

**Joint 2013 Meeting
Weed Science Society of America
And
Northeastern Weed Science Society**

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**Location of Special Committees
and Activities
February 2013**

WSSA Photo Contest Judging*	Armistead
NEWSS Photo Contest Judging**	Armistead
Registration (Including Guests)	Key East Foyer
WSSA Board Meeting (Sat/Sun/Thurs)	Ruth
NEWSS EC Meeting (Monday) ...	Marshall Boardroom
NEWSS EC Meeting (Thurs)	Douglass

**Local Arrangements Committee
2013-Baltimore, Maryland**

Chair	Scott Glenn
Exhibits and Posters ...	Betty Marose, Dave Mayonado
PUFF Run	Barbara Glenn

***For WSSA Photo contest digital files must be delivered via email to Michael DeFelice by January 25th, 2013 at michael.defelice@pioneer.com**

****For NEWSS Photo contest, submissions must be delivered to the NEWSS table in the Key East Foyer by 3:00 p.m. on Monday, February 4th.**

THE 2013 WSSA/NEWSS PROGRAM

Welcome to the 2013 joint meeting of the Weed Science of America (WSSA) and the Northeastern Weed Science Society (NEWSS) at the Hilton Baltimore. The venue is outstanding and we have an excellent program planned for the joint meeting.

The General Session and Awards Ceremony will begin at 4:00 pm in Holiday Ballroom 4/5 of the Hilton. Our keynote speaker is Dr. Sonny Ramaswamy, Director of the USDA National Institute of Food and Agriculture (NIFA). He will update us on current developments in USDA and NIFA, especially related to funding for agricultural research. The Awards Ceremony will include the presentation of both NEWSS and WSSA Awards. Be sure to attend this session to help recognize all the awardees from both Societies. Following the Awards Ceremony, WSSA will host an Awards Reception beginning at 6:00 pm in Holiday 6. All registered attendees are welcome and encouraged to attend. Please be sure spouses and friends that accompany you have registered so that they may attend this fun event.

We are trying something different this year with a joint Society Dessert Social from 9:00 pm to 11:00 pm in the Key Ballroom South Foyer of the hotel. This event is a tradition in the NEWSS and should be an enjoyable way to end the day on Wednesday. Please plan to return from dinner in time to stop by for some sweets and a nightcap (or other beverages) at the Dessert Social on Wednesday evening.

The second annual Presidents Uniform Fitness Forum (PUFF) will take place at 6:00 am on Tuesday. The PUFF is an all-inclusive run/walk to start the day with your fellow weed scientists. Get the day off to a great start as Rod Lym, WSSA President, leads the way.

This year there are 371 presentations of which 131 are posters. There will be two poster sessions: Tuesday, 7:00 – 8:30 am and Wednesday, 7:00–8:30 am. Authors of even numbered posters should be present at the Tuesday poster session and authors of odd numbered posters should be present at the Wednesday poster session.

The NEWSS Graduate Student Paper Contest will take place on Tuesday. These papers will be in a separate concurrent session. A total of 23 graduate students have signed up for the contest. In holding with the NEWSS tradition, the papers will be judged by a group of Past-Presidents. Anyone may attend this session to listen to and ask questions about some of the interesting and varied research our graduate students and their advisors are conducting. In addition to the oral contest, thirteen NEWSS graduate students are involved in the poster contest and will be visited by the judging committee during the poster session. The award winners

for both of these contests will be announced at the NEWSS Business Meeting on Wednesday at 5:00 pm.

There are four outstanding symposia and two excellent workshops at this meeting. The first symposium “Herbicide Application in the 21st Century” will be on Tuesday morning. This symposium was organized by Greg Dahl and will cover current and upcoming herbicide application technology. The afternoon session will include “Herbicide Resistance Management - The Path Forward”, organized by David Shaw. This symposium will explore the best options to build on the Aphis I and II publications and the recent Herbicide Resistance Summit. On Wednesday morning, Toni DiTommaso will facilitate a workshop entitled “Need an Adjustment? Realigning your Course to Improve Student Learning”. Participants will work in small and large groups to create course-level goals and daily learning objectives to improve their weed science courses and teaching effectiveness. Later Wednesday morning, there will be a graduate student professional development workshop followed by a luncheon, sponsored by Monsanto. Preregistration for this workshop is required and seating is limited to 50 students. The third symposium, organized by Timothy Grey, is entitled “Environmental Assessment of Herbicide Resistance: Past, Present, and Future” and is scheduled for Wednesday afternoon. This symposium will focus on the negative effects of herbicide resistant weeds on the environment. On Thursday morning, a symposium will be held entitled “Holistic Invasive Weed Management: Integration of Science, Regulation, and Public/Private Policy”. This symposium, organized by William Bruckart, will examine what has succeeded and what has failed in the past using holistic management for invasive plants.

