, Madison, WI, ²Monsanto Company, Monmouth, IL (53)

Manual for Propane-Fueled Flame Weeding in Corn, Soybean, and Sunflower. Stevan Z. Knezevic*¹, Avishek Datta², Chris Bruening³, George Gogos³, Jon E. Scott¹; ¹University of Nebraska-Lincoln, Concord, NE, ²Asian Institute of Technology, Bangkok, Thailand, ³University of Nebraska-Lincoln, Lincoln, NE (54)

Using grower survey responses to assess herbicide resistance issues and educational needs. Lizabeth Stahl*¹, Lisa M. Behnken², Fritz Breitenbach³, David A. Nicolai⁴, Ryan P. Miller⁵; ¹University of MN Extension, Worthington, MI, ²University of Minnesota, Rochester, MN, ³University of Minnesota, St. Paul, MN, ⁴University of MN Extension, Farmington, MN, ⁵University of MN Extension, Rochester, MN (55)

Horticulture, Ornamentals, and Turf

Stevia Tolerance to Herbicides. Donald Penner*, Jan Michael; Michigan State University, East Lansing, MI (56)

†**Screening of Herbicides for Selective Weed Control in African marigolds (*Tagetes erecta*).** Katie J. Demers*¹, Robert Hartzler¹, John A. Greaves², Norman P. Cloud²; ¹Iowa State University, Ames, IA, ²Kemin Industries Inc, Des Moines, IA (57)

Effect of Simulated Glyphosate Drift on Seed Pieces From Four Potato Processing Cultivars. Collin P. Auwarter*¹, Harlene M. Hatterman-Valenti², NDSU, Fargo, ND, ²North Dakota State University, Fargo, ND (58)

Invasive Weeds

Biological Control of Garlic Mustard in North America. Jeanie Katovich*, Roger L. Becker; University of Minnesota, St. Paul, MN (59)

Invasive Weeds (continued)

Impact of Native Prairie Functional Groups On Persistence of Canada Thistle. Roger L. Becker*¹, Milt Haar², Lee Klossner³; ¹University of Minnesota, St. Paul, MN, ²US Department of Interior, Interior, SD, ³University of Minnesota, Lamberton, MN (60)

Japanese Stiltgrass Control in Managed Woodlands. Joe Omielan*, Michael Barrett; University of Kentucky, Lexington, KY (61)

Rangeland, Pasture, and Industrial Vegetation Management

Management of Callery pear (*Pyrus Calleryana*) on urban roadsides. Carey Page*¹, E. Scott Flynn², Reid Smeda¹; ¹University of Missouri, Columbia, MO, ²Dow Agrosiences, Lee's Summit, MO (62)

Weed Biology, Ecology, Management

Confirmation of glyphosate-resistant common ragweed in Nebraska. Lucas Baldridge*¹, Andre Silva¹, Rodrigo Werle¹, Lowell D. Sandell¹, Greg R. Kruger²; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, USA, Lincoln, NE (63)

†**Critical duration of grass weed interference in grain sorghum.** Gared E. Shaffer*¹, J. Anita Dille²; ¹Kansas State University, Manhattan, KS, ²Agronomy Department, Kansas State University, Manhattan, KS (64)

†**Influence of tillage systems on glyphosate-resistant waterhemp in Indiana.** Joseph M. Heneghan*¹, William G. Johnson²; ¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN (65)

†**Weed suppression with narrow rows and high seeding rates in grain sorghum.** Cade A. Hewitt*¹, J. Anita Dille², Phillip W. Stahlman³, Curtis R. Thompson¹; ¹Kansas State University, Manhattan, KS, ²Agronomy Department, Kansas State University, Manhattan, KS, ³Kansas State University, Hays, KS (66)

Population-Dependent Dominance of the R-Allele in *Amaranthus tuberculatus* Resistant to PPO Inhibitors. R. Joseph Wuerffel*¹, Bryan Young²; ¹Southern Illinois University, Carbondale, IL, ²Purdue University, W. Lafayette, IN (67)

**Weed Biology, Ecology, Management
(continued)**

††**Can Foliar-Applied Gibberellic Acid Influence Sex Determination or Pistillate Flower Morphology in *Amaranthus tuberculatus*?** Brent Sunderlage*¹, R. Joseph Wuerffel¹, Bryan Young²; ¹Southern Illinois University, Carbondale, IL, ²Purdue University, W. Lafayette, IN (68)

††**Control of Several Southern Illinois Palmer Amaranth Populations with Fomesafen and Lactofen.** Kayla N. Wiedau*, R. Joseph Wuerffel, Joseph L. Matthews, Ronald F. Krausz; Southern Illinois University, Carbondale, IL (69)

†**Influence of Plant Height and Growth Temperature on Glyphosate Efficacy in Common Lambsquarters.** Randy D. Degreeff*¹, Mithila Jugulam², Amar S. Godar², J. Anita Dille³; ¹Kansas State University, SALINA, KS, ²Kansas State University, Manhattan, KS, ³Agronomy Department, Kansas State University, Manhattan, KS (70)

†**Importance of emergence date on the development of Palmer amaranth (*Amaranthus palmeri*).** Heidi R. Davis*, Reid Smeda; University of Missouri, Columbia, MO (71)

†**Linkage between seed dormancy and resistances to ALS and PPO inhibitors in waterhemp.** Patrick J. Tranel¹, Chenxi Wu*²; ¹University of Illinois, Urbana, IL, ²University of Illinois at Champaign-Urbana, Urbana, IL (72)

†**Ecological Fitness of Glyphosate Resistant Kochia (*Kochia scoparia*).** O. Adewale Osipitan*¹, J. Anita Dille¹, Phillip W. Stahlman², David C. Hartnett³, Allan K. Fritz¹; ¹Agronomy Department, Kansas State University, Manhattan, KS, ²Kansas State University, Hays, KS, ³Biological Sciences, Kansas State University, Manhattan, KS (73)

†**Effect of Herbicides on Recovery and Pathogenicity of *Clavibacter michiganensis* subsp. *nebraskensis*, Causal Agent of Goss's Wilt of Corn.** Joseph T. Ikley*¹, Kiersten A. Wise¹, William G. Johnson²; ¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN (74)

N₂O Emissions from Soybean as Influenced by Herbicide Management Strategy and Row Width. Rebecca R. Bailey*, Thomas R. Butts, Vince M. Davis; University of Wisconsin-Madison, Madison, WI (75)

**Weed Biology, Ecology, Management
(continued)**

†**Rate and duration of emergence in response to tillage and competition effects in 2,4-D resistant common waterhemp (*Amaranthus tuberculatus*).** Lacy J. Leibhart*¹, Lowell D. Sandell¹, Zac J. Reicher¹, Greg R. Kruger²; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, USA, Lincoln, NE (76)

†**Response of velvetleaf populations from south-western Nebraska to glyphosate.** Bruno Canella Vieira*¹, Spencer L. Sameulson¹, Chandra J. Hawley², Greg R. Kruger³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE (77)

†**Frequency of atrazine resistance in kochia populations from south-western Nebraska.** Spencer L. Sameulson*¹, Bruno Canella Vieira¹, Chandra J. Hawley², Greg R. Kruger³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE (78)

†**Factors Affecting the Germination and Emergence of Glyphosate-Resistant Hybrid and Volunteer Corn (*Zea mays* L.).** Parminder S. Chahal*¹, Greg R. Kruger², Humberto Blanco-Canqui³, Amit J. Jhala²; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, USA, Lincoln, NE, ³Assistant Professor, Lincoln, NE (79)

Screening for resistance to 20X glyphosate in biotypes of *Conyza canadensis* from soybean fields and non-agricultural habitats in Ohio and Iowa. Zachery T. Beres*¹, Emily E. Ernst¹, Allison A. Snow¹, Jason T. Parrish¹, Micheal D. Owen², Bruce A. Ackley¹, Mark M. Loux¹; ¹Ohio State University, Columbus, OH, ²ISU, Ames, IA (80)

††**Influence of spring tillage on common ragweed emergence in Nebraska.** Ethann R. Barnes*¹, Rodrigo Werle¹, Lowell D. Sandell², Amit J. Jhala³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²Valent USA Corporation, Lincoln, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE (81)

**Weed Biology, Ecology, Management
(continued)**

†**Giant Ragweed Seed Production and Retention in Soybean and Field Margins.** Jared J. Goplen*¹, Jeffrey L. Gunsolus², Craig C. Sheaffer², Roger L. Becker², Jeffrey A. Coulter², Fritz Breitenbach², Lisa Behnken², Gregg A. Johnson²; ¹University of Minnesota, Saint Paul, MN, ²University of Minnesota, St. Paul, MN (82)

††**Identification and Determination of Glyphosate-Resistant *Amaranthus* spp. using Molecular Markers.** Brittany Janney*, Rong Ma, Kris N. Lambert, Dean E. Riechers; University of Illinois, Urbana, IL (83)

†**Termination strategies for winter rye and overwintering annual ryegrass with glyphosate.** Daniel H. Smith*¹, Vince M. Davis²; ¹University of Wisconsin- Madison, Madison, WI, ²University of Wisconsin-Madison, Madison, WI (84)

Common and Tartary Buckwheat as Summer Cover Crops for Weed Suppression in Vegetable Cropping Systems. Mary T. Saunders Bulan, David E. Stoltenberg*, Joshua L. Posner; University of Wisconsin-Madison, Madison, WI (85)

Equipment and Application Methods

†**Impact of applications of dicamba and dicamba plus glyphosate using air-induction nozzles on glyphosate-resistant kochia.** Cody F. Creech*¹, William E. Bagley², Ryan S. Henry¹, Greg R. Kruger³; ¹University of Nebraska-Lincoln, North Platte, NE, ²Bagley Enterprises, San Antonio, TX, ³University of Nebraska-Lincoln, USA, Lincoln, NE (86)

†**Herbicide Efficacy on Glyphosate Resistant Palmer Amaranth (*Amaranthus palmeri*) and Common Waterhemp (*Amaranthus rudis*) as Influenced by Spray Nozzle Design.** Travis R. Legleiter*¹, William G. Johnson², Bryan Young³; ¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN, ³Purdue University, W. Lafayette, IN (87)

†**Linking droplet size and deposition from Coarse nozzles in a wind tunnel.** J Connor Ferguson*¹, Chris C. O'Donnell¹, Greg R. Kruger², Andrew J. Hewitt¹; ¹The University of Queensland, Gatton, Australia, ²University of Nebraska-Lincoln, USA, Lincoln, NE (88)

**Equipment and Application Methods
(continued)**

††**Impact of applications of dicamba and dicamba plus glyphosate using air-induction nozzles on glyphosate-resistant waterhemp.** Rafael Pieroni Catojo*¹, Cody F. Creech¹, William E. Bagley², Greg R. Kruger³; ¹University of Nebraska-Lincoln, North Platte, NE, ²Bagley Enterprises, San Antonio, TX, ³University of Nebraska-Lincoln, USA, Lincoln, NE (89)

††**The influence of nozzle type on the performance of PPO herbicides for POST soybean applications.** Camila de Carvalho Ozorio*¹, Cody F. Creech¹, Ryan S. Henry¹, Greg R. Kruger²; ¹University of Nebraska-Lincoln, North Platte, NE, ²University of Nebraska-Lincoln, USA, Lincoln, NE (90)

