



**2022**

**77<sup>th</sup> Annual Meeting**

**North Central Weed Science Society**

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**[www.ncwss.org](http://www.ncwss.org)**

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**December 5 – 8, 2022**

**Hyatt Regency St. Louis at the Arch,  
St. Louis, MO**

## **President's Welcome**

### **2022 North Central Weed Science Society Meeting**

Welcome to the 77<sup>th</sup> annual meeting of the North Central Weed Science Society (NCWSS) at the Hyatt Regency at the Arch in St. Louis, Missouri. It has been my great pleasure to serve as NCWSS President in 2022. My first NCWSS annual meeting was in 1991 in Indianapolis. In the past 32 years, I have benefited from the technical knowledge, scientific discussion and fellowship found at the annual meeting that has helped shaped my career development. I look forward to this week every year as an opportunity to renewed old friendships and meet new weed scientists, particularly new students, in an exchange of ideas, experiences, opinions and information to enhance the future of weed control. During the meetings this week, I hope that you find time to engage with NCWSS membership and seek the opportunity to influence the next generation of weed scientists.

Karla Gage and the Local Arrangement Committee have been doing an amazing job to prepare for the meeting. While their efforts will largely go unrecognized by most members, the meeting would not be a success without their efforts. When you see a member of this year's Local Arrangement Committee, please take a moment to stop and thank them for contributions to the meeting or buy them a beverage in the evening.

Reid Smeda is the President Elect and Program Chair for the 2022 annual meeting. This year program has over 90 oral presentations, 90 poster presentations and 5 video presentations. Additionally, there are two symposia on Wednesday afternoon for members to attend, including: "Impact of the Endangered Species Act on herbicide registration and regulation" moderated by Bill Johnson and "New Frontiers in Application Technology" moderated by Greg Kruger. Don't miss out on networking opportunities at the Student Mixer on Monday, Graduate Student Luncheon on Tuesday, Women in Weed Science Networking Breakfast on Wednesday, and Industry Breakfast on Thursday. Please note that the Student Mixer is open to the entire society.

Please attend the award luncheon on Wednesday to recognize the Distinguished Achievement and Fellow award winners. Join us at the NCWSS Society Social on Wednesday evening where the Undergraduate and Graduate contests winners will be announced.

The NCWSS is a volunteer organization which needs your involvement for continued success. If you are not on a committee than please consider joining one. There are numerous committee meetings scheduled during this week which are open to all NCWSS members. Please see the program for committee times and meeting rooms and attend as many of the committee meetings that interest you. If there is a committee you want to serve on, please contact the committee chair, Reid Smeda, or myself.

To the Sustaining Members of the Society, let me extend my sincere thanks to you for your generous support of the NCWSS. Through the Sustaining Members financial support, we can defray the costs of the annual meeting. Volunteers from our Sustaining Members serve as judges at the annual meeting and the summer weed contest.

In closing, I thank the entire NCWSS for this opportunity to serve as President. Have a great meeting and safe travels.

David Simpson  
President

### ***Conference Headquarters***

All sessions of the conference and the meeting events will be held at the Hyatt Regency St. Louis, 315 Chestnut Street, St. Louis, MO 63102.

### ***Registration Hours***

The registration desk is at the **Regency Coat Room**, and 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, Thursday 8 to 10:15 am.

### ***Meeting Rooms***

All sessions and meetings will be in the Hyatt Regency St. Louis. Additional meetings may be arranged any time during the conference by contacting Karla Gage, Local Arrangements Chair.

### ***Proceedings***

2022 NCWSS Proceedings will be available following the meeting online at the NCWSS website.

### ***Sustaining Members***

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

### ***Health and Safety***

Smoking is allowed in designated areas only.

Please contribute to conference environment in which diverse attendees may learn, network, and enjoy the company of colleagues in a professional and harassment-free atmosphere.

The NCWSS believes in and supports the laws designated to keep our Society safe and designed to protect the environment. If you believe that an unsafe condition exists in our Society, bring it immediately to the attention of the President, a member of the Board, or Executive Secretary. If an incident takes place, report it pursuant to policy and immediately take action to address the problem. Any incident or situation that violates the law or this policy should be immediately reported to the Executive Secretary; in person or via this contact information: [info@ncwss.org](mailto:info@ncwss.org) or 720-445-4789.

Please keep your personal belongings with you at all times.

### ***No photographs or videos***

Do not take pictures or videos of any presentations without prior permission from the presenter. The posters will be available online after the conference.

# NCWSS Mobile Meeting App – Crowd Compass

The 77<sup>th</sup> Annual Meeting Program has its own mobile app. Get started by downloading the **Attendee Hub** App in your mobile app store.

1. Open the invitation in your inbox. Tap **Verify Account**.
2. Tap **Open App** to complete the verification via your brand new mobile app.

If you're signing up for an account:

1. From the event home screen, tap the hamburger icon at the top left of the screen.
2. Tap **Log in for more features!**
3. Enter your first and last name and tap **Next**.
4. Enter your email.
5. We'll send you an email to verify your account. We just want to make sure it's you.
6. Open your email to find your verification code.
7. Return to the app and enter the four-digit code to finish logging in.

## Follow NCWSS on Twitter

Keep up to date with the latest NCWSS news by following @NCWeedScience and the annual meeting tag #NCWSS2022.

## Program Symbols

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

# Meal Functions of the Society 2022

## Meal Functions

### Breaks

|                              |                    |
|------------------------------|--------------------|
| Tuesday, 9:40 – 10:00 am     | Regency BCDE Foyer |
| Tuesday, 3:15 – 3:30 pm      | Regency BCDE Foyer |
| Wednesday, 10:00 – 10:15 am  | Regency BCDE Foyer |
| Wednesday, 3:15 pm – 3:30 pm | Regency BCDE Foyer |

### Presidential Reception

– *Open to 2022 Distinguished Award Winners, New and Current Fellows, Current Board Members*

|                        |                    |
|------------------------|--------------------|
| Monday, 6:00 – 7:00 pm | Presidential Suite |
|------------------------|--------------------|

### Student Mixer

*Sponsored by BASF Corporation – Open to all attendees*

|                         |            |
|-------------------------|------------|
| Monday, 6:30 – 10:00 pm | Regency AB |
|-------------------------|------------|

### Paper Judges Breakfast

|                  |            |
|------------------|------------|
| Tuesday, 7:00 am | Sterling 9 |
|------------------|------------|

### Poster Judges Breakfast

|                  |            |
|------------------|------------|
| Tuesday, 7:00 am | Sterling 9 |
|------------------|------------|

### Student Luncheon/Business Meeting

*Sponsored by Corteva Agriscience – Open to all students*

|                          |           |
|--------------------------|-----------|
| Tuesday, 12:00 – 1:15 pm | Regency A |
|--------------------------|-----------|

### Women in Weed Science Networking Breakfast

*Open to all*

|                           |                                      |
|---------------------------|--------------------------------------|
| Wednesday, 7:00 – 8:45 am | 18 <sup>th</sup> Floor, Gateway East |
|---------------------------|--------------------------------------|

### Society Awards Luncheon

|                            |            |
|----------------------------|------------|
| Wednesday, 12:00 – 1:15 pm | Regency CD |
|----------------------------|------------|

### Society Social and Contest Awards

*Sponsored by Sustaining Members – Open to all*

|                           |           |
|---------------------------|-----------|
| Wednesday, 5:30 – 7:00 pm | Regency C |
|---------------------------|-----------|

### Industry Breakfast (Cost \$45)

|                          |            |
|--------------------------|------------|
| Thursday, 7:00 – 8:15 am | Regency AB |
|--------------------------|------------|

## Tours of the Society 2022

### Graduate Student Chesterfield Tour

*Hosted by Bayer - Busses leave no later than 9:15 am*

|                            |                           |
|----------------------------|---------------------------|
| Monday, 10:00 am – 4:30 pm | Buses at 4th St. entrance |
|----------------------------|---------------------------|

# Meetings of the Society 2022

Meetings will take place for conducting the business of each respective committee. Most meetings are open to members. Please contact the committee chair or attend the committee meeting if you are interested in serving the society by being a committee member. \* denotes committees that will elect a new Vice Chair to serve as Chair in 2024.

## ***NCWSS Committee Meetings***

### **Local Arrangement Committee**

Monday, 10:00 am Sterling 4

### **Board of Directors**

Monday, 1:00 pm Sterling 6

### **Resident Education, Summer Contest and Contest Rules Joint meeting**

Monday, 5:00 pm Sterling 3

### **NCWSS Fellows\***

Monday, 5:00 pm Sterling 1

### **Resolutions & Necrology**

Monday, 5:00 pm Sterling 2

### **Program Committee and Section Chairs**

Monday, 7:30 pm (*section moderators*) Sterling 6

### **Distinguished Achievement Awards**

Tuesday, 12:00 pm Sterling 4

### **Nominating\***

Tuesday, 5:15 pm Sterling 7

### **Strategic Planning**

Tuesday, 5:15 pm Sterling 3

### **Finance, Steering & Policy**

Tuesday, 6:00 pm Sterling 7

### **Paper Judges**

Tuesday, 7:00 am with breakfast Regency A

Wednesday, 11:30 am Sterling 9

### **Poster Judges**

Tuesday, 7:00 am with breakfast Regency A

Wednesday, 11:30 am Sterling 9

### **Industry**

Thursday, 10:00 am Regency D

### **Board of Directors**

Thursday, 10:15 am Sterling 7

# Meetings of the Society 2022

## ***Program Section Business Meetings***

|   |           |
|---|-----------|
| Weed Biology, Ecology & Management                            |           |
| Tuesday, 5:00 pm  | Regency F |
| Agronomic Crops II (Soybeans)                                 |           |
| Tuesday, 4:45 pm  | Regency D |
| Equipment and Application Methods                             |           |
| Tuesday, 5:00 pm  | Regency C |
| Horticulture and Specialty Crops                              |           |
| Wednesday, 10:00 am   | Regency E |
| Extension   |           |
| Wednesday, 9:55 am  | Regency B |
| Invasive Weeds, Rangeland, Pasture, and Vegetation Management |           |
| Wednesday, 11:00 am   | Regency B |
| Herbicide Physiology & Molecular Biology                      |           |
| Wednesday, 11:15 am   | Regency F |
| Agronomic Crops I (Corn)                                      |           |
| Wednesday, 3:15 pm  | Regency A |

## ***Symposia***

|   |            |
|---|------------|
| Impact of the Endangered Species Act on Herbicide Registration and Regulation |            |
| Wednesday, 1:30 – 3:55 pm   | Regency B  |
| New Frontiers in Application Technology                                       |            |
| Wednesday, 1:30 – 4:45 pm   | Regency EF |
| What's New in Industry  |            |
| Thursday, 10:30 – 11:15 pm  | Regency D  |

# Condensed Program – NCWSS 2022

## Monday, December 5

|               |   |                       |
|---------------|---|-----------------------|
| 10:00 - 12:00 | Local Arrangements                              | Sterling 4            |
| 1:00 - 5:00   | Board of Directors                              | Sterling 6            |
| 10:00 - 9:00  | Poster Setup                                    | Regency BCDE<br>Foyer |
| 5:00 - 6:00   | NCWSS Fellows                                   | Sterling 1            |
| 5:00 - 6:00   | Resident Education and<br>subcommittees         | Sterling 3            |
| 5:00 - 6:00   | Resolutions and Necrology<br>Committee          | Sterling 2            |
| 6:00 - 7:00   | Presidents Reception                            | Presidential<br>Suite |
| 6:30 - 9:30   | Graduate Student Mixer                          | Regency AB            |
| 7:30 - 9:00   | Program Committee and<br>Section Program Chairs | Sterling 6            |

## Tuesday, December 6

|               |  |                       |
|---------------|--|-----------------------|
| 7:00 - 8:00   | Paper Judges Breakfast                       | Regency A             |
| 7:00 - 8:00   | Poster Judges Breakfast                      | Regency A             |
| 8:00 - 9:45   | Poster Session I                             | Regency BCDE<br>Foyer |
| 10:00 - 12:00 | General Session                              | Regency C             |
| 12:00 – 1:00  | Distinguished Achievement<br>Award Committee | Sterling 4            |
| 12:00 – 1:15  | Graduate Student<br>Luncheon                 | Regency A             |
| 1:30 - 5:15   | Equipment and Application<br>Methods         | Regency C             |
| 1:30 - 5:00   | Agronomic Crops II -<br>Soybeans             | Regency D             |
| 1:30 - 5:15   | Weed Biology, Ecology,<br>Management         | Regency F             |
| 5:15 - 6:00   | Nominating Committee                         | Sterling 7            |
| 5:15 - 6:00   | Strategic Planning                           | Sterling 3            |
| 5:30 - 6:30   | Poster Session II                            | Regency BCDE<br>Foyer |
| 6:00 - 6:45   | Finance Steering and Policy<br>Committee     | Sterling 7            |

## Wednesday, December 7

|              |   |   |
|--------------|---|---|
| 6:30 - 7:45  | Women in Weed Science<br>Breakfast          | 18 <sup>th</sup> Floor,<br>Gateway East |
| 7:00 - 5:00  | Poster Viewing                              | Regency BCDE<br>Foyer                   |
| 9:00 - 10:10 | Extension                                   | Regency B                               |
| 8:00 - 10:15 | Horticulture and Specialty<br>Crops         | Regency E                               |
| 9:00 - 11:30 | Herbicide Physiology &<br>Molecular Biology | Regency F                               |



|               |  |            |
|---------------|--|------------|
| 9:00 - 11:15  | Agronomic Crops I - Corn   | Regency A  |
| 10:15 - 11:00 | Invasive Weeds, Rangeland,<br>Pasture, and Vegetation<br>Management                          | Regency B  |
| 11:30 - 12:00 | Poster Final Grades<br>Submission  | Sterling 9 |
| 12:00 - 1:15  | Society Awards Luncheon  | Regency CD |
| 1:30 - 3:00   | Agronomic Crops I - Corn   | Regency A  |
| 1:30 - 3:55   | Implications of the<br>Endangered Species Act on<br>Herbicide Registration and<br>Regulation | Regency B  |
| 1:30 - 4:45   | New Frontiers in<br>Application Technology   | Regency EF |
| 5:30 - 7:00   | Society Social and Contest<br>Awards   | Regency C  |

### **Thursday, December 8**

|               |   |            |
|---------------|---|------------|
| 7:00 - 8:15   | Industry Breakfast (Ticket<br>required) | Regency A  |
| 8:30 - 10:00  | What's New in Industry                  | Regency D  |
| 10:00 - 10:15 | Industry Business Meeting               | Regency D  |
| 10:15 - 11:15 | Board of Directors                      | Sterling 7 |
| 10:30 - 11:30 | Local Arrangements                      | Sterling 3 |

# Poster Sessions

Room: Regency BCDE Foyer

Chairperson and Moderator: Nick Arneson

## Poster Setup

Posters can be set up between 10:00 am and 9:00 pm on Monday, December 5. All NCWSS posters will be on display on Tuesday, December 6 from 7:00 am until 6:30 pm and on Wednesday, December 7 from 7:00 am until 5:00 pm. Posters must be removed by 4:30 pm on Wednesday, December 7.