The WSSA Business Meeting will be held Tuesday at 5:00 pm. and the Presidential Address will be given at this time. The NEWSS Business Meeting and Graduate Student Paper and Poster Contest Awards Presentation will take place Wednesday at 5:00 pm.

Special thanks to our Local Arrangements Chair Scott Glenn, who helped with local arrangements and arranged a great tour of Oriole Park at Camden Yards on Sunday, February 4 beginning at 1:00 pm. Please take time to also thank the section chairs as you see them during the meeting, Vince Davis, Joel Felix, Mike Barrett, David Dickens, Atul Puri, Chris Dionigi, Eric Prostko, Greg Kruger, David Gealy, Alan Tasker, Alejandro Perez-Jones, Mark Bernards, Jonathan Huff, Jordan Tranasse, and Vijay Nandula. Also, let Joyce Lancaster and Kate Counter of Allen Press know how much you appreciate the work they do, not only on the annual meeting, but all of the Society’s business.

We hope you find this year's annual meeting especially useful and rewarding. We have attempted to schedule something of interest for everyone each day.

Jim Kells, 2013 WSSA Program Chair

Dwight Lingenfelter, 2013 NEWSS Program Chair

2013 Program Committee

General Program Chairs	James Kells, Dwight Lingenfelter
Vice Chair	Joe DiTomaso
Agronomic Crops	Vince Davis
Horticultural Crops	Joel Felix
Turf and Ornamentals	Mike Barrett
Pastures, Rangelands, Forests, & Right-of-Ways	E. David Dickens
Wildland and Aquatic Invasives	Atul Puri
Regulatory Aspects	Chris Dionigi
Teaching and Extension	Eric Prostko
Formulation, Adjuvant, & Application Technology	Greg Kruger
Weed Biology and Ecology	David Gealy
Biocontrol of Weeds	Al Tasker
Physiology	Alejandro Perez-Jones
Soil and Environmental Aspects	Mark Bernardis
Integrated Weed Management	Jonathan Huff
Sustaining Member Exhibits Session	Jim Steffel
Poster Sessions	Vijay Nandula

General Information

Hotel: The AAA Four Diamond Hilton Baltimore hotel has contemporary accommodations 15 minutes from Baltimore Washington International Airport and is located in downtown Baltimore's Inner Harbor district, a prime business and cultural area in Baltimore, Maryland. The Hilton Baltimore is a premier meeting and convention hotel connected to the Baltimore Convention Center.

Built as a tribute to Baltimore's heritage, the hotel features bricks from Camden Yards and artwork from more than 40 local artists. All guest rooms offer large LCD HDTVs, wired and wireless high-speed internet access and large desks. Attend to business in the hotel's convenient UPS Store® with print, copy and fax services.

Guest Room amenities include:

- Hilton Serenity Collection™ bedding and bath experience with Suite Dreams® plush-top mattress, down duvet and pillows

- Large, plasma screen, high definition televisions with On-Demand™ entertainment
- Sizable work stations with ergonomic desk chair
- Dual line phone with voicemail and data port
- High speed Internet access (wired/wireless) for a nominal fee
- Hilton Alarm Clock with MP3 capability
- Personal iron, ironing board and hair dryer
- Electronic door locks
- Valet Parking, \$40/day; Self Parking, \$28/day. (Rates subject to change)

The Hilton Baltimore hotel is a short walk from many of Baltimore's leading tourist attractions, including Baltimore's famous Inner Harbor, M&T Football Stadium-home of the Baltimore Ravens, the University of Maryland and Johns Hopkins University. Have fun with the kids at the National Aquarium and the Maryland Zoo. The hotel is ideally placed to explore Baltimore's famous neighborhoods such as Mt. Vernon, Federal Hill and Fells Point for local shopping, great dining and theater.

The Hilton is making available 25 student rooms each day at the reduced rate of \$120 per night (single/double/triple/quad occupancy).

This is first-come, first-served so you need to reserve these early. Student reservations will be cross-checked with the registrant list to ensure that only those who qualify for the rooms obtain them. Valid student ID's will need to be presented upon check-in.