††**Efficacy of dicamba and dicamba plus glyphosate applications with and without drift control adjuvants through four venturi-type nozzles.** Leon Cimo*¹, Cody F. Creech¹, Ryan S. Henry¹, William E. Bagley², Greg R. Kruger³; ¹University of Nebraska-Lincoln, North Platte, NE, ²Bagley Enterprises, San Antonio, TX, ³University of Nebraska-Lincoln, USA, Lincoln, NE (91)

††**Droplet retention on soybean leaves as influenced by nozzle type, application pressure, and adjuvant.** Maximila Miranda Martins*¹, Cody F. Creech¹, Ryan S. Henry¹, Greg R. Kruger²; ¹University of Nebraska-Lincoln, North Platte, NE, ²University of Nebraska-Lincoln, USA, Lincoln, NE (92)

Comparison of four venturi nozzles on injury of tomato from 2,4-D applications. Cody T. Dorn*¹, Danilo Pavani Correa¹, Jeffrey A. Golus¹, Ryan S. Henry¹, Cody F. Creech¹, Greg R. Kruger²; ¹University of Nebraska-Lincoln, North Platte, NE, ²University of Nebraska-Lincoln, USA, Lincoln, NE (93)

Ground spray 2.0 – An improved droplet size calculator. Jeffrey A. Golus*¹, Ryan S. Henry¹, Lowell D. Sandell², Greg R. Kruger³; ¹University of Nebraska-Lincoln, North Platte, NE, ²University of Nebraska-Lincoln, Lincoln, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE (94)

†**Evaluation of spray particle size, spray pattern uniformity, and droplet velocity of four ground nozzles.** Ryan S. Henry*¹, Bradley K. Fritz², Clint W. Hoffmann², Greg R. Kruger³; ¹University of Nebraska-Lincoln, North Platte, NE, ²USDA-ARS, College Station, TX, ³University of Nebraska-Lincoln, USA, Lincoln, NE (95)

**Equipment and Application Methods
(continued)**

†**An evaluation of a hooded sprayer for pesticide drift reduction.** Strahinja Stepanovic*¹, Ryan S. Henry², Steven Claussen³, Greg R. Kruger⁴; ¹University of Nebraska-Lincoln, Grant, NE, ²University of Nebraska-Lincoln, North Platte, NE, ³Willmar Fabrication, Wilmar, MN, ⁴University of Nebraska-Lincoln, USA, Lincoln, NE (96)

†**Tank mixtures of glyphosate or glufosinate with growth regulators.** Sjdjan Cirovic*¹, Ryan S. Henry², Greg R. Kruger³; ¹University of Nebraska-Lincoln, NORTH PLATTE, NE, ²University of Nebraska-Lincoln, North Platte, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE (97)

Tuesday Papers 2014

General Session

Room: Nicollet B/C

MODERATOR: John Hinz

*SPEAKER

- 10:30 Welcome to Minneapolis.** Bev Durgan*; University of Minnesota, St. Paul, MN (98)
- 10:45 Washington Science Policy Update.** Lee Van Wychen*; National and Regional Weed Science Societies, Washington, DC (99)
- 11:00 Turfgrass Management for Professional Sports.** Larry DiVito*; Minnesota Twins Baseball Club, Minneapolis, MN (100)
- 11:30 NCWSS Presidential Address.** JD Green*; University of Kentucky, Lexington, KY (101)
- 11:45 Necrology Report.** Joe Armstrong*; Dow AgroSciences, Davenport, IA (102)

Agronomic Crops I & II (Corn, Sorghum, Cereals, Soybeans, Dry Beans/Sugar Beets)

Room: Nicollet D1/D2

MODERATOR: Helen Flanigan

*SPEAKER † STUDENT CONTEST

- 1:15 †Comparison of Single Mode of Action Herbicides Applied Preemergence to Glyphosate-Resistant Palmer Amaranth in Indiana.** Joseph T. Ikley*¹, Travis R. Legleiter¹, William G. Johnson²; ¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN (103)
- 1:30 Comparison of Herbicide Mode of Action Combinations Applied Preemergence to Glyphosate-Resistant Palmer Amaranth in Indiana.** Joseph T. Ikley*¹, Travis R. Legleiter¹, William G. Johnson²; ¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN (104)
- 1:45 †Current Status of Herbicide Resistance in Shattercane and Johnsongrass Populations from Northern Kansas, Eastern Missouri and Southern Nebraska.** Rodrigo Werle*¹, Amit J. Jhala¹, Melinda K. Yerka², John L. Lindquist¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²USDA-ARS, Lincoln, NE (105)
- 2:00 †Control and Distribution of Glyphosate Resistant Common Ragweed (*Ambrosia artemisiifolia* L.) in Ontario.** Annemarie C. Van Wely*¹, Peter H. Sikkema¹, Darren Robinson¹, David C. Hooker¹, Mark B. Lawton²; ¹University of Guelph, Ridgetown, ON, ²Monsanto Canada, Guelph, ON (106)
- 2:15 †Glyphosate-Resistant Common Waterhemp in Nebraska: Confirmation and Control in Soybean.** Debalin Sarangi*¹, Lowell D. Sandell¹, Stevan Z. Knezevic², Jatinder S. Aulakh³, John L. Lindquist¹, Suat Irmak³, Amit J. Jhala⁴; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Concord, NE, ³University of Nebraska-Lincoln, Lincoln, NE, ⁴University of Nebraska-Lincoln, USA, Lincoln, NE (107)

Agronomic Crops I & II (continued)

- 2:30 †Integrated Management of Glyphosate-Resistant Giant Ragweed with Tillage and Herbicides in Soybean.** Zahoor A. Ganie*¹, Lowell D. Sandell¹, John L. Lindquist¹, Greg R. Kruger², Mithila Jugulam³, Amit J. Jhala²; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, USA, Lincoln, NE, ³Kansas State University, Manhattan, KS (108)
- 2:45 Break**
- 3:00 †Dose Response of Glyphosate-Resistant Weeds to Enlist Duo™ Applied at Two Growth Stages.** Parminder S. Chahal*¹, Jatinder S. Aulakh², Amit J. Jhala¹, Kristin Rosenbaum³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Lincoln, NE, ³Field Scientist, Crete, NE (109)
- 3:15 †Confirmation of HPPD Resistant Common Waterhemp in Nebraska.** Maxwel C. Oliveira*¹, Jon E. Scott², Aaron S. Franssen³, Vinod K. Shivrain⁴, Stevan Z. Knezevic²; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Concord, NE, ³Syngenta Crop Protection, Seward, NE, ⁴Syngenta, Greensboro, NC (110)
- 3:30 Herbicides to Manage Putative HPPD-Resistant Waterhemp in Corn.** Damian D. Franzenburg*¹, Micheal D. Owen², James M. Lee¹, Jacob S. Eeling¹; ¹Iowa State University, Ames, IA, ²ISU, Ames, IA (111)
- 3:45 †Revisiting Traillate for Wild Oat Control in Wheat.** Morgan D. Hanson*, Kirk A. Howatt; NDSU, Fargo, ND (112)
- 4:00 †Influence of Various Cover Crop Species on Winter and Summer Annual Weed Emergence.** Cody D. Cornelius, Alex Long, Mandy Bish, Meghan Biggs, and Kevin Bradley. Cody D. Cornelius*; University of Missouri, Columbia MO, MO (113)
- 4:15 †Light interception in soybean determined through digital imagery analysis affects soybean yield and weed suppression.** Thomas R. Butts*¹, Jason K. Norsworthy², Greg R. Kruger³, Lowell Sandell⁴, Bryan Young⁵, Lawrence E. Steckel⁶, Mark M. Loux⁷, Kevin W. Bradley⁸, William G. Johnson⁹, Vince M. Davis¹;

Agronomic Crops I & II (continued)

¹University of Wisconsin-Madison, Madison, WI,

²University of Arkansas, Fayetteville, AR, ³University of Nebraska-Lincoln, USA, Lincoln, NE, ⁴Valent USA Corporation, Lincoln, NE, ⁵Purdue University, W.

Lafayette, IN, ⁶University of Tennessee, Jackson, TN,

⁷Ohio State University, Columbus, OH, ⁸University of Missouri, Columbia, MO, ⁹Purdue, West Lafayette, IN (114)

4:30 †Competitive Interactions of Four Amaranthaceae Species with Soybeans. Lauren M. Schwartz*¹, Bryan Young², David J. Gibson³; ¹Southern Illinois University, Carbondale, IL, ²Purdue University, W. Lafayette, IN, ³Southern Illinois University, Carbondale, Carbondale, IL (115)

4:45 †Differences in final biomass among glyphosate-resistant and glyphosate-susceptible maternal families of *Conyza canadensis* in Ohio: a pilot field experiment. Beres T. Zachery*, Allison A. Snow, Jason T. Parrish; Ohio State University, Columbus, OH (116)

Weed Biology, Ecology, Management

Room: Nicollet A1/A2

MODERATOR: Erin Hill

***SPEAKER † STUDENT CONTEST**

1:15 †Emergence Pattern of Horseweed (*Conyza canadensis*); Behavior as Both a Winter and Summer Annual. Joseph D. Bolte*, Reid Smeda; University of Missouri, Columbia, MO (117)

1:30 †Emergence, Growth, and Fecundity of Palmer Amaranth in Michigan Corn and Soybeans. Jonathon R. Kohrt*, Christy L. Sprague, Karen A. Renner; Michigan State University, East Lansing, MI (118)

**Weed Biology, Ecology, Management
(continued)**

- 1:45 †Emergence Patterns of Waterhemp and Palmer amaranth under No-Till and Tillage Conditions in Southern Illinois.** Lucas X. Franca*¹, Bryan Young², Julie M. Young³, Joseph L. Matthews³; ¹Southern Illinois University Carbondale, CARBONDALE, IL, ²Purdue University, W. Lafayette, IN, ³Southern Illinois University, Carbondale, IL (119)
- 2:00 †Seed-Bank Depletion and Emergence Patterns of Giant Ragweed in Various Crop Rotations.** Jared J. Goplen*¹, Jeffrey L. Gunsolus², Craig C. Sheaffer², Roger L. Becker², Jeffrey A. Coulter², Fritz Breitenbach², Lisa Behnken², Gregg A. Johnson²; ¹University of Minnesota, Saint Paul, MN, ²University of Minnesota, St. Paul, MN (120)
- 2:15 †Biological Response of Foreign Palmer Amaranth (*Amaranthus palmeri*) Biotypes in Indiana .** Douglas J. Spaunhorst*, William G. Johnson; Purdue, West Lafayette, IN (121)
- 2:30 †Seed production of common waterhemp (*Amaranthus rudis*) is affected by time of emergence.** Heidi R. Davis*, Reid Smeda; University of Missouri, Columbia, MO (122)
- 2:45 †Growth response of glyphosate-resistant giant ragweed (*Ambrosia trifida*) to water stress.** Simranpreet Kaur*¹, Jatinder S. Aulakh², Amit J. Jhala³; ¹University of Nebraska Lincoln, Lincoln, NE, ²University of Nebraska- Lincoln, Lincoln, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE (123)
- 3:00 Break**
- 3:15 †Cover crops in edamame: Balancing crop emergence with weed suppression.** Laura E. Crawford*¹, Martin M. Williams II², Samuel E. Wortman¹; ¹University of Illinois, Urbana, IL, ²USDA-ARS, Urbana, IL (124)
- 3:30 †Cereal Rye Cover Crop Effects on Common Waterhemp and Common Lambsquarters Emergence.** Meaghan Anderson*, Robert Hartzler; Iowa State University, Ames, IA (125)

