



2013

68th Annual Meeting

North Central Weed Science Society

www.ncwss.org

December 9 -12, 2013

Hyatt Regency

Columbus, OH

Please bring this program to the conference

President's Welcome

2013 North Central Weed Science Society Meeting

Welcome to Columbus and the 68th annual meeting of the North Central Weed Science Society.

NCWSS returns to Columbus for at least the third time since I have been involved in NCWSS, and I look forward to the presentations, seeing friends and colleagues, and meeting new ones. The annual meeting is an important way we accomplish the mission of our Society. We are meeting jointly with the Midwest Invasive Plants Network (MIPN), and we welcome their members to the conference. I hope this conference meets your expectations to learn and share the latest advances in weed management, as well as provide the social setting to network and catch up with old or new friends.

Mark Loux and the local arrangements committee have done an excellent job preparing the hotel for our meeting. The Hyatt will provide a spacious, high-quality site with outstanding services. Columbus is a great city for our meeting, with diverse restaurants and many local attractions.

Program Chair JD Green has put together an excellent program, and has worked closely with Mark Renz and others in MIPN to integrate the invasive plants sessions and symposia into the program. There will be a symposium on "Technology Tools and Communication Trends for Weed Scientists" organized by Vince Davis, and the ever popular "What's New in Industry" session, organized this year by Industry Committee Chair Chris Kamienski. A preconference tour of the Scott's Company facility in Marysville, OH will be given for interested students and their advisors.

The success of the NCWSS depends on your active participation through attendance and presentations as well as your service on committees or as an officer. Feel free to attend any committee meetings that interest you and please volunteer to serve. Committee assignments will be made shortly after this meeting, so please indicate your willingness to serve to the committee chair, myself, or President-Elect JD Green. Both you and the society will benefit from your involvement.

It has been a great privilege to serve you as President of the NCWSS. I look forward to seeing you at the meeting and thank you for your continued service and support of the NCWSS.

Dave Johnson
President

General Information

Conference Headquarters

All sessions of the conference and the banquet will be held at the Hyatt Regency, 350 N High St, Columbus, OH 43215; Phone 888-421-1442.

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 **\$30**.

Registration Hours

The registration desk (County Foyer) 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 noon.

Local Arrangements Headquarters

Clark

Meeting Rooms

All sessions and meetings will be on the 1st and 2nd floor of the hotel. The General Session will be in the Delaware Room. Additional meetings may be arranged any time during the conference by contacting Mark Loux, Local Arrangements Chair.

Proceedings

2013 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 2013

Board of Directors

Monday, 1:00 pm	Morrow
Wednesday, 7:00 pm	Morrow

Local Arrangements

Monday, 11:00 am	Clark
Thursday, 12:00 am (with 2014 committee)	Clark

Contest Judges for Paper and Poster Contests

Judges breakfast, Tuesday, 7:00 am	Marion
Paper Judges, Tuesday, 7:15 am	Marion
Poster Judges, Tuesday, 7:15 am	Marion
Paper Judges, Tuesday, 5:00 pm	Madison
Poster Judges, Tuesday, 5:00 pm	Fayette

Meal Functions

Breaks

Tuesday, 2:30– 3:15 pm	Union
Wednesday, 9:15 – 10:00 am	Union
Wednesday, 3:00 – 3:45 pm	Union
Thursday, 9:45 – 10:30 am	Franklin CD
Thursday, 3:00 – 3:30 pm	Franklin CD

Student Mixer and Quiz Bowl

Sponsored by BASF Corporation – Open to all attendees

Monday, 6:30 pm	Delaware
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Student Luncheon/Business Meeting

Sponsored by Dow AgroSciences – Open to all students

Tuesday, 12:00 – 1:15 pm	Taft A
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Society Awards Luncheon

MC: Adrian Moses

Wednesday, 11:30 am	Regency Ballroom
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Society Socials

Tuesday, 5:00 – 7:00 pm	Union
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Sponsored by Syngenta – Open to all attendees

Wednesday, 5:30 – 7:00 pm	Regency Ballroom
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Sponsored by Industry – Open to all attendees

Industry Breakfast (Cost \$30)

Thursday, 7:00 am	Fairfield
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Meetings of the Society 2013

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 2015. 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, 12:00 pm Fayette
Monday, 8:00 pm (*for section moderators*) Fayette

Distinguished Achievement Award

Tuesday, 12:00 pm Madison

Strategic Planning

Tuesday, 4:30 pm Morrow

Paper Judges

Tuesday, 5:00 pm Madison

Poster Judges

Tuesday, 5:00 pm Fayette

Finance, Steering, & Policy

Tuesday, 5:30 pm Champaign

Future Site Selection

Tuesday, 5:30 pm Marion

Nominating

Tuesday, 5:30 pm Knox

Resident Education, Summer Contest, and Contest Rules Joint meeting

Wednesday, 7:00 am Marion

Extension (Committee and Business Meeting)

Wednesday, 3:15 pm Franklin CD

NCWSS Fellow

Wednesday, 5:00 pm Madison

Resolutions & Necrology

Wednesday, 5:00 pm Fayette

Invasive Plants

Wednesday, 5:15 pm Fairfield

Industry (committee and Business Meeting)

Thursday, 8:00 am Fairfield

Meetings of the Society 2013

Program Section Business Meetings

Agronomic Crops I (Forages, Pastures, Rangeland)	
Wednesday, 5:00 pm [No oral session this year]	Marion
Agronomic Crops II (Corn, Sorghum, Cereals)	
Thursday, 11:15 am	Franklin AB
Agronomic Crops III (Soybeans, Dry Beans, Sugar Beets)	
Wednesday, 11:00 am	Franklin CD
Equipment and Application Methods	
Wednesday, 10:45 am	Franklin AB
Extension	
Wednesday, 3:15 pm	Franklin CD
Forestry/Industrial/Non-Cropland/Aquatics	
Wednesday, 5:00 pm [No oral session this year]	Marion
Herbicide Physiology	
Tuesday, 4:00 pm	Delaware CD
Horticulture & Ornamentals	
Tuesday, 4:45 pm	Delaware AB
Poster Session	
Monday, 6:00 pm	Union
Weed Biology, Ecology & Management	
Wednesday, 3:15 pm	Franklin AB
Invasive Plants	
Wednesday, 5:15 pm	Fairfield

Special Interest Groups

Graduate Students (at luncheon)	
Tuesday, 12:00 pm	Taft A
Industry (at breakfast)	
Thursday, 7:00 am	Fairfield

Symposia

Technology Tools and Communication Trends for Weed Scientists	
Wednesday, 8:00 – 11:30 am	Fairfield
MIPN Invasive Plant Symposium	
Wednesday, 1:15 – 5:30 pm	Fairfield
Thursday, 8:00 am – 5:00 pm	Delaware
What's New in Industry?	
Wednesday, 3:45 – 5:00 pm	Franklin

Condensed Program – NCWSS 2013

Monday, December 9

1:00 pm	Board of Directors Meeting	Morrow
1:00 – 9:30 pm	Poster Setup	Union
6:30 pm	Student Mixer and Quiz Bowl	Delaware

Tuesday, December 10

8:00 – 9:45	Poster Session I	Union
10:00 – 12:00	NCWSS General Session	Delaware
12:00 – 1:15	Graduate Student Luncheon	Taft A
1:15 – 4:30	Agronomic Crops	Franklin CD
1:15 – 4:45	Weed Biology, Ecology, and Management	Franklin AB
1:15 – 4:15	Herbicide Physiology	Delaware CD
1:15 – 2:45	Equipment and Application Methods	Delaware AB
3:00 - 5:00	Horticulture/Ornamentals/Turf	Delaware AB
5:00 – 6:00	Poster Session II	Union
5:30 – 7:00	Society Social - [open to all attendees]	Union

Wednesday, December 11

8:10 – 11:15	Symposium: Technology Tools and Communication Trends for Weed Scientists	Fairfield
8:15 – 11:15	Soybeans/Dry Beans/Sugarbeets	Franklin CD
8:15 – 11:00	Equipment & Application Methods	Franklin AB
11:30-1:30	Awards Luncheon	Regency Ballroom
1:30 – 3:30	Weed Biology & Ecology	Franklin AB
1:30 – 3:30	Extension	Franklin CD
3:45 – 5:00	What's New in Industry?	Franklin
1:15 – 5:30	MIPN Symposium: Invasive Plants [all meeting attendees welcome]	Fairfield
5:30 – 7:00	Society Social - (open to all attendees)	Regency Ballroom
7:00 – 9:00	Board of Directors Meeting	Morrow

Thursday, December 12

7:00 – 8:15	Industry Breakfast	Fairfield
8:15 – 11:30	Corn/Sorghum/Cereals	Franklin AB
8:00 – 5:00	MIPN Symposium: Invasive Plants [all meeting attendees welcome]	Delaware

Poster Sessions

Room: Union

Chairperson and Moderator: Dave Ruen

Poster Setup

Posters can be set up between 1:00 and 9:30 pm on Monday, December 9. All NCWSS posters will be on display from 8:00 am Tuesday, December 10 through 4:00 pm Wednesday December 11. Posters for the MIPN Invasive Plant Symposium will be on display through 5:00 pm Thursday December 12

Students in the Poster Contest must be with their posters during both 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 10

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. Posters and exhibitors with the MIPN/OIPC Invasive Plant Symposium will be moved to Franklin CD on Thursday and should be removed by 5:00 pm.

Exhibitors

Tuesday & Wednesday	NCWSS	Union
Thursday	MIPN/OIPC	Franklin CD

Program Symbols

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

Corn/Sorghum/Cereals Posters

Common Windgrass Management in Winter Wheat. Christy L. Sprague*; Michigan State University, East Lansing, MI (1)

†Shattercane X ALS-Tolerant Sorghum F1 Hybrid and Shattercane Interference in ALS-Tolerant Sorghum. Rodrigo Werle¹, Jared J. Schmidt¹, John Laborde¹, Angela M. Tran*¹, Cody F. Creech², John L. Lindquist¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE (2)

Interactions Between Foliar Applied RyzUp SmartGrass Tank Mixed with Synthetic Auxin Herbicides in Corn. Eric J. Ott*¹, James M. Wargo², John A. Pawlak³; ¹Valent USA Corporation, Greenfield, IN, ²Valent USA Corporation, Atlanta, GA, ³Valent USA Corporation, Lansing, MI (3)

†Control of Glyphosate-Resistant Giant Ragweed by Tank Mixing Glufosinate with 2,4-D and/or Dicamba in Corn. Zahoor A. Ganie*¹, Kevin Watteyne², Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²Bayer CropScience, Lincoln, NE (4)

†Influence of Fall and Early Spring Application of Pre-Packaged Tank Mixture of Iodosulfuron and Thien carbazone-methyl on Control of Glyphosate-Resistant Giant Ragweed in No-till Corn. Simranpreet Kaur*¹, Kevin Watteyne², Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²Bayer CropScience, Lincoln, NE (5)

Control of HPPD-Resistant Waterhemp with Mesotrione and Tankmixes Applied Preemergence. Jon E. Scott*¹, Aaron S. Franssen², Stevan Z. Knezevic¹; ¹University of Nebraska-Lincoln, Concord, NE, ²Syngenta Crop Protection, Seward, NE (6)

Control of HPPD-Resistant Waterhemp in Corn and Soybean. Jon E. Scott*¹, Aaron S. Franssen², Stevan Z. Knezevic¹; ¹University of Nebraska-Lincoln, Concord, NE, ²Syngenta Crop Protection, Seward, NE (7)

†Weed Height and the Inclusion of Atrazine Influence Control of Multiple-Resistant Palmer Amaranth with HPPD-Inhibitors. Jonathon R. Kohrt*, Christy L. Sprague; Michigan State University, East Lansing, MI (8)

Corn/Sorghum/Cereals Posters (continued)

††Corn Yield as Influenced by Nitrogen Management, Residual Herbicide, and Other Pest Management Inputs. John T. Buol*, Rebecca R. Bailey, Elizabeth J. Bosak, Tim Trower, Vince M. Davis; University of Wisconsin-Madison, Madison, WI (9)

Soybean/Dry Beans/Sugar Beets Posters

††Cover Crop Response to Corn and Soybean Residual Herbicides. Chris P. Corzatt*, Mark L. Bernards; Western Illinois University, Macomb, IL (10)

Italian Ryegrass, *Lolium multiflorum* and Other Cover Crops for Suppression of Soybean Cyst Nematode, *Heterodera glycines*. Bruce A. Ackley*, Steven K. Harrison, Mark Sulc; The Ohio State University, Columbus, OH (11)