**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 at least 25 letter-sized copies of your posters to hand out.**

## Tuesday, December 6

8:00 – 9:45 am Poster Session I

5:30 – 6:30 pm Poster Session II

## Poster Removal

All posters must be removed by 4:30 pm on Wednesday, December 7.

## NCWSS Sustaining Member Exhibitors

Tuesday & Wednesday

Regency BCDE Foyer

Set up Monday afternoon.

## Program Symbols

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

# PROGRAM

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**TUESDAY MORNING DECEMBER 6**

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## General Session

LOCATION: Regency C  
TIME: 8:00 AM - 10:00 AM  
MODERATOR: Reid J. Smeda  
University of Missouri  
Columbia, MO

### **\*SPEAKER**

- 8:00 AM Welcome to the 77th Annual Meeting of the North Central Weed Science Society.** Reid J. Smeda\*; University of Missouri, Columbia, MO **(1)**
- 8:05AM Weed Science Policy Update from DC.** Lee Van Wychen\*; Weed Science Society of America, Alexandria, VA **(2)**
- 8:30 AM Horseradish; the Spicy Root Condiment of Southern Illinois.** Stuart A. Walters\*; Southern Illinois University, Carbondale, IL **(3)**
- 9:00 AM Presidential Address.** David M. Simpson\*; Corteva, Indianapolis, IN **(4)**
- 9:30 AM Remembering NCWSS Members and Friends.** Sarah Striegel\*; Bayer Crop Science, Creve Coeur, MO **(5)**
- 9:35 AM Program Announcements.** Reid J. Smeda\*; University of Missouri, Columbia, MO **(6)**
- 9:40 AM Break**

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**TUESDAY MORNING DECEMBER 6**

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**POSTER - Agronomic Crops I - Corn**

LOCATION: Regency BCDE Foyer  
TIME: 10:00 AM - 11:50 AM  
MODERATOR: Nicholas J. Arneson  
University of Wisconsin-Madison  
Madison, WI

**\*PRESENTER † GRADUATE CONTEST ‡  
UNDERGRADUATE CONTEST**

**†Rescue Post-emergence Herbicide Options for Control of Multiple Herbicide-resistant Palmer Amaranth (*Amaranthus palmeri*) in Glyphosate/glufosinate-resistant Corn.**

Ramandeep Kaur\*, Stevan Z. Knezevic, Parminder Chahal, Nevin Lawrence, Yeyin Shi, Rachana Jhala, Amit J. Jhala; University of Nebraska, Lincoln, NE (7)

**†Planting Green in Corn: Evaluation of Soil Residual Herbicide Interaction, Weed Suppression, and Corn Yield.**

Trey P. Stephens\*, Amit J. Jhala; University of Nebraska, Lincoln, NE (8)

**†Volunteer Rapeseed Infestation in Corn and its Management.** Vipin Kumar\*<sup>1</sup>, Vijay Singh<sup>2</sup>, Michael L. Flessner<sup>3</sup>; <sup>1</sup>Virginia Polytechnic Institute and State University, Painter, VA, <sup>2</sup>Virginia Tech, Painter, VA, <sup>3</sup>Virginia Tech, Blacksburg, VA (9)

**†Evaluating Spot Application of Herbicide Using a Dual Tank Sprayer for Weed Management in Corn.** Adam Leise\*<sup>1</sup>, Amit J. Jhala<sup>1</sup>, Tsuky Khait<sup>2</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>Greeneye, Tel Aviv, Israel (10)

**New Corn Herbicide Programs in Nebraska.** Jon E. Scott\*<sup>1</sup>, Stevan Knezevic<sup>2</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>University of Nebraska, Concord, NE (11)

**Maverick™ Corn Herbicide: Rate Breakdown and Component Comparison for Residual Control.** Garrison J. Gundy\*<sup>1</sup>, Jonathon Kohrt<sup>2</sup>, Chad L. Smith<sup>3</sup>, Trevor D. Israel<sup>4</sup>, John Pawlak<sup>5</sup>; <sup>1</sup>Valent USA, McPherson, KS, <sup>2</sup>Valent USA, West Des Moines, IA, <sup>3</sup>Valent USA, Hallsville, MO, <sup>4</sup>Valent USA, Harrisburg, SD, <sup>5</sup>Valent USA, Spring Lake, MI (12)

**†Efficacy Limits of Group 15 Herbicides Following Severe Rainfall Events.** Bradley J. Decker\*, Eric J. Miller, Karla L. Gage; Southern Illinois University, Carbondale, IL **(13)**

**‡Greenhouse Evaluation of Corn Preemergence Herbicide Carry Over Potential for Early-season Drill Interseeded Cover Crops.** Bruno J. Eltink\*<sup>1</sup>, Victor de Sousa Ferreira<sup>1</sup>, Leonardo Carmona<sup>1</sup>, Christopher Proctor<sup>1</sup>, Rodrigo Werle<sup>2</sup>, Tatiane Severo Silva<sup>3</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>University of Wisconsin-Madison, Madison, WI, <sup>3</sup>University of Wisconsin-Madison Department of Agronomy, Madison, WI **(14)**

**Maverick™ Corn Herbicide: A New Burndown and Residual Premix in No-Till Corn.** Randall L. Landry\*<sup>1</sup>, Garrison J. Gundy<sup>2</sup>, Jonathon Kohrt<sup>3</sup>, Trevor D. Israel<sup>4</sup>, Chad L. Smith<sup>5</sup>, John A. Pawlak<sup>6</sup>, Ron E. Estes<sup>1</sup>, Eric Ott<sup>7</sup>, Pat Clay<sup>8</sup>; <sup>1</sup>Valent USA, Seymour, IL, <sup>2</sup>Valent USA, McPherson, KS, <sup>3</sup>Valent USA, West Des Moines, IA, <sup>4</sup>Valent USA, Harrisburg, SD, <sup>5</sup>Valent USA, Hallsville, MO, <sup>6</sup>Valent USA, Spring Lake, MI, <sup>7</sup>Valent USA, Greenfield, IN, <sup>8</sup>Valent USA, Fresno, CA **(15)**

**†Isoxadifen-ethyl Safener Associated with Goss's Wilt Severity in Corn.** Nathan H. Haugrud\*, Andrew J. Friskop, Joseph T. Ikley; North Dakota State University, Fargo, ND **(16)**

**Maverick™ Corn Herbicide: A New PRE and POST Herbicide in Conventional Tillage Corn.** Chad L. Smith\*<sup>1</sup>, Jonathon Kohrt<sup>2</sup>, Garrison J. Gundy<sup>3</sup>, Trevor D. Israel<sup>4</sup>, John Pawlak<sup>5</sup>, Ron Estes<sup>6</sup>, Randall L. Landry<sup>7</sup>, Eric Ott<sup>8</sup>; <sup>1</sup>Valent USA, Hallsville, MO, <sup>2</sup>Valent USA, West Des Moines, IA, <sup>3</sup>Valent USA, McPherson, KS, <sup>4</sup>Valent USA, Harrisburg, SD, <sup>5</sup>Valent USA, Spring Lake, MI, <sup>6</sup>Valent USA, IL, <sup>7</sup>Valent USA, Seymour, IL, <sup>8</sup>Valent USA, Greenfield, IN **(17)**

**†Evaluating Establishment of Early-season Drill Interseeded Cover Crop Mixture in Corn Across Different Rates of dimethenamid-P + Saflufenacil Applied Preemergence.** Kayla M. Safarik\*<sup>1</sup>, Daniel H. Smith<sup>2</sup>, Rodrigo Werle<sup>2</sup>, Chris Proctor<sup>1</sup>, Tatiane Severo Silva<sup>2</sup>, Victor de Sousa Ferreira<sup>1</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>University of Wisconsin, Madison, WI **(18)**

**†Herbicide Programs for Weed Control in Conventional (Non-GMO) Corn.** Venkatanaga Shiva Datta Kumar Sharma

## Posters 2022

Chiruvelli\*, Debalin Sarangi; University of Minnesota, St Paul, MN (19)

**Comparison of Atrazine Based Post-emergence Treatments in Corn.** Koray Kaçan\*<sup>1</sup>, Luka Milosevic<sup>1</sup>, Jon E. Scott<sup>1</sup>, Stevan Knezevic<sup>2</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>University of Nebraska, Concord, NE (20)

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### *TUESDAY MORNING DECEMBER 6*

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#### **POSTER - Agronomic Crops II - Soybeans**

LOCATION: Regency BCDE Foyer  
TIME: 10:00 AM - 11:50 AM

**\*PRESENTER † GRADUATE CONTEST ‡  
UNDERGRADUATE CONTEST**

**†Weed Management in Early-Planted Illinois Soybean.** Logan Miller\*<sup>1</sup>, Aaron Hager<sup>2</sup>; <sup>1</sup>University of Illinois, Chenoa, IL, <sup>2</sup>University of Illinois, Urbana, IL (21)

**Herbicide Management Strategies for ALS, PPO, Triazine, Glyphosate, and Dicamba Resistant Waterhemp in Xtendflex and E3 Soybean.** Claudia R. Bland\*, Bryan G. Young, William G. Johnson; Purdue University, West Lafayette, IN (22)

**†Impact of Esterified Seed Oil Adjuvant (Efficax) on Spray Deposition and Efficacy of PRE-emergence Herbicides in Wisconsin Soybean Production.** Laura D. Rodriguez Baquero\*, Jose J. Nunes, Ryan P. DeWerff, Rodrigo Werle; University of Wisconsin, Madison, WI (23)

**†This or That? Looking into Late Cereal Rye Cover Crop Termination Techniques in Wisconsin Soybean Systems.** Jacob H. Felsman\*, Nicholas J. Arneson, Ryan P. DeWerff, Rodrigo Werle; University of Wisconsin, Madison, WI (24)

**†Soybean Growth and Development as Influenced by Glyphosate Micro-Rates.** Luka Milosevic\*<sup>1</sup>, Jon E. Scott<sup>1</sup>, Stevan Knezevic<sup>2</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>University of Nebraska, Concord, NE (25)

**Soybean Yield as Influenced by Glyphosate Micro-Rates.** Jon E. Scott\*<sup>1</sup>, Luka Milosevic<sup>1</sup>, Stevan Knezevic<sup>2</sup>; <sup>1</sup>University of

## Posters 2022

Nebraska, Lincoln, NE, <sup>2</sup>University of Nebraska, Concord, NE  
(26)

**Control of Glyphosate-Resistant Palmer Amaranth with Late-Season Applications of Glufosinate in XtendFlex Soybean.** Vipin Kumar\*, Sachin Dhanda, Rui Liu, Taylor Lambert; Kansas State University, Hays, KS (27)

**Corteva New Residual Soybean Herbicide for PRE and POST Application.** Kelly A. Backscheider\*<sup>1</sup>, David M. Simpson<sup>2</sup>; <sup>1</sup>Corteva Agriscience, Franklin, IN, <sup>2</sup>Corteva Agriscience, Indianapolis, IN (28)

**†Comparison of POST-emergence Herbicide Programs without Dicamba in XtendFlex Soybean Systems: Waterhemp Control and Crop Response.** Arthur F. T. Duarte\*, Rodrigo Werle, Ryan P. DeWerff, Jose J. Nunes, Nicholas J. Arneson; University of Wisconsin, Madison, WI (29)

**Glufosinate, 2,4-D, and Dicamba Respray Intervals for Optimal Control of Palmer Amaranth (*Amaranthus palmeri*).** Emma A. Mitchell\*, Stephanie DeSimini, Joseph T. Ikley; North Dakota State University, Fargo, ND (30)

**Investigations of Suspected Weed Resistance to XtendiMax<sup>&Reg;</sup> Herbicide with VaporGrip<sup>&Reg;</sup> Technology.** Aruna V. Varanasi\*, Jeffrey Herrmann, John Willis, Chandra V. Aradhya; Bayer CropScience, Chesterfield, MO (31)

**†Effect of Growth Stage on the Sensitivity of Resistant and Susceptible Palmer Amaranth to 2,4-D.** Monica R. Marrs\*<sup>1</sup>, Vipin Kumar<sup>2</sup>, Anita Dille<sup>1</sup>, Rui Liu<sup>2</sup>, Augustine Obour<sup>2</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Kansas State University, Hays, KS (32)

**Integrating Ecological Tactics to Manage Herbicide-Resistant Waterhemp and Palmer Amaranth in Soybean.** Prashant Jha\*<sup>1</sup>, Jason K. Norsworthy<sup>2</sup>, Vipin Kumar<sup>3</sup>, Karla L. Gage<sup>4</sup>; <sup>1</sup>Iowa State University, Ames, IA, <sup>2</sup>University of Arkansas, Fayetteville, AR, <sup>3</sup>Kansas State University, Hays, KS, <sup>4</sup>Southern Illinois University, Carbondale, IL (33)

**To Terminate or Not to Terminate? Cereal Rye Cover Crop Management in an Early-Planted Soybean System.** Ryan P. DeWerff\*, Nicholas J. Arneson, Rodrigo Werle; University of Wisconsin, Madison, WI (34)

**†Tank Mixing Metobromuron with Soybean Preemergence Herbicides Improves Residual Weed Control.** Eric Y. Yu\*, Debalin Sarangi; University of Minnesota, St. Paul, MN **(35)**

**Soybean Response to Dicamba Vapor is Influenced by Canopy Conductance During the Exposure Event.** Matthew Osterholt\*, Scott Am McAdam, Bryan G. Young; Purdue University, West Lafayette, IN **(36)**

**†Influence of Herbicide Application Timing and Sequence on Weed Control in Soybean.** Navjot Singh\*<sup>1</sup>, Ryan P. Miller<sup>2</sup>, Thomas J. Peters<sup>3</sup>, Seth L. Naeve<sup>1</sup>, Debalin Sarangi<sup>1</sup>; <sup>1</sup>University of Minnesota, St. Paul, MN, <sup>2</sup>University of Minnesota, Rochester, MN, <sup>3</sup>North Dakota State University, Fargo, ND **(37)**

**‡Evaluation of Dicamba and Soil Residual Herbicide Tank Mixtures for Early-Season Weed Control in Glyphosate/Dicamba-Resistant Soybean.** Ian Tuma\*<sup>1</sup>, Devin Hammer<sup>2</sup>, Sarah Striegel<sup>3</sup>, Debalin Sarangi<sup>4</sup>; <sup>1</sup>University of Minnesota, Morris, MN, <sup>2</sup>Bayer CropScience, St. Louis, MO, <sup>3</sup>Bayer Crop Science, Mapleton, MN, <sup>4</sup>University of Minnesota, St. Paul, MN **(38)**

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***TUESDAY MORNING DECEMBER 6***

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**POSTER - Equipment and Application**  
**Methods**

LOCATION: Regency BCDE Foyer  
TIME: 10:00 AM - 11:50 AM

**\*PRESENTER † GRADUATE CONTEST**  
**‡ UNDERGRADUATE CONTEST**

**Effect of Adjuvants on Development and Formation of Arrested Ear Syndrome.** Ryan J. Edwards\*<sup>1</sup>, Lee A. Boles<sup>1</sup>, Gregory K. Dahl<sup>2</sup>; <sup>1</sup>WinField United, River Falls, WI, <sup>2</sup>Winfield United, Eagan, MN **(39)**