**Weed Biology, Ecology, Management
(continued)**

- 3:45** †**Effect of Inoculum Concentration of *Clavibacter michiganensis* subsp. *nebraskensis* on Infection of Alternative Hosts.** Taylor M. Campbell*¹, Joseph T. Ikley¹, William G. Johnson², Kiersten A. Wise¹;
¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN (126)
- 4:00** †**Herbicide carryover evaluation in cover crops following silage corn and soybean herbicides.** Daniel H. Smith*¹, Elizabeth J. Bosak², Vince M. Davis²;
¹University of Wisconsin- Madison, Madison, WI, ²University of Wisconsin-Madison, Madison, WI (127)
- 4:15** †**Mechanism of resistance in 2,4-D-resistant waterhemp.** Lacy J. Leibhart*¹, Amar S. Godar², Mithila Jugulam², Zac J. Reicher¹, Greg R. Kruger³;
¹University of Nebraska-Lincoln, Lincoln, NE, ²Kansas State University, Manhattan, KS, ³University of Nebraska-Lincoln, USA, Lincoln, NE (128)
- 4:30** †**Distribution of glyphosate-resistant kochia in south-western Nebraska.** Spencer L. Sameulson*¹, Bruno Canella Vieira¹, Chandra J. Hawley², Greg R. Kruger³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE (129)
- 4:45** †**Distribution of glyphosate-resistant Palmer amaranth in south-western Nebraska.** Bruno Canella Vieira*¹, Spencer L. Sameulson¹, Chandra J. Hawley², Greg R. Kruger³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE (130)

Herbicide Physiology

Room : Lakeshore AB
MODERATOR: Jared Roskamp

*SPEAKER † STUDENT CONTEST

- 1:15** **Glyphosate resistance in Palmer amaranth in Kansas: what do we know new?** Amar S. Godar*¹, Dallas E. Peterson¹, Phillip W. Stahlman², Mithila Jugulam¹; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Hays, KS (131)
- 1:30** **†Genetics and inheritance of non-target-site resistances to atrazine and mesotrione in an Illinois waterhemp population.** Janel L. Huffman*¹, Nicholas E. Hausman², Aaron G. Hager², Dean E. Riechers², Patrick J. Tranel²; ¹University of Illinois, Champaign/Urbana, IL, ²University of Illinois, Urbana, IL (132)
- 1:45** **†Evaluation of Cytochrome P450 Expression in Mesotrione-Resistant and -Sensitive Waterhemp (*Amaranthus tuberculatus*) Populations.** Rong Ma*¹, Kris N. Lambert², Dean E. Riechers³; ¹UIUC, Urbana, IL, ²University of Illinois Champaign-Urbana, Urbana, IL, ³University of Illinois, Urbana, IL (133)
- 2:00** **†Physiological and Molecular Characterization of Mesotrione Resistance in Palmer amaranth (*Amaranthus palmeri*) from Kansas.** Sridevi Betha*, Amar S. Godar, Curtis R. Thompson, Dallas E. Peterson, Mithila Jugulam; Kansas State University, Manhattan, KS (134)
- 2:15** **†Relationship between EPSPS Copies, Expression, and Level of Resistance to Glyphosate in Common Waterhemp (*Amaranthus rudis*) from Kansas.** Andrew J. Dillon*, Vijay K. Varanasi, Dallas E. Peterson, Mithila Jugulam; Kansas State University, Manhattan, KS (135)
- 2:30** **†Synergistic Antagonism: Characterizing the Interaction of Paraquat and Metribuzin on Horseweed.** Garth W. Duncan*¹, Julie M. Young¹, Bryan Young²; ¹Purdue University, West Lafayette, IN, ²Purdue University, W. Lafayette, IN (136)

Herbicide Physiology (continued)

- 2:45 †2,4-D Metabolism in Enlist™ Crops.** Joshua J. Skelton*¹, David M. Simpson², Mark A. Peterson³, Dean E. Riechers⁴; ¹University of Illinois, Champaign, IL, ²Dow AgroSciences, Indianapolis, IN, ³Dow AgroSciences, Indianapolis, IN, ⁴University of Illinois, Urbana, IL (137)
- 3:00 †2,4-D Translocation and Metabolism in Sensitive and Tolerant Red Clover (*Trifolium pratense*) Lines.** Tara L. Burke*, Michael Barrett; University of Kentucky, Lexington, KY (138)

Section Business Meeting

Equipment and Application Methods

Room : Nicollet A3

MODERATOR: Cody Creech

***SPEAKER † STUDENT CONTEST**

- 1:15 †Influence of nozzle type and wind speed on tomato injury from dicamba applications.** Ryan S. Henry*¹, Cody F. Creech¹, Sanela Milenkovic¹, William E. Bagley², Greg R. Kruger³; ¹University of Nebraska-Lincoln, North Platte, NE, ²Bagley Enterprises, San Antonio, TX, ³University of Nebraska-Lincoln, USA, Lincoln, NE (139)
- 1:30 †Influence of Spray Nozzle Design on Spray Solution Deposition on Palmer Amaranth (*Amaranthus palmeri*) and Common Waterhemp (*Amaranthus rudis*).** Travis R. Legleiter*¹, William G. Johnson², Bryan Young³; ¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN, ³Purdue University, W. Lafayette, IN (140)
- 1:45 †Effect of Foliar Fertilizers and Water pH on Weed Control with MON 76783, Enlist Duo, and Glufosinate.** Pratap Devkota*¹, William G. Johnson²; ¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN (141)

**Equipment and Application Methods
(continued)**

- 2:00 †Glyphosate canopy penetration in corn and soybean as influenced by nozzle type, carrier volume, and drift control adjuvant.** Cody F. Creech*¹, Ryan S. Henry¹, Greg R. Kruger²;
¹University of Nebraska-Lincoln, North Platte, NE,
²University of Nebraska-Lincoln, USA, Lincoln, NE
(142)
- 2:15 †Which adjuvants increase glufosinate efficacy?** Theresa A. Reinhardt*, Rich Zollinger, Kirk Howatt, Devin A. Wirth; North Dakota State University, Fargo, ND (143)
- 2:30 †Validation of Immunoassay kit to detect glyphosate residue within Red Norland potato tubers.** Amanda Crook*; NDSU, Fargo, ND (144)
- 2:45 †Alternative Weed Control Options During Vineyard Establishment in North Dakota.** John E. Stenger*¹, Collin P. Auwarter², Harlene M. Hatterman-Valenti¹; ¹North Dakota State University, Fargo, ND, ²ndsu, fargo, ND (145)
- 3:00 †Utilizing R software for response surface data analysis in application technology and weed science.** Strahinja Stepanovic*¹, Ryan S. Henry², Greg R. Kruger³; ¹University of Nebraska-Lincoln, Grant, NE, ²University of Nebraska-Lincoln, North Platte, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE
(146)

Symposium: Cover Crops

Room : Nicollet D3
MODERATOR: Devin Wirth
***SPEAKER**

- 9:00 Cover crop trends in the United States.** Erin C. Hill*; Michigan State University, East Lansing, MI (147)
- 9:10 Cover crop and herbicide interactions: A Michigan perspective.** Erin C. Hill*, Christy L. Sprague, Karen A. Renner; Michigan State University, East Lansing, MI (148)
- 9:30 Cover crop adoption and utilization in the mid-Atlantic; a combination of staunch enthusiasm and anxious uncertainty.** William Curran*¹, Dwight D. Lingenfelter²; ¹Penn State, University Park, PA, ²Penn State University, University Park, PA (149)
- 9:50 Break**
- 10:05 Cover Crop Research and Extension Needs in Northern Midwest Farming Operations.** Elizabeth J. Bosak*, Vince M. Davis; University of Wisconsin-Madison, Madison, WI (150)
- 10:30 Potential for Herbicide Residues to Impact Cover Crop Establishment and Function.** Darren Robinson*; University of Guelph, Ridgetown, ON (151)
- 10:50 Soil-Applied Herbicides over Spring Seeded Cover Crops.** Thomas J. Peters*, Aaron L. Carlson; North Dakota State University, Fargo, ND (152)

Agronomic Crops II (Soybeans, Dry Beans/Sugar Beets)

Room : Nicollet D1/D2

MODERATOR: Ryan Henry

***SPEAKER**

- 8:00 Comparison of Herbicide Programs with and without Residual Herbicides for Weed Control in Glufosinate-Resistant soybean.** Jatinder S. Aulakh*¹, John L. Lindquist², Amit J. Jhala³; ¹University of Nebraska- Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Lincoln, NE, ³University of Nebraska-Lincoln, USA, Lincoln, NE (153)
- 8:15 INFLUENCE OF TILLAGE METHODS ON MANAGEMENT OF AMARANTHUS SPECIES IN SOYBEAN.** . Jaime Farmer*¹, Vince M. Davis², William G. Johnson³, Mark M. Loux⁴, Jason K. Norsworthy⁵, Lawrence E. Steckel⁶, Kevin W. Bradley¹; ¹University of Missouri, Columbia, MO, ²University of Wisconsin-Madison, Madison, WI, ³Purdue, West Lafayette, IN, ⁴Ohio State University, Columbus, OH, ⁵University of Arkansas, Fayetteville, AR, ⁶University of Tennessee, Jackson, TN (154)
- 8:30 Palmer Amaranth Weed Control with Enlist Weed Control Systems.** David M. Simpson*¹, Kristin Rosenbaum², Jeff M. Ellis³, John S. Richburg⁴, Fikru Haile⁵, Leah L. Granke⁶, Gary D. Thompson⁷, Bobby H. Haygood⁸, Larry W. Walton⁹; ¹Dow AgroSciences, Indianapolis, IN, ²Field Scientist, Crete, NE, ³Dow AgroSciences, Smithville, MO, ⁴Dow AgroSciences, Headland, AL, ⁵Dow AgroSciences, Carmel, IN, ⁶Dow AgroSciences, Columbus, OH, ⁷Dow AgroSciences, Omaha, AR, ⁸Dow AgroSciences, Collierville, TN, ⁹Dow AgroSciences, Tupelo, TN (155)
- 8:45 Weed Management Stewardship of EngeniaTM Herbicide in Dicamba Tolerant Soybean.** Shane Hennigh*¹, John Frihau², Chad Brommer²; ¹BASF Corporation, Story City, IA, ²BASF Corporation, Research Triangle Park, NC (156)
- 9:00 Application Stewardship of EngeniaTM Herbicide in Dicamba Tolerant Crops.** Dustin Lewis*¹, Chad Brommer², Ching Feng², Walter E. Thomas²; ¹BASF Corporation, Urbana, IL, ²BASF Corporation, Research Triangle Park, NC (157)

Agronomic Crops II (continued)