†Light Interception of Soybean as Influenced by Row Width, Seeding Rate, and Weed Competition. Thomas R. Butts*¹, Jason K. Norsworthy², Greg R. Kruger³, Lowell Sandell⁴, Bryan G. Young⁵, Kevin W. Bradley⁶, Lawrence E. Steckel⁷, Mark M. Loux⁸, Vince M. Davis¹; ¹University of Wisconsin-Madison, Madison, WI, ²University of Arkansas, Fayetteville, AR, ³University of Nebraska-Lincoln, North Platte, NE, ⁴University of Nebraska-Lincoln, Lincoln, NE, ⁵Southern Illinois University, Carbondale, IL, ⁶University of Missouri, Columbia, MO, ⁷University of Tennessee, Jackson, TN, ⁸The Ohio State University, Columbus, OH (12)

Weed Management with Flumioxazin/Pyroxasulfone in Soybean. Nader Soltani*, Christy Shropshire, Peter H. Sikkema; University of Guelph-Ridgetown, Ridgetown, ON (13)

The Influence of Herbicide Rate and Application Timing on the Soil-Residual Efficacy of Preplant Soybean Herbicides. R. Joseph Wuerffel*¹, Bryan G. Young¹, Julie M. Young¹, Mark L. Bernards², Aaron G. Hager³; ¹Southern Illinois University, Carbondale, IL, ²Western Illinois University, Macomb, IL, ³University of Illinois, Urbana-Champaign, IL (14)

Soybean/Dry Beans/Sugar Beets Posters (continued)

†Optimum Glyphosate Application Timing in Soybean as Influenced by Preemergence Residual Herbicide Use Following Different Planting Dates. Ryan P. DeWerff*, Vince M. Davis, Shawn P. Conley; University of Wisconsin-Madison, Madison, WI (15)

†Control of Glyphosate-Resistant Common Waterhemp with Long Chain Fatty Acid Inhibitors Applied in a Split Application in Soybeans. Debalin Sarangi*¹, Lowell Sandell¹, Stevan Z. Knezevic², Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Concord, NE (16)

Dicamba in a Residual System for Glyphosate-Resistant Waterhemp Control in Soybean. Seth T. Logan*¹, Bryan G. Young², Julie M. Young², Simone Seifert-Higgins³, Sara M. Allen⁴; ¹Monsanto, Tamaroa, IL, ²Southern Illinois University, Carbondale, IL, ³Monsanto Company, St. Louis, MO, ⁴Monsanto, Bonnie, IL (17)

†Response of Glyphosate-Resistant Horseweed to POST Herbicides. Joseph D. Bolte*, Reid J. Smeda; University of Missouri, Columbia, MO (18)

Enlist Soybean Tolerance to Enlist Duo. Jeff M. Ellis*¹, David C. Ruen², Eric F. Scherder³, David M. Simpson⁴, Scott C. Ditmarsen⁵; ¹Dow AgroSciences, Smithville, MO, ²Dow AgroSciences, Lanesboro, MN, ³Dow AgroSciences, Huxley, IA, ⁴Dow AgroSciences, Indianapolis, IN, ⁵Dow AgroSciences, Madison, WI (19)

Palmer Amaranth Control Program in Enlist Soybean. Kristin Rosenbaum*¹, Jeff M. Ellis², Brad Hopkins³, Jonathan Siebert⁴; ¹Dow AgroSciences, Lincoln, NE, ²Dow AgroSciences, MO, ³Dow AgroSciences, Indianapolis, IN, ⁴Dow AgroSciences, Leland, MS (20)

In-Season Weed Control in Dicamba-Resistant Soybean Systems for Controlling Glyphosate Resistant and Other Tough to Control Weeds. Jeffrey Golus*¹, Lowell Sandell², Amit J. Jhala², Ryan S. Henry¹, Mayank Malik³, Simone Seifert-Higgins⁴, Tony D. White⁴, Greg R. Kruger¹; ¹University of Nebraska-Lincoln, North Platte, NE, ²University of Nebraska-Lincoln, Lincoln, NE, ³Monsanto, Lincoln, NE, ⁴Monsanto Company, St. Louis, MO (21)

Soybean/Dry Beans/Sugar Beets Posters (continued)

BAS 18322H for Glyphosate Resistant Waterhemp Control in Dicamba-Tolerant Soybean. Stevan Z. Knezevic¹, Jon E. Scott¹, Leo D. Charvat*²; ¹University of Nebraska-Lincoln, Concord, NE, ²BASF Corporation, Lincoln, NE (22)

A197: A Technical Overview. Stott Howard*¹, Gordon D. Vail², John P. Foresman²; ¹Syngenta Crop Protection, Des Moines, IA, ²Syngenta Crop Protection, Greensboro, NC (23)

†Control of Glyphosate-Resistant Volunteer Corn in Glufosinate-Resistant Soybeans. Parminder S. Chahal*¹, Greg R. Kruger², Lowell Sandell¹, Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE (24)

†Timing of Volunteer Corn Control Affects Sugarbeet Yield. Amanda C. Harden*, Christy L. Sprague; Michigan State University, East Lansing, MI (25)

Dry Bean Desiccation with Various Herbicides in Canada. Nader Soltani*¹, Robert E. Blackshaw², Rob Gulden³, Chris Gillard¹, Christy Shropshire¹, Peter H. Sikkema¹; ¹University of Guelph-Ridgetown, Ridgetown, ON, ²Agriculture Canada, Alberta, AB, ³University of Manitoba, Manitoba, MB (26)

Equipment and Application Posters

††The Effect of Adjuvants and Nozzles on Cloransulam, Glyphosate, and Dicamba Efficacy and Droplet Size. Fernanda S. Antonio*, Ryan S. Henry, Andre O. Rodrigues, Jesaelen G. Moraes, Rafael Werle, Cody F. Creech, Greg R. Kruger; University of Nebraska-Lincoln, North Platte, NE (27)

††The Impact of Droplet Size on the Efficacy of 2,4-D, Atrazine, Chlorimuron, Dicamba, Glufosinate, and Saflufenacil. Jesaelen G. Moraes*, Rafael Werle, Fernanda S. Antonio, Andre O. Rodrigues, Cody F. Creech, Ryan S. Henry, Greg R. Kruger; University of Nebraska-Lincoln, North Platte, NE (28)

Equipment and Application Posters (continued)

††Glyphosate, Fluazifop, Lactofen, and Dicamba Efficacy as Impacted by Adjuvants and Nozzles. Andre O. Rodrigues*, Fernanda S. Antonio, Jesaelen G. Moraes, Rafael Werle, Cody F. Creech, Ryan S. Henry, Greg R. Kruger; University of Nebraska-Lincoln, North Platte, NE (29)

†Herbicide Efficacy as Influenced by Carrier Volume and Weed Size. Cody F. Creech*¹, Rafael Werle¹, Jesaelen G. Moraes¹, Andre O. Rodrigues¹, Fernanda S. Antonio¹, Ryan S. Henry¹, Lowell Sandell², Greg R. Kruger¹; ¹University of Nebraska-Lincoln, North Platte, NE, ²University of Nebraska-Lincoln, Lincoln, NE (30)

Efficacy of Dicamba & Glyphosate Applied Through Commercial Application Equipment. Stephen A. Valenti*¹, Joseph J. Sandbrink², Jeff N. Travers²; ¹Monsanto, Fargo, ND, ²Monsanto Company, St. Louis, MO (31)

Proposed Label Application Requirements for Dicamba in Roundup Ready® Xtend Crop Systems. Susan E. Curvey*, Jeff N. Travers, Joseph J. Sandbrink, Thomas B. Orr, Helen E. Mero; Monsanto Company, St. Louis, MO (32)

†Effect of Carrier Volume on Growth Regulator and Contact Herbicide Tank-Mixtures. Strahinja Stepanovic*¹, Matheus Palhano¹, Greg R. Kruger², Lowell Sandell¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE (33)

†Effect of Water Temperature and Storage Duration on MON 76757. Pratap Devkota*, William G. Johnson; Purdue University, West Lafayette, IN (34)

†An Evaluation of Three Drift Reduction Technologies for Aerial Application of Pesticides. Ryan S. Henry*¹, Annah Geyer¹, William E. Bagley², Greg R. Kruger¹; ¹University of Nebraska-Lincoln, North Platte, NE, ²Wilbur-Ellis, San Antonio, TX (35)

Drift Reduction to Soybean Fields When Using Best Management Practices with Enlist Duo. David M. Simpson*, Fikru Haile, Jerome J. Schleier; Dow AgroSciences, Indianapolis, IN (36)

Extension Posters

Use of Non-Traditional Extension Outreach Tools for Turfgrass Weed Science. Jared A. Hoyle*; Kansas State University, Manhattan, KS (37)

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 (38)

Time of Weed Removal in Corn and Soybeans, A Field Teaching Tool - Seeing is Believing. Lisa M. Behnken*¹, Fritz Breitenbach¹, Jeffrey L. Gunsolus², Ryan P. Miller¹; ¹University of Minnesota, Rochester, MN, ²University of Minnesota, Saint Paul, MN (39)

Planning and Conducting Field Demonstration Tours. Bruce E. Maddy*¹, David E. Hillger², Gary A. Finn², Jeff M. Ellis³, Eric F. Scherder⁴, David C. Ruen⁵, Corey K. Gerber⁶, Fritz Koppatschek⁷, Luke A. Peters²; ¹Dow AgroSciences, Noblesville, IN, ²Dow AgroSciences, Indianapolis, IN, ³Dow AgroSciences, Smithville, MO, ⁴Dow AgroSciences, Huxley, IA, ⁵Dow AgroSciences, Lanesboro, MN, ⁶Purdue University, West Lafayette, IN, ⁷ABG Ag Services, Sheridan, IN (40)

Global Technology Transfer at Dow AgroSciences: Blended Learning for Employee and Customer Education. Gary A. Finn¹, Bruce E. Maddy², Ed King¹, David E. Hillger*¹; ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences, Noblesville, IN (41)

Take Action: A Cooperative Herbicide Resistance Educational Program. William G. Johnson, Travis Legleiter*; Purdue University, West Lafayette, IN (42)

Pro-Active Late-Season Weed Escape Survey Identified Glyphosate-Resistant Horseweed Present at Low Frequency in Wisconsin. Ross A. Recker*, Vince M. Davis; University of Wisconsin-Madison, Madison, WI (43)

Forage/Pastures/Rangeland Posters

†**The Effect of Growth Stage on Switchgrass Atrazine Tolerance.** Whitney M. Churchman*, Michael Barrett, David W. Williams; University of Kentucky, Lexington, KY (44)

†**Selection Based Improvement for 2,4-D Tolerance in Red Clover (*Trifolium pratense*).** Tara L. Burke*, James Roberts, Norman Taylor, Michael Barrett; University of Kentucky, Lexington, KY (45)

Forestry/Industrial/Non-Cropland/ Aquatics Posters

Comparison of Newer and Older Herbicide Options for Guardrails. Joe Omielan*, William Witt; University of Kentucky, Lexington, KY (46)

Horticulture/Ornamentals/Turf Posters

†**Herbicide Combinations for the Control of Nimblewill in Kentucky Bluegrass Lawns.** Michael Barrett, Alexandra P. Williams*; University of Kentucky, Lexington, KY (47)

†**Effect of Herbicide Carryover in Cover Crop Capacity to Affect Soil Structure and Nutrient Availability.** Maria R. Rojas*, Darren Robinson, Laura Van Eerd, Ivan O'Halloran; University of Guelph-Ridgetown, Ridgetown, ON (48)

Does Cyprosulfamide Safen Isoxaflutole in Sweet Corn? Darren Robinson*, Nader Soltani, Christy Shropshire, Peter H. Sikkema; University of Guelph-Ridgetown, Ridgetown, ON (49)

Weed Management Options During Wine Grape Establishment. Collin Auwarter*, Harlene M. Hatterman-Valenti, John E. Stenger; North Dakota State University, Fargo, ND (50)

Herbicide Physiology Posters

†**Characterization of an Indiana Palmer Amaranth Population Resistant to Glyphosate.** Doug J. Spaunhorst*, William G. Johnson; Purdue University, West Lafayette, IN (51)

Inheritance of Atrazine Resistance in Palmer Amaranth. Mithila Jugulam*, Amar S. Godar, Curtis R. Thompson; Kansas State University, Manhattan, KS (52)

†**Biochemical Basis for Metabolism-Based Atrazine Resistance in *Amaranthus tuberculatus*.** Anton F. Evans*, Rong Ma, Jacqueline Janney, Brittany A. Janney, Dean E. Riechers; University of Illinois, Urbana-Champaign, IL (53)

††**Influence of Soil Residual Fomesafen and Dicamba Tank-Mixtures on the Frequency of PPO-Resistant Waterhemp.** Theresa A. Reinhardt*, R. Joseph Wuerffel, Julie M. Young, Bryan G. Young; Southern Illinois University, Carbondale, IL (54)