**‡The Influence of Electrocutation Height and Soil and Plant Moisture on the Control of Waterhemp.** Kaden W. Bollmann\*,



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Haylee E. Schreier, Kevin W. Bradley; University of Missouri, Columbia, MO (40)

**†A Dual Tank/boom Sprayer Reduced the Antagonism of Clethodim from Dicamba on Volunteer Corn Control in Soybean.** Marcelo Zimmer\*<sup>1</sup>, Bryan G. Young<sup>1</sup>, William G. Johnson<sup>1</sup>, Tristen H. Avent<sup>2</sup>, Jason K. Norsworthy<sup>2</sup>, Diego J. Contreras<sup>3</sup>, Wesley Everman<sup>3</sup>, Michael M. Houston<sup>4</sup>, Lauren M. Lazaro<sup>5</sup>, William L. Patzoldt<sup>5</sup>; <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>University of Arkansas, Fayetteville, AR, <sup>3</sup>North Carolina State University, Raleigh, NC, <sup>4</sup>Blue River Technology, Greenville, MS, <sup>5</sup>Blue River Technology, Sunnyvale, CA (41)

**†Delivering POST Herbicides on the Spot: Evaluating A Novel Smart Sprayer Technology.** Zaim Ugljic\*<sup>1</sup>, Nicholas J. Arneson<sup>1</sup>, Ryan P. DeWerff<sup>1</sup>, Anita Dille<sup>2</sup>, Chris Proctor<sup>3</sup>, Greg Kruger<sup>4</sup>, Miller Calvin<sup>5</sup>, Rodrigo Werle<sup>1</sup>; <sup>1</sup>University of Wisconsin, Madison, WI, <sup>2</sup>Kansas State University, Manhattan, KS, <sup>3</sup>University of Nebraska, Lincoln, NE, <sup>4</sup>University of Nebraska, North Platte, NE, <sup>5</sup>BASF, Seymour, IL (42)

**†Can Glufosinate Tank-mix Combinations with PPO-inhibitors and Proper Nozzle Selection Enhance Waterhemp Control?** Nikola Arsenijevic\*, Rodrigo Werle; University of Wisconsin, Madison, WI (43)

**Locating Weeds and Patches with Precision Sprayers.** Isaac H. Barnhart\*<sup>1</sup>, Thiago H. Vitti<sup>2</sup>, Chris Proctor<sup>2</sup>, Calvin A. Miller<sup>3</sup>, Greg Kruger<sup>4</sup>, Anita Dille<sup>1</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>University of Nebraska, Lincoln, NE, <sup>3</sup>BASF, Seymour, IL, <sup>4</sup>University of Nebraska, North Platte, NE (44)

**‡Employment of Multiple-Fan Nozzles and Application Volume Affected Spray Coverage and Herbicide Efficacy in Three Troublesome Broadleaf Species.** Taíris Duarte Vasconcelos\*, Alina Gava, Zachary Halsted, Barbara Houston, Kasey P. Schroeder, Jeffrey Golus, Milos Zaric; University of Nebraska, North Platte, NE (45)

**†Hooded Booms Reduce Particle Drift of Dicamba Applications.** Andrew T. Vehige\*<sup>1</sup>, Shaun M. Billman<sup>1</sup>, Reid J. Smeda<sup>1</sup>, Naresh Pai<sup>2</sup>, Sarah Striegel<sup>3</sup>, Justin Pollard<sup>3</sup>, Devin J. Hammer<sup>4</sup>, Jose J. Nunes<sup>5</sup>, Arthur Franco Teodoro Duarte<sup>5</sup>, Guilherme Chudzik<sup>5</sup>, Ryan P. DeWerff<sup>5</sup>, Rodrigo Werle<sup>5</sup>; <sup>1</sup>University of Missouri, Columbia, MO, <sup>2</sup>Bayer Crop Science, Chesterfield, MO, <sup>3</sup>Bayer Crop Science, Creve Coeur, MO,

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<sup>4</sup>Bayer Crop Science, St. Charles, MO, <sup>5</sup>University of Wisconsin, Madison, WI (46)

**‡Application Antagonism Negates Benefit of Foliar Herbicide Combinations for Resistance Management.** Estevan Goncalves Cason\*, Julie M. Young, Bryan G. Young; Purdue University, West Lafayette, IN (47)

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### *TUESDAY MORNING DECEMBER 6*

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#### POSTER - Extension

LOCATION: Regency BCDE Foyer  
TIME: 10:00 AM - 11:50 AM

\*PRESENTER † GRADUATE CONTEST

**Telling Your Extension Weed Science Story: Innovating Outreach Efforts in Wisconsin Through ArcGIS Tools.** Nicholas J. Arneson\*, Jose J. Nunes, Kolby Grint, Rodrigo Werle; University of Wisconsin, Madison, WI (48)

**Interseeding Cover Crops into Corn in the North Central Region.** Daniel H. Smith\*<sup>1</sup>, Tatiane Severo Silva<sup>1</sup>, Ryan P. DeWerff<sup>1</sup>, Nicholas J. Arneson<sup>1</sup>, Ahmadreza Mobli<sup>1</sup>, Kayla Safarik<sup>2</sup>, Victor de Sousa Ferreira<sup>2</sup>, Chris Proctor<sup>2</sup>, Rodrigo Werle<sup>1</sup>; <sup>1</sup>University of Wisconsin, Madison, WI, <sup>2</sup>University of Nebraska, Lincoln, NE (49)

**Mature Alfalfa Tolerance to Flaming.** Stevan Knezevic\*<sup>1</sup>, Jon E. Scott<sup>2</sup>, Luka Milosevic<sup>2</sup>; <sup>1</sup>University of Nebraska, Concord, NE, <sup>2</sup>University of Nebraska, Lincoln, NE (50)

**Podcasting to Communicate Weed Management Principles.** Sarah Lancaster\*<sup>1</sup>, Joseph T. Ikley<sup>2</sup>, Mandy Bish<sup>3</sup>, Alyssa Essman<sup>4</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>North Dakota State University, Fargo, ND, <sup>3</sup>University of Missouri, Columbia, MO, <sup>4</sup>The Ohio State University, Columbus, OH (51)

**†Influence of Cover Crop Termination Strategies on Weed Suppression and Residual Herbicide Availability in the Soil.** Hunter A. Medenwald\*, Lucas Oliveira Ribeiro Maia, Bryan G. Young; Purdue University, West Lafayette, IN (52)

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**An Air Tractor Simulator for Safety Training and Proficiency in Application Techniques for Agricultural Pilots.** Jeffrey Golus\*<sup>1</sup>, Thomas May<sup>2</sup>; <sup>1</sup>University of Nebraska, North Platte, NE, <sup>2</sup>Flying M Enterprises, Holdrege, NE (53)

**Managing Volunteer Corn in 2,4-D Tolerant Soybeans.** Ryan P. Miller\*<sup>1</sup>, Lisa M. Behnken<sup>1</sup>, Nathaniel M. Drewitz<sup>1</sup>, Debalin Sarangi<sup>2</sup>; <sup>1</sup>University of Minnesota, Rochester, MN, <sup>2</sup>University of Minnesota, St. Paul, MN (54)

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### *TUESDAY MORNING DECEMBER 6*

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#### **POSTER - Herbicide Physiology & Molecular Biology**

LOCATION: Regency BCDE Foyer  
TIME: 10:00 AM - 11:50 AM

\*PRESENTER † GRADUATE CONTEST  
‡ UNDERGRADUATE CONTEST

**Enhancing Herbicide Efficacy with a Novel Ethoxylated Phospholipid.** Lia Marchi Werle\*<sup>1</sup>, Glen R. Obear<sup>1</sup>, Nongnuch Sutivisedsak<sup>1</sup>, Keith Rowley<sup>2</sup>, Felipe de Andrade Faleco<sup>3</sup>, Rodrigo Werle<sup>3</sup>; <sup>1</sup>Exacto Inc, Sharon, WI, <sup>2</sup>Exacto, Madison, WI, <sup>3</sup>University of Wisconsin, Madison, WI (55)

**†Discovering Site of Action of Herbicide Indaziflam.** Mohit Mahey\*<sup>1</sup>, Jinyi Chen<sup>2</sup>, Peter Knut Lundquist<sup>1</sup>, Eric Lloyd Patterson<sup>1</sup>; <sup>1</sup>Michigan state university, East Lansing, MI, <sup>2</sup>Nanjing agricultural university, Nanjing, China (56)

**†Effectiveness of Early Post Emergence Tank Mix for *Amaranthus palmeri* Management.** Devin W. Koester\*<sup>1</sup>, Dean E. Riechers<sup>2</sup>, Jeanafior Crystal T. Concepcion<sup>2</sup>; <sup>1</sup>University of Illinois, Elizabeth, IL, <sup>2</sup>University of Illinois, Urbana, IL (57)

**†Inheritance of S-Metolachlor Resistance in a Waterhemp (*Amaranthus tuberculatus*) Population from Illinois.** Isabel S. Werle\*<sup>1</sup>, Lucas K. Bobadilla<sup>2</sup>, Aaron G. Hager<sup>1</sup>, Patrick J. Tranel<sup>1</sup>; <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>University of Illinois, Champaign, IL (58)

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‡**Evaluating Herbicide Resistance of Giant Ragweed (*Ambrosia trifida* L.).** Emma J. Lagerhausen\*, Alexander R. Mueth, Eric J. Miller, Cristiana B. Rankrape, Karla L. Gage; Southern Illinois University, Carbondale, IL (59)

‡**Mechanisms of Resistance to Indaziflam in *Poa Annua*.** Sarah E. Holmes\*<sup>1</sup>, Mohit Mahey<sup>2</sup>, Eric L. Patterson<sup>2</sup>; <sup>1</sup>Truman State University, Kirksville, MO, <sup>2</sup>Michigan state university, East Lansing, MI (60)

†**Confirmation and Characterization of ALS-Inhibitor Resistance in Japanese Brome.** Manogna Devi Adari\*<sup>1</sup>, Balaji Aravindhan Pandian<sup>2</sup>, Vara Prasad Pv<sup>1</sup>, Mithila Jugulam<sup>1</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Enko, Mystic, CT (61)

†**Differential Sensitivity of Winter Wheat to HPPD-Inhibitors.** Susee Sudhakar\*<sup>1</sup>, Sridevi Nakka<sup>2</sup>, Asif Mohammad<sup>3</sup>, Harold Trick<sup>1</sup>, Vara Prasad Pv<sup>1</sup>, Mithila Jugulam<sup>1</sup>; <sup>1</sup>Kansas state university, Manhattan, KS, <sup>2</sup>Tritica Biosciences, Manhattan, KS, <sup>3</sup>Heartland Plant Innovations, Manhattan, KS (62)

†**Is Detoxification Contributing to PPO Inhibitor Resistance in Waterhemp (*Amaranthus tuberculatus*)?** Jesse A. Haarmann\*<sup>1</sup>, Bryan G. Young<sup>1</sup>, William G. Johnson<sup>2</sup>; <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Purdue University, West Lafayette In, IN (63)

**Distribution of Target Site Mutations in PPO2 Gene in Waterhemp (*A. Tuberculatus*) and Palmer Amaranth (*A. Palmeri*) Populations in the USA.** Jacob S. Montgomery<sup>1</sup>, Daljit Singh\*<sup>2</sup>, Jaishree Chittoor<sup>2</sup>, Chandrashekar Aradhya<sup>2</sup>, Alejandro Perez-Jones<sup>2</sup>; <sup>1</sup>Colorado State University, Fort Collins, CO, <sup>2</sup>Bayer Crop Science, Chesterfield, MO (64)

**Investigating the Effect of S-Metolachlor and Cereal Rye Cover Crops in Weeds.** Rama Paudel\*<sup>1</sup>, Martin M. Williams II<sup>2</sup>, Adam Davis<sup>1</sup>, Dean Edward Riechers<sup>1</sup>; <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>USDA-ARS, Urbana, IL (65)

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**TUESDAY MORNING DECEMBER 6**

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**POSTER - Horticulture and Specialty Crops**

LOCATION: Regency BCDE Foyer

TIME: 10:00 AM - 11:50 AM

**\*PRESENTER † GRADUATE CONTEST**

**‡ UNDERGRADUATE CONTEST**

**†Evaluation of Weed Removal Timing for Three Sweetpotato Cultivars.** Emmanuel G. Cooper\*, Stephen L. Meyers, Jeanine Arana; Purdue University, West Lafayette, IN (66)

**‡Onion Response to Simulated 2,4-D and Dicamba Drift.** Hope Thome\*<sup>1</sup>, Monique Mose<sup>2</sup>, Sushila Chaudhari<sup>2</sup>; <sup>1</sup>Michigan State University, East Lansing, MI, <sup>2</sup>Michigan State University, East Lansing, MI (67)

**Combinations of PRE and Layby Herbicides in Watermelon.** Josue D. Cerritos\*, Stephen L. Meyers, Jeanine Arana, Emmanuel G. Cooper, Luis F. Medina, Carlos A. López Manzano; Purdue University, West Lafayette, IN (68)

**†Effect of POST Herbicides Applied to the Distal Portion of Pumpkin Vines.** Jeanine Arana\*, Stephen L. Meyers, Emmanuel G. Cooper, Luis F. Medina, Josue D. Cerritos, Carlos A. López Manzano; Purdue University, West Lafayette, IN (69)

**‡Impact of Herbicide, Application Method, and Variety on Celery Plant Meltdown.** Rachel Mickey\*, Monique Mose, Christopher Galbraith, Sushila Chaudhari; Michigan State University, East Lansing, MI (70)

**Transplanted Banana Pepper Response to Clomazone PRE.** Luis F. Medina\*, Stephen L. Meyers, Jeanine Arana, Emmanuel G. Cooper, Josue D. Cerritos, Carlos A. López Manzano; Purdue University, West Lafayette, IN (71)

**†Weed Surveys of Snap Bean Fields in Midwest Production Systems.** Pavle Pavlovic\*<sup>1</sup>, Caio Brunharo<sup>2</sup>, Jed B. Colquhoun<sup>3</sup>, Nicholas Emmanuel Korres<sup>4</sup>, Carolyn Lowry<sup>2</sup>, Scott Lukas<sup>5</sup>, Ed Peachey<sup>6</sup>, Barbara Scott<sup>7</sup>, Lynn M. Sosnoskie<sup>8</sup>, Yudai Takenaka<sup>1</sup>, Mark J. VanGessel<sup>7</sup>, Martin M. Williams II<sup>9</sup>; <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>Pennsylvania State University, University

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Park, PA, <sup>3</sup>University of Wisconsin, Madison, WI, <sup>4</sup>University of Ioannina, áRta, Greece, <sup>5</sup>Oregon State University, Hermiston, OR, <sup>6</sup>Oregon State University, Corvallis, OR, <sup>7</sup>University of Delaware, Georgetown, DE, <sup>8</sup>Cornell University, Geneva, NY, <sup>9</sup>Global Change and Photosynthesis Research Unit, USDA-ARS, Urbana, IL **(72)**