- 9:15 Control of volunteer Enlist corn in soybean.** Peter H. Sikkema*, Nader Soltani; University of Guelph, Ridgetown, ON (158)
- 9:30 The effect of auxinic herbicides on growth and yield on non-auxin resistant soybeans.** Kevin R. McGregor^{*1}, Micheal D. Owen²; ¹Iowa State University, Ankeny, IA, ²ISU, Ames, IA (159)
- 9:45 Break**
- 10:00 Evaluation of Weed Control Programs Utilizing HPPD-Tolerant Soybeans.** Aaron S. Franssen^{*1}, Dain E. Bruns², Thomas H. Beckett³, Brett R. Miller⁴, Donald J. Porter³; ¹Syngenta Crop Protection, Seward, NE, ²Syngenta Crop Protection, Marysville, OH, ³Syngenta Crop Protection, Greensboro, NC, ⁴Syngenta Crop Protection, Minnetonka, MN (160)
- 10:15 Broadspectrum weed control in soybeans with Fierce XLT.** Trevor M. Dale^{*1}, Eric J. Ott², Dawn E. Refsell³, Lowell Sandell⁴, John A. Pawlak⁵; ¹Valent USA Corporation, Sioux Falls, SD, ²Valent USA Corporation, Greenfield, IN, ³Valent USA Corporation, Lathrop, MO, ⁴Valent USA Corporation, Lincoln, NE, ⁵Valent USA Corporation, Lansing, MI (161)
- 10:30 Fierce XLT: A new herbicide for control of *Amaranth* species in soybeans.** John A. Pawlak¹, Dawn E. Refsell², Trevor M. Dale³, Eric J. Ott⁴, Lowell D. Sandell^{*5}; ¹Valent USA Corporation, Lansing, MI, ²Valent USA Corporation, Lathrop, MO, ³Valent USA Corporation, Sioux Falls, SD, ⁴Valent USA Corporation, Greenfield, IN, ⁵Valent USA Corporation, Lincoln, NE (162)
- 10:45 Old Dogs New Tricks: Value of Metribuzin in Modern Weed Control for Soybeans .** Neha Rana^{*1}, Keith Kretzmer¹, John B. Willis¹, Alejandro Perez-Jones¹, Paul Feng¹, Jesse Gilsinger²; ¹Monsanto Company, Chesterfield, MO, ²Monsanto Company, Mount Olive, NC (163)
- 11:00 Waterhemp Control in Sugarbeet.** Aaron L. Carlson*, Thomas J. Peters; North Dakota State University, Fargo, ND (164)

Section Business Meeting

Wednesday Papers 2014
Equipment and Application Methods

Room : Lakeshore C

MODERATOR: Cody Creech

***SPEAKER**

- 8:30 Application best management practices for balancing drift mitigation and weed control with the Enlist Weed Control System.** Andy Asbury*¹, Patrick Havens², David E. Hillger³, Ryan Keller⁴, John Laffey⁵, Ralph Lassiter⁶, Jerome Schleier², Jonathan Siebert⁷; ¹Dow AgroSciences, Dahinda, IL, ²Dow AgroSciences, Indianapolis, IN, ³Dow AgroSciences, Noblesville, IN, ⁴Dow AgroSciences, Rochester, MN, ⁵Dow AgroSciences, Maryville, MO, ⁶Dow AgroSciences, Raleigh, NC, ⁷Dow AgroSciences, Greenville, MS (165)
- 8:45 Influence of nozzle type and wind speed on soybean injury from dicamba applications.** Ryan S. Henry*¹, Cody F. Creech¹, Sanela Milenkovic¹, William E. Bagley², Greg R. Kruger³; ¹University of Nebraska-Lincoln, North Platte, NE, ²Bagley Enterprises, San Antonio, TX, ³University of Nebraska-Lincoln, USA, Lincoln, NE (166)
- 9:00 Influence of nozzle type and wind speed on cotton injury from dicamba applications.** Ryan S. Henry*¹, Cody F. Creech¹, Sanela Milenkovic¹, William E. Bagley², Greg R. Kruger³; ¹University of Nebraska-Lincoln, North Platte, NE, ²Bagley Enterprises, San Antonio, TX, ³University of Nebraska-Lincoln, USA, Lincoln, NE (167)
- 9:15 Implications of drift studies on the application of herbicides: A review of what we have learned.** Greg R. Kruger*¹, Ryan S. Henry², William E. Bagley³; ¹University of Nebraska-Lincoln, USA, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE, ³Bagley Enterprises, San Antonio, TX (168)
- 9:30 Break**
- 9:45 Assessment of Drift Reduction Technologies and Pulse Width Modulation for Dicamba-Glyphosate Applications on Glyphosate Resistant Waterhemp.** Scott M. Bretthauer*¹, Robert E. Wolf², Matthew P. Gill¹; ¹University of Illinois, Urbana, IL, ²Wolf Consulting and Research, Mahomet, IL (169)

**Equipment and Application Methods
(continued)**

- 10:00 Atomization of Agricultural Tank Mixtures Using a Pulse Width Modulation Spray Delivery System: Part II.** Lillian C. Magidow*¹, Stephanie Wedryk²; ¹Winfield Solutions, River Falls, WI, ²Winfield Solutions, St. Paul, MN (170)
- 10:15 LAESI-MS in the Determination of 2,4-Dichlorophenoxyacetic Acid in Plant Tissue.** Gregory J. Lindner*¹, Stephen Rumbelow², Holly Henderson³, Melissa Moury³, Haddon Goodman³, Thomas Steen¹; ¹Croda Inc, New Castle, DE, ²Croda Inc, Wilmington, DE, ³Protea Biosciences, Morgantown, WV (171)
- 10:30 Glufosinate Efficacy with Tank-mix Partners and Droplet Size.** Kirk A. Howatt*¹, Rich Zollinger²; ¹NDSU, Fargo, ND, ²North Dakota State University, Fargo, ND (172)
- 10:45 Ammonium sulfate replacement adjuvants - Part 3.** Rich Zollinger*¹, Kirk Howatt¹, Bryan Young², Mark Bernards³; ¹North Dakota State University, Fargo, ND, ²Purdue University, W. Lafayette, IN, ³Western Illinois University, Macomb, IL (173)

Section Business Meeting

Weed Biology, Ecology, Management

Room : Lakeshore AB

MODERATOR: Neha Rana

***SPEAKER**

- 8:15 Weed management in strip tillage.** Erin Haramoto*¹, Daniel Brainard²; ¹University of Kentucky, Lexington, KY, ²Michigan State University, East Lansing, MI (174)
- 8:30 Impact of PRE+POST vs. POST-only Weed Management Strategy on N₂O Emissions.** Rebecca R. Bailey*, Vince M. Davis; University of Wisconsin-Madison, Madison, WI (175)
- 8:45 Impact of waterhemp emergence date on growth and development of five populations in Indiana.** Joseph M. Heneghan*¹, William G. Johnson²; ¹Purdue University, West Lafayette, IN, ²Purdue, West Lafayette, IN (176)

Weed Biology, Ecology, Management

(continued)

- 9:00 Weed Control in Edamame .** Bernard H. Zandstra*, Colin J. Phillippo; Michigan State University, East Lansing, MI (177)
- 9:15 Weed Control in Vegetable Crops with bicyclopyrone.** Colin J. Phillippo*, Bernard H. Zandstra; Michigan State University, East Lansing, MI (178)
- 9:30 Break**
Moderator: Erin Hill
- 9:45 Does Heterozygosity of Herbicide-Resistance Traits Deserve Greater Attention from Weed Scientists? A Case Study from Resistance to PPO Inhibitors. R.** Joseph Wuerffel*¹, Bryan Young²; ¹Southern Illinois University, Carbondale, IL, ²Purdue University, W. Lafayette, IN (179)
- 10:45 An update on HPPD-resistance in AMAPA and AMATA populations.** Vinod K. Shivrain*¹, Cheryl L. Dunne², Gordon Vail¹; ¹Syngenta, Greensboro, NC, ²Syngenta, Vero Beach, FL (180)
- 10:15 Molecular analysis of glyphosate resistance in giant ragweed.** Karthik Ramaswamy Padmanabhan*¹, Kabelo Segobye², Michael Gribskov¹, Burkhard Schulz¹, Stephen C. Weller¹; ¹Purdue University, West Lafayette, IN, ²Botswana College of Agriculture, Gaborone, Botswana (181)
- 10:30 Susceptibility of Multiple Kochia (Kochia scoparia) Populations to Dicamba.** David A. Brachtenbach*¹, Phillip W. Stahlman², Mithila Jugulam¹; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Hays, KS (182)

Section Business Meeting

- 11:30 NCWSS Awards Luncheon
Nicollet A-C**

Extension

Room : Nicollet D1/D2

MODERATOR: Devin Wirth

***SPEAKER**

1:30 Control of glyphosate-resistant common waterhemp in glufosinate-resistant soybean. Amit J. Jhala*¹, Lowell D. Sandell², Debalin Sarangi³;

¹University of Nebraska-Lincoln, USA, Lincoln, NE,

²Valent USA Corporation, Lincoln, NE, ³University of Nebraska-Lincoln, Lincoln, NE (183)

1:45 Enlist Ahead App: management resources for the Enlist Weed Control System. David E. Hillger*¹,

Andy Asbury², Ryan Keller³, John Laffey⁴, Ralph

Lassiter⁵, Jonathan Siebert⁶, Jake Wiltrout⁷; ¹Dow

AgroSciences, Noblesville, IN, ²Dow AgroSciences,

Dahinda, IL, ³Dow AgroSciences, Rochester, MN,

⁴Dow AgroSciences, Maryville, MO, ⁵Dow

AgroSciences, Raleigh, NC, ⁶Dow AgroSciences,

Greenville, MS, ⁷Dow AgroSciences, Indianapolis, IN

(184)

2:00 Enlist 360 Education Series: education, training and outreach on the Enlist Weed Control System.