†**EPSPS Pro106Ser Substitution in a Glyphosate Resistant Goosegrass Population from Tennessee.** Janel L. Huffman*¹, Chance W. Riggins¹, Lawrence E. Steckel², Patrick Tranel¹; ¹University of Illinois, Urbana-Champaign, IL, ²University of Tennessee, Jackson, TN (55)

Differential Response of Lambsquarters from Kansas to Glyphosate. Randall DeGreeff*, Amar S. Godar, Anita Dille, Dallas E. Peterson, J. Mithila; Kansas State University, Manhattan, KS (56)

†**Inheritance of Glyphosate Resistance in Kochia.** J. Mithila, Kindsey Niehues*; Kansas State University, Manhattan, KS (57)

Multiple Herbicide-Resistant Kochia from Kansas. J. Mithila*¹, Amar S. Godar¹, Randall S. Currie², Anita Dille¹, Curtis R. Thompson¹, Phillip W. Stahlman³; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Garden City, KS, ³Kansas State University, Hays, KS (58)

†**Transfer of Phenoxy Resistance from Wild Radish to Canola via Embryo Rescue.** Mithila Jugulam, Andrew Dillon*; Kansas State University, Manhattan, KS (59)

Weed Biology/Ecology/Management Posters

†Impact of Cover Crops and Strip Tillage on Early Season Weed Populations in Corn. John M. Green*¹, Karen A. Renner¹, Dale R. Mutch²; ¹Michigan State University, East Lansing, MI, ²Michigan State University, Centerville, MI (60)

Glyphosate-Resistant Waterhemp Response to Glyphosate Doses in Nebraska. Jordan Moody*¹, Lucas Baldrige¹, Lowell Sandell¹, Greg R. Kruger²; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE (61)

†Measuring Ecological Fitness in the Absence of Herbicide Selection of Five Herbicide-Resistance Traits in Waterhemp using a Multi-Generation Greenhouse Study. Chenxi Wu*¹, Adam S. Davis², Patrick Tranel¹; ¹University of Illinois, Urbana-Champaign, IL, ²USDA-Agricultural Research Service, Urbana, IL (62)

Use of Residual Herbicides to Control Waterhemp and Palmer Amaranth. Lucas Baldrige*¹, Jordan Moody¹, Strahinja Stepanovic¹, Lowell Sandell¹, Lawrence E. Steckel², Jason K. Norsworthy³, Bryan G. Young⁴, Kevin W. Bradley⁵, William G. Johnson⁶, Mark M. Loux⁷, Vince M. Davis⁸, Thomas W. Eubank⁹, Greg R. Kruger¹⁰; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Tennessee, Jackson, TN, ³University of Arkansas, Fayetteville, AR, ⁴Southern Illinois University, Carbondale, IL, ⁵University of Missouri, Columbia, MO, ⁶Purdue University, West Lafayette, IN, ⁷The Ohio State University, Columbus, OH, ⁸University of Wisconsin-Madison, Madison, WI, ⁹Mississippi State University, Stoneville, MS, ¹⁰University of Nebraska-Lincoln, North Platte, NE (63)

Waterhemp Resistance to Post Emergent Application of HPPD Herbicides. Stevan Z. Knezevic*¹, Jon E. Scott¹, Aaron S. Franssen², Vinod K. Shivrain³; ¹University of Nebraska-Lincoln, Concord, NE, ²Syngenta Crop Protection, Seward, NE, ³Syngenta Crop Protection, Vero Beach, FL (64)

†Differential Responses to Atrazine Preemergence and Postemergence in Two Populations of Atrazine-resistant Waterhemp (*Amaranthus tuberculatus*) from Illinois. Rong Ma*¹, Anton F. Evans¹, Shiv S. Kaundun², Brittany A. Janney¹, Dean E. Riechers¹; ¹University of Illinois, Urbana-Champaign, IL, ²Syngenta UK, Berkshire, England (65)

Weed Biology/Ecology/Management Posters (continued)

†Landscape Movement of 2,4-D Resistance in *Amaranthus tuberculatus*. Lacy J. Valentine*¹, Zac Reicher¹, Patrick Tranel², Greg R. Kruger³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Illinois, Urbana-Champaign, IL, ³University of Nebraska-Lincoln, North Platte, NE (66)

†Growth Rate, Dry Matter Accumulation, and Seed Yield of Common Waterhemp. Joey M. Heneghan*, William G. Johnson; Purdue University, West Lafayette, IN (67)

†Impact of Emergence Date on Reproductive Potential of *Amaranthus*. Heidi R. Davis*, Reid J. Smeda; University of Missouri, Columbia, MO (68)

Emergence Patterns of Waterhemp in Nebraska in 2013. Chandra J. Hawley*¹, Lacy J. Valentine², Lowell Sandell², Amit J. Jhala², Greg R. Kruger¹; ¹University of Nebraska-Lincoln, North Platte, NE, ²University of Nebraska-Lincoln, Lincoln, NE (69)

†Waterhemp Control Under Varying Drought Stress Conditions with 2,4-D and Glyphosate. Joshua J. Skelton*, Brittany A. Janney, Dean E. Riechers; University of Illinois, Urbana-Champaign, IL (70)

†Identifying Gender-Specific DNA Markers in Waterhemp. Ahmed Sadeque*, Patrick J. Brown, Patrick Tranel; University of Illinois, Urbana-Champaign, IL (71)

††Characterization of Illinois Populations of Waterhemp and Palmer Amaranth for Herbicide Mode-of-Action Sensitivity and Soil Residual Activity. Jamie L. Long*, Julie M. Young, Bryan G. Young; Southern Illinois University, Carbondale, IL (72)

Weed Biology/Ecology/Management Posters (continued)

†Emergence Patterns of Waterhemp and Palmer Amaranth in the Southern and Midwestern U.S. Lucas X. Franca*¹, Bryan G. Young¹, Jason K. Norsworthy², Thomas W. Eubank³, Lawrence E. Steckel⁴, Mark M. Loux⁵, William G. Johnson⁶, Vince M. Davis⁷, Reid J. Smeda⁸, Greg R. Kruger⁹; ¹Southern Illinois University, Carbondale, IL, ²University of Arkansas, Fayetteville, AR, ³Mississippi State University, Stoneville, MS, ⁴University of Tennessee, Jackson, TN, ⁵The Ohio State University, Columbus, OH, ⁶Purdue University, West Lafayette, IN, ⁷University of Wisconsin-Madison, Madison, WI, ⁸University of Missouri, Columbia, MO, ⁹University of Nebraska-Lincoln, North Platte, NE (73)

Historical Distribution of Giant Ragweed and Cocklebur in the North Central Region. Ramarao Venkatesh*¹, Robert A. Ford¹, Emilie E. Regnier¹, Steven K. Harrison¹, Christopher Holloman¹, Robin Taylor², Florian Diekmann¹; ¹The Ohio State University, Columbus, OH, ²Texas A&M University, Temple, TX (74)

GIS Analysis of Glyphosate Resistance in Giant Ragweed (*Ambrosia trifida*). Robert A. Ford*¹, Ramarao Venkatesh¹, Emilie E. Regnier¹, Steven K. Harrison¹, Christopher Holloman¹, Robin Taylor², Florian Diekmann¹; ¹The Ohio State University, Columbus, OH, ²Texas A&M University, Temple, TX (75)

Metagenomic Evaluation of Rhizosphere Microbial Community Dynamics in Glyphosate-Treated Giant Ragweed Biotypes. Jessica R. Schafer*, Steve G. Hallett, William G. Johnson; Purdue University, West Lafayette, IN (76)

Giant Ragweed Resistance to Glyphosate in Nebraska. Stevan Z. Knezevic*¹, Jon E. Scott¹, Avishek Datta²; ¹University of Nebraska-Lincoln, Concord, NE, ²Asian Institute of Technology, Bangkok, Thailand (77)

†Emergence Time of Summer and Winter Annual Weeds in the Midwestern USA. Rodrigo Werle*¹, Lowell Sandell¹, Mark L. Bernards², Doug Buhler³, Bob G. Hartzler⁴, John L. Lindquist¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²Western Illinois University, Macomb, IL, ³Michigan State University, East Lansing, MI, ⁴Iowa State University, Ames, IA (78)

Weed Biology/Ecology/Management Posters (continued)

†**Defining the Weed Host Range of *Clavibacter michiganensis* subsp. *nebraskensis*, Causal Agent of Goss's Wilt of Corn.** Joseph Ikley*, Kiersten Wise, William G. Johnson; Purdue University, West Lafayette, IN (79)

†**Influence of Cereal Rye and Annual Ryegrass Cover Crops on Management of Glyphosate Resistant Horseweed.** Tyler A. Johnson*, Mark M. Loux; The Ohio State University, Columbus, OH (80)

†**Impact of Weed Management and Nitrogen Rate on Nitrous Oxide Emissions in Corn.** Rebecca R. Bailey*, Vince M. Davis; University of Wisconsin-Madison, Madison, WI (81)

†**Herbicide Carryover Evaluation in Cover Crops Following Corn and Soybean Herbicides.** Daniel H. Smith*¹, Travis Legleiter², Elizabeth J. Bosak¹, William G. Johnson², Vince M. Davis¹; ¹University of Wisconsin-Madison, Madison, WI, ²Purdue University, West Lafayette, IN (82)

†**Winter Annual Weed Suppression with Oilseed Radish.** Sandler Leah*, Kelly Nelson; University of Missouri, Columbia, MO (83)

Impact of Cover Crops on Weed Dynamics in Organic Dry Beans. Erin C. Hill*, Karen A. Renner, Christy L. Sprague; Michigan State University, East Lansing, MI (84)

†**Fitness of Sorghum, Shattercane and Their F2 Hybrid Progeny.** Jared J. Schmidt*¹, Scott Sattler², Diana Pilson¹, Aaron J. Lorenz¹, Jeff f. Pedersen², John L. Lindquist¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²USDA-ARS, Lincoln, NE (85)

Weed Control in Shelterbelts. Devin A. Wirth*; North Dakota State University, Fargo, ND (86)

Invasive Plants Posters

The Great Lakes Phragmites Collaborative: Building a Communication Strategy to Increase Regional Collaboration on Invasive Species Management. Amanda Sweetman*¹, Sphie Taddeo¹, Heather Braun¹, Kurt P. Kowalski²; ¹Great Lakes Commission, Ann Arbor, MI, ²USGS-Great Lakes Science Center, Ann Arbor, MI (87)

Invasive Phragmites in Great Lakes Coastal Corriors: Combining Radar Mapping and Habitat Suitability Modeling in an Online Decision Support Tool. Wesley A. Bickford*¹, Kurt P. Kowalski¹, Martha L. Carlson Mazur², Mike R. Eggleston¹; ¹USGS-Great Lakes Science Center, Ann Arbor, MI, ²Boston College, Chestnut Hill, ME (88)

Invasive Plant and Native Amphibian Interactions. Lisa Regula Meyer*; Kent State University, Kent, OH (89)

Is the Solution Worse Than the Problem? Examining the Effects of *Myriophyllum spicatum* and *Triclopyr* on *Lithobates pipiens* Tadpoles. Amanda Curtis*, M. Gabriela Bidart-Bouzat; Bowling Green State University, Bowling Green, OH (90)

Historic Mining and Agriculture as Indicators of Presence and Distribution of Two Widespread Invasive Plant Species. Kellen M. Calinger*, Elisabeth Calhoon, Hsiao-chi Chang; Ohio State University, Columbus, OH (91)

The Effect of Invasive Species on Grassland Bird Nesting. Chelsea L. Merriman*, Kerri C. Martin; University of Notre Dame, South Bend, IN (92)

Does the Rare, Native West Virginia White Butterfly (*Pieris virginiensis*) Oviposit on Invasive Garlic Mustard (*Alliaria petiolata*)? Samantha L. Davis*, Don Cipollini; Wright State University, Fairborn, OH (93)

Invasive Plant Dynamics in Ash Ecosystems. Kathleen Knight*; USDA Forest Service, Delaware, OH (94)

Native-Invasive Tree Litter Mixtures Enhance Invasive Species' Impacts on Nutrient Cycling During the Growing Season. Michael J. Schuster*, Jeffrey S. Dukes; Purdue University, West Lafayette, IN (95)

Exploring Direct and Indirect Comparative Allelopathic Effects of Invasive *Lonicera japonica* and Native *Lonicera sempervirens*. Nate Godby*, Kendra Cipollini; Wilmington College, Wilmington, OH (96)