**‡Phytotoxicity, Plant Height, and Biomass Response of Two Industrial Hemp Cultivars to Quizalofop-ethyl Tank Mixtures with Various Adjuvants.** Alina Gava\*, Tairis Duarte Vasconcelos, Jeff Golus, Milos Zaric, Kelly Bruns; University of Nebraska, North Platte, NE **(73)**

**‡Peppermint Response to Tiafenacil and Saflufenacil Applied Postharvest.** Carlos A. López Manzano\*, Stephen L. Meyers, Jeanine Arana, Emmanuel G. Cooper, Josue D. Cerritos, Luis F. Medina; Purdue University, West Lafayette, IN **(74)**

**†Response of Trees to Dicamba and 2,4-D Simulated Drift.** Allyssa Boerngen\*, Eric J. Miller, Karla L. Gage; Southern Illinois University, Carbondale, IL **(75)**

**‡Golden Pennycress Response to Simulated Carryover of Group 14 Soybean Herbicides.** Claudia J. Duarte\*, Brent S. Heaton, Mark L. Bernards; Western Illinois University, Macomb, IL **(76)**

**†Comparison of ACCase Inhibiting Herbicides for Use in Two Industrial Hemp Cultivars.** Milos Zaric\*<sup>1</sup>, Marija Savic<sup>2</sup>, Greg Kruger<sup>1</sup>, Sam E. Wortman<sup>3</sup>, Kelly Bruns<sup>1</sup>; <sup>1</sup>University of Nebraska, North Platte, NE, <sup>2</sup>University of Nebraska, North Platte, NE, <sup>3</sup>University of Nebraska, Lincoln, NE **(77)**

**†Residual vs Post Emergence Herbicides for Weed Management in Vineyards.** Michelle M. Maile\*, Reid J. Smeda, Dean S. Volenberg; University of Missouri, Columbia, MO **(78)**

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***TUESDAY MORNING DECEMBER 6***

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**POSTER - Invasive Weeds, Rangeland, Pasture,  
and Vegetation Management**

LOCATION: Regency BCDE Foyer  
TIME: 10:00 AM - 11:50 AM

\*PRESENTER † GRADUATE CONTEST  
‡ UNDERGRADUATE CONTEST

†**Allelopathic Characteristics That Drive Johnsongrass (*Sorghum halepense*) Competition: Accessing Dhurrin Gene Expression.** Connor L. Purvis\*, Erin E. Burns; Michigan State University, East Lansing, MI (79)

**Control Options for Japanese Knotweed Along Roadsides - Initial Results.** Joseph Omielan\*; University of Kentucky, Lexington, KY (80)

†**Evaluating the Weed Suppression Potential of Spray-on Biopolymer-based Films for Use in Midwest Row-Crop Systems.** Camila Chiaranda Rodrigues\*, Christopher Proctor, Bruno Eltink, Leonardo Inveninato Carmona; University of Nebraska, Lincoln, NE (81)

†**Grazing Winter Cover Crops: Does it Affect Weed Suppression in Kansas?** Lily A. Woitaszewski\*, Bruno Pedreira, DooHong Min, Sarah Lancaster; Kansas State University, Manhattan, KS (82)

**Waterhemp (*Amaranthus tuberculatus*) Regeneration from Callus Culture: A Step Forward to Genome Editing in Weed Management.** Yaiphabi Kumam\*<sup>1</sup>, Harold Trick<sup>2</sup>, Vara Prasad Pv<sup>1</sup>, Mithila Jugulam<sup>1</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Kansas State University, Manhattan, KS (83)

‡**Evaluation of Chemical and Non-Chemical Options for Cereal Rye Cover Crop Termination.** Mark Timper\*<sup>1</sup>, Navjot Singh<sup>1</sup>, Eric Y. Yu<sup>1</sup>, Elizabeth Stahl<sup>2</sup>, Debalin Sarangi<sup>1</sup>; <sup>1</sup>University of Minnesota, St. Paul, MN, <sup>2</sup>University of Minnesota, Worthington, MN (84)

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***TUESDAY MORNING DECEMBER 6***

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**POSTER - Weed Biology, Ecology,  
Management**

LOCATION: Regency BCDE Foyer  
TIME: 10:00 AM - 11:50 AM

**\*PRESENTER † GRADUATE CONTEST  
‡ UNDERGRADUATE CONTEST**

**†Impact of Simulated Rainfall on Atrazine Wash Off from Roller Crimped and Standing Cereal Rye Residue Onto the Soil.** Lucas Oliveira Ribeiro Maia\*, Bryan G. Young, Eileen J. Kladvik, Shalamar Armstrong, William G. Johnson; Purdue University, West Lafayette, IN (85)

**†Water Stress Effects on Weed Germination, Growth, and Seed Production: A Global Meta-analysis.** Mandeep Singh\*<sup>1</sup>, Resham Thapa<sup>2</sup>, Meetpal S. Kukal<sup>3</sup>, Suat Irmak<sup>3</sup>, Steven Mirsky<sup>4</sup>, Amit J. Jhala<sup>1</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>North Carolina State University, Raleigh, NC, <sup>3</sup>Pennsylvania State University, University Park, PA, <sup>4</sup>USDA-ARS Beltsville Agricultural Research Center, Beltsville, MD (86)

**Evaluation of Foliar Corn-soybean Herbicides on Giant Ragweed and Waterhemp Control in Wisconsin.** Ahmadreza Mobli\*, Nicholas J. Arneson, Ryan DeWerff, Rodrigo Werle; University of Wisconsin, Madison, WI (87)

**†Lack of Effective Control of a Wisconsin Waterhemp Accession with Soil-applied PPO-inhibitor Herbicides.** Felipe de Andrade Faleco\*, Nicholas J. Arneson, Rodrigo Werle; University of Wisconsin, Madison, WI (88)

**†Effect of Cereal Rye Cover Crop Biomass on Waterhemp Emergence and Soil Abiotic Parameters.** Jose J. Nunes\*, Guilherme Chudzik, Arthur F. Teodoro, Nicholas J. Arneson, Rodrigo Werle; University of Wisconsin, Madison, WI (89)

**Response of Herbicide Resistant Palmer Amaranth to Combinations of Herbicide Groups 5 and 27 Applied Preemergence and Postemergence.** Tyler P. Meyeres\*<sup>1</sup>, Christopher M. Weber<sup>1</sup>, Lily A. Woitaszewski<sup>1</sup>, Mithila Jugulam<sup>1</sup>,



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Sarah Lancaster<sup>1</sup>, Marshall Hay<sup>2</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Syngenta Crop Protection, Vero Beach, FL (90)

### †Impact of Cereal Rye Cover Crop Termination Time, Soybean Planting Time, and Residual Herbicide on Giant Ragweed (*Ambrosia trifida*) Control in Nebraska and Wisconsin.

Guilherme Chudzik\*<sup>1</sup>, Nicholas J. Arneson<sup>1</sup>, Ryan P. DeWerff<sup>1</sup>, Victor de Sousa Ferreira<sup>2</sup>, Christopher Proctor<sup>2</sup>, David Stoltenberg<sup>1</sup>, Rodrigo Werle<sup>1</sup>; <sup>1</sup>University of Wisconsin, Madison, WI, <sup>2</sup>University of Nebraska, Lincoln, NE (91)

### ‡The Critical Weed Free Period in Hemp (*Cannabis sativa* L.).

Charles M. Williams\*<sup>1</sup>, Eric J. Miller<sup>1</sup>, Matthew P. Spoth<sup>2</sup>, Michael L. Flessner<sup>3</sup>, Karla L. Gage<sup>1</sup>; <sup>1</sup>Southern Illinois University, Carbondale, IL, <sup>2</sup>Virginia Polytechnic Institute and State University, Blacksburg, VA, <sup>3</sup>Virginia Tech, Blacksburg, VA (92)

### Survey of Herbicide Resistance in Pigweed Escapes in North Dakota.

Stephanie DeSimini\*<sup>1</sup>, Zack Bateson<sup>2</sup>, Megan O'Neil<sup>2</sup>, Michael J. Christoffers<sup>1</sup>, Joseph T. Ikley<sup>1</sup>; <sup>1</sup>North Dakota State University, Fargo, ND, <sup>2</sup>National Agricultural Genotyping Center, Fargo, ND (93)

### †Plastomes of Dioecious *Amaranthus* Species and Evolutionary Implications in Weed Science.

Damilola A. Raiyemo\*, Patrick Tranel; University of Illinois, Urbana, IL (94)

### ‡The Effect of Planting Density and Herbicide Program on Weed Control in Hemp (*Cannabis sativa* L.).

Grant D. Isaacs\*<sup>1</sup>, Eric J. Miller<sup>1</sup>, Matthew P. Spoth<sup>2</sup>, Michael L. Flessner<sup>3</sup>, Karla L. Gage<sup>1</sup>; <sup>1</sup>Southern Illinois University, Carbondale, IL, <sup>2</sup>Virginia Polytechnic Institute and State University, Blacksburg, VA, <sup>3</sup>Virginia Tech, Blacksburg, VA (95)

### Functional Structure of the Seedbank Shows Weed Trait Gradients in Glyphosate-resistant Cropping Systems in the U.S.

Zhe Ren\*<sup>1</sup>, Bryan G. Young<sup>2</sup>, David J. Gibson<sup>3</sup>, Karla L. Gage<sup>4</sup>, Micheal Dk Owen<sup>5</sup>, Joseph L. Matthews<sup>4</sup>, David L. Jordan<sup>6</sup>, David R. Shaw<sup>7</sup>, Stephen C. Weller<sup>2</sup>, Robert G. Wilson<sup>8</sup>; <sup>1</sup>Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN, <sup>2</sup>Purdue University, West Lafayette, IN, <sup>3</sup>Southern Illinois University, Carbondale, IN, <sup>4</sup>Southern Illinois University, Carbondale, IL, <sup>5</sup>Iowa State University, Ames, IA, <sup>6</sup>North Carolina State University, Raleigh, NC, <sup>7</sup>Mississippi State University, Mississippi State, MS, <sup>8</sup>University of Nebraska, Scottsbluff, NE (96)

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†**Emergence Patterns of Midwestern Shattercane (*Sorghum bicolor*) Biotypes.** Emma L. Gaither\*, Reid J. Smeda; University of Missouri, Columbia, MO (97)

‡**Evaluating Establishment and Weed Suppression Potential of Early-season Drill Interseeded Cover Crop into Corn.** Leonardo Inveninato Carmona\*; University of Nebraska, Lincoln, NE (98)

**The Effects of Interseeding Winter Wheat on Weed Suppression in Soybean Across Multiple States.** Karla L. Gage\*<sup>1</sup>, Eric J. Miller<sup>1</sup>, Nicholas J. Arneson<sup>2</sup>, Anthony F. Dobbels<sup>3</sup>, Alyssa Essman<sup>4</sup>, Joseph T. Ikley<sup>5</sup>, Prashant Jha<sup>6</sup>, Amit J. Jhala<sup>7</sup>, Mark M. Loux<sup>4</sup>, Christy L. Sprague<sup>8</sup>, Reid J. Smeda<sup>9</sup>, Rodrigo Werle<sup>2</sup>; <sup>1</sup>Southern Illinois University, Carbondale, IL, <sup>2</sup>University of Wisconsin, Madison, WI, <sup>3</sup>The Ohio State University, South Charleston, OH, <sup>4</sup>The Ohio State University, Columbus, OH, <sup>5</sup>North Dakota State University, Fargo, ND, <sup>6</sup>Iowa State University, Ames, IA, <sup>7</sup>University of Nebraska, Lincoln, NE, <sup>8</sup>Michigan State University, East Lansing, MI, <sup>9</sup>University of Missouri, Columbia, MO (99)

†**Evolutionary Stability of Dioecy in the Genus *Amaranthus*.** Alexander J. Lopez\*<sup>1</sup>, Lucas Kopecky Bobadilla<sup>2</sup>, Patrick Tranel<sup>1</sup>; <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>University of Illinois, Champaign, IL (100)

‡**Effects of Soybean Chaff Lining on *Amaranthus* spp. Seed Viability.** Kylee S. Watkins\*<sup>1</sup>, Alexander R. Mueth<sup>1</sup>, Nicholas J. Arneson<sup>2</sup>, Gabrielle LaBiche<sup>3</sup>, Vipin Kumar<sup>4</sup>, Travis Legleiter<sup>5</sup>, Rodrigo Werle<sup>2</sup>, Lauren M. Lazaro<sup>3</sup>, Eric J. Miller<sup>1</sup>, Karla L. Gage<sup>1</sup>; <sup>1</sup>Southern Illinois University, Carbondale, IL, <sup>2</sup>University of Wisconsin, Madison, WI, <sup>3</sup>Louisiana State University AgCenter, Baton Rouge, LA, <sup>4</sup>Kansas State University, Hays, KS, <sup>5</sup>University of Kentucky, Princeton, KY (101)

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***TUESDAY AFTERNOON DECEMBER 6***

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**Grad Student Luncheon**

LOCATION: Regency A  
TIME: 12:00 PM - 1:15 PM

**12:00 PM Student Luncheon**  
**Sponsored by Corteva**

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***TUESDAY AFTERNOON DECEMBER 6***

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**ORAL - Agronomic Crops II - Soybeans**

LOCATION: Regency D  
TIME: 1:30 PM - 5:00 PM  
MODERATOR Michael Weber  
Bayer Res. & Dev. Services  
Indianola, IA

**\*SPEAKER † GRADUATE CONTEST**

**1:30 PM †Control of Multiple-Herbicide-Resistant Waterhemp (*Amaranthus tuberculatus*) with Acetochlor-based Tank Mixtures in Soybean.** Hannah E. Symington\*<sup>1</sup>, Nader Soltani<sup>1</sup>, Allan Kaastra<sup>2</sup>, David C. Hooker<sup>1</sup>, Darren E. Robinson<sup>1</sup>, Peter Sikkema<sup>1</sup>; <sup>1</sup>University of Guelph, Ridgetown, ON, Canada, <sup>2</sup>Bayer Crop Science, Guelph, ON, Canada **(102)**

**1:45 PM †Planting Soybean Green: Agronomic and Weed Management Benefits and Challenges.** Jose J. Nunes\*<sup>1</sup>, Nicholas J. Arneson<sup>1</sup>, Bill Johnson<sup>2</sup>, Bryan G. Young<sup>2</sup>, Joseph T. Ikley<sup>3</sup>, John M. Wallace<sup>4</sup>, Karla L. Gage<sup>5</sup>, Prashant Jha<sup>6</sup>, Sarah Lancaster<sup>7</sup>, Travis Legleiter<sup>8</sup>, Vipin Kumar<sup>9</sup>, Rodrigo Werle<sup>1</sup>; <sup>1</sup>University of Wisconsin, Madison, WI, <sup>2</sup>Purdue University, West Lafayette, IN, <sup>3</sup>North Dakota State University, Fargo, ND,

## Tuesday Papers 2022

<sup>4</sup>Pennsylvania State University, University Park, PA, <sup>5</sup>Southern Illinois University, Carbondale, IL, <sup>6</sup>Iowa State University, Ames, IA, <sup>7</sup>Kansas State University, Manhattan, KS, <sup>8</sup>University of Kentucky, Princeton, KY, <sup>9</sup>Kansas State University, Hays, KS **(103)**