Ryan Keller*¹, Andy Asbury², David E. Hillger³, John

Laffey⁴, Ralph Lassiter⁵, Jonathan Siebert⁶, Jake

Wiltrout⁷; ¹Dow AgroSciences, Rochester, MN, ²Dow

AgroSciences, Dahinda, IL, ³Dow AgroSciences,

Noblesville, IN, ⁴Dow AgroSciences, Maryville, MO,

⁵Dow AgroSciences, Raleigh, NC, ⁶Dow

AgroSciences, Greenville, MS, ⁷Dow AgroSciences,

Indianapolis, IN (185)

Section Business Meeting

Wednesday Papers 2014

Horticulture, Ornamentals, and Turf

Room : Nicollet D1/D2

MODERATOR: John Kaufmann

*SPEAKER

- 2:30 Which bromoxynil should I use for broadleaf weed control in onion?** Harlene M. Hatterman-Valenti^{*1}, Collin P. Auwarter²; ¹North Dakota State University, Fargo, ND, ²NDSU, Fargo, ND (186)
- 2:45 Response of tomato (*Solanum lycopersicum*) to sub-lethal doses of 2,4-D and glyphosate.** Mohsen Mohseni Moghadam*, Andrea S. Leiva Soto, Louceline Fleuridor, Roger Downer, Douglas Doohan; The Ohio State University - Ohio Agricultural Research and Development Center, Wooster, OH (187)
- 3:00 Herbicide Safety on Beardless Iris Seedlings.** John Kaufmann*; Kaufmann Agknowledge, Okemos, MI (188)

Section Business Meeting

Invasive Plants

Room : Nicollet D3

MODERATOR: Roger Becker

*SPEAKER

- 1:30 Invasive Species Weed Seed Viability after Composting.** Mark J. Renz^{*1}, Joe Van Rossum²; ¹University of Wisconsin Madison, Madison, WI, ²University of Wisconsin Extension, Madison, WI (189)
- 1:45 Glyphosate-resistant *Conyza canadensis* [L.] Cronq. and *Ambrosia trifida* L. in Ontario: Control for Balance GT Soybeans.** Scott Ditschun*; University of Guelph, Guelph, ON (190)

Section Business Meeting

Rangeland, Pasture, and Industrial

Vegetation Management

Room : Nicollet D3

MODERATOR: Scott Flynn

***SPEAKER**

2:30 Foliar-applied herbicides for indigobush control.
Walter H. Fick*; Kansas State University, Manhattan,
KS (191)

**2:45 Vegetation Management Options Under Cable
Barriers.** Joe Omielan*; University of Kentucky,
Lexington, KY (192)

Section Business Meeting

What's New In Industry 3:30 – 5:00 pm

Room : Nicollet A

MODERATOR: Mike Meyer

Industry Breakfast (cost \$35)

Room: Nicollett A1/A2

Moderator: Mike Meyer

7:00 **Current economic issues and their impact of farmers' decisions.** Dr. Kent Olson, Professor; Department of Applied Economics; College of Food, Agricultural, and Natural Resource Sciences; University of Minnesota; St. Paul, MN

8:00 **Section Business Meeting**

Symposium: Roadmap to Success: The Human Dimension of Managing Herbicide Resistance

Room : Nicollet D1/D2

MODERATOR: Michael Owen

***SPEAKER**

9:00 **Herbicide resistant weeds - efforts and endeavors past, present and future.** Micheal D. Owen*; ISU, Ames, IA (193)

9:30 **Iowa Farmers' Perspectives on Herbicide Resistance.** J G. Arbuckle*; Iowa State University, Ames, IA (194)

10:00 **Knocking Down Economic Barriers to Herbicide Resistance Management.** Terrance M. Hurley*; University of Minnesota, St. Paul, MN (195)

10:30 **Break**

10:45 **How Micro and Macro Social Forces May be Influencing Farmer Response to the "Wicked Problem" of Herbicide Resistant Weeds.** Raymond A. Jussaume*; Michigan State University, East Lansing, MI (196)

11:15 **Addressing several barriers to diversification of weed management by revealing the hidden costs of biological time constraints.** Jeffrey L. Gunsolus*; University of Minnesota, St. Paul, MN (197)

Thursday Papers 2014

Agronomic Crops I (Corn, Sorghum, Cereals)

Room : Lakeshore AB
MODERATOR: Helen Flanigan

***SPEAKER**

- 8:15 Stewardship of BASF corn herbicides.** Walter E. Thomas*, Steven Bowe, Luke Bozeman; BASF Corporation, Research Triangle Park, NC (198)
- 8:30 Introduction of SYN-A205 for Atrazine-free Weed Control in Corn.** Ryan D. Lins*¹, Scott Cully², Thomas H. Beckett³, Gordon Vail⁴, John Foresman⁴; ¹Syngenta, Byron, MN, ²Syngenta, Marion, IL, ³Syngenta Crop Protection, Greensboro, NC, ⁴Syngenta, Greensboro, NC (199)
- 8:45 Acuron: Preemergence Weed Control and Corn Safety.** Thomas H. Beckett*¹, Scott E. Cully², Ryan D. Lins³, Gordon Vail¹; ¹Syngenta, Greensboro, NC, ²Syngenta, Marion, IL, ³Syngenta, Byron, MN (200)
- 9:00 Acuron tolerance in sweet corn.** Nicholas E. Hausman*¹, Martin M. Williams II²; ¹University of Illinois, Urbana, IL, ²USDA-ARS, Urbana, IL (201)
- 9:15 Revulin™ Q: A New Postemergence Herbicide for Seed Corn.** Paul Marquardt*¹, Jessica Bugg², Kelly Barnett³, Michael Meyer⁴, Jeffery Carpenter⁵, Helen A. Flanigan⁶; ¹DuPont Crop Protection, Des Moines, IA, ²DuPont Crop Protection, Delaware, OH, ³DuPont Crop Protection, Whiteland, IN, ⁴DuPont Crop Protection, Norwalk, IA, ⁵DuPont Crop Protection, Johnston, IA, ⁶DuPont, Greenwood, IN (202)
- 9:30 DuPont Revulin Q Herbicide, A New Postemergence Herbicide for Sweetcorn and Popcorn.** Jeff Krumm*¹, Greg Hannig², Keith Diedrick³, Jessica Bugg⁴, Helen Flannigan⁵; ¹DuPont Crop Protection, Hastings, NE, ²DuPont Crop Protection, Palmyra, NY, ³DuPont Crop Protection, Rio, WI, ⁴DuPont Crop Protection, Richwood, OH, ⁵DuPont Crop Protection, Greenwood, IN (203)
- 9:45 Break**

Agronomic Crops I (continued)

- 10:00 Using Inzen Z sorghum to manage annual grasses postemergence.** Curtis R. Thompson*¹, Randall S. Currie², Phillip W. Stahlman³, Alan J. Schlegel⁴, Gary Cramer⁵, Dallas E. Peterson¹, Jennifer L. Jester³; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Garden City, KS, ³Kansas State University, Hays, KS, ⁴Kansas State University, Tribune, KS, ⁵Kansas State University, Hutchinson, KS (204)
- 10:15 Effect of Previous Atrazine use on Enhanced Atrazine Degradation in Northern United States Soils.** Thomas C. Mueller*¹, Randall S. Currie², Anita Dille³, William Curran⁴, Christy L. Sprague⁵, James Martin⁶, Kevin W. Bradley⁷, Mark L. Bernards⁸, Micheal D. Owen⁹, Sharon Clay¹⁰, Stevan Z. Knezevic¹¹, Vince M. Davis¹²; ¹University of Tennessee, Knoxville, TN, ²Kansas State University, Garden City, KS, ³Kansas State University, Manhattan, KS, ⁴Penn State, University Park, PA, ⁵Michigan State University, East Lansing, MI, ⁶University of Kentucky, Princeton, KY, ⁷University of Missouri, Columbia, MO, ⁸Western Illinois University, Macomb, IL, ⁹ISU, Ames, IA, ¹⁰South Dakota State University, Brookings, SD, ¹¹University of Nebraska-Lincoln, Concord, NE, ¹²University of Wisconsin-Madison, Madison, WI (205)
- 10:30 Weed control in drought tolerant and conventional corn with increasing levels of irrigation with and with out a wheat cover crop.** Randall S. Currie*, Isaya Kisekka, Sarah Zukoff, Pat Geier, Anthony Zukoff; Kansas State Univ., Garden City, KS (206)
- 10:45 Improving the establishment and subsequent yield of alfalfa interseeded into silage corn with prohexadione.** Mark J. Renz*¹, John Grabber²; ¹University of Wisconsin Madison, Madison, WI, ²USDA-ARS, Madison, WI (207)
- 11:00 Varro - A New Herbicide for Grass Control in Northern Plains Cereals.** Kevin B. Thorsness*¹, Steven R. King², Dean W. Maruska³, Michael C. Smith⁴, Charlie P. Hicks⁵, George S. Simkins⁶, Mark A. Wrucke⁷; ¹Bayer CropScience, Fargo, ND, ²Bayer CropScience, Research Triangle Park, NC, ³Bayer CropScience, Warren, MN, ⁴Bayer CropScience, Sabin, MN, ⁵Bayer CropScience, Fort Collins, CO, ⁶Bayer CropScience, St. Paul, MN, ⁷Bayer CropScience, Farmington, MN (208)

Agronomic Crops I (continued)

11:15 Droplet size effects on wild oat (*Avena ludoviciana*) control in Australian wheat and canola production.

J Connor Ferguson*¹, Chris C. O'Donnell¹, Greg R. Kruger², Andrew J. Hewitt¹; ¹The University of Queensland, Gatton, Australia, ²University of Nebraska-Lincoln, USA, Lincoln, NE (209)

Section Business Meeting

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Summer Contest Subcommittee of Resident Education

Dave Johnson	Past Contest Host Chair	515-535-7234	david.h.johnson@pioneer.com
Tate Castillo	Chair Res. Ed.	785-213-8979	tate.castillo@bayer.com
Doug Nord	1st Vice Chair	620-285-3380	dwnord@gbta.net
Mark Bernards	2nd Vice Chair	309-298-1569	ML-Bernards@wiu.edu
Mayank Malik	2013 Past Host Vice Chair		602-402-9030
	mayank.s.malik@monsanto.com		
Cheryl Dunne	Past Res. Ed Chair	772-794-7146	cheryl.dunne@syngenta.com
Fritz Koppatschek		317-415-0553	fkoppatschek@abgagservices.com
Anita Dille		785-532-7240	dieleman@ksu.edu
Stephanie Wedryke		651-202-6001	SlWedryk@landolakes.com
Andy Kendig		636-751-1635	John.a.kendig@monsanto.com
Neha Rana		636-737-3476	neha.rana@monsanto.com
Vince Davis		608-262-1392	vmDavis@wisc.edu

North Central Weed Science Society Information

NCWSS Standing Committees

Distinguished Achievement Award

Dave Johnson	Chair (Past President NCWSS) david.h.johnson@pioneer.com	515-535-7234	
J.D. Green	Vice Chair (President NCWSS) jdgreen@uky.edu	859-257-4898	
Bryan Young	Past Chair	765-496-1646	BryanYoung@purdue.edu
Jan Michael	517-655-6219	michae42@msu.edu	
Bill Witt	859-333-3131	wwitt@uky.edu	
Kelly Barnett	317-478-6974	kelly.a.barnett@dupont.com	
Mithila Jugulam	785-532-5501	mithila@ksu.edu	
Doug Doohan		doohan.1@osu.edu	
Steve Bowe	919-547-2559	steven.bowe@basf.com	

Fellow Committee

Duane Rathmann	Chair	507-835-2580	duane.rathmann@basf.com
Richard Zollinger	Vice Chair	701-231-8157	r.zollinger@ndsu.edu
Mike Owen		515-294-5936	mdowen@iastate.edu
James Martin		270-365-7541	james.martin@uky.edu
Mark Peterson		317-337-7704	mapeterson@dow.com

Finance Steering and Policy Committee

David Simpson	Chair	317-337-3959	dmsimpson@dow.com
Harlene Hatterman-Valenti		701-231-8536	h.hatterman.valenti@ndsu.edu
Kelly Nelson		660-739-4410	nelsonke@missouri.edu
Christy Sprague		517-355-0271	sprague1@msu.edu
Greg Kruger		308-696-6715	gkruger2@unl.edu
Eric Spandl		651-375-4292	epspandl@landolakes.com
Phil Banks	Executive Secretary	575-527-1888	ncwss@marathonag.com