General Session

68th NCWSS Annual Meeting

Room: Delaware

Moderator: J.D. Green

- 10:00 Welcome to Columbus, Home of Pelotonia One Goal.** Thomas Lennox*; Chief Executive Officer Pelotonia LLC, Columbus, OH
- 10:15 Current Issues and Future Perspective: Update from CAST.** Phillip W. Stahlman*, CAST President; Kansas State University, Hays, KS (97)
- 10:40 WSSA EPA-Subject Matter Expert Position: My Initial Impressions.** Michael Barrett*; University of Kentucky, Lexington, KY (98)
- 11:00 NCWSS Presidential Address.** Dave Johnson*; DuPont Pioneer, Johnston, IA (99)
- 11:20 Necrology Report.** Kirk A. Howatt*; North Dakota State University, Fargo, ND (100)
- 11:25 Announcements.**

Agronomic Crops Papers

Room: Franklin CD

Moderator: Mark Waddington

- 1:15 †Increased Soybean Seeding Rates Versus Preemergence Herbicide Use.** Ryan P. DeWerff*, Vince M. Davis, Shawn P. Conley; University of Wisconsin-Madison, Madison, WI (101)
- 1:30 †Effect of Soybean Pre- and Post-Emergence Herbicides on Glyphosate, Glufosinate, and Imidazolinone Resistant Volunteer Corn.** Parminder S. Chahal*¹, Greg R. Kruger², Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE (102)
- 1:45 †Control of Glyphosate-Resistant Giant Ragweed in Glufosinate-Resistant Soybean.** Simranpreet Kaur*, Lowell Sandell, Rodrigo Werle, Amit J. Jhala; University of Nebraska-Lincoln, Lincoln, NE (103)
- 2:00 Control of Glyphosate-Resistant Giant Ragweed in Glyphosate-Tolerant Notill Soybeans.** Lowell Sandell*¹, Greg R. Kruger², Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, North Platte, NE (104)
- 2:15 †Influence of Soybean Seeding Rate, Row Spacing and Herbicide Programs on the Control of Resistant Waterhemp in Glufosinate-Resistant Soybean.** John Schultz*, Eric B. Riley, Jimmy D. Wait, Kevin W. Bradley; University of Missouri, Columbia, MO (105)
- 2:30 †Multiple-Resistant Palmer Amaranth Control with Soil-Applied Herbicides in Michigan.** David Powell*, Christy L. Sprague; Michigan State University, East Lansing, MI (106)
- 2:45 Break**
- 3:00 †Effect of Herbicide and Application Timing on Residual Control of Horseweed Resistant to Glyphosate and ALS Inhibitors.** Bryan Reeb*, Mark M. Loux; The Ohio State University, Columbus, OH (107)

Agronomic Crops Papers (continued)

- 3:15 Soybean Breeding Over the Last 80+ Years Has Improved Plant Branching and Reduced the Penalty for Low Seeding Rates.** Vince M. Davis*¹, Justin Suhre²; ¹University of Wisconsin-Madison, Madison, WI, ²University of Illinois, Urbana-Champaign, IL (108)
- 3:30 Harvest Aid Effects on Black Bean Desiccation and Yield.** Amanda M. Goffnett*, Christy L. Sprague; Michigan State University, East Lansing, MI (109)
- 3:45 †Effect of Tillage and Herbicides on Control of Glyphosate-Resistant Giant Ragweed in Corn and Soybeans.** Zahoor A. Ganie*, Lowell Sandell, Amit J. Jhala; University of Nebraska-Lincoln, Lincoln, NE (110)
- 4:00 †Management of Palmer Amaranth in Corn Using Cover Crops and Herbicides.** Matthew S. Wiggins*, Lawrence E. Steckel; University of Tennessee, Jackson, TN (111)
- 4:15 †Waterhemp and Palmer Amaranth Control Using Dicamba, 2,4-D and Isoxaflutole Based Chemical Programs.** Strahinja Stepanovic*¹, Lawrence E. Steckel², Jason K. Norsworthy³, Bryan G. Young⁴, Kevin W. Bradley⁵, William G. Johnson⁶, Mark M. Loux⁷, Vince M. Davis⁸, Thomas W. Eubank⁹, Lowell Sandell¹, Greg R. Kruger¹⁰; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Tennessee, Jackson, TN, ³University of Arkansas, Fayetteville, AR, ⁴Southern Illinois University, Carbondale, IL, ⁵University of Missouri, Columbia, MO, ⁶Purdue University, West Lafayette, IN, ⁷The Ohio State University, Columbus, OH, ⁸University of Wisconsin-Madison, Madison, WI, ⁹Mississippi State University, Stoneville, MS, ¹⁰University of Nebraska-Lincoln, North Platte, NE (112)

Weed Biology, Ecology, and Management Papers

Room: Franklin AB

Moderator: Kris Mahoney

- 1:15 †Kochia Seed Characteristics Under Different Crop Canopies.** Andrew Esser*, Anita Dille; Kansas State University, Manhattan, KS (113)
- 1:30 †Influence of Emergence Timing on the Vegetative and Reproductive Development of Palmer Amaranth in Indiana.** Doug J. Spaunhorst*, William G. Johnson; Purdue University, West Lafayette, IN (114)
- 1:45 †Influence of Spring Tillage on Emergence of Giant Ragweed in Nebraska.** Rodrigo Werle*, Lowell Sandell, Simranpreet Kaur, Amit J. Jhala, John L. Lindquist; University of Nebraska-Lincoln, Lincoln, NE (115)
- 2:00 †Giant Ragweed Seed Production and Retention in Soybean and Field Margins.** Jared J. Goplen*¹, Jeffrey L. Gunsolus¹, Craig Sheaffer¹, Roger Becker¹, Jeffrey Coulter¹, Fritz Breitenbach², Lisa M. Behnken², Gregg Johnson³; ¹University of Minnesota, Saint Paul, MN, ²University of Minnesota, Rochester, MN, ³University of Minnesota SROC, Waseca, MN (116)
- 2:15 †Control of Glyphosate Resistant Canada Fleabane (*Conyza Canadensis*) with Glyphosate DMA/2,4-D Choline (Enlist Duo ©) in Corn (*Zea mays*).** Laura R. Ford*¹, Darren Robinson¹, Allan McFadden², Nader Soltani¹, Robert Nurse³, Peter H. Sikkema¹; ¹University of Guelph-Ridgetown, Ridgetown, ON, ²Dow AgroSciences Canada Inc, Guelph, ON, ³Agriculture and Agri-Food Canada, Harrow, ON (117)
- 2:30 †Impact of Herbicides on *Clavibacter michiganensis* subsp. *nebraskensis*, Causal Agent of Goss's Wilt of Corn.** Joseph Ikley*, Kiersten Wise, William G. Johnson; Purdue University, West Lafayette, IN (118)
- 2:45 Break**

Weed Biology, Ecology, and Management Papers (continued)

- 3:00 †Effect of Humidity and Humectant on Glufosinate Efficacy.** Andrew R. Kniss¹, Carl W. Coburn*¹, Richard K. Zollinger²; ¹University of Wyoming, Laramie, WY, ²North Dakota State University, Fargo, ND (119)
- 3:15 †Response of Glyphosate-susceptible and –resistant Common Waterhemp to Waterstress.** Debalin Sarangi*, John L. Lindquist, Suat Irmak, Amit J. Jhala; University of Nebraska-Lincoln, Lincoln, NE (120)
- 3:30 †Status of Herbicide Resistance in Ohio Amaranthus spp.** Samantha N. Konkle*, Mark M. Loux, Tony Dobbels; The Ohio State University, Columbus, OH (121)
- 3:45 †Nitrous Oxide Emissions as Influenced by Nitrogen and Weeds Before and After Postemergence Glyphosate Application.** Rebecca R. Bailey*, Vince M. Davis; University of Wisconsin-Madison, Madison, WI (122)
- 4:00 †Concomitant Nutrient Release of Decaying Weed Residues Following Postemergent Weed Control.** Nick T. Harre*, Bryan G. Young, Jon E. Schoonover; Southern Illinois University, Carbondale, IL (123)
- 4:15 †The Applicability of Tilman's Resource Ratio Theory to Four Amaranthaceae Species.** Lauren M. Schwartz*, Bryan G. Young, David J. Gibson; Southern Illinois University, Carbondale, IL (124)
- 4:30 †The Effect of Mob Grazing on Canada thistle Control, Pasture Productivity and Utilization, and Forage Quality.** Anders M. Gurda*¹, Mark J. Renz¹, Geoffrey E. Brink²; ¹University of Wisconsin-Madison, Madison, WI, ²USDA-ARS Dairy Forage Research Center, Madison, WI (125)

Herbicide Physiology

Room: Delaware CD

Moderator: Ryan Lee

- 1:15 †Effect of Imazethapyr, Mesotrione and Saflufenacil Residues on Four Spring-Seeded Cover Crops.** Li Yu*, Darren Robinson, Peter H. Sikkema; University of Guelph-Ridgetown, Ridgetown, ON (126)
- 1:30 †A Multi-State Study of the Association Between Glyphosate Resistance and EPSPS Gene Amplification in Waterhemp.** Laura A. Chatham*¹, Chance W. Riggins¹, James R. Martin², Greg R. Kruger³, Kevin W. Bradley⁴, Dallas E. Peterson⁵, Mithila Jugulam⁵, Patrick Tranel¹; ¹University of Illinois, Urbana-Champaign, IL, ²University of Kentucky, Princeton, KY, ³University of Nebraska-Lincoln, North Platte, NE, ⁴University of Missouri, Columbia, MO, ⁵Kansas State University, Manhattan, KS (127)
- 1:45 Non-Target-Site Resistance to ALS Inhibitors in Waterhemp.** Jiaqi Guo*, Chance W. Riggins, Nicholas Hausman, Aaron G. Hager, Dean E. Riechers, Patrick Tranel; University of Illinois, Urbana-Champaign, IL (128)
- 2:00 †Absorption and Translocation of 2,4-D in Resistant and Susceptible *Amaranthus tuberculatus*.** Lacy J. Valentine*¹, J. Mithila², Amar S. Godar², Zac Reicher¹, Greg R. Kruger³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²Kansas State University, Manhattan, KS, ³University of Nebraska-Lincoln, North Platte, NE (129)
- 2:15 Mesotrione Resistance is Increased Under Elevated Growth Temperatures in Palmer Amaranth.** Amar S. Godar, Mithila Jugulam*, P. V. Vara Prasad; Kansas State University, Manhattan, KS (130)
- 2:30 †*Amaranthus* Species: Pollen Expression of EPSP Synthase and *In Vitro* Pollen Germination.** Tye C. Shauck*, Reid J. Smeda; University of Missouri, Columbia, MO (131)
- 2:45 Break**

Herbicide Physiology (continued)

- 3:00 †New Evidence for Multiple Glyphosate-Resistance Mechanisms Within a Population of Common Ragweed (*Ambrosia artemisiifolia*).** Jason T. Parrish*¹, Mark M. Loux¹, David M. Mackey¹, Leah K. McHale¹, Doug Sammons², Dafu Wang², Elizabeth L. Ostrander³, Dana A. d'Avignon³, Xia Ge³, Philip Westra⁴, Christopher R. Van Horn⁴, Andrew T. Wiersma⁵; ¹The Ohio State University, Columbus, OH, ²Monsanto Company, St. Louis, MO, ³Washington University, St. Louis, MO, ⁴Colorado State University, Fort Collins, CO, ⁵Michigan State University, East Lansing, MI (132)
- 3:15 †Uptake, Translocation, and Metabolism of 2,4-D in Enlist Soybeans.** Joshua J. Skelton*¹, David M. Simpson², Dean E. Riechers¹; ¹University of Illinois, Urbana-Champaign, IL, ²Dow AgroSciences, Indianapolis, IN (133)
- 3:30 Kochia Populations Response to Glyphosate and EPSPS Gene Copy Number.** Amar S. Godar*¹, Phillip W. Stahlman², Mithila Jugulam¹, Anita Dille¹; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Hays, KS (134)
- 3:45 Evolution and Status of Glyphosate Resistant Kochia in American Great Plains.** Philip Westra*¹, Andrew T. Wiersma²; ¹Colorado State University, Ft. Collins, CO, ²Michigan State University, East Lansing, MI (135)
- 4:00 Section Business Meeting**