- 2:00 PM Soybean and Dicamba: Hormesis or Not.** Luka Milosevic\*<sup>1</sup>, Jon E. Scott<sup>1</sup>, Stevan Knezevic<sup>2</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>University of Nebraska, Concord, NE **(104)**
- 2:15 PM †Synergistic and Antagonistic Herbicide Interactions for Control of Volunteer Corn in glyphosate/glufosinate/2,4-D-resistant Soybean.** Emily Duenk\*<sup>1</sup>, Nader Soltani<sup>1</sup>, Robert T. Miller<sup>2</sup>, David C. Hooker<sup>1</sup>, Darren E. Robinson<sup>1</sup>, Peter H. Sikkema<sup>1</sup>; <sup>1</sup>University of Guelph, Ridgetown, ON, Canada, <sup>2</sup>BASF, Mississauga, ON, Canada **(105)**
- 2:30 PM †Survey of Corn-Soybean Weed Management During the 2021 Growing Season and Current Stakeholder Perception on Targeted Spraying Technologies.** Zaim Ugljic\*<sup>1</sup>, Maxwell Coura Oliveira<sup>1</sup>, Anita Dille<sup>2</sup>, Chris Proctor<sup>3</sup>, Rodrigo Werle<sup>1</sup>; <sup>1</sup>University of Wisconsin, Madison, WI, <sup>2</sup>Kansas State University, Manhattan, KS, <sup>3</sup>University of Nebraska, Lincoln, NE **(106)**
- 2:45 PM Effects of Micro-Rates of 2,4-D and Dicamba on Sensitive Soybeans.** Stevan Knezevic\*<sup>1</sup>, Jon E. Scott<sup>2</sup>, Luka Milosevic<sup>2</sup>; <sup>1</sup>University of Nebraska, Concord, NE, <sup>2</sup>University of Nebraska, Lincoln, NE **(107)**
- 3:00 PM †Impact of Planting Date and Soybean Row Width on Weed Suppression and Yield.** Matthew S. Goddard\*, Christy L. Sprague, Maninderpal Singh; Michigan State University, East Lansing, MI **(108)**
- 3:15 PM Break**
- 3:30 PM †Influence of Glufosinate Tank-mix Combinations with PPO-inhibitors on Waterhemp Control and Soybean Development and Yield.** Nikola Arsenijevic\*<sup>1</sup>, Nicholas J.

## Tuesday Papers 2022

Arneson<sup>1</sup>, Ryan P. DeWerff<sup>1</sup>, Daniel H. Smith<sup>1</sup>, Rodrigo Werle<sup>1</sup>, Mark L. Bernards<sup>2</sup>; <sup>1</sup>University of Wisconsin, Madison, WI, <sup>2</sup>Western Illinois University, Macomb, IL **(109)**

- 3:45 PM †Optimizing Dicamba and Glufosinate Application Timings for Weed Control in Xtendflex Soybeans in Central Kansas.** Monica R. Marrs\*<sup>1</sup>, Vipin Kumar<sup>2</sup>, Anita Dille<sup>1</sup>, Rui Liu<sup>2</sup>, Augustine Obour<sup>2</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Kansas State University, Hays, KS **(110)**
- 4:00 PM Comparisons of Pre-emergence Herbicide Programs with and without XtendiMax<sup>&Reg;</sup> Herbicide with VaporGrip<sup>&Reg;</sup> Technology in Dicamba-Tolerant Soybean Systems.** Devin Hammer\*<sup>1</sup>, Cody Evans<sup>2</sup>, Neha Rana<sup>1</sup>, Ananda Datta<sup>1</sup>; <sup>1</sup>Bayer CropScience, St. Louis, MO, <sup>2</sup>Bayer CropScience, Franklin, IL **(111)**
- 4:15 PM †Integrated Management of Giant Ragweed in Soybean.** Venkatanaga Shiva Datta Kumar Sharma Chiruvelli\*<sup>1</sup>, Debalin Sarangi<sup>1</sup>, Thomas J. Peters<sup>2</sup>, Gregg A. Johnston<sup>1</sup>; <sup>1</sup>University of Minnesota, St Paul, MN, <sup>2</sup>North Dakota State University, Fargo, ND **(112)**
- 4:30 PM †A Multi-Tactic Approach for Weed Management in Soybean-Sugar Beet Rotation.** Navjot Singh\*<sup>1</sup>, Thomas J. Peters<sup>2</sup>, Seth L. Naeve<sup>1</sup>, Ryan P. Miller<sup>3</sup>, Debalin Sarangi<sup>1</sup>; <sup>1</sup>University of Minnesota, St. Paul, MN, <sup>2</sup>North Dakota State University, Fargo, ND, <sup>3</sup>University of Minnesota, Rochester, MN **(113)**
- 4:45 PM Business Meeting**

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***TUESDAY AFTERNOON DECEMBER 6***

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**ORAL - Equipment and Application Methods**

LOCATION: Regency C  
TIME: 1:30 PM - 5:00 PM  
MODERATOR: Matt Faletti  
Precision Lab  
Waukegan, IL

**\*SPEAKER † GRADUATE CONTEST**

- 1:30 PM †Evaluating Even Flat-fan Nozzle Coverage for Spot Spraying Applications with a One or Two-boom System.** Thiago H. Vitti\*; University of Nebraska, Lincoln, NE **(114)**
- 1:45 PM Setting the Standard for Quantitative Data Collection with Tractor-Mounted Sensor Technology in Agriculture.** Lauren M. Lazaro\*, Scott Brown, Jesaelen Gizotti de Moraes, Michael Houston, William L. Patzoldt; Blue River Technology, Sunnyvale, CA **(115)**
- 2:00 PM †Multi-State Evaluation of Electrocutation for Control of Escaped Weeds in Soybean.** Jacob E. Vaughn\*<sup>1</sup>, Karla L. Gage<sup>2</sup>, Prashant Jha<sup>3</sup>, Amit J. Jhala<sup>4</sup>, Sarah Lancaster<sup>5</sup>, Bryan G. Young<sup>6</sup>, Kevin W. Bradley<sup>1</sup>; <sup>1</sup>University of Missouri, Columbia, MO, <sup>2</sup>Southern Illinois University, Carbondale, IL, <sup>3</sup>Iowa State University, Ames, IA, <sup>4</sup>University of Nebraska, Lincoln, NE, <sup>5</sup>Kansas State University, Manhattan, KS, <sup>6</sup>Purdue University, West Lafayette, IN **(116)**
- 2:15 PM Comparison of Banded and Broadcast Herbicide Applications in Soybean with a Cereal Rye Cover Crop.** Eric J. Miller\*, Alex Mueth, Karla L. Gage; Southern Illinois University, Carbondale, IL **(117)**
- 2:30 PM †Evaluating the Control of Italian Ryegrass (*Lolium perenne* spp. *Multiflorum*) Using a Seed Control Unit (SCU) in Winter Wheat at Harvest.** Hayden S. Love\*<sup>1</sup>, Travis Legleiter<sup>2</sup>; <sup>1</sup>The

## Tuesday Papers 2022

University of Kentucky, Lexington, KY, <sup>2</sup>University of Kentucky, Princeton, KY (118)

- 2:45 PM** **Impact of Weed Electrocutation on Earthworm Survival and Soil Microflora and Fauna.** Haylee E. Schreier\*, Kevin W. Bradley; University of Missouri, Columbia, MO (119)
- 3:00 PM** **†Impact of Herbicide Application by UAV on *Phragmites australis*.** Emma L. Gaither\*, Reid J. Smeda, Sarah E. Dixon; University of Missouri, Columbia, MO (120)
- 3:15 PM** **Break**
- 3:30 PM** **Utilizing UAV Indices to Measure Weed Control Efficacy.** Lee A. Boles\*, Ryan J. Edwards; WinField United, River Falls, WI (121)
- 3:45 PM** **†Sources of Spatial Soil Data for Developing Variable-Rate Residual Herbicide Management Zones.** Rose V. Vagedes\*<sup>1</sup>, Jason Ackerson<sup>2</sup>, William G. Johnson<sup>1</sup>, Bryan G. Young<sup>1</sup>; <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Soil Health Institute, West Lafayette, IN (122)
- 4:00 PM** **†Comparison of Weed Control Outcomes When Using Precision Sprayers Versus Traditional Approaches.** Isaac H. Barnhart\*<sup>1</sup>, Greg Kruger<sup>2</sup>, Calvin A. Miller<sup>3</sup>, Chris Proctor<sup>4</sup>, Rodrigo Werle<sup>5</sup>, Anita Dille<sup>1</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>University of Nebraska, North Platte, NE, <sup>3</sup>BASF, Seymour, IL, <sup>4</sup>University of Nebraska, Lincoln, NE, <sup>5</sup>University of Wisconsin, Madison, WI (123)
- 4:15 PM** **Effect of Adjuvants on Canopy Deposition with a UAV Spray Platform.** Ryan J. Edwards\*<sup>1</sup>, Lee A. Boles<sup>1</sup>, Gregory K. Dahl<sup>2</sup>, Steven A. Fredericks<sup>1</sup>; <sup>1</sup>WinField United, River Falls, WI, <sup>2</sup>Winfield United, Eagan, MN (124)
- 4:30 PM** **Evaluation of Drift Reduction Adjuvants Via Biological Injury on Soybeans from Simulated Dicamba Drift in a Low-speed Wind Tunnel.** Aszhia K. Albrecht\*<sup>1</sup>, Elizabeth R. Alonzi<sup>1</sup>, Anderson Weber<sup>1</sup>, Joshua J. Skelton<sup>2</sup>, Steven A.

## Tuesday Papers 2022

Fredericks<sup>1</sup>; <sup>1</sup>Winfield United, River Falls, WI,  
<sup>2</sup>WinField United, Saint Paul, MN (125)

**4:45 PM A Novel Tool for Improving Selection of Nozzles & Adjuvants, CPDA's New Application Enhancement Certification Program.** James Reiss\*; James Reiss, Waukegan, IL (126)

**5:00 PM Business Meeting**

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### *TUESDAY AFTERNOON DECEMBER 6*

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#### ORAL - Weed Biology, Ecology, Management

LOCATION: Regency F  
TIME: 1:30 PM - 4:45 PM  
MODERATOR: Debalin Sarangi  
University of Minnesota  
St. Paul, MN

**\*SPEAKER † GRADUATE CONTEST**

**1:30 PM †Characterization of Six Herbicide Resistance Traits in an Indiana Waterhemp Population.** Claudia R. Bland\*, Bryan G. Young, William G. Johnson; Purdue University, West Lafayette, IN (127)

**1:45 PM †Effect of Soil Microbial Activity on the Degradation of Soil Residual Herbicides in Cover Cropping Systems.** Lucas Oliveira Ribeiro Maia\*, Bryan G. Young, Shalamar Armstrong, Eileen Kladviko, William G. Johnson; Purdue University, West Lafayette, IN (128)

**2:00 PM †Assessment of Non-target Site Resistance to 2,4-D, Atrazine, and Mesotrione in Waterhemp Accessions from Wisconsin and Their Response to Climate Warming.** Felipe de Andrade Faleco\*, Laura D. Rodriguez Baquero, Nicholas J. Arneson, David E. Stoltenberg, Rodrigo Werle; University of Wisconsin, Madison, WI (129)



## Tuesday Papers 2022

- 2:15 PM** **Genomic Profiling of Dioecious *Amaranthus* Species Reveals Genes with Roles in Sex Function.** Damilola A. Raiyemo\*<sup>1</sup>, Lucas Kopecky Bobadilla<sup>2</sup>, Patrick Tranel<sup>1</sup>; <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>University of Illinois, Champaign, IL **(130)**
- 2:30 PM** **†Water Use Characteristics of Weeds: A Global Systematic Review, Best Practices, and Future Directions.** Mandeep Singh\*<sup>1</sup>, Meetpal S. Kukal<sup>2</sup>, Suat Irmak<sup>2</sup>, Amit J. Jhala<sup>1</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>Pennsylvania State University, University Park, PA **(131)**
- 2:45 PM** **†Effect of Cereal Rye Cover Crop on Seed Viability of *Amaranthus* spp.** Lily A. Woitaszewski\*<sup>1</sup>, Anita Dille<sup>1</sup>, Mandy Bish<sup>2</sup>, Kevin W. Bradley<sup>2</sup>, Joseph Ikley<sup>3</sup>, William Johnson<sup>4</sup>, Rodrigo Werle<sup>5</sup>, Sarah Lancaster<sup>1</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>University of Missouri, Columbia, MO, <sup>3</sup>North Dakota State University, Fargo, ND, <sup>4</sup>Purdue University, West Lafayette, IN, <sup>5</sup>University of Wisconsin, Madison, WI **(132)**
- 3:00 PM** **†Cereal Rye Termination Method Effects on Horse Weed Management in Soybean.** Claudia R. Walz\*, Christy L. Sprague; Michigan State University, East Lansing, MI **(133)**
- 3:15 PM** **Break**
- 3:30 PM** **†Female vs Male Palmer Amaranth: How Can We Explore Gender's Biology as a Management Approach?** Edinaldo A. Borgato\*, Eduardo C. Rudell, Mithila Jugulam, Anita Dille; Kansas State University, Manhattan, KS **(134)**
- 3:45 PM** **†Evaluating the Competitive Ability of Clopyralid Resistant Common Ragweed (*Ambrosia artemisiifolia*).** Nash D. Hart\*<sup>1</sup>, Erin E. Burns<sup>2</sup>; <sup>1</sup>Michigan State University, Durand, MI, <sup>2</sup>Michigan State University, East Lansing, MI **(135)**
- 4:00 PM** **Non-target Site Glyphosate Resistance: Movement Within a Johnsongrass (*Sorghum halepense*) Population from Missouri.** Sarah E.