Future Site Selection Committee

Charles Slack	Chair	859-227-3355	cslack@uky.edu
Dave Johnson	Past President	515-535-7234	david.h.johnson@pioneer.com
Mark Loux		614-292-9081	loux.1@osu.edu
Kirk Howatt		701-231-7209	kirk.howatt@ndsu.edu
David Simpson		317-337-3959	dmsimpson@dow.com
Sara Carter		859-259-1914	sara.carter@uky.edu

Local Arrangements: 2014 Minneapolis, MN

Eric Spandl	Chair	651-375-4292	epspandl@landolakes.com
Mark Loux	Past Chair	614-292-9081	loux.1@osu.edu
John Hinz	Program Chair	515-733-9250	john.hinz@bayer.com
Phil Banks	Executive Secretary	575-527-1888	ncwss@marathonag.com

Nominating Committee

Stott Howard	Chair	515-222-4809	stott.howard@syngenta.com
Peter Sikkema	Vice Chair	519-674-1500	psikkema@ridgetownc.uoguelph.ca
Bernie Zandstra	Past Chair	517-353-6637	zandstra@msu.edu
Karen Renner		517-355-0271	renner@msu.edu
Gary Finn		317-337-4781	gafinn@dow.com
Rick Schmenk		734-845-0925	weedkillr@aol.com
Bert Schou		319-277-6661	Bert@AcresResearch.com

Program Committee

John Hinz	Chair	515-733-9250	john.hinz@bayer.com
Anita Dille	Vice Chair	785-532-7240	dieleman@ksu.edu
Eric Spandl	LAC	651-375-4292	epspandl@landolakes.com
David Simpson	Secretary/Treasurer	317-337-3959	dmsimpson@dow.com
Robert Hartzler	Editor - Proceedings	515-294-1923	hartzler@iastate.edu
Curtis Thompson	CAST	785-532-5776	cthompson@ksu.edu
Tate Castillo	Resident Education	785-213-8979	tate.castillo@bayer.com
Devin Wirth	Extension	701-370-1929	devin.a.wirth@ndsu.edu
Rodrigo Werle	Graduate Students	402-937-2887	rwerleagro@gmail.com
Mike Meyer	Industry	810-299-1522	Michael-devin.meyer@dupont.com
Roger Becker	Invasive Plants	612-625-5753	becke003@umn.edu
Mark Bernards	WSSA	309-298-1569	ML-Bernards@wiu.edu
J.D. Green	President (ex officio)	859-257-4898	jdgreen@uky.edu

Resolutions and Necrology Committee

Joe Armstrong	Chair	563-726-2280	jqarmstrong@dow.com
Aaron Hager	Vice Chair	217-333-4424	hager@illinois.edu
Kirk Howatt	Past Chair	701-231-7209	kirk.howatt@ndsu.edu
Donald Penner		517-355-0271	pennerd@msu.edu
Pat Tranel		217-333-1531	tranel@illinois.edu

North Central Weed Science Society Information

NCWSS Standing Committees (continued)

Invasive Plants Committee

Roger Becker	Chair	612-625-5753	becke003@umn.edu
Mark Renz	Vice Chair	608-263-7437	mrenz@wisc.edu
Steve Young		308-696-6712	syoung4@unl.edu
Jim Harbour		402-219-3863	james.d.harbour@usa.dupont.com
Kevin Gibson		765-496-2161	kgibson@purdue.edu
Bob Masters		317-337-4281	ramasters@dow.com
Walt Fick		785-532-7223	whfick@ksu.edu
Joe Omielan		859-967-6205	joe.omielan@uky.edu
Reid Smeda		573-882-1329	smedar@missouri.edu

NCWSS Special Committees

Presentation Recording Committee (2013)

Brian Jenks	Chair	701-857-7677	brian.jenks@ndsu.edu
Bruce Ackley	Vice Chair	614-292-1339	ackley.19@osu.edu
Angela Kazmierczak		701-231-6220	Angela.Kazmierczak@ndsu.edu
Neha Rana		636-737-3476	neha.rana@monsanto.com
Ryan Henry		308-696-6729	ryan.henry@unl.edu

Section Program Chairs

General Program

John Hinz	Chair	515-733-9250	john.hinz@bayer.com
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Poster Session

Dave Ruen	Chair	507-467-2375	dcruen@dow.com
Helen Flanigan	Vice Chair	317-862-0578	helen.a.flanigan@usa.dupont.com
Dave Ruen	Past Chair	507-467-2375	dcruen@dow.com

Graduate Student Paper Awards

Doug Nord	Chair	620-285-3380	dwNord@gbta.net
Tate Castillo	Past Chair	785-213-8979	tate.castillo@bayer.com

Graduate Student Poster Awards

Mark Bernards	Chair	309-298-1569	ML-Bernards@wiu.edu
Doug Nord	Past Chair	620-285-3380	dwNord@gbta.net

Agronomic Crops I (Corn, Sorghum, Cereals)

Ryan Henry	Chair	308-530-5729	ryan.henry@unl.edu
Brett Miller	Vice Chair	612-656-8464	brett.miller@syngenta.com

Agronomic Crops II (Soybeans, Dry Beans, Sugarbeets)

Helen Flanigan	Chair	317-459-9650	helen.a.flanigan@dupont.com
Joe Ikley	Vice Chair	765-494-0891	jikley@purdue.edu

Equipment and Application Methods

Cody Creech	Chair	435-770-1538	cody.creech@huskers.unl.edu
Dave Hillger	Vice Chair	317-504-6130	dehillger@dow.com

Extension

Devin Wirth	Chair	701-370-1929	devin.a.wirth@ndsu.edu
Kelly Nelson	Vice Chair	660-739-4410	nelsonke@missouri.edu

Herbicide Physiology

Jared Roskamp	Chair	217-440-7810	jared.roskamp@basf.com
Mithila Jugulam	Vice Chair	785-532-2755	mithila@ksu.edu

Invasive Weeds

Roger Becker	Chair	612-625-5753	becke003@umn.edu
Mark Renz	Vice Chair	608-263-7437	mrenz@wisc.edu

Rangeland, Pasture, and Industrial Vegetation Management

Scott Flynn	Chair	859-396-9229	flynn@dow.com
Joe Omielan	Vice Chair	859-217-0744	joe.omielan@uky.edu

Horticulture and Ornamentals

John Kaufmann	Chair	517-347-7555	kaufma60@msu.edu
Harlene Hatterman-Valenti	Vice Chair		701-231-8536
		h.hatterman.valenti@ndsu.edu	

Weed Biology, Ecology and Management

Erin Hill	Chair	517-355-0271	hiller12@msu.edu
Neha Rana	Vice Chair	638-288-2609	neha.rana@monsanto.com

North Central Weed Science Society Information

Honorary Members/Fellows

Honorary Members

1948	L.W. Dephart *		Dale E. Bush *
1949	A.H. Larson *	1984	Ronald E. Doersch
1950	J.W. Zahnley *		Edward W. Stroube *
1951	R.W. Fuelleman *		Oliver E. Strand *
	(posthumous citation)	1985	Gail A. Wicks *
	Ted F. Yost *	1986	Robert Hiltibran *
	(posthumous citation)		Elroy J. Peters *
1952	Henry E. Wood *		Deane W. Finnerty *
1953	George Briggs *	1987	Oliver G. Russ
	Walter C. Dutton *		Ralph Althaus *
1954	A.L. Bakke *		William M. Phillips
1955	Charles J. Willard *	1988	Gerald R. Miller
1956	R.S. Dunham *		Robert Benson
1957	P.J. Olson *		Calvin Messersmith
1958	L.W. Melander	1989	Edward Stoller
	T.K. Pavlychenko *		Lloyd M. Wax
	(posthumous citation)	1990	Alan R. Putman
1959	E.A. Helgeson *		Alan G. Dexter
1960	Oliver C. Lee *	1991	Russel L. Nash
1962	Sig Bjerken *		George Kapusta *
1964	K.P. Buchholtz *		Marshall McGlamery *
	E.P. Sylwester *		Russell Moomaw
1966	Robert C. Beatty *	1992	Don Penner
	Clare Buskirk *		R. Gordon Harvey, Jr. *
1967	J.K. Freeman *		Larry K. Binning
1968	E.K. Alban *		Alex R. Martin
	H.A. Friesen *	1993	Don Taylor
1969	Lawrence Southwick		Merrill A. Ross, Jr.
	David W. Staniforth *		Robert G. Wilson
1970	Delbert D. Hemphill *	1994	Jerry D. Doll
	George Frederick Warren *		Ted R. Warfield
1971	Fred W. Slife *		William W. Witt
1972	Thomas Victor Beck	Fellows¹	
	O. Hale Fletchall *	1995	Charles R. Fenster
1973	Richard Behrens	1996	Leon J. Wrage
	Lawrence H. Hannah		Thomas T. Bauman
1974	William Lobay		Earl W. Chamberlain
1975	John D. Furrer *		Richard S. Fawcett
1976	Lyle A. Derscheid *	1997	William E. Lueschen
	LeRoy G. Holm *		Stephen D. Miller
1977	James W. Divall		Michael D.K. Owen
	James L. Williams, Jr. *	1998	Fred W. Roeth
1978	Melwin K. McCarty *		Paul J. Ogg *
	Robert E. Nylund	1999	James P. Worthington
1979	Ellery L. Knake *		Michael Barrett
	Kenneth W. Bradfield *	2000	Norman J. Probst
1980	John D. Nalewaja		Douglas D. Buhler
	O.C. Burnside		Bill Miller
1981	Rodney J. Fink		Philip L. Orwick
	Juett C. Hogancamp *	2001	Stephen C. Weller
	Larry W. Mitich *	2002	LeRoy R. Cobia
1982	W.D. Carpenter	2003	James J. Kells
	James W. Herron *		Karen Ann Renner
	William F. Meggitt		Charles Slack
1983	Robert N. Andersen		Phillip Stahlman

North Central Weed Science Society Information

Honorary Members/Fellows (continued)

2004	Duane Rathman David Regehr	2009	J.D. Green Thomas B. Threewitt
2005	Dallas E. Peterson		Robert N. Klein
2006	James R. Martin Bernard H. Zandstra	2010	No nominations
2007	Chris M. Boerboom Michael J. Horak	2011	Bill Johnson Harlene Hatterman-Valenti Gordon K. Roskamp
2008	Thomas J. Peters Jeffrey Gunsolus Kassim Al-Khatib	2012	Peter H. Sikkema Bob Hartzler Roger Becker
		2013	Bryan Young

* Deceased

¹Society members being honored were originally referred to as Honorary Members. Beginning in 1995, the award was changed to Fellow.