Equipment and Application Papers

Room: Delaware AB

Moderator: Lillian Magidow

- 1:15 †The Influence Of Carrier Volume And Spray Nozzle Type On Herbicide Coverage At Late Post Application to 31-cm Tall Soybean.** Travis Legleiter*, William G. Johnson; Purdue University, West Lafayette, IN (136)
- 1:30 †Interaction of Carrier Water pH and Hardness on the Efficacy of MON 76757 and 2,4-D Choline.** Pratap Devkota*, William G. Johnson; Purdue University, West Lafayette, IN (137)
- 1:45 Increasing Activity of Growth Regulator Herbicides with Water Conditioners.** Donald Penner*, Jan Michael; Michigan State University, East Lansing, MI (138)
- 2:00 †Glyphosate, Fluazifop, Lactofen, and Dicamba Efficacy and Droplet Size as Influenced by Adjuvants.** Cody F. Creech*¹, William E. Bagley², Lowell Sandell³, Greg R. Kruger¹; ¹University of Nebraska-Lincoln, North Platte, NE, ²Wilbur-Ellis, San Antonio, TX, ³University of Nebraska-Lincoln, Lincoln, NE (139)
- 2:15 †Tomato Injury and Downwind Deposition from Aerial Applications of Glyphosate.** Ryan S. Henry*¹, Brad Fritz², Clint Hoffmann², William E. Bagley³, Andrew Hewitt¹, Greg R. Kruger¹; ¹University of Nebraska-Lincoln, North Platte, NE, ²USDA-ARS, College Station, TX, ³Wilbur-Ellis, San Antonio, TX (140)
- 2:30 Glyphosate Drift Deposition and Tomato Injury from Ground Applications.** Greg R. Kruger*¹, Ryan S. Henry¹, Cody F. Creech¹, Brad Fritz², Clint Hoffmann², William E. Bagley³, Andrew Hewitt¹; ¹University of Nebraska-Lincoln, North Platte, NE, ²USDA-ARS, College Station, TX, ³Wilbur-Ellis, San Antonio, TX (141)
- 2:45 Break**

Horticulture, Ornamentals, and Turf Papers

Room: Delaware AB

Moderator: Collin Auwarter

- 3:00 †Dose Responses of Silvery-Thread Moss to Applications of Carfentrazone-ethyl.** Zane M. Raudenbush*, Steven J. Keeley, Mithila Jugulam; Kansas State University, Manhattan, KS (142)
- 3:15 ‘Cody’ Buffalograss Tolerance to Combination Postemergent Herbicides.** Jared A. Hoyle*; Kansas State University, Manhattan, KS (143)
- 3:30 †Investigating *Poa annua* Biotypes Collected from Golf Greens: Greenhouse Evaluations.** Alexandra P. Williams*, Michael Barrett, David W. Williams; University of Kentucky, Lexington, KY (144)
- 3:45 Tolerance of Red Raspberry to Clopyralid Applied Pre-harvest, Post-harvest, Early- and Late-fall.** Constanza Echaiz, Doug Doohan*; The Ohio State University, Wooster, OH (145)
- 4:00 Evaluation of Season-Long Weed Management Options in Potato.** Jed Colquhoun*, Daniel Heider, Richard Rittmeyer; University of Wisconsin, Madison, WI (146)
- 4:15 Effect of Simulated Glyphosate Drift to Russet Potato Cultivars Grown for Seed Production.** Harlene M. Hatterman-Valenti*, Collin Auwarter; North Dakota State University, Fargo, ND (147)
- 4:30 A Comparison of Synergistic Effects of Glyphosate and Bromoxynil Drift with In-Crop Herbicides in Tomato.** Darren Robinson*, Kristen E. McNaughton, Peter H. Sikkema; University of Guelph-Ridgetown, Ridgetown, ON (148)
- 4:45 Section Business Meeting**

Symposium: Technology Tools and Communication Trends for Weed Scientists

Room: Fairfield

Moderator: Vince Davis

- 8:10 Symposium Introduction.** Vince M. Davis*; University of Wisconsin-Madison, Madison, WI (149)
- 8:15 Getting Growers to Go Digital: The Power of a Positive User Experience.** Brian McCornack*; Kansas State University, Manhattan, KS (150)
- 8:45 You Tube, Social Media, Google Tools, etc...Extension Today@#MSUweedsience.** Erin C. Hill*; Michigan State University, East Lansing, MI (151)
- 9:15 The Nebraska Weed Guide: An Interactive Experience.** Lowell Sandell*¹, Greg R. Kruger²;
¹University of Nebraska-Lincoln, Lincoln, NE,
²University of Nebraska-Lincoln, North Platte, NE (152)
- 9:30 Break**
- 9:45 Development of the NDSU Pest Management App.** Angela J. Kazmierczak*; North Dakota State University, Fargo, ND (153)
- 10:00 #Etiquette: Social Media BMP's.** Dawn Refsell*; Valent USA, Columbia, MO (154)
- 10:15 Increase the Impact of Your Programs through Branding and Communications.** Karen Pfautsch*; OsbornBarr, St.Louis, MO (155)
- 10:45 Roundtable Discussion**
- 11:30 NCWSS Awards Luncheon**

Soybean/Dry Beans/Sugar Beets Papers

Room: Franklin CD

Moderator: Mark Waddington

- 8:15 Crop Response to Dicamba Applications on Soybean Event MON 87708.** Paul Feng*¹, Cindy L. Arnevik¹, Joe Cordes², Mindy Devries³, Mark Lubbers⁴, Debi Herren², Radha Mohanty¹; ¹Monsanto Company, St. Louis, MO, ²Monsanto Company, Jerseyville, IL, ³Monsanto Company, Huxley, IA, ⁴Monsanto Company, Wichita, KS (156)
- 8:30 Dicamba Formulation Advancements.** Joseph J. Sandbrink*, Alison Macinnes, John W. Hemminghaus, Jeff N. Travers, Simone Seifert-Higgins, Susan E. Curvey; Monsanto Company, St. Louis, MO (157)
- 8:45 Performance of Engenia™ Herbicide Programs in Dicamba Tolerant Soybeans.** Dustin Lewis*¹, John Frihauf², Walter Thomas², Steven Bowe², Luke L. Bozeman²; ¹BASF Corporation, Seymour, IL, ²BASF Corporation, Research Triangle Park, NC (158)
- 9:00 Stewardship of Engenia™ Herbicide.** Shane Hennigh*¹, Walter Thomas², Steven Bowe², Luke L. Bozeman²; ¹BASF Corporation, Story City, IA, ²BASF Corporation, Research Triangle Park, NC (159)
- 9:15 Enlist™ Soybean Tolerance and Weed Control with PRE Followed by POST Herbicide Programs.** . David C. Ruen*¹, Jeff M. Ellis², David M. Simpson³, Jonathan A. Huff³; ¹Dow AgroSciences, Lanesboro, MN, ²Dow AgroSciences, Smithville, MO, ³Dow AgroSciences, Indianapolis, IN (160)
- 9:30 Break**
- 9:45 University Evaluation of Isoxaflutole Weed Management Programs in HPPD Tolerant Soybean System.** Michael L. Weber*; Bayer CropScience, Indianola, IA (161)
- 10:00 Enhanced Weed Management Solutions with MGI Herbicide-Tolerant Soybeans.** Dain E. Bruns*¹, Rakesh Jain², Thomas H. Beckett², Brian L. Wilkinson², Brian Erdahl²; ¹Syngenta, Marysville, OH, ²Syngenta, Greensboro, NC (162)

Soybean/Dry Beans/Sugar Beets Papers (continued)

- 10:15 Influence of Weed Competition Duration on Soybean Nutrient Acquisition and Grain Yield Characteristics.** Nick T. Harre*¹, Bryan G. Young¹, Scott E. Cully², Brett R. Miller³, Mark Kitt³, Bryan J. Ulmer⁴; ¹Southern Illinois University, Carbondale, IL, ²Syngenta, Marion, IL, ³Syngenta, Minnetonka, MN, ⁴Syngenta, Basel, Switzerland (163)
- 10:30 New Residual Management Systems to Address Herbicide Resistant Weeds in Soybeans.** Dario F. Narvaez*; MANA, Wildwood, MO (164)
- 10:45 Preemergence Weed Control in Soybean with Chlorimuron, Flumioxazin, and Metribuzin.** Kelly A. Barnett*¹, Helen A. Flanigan², Kevin L. Hahn³, Dan Smith⁴; ¹DuPont Crop Protection, Whiteland, IN, ²DuPont Crop Protection, Greenwood, IN, ³DuPont Crop Protection, Bloomington, IL, ⁴DuPont Crop Protection, Madison, MS (165)
- 11:00 Section Business Meeting**
- 11:30 NCWSS Awards Luncheon**

Equipment and Application Papers

Room: Franklin AB

Moderator: Lillian Magidow

- 8:15 Low Volume Dormant Stem Treatments for Extending the Brush Control Season.** Pat Burch¹, Travis Roger², Ernest S. Flynn*³; ¹Dow AgroSciences, Christiansburg, VA, ²Dow AgroSciences, Charleston, SC, ³Dow AgroSciences, Ankeny, IA (166)
- 8:30 Calibration Technology.** Robert E. Wolf*; Wolf Consulting & Research LLC, Mahomet, IL (167)
- 8:45 The Effects of Nozzles and Drift Reduction Agents on Droplet Size Distributions of Dicamba and Glyphosate Mixtures.** Thomas B. Orr*¹, Kirk B. Remund¹, Jeff N. Travers¹, Joy L. Honegger¹, Andrew Hewitt²; ¹Monsanto Company, St. Louis, MO, ²University of Nebraska-Lincoln, North Platte, NE (168)

Wednesday Papers 2013

- 9:00 Evaluating Drift Reduction Technologies for the Control of Glyphosate-resistant Waterhemp Using Dicamba and Glyphosate.** . Robert E. Wolf*¹, Scott M. Bretthauer², Matthew Gill², Bryan G. Young³, Greg R. Kruger⁴; ¹Wolf Consulting & Research LLC, Mahomet, IL, ²University of Illinois, Urbana-Champaign, IL, ³Southern Illinois University, Carbondale, IL, ⁴University of Nebraska-Lincoln, North Platte, NE (169)
- 9:15 Nonionic Surfactant Adjuvant with Optimized Physical and Biological Properties for Herbicide Tank Mixtures.** Gregory J. Lindner*¹, Kevin Penfield¹, Bryan G. Young², Marcia Werner³; ¹Croda Inc, New Castle, DE, ²Southern Illinois University, Carbondale, IL, ³Croda Brasil, Campinas, Brazil (170)
- 9:30 Break**
- 9:45 Atomization of Agricultural Tank Mixtures in Response to a Pulse Width Modulation (PWM) Spray Delivery System.** Lillian C. Magidow*¹, Stephanie Wedryk², Donald Penner³; ¹Winfield Solutions, River Falls, WI, ²Winfield Solutions, St. Paul, MN, ³Michigan State University, East Lansing, MI (171)
- 10:00 Minimizing Dicamba Drift with Improved Hooded Sprayers.** Joseph J. Sandbrink*¹, Jeff N. Travers¹, Steve Claussen²; ¹Monsanto Company, St. Louis, MO, ²Willmar, Willmar, MN (172)
- 10:15 Methods for Deactivating Dicamba Solutions in Agricultural Spray Equipment.** Susan E. Curvey*¹, David A. Morgenstern¹, Jeff N. Travers¹, Joseph J. Sandbrink¹, Ryan J. Rector²; ¹Monsanto Company, St. Louis, MO, ²Monsanto Company, St Louis, MO (173)
- 10:30 Simple and Reliable Tank Cleaning.** David A. Morgenstern*, Ronald J. Brinker, James W. Taylor, James P. Fornango, Jeff N. Travers; Monsanto Company, St. Louis, MO (174)
- 10:45 Section Business Meeting**
- 11:30 NCWSS Awards Luncheon**

Weed Biology, Ecology, and Management Papers

Room: Franklin AB

Moderator: Kris Mahoney

- 1:30 Effect of Winter Wheat Cover Crop Residue on Dry Bean Development and Harvest Loss.** Andrew R. Kniss*¹, Robert Baumgartner², David Claypool¹; ¹University of Wyoming, Laramie, WY, ²University of Wyoming, Lingle, WY (175)
- 1:45 Benefits and Economics of “The Critical Period of Competition” and “The ZeroSeed Threshold” Weed Management Strategies for Transitioning to Organic Farming.** Mohsen Mohseni-Moghadam*¹, Karen Amisi², Doug Doohan³; ¹OSU-OARDC, Wooster, OH, ²Grand Valley State University, Allendale, MI, ³The Ohio State University, Wooster, OH (176)
- 2:00 Can Overproduction of EPSPS Enhance Fitness in Certain Glyphosate-Resistant Weeds?: Avenues for Research.** Allison A. Snow*, Mark M. Loux, Bruce A. Ackley, David M. Mackey, Zachery T. Beres; The Ohio State University, Columbus, OH (177)
- 2:15 Impact of Management and Atrazine Use on Late-Season Weed Escapes in Wisconsin Corn and Soybean Fields.** Ross A. Recker*, Vince M. Davis; University of Wisconsin-Madison, Madison, WI (178)
- 2:30 Palmer Amaranth: A Looming Threat to Soybean Production in the North Central Region?** Adam S. Davis*¹, Aaron G. Hager², Bryan G. Young³; ¹USDA-Agricultural Research Service, Urbana, IL, ²University of Illinois, Urbana-Champaign, IL, ³Southern Illinois University, Carbondale, IL (179)
- 2:45 Something Wicked This Way Comes: New Reports and Herbicide Resistance Profiles of Invasive Palmer Amaranth Populations in Illinois.** Chance W. Riggins*, Aaron G. Hager, Patrick Tranel; University of Illinois, Urbana-Champaign, IL (180)