## Tuesday Papers 2022

Dixon\*, Reid J. Smeda; University of Missouri, Columbia, MO (136)

- 4:15 PM †Emergence, Growth, and Flowering of Palmer Amaranth Cohorts.** Ethan C. Denson\*; Kansas State University, Manhattan, KS (137)
- 4:30 PM †Effect of Cereal Rye Cover Crop Seeding Rate and Termination Timing on Weed Management in Corn-Soybean Rotation in Minnesota.** Eric Y. Yu\*<sup>1</sup>, Axel Garcia y Garcia<sup>1</sup>, Lizabeth Stahl<sup>2</sup>, Ryan P. Miller<sup>3</sup>, Gregg Johnson<sup>1</sup>, Ce Yang<sup>1</sup>, William Lazarus<sup>1</sup>, Debalin Sarangi<sup>1</sup>; <sup>1</sup>University of Minnesota, St. Paul, MN, <sup>2</sup>University of Minnesota, Worthington, MN, <sup>3</sup>University of Minnesota, Rochester, MN (138)
- 4:45 PM †Assessing the Impact of Controlled-release Fertilizer Placements on Liverwort Growth, Reproduction, and its Competitiveness with Ornamentals in Container Production.** Manjot Kaur Sidhu\*, Debalina Saha; Michigan State University, East Lansing, MI (139)
- 5:00 PM Business Meeting**

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**WEDNESDAY MORNING DECEMBER 7**

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**Women in Weed Science Breakfast**

LOCATION: 18<sup>th</sup> Floor, Gateway East

TIME: 7:00 AM - 8:45 AM

**\*SPEAKER**

**7:00 AM Women in Weed Science  
Sponsored by Bayer**

**ORAL - Extension**

LOCATION: Regency B

TIME: 9:00 AM - 9:30 AM

MODERATOR: Prashant Jha  
Iowa State University  
Ames, IA

**\*SPEAKER**

**9:00 AM A Year without Glyphosate: How Two  
Conventional Farmers' Concerns Led to Timely  
Weed Management Recommendations in  
Wisconsin Corn Production.** Nicholas J. Arneson\*,  
Ryan P. DeWerff, Ahmadreza Mobli, Rodrigo  
Werle; University of Wisconsin, Madison, WI  
**(140)**

**9:15 AM Symptoms of Synthetic Auxin Herbicides on  
Dicamba-resistant Soybean.** Amit J. Jhala\*;  
University of Nebraska, Lincoln, NE **(141)**

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**WEDNESDAY MORNING DECEMBER 7**

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**VIDEO - Extension/Education**

LOCATION: Regency B  
TIME: 9:30 AM - 9:50 AM  
MODERATOR: Prashant Jha  
Iowa State University  
Ames, IA

**\*SPEAKER † GRADUATE CONTEST**

- 9:30 AM †Using Black Soldier Fly Larvae Composting to Reduce Weed Seed Germination.** Jeanine Arana\*<sup>1</sup>, Stephen L. Meyers<sup>1</sup>, Luz Aide Cardona Giraldo<sup>1</sup>, Nathaly Belen Vargas Arroyo<sup>1</sup>, Laura D. Rodriguez Baquero<sup>2</sup>; <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>University of Wisconsin, Madison, WI **(142)**
- 9:35 AM †Evaluate Herbicide Programs for Weed Control in Dicamba/glufosinate/glyphosate Soybean.** Ramandeep Kaur\*; University of Nebraska, Lincoln, NE **(143)**
- 9:40 AM †Concerned About Herbicide Carryover Impacting Cover Crop Establishment? Try a Bioassay!** Tatiane Severo Silva\*<sup>1</sup>, Nicholas J. Arneson<sup>1</sup>, Ryan P. DeWerff<sup>1</sup>, Daniel H. Smith<sup>1</sup>, Daniel Valadão Silva<sup>2</sup>, Rodrigo Werle<sup>1</sup>; <sup>1</sup>University of Wisconsin, Madison, WI, <sup>2</sup>Federal Rural University of the Semi-Arid Region, Mossoró, Brazil **(144)**
- 9:45 AM †Challenges and Opportunities for Weed Management in Organic and Conventional Hopyards.** Milos Zaric\*; University of Nebraska, North Platte, NE **(145)**

**WEDNESDAY MORNING DECEMBER 7**

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**VIDEO - Research**

LOCATION: Regency B  
TIME: 9:50 AM - 9:55 AM  
MODERATOR: Prashant Jha  
Iowa State University  
Ames, IA

**\*SPEAKER † GRADUATE CONTEST**

**9:50 AM †Herbicide Interactions of Quizalofop, 2,4-D Choline, and Glufosinate for Control of Glyphosate/glufosinate-resistant Volunteer Corn in Corn.** Mandeep Singh\*<sup>1</sup>, John Lindquist<sup>1</sup>, Stevan Knezevic<sup>2</sup>, Suat Irmak<sup>3</sup>, Vipin Kumar<sup>4</sup>, Amit J. Jhala<sup>1</sup>; <sup>1</sup>University of Nebraska, Lincoln, NE, <sup>2</sup>University of Nebraska, Concord, NE, <sup>3</sup>Pennsylvania State University, University Park, PA, <sup>4</sup>Kansas State University, Hays, KS **(146)**

**9:55 AM Business Meeting**

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**WEDNESDAY MORNING DECEMBER 7**

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**ORAL - Invasive Weeds, Rangeland, Pasture, and Vegetation Management**

LOCATION: Regency B  
TIME: 10:15 AM - 11:15 PM  
MODERATOR: Steve Valenti  
Bayer Crop Science  
Fargo, ND

**\*SPEAKER**

**10:15 AM Evaluation of Herbicides for Control of Snow-on-the-Mountain in Kansas Pastures.** Walter H. Fick\*<sup>1</sup>, Rod Schaub<sup>2</sup>, Scott Flynn<sup>3</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Kansas State

## Wednesday Papers 2022

University, Lyndon, KS, <sup>3</sup>Corteva Agriscience,  
Indianapolis, IN (147)

- 10:30 AM** **Can Cover Crops, Mowing or Herbicides Improve Establishment of Forbs in Conservation Plantings?** Mark Renz\*; University of Wisconsin, Madison, WI (148)
- 10:45 AM** **Reducing Tick Populations in Wisconsin Forests by Managing Japanese Barberry (*Berberis thunbergii*) Infestations.** Mark J. Renz\*; University of Wisconsin, Madison, WI (149)
- 11:00 AM** **Business Meeting**

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### *WEDNESDAY MORNING DECEMBER 7*

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#### ORAL - Horticulture and Specialty Crops

LOCATION: Regency E  
TIME: 9:00 AM - 11:15 AM  
MODERATOR: Nathan H. Haugrud  
North Dakota State University  
Fargo, ND

**\*SPEAKER † GRADUATE CONTEST**

- 9:00 AM** **IR-4 Weed Science Update - Food Crops.** Roger B. Batts\*, Jerry Baron, Venkat Pedibhotla; North Carolina State University, Raleigh, NC (150)
- 9:15 AM** **†Newly Planted Peppermint Response to S-Metolachlor.** Jeanine Arana\*, Stephen L. Meyers, Brandi C. Woolam; Purdue University, West Lafayette, IN (151)
- 9:30 AM** **S-Metolachlor- an Effective Option for Transplanted Bulbing Onions on Small Farms.** Stephen L. Meyers\*, Jeanine Arana, Emmanuel G. Cooper, Josue D. Cerritos, Luis F. Medina; Purdue University, West Lafayette, IN (152)

## Wednesday Papers 2022

- 9:45 AM**    **Our Experiences with Acifluorfen in Sugarbeet.**  
Thomas J. Peters\*, Alexa L. Lystad, Emma L. Burt;  
North Dakota State University, Fargo, ND **(153)**
- 10:00 AM**    **Break**
- 10:15 AM**    **Group 14 and 15 Herbicide Safety and Efficacy  
in Pinto Bean.** Nathan H. Haugrud\*, Joseph T.  
Ikley; North Dakota State University, Fargo, ND  
**(154)**
- 10:30 AM**    **Volunteer Hemp Resilience to Spring Burndown  
Herbicide Application in Soybean and Corn.**  
Milos Zaric\*<sup>1</sup>, Kasey P. Schroeder<sup>1</sup>, Thiago H.  
Vitti<sup>2</sup>, Christopher Proctor<sup>2</sup>, Jeffrey A. Golus<sup>1</sup>,  
Sam E. Wortman<sup>2</sup>, Kelly W. Bruns<sup>1</sup>; <sup>1</sup>University of  
Nebraska, North Platte, NE, <sup>2</sup>University of  
Nebraska, Lincoln, NE **(155)**
- 10:45 AM**    **Is a Critical Weed Free Period Needed for  
Transplanted Floral Hemp?** Harlene M.  
Hatterman-Valenti\*, Collin M. Auwarter; North  
Dakota State University, Fargo, ND **(156)**
- 11:00 AM**    **Business Meeting**

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## *WEDNESDAY MORNING DECEMBER 7*

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### ORAL - Herbicide Physiology & Molecular Biology

LOCATION:                      Regency F  
TIME:                              9:00 AM - 11:15 AM  
MODERATOR:                Eric L. Patterson  
   Michigan State University  
   East Lansing, MI

**\*SPEAKER    † GRADUATE CONTEST**

- 9:00 AM**    **†Halauxifen-methyl Metabolism in *Triticum  
aestivum* is Regulated by Genes on Group 5  
Chromosomes.** Olivia A. Landau\*<sup>1</sup>, Jeanafior  
Crystal T. Concepcion<sup>1</sup>, Norbert M. Satchivi<sup>2</sup>, Dean

## Wednesday Papers 2022

E. Riechers<sup>1</sup>; <sup>1</sup>University of Illinois, Urbana, IL,  
<sup>2</sup>Corteva Agriscience, Indianapolis, IN (157)

- 9:15 AM †Candidate Genes for Gender Determination in Palmer Amaranth (*Amaranthus palmeri*): the First Step Towards a Genetic Weed Control Strategy.** Lucas Kopecky Bobadilla\*<sup>1</sup>, YouSoon Baek<sup>2</sup>, Patrick Tranel<sup>2</sup>; <sup>1</sup>University of Illinois, Champaign, IL, <sup>2</sup>University of Illinois, Urbana, IL (158)
- 9:30 AM †An Epidemiological Study of *Conyza canadensis*: Linking Management History to Herbicide Resistance.** Juliano Sulzback\*<sup>1</sup>, Eric L. Patterson<sup>2</sup>, Erin E. Burns<sup>2</sup>; <sup>1</sup>Michigan State University, East Lansing, MI, <sup>2</sup>Michigan State University, East Lansing, MI (159)
- 9:45 AM †PPO-inhibitor Metabolism and Inheritance of Resistance in Palmer Amaranth from Kansas.** Ednaldo A. Borgato\*, Aarthi Thiagarayaselvam, Lily A. Woitaszewski, Eduardo C. Rudell, Manogna Devi Adari, Anita Dille, Mithila Jugulam; Kansas State University, Manhattan, KS (160)
- 10:00 AM Break**
- 10:15 AM †Subtelomeric Rearrangements Cause Glyphosate Resistance in *Eleusine indica*.** Nicholas A. Johnson\*<sup>1</sup>, Nathan D. Hall<sup>1</sup>, Qin Yu<sup>2</sup>, Chun Zhang<sup>3</sup>, Eric L. Patterson<sup>1</sup>; <sup>1</sup>Michigan State University, East Lansing, MI, <sup>2</sup>University of Western Australia, Perth, Australia, <sup>3</sup>Guangdong Academy of Agricultural Sciences, Guangzhou, China (161)
- 10:30 AM †Confirmation of PPO Inhibitor Resistant Waterhemp (*Amaranthus tuberculatus*) Lacking Resistance Conferring Target Site Mutations.** Jesse A. Haarmann\*<sup>1</sup>, Bryan G. Young<sup>1</sup>, William G. Johnson<sup>2</sup>; <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Purdue University, West Lafayette In, IN (162)
- 10:45 AM Mesotrione Detoxification in Multiple-resistant Palmer Amaranth (*Amaranthus palmeri*) Populations.** Jeanafior Crystal T. Concepcion\*<sup>1</sup>,



## Wednesday Papers 2022

Shiv S. Kaundun<sup>2</sup>, Autumn N. Brandenburg<sup>1</sup>,  
Alison C. Ross<sup>1</sup>, Noeleen K. Brown<sup>1</sup>, James A.  
Morris<sup>2</sup>, Sarah-Jane Hutchings<sup>2</sup>, Dean E.  
Riechers<sup>1</sup>; <sup>1</sup>University of Illinois, Urbana, IL,  
<sup>2</sup>Syngenta Crop Protection, Bracknell, United  
Kingdom (163)

**11:00 AM Comparative Genomics of Kochia and Russian Thistle.** Philip Westra\*<sup>1</sup>, Todd A. Gaines<sup>1</sup>, Eric Patterson<sup>2</sup>; <sup>1</sup>Colorado State University, Fort Collins, CO, <sup>2</sup>Michigan State University, East Lansing, MI (164)

**11:15 AM Business Meeting**

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## WEDNESDAY MORNING DECEMBER 7

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### ORAL - Agronomic Crops I - Corn

LOCATION: Regency A  
TIME: 9:00 AM - 11:15 AM  
MODERATOR: Ryan D. Lins  
Syngenta Crop Protection, LLC  
Rochester, MN

**\*SPEAKER † GRADUATE CONTEST**

**9:00 AM †Herbicide Options for Control of Multiple Herbicide-resistant Palmer Amaranth (*Amaranthus palmeri*) in Corn Resistant to 2,4-D Choline/glufosinate/glyphosate.** Ramandeep Kaur\*, Stevan Knezevic, Parminder Chahal, Nevin Lawrence, Yeyin Shi, Rachana Jhala, Amit J. Jhala; University of Nebraska, Lincoln, NE (165)

**9:15 AM †Does Spray Volume Effect Residual Herbicide Efficacy in Corn?** Tyler P. Meyeres\*<sup>1</sup>, Christopher M. Weber<sup>1</sup>, Christopher Mayo<sup>2</sup>, Sarah Lancaster<sup>1</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Bayer Crop Science, Salina, KS (166)

**9:30 AM Efficacy Comparison of Multiple Herbicide Programs in Short-stature and Traditional Tall Corn.** Ross A. Recker\*<sup>1</sup>, Devin Hammer<sup>2</sup>, John

## Wednesday Papers 2022

Buol<sup>2</sup>, Patrick Miner<sup>3</sup>, Ananda Datta<sup>2</sup>; <sup>1</sup>Bayer Crop Science, Smithton, IL, <sup>2</sup>Bayer CropScience, St. Louis, MO, <sup>3</sup>Bayer Crop Science, Tripoli, IA (167)

- 9:45 AM** †**Selecting PRE-emergence Herbicides for Effective Soil Residual Weed Control and Successful Establishment of Interseeded Cover Crops in Wisconsin Corn Production Systems; What a Challenge!** Tatiane Severo Silva\*<sup>1</sup>, Nicholas J. Arneson<sup>1</sup>, Ryan P. DeWerff<sup>1</sup>, Daniel H. Smith<sup>1</sup>, Daniel Valadão Silva<sup>2</sup>, Rodrigo Werle<sup>1</sup>; <sup>1</sup>University of Wisconsin, Madison, WI, <sup>2</sup>Federal Rural University of the Semi-Arid Region, Mossoro, Brazil (168)
- 10:00 AM** **Break**
- 10:15 AM** **Simulating Postemergence Optical Spot Spraying Applications Following Acuron Applied Preemergence.** R Joseph Wuerffel\*<sup>1</sup>, Jason W. Adams<sup>2</sup>, Rob Lind<sup>3</sup>, Taylor Glenn<sup>3</sup>, David Belles<sup>3</sup>; <sup>1</sup>Syngenta Crop Protection, Gerald, MO, <sup>2</sup>Syngenta Crop Protection, Vero Beach, FL, <sup>3</sup>Syngenta Crop Protection, Greensboro, NC (169)
- 10:30 AM** **A23980B: Exceptional Corn Weed Control from Four Complimentary Active Ingredients.** Seth A. Strom\*<sup>1</sup>, Tom Beckett<sup>2</sup>, Mark Kitt<sup>2</sup>; <sup>1</sup>Syngenta Crop Protection, Monticello, IL, <sup>2</sup>Syngenta Crop Protection, Greensboro, NC (170)
- 10:45 AM** **A23980B: A Step Change for Residual Weed Control in Corn.** Scott E. Cully\*<sup>1</sup>, Mark J. Kitt<sup>2</sup>, Thomas H. Beckett<sup>2</sup>; <sup>1</sup>Syngenta Crop Protection, Marion, IL, <sup>2</sup>Syngenta Crop Protection, Greensboro, NC (171)
- 11:00 AM** **Maverick™ : Valent's New Broad-spectrum Corn Herbicide with Application Flexibility.** Trevor D. Israel\*<sup>1</sup>, Jonathon Kohrt<sup>2</sup>, Ron E. Estes<sup>3</sup>, Garrison J. Gundy<sup>4</sup>, Randall L. Landry<sup>3</sup>, Eric Ott<sup>5</sup>, Chad L. Smith<sup>6</sup>, John A. Pawlak<sup>7</sup>; <sup>1</sup>Valent USA, Harrisburg, SD, <sup>2</sup>Valent USA, West Des Moines, IA, <sup>3</sup>Valent USA, Seymour, IL, <sup>4</sup>Valent USA, Mcpherson, KS, <sup>5</sup>Valent USA, Greenfield, IN, <sup>6</sup>Valent USA, Hallsville, MO, <sup>7</sup>Valent USA, Spring Lake, MI (172)