North Central Weed Science Society Presidents

1944	No President	1980	Stroube, Edward W.
1945	Yost, Ted F. *	1981	Herron, James W. *
1946	Yost, Ted F. *	1982	Benson, Robert L.
1947	Hanson, Noel S. *	1983	DiVall, James W.
1948	Willard, Charles J. *	1984	Miller, Gerald R.
1949	Dunham, R. S. *	1985	Messersmith, Calvin G.
1950	Worzella, W. W. *	1986	Wax, Lloyd M.
1951	Sylwester, Erhardt P. *	1987	Chamberlain, Earl
1952	Buchholtz, Kenneth P. *	1988	Harvey, R. Gordon *
1953	Gilbert, C. J. *	1989	Worthington, James P.
1954	Lee, Oliver C. *	1990	Martin, Alex R.
1955	Grigsby, Buford H. *	1991	Taylor, T. Don
1956	Helgeson, Earl A. *	1992	Stoller, Edward W.
1957	Slife, Fred W. *	1993	Warfield, Ted R.
1958	Derscheid, Lyle A.	1994	Bauman, Thomas T.
1959	Foster, J. Roe *	1995	Cobia, LeRoy R.
1960	Holm, Leroy G. *	1996	Dexter, Alan G.
1961	Alban, E. K. *	1997	Miller, Bill
1962	Bjerken Sig. *	1998	Buhler, Douglas D.
1963	Hemphill, Delbert D. *	1999	Orwick, Philip L.
1964	Hemphill, Delbert D. *	2000	Kells, James J.
1965	Furrer, John D. *	2001	Rathmann, Duane P.
1966	Furrer, John D. *	2002	Peterson, Dallas E.
1967	Warden, Robert L. *	2003	Horak, Michael J.
1968	Fletchall, O. Hale *	2004	Doll, Jerry D.
1969	Beck, Thomas V.	2005	Peters, Tom
1970	Hannah, Lawrence H.	2006	Miller, Stephen D.
1971	Knake, Ellery *	2007	Moses, Adrian
1972	Williams, Jr., James L. *	2008	Johnson, William G.
1973	Meggitt, William	2009	Holm, Mick
1974	Bradfield, Kenneth W.	2010	Boerboom, Chris
1975	Burnside, Orvin C.	2011	Wrucke, Mark
1976	Fink, Rodney J.	2012	Bryan Young
1977	Carpenter, Will D.	2013	Dave Johnson
1978	Doersch, Ronald E.	2014	J.D Green
1979	Nalewaja, John D.		

* Deceased

North Central Weed Science Society Information

Distinguished Achievement Award

1990	Gerald W. Gogan – Education Gail A. Wicks - Service Robert G. Wilson - Research Jeffrey L. Gunsolus - Young Scientist
1991	F. Strizke - Education Paul G. Mayland - Industry Patrick J. Shea - Research
1992	William W. Witt - Education James P. Worthington - Education Rex A. Liebl - Research Jerry D. Doll - Service
1993	Robert G. Hartzler - Education Douglas D. Buhler - Research Karen A. Renner - Young Scientist
1994	David L. Regehr - Education Deane W. Finnerty - Industry Robert N. Andersen - Service David A. Mortensen - Young Scientist
1995	Will D. Carpenter - Industry Phillip W. Stahlman - Research Michael D.K. Owen - Service
1996	Beverly R. Durgan - Education Charles L. Kern - Industry E. James Retzinger - Industry Michael J. Horak - Young Scientist
1997	Roger Becker - Education Joseph G. Vollmer - Industry Charles H. Slack - Research Richard Zollinger - Service David E. Stoltenberg - Young Scientist
1998	Randy W. Lloyd - Industry Ronald F. Krausz - Research James R. Martin - Service
1999	Thomas R. Hoverstad - Professional Staff Robert J. Kremer - Research J. D. Green - Service Chris M. Boerboom - Young Scientist Reid J. Smeda - Young Scientist
2000	Harlan P. Palm - Industry James F. Lux - Professional Staff Gary E. Powell - Professional Staff David A. Vox - Professional Staff William G. Johnson - Young Scientist
2001	John B. Masiunas - Education Bernard H. Zandstra - Education Patrick W. Geier - Professional Staff Douglas J. Maxwell - Professional Staff Kassim Al-Khatib - Research
2002	Paul L. Sprankle - Industry Thomas B. Threewitt - Industry Monica Elmes - Professional Staff John L. Luecke - Professional Staff Bryan Young - Young Weed Scientist

North Central Weed Science Society Information

Distinguished Achievement Award (continued)

2003	Mark Loux - Education Kenneth Carlson - Industry Daniel E. Schroeder - Industry Andrew Chomas - Professional Staff Jeffrey Stachler - Professional Staff
2004	Gordon Roskamp - Education Robert N. Klein - Education David Stoltenberg - Research Robert E. Wolf - Service Patrick J. Tranel - Young Weed Scientist
2005	Chris Boerboom - Education Dennis Belcher - Industry Anthony F. Dobbels - Professional Staff Curtis R. Thompson - Service Christy Sprague - Young Scientist
2006	Richard K. Zollinger - Education John R. Hinz - Industry Christy Shropshire - Professional Staff Glenn Nice - Service Dean E. Riechers - Young Scientist
2007	Douglas Doohan - Education Kevin Gibson - Young Scientist Martin M. Williams II - Young Scientist
2008	Frank Forcella - Research Anita Dille - Young Scientist Damian Franzenburg - Professional Staff Joseph Matthews - Professional Staff
2009	Kevin W. Bradley – Young Scientist Adam S. Davis – Young Scientist Reid J. Smeda – Education Adrian J. Moses – Industry James L. Moody – Professional Staff
2010	Darren Robinson – Young Scientist Aaron Hager – Education Jon Scott – Professional Staff Peter Sikkema - Research
2011	Anita Dille-Education Walter Fick-Education Terry Wright-Industry Greg Dahl-Industry Nader Soltani-Professional Staff
2012	Dain Bruins - Industry Fritz Breitenbach - Professional Staff Timothy Trower - Professional Staff Erin Taylor-Hill - Professional Staff
2013	Kirk Howatt – Education Mark Renz – Education Patrick Tranel – Research Steve Knezevic – Research Christy Sprague - Service Rodrigo Werle – Graduate Student

North Central Weed Science Society Information

North Central Weed Science Contest Locations

YEAR	Company	Location
1981	<i>Agri-Growth</i>	<i>Hollandale, MN</i>
1982	Agri-Growth	Hollandale, MN
1983	Lilly Research Lab	Leshara, NE
1984	Dow Chemical Research	Geneseo, IL
1985	Bayer (Mobay)	Stilwell, KS
1986	Union Carbide	Newton, IA
1987	Monsanto	Monmouth, IL
1988	Agri-Growth	Hollandale, MN
1989	FMC	Champaign, IL
1990	DowElanco	Greenfield, IN
1991	CibaGeigy	Champaign, IL
1992	Cenex Land o Lakes	Iowa
1993	Zeneca	Champaign, IL
1994	Bayer (Miles)	Stilwell, KS
1995	Amcy	Seymour, IL
1996	Monsanto	Monmouth, IL
1997	Land o Lakes	Webster City, IA
1998	Valent	Champaign, IL
1999	Agri-Growth	Hollandale, MN
2000	Bayer	West Lafayette, IN
2001	Monsanto	Monmouth, IL
2002	Dow AgroSciences	Fowler, IN
2003	Syngenta	Champaign, IL
2004	University of Minnesota- Southern Research & Outreach Ctr.	Waseca, MN
2005	Kansas State University	Manhattan, KS
2006	Midwest Research Inc.	York, NE
2007	Bennett Ag. Research Corp	Richland, IA
2008	SGS Alvey Ag Research	Carlyle IL
2009	joint NC/NE – ABG Ag Services	Indianapolis, IN
2010	no contest	
2011	Weed Olympics, University of Tennessee	Knoxville, TN
2012	Diamond Ag Research Inc.	Larned, KS
2013	Monsanto	Monmouth IL
2014	DuPont Pioneer	Johnston, IA

Herbicide Index

Common Name	Trade Name(s)	Manufacturer
2,4-D	Several	Several
2,4-D + triclopyr	Crossbow	Dow
2,4-DB	Butyrac	Albaugh
Acetochlor	Harness, Surpass, etc.	Monsanto, Dow
Acetochlor + atrazine	Harness Xtra, Keystone, etc	Monsanto, Dow
Acetochlor + flumetsulam + clopyralid	SureStart	Dow
Acifluorfen	Ultra Blazer	United Phosphorus
Acifluorfen + bentazon	Storm	United Phosphorus
Alachlor	Intrro, Micro-Tech	Monsanto
Ametryn	Evik	Syngenta
Aminocyclopyrachlor	Imprelis	DuPont
Aminopyralid	Milestone	Dow
Aminopyralid + 2,4-D	Forefront	Dow
Atrazine	Several	Several
Atrazine + s-metolachlor	Bicep II Magnum, etc.	Syngenta, etc.
Benefin	Balan	Loveland
Bensulide	Prefar	Gowan
Bentazon	Basagran	Arysta
Bromacil	Hyvar	DuPont
Bromacil + diuron	Krovar I	DuPont
Bromoxynil	Buctril	Bayer
Bromoxynil + MCPA	Bronate Advanced	Bayer
Carfentrazone-ethyl	Aim	FMC
Chlorimuron-ethyl	Classic	DuPont
Chlorimuron + metribuzin	Canopy	DuPont
Chlorimuron + thifensulfuron	Synchrony XP	DuPont
Chlorimuron + tribenuron	Canopy EX	DuPont
Chlorsulfuron	Glean, Telar	DuPont
Chlorsulfuron + metsulfuron	Finesse	DuPont
Chlorsulfuron + flucarbazone	Finesse Grass & Broadleaf	DuPont
Chlorsulfuron + sulfometuron + sulfentrazone	Throttle	DuPont
Clethodim	SelectMax	Valent
Clodinafop	Discover	Syngenta
Clomazone	Command	FMC
Clopyralid	Stinger	Dow
Clopyralid + 2,4-D	Curtail, Commando	Dow, Albaugh
Clopyralid + MCPA	Cutback M	Dow
Cloransulam-methyl	FirstRate	Dow
Cloransulam-methyl + flumetsulam	Frontrow	Dow
Cycloate	Ro-Neet	Helm Agro
DCPA	Dacthal	Amvac
Desmedipham	Betanex	Bayer
Desmedipham + phenmedipham + ethofumesate	Progress	Bayer
Dicamba	Banvel, Clarity, etc.	Micro Flo
Dicamba + atrazine	Rifle Plus	Loveland
Dicamba + diflufenzopyr	Distinct, Overdrive, Status	BASF
Dichlobenil	Casoron	Chemtura
Dichlorprop (2,4-DP)	Several	Several
Diclosulam	Strongarm	Dow
Diflufenzopyr	BAS 654	BASF
Dimethenamid-P	Outlook	BASF
Dimethenamid-P + atrazine	Guardsman Max, Gmax Lite	BASF
Dimethipin	Harvade	Chemtura
Diquat	Reglone	Syngenta
Dithiopyr	Dimension	Dow
Diuron	Karmex, Direx	Several
Endothall	Several	Elf Atochem
EPTC	Eptam, Eradicane	Gowan
Ethalfuralin	Curbit	Loveland
Ethalfuralin + clomazone	Strategy	Loveland
Ethametsulfuron	Muster	DuPont
Ethofumesate	Nortron	Bayer
Fenoxaprop	Acclaim, Puma, Whip	Bayer
Fenoxaprop + pyrasulfotole + bromoxynil	Wolverine	Bayer
Florasulam + MCPA-Ester	Orion	Syngenta
Fluazifop-P	Fusilade DX	Syngenta
Fluazifop-P + fenoxaprop	Fusion	Syngenta
Flucarbazone	Everest	Bayer
Flufenacet	Define	Bayer
Flumetsulam	Python	Dow
Flumetsulam + clopyralid	Hornet	Dow