Weed Biology, Ecology, and Management Papers (continued)

3:00 Survey of Giant Ragweed Distribution and Spread in the North Central Region. Emilie E. Regnier*¹, Christopher Holloman¹, Steven K. Harrison¹, Mark M. Loux¹, Ramarao Venkatesh¹, Robert A. Ford¹, Robin Taylor², Florian Diekmann¹; ¹The Ohio State University, Columbus, OH, ²Texas A&M University, Temple, TX (181)

3:15 Section Business Meeting

3:30 Break

Extension Papers

Room: Franklin CD

Moderator: Vince Davis

1:30 Efficacy of Weed Management Systems in MGI Soybeans. Bryan G. Young*¹, Lawrence E. Steckel², Scott E. Cully³, James C. Holloway⁴; ¹Southern Illinois University, Carbondale, IL, ²University of Tennessee, Jackson, TN, ³Syngenta, Marion, IL, ⁴Syngenta, Jackson, TN (182)

1:45 Glyphosate Weeds in Ontario. Peter H. Sikkema*¹, Darren Robinson¹, Francois Tardif², Mark B. Lawton³, Nader Soltani¹; ¹University of Guelph-Ridgetown, Ridgetown, ON, ²University of Guelph, Guelph, ON, ³Monsanto, Guelph, ON (183)

2:00 A Weed Scientists Perspective on Cover Crops in Missouri. Kevin W. Bradley*, John Schultz, Eric B. Riley, Jimmy D. Wait; University of Missouri, Columbia, MO (184)

2:15 Italian Ryegrass (*Lolium multiflorum*) - Friend or Foe? James R. Martin*; University of Kentucky, Princeton, KY (185)

Extension Papers (continued)

2:30 Enlist Ahead: Novel Management and Stewardship Resources for the Enlist Weed Control System. David E. Hillger*¹, Jonathan Siebert², Ralph Lassiter³, Byron Hendrix⁴, John Laffey⁵, Gary A. Finn¹, Bruce E. Maddy⁶, Eric Thorson¹, Damon Palmer¹; ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences, Leland, MS, ³Dow AgroSciences, Cary, NC, ⁴Dow AgroSciences, Lakeville, MN, ⁵Dow AgroSciences, Maryville, MO, ⁶Dow AgroSciences, Noblesville, IN (186)

2:45 Roundup Ready Learning Xperience - A New Training Tool. Sara M. Allen*¹, Michelle M. Vigna², Simone Seifert-Higgins², Joseph J. Sandbrink², Adam M. Marschel², Barry L. Rogers², Matthew J. Helms², Tony D. White²; ¹Monsanto, Bonnie, IL, ²Monsanto Company, St. Louis, MO (187)

3:00 Stewardship for BASF Herbicides. Luke L. Bozeman*¹, Sandra Wilson¹, Robert E. Wolf², Daniel Pepitone¹; ¹BASF Corporation, Research Triangle Park, NC, ²Wolf Consulting & Research LLC, Mahomet, IL (188)

3:15 Section Business Meeting

3:30 Break

What's New in Industry?

Room: Franklin

Organizer and Moderator: Chris Kamienski

3:45-5:00pm

Dow AgroSciences

Valent

FMC

Growmark

Winfield Solutions

BASF

Helena

DuPont

Gylling Data Management

Monsanto

Syngenta

Bayer CropScience

MIPN/OIPC Symposium: Invasive Plants

Room: Fairfield

Organizers: Mark Renz and Katherine Howe

Moderator: Mark Renz

- 1:15 Factors Associated with Invasive Plant Distribution along Wisconsin Roadsides.** Mark J. Renz*, Joslyn Mink; University of Wisconsin-Madison, Madison, WI, (189)
- 1:30 Effects of Three Common Buckthorn Removal Techniques on the Regeneration of Understory Vegetation.** Alexander M. Roth*, Alexandra G. Lodge, Lee E. Frelich, Peter B. Reich; University of Minnesota, St. Paul, MN (190)
- 1:45 Foliar-Applied Herbicides for Saltcedar Control.** Walter H. Fick*; Kansas State University, Manhattan, KS (191)
- 2:00 *Ailanthus* Wilt, a Potential Biocontrol Agent in Ohio Forests?** Joanne Rebbeck*¹, Joan Jolliff¹, Donald Davis², Eric O'Neal²; ¹Northern Research Station, Delaware, OH, ²Penn State University, University Park, PA (192)
- 2:15 The Effects of Site Fertility on Biological Control Targeting Purple Loosestrife (*Lythrum salicaria*).** Stephen M. Hovick*¹, Chris J. Peterson², Walter P. Carson³; ¹The Ohio State University, Columbus, OH, ²University of Georgia, Athens, GA, ³University of Pittsburgh, Pittsburgh, PA (193)
- 2:30 Vegetative Dispersal of an Invasive Bioenergy Crop: Should We Be Worried?** Natalie M. West*¹, David P. Matlaga², Adam S. Davis¹; ¹USDA-Agricultural Research Service, Urbana, IL, ²Susquehanna University, Selinsgrove, PA (194)
- 2:45 The Effect of Emerald Ash Borer-Caused Canopy Gaps on Understory Invasive Shrubs and Forest Regeneration.** Brian M. Hoven*¹, David Gorchov¹, Kathleen Knight²; ¹Miami University, Oxford, OH, ²USDA Forest Service, Delaware, OH (195)
- 3:00 Break**

Symposium: Invasive Plants (cont.)

- 3:30 Aminopyralid Research Summary for Aquatic Labeling.** Vanelle F. Peterson¹, John Jachetta², Patrick L. Havens², Louise A. Brinkworth², William Kline³, William T. Haller⁴, John Troth², Ernest S. Flynn⁵; ¹Dow AgroSciences LLC, Mulino, OR, ²Dow AgroSciences LLC, Indianapolis, IN, ³Private Researcher, Ballground, GA, ⁴University of Georgia, Gainesville, FL, ⁵Dow AgroSciences, Ankeny, IA (196)
- 3:45 Functional Trait Differences between Native and Invasive Plants in Deciduous Forests of the Upper Midwest.** Alexandra G. Lodge^{*1}, Alexander M. Roth¹, Timothy Whitfeld², Peter B. Reich¹; ¹University of Minnesota, St. Paul, MN, ²Brown University, Providence, RI (197)
- 4:00 Effects of the Invasive Shrub *Lonicera maackii* and a Generalist Herbivore, White-tailed Deer, on Forest Floor Plant Community Composition.** Jessica R. Peebles-Spencer*, David Gorchoy; Miami University, Oxford, OH (198)
- 4:15 The Role of White-tailed Deer in Long-distance Dispersal of Amur Honeysuckle (*Lonicera maackii*).** Peter W. Guiden*, David Gorchoy; Miami University, Oxford, OH (199)
- 4:30 The Effect of Treefall Gaps on the Spatial Distribution and Dispersal of Four Invasive Plants in a Mature Secondary Upland Forest in Maryland.** Angela Klinczar^{*1}, Charlotte Freeman², Nicole Angeli³, David Gorchoy⁴; ¹Miami University, Orchard Park, NY, ²Purdue University, West Lafayette, IN, ³Texas A&M University, College Station, TX, ⁴Miami University, Oxford, OH (200)
- 4:45 Developing Innovative Management Strategies for the Invasive *Phragmites australis*.** Kurt P. Kowalski, Wesley A. Bickford*; USGS-Great Lakes Science Center, Ann Arbor, MI (201)
- 5:00 Plant Community Development Following Restoration Treatments on a Legacy Reclaimed Mine Site.** Keith E. Gilland^{*1}, Caleb J. Cochran¹, Julia I. Chapman², Jenise M. Bauman¹; ¹Miami University, Middletown, OH, ²Univ. of Dayton, Dayton, OH (202)
- 5:15 Section Business Meeting**

Industry Breakfast (cost \$30)

Room: Fairfield

Moderator: Chris Kamienski

7:00 Relationship of Public/Private Partnerships in the Discovery and Development of Agricultural Technologies. F. William Ravlin, Associate Director, The Ohio Agricultural Research and Development Center, The Ohio State University, Columbus, OH

8:00 Section Business Meeting

Corn/Sorghum/Cereals Papers

Room: Franklin AB

Moderator: Ryan Lins

8:15 Bicyclopyrone, a New Herbicide for Improved Weed Control in Corn. Gordon D. Vail*¹, Scott E. Cully², Ryan D. Lins³, John P. Foresman¹; ¹Syngenta Crop Protection, Greensboro, NC, ²Syngenta, Marion, IL, ³Syngenta, Byron, MN (203)

8:30 Bicyclopyrone for Pre-emergence Weed Control in Corn. Ryan D. Lins*¹, Thomas H. Beckett², Scott E. Cully³, John P. Foresman⁴, Gordon D. Vail⁴; ¹Syngenta, Byron, MN, ²Syngenta, Greensboro, NC, ³Syngenta, Marion, IL, ⁴Syngenta Crop Protection, Greensboro, NC (204)

8:45 Bicyclopyrone for Burndown and Post-Emergence Weed Control in Corn. Scott E. Cully*¹, Thomas H. Beckett², Ryan D. Lins³, John P. Foresman⁴, Gordon D. Vail⁴; ¹Syngenta, Marion, IL, ²Syngenta, Greensboro, NC, ³Syngenta, Byron, MN, ⁴Syngenta Crop Protection, Greensboro, NC (205)

9:00 Dicamba + Cyprosulfamide Broadleaf Weed Control and Tolerance in Corn. David Lamore*¹, Michael L. Weber², James R. Bloomberg³; ¹Bayer CropScience, Bryan, OH, ²Bayer CropScience, Indianola, IA, ³Bayer CropScience, RTP, NC (206)

9:15 Enlist™ Corn Tolerance and Weed Control with PRE Followed by POST Herbicide Programs. Joe Armstrong*¹, Michael Moechnig², Scott C. Ditmarsen³, Mark A. Peterson⁴; ¹Dow AgroSciences, Davenport, IA, ²Dow AgroSciences, Toronto, SD, ³Dow AgroSciences, Madison, WI, ⁴Dow AgroSciences, Indianapolis, IN (207)

Corn/Sorghum/Cereals Papers (continued)

- 9:30 HPPD Resistant Palmer Amaranth Control with PRE and POST Applied Herbicides.** Curtis R. Thompson*, Dallas E. Peterson; Kansas State University, Manhattan, KS (208)
- 9:45 Break**
- 10:00 Enhancement of the Weed Control of Preemergence Saflufenacil and Dimethenamid Applications with Various Post Emergence Timings and Rates of Pendimethalin in Grain Sorghum.** Randall S. Currie*¹, Curtis R. Thompson²; ¹Kansas State University, Garden City, KS, ²Kansas State University, Manhattan, KS (209)
- 10:15 Huskie Complete - Overview of Performance in Northern Plains Cereals.** Kevin B. Thorsness*¹, Steven R. King², Dean W. Maruska², Michael C. Smith², Charlie Hicks³, George S. Simkins², Mark A. Wrucke²; ¹Bayer CropScience, Fargo, ND, ²Bayer CropScience, Raleigh, NC, ³Bayer CropScience, Fort Collins, CO (210)
- 10:30 Kochia Control in Wheat with Pre- or Postemergence Herbicides.** Kirk A. Howatt*, Andrew N. Fillmore; North Dakota State University, Fargo, ND (211)
- 10:45 Management Options for Control of Glyphosate Resistant Kochia in Fallow.** James R. Bloomberg*¹, Kevin Watteyne², Greg Hudec³, Charlie Hicks⁴; ¹Bayer CropScience, RTP, NC, ²Bayer CropScience, Lincoln, NE, ³Bayer CropScience, Manhattan, KS, ⁴Bayer CropScience, Fort Collins, CO (212)
- 11:00 Possible Use of Indazaflam for Fallow Weed Control One Year Prior to Planting Wheat or Canola.** Jennifer Jester*¹, Randall S. Currie²; ¹Kansas State Univ., Garden city, KS, ²Kansas State University, Garden City, KS (213)
- 11:15 Section Business Meeting**

MIPN/OIPC Symposium: Invasive Plants

Room: Delaware AB

Organizers: Mark Renz and Katherine Howe

Moderator: David Gorchov

8:00 Welcome: NCWSS, MIPN, and OIPC

8:15 Prairie Reconstruction: A Weed is a Weed is a... Placeholder? Diane L. Larson*; U.S. Geological Survey - Biological Resources Division at Northern Prairie Wildlife Research Center, Minneapolis, MN (214)

8:45 Chemical Explanations for the Impacts of Invasive Plants: How Important Are They? Don Cipollini*; Wright State University, Fairborn, OH (215)

9:15 What's New in Invasion Biology, and Why is it Controversial? Daniel Simberloff*; University of Tennessee, Knoxville, TN (216)

10:00 Break

10:30-12:00 Concurrent Sessions

Session A. New Tools and Technology for Invasive Species Reporting and Information Sharing

Room: Delaware AB

Moderator: Roger Becker

10:30 The Midwest Invasive Plant Network's Control Information Database: A Resource for Natural Resource Managers and Landowners. Katherine M. Howe*¹, Brendon J. Panke², Mark J. Renz²; ¹Purdue University, Indianapolis, IN, ²University of Wisconsin-Madison, Madison, WI (217)

10:45 GLEDN: How to Report Invasive Plant Locations and Sign Up for Alerts. Mark J. Renz*, Brendon J. Panke; ¹University of Wisconsin-Madison, Madison, WI (218)

11:00 Tracking Invasive Species: We Have An App For That! Kathy Smith*; Ohio State University Extension, Columbus, OH (219)

Session A. New Tools and Technology for Invasive Species Reporting and Information Sharing (cont.)