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**WEDNESDAY MORNING DECEMBER 7**

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**Society Luncheon**

LOCATION: Regency CD  
TIME: 12:00PM - 1:15 PM

**\*SPEAKER**

**12:00 PM NCWSS Awards Luncheon**

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**WEDNESDAY AFTERNOON DECEMBER 7**

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**SYMPOSIUM - New Frontiers in Application  
Technology**

LOCATION: Regency EF  
TIME: 1:30 PM - 4:45 PM  
MODERATOR: Greg Kruger  
BASF Corp.  
Durham, NC

**\*SPEAKER**

- 1:30 PM See & Spray™ Ultimate - A New Tool for Weed Management in Agronomic Crops.** William L. Patzoldt\*<sup>1</sup>, Scott Brown<sup>1</sup>, Lauren M. Lazaro<sup>1</sup>, Jesaelen G. Moraes<sup>1</sup>, Michael M. Houston<sup>1</sup>, Gaylia C. Ostermeier<sup>2</sup>, Chad Yagow<sup>3</sup>; <sup>1</sup>Blue River Technology, Sunnyvale, CA, <sup>2</sup>Deere and Company, Urbandale, IA, <sup>3</sup>Deere and Company, Champaign, IL (173)
- 1:50 PM BBSF Smart Sprayer: Combining Equipment and Digital.** Greg Kruger\*; BASF Corp., Durham, NC (174)
- 2:10 PM Agronomic Strengths, Weaknesses, and Opportunities for Spray Drones.** Trenton Houston\*; Bayer Crop Science, Gothenburg, NE (175)

## Wednesday Papers 2022

- 2:30 PM** **Grower Perspectives on the Emerging Technology for Pesticide Applications.** Aaron Studebaker\*; Grower, Davey, NE **(176)**
- 2:40 PM** **Top 3 Reasons Why I Hate Custom Application and So Will You!** Pete Cullan\*; Country Partners Cooperative, Gothenburg, NE **(177)**
- 2:50 PM** **The Importance of Guidance on the Correct Use of New Technologies and How it Will Impact Product Design.** Brett A. Martin\*, Marcella G. Wehrle; Corteva, Indianapolis, IN **(178)**
- 3:00 PM** **Advancements in Precision Application and Site-Specific Weed Management Technologies: Will These be the Major Frameshift Change We've Been Waiting For?** Bryan G. Young\*; Purdue University, Brookston, IN **(179)**
- 3:30 PM** **Break**
- 3:45 PM** **Regulatory Landscape of UAV Pesticide Applications in North America.** Jane Teng\*; Bayer Crop Science, Chesterfield, MO **(180)**
- 4:05 PM** **Panel discussion**
- 4:25 PM** **Data, Data, Data; What Do We Do with the Data?** Andrew D. Hunt\*, Erik Hass; BASF Corp., Durham, NC **(181)**
- 4:45 PM** **Opportunities for Site-specific Weed Management: BMP Considerations for Weed Control with Precision Application Equipment.** Anita Dille\*; Kansas State University, Manhattan, KS **(182)**

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**WEDNESDAY AFTERNOON DECEMBER 7**

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**SYMPOSIUM - Impact of the Endangered Species Act on Herbicide Registration and Regulation**

LOCATION: Regency B  
TIME: 1:30 PM - 3:55 PM  
MODERATOR: Reid J. Smeda  
University of Missouri  
Columbia, MO

**\*SPEAKER**

- 1:30 PM Endangered Species Act and Herbicides; Who's Endangered?** Reid J. Smeda\*<sup>1</sup>, William G. Johnson<sup>2</sup>; <sup>1</sup>University of Missouri, Columbia, MO, <sup>2</sup>Purdue University, West Lafayette, IN **(182)**
- 1:40 PM Regulatory Considerations for Current and New Herbicide Registrations.** Reuben D. Baris\*<sup>1</sup>, David M. Simpson<sup>2</sup>; <sup>1</sup>Corteva Agriscience, Indianapolis, IN, <sup>2</sup>Corteva, Indianapolis, IN **(183)**
- 2:00 PM Monarchs, Milkweeds and the Endangered Species Act.** Robert G. Hartzler\*, Steven P. Bradbury; Iowa State University, Ames, IA **(184)**
- 2:20 PM Endangered Species Act Regulations: Perceptions and Reactions in the Mid-South.** Thomas R. Butts\*; University of Arkansas System Division of Agriculture, Lonoke, AR **(185)**
- 2:40 PM Thoughts from the Field Around ESA.** Amy Asmus\*; Asmus Farm Supply, Inc, Rake, IA **(186)**
- 3:00 PM Did State Pesticide Regulatory Agencies See ESA Label Mitigation Measures Coming & Do They Have a Plan for Ensuring Compliance?** David Scott\*; Office of IN State Chemist, West Lafayette, IN **(187)**
- 3:20 PM Break**

## Wednesday Papers 2022

- 3:30 PM** **Endangered Species Act: Thoughts on How and Why Labels Will Change.** Bill Chism\*; Retired, EPA Office of Pesticide Programs, Xx, IN **(188)**
- 3:50 PM** **Panel discussion**

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### *WEDNESDAY AFTERNOON DECEMBER 7*

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#### **ORAL - Agronomic Crops I - Corn**

LOCATION: Regency A  
TIME: 1:30 PM - 3:15 PM  
MODERATOR: Ryan D. Lins  
Syngenta Crop Protection, LLC  
Rochester, MN

**\*SPEAKER † GRADUATE CONTEST**

- 1:30 PM** **Diflufenican: a Tool for Managing *Amaranthus* Species in Corn and Soybean Cropping Systems.** John Buol\*, Carl Coburn, Richard Leitz, Eric Riley, Ananda Datta; Bayer Crop Science, St. Louis, MO **(189)**
- 1:45 PM** **Waterhemp Yield Interference in North Dakota Corn and Soybean.** Quincy D. Law\*, Joseph T. Ikley; North Dakota State University, Fargo, ND **(190)**
- 2:00 PM** **A New Postemergence Herbicide for Weed Management in Corn.** Kristin K. Rosenbaum\*<sup>1</sup>, Kelly A. Bakscheider<sup>2</sup>, Kevin Johnson<sup>3</sup>, Lowell Sandell<sup>4</sup>; <sup>1</sup>Corteva Agriscience, Coffey, MO, <sup>2</sup>Corteva Agriscience, Franklin, IN, <sup>3</sup>Corteva Agriscience, Lafayette, IN, <sup>4</sup>Corteva Agriscience, Ankeny, IA **(191)**
- 2:15 PM** **Fitting Pennycress Grown as a Cash Cover Crop into a Corn and Soybean Rotation - Herbicide Considerations.** Mark L. Bernards\*, Brent S. Heaton; Western Illinois University, Macomb, IL **(192)**

## Wednesday Papers 2022

**2:30 PM Factors Influencing See & Spray™ Weed Management in Corn Production.** William L. Patzoldt\*<sup>1</sup>, Michael M. Houston<sup>1</sup>, Bryan G. Young<sup>2</sup>, Marcelo Zimmer<sup>2</sup>, Aaron G. Hager<sup>3</sup>, Jason W. Niekamp<sup>3</sup>, Jasmine M. Mausbach<sup>3</sup>, Lauren M. Lazaro<sup>1</sup>; <sup>1</sup>Blue River Technology, Sunnyvale, CA, <sup>2</sup>Purdue University, West Lafayette, IN, <sup>3</sup>University of Illinois, Urbana, IL **(193)**

**2:45 PM Resicore XL Herbicide for Weed Control in Corn.** David M. Simpson<sup>1</sup>, Kristin K. Rosenbaum<sup>2</sup>, Kelly A. Backscheider<sup>3</sup>, David H. Johnson<sup>4</sup>, Kevin D. Johnson\*<sup>5</sup>; <sup>1</sup>Corteva Agriscience, Indianapolis, IN, <sup>2</sup>Corteva Agriscience, Coffey, MO, <sup>3</sup>Corteva Agriscience, Franklin, IN, <sup>4</sup>Corteva Agriscience, St. Paul, MN, <sup>5</sup>Corteva Agriscience, Lafayette, IN **(194)**

**3:00 PM Business Meeting**

### **NCWSS Society Social**

*Sponsored by the Sustaining Members – Open to all attendees.*

Graduate and Undergraduate Paper and Poster Awards

**5:30 - 7:00 pm**

**Regency C**

Thursday 2022

## **Industry Breakfast (Tickets Required)**

LOCATION: Regency AB  
TIME: 07:00 AM – 8:15 AM  
MODERATOR: Ryan Henry

**07:30 AM It's Corn: Beyond Just Feel-Good & Onward to Forward-Thinking.** Robyn Allscheid, Director of Research and Productivity, National Corn Growers Association

## **What's New in Industry?**

LOCATION: Regency D  
TIME: 08:30 AM – 10:00 AM  
MODERATOR: Ryan Henry

**8:30 AM What's New in Industry?**

**10:00 AM Business Meeting**



# North Central Weed Science Society Information

## 2022 Officers/Executive Committee

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### Summer Contest Subcommittee of

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### Distinguished Achievement Award

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### Distinguished Achievement Awards, Graduate Student subcommittee

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## Future Site Selection Committee

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| Nathan Haugrud            | 701-446-6876 | nathan.haugrud@ndsu.edu       |
| Mike Weber                | 515-201-9995 | michael.weber3@bayer.com      |
| Kristin Rosenbaum         | 660-425-1793 | kristin.rosenbaum@corteva.com |

# North Central Weed Science Society Information

## **Section Program Chairs**

### **General Program**

Reid Smeda                                      Chair                                      573-882-1329                                      smedar@missouri.edu

### **Poster Session**

Nicholas "Nick" Arneson                      Chair                                      402-676-1618                                      njameson@wisc.edu

### **Graduate Student Paper Awards**

Travis Legleiter                                      Chair                                      573-808-2357                                      travis.legleiter@uky.edu

### **Graduate Student Poster Awards**

Nick Arneson                                      Chair                                      402-676-1618                                      njameson@wisc.edu

### **Undergraduate Student Poster Awards**

Debalin Sarangi                                      Chair                                      612-625-8130                                      dsarangi@umn.edu

### **Agronomic Crops I (Corn)**

Ryan Lins    Chair                                      507-251-5524                                      ryan.lins@syngenta.com

Chad Smith    Vice Chair                                      662-379-3111                                      chad.smith@valent.com

### **Agronomic Crops II (Soybeans)**

Mike Weber    Chair                                      515-201-9995                                      michael.weber3@bayer.com

Garrison Gundy                                      Vice Chair                                      316-303-7316                                      garrison.gundy@valent.com

### **Horticulture and Specialty Crops**

Nathan Haugrud                                      Chair                                      701-446-6878                                      nathan.haugrud@ndsu.edu

Stephen Meyers                                      Vice Chair                                      812-314-5973                                      slmeyers@purdue.edu

### **Equipment and Application Methods**

Angela Kazmierczak                                      Chair                                      701-367-6422                                      angela.kazmierczak@bayer.com

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Ryan Edwards    Past Chair                                      651-319-6479                                      rjedwards@landolakes.com

### **Extension**

Prashant Jha    Chair                                      406-647-1427                                      pjha@iastate.edu

Nathaniel Drewitz                                      Vice Chair                                      608-515-4414                                      ndrewitz@umn.edu

Travis Legleiter                                      Past Chair                                      573-808-2357                                      travis.legleiter@uky.edu

### **Herbicide Physiology**

Eric Patterson    Chair                                      303-328-5580                                      patte543@msu.edu

Nick Harre    Past Chair                                      618-314-0581                                      nharre4@gmail.com

### **Invasive Weeds, Rangeland, Pasture & Vegetation Management**

Sam Ingram    Chair                                      706-521-9333                                      sam.ingram@corteva.com

Steve Valenti    Vice Chair                                      701-799-9328                                      stephen.valenti@bayer.com

David Hillger    Past Chair                                      317-504-6130                                      david.hillger@corteva.com

### **Weed Biology, Ecology and Management**

Debalin Sarangi    Chair                                      612-625-8310                                      dsarangi@umn.edu

Chandrima Shyam                                      Vice Chair                                      785-532-2755                                      chandrima@ksu.edu

Marshall Hay    Past Chair                                      772-299-8506                                      marshall.hay@syngenta.com