Herbicide Index

Common Name	Trade Name(s)	Manufacturer
Flumeturon	Cotoran	Syngenta
Flumiclorac	Resource	Valent
Flumioxazin	Valor	Valent
Flumioxazin + chlorimuron	Valor XLT	Valent
Flumioxazin + cloransulam-methyl	Gangster	Valent
Flumioxazin + pyroxasulfone	Fierce	Valent
Flumioxazin + pyroxasulfone + chlorimuron	Fierce XLT	Valent
Fluthiacet-ethyl	Cadet	FMC
Fluthiacet-ethyl + pyroxasulfone	Anthem	FMC
Fluroxypyr	Starane, etc.	Dow
Fluroxypyr + aminopyralid	CleanWave	Dow
Fluroxypyr + bromoxynil	Starane NXT	Dow
Fluroxypyr + clopyralid	WideMatch	Dow
Fomesafen	Flexstar, Reflex	Syngenta
Fomesafen + glyphosate	Flexstar GT	Syngenta
Foramsulfuron	Option	Bayer
Foramsulfuron + iodosulfuron	Equip	Bayer
Fosamine	Krenite	DuPont
Glufosinate	Ignite, Finale, Rely	Bayer
Glyphosate	Several	Several
Glyphosate + 2,4-D	Landmaster BW	Monsanto
Halosulfuron	Permit, Manage, Sempra	Gowan
Halosulfuron + dicamba	Yukon	Gowan
Hexazinone	Velpar	DuPont
Hexazinone + diuron	Velpar Alfamax	DuPont
Hexazinone + sulfometuron	Westar	DuPont
Imazamethabenz	Assert	Nufarm
Imazamox	Raptor, Beyond	BASF
Imazapic	Plateau	BASF
Imazapyr	Arsenal, Chopper, Habitat	BASF
Imazapyr + imazethapyr	Lightning	BASF
Imazapyr + sulfometuron + metsulfuron	Lineage HWC, Lineage Prep	DuPont
Imazapyr + metsulfuron	Lineage, Clearstand	DuPont
Imazaquin	Scepter, Image	BASF
Imazethapyr	Pursuit	BASF
Imazethapyr + glyphosate	Extreme	BASF
Indaziflam	Alion	Bayer
Iodosulfuron	Autumn	Bayer
Isoxaben	Gallery	Dow
Isoxaflutole	Balance Flexx	Bayer
Isoxaflutole + thiencazone-methyl	Corvus	Bayer
Lactofen	Cobra, Phoenix	Valent
Linuron	Lorox, Linex	Tessenderlo Kerley
MCPA	Several	Several
MCPB	Thistrol	NuFarm
Mecoprop (MCP)	Several	Several
Mesosulfuron	Osprey, Silverado	Bayer
Mesosulfuron + propoxycarbazone	Olympus Flex	Bayer
Mesosulfuron-methyl	Osprey, Silverado	Bayer
Mesotrione	Callisto, Tenacity	Syngenta
Mesotrione + s-metolachlor	Camix	Syngenta
Mesotrione + s-metolachlor + atrazine	Lexar, Lumax	Syngenta
Mesotrione + s-metolachlor + glyphosate	Halex GT	Syngenta
Metribuzin	Several	Several
Metsulfuron	Ally, Escort, Cimarron	DuPont
Metsulfuron + chlorsulfuron	Cimarron Plus, Cimarron X'tra	DuPont
Metsulfuron + 2,4-D + dicamba	Cimarron Max	DuPont
Metsulfuron + tribenuron + thifensulfuron	Ally Extra	DuPont
Molinate	Ordram	Syngenta
MSMA	Several	Several
Napropamide	Devrinol	United Phosphorus
Naptalam	Alanap	Chemtura
Nicosulfuron	Accent	DuPont
Nicosulfuron + thifensulfuron	Stout	DuPont
Norflurazon	Solicam	Syngenta
Oryzalin	Surflan	Dow
Oxadiazon	Ronstar	Bayer
Oxyfluorfen	Goal	Dow
Paraquat	Gramoxone Inteon	Syngenta
Pendimethalin	Prowl, etc.	BASF
Phenmedipham	Spin-aid	Bayer
phenmedipham + desmedipham	Betamix	Bayer
Picloram	Tordon, etc.	Dow

Herbicide Index

Common Name	Trade Name(s)	Manufacturer
Pinoxaden	Axial XL	Syngenta
Primisulfuron	Beacon	Syngenta
Primisulfuron + dicamba	NorthStar	Syngenta
Primisulfuron + prosulfuron	Exceed, Spirit	Syngenta
Prodiamine	Barricade	Syngenta
Prometon	Pramitol	Syngenta
Prometryn	Caparol	Syngenta
Pronamide	Kerb	Dow
Propanil	Stam, Strel, Stampede	Dow
Propoxycarbazone	Olympus	Bayer
Prosulfuron	Peak	Syngenta
Pyraflufen	Vida	Gowan
Pyrasulfotole + bromoxynil	Huskie	Bayer
Pyrazon	Pyramin	Arysta
Pyrithiobac sodium	Staple	DuPont
Pyroxasulfone	KIH-485, Zidua	Kumiai, BASF
Pyroxulam	Powerflex	Dow
Quinclorac	Facet, Drive, Paramount	BASF
Quizalofop	Assure II, Targa	DuPont, Gowan
Rimsulfuron	Matrix, Titus, Resolve	DuPont
Rimsulfuron + nicosulfuron	Steadfast	DuPont
Rimsulfuron + thifensulfuron	Basis, Resolve Q	DuPont
Saflufenacil	Sharpen, Treevix	BASF
Saflufenacil + dimethenamid-P	Verdict	BASF
Saflufenacil + imazethapyr	Optill	BASF
Sethoxydim	Poast, Poast Plus	BASF
Sethoxydim + bentazon	Clearmax	BASF
Siduron	Tupersan	Gowan
Simazine	Princep	Syngenta
s-metolachlor	Dual II Magnum, etc.	Syngenta, etc.
s-metolachlor + metribuzin	Boundary	Syngenta
Sulfentrazone	Spartan	FMC
Sulfentrazone + chlorimuron	Authority XL	FMC
Sulfentrazone + cloransulam-methyl	Sonic, Authority First	Dow, FMC
Sulfentrazone + imazethapyr	Authority Assist	FMC
Sulfentrazone + metribuzin	Authority MTZ	FMC
Sulfometuron-methyl	Oust	DuPont
Sulfometuron + chlorsulfuron	Landmark XP	DuPont
Sulfometuron + metsulfuron	Oust Extra	DuPont
Sulfometuron + hexazinone	Oustar	DuPont
Sulfosulfuron	Maverick, Outrider	Monsanto
Tebuthiuron	Spike	Dow
Tembotrione	Laudis	Bayer
Tembotrione + thiencazone-methyl	Capreno	Bayer
Terbacil	Sinbar	Tessenderlo Kerley
Thiazopyr	Visor, Mandate	Dow
Thidiazuron	Dropp	Bayer
Thifensulfuron-methyl	Harmony SG	DuPont
Thifensulfuron-methyl + tribenuron	Harmony Extra, Affinity Broadspec, etc.	DuPont
Thifensulfuron + tribenuron + metsulfuron + dicamba	Agility SG	DuPont
Thiobencarb	Bolero	Valent
Topramezone	Impact	Amvac
Tralkoxydim	Achieve	Syngenta
Triallate	Far-Go	Gowan
Triasulfuron	Amber	Syngenta
Triasulfuron + dicamba	Rave	Syngenta
Tribenuron-methyl	Express	DuPont
Triclopyr	Garlon, Remedy, etc.	Dow
Triclopyr + fluroxypyr	PastureGard	Dow
Trifloxysulfuron	Envoke, Monument	Syngenta
Trifluralin	Treflan, etc.	Dow
Triflurosulfuron-methyl	UpBeet	DuPont

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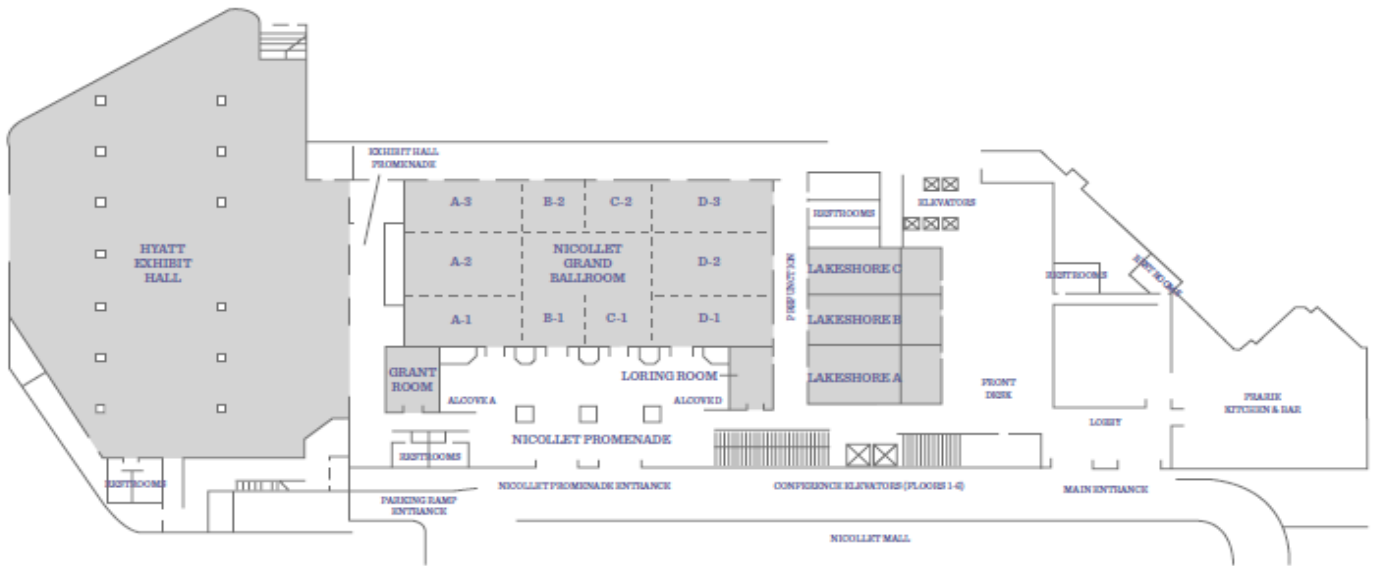
Time Schedule

Mark papers and meetings in the appropriate space.

Time	Tuesday	Wednesday	Thursday			
8:00	Poster Session I					
8:15						
8:30						
8:45						
9:00		General Session	Cover Crops Symposium	Roadmap to Success: The Human Dimension of Managing Herbicide Resistance. Symposium		
9:15						
9:30						
9:45						
10:00						
10:15						
10:30						
10:45						
11:00						
11:15						
11:30		NCWSS Awards Luncheon	NCWSS Conference End			
11:45						
12:00						
12:15						
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3:00						
3:15						
3:30						
3:45		What's New In Industry				
4:00						
4:15						
4:30						
4:45						
5:00				Poster Session II & Society Social	Society Social	
5:15						
5:30						
5:45						
6:00						

FLOOR PLAN

Main Level Meeting Rooms



Second Level Meeting Rooms