- 11:15 iMapInvasives – An Emerging Online Reporting Tool for Early Detection Rapid Response.** Amy Stauffer*; Western PA Conservancy, Pittsburgh, PA (220)
- 11:30 Communicating Hydrilla Search Efforts in New York: Using iMapInvasives with Professionals and Volunteers.** Jennifer M. Dean*; NY Natural Heritage Program, Albany, NY (221)
- 11:45 Panel Discussion**

Session B. Strategies for Outreach on Invasive Ornamental Plants

Room: Delaware C

Moderator: Theresa Culley

- 10:30 Reaching Consumers: Smart Phone App for Landscape Alternatives for Invasive Plants.** Lara A. Valley*¹, Katherine M. Howe¹, Mark J. Renz², Chuck Barger³; ¹Purdue University, Indianapolis, IN, ²University of Wisconsin-Madison, Madison, WI, ³University of Georgia, Tifton, GA (222)
- 10:45 Update on Green Industry Outreach Efforts in the Midwest.** Cathy A. McGlynn*; Northeast Illinois Invasive Plant Partnership, Glencoe, IL (223)
- 11:00 Go Beyond Beauty – Community-Based Solutions for Working with Nurseries to Remove Invasive Ornamental Plants from Trade.** Mathew Bertrand*; Michigan State University, Suttons Bay, MI (224)
- 11:15 Cultivating Awareness: Using Video to Demonstrate the Impacts of Invasive Ornamental Plants in Natural Areas.** Katherine M. Howe*¹, Mark J. Renz², Brendon J. Panke³, Cathy A. McGlynn⁴; ¹Purdue University, Indianapolis, IN, ²University of Wisconsin-Madison, Madison, WI, ³University of Wisconsin, Madison, WI, ⁴Northeast Illinois Invasive Plant Partnership, Glencoe, IL (225)
- 11:30 Panel Discussion**

Session C. Invasive Plant Management

Room: Delaware D

Moderator: Chris Evans

10:30 Successful Phragmites Control in Northeast Ohio Watersheds. Karen Adair*; The Nature Conservancy, Rock Creek, OH (226)

11:00 Management of Invasive Woody Vines. Chris W. Evans*; Illinois Wildlife Action Plan, Marion, IL (227)

11:30 Biology and Control of Ailanthus. Eric Boyda*; Appalachian Ohio Weed Control Partnership, Pedro, OH (228)

12:00 – 1:30 Lunch Break

1:30-5:00 Concurrent Sessions

Session D. Assessing Invasiveness of Invasive Plants

Room: Delaware C

Moderator: Katherine Howe

1:30 Assessing and Predicting the Risk of Non-Native Plant Invasions in Florida's Natural Areas. Deah Lieurance*¹, S L. Flory²; ¹UF/IFAS Assessment, Gainesville, FL, ²University of Florida, Gainesville, FL (229)

2:00 Assessing Invasive Plants in Ohio: The Process and Progress of the Ohio Invasive Plants Council Assessment Program. Theresa M. Culley*; University of Cincinnati, Cincinnati, OH (230)

2:30 Assessment of Invasive Species in Indiana's Natural Areas. Ellen Jacquart¹, Katherine M. Howe*²; ¹The Nature Conservancy, Indianapolis, IN, ²Purdue University, Indianapolis, IN (231)

3:00 Break

3:30 Standardizing the Creation of Invasive Plant Lists. Susan Gitlin*; US Environmental Protection Agency, Washington, DC (232)

4:00 Panel Discussion

Session E. Asian Bush Honeysuckle: Recent Advances in Research and Control

Room: Delaware D

Moderator: Ryan McEwan

- 1:30 Invasion Dynamics of Amur Honeysuckle in Southwest Ohio.** David Gorchov*, Mary Henry; Miami University, Oxford, OH (233)
- 1:45 Species Influences on Ecosystems Processes: Context-Dependent Impacts of the Invasive *Lonicera maackii*.** Sarah Bray¹, Megan Poulette², Mary A. Arthur*³; ¹Transylvania University, Lexington, KY, ²Cornell College, Mt. Vernon, IA, ³University of Kentucky, Lexington, KY (234)
- 2:00 Amur Honeysuckle Interactions with Pollinators: Consequences for Reproduction of Both Invader and Native Plants.** Karen Goodell*; Ohio State University, Newark, OH (235)
- 2:15 Management of Amur Honeysuckle in Hamilton County Ohio Parks.** Tom Borgman*; Great Parks of Hamilton County, Cincinnati, OH (236)
- 2:30 Plant-Herbivore Interactions and the Invasion of Amur Honeysuckle in North America.** Deah Lieurance*; UF/IFAS Assessment, Gainesville, FL (237)
- 2:45 "The Plan to Win" Amur Honeysuckle Removal and Restoration in the Five Rivers MetroParks.** Mary Klunk*; Five Rivers MetroParks, Dayton, OH (238)
- 3:00 Break**
- 3:30 Riparian Zone Invasion of Amur Honeysuckle Alters Headwater Stream Biota and Ecosystem Function.** Rachel E. McNeish*, Mark E. Benbow, Ryan W. McEwan; University of Dayton, Dayton, OH (239)
- 3:45 Comprehensive System for Controlling Amur Honeysuckle.** Donald Geiger*; Univ. of Dayton, Dayton, OH (240)

Session E. Asian Bush Honeysuckle: Recent Advances in Research and Control (cont.)

- 4:00** **Inferring Invasion Patterns of *Lonicera maackii* in Southwestern Ohio from the Genetic Structure of Established Populations.** Oscar J. Rocha*; Kent State University, Kent, OH (241)
- 4:15** **Recovery of Forest Communities after Amur Honeysuckle Removal.** Richard L. Boyce*; Northern Kentucky University, Highland Heights, KY (242)
- 4:30** **A Price to Pay for Restoration? Soil Loss Associated with Amur Honeysuckle Removal in Olmsted Parks of Louisville, KY.** Margaret M. Carreiro*¹, Major Waltman²; ¹University of Louisville, Louisville, KY, ²Louisville Olmsted Parks Conservancy, Louisville, KY (243)

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North Central Weed Science Society Information

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NOTE All NCWSS graduate student members are welcome to this committee

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Brent Petersen		320-230-4081	brentpetersen@charter.net
Mark Peterson		765-463-7788	mapeterson@dow.com
Aaron Waltz		608-758-3468	aaron.waltz@pioneer.com
Nick Vandervort		563-547-2886	nvandervort@wilburellis.com
Greg Dahl		651-490-4246	gkdahl@landolakes.com
Stott Howard		515-222-4809	stott.howard@syngenta.com
Gary Schmitz		217-897-1939	gary.schmitz@basf.com
John Hinz		515-733-9250	john.hinz@bayer.com
Helen Flanigan		317-862-0578	helen.a.flanigan@usa.dupont.com
Jeff Ellis		816-343-2997	jmellis2@dow.com
Brent Neuberger		515-250-2566	Brent.Neuberger@fmc.com
Brady Kappler		402-432-1469	brady.kappler@basf.com
Alan Miller		608-845-7993	amagstat@td.net
Dave Saunders		515-480-1218	david.w.saunders@usa.dupont.com

Resident Education

Cheryl Dunne	Chair	772-794-7146	cheryl.dunne@syngenta.com
Tate Castillo	1st Vice Chair	785-213-8979	tate.castillo@bayer.com
Doug Nord	2nd Vice Chair	620-285-3380	dwnord@gbta.net
Fritz Koppatschek	Past Chair	317-413-3295	fkoppatschek@abgagservices.com
Troy Coziahr	2013 Host	309-371-4805	troy.g.coziahr@monsanto.com
Mayank Malik		402-486-1054	mayank.s.malik@monsanto.com
Anita Dille		785-532-7240	dieleman@ksu.edu
Eric Scherder		515-597-2660	efscherder@dow.com
Jeff Stachler		701-231-8131	jeff.stachler@ndsu.edu
Jess Spotanski		402-366-9230	jess_spotanski@mainstaycomm.net
Helen Flanigan		317-862-0578	helen.a.flanigan@usa.dupont.com
Jason Parrish		440-225-4831	parrish.174@osu.edu
Mark Bernards		309-298-1569	ML-Bernards@wiu.edu
John Hinz		515-733-9250	john.hinz@bayer.com
Stephanie Wedryke		605-202-6001	SLWedryk@landolakes.com

Contest Rules Subcommittee of Resident Education

Cheryl Dunne	Chair	772-794-7146	cheryl.dunne@syngenta.com
Tate Castillo	1st Vice Chair	785-213-8979	tate.castillo@bayer.com
Doug Nord	2nd Vice Chair	620-285-3380	dwnord@gbta.net
Fritz Koppatschek	Past Chair	317-413-3295	fkoppatschek@abgagservices.com
Troy Coziahr	2013 Host	309-371-4805	troy.g.coziahr@monsanto.com
Mayank Malik		402-486-1054	mayank.s.malik@monsanto.com
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Mark Bernards		309-298-1569	ML-Bernards@wiu.edu

Summer Contest Subcommittee of Resident Education

Troy Coziahr	Chair and Host	309-371-4805	troy.g.coziahr@monsanto.com
Cheryl Dunne	Chair Res. Ed.	772-794-7146	cheryl.dunne@syngenta.com
Tate Castillo	1st Vice Chair	785-213-8979	tate.castillo@bayer.com
Doug Nord	2nd Vice Chair	620-285-3380	dwnord@gbta.net
Fritz Koppatschek	Past Chair	317-413-3295	fkoppatschek@abgagservices.com
Mayank Malik		402-486-1054	mayank.s.malik@monsanto.com
Anita Dille		785-532-7240	dieleman@ksu.edu
Stephanie Wedryke		605-202-6001	SLWedryk@landolakes.com
Jeff Stachler		701-231-8131	jeff.stachler@ndsu.edu
Mark Bernards		309-298-1569	ML-Bernards@wiu.edu

North Central Weed Science Society Information

NCWSS Standing Committees

Distinguished Achievement Award

Bryan Young	Chair	618-453-7679	bgyoung@siu.edu
Mark Wrucke	Past Chair	651-463-3365	mark.wrucke@bayer.com
Kelly Barnett		317-478-6974	kelly.a.barnett@dupont.com
Bill Witt		859-333-3131	wwitt@uky.edu
Ryan Tichich		636-737-6807	ryan.p.tichich@monsanto.com
Jan Michael		517-655-6219	michae42@msu.edu
Roger Becker		612-625-5753	becke003@umn.edu
Larry Hageman		815-562-7570	larry.h.hageman@usa.dupont.com
Mithila Jugulam		785-532-5501	mithila@ksu.edu

Fellow Committee

Dain Bruns	Chair	937-747-3503	dain.bruns@syngenta.com
Duane Rathmann	Vice Chair	507-835-2580	duane.rathmann@basf.com
Richard Zollinger		701-231-8157	r.zollinger@ndsu.edu
Adrian Moses		515-689-7451	adrian.moses@syngenta.com
Mike Owen		515-294-5936	mdowen@iastate.edu