# North Central Weed Science Society Information

## Honorary Members/Fellows

### Honorary Members

|      |                           |                            |                         |
|------|---------------------------|----------------------------|-------------------------|
| 1948 | L.W. Dephart *            | 1983                       | Ronald E. Doersch       |
| 1949 | A.H. Larson *             | 1984                       | Edward W. Stroube *     |
| 1950 | J.W. Zahnley *            |                            | Oliver E. Strand *      |
| 1951 | R.W. Fuelleman *          |                            | Gail A. Wicks *         |
|      | Ted F. Yost *             | 1985                       | Robert Hiltibran *      |
| 1952 | Henry E. Wood *           | 1986                       | Elroy J. Peters *       |
| 1953 | George Briggs *           |                            | Deane W. Finnerty *     |
|      | Walter C. Dutton *        |                            | Oliver G. Russ *        |
| 1954 | A.L. Bakke *              | 1987                       | Ralph Althaus *         |
| 1955 | Charles J. Willard *      |                            | William M. Phillips     |
| 1956 | R.S. Dunham *             |                            | Gerald R. Miller        |
| 1957 | P.J. Olson *              | 1988                       | Robert Benson           |
| 1958 | L.W. Melander *           |                            | Calvin Messersmith      |
|      | T.K. Pavlychenko *        |                            | Edward Stoller          |
| 1959 | E.A. Helgeson *           | 1989                       | Loyd M. Wax             |
| 1960 | Oliver C. Lee *           |                            | Alan R. Putman          |
| 1962 | Sig Bjerken *             | 1990                       | Alan G. Dexter          |
| 1964 | K.P. Buchholtz *          |                            | Russell L. Nash *       |
|      | E.P. Sylwester *          | 1991                       | George Kapusta *        |
| 1966 | Robert C. Beatty *        |                            | Marshall McGlamery *    |
|      | Clare Buskirk *           |                            | Russell Moomaw *        |
| 1967 | J.K. Freeman *            |                            | Don Penner              |
| 1968 | E.K. Alban *              | 1992                       | R. Gordon Harvey, Jr. * |
|      | H.A. Friesen *            |                            | Larry K. Binning        |
| 1969 | Lawrence Southwick *      |                            | Alex R. Martin          |
|      | David W. Staniforth *     |                            | Don Taylor              |
| 1970 | Delbert D. Hemphill *     | 1993                       | Merrill A. Ross, Jr. *  |
|      | George Frederick Warren * |                            | Robert G. Wilson        |
| 1971 | Fred W. Slife *           |                            | Jerry D. Doll           |
| 1972 | Thomas Victor Beck *      | 1994                       | Ted R. Warfield         |
|      | O. Hale Fletchall *       |                            | William W. Witt         |
| 1973 | Richard Behrens*          | <b>Fellows<sup>1</sup></b> |                         |
|      | Lawrence H. Hannah *      | 1995                       | Charles R. Fenster      |
| 1974 | William Lobay *           |                            | Leon J. Wrage           |
| 1975 | John D. Furrer *          | 1996                       | Thomas T. Bauman *      |
| 1976 | Lyle A. Derscheid *       |                            | Earl W. Chamberlain     |
|      | LeRoy G. Holm *           |                            | Richard S. Fawcett      |
| 1977 | James W. Divall           |                            | William E. Lueschen     |
|      | James L. Williams, Jr. *  | 1997                       | Stephen D. Miller       |
| 1978 | Melwin K. McCarty *       |                            | M.D.K. Owen             |
|      | Robert E. Nylund*         |                            | Fred W. Roeth           |
| 1979 | Ellery L. Knake *         | 1998                       | Paul J. Ogg *           |
|      | Kenneth W. Bradfield *    |                            | James P. Worthington    |
| 1980 | John D. Nalewaja *        | 1999                       | Michael Barrett         |
|      | O.C. Burnside *           |                            | Norman J. Probst        |
| 1981 | Rodney J. Fink            | 2000                       | Douglas D. Buhler       |
|      | Juett C. Hogancamp *      |                            | Bill Miller             |
|      | Larry W. Mitich *         |                            | Philip L. Orwick        |
| 1982 | W.D. Carpenter            |                            | Stephen C. Weller       |
|      | James W. Herron *         | 2001                       | LeRoy R. Cobia          |
|      | William F. Meggitt        | 2002                       | James J. Kells          |
| 1983 | Robert N. Andersen*       | 2003                       | Karen Ann Renner        |
|      | Dale E. Bush*             |                            | Charles Slack           |
|      |                           |                            | Phillip Stahlman        |

# North Central Weed Science Society Information

## Honorary Members/Fellows (continued)

|      |  |      |  |
|------|--|------|--|
| 2004 | Duane Rathman<br>David Regehr                                  | 2014 | Adrian Moses<br>David Stoltenberg                |
| 2005 | Dallas E. Peterson   | 2015 | Dave Johnson<br>Mark Wrucke                      |
| 2006 | James R. Martin<br>Bernard H. Zandstra                         | 2016 | David Simpson<br>Curtis Thompson                 |
| 2007 | Chris M. Boerboom<br>Michael J. Horak                          | 2017 | John Hinz<br>Patrick J. Tranel                   |
| 2008 | Thomas J. Peters<br>Jeffrey Gunsolus<br>Kassim Al-Khatib       | 2018 | Anita Dille<br>Mark Peterson                     |
| 2009 | J.D. Green<br>Thomas B. Threewitt<br>Robert N. Klein           | 2019 | Greg Dahl<br>Mark Loux<br>Rich Zollinger         |
| 2010 | No nominations   | 2020 | Kevin Bradley<br>Dawn Refsell<br>Christy Sprague |
| 2011 | Bill Johnson<br>Harlene Hatterman-Valenti<br>Gordon K. Roskamp | 2021 | Aaron Hager<br>Eric Spandl                       |
| 2012 | Peter H. Sikkema<br>Bob Hartzler                               |      |  |
| 2013 | Bryan Young<br>Roger Becker                                    |      |  |

\* Deceased

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

# North Central Weed Science Society Information

## North Central Weed Science Society Presidents

|      |                           |            |                            |
|------|---------------------------|------------|----------------------------|
| 1944 | No President              | 2000       | Kells, James J.            |
| 1945 | Yost, Ted F. *            | 2001       | Rathmann, Duane P.         |
| 1946 | Yost, Ted F. *            | 2002       | Peterson, Dallas E.        |
| 1947 | Hanson, Noel S. *         | 2003       | Horak, Michael J.          |
| 1948 | Willard, Charles J. *     | 2004       | Doll, Jerry D.             |
| 1949 | Dunham, R. S. *           | 2005       | Peters, Tom                |
| 1950 | Worzella, W. W. *         | 2006       | Miller, Stephen D.         |
| 1951 | Sylwester, Erhardt P. *   | 2007       | Moses, Adrian              |
| 1952 | Buchholtz, Kenneth P. *   | 2008       | Johnson, William G.        |
| 1953 | Gilbert, C. J. *          | 2009       | Holm, Mick                 |
| 1954 | Lee, Oliver C. *          | 2010       | Boerboom, Chris            |
| 1955 | Grigsby, Buford H. *      | 2011       | Wrucke, Mark               |
| 1956 | Helgeson, Earl A. *       | 2012       | Young, Bryan               |
| 1957 | Slife, Fred W. *          | 2013       | Johnson, Dave              |
| 1958 | Derscheid, Lyle A. *      | 2014       | Green, J.D.                |
| 1959 | Foster, J. Roe *          | 2015       | Hinz, John                 |
| 1960 | Holm, Leroy G. *          | 2016       | Dille, Anita               |
| 1961 | Alban, E. K. *            | 2017       | Dahl, Gregory              |
| 1962 | Bjerken Sig. *            | 2018       | Sprague, Christy L.        |
| 1963 | Hemphill, Delbert D. *    | 2019       | Hager, Aaron G.            |
| 1964 | Hemphill, Delbert D. *    | 2020       | Howard, Stott              |
| 1965 | Furrer, John D. *         | 2021       | Hatterman-Valenti, Harlene |
| 1966 | Furrer, John D. *         | 2022       | Simpson, David M.          |
| 1967 | Warden, Robert L. *       |            |                            |
| 1968 | Fletchall, O. Hale *      |            |                            |
| 1969 | Beck, Thomas V. *         | * Deceased |                            |
| 1970 | Hannah, Lawrence H. *     |            |                            |
| 1971 | Knake, Ellery *           |            |                            |
| 1972 | Williams, Jr., James L. * |            |                            |
| 1973 | Meggitt, William          |            |                            |
| 1974 | Bradfield, Kenneth W. *   |            |                            |
| 1975 | Burnside, Orvin C. *      |            |                            |
| 1976 | Fink, Rodney J.           |            |                            |
| 1977 | Carpenter, Will D.        |            |                            |
| 1978 | Doersch, Ronald E.        |            |                            |
| 1979 | Nalewaja, John D. *       |            |                            |
| 1980 | Stroube, Edward W. *      |            |                            |
| 1981 | Herron, James W. *        |            |                            |
| 1982 | Benson, Robert L.         |            |                            |
| 1983 | DiVall, James W.          |            |                            |
| 1984 | Miller, Gerald R.         |            |                            |
| 1985 | Messersmith, Calvin G.    |            |                            |
| 1986 | Wax, Loyd M.              |            |                            |
| 1987 | Chamberlain, Earl *       |            |                            |
| 1988 | Harvey, R. Gordon *       |            |                            |
| 1989 | Worthington, James P.     |            |                            |
| 1990 | Martin, Alex R.           |            |                            |
| 1991 | Taylor, T. Don            |            |                            |
| 1992 | Stoller, Edward W.        |            |                            |
| 1993 | Warfield, Ted R.          |            |                            |
| 1994 | Bauman, Thomas T. *       |            |                            |
| 1995 | Cobia, LeRoy R.           |            |                            |
| 1996 | Dexter, Alan G.           |            |                            |
| 1997 | Miller, Bill              |            |                            |
| 1998 | Buhler, Douglas D.        |            |                            |
| 1999 | Orwick, Philip L.         |            |                            |



## Distinguished Achievement Awards

- 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  
M.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 Scientist
- 2003 Mark Loux - Education  
Kenneth Carlson - Industry  
Daniel E. Schroeder - Industry  
Andrew Chomas - Professional Staff

2004 Jeffrey Stachler - Professional Staff  
 Gordon Roskamp - Education  
 Robert N. Klein - Education  
 David Stoltenberg - Research  
 Robert E. Wolf - Service  
 Patrick J. Tranel - Young 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  
 Chad Brabham - Graduate Student

2012 Dain Bruns - Industry  
 Fritz Breitenbach - Professional Staff  
 Timothy Trower - Professional Staff  
 Erin Taylor-Hill - Professional Staff  
 Paul Marquardt-Graduate Student

2013 Kirk Howatt – Education  
 Mark Renz – Education  
 Patrick Tranel – Research  
 Stevan Knezevic – Research  
 Christy Sprague - Service  
 Rodrigo Werle – Graduate Student

2014 Greg Kruger – Young Scientist  
 Ryan Lins – Young Scientist  
 Dawn Refsell – Industry  
 Jeff Golus – Professional Staff  
 Collin Auwarter – Professional Staff  
 Jessica Bugg – Graduate Student

2015 Brian Jenks – Service  
 Doug Nord – Service  
 Marvin Schultz – Industry

2015 Bruce Ackley – Professional Staff  
Darren Robinson – Research  
Cody F. Creech – Graduate Student

## **Distinguished Achievement Awards (continued)**

2016 Richard Cole- Industry  
Mark Peterson- Industry  
Larry Hageman- Industry  
Stott Howard- Service  
Amit Jhala- Young Scientist

2017 Scott Cully – Industry  
Helen Flanigan – Industry  
Lowell Sandell – Industry  
Steven Knezevic – Education  
Julie Young – Professional Staff  
Parminder Chahal – Graduate

2018 Carla Yerkes – Industry  
Kevin Bradley – Education  
Peter Sikkema – Education  
Richard Proost – Professional Staff  
Phil Westra – Research  
Marshall Hay – Graduate Student

2019 Mark Bernards – Education  
David Thomas – Industry  
Nader Soltani – Research  
Mithila Jugulam – Research  
Mayank Malik – Young Scientist

2020 Eric Spandl – Industry  
Mandy Bish – Research  
Joe Wuerffel – Young Scientist  
Vipan Kumar – Young Scientist  
Lisa Behnken – Professional Staff  
Ram Yadav – Graduate Student

2021 Kevin Thorsness – Industry  
Michael Weber – Industry  
Rodrigo Werle – Young Scientists  
Ryan Edwards – Young Scientists  
Andrew Toft – Professional Staff

| <b>YEAR</b> | <b>Company</b>   | <b>Location</b>    |
|-------------|--|--------------------|
| 1981        | Agri-Growth  | Hollandale, MN     |
| 1982        | Agri-Growth  | Hollandale, MN     |
| 1983        | Lilly Research Lab   | Leshara, NE        |
| 1984        | Dow Chemical Research  | Geneseo, IL        |
| 1985        | Bayer (Mobay)  | Stilwell, KS       |
| 1986        | Union Carbide  | Newton, IA         |
| 1987        | Monsanto   | Monmouth, IL       |
| 1988        | Agri-Growth  | Hollandale, MN     |
| 1989        | FMC  | Champaign, IL      |
| 1990        | DowElanco  | Greenfield, IN     |
| 1991        | CibaGeigy  | Champaign, IL      |
| 1992        | Cenex Land o Lakes   | Iowa               |
| 1993        | Zeneca   | Champaign, IL      |
| 1994        | Bayer (Miles)  | Stilwell, KS       |
| 1995        | Amcy   | Seymour, IL        |
| 1996        | Monsanto   | Monmouth, IL       |
| 1997        | Land o Lakes   | Webster City, IA   |
| 1998        | Valent   | Champaign, IL      |
| 1999        | Agri-Growth  | Hollandale, MN     |
| 2000        | Bayer  | West Lafayette, IN |
| 2001        | Monsanto   | Monmouth, IL       |
| 2002        | Dow AgroSciences   | Fowler, IN         |
| 2003        | Syngenta   | Champaign, IL      |
| 2004        | University of Minnesota-<br>Southern Research & Outreach Ctr.      | Waseca, MN         |
| 2005        | Kansas State University  | Manhattan, KS      |
| 2006        | Midwest Research Inc.  | York, NE           |
| 2007        | Bennett Ag. Research Corp  | Richland, IA       |
| 2008        | SGS Alvey Ag Research  | Carlyle, IL        |
| 2009        | joint NC/NE – ABG Ag Services                                      | Indianapolis, IN   |
| 2010        | no contest   |                    |
| 2011        | Weed Olympics,<br>University of Tennessee                          | Knoxville, TN      |
| 2012        | Diamond Ag Research Inc.   | Larned, KS         |
| 2013        | joint NC/NE - Monsanto   | Monmouth, IL       |
| 2014        | DuPont Pioneer   | Johnston, IA       |
| 2015        | Weed Olympics,<br>The Ohio State University                        | Columbus, OH       |
| 2016        | Purdue University  | West Lafayette, IN |
| 2017        | Iowa State University FEEL   | Ames, IA           |
| 2018        | Monsanto Water<br>Utilization Learning Center                      | Gothenburg, NE     |
| 2019        | Weed Olympics<br>BASF, Bayer, Corteva, Valent<br>Klein Family Farm | Seymour, IL        |
| 2020        | Canceled due to Covid  |                    |
| 2021        | North Dakota State University                                      | Fargo, ND          |
| 2022        | Corteva Agriscience  | Johnston, IA       |
| 2023        | Bayer  | Union City, TN     |

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## Time Schedule

Mark papers and meetings in the appropriate space.

| Time  | Tuesday              | Wednesday                | Thursday                  |
|-------|----------------------|--------------------------|---------------------------|
| 8:00  |                      |                          |                           |
| 8:15  | General Session      |                          | What's New<br>In Industry |
| 8:30  |                      |                          |                           |
| 8:45  |                      |                          |                           |
| 9:00  |                      |                          |                           |
| 9:15  |                      |                          |                           |
| 9:30  |                      |                          |                           |
| 9:45  |                      |                          |                           |
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| 10:15 |                      |                          |                           |
| 10:30 |                      |                          |                           |
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| 11:00 |                      |                          |                           |
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| 2:30  |                      |                          |                           |
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| 5:15  |                      |                          |                           |
| 5:30  | Poster<br>Session II | Society<br>Social        |                           |
| 6:00  |                      |                          |                           |
| 6:30  |                      |                          |                           |
| 7:00  |                      |                          |                           |

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## **Future NCWSS Annual Meeting Sites**

2023 – December 11 – 14 Minneapolis, MN

2024 – December 7 – 13 Kansas City, MO

# Meeting Map

## Meeting Space – Hyatt Regency St. Louis at the Arch, St. Louis, MO