Finance Steering and Policy Committee

David Simpson	Chair	317-337-3959	dmsimpson@dow.com
Harlene Hatterman-Valenti	Vice Chair	701-231-8536	h.hatterman.valenti@ndsu.edu
Kelly Nelson		660-739-4410	nelsonk@missouri.edu
Christy Sprague		517-355-0271	sprague1@msu.edu
Bill Johnson		765-494-4656	wgj@purdue.edu
Greg Kruger		308-696-6715	gkruger2@unl.edu
Eric Spandl		651-490-4292	epsandl@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
Bryan Young	Past President	618-453-7679	bgyoung@siu.edu
John Wollam		816-880-3820	john.wollam@bayer.com
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: 2013 Hyatt Regency, Columbus

Mark Loux	Chair	614-292-9081	loux.1@osu.edu
Emilio Oyarzabal	Past Chair	314-610-4805	emilio.s.oyarzabal@monsanto.com
J.D. Green	Program Chair	859-257-4898	jdgreen@uky.edu
Phil Banks	Executive Secretary	575-527-1888	ncwss@marathonag.com

Nominating Committee

Bernie Zandstra	Chair	517-353-6637	zandstra@msu.edu
Stott Howard	Vice Chair	515-222-4809	stott.howard@syngenta.com
Peter Sikkema		519-674-1500	psikkema@ridgetownc.uoguelph.ca
Karen Renner		517-355-0271	renner@msu.edu
Brent Neuberger		515-250-2566	brent.neuberger@fmc.com
Dallas Peterson		785-532-0405	dpeterso@ksu.edu
Gary Finn		317-337-4781	gafinn@dow.com

Program Committee

J.D. Green	Chair	859-2574898	jdgreen@uky.edu
John Hinz	Vice Chair	515-733-9250	john.hinz@bayer.com
Mark Loux	LAC	614-292-9081	loux.1@osu.edu
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
Cheryl Dunne	Resident Education	772-794-7146	cheryl.dunne@syngenta.com
Vince Davis	Extension	608-262-1392	vmdavis@wisc.edu
Lacy Valentine	Graduate Students	308-643-7319	lacy.valentine@huskers.unl.edu
Chris Kamienski	Industry	309-532-4405	Christopher.d.Kamienski@monsanto.com
Mark Renz	Invasive Plants	608-263-7437	mrenz@wisc.edu
Mark Bernards	WSSA	309-298-1569	ML-Bernards@wiu.edu
Dave Johnson	President (ex officio)	515-535-7234	david.h.johnson@pioneer.com

Resolutions and Necrology Committee

Kirk Howatt	Chair	701-231-7209	kirk.howatt@ndsu.edu
Joe Armstrong	Vice Chair	563-726-2280	jqarmstrong@dow.com
Tom Bauman		765-494-4625	tbauman@purdue.edu
Donald Penner		517-355-0271	pennerd@msu.edu
Pat Tranel		217-333-1531	tranel@illinois.edu
Aaron Hager	Past Chair	217-333-4424	hager@illinois.edu

North Central Weed Science Society Information

NCWSS Standing Committees (continued)

Invasive Plants Committee

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

Section Program Chairs

General Program

J.D. Green	Chair	859-257-4898	jdgreen@uky.edu
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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
Gordon Vail	Past Chair	336-632-5596	gordan.vail@syngenta.com

Graduate Student Paper Awards

Tate Castillo	Chair	785-213-8979	tate.castillo@bayer.com
Cheryl Dunne	Past Chair	772-794-7146	cheryl.dunne@syngenta.com

Graduate Student Poster Awards

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

Agronomic Crops I (Cereals, Sugar Beets, Dry Beans)

Joe Omielan	Chair	859-217-0744	joe.omielan@uky.edu
VACANT	Vice Chair		

Agronomic Crops II (Corn, Sorghum)

Ryan Lins	Chair	507-251-5524	ryan.lins@syngenta.com
Ryan Henry	Vice Chair	308-530-5729	ryan.henry@unl.edu

Agronomic Crops III (Soybeans, Legumes, Forage and Range)

Mark Waddington	Chair	618-334-6789	mark.waddington@bayer.com
Helen Flanigan	Vice Chair	317-459-9650	helen.a.flanigan@dupont.com

Equipment and Application Methods

Lillian Magidow	Chair	651-600-1028	lcmagidow@landolakes.com
Cody Creech	Vice Chair	435-770-1538	cody.creech@huskers.unl.edu

Extension

Vince Davis	Chair	608-262-1392	vmdavis@wisc.edu
Devin Wirth	Vice Chair	701-370-1929	devin.a.wirth@ndsu.edu

Herbicide Physiology

Ryan Lee	Chair		ryanlee@dow.com
A.J. Woodyard	Vice Chair	217-712-6011	aj.woodyard@basf.com

Invasive Weeds

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

Forestry, Industrial, Turf, Aquatics, Forage and Range

Scott Flynn	Chair	515-964-7641	flynn@dow.com
VACANT	Vice Chair		

Horticulture and Ornamentals

Collin Auwarter	Chair	701-231-8471	collin.auwarter@ndsu.edu
John Kaufmann	Vice Chair		kaufma60@msu.edu

Weed Biology, Ecology and Management

Kris Mahoney	Chair	608-342-1363	mahoneykr@uwplatt.edu
Erin Taylor	Vice Chair	517-355-0271	hiller12@msu.edu

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

* 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	1979	Nalewaja, John D.
1945	Yost, Ted F. *	1980	Stroube, Edward W.
1946	Yost, Ted F. *	1981	Herron, James W. *
1947	Hanson, Noel S. *	1982	Benson, Robert L.
1948	Willard, Charles J. *	1983	DiVall, James W.
1949	Dunham, R. S. *	1984	Miller, Gerald R.
1950	Worzella, W. W. *	1985	Messersmith, Calvin G.
1951	Sylwester, Erhardt P. *	1986	Wax, Lloyd M.
1952	Buchholtz, Kenneth P. *	1987	Chamberlain, Earl
1953	Gilbert, C. J. *	1988	Harvey, R. Gordon *
1954	Lee, Oliver C. *	1989	Worthington, James P.
1955	Grigsby, Buford H. *	1990	Martin, Alex R.
1956	Helgeson, Earl A. *	1991	Taylor, T. Don
1957	Slife, Fred W. *	1992	Stoller, Edward W.
1958	Derscheid, Lyle A.	1993	Warfield, Ted R.
1959	Foster, J. Roe *	1994	Bauman, Thomas T.
1960	Holm, Leroy G. *	1995	Cobia, LeRoy R.
1961	Alban, E. K. *	1996	Dexter, Alan G.
1962	Bjerken Sig. *	1997	Miller, Bill
1963	Hemphill, Delbert D. *	1998	Buhler, Douglas D.
1964	Hemphill, Delbert D. *	1999	Orwick, Philip L.
1965	Furrer, John D. *	2000	Kells, James J.
1966	Furrer, John D. *	2001	Rathmann, Duane P.
1967	Warden, Robert L. *	2002	Peterson, Dallas E.
1968	Fletchall, O. Hale *	2003	Horak, Michael J.
1969	Beck, Thomas V.	2004	Doll, Jerry D.
1970	Hannah, Lawrence H.	2005	Peters, Tom
1971	Knake, Ellery *	2006	Miller, Stephen D.
1972	Williams, Jr., James L. *	2007	Moses, Adrian
1973	Meggitt, William	2008	Johnson, William G.
1974	Bradfield, Kenneth W.	2009	Holm, Mick
1975	Burnside, Orvin C.	2010	Boerboom, Chris
1976	Fink, Rodney J.	2011	Wrucke, Mark
1977	Carpenter, Will D.	2012	Bryan Young
1978	Doersch, Ronald E.	2013	Dave Johnson

* 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 Hill - Professional Staff

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.
Benfen	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
Flumeturon	Cotoran	Syngenta

Herbicide Index

Common Name	Trade Name(s)	Manufacturer
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 (MCPP)	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
Pinoxaden	Axial XL	Syngenta

Herbicide Index

Common Name	Trade Name(s)	Manufacturer
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
Pyroxsulam	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 + thiencazabzone-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
Triflusalufuron-methyl	UpBeet	DuPont

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Notes

Future NCWSS Annual Meeting Sites

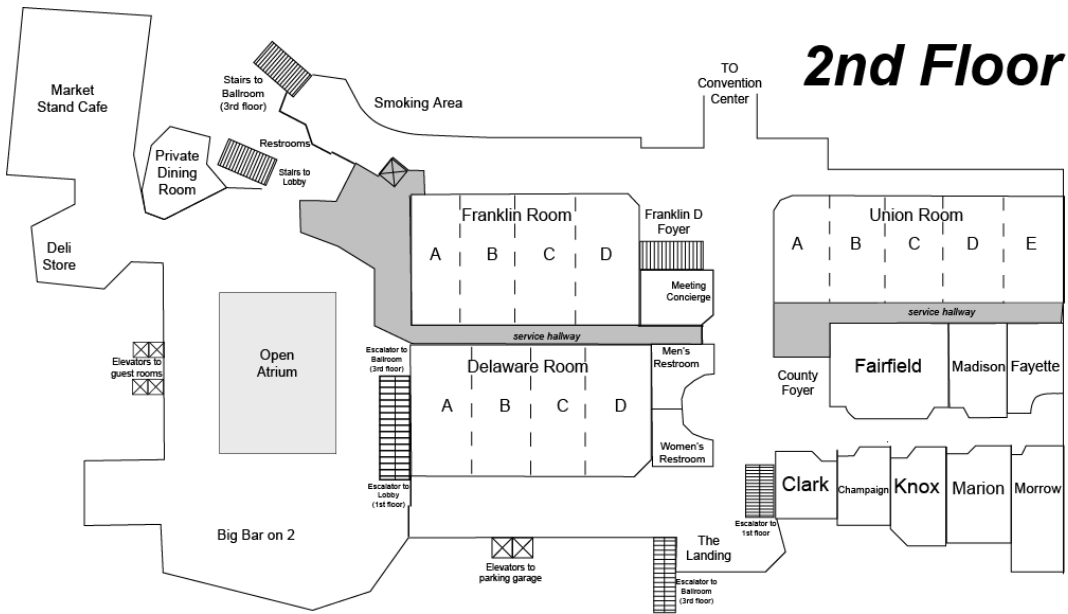
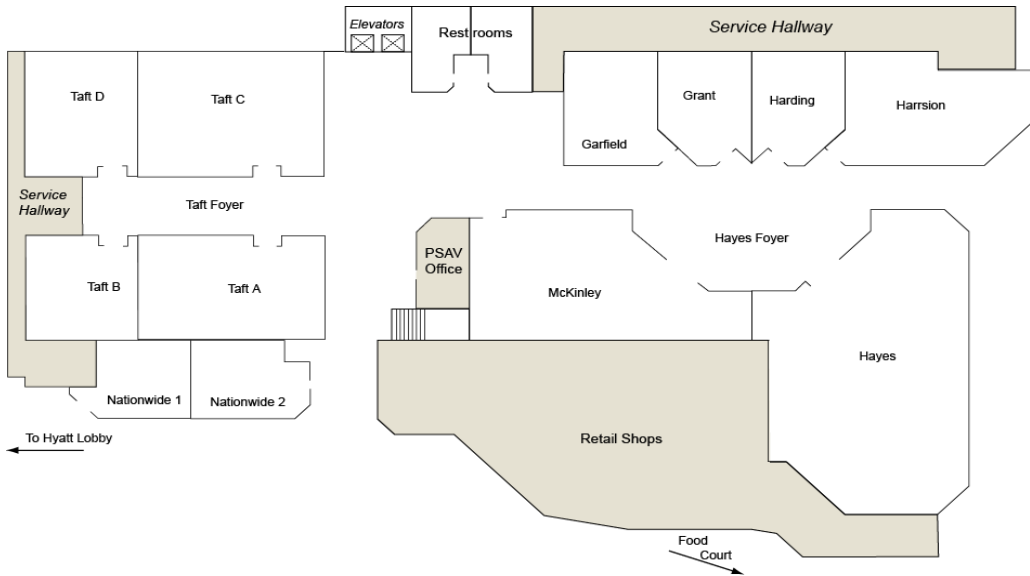
2014 – December 1–4 in Minneapolis, MN

2015 – December 7-10 in Indianapolis, IN

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				
9:15				
9:30				
9:45				
10:00	General Session			
10:15				
10:30				
10:45				
11:00				
11:15				
11:30			NCWSS Awards Luncheon	
11:45				NCWSS
12:00				Conference End
12:15				
12:30				
12:45				
1:00				
1:15				
1:30				
1:45				
2:00				
2:15				
2:30				
2:45				
3:00				
3:15				
3:30				
3:45				
4:00				
4:15				
4:30			Invasive Plant	
4:45			Symposium End	
5:00	Poster Session II & Society Social			
5:15				
5:30			Society Social	
5:45				
6:00				



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