IMPORTANT INFORMATION: One of the reasons we have been able to retain relatively low meeting registration costs is that we receive free meeting space from the hotel. However, we are charged attrition fees if we do not meet our guest room block. Thus, your reservation at the Baltimore Hilton rather than another location, ensures the success of the meeting for the Society and lower registration rates in the future.

Reservations: To make reservations, you may either do so online by visiting this link:

Regular Block

http://www.hilton.com/en/hi/groups/personalized/B/BWICCHH-WES-20130201/index.jhtml?WT.mc_id=POG

Student Block

http://www.hilton.com/en/hi/groups/personalized/B/BWICCHH-WEB-20130201/index.jhtml?WT.mc_id=POG

Or by calling 1-800-HILTONS. Make sure to mention our group code "WES", in order to qualify for our special discounted room rates; the code for Student rooms is "WEB." The last day that the Hilton Baltimore will honor our discounted rate is Thursday, January 1, 2013.

Check-in time at the Hilton is 3 p.m. with check-out at Noon. The hotel requires a first night's deposit (refundable up to 72 hours) that will be charged to your card at the time of booking.

Transportation

Driving Directions:

From 83 South:

Follow 83 to Lombard Street. Right on Lombard Street. Left on Green Street, left on Pratt Street. Hotel is 2 blocks on the right.

From I-95 North:

Exit 53 (395 North), stay in left lane. Turn left on Camden, right on Paca, right on Pratt Street. Hotel on the right. Please note that during Camden Yards events Camden Street may be closed. From exit 53 follow to Russell Street, turn right on Pratt. Hotel is on the right.

95 South through Ft. McHenry Tunnel:

Take Ft. McHenry Tunnel to Exit 53 (395 North), stay in left lane. Turn left on Camden, right on Paca, right on Pratt Street. Hotel on the right. Please note that during Camden Yards events Camden Street may be closed. From exit 53 follow to Russell Street, turn right on Pratt. Hotel is on the right.

From 40 East:

Follow 95 South. Go through Ft. McHenry tunnel. Take exit 53 (395 North)

Air Transportation:

The closest airport to the hotel is Baltimore/Washington International Airport(BWI)

Directions

Take 195 West to 95 North. Take exit 53 (395 North). Follow for one half mile and turn right on Pratt Street. The hotel will be on the right.

Distance from Hotel: 10 mi.

Drive Time: 15 min.

Transportation to and from Airport: (Most recently published prior to publication)

Type	Typical Minimum Charge
Super Shuttle	13.00 USD
Limousine	35.00 USD
Rental Car	Rates Vary
Taxi	25.00 USD

Washington Dulles International Airport

Directions

A-267E to Washington DC-Exit 18-I-495N to Baltimore. I-495N to Exit 27, I-95N to Baltimore. I-95N to Exit 53, I-395N downtown. 4 lights to Lombard St.; make left. Go 3 blocks make left onto S. Green St. One block, turn left onto Pratt St.

Distance from Hotel: 70 mi.

Drive Time: 75 min.

Transportation to and from Airport :

Type	Typical Minimum Charge
Limousine	130.00 USD
Rental Car	Rates Vary
Taxi	100.00 USD

Washington National Airport

Directions

Take I-95N to Baltimore. Take Exit 53, I-395N downtown. Follow 4 lights to Lombard St.; make left. Go 3 blocks, make left onto S. Green St.; Go 1 block, turn Left onto Pratt St. Hotel is located on the right

Distance from Hotel: 41 mi.

Drive Time: 50 min.

Transportation to and from Airport :

Type	Typical Minimum Charge
Taxi	140.00 USD
Limousine	170.00 USD
Rental Car	Rates Vary
Super Shuttle	115.00 USD

Program Booklet and Abstracts

All those registering for the annual meeting will receive a program booklet. The program will be mailed to those US attendees registering before January 10, 2013. International attendees and on-site registrants will receive programs at the meeting registration desk. To find the time and location of specific papers, look up the author in the author index in the back of the program. For those of you receiving programs in the mail, please bring these with you to the meeting as we only print enough to accommodate any additional on-site registrants.

NEWSS Committee Meetings

MONDAY, February 4

11:30 p.m. – 12:30 p.m.

NEWSS EC Lunch Diamond Tavern

12:30 p.m. – 3:00 p.m.

NEWSS EC Meeting Marshall Boardroom

3:00 p.m. – 3:30 p.m.

NEWSS Awards Committee Tubman A

3:00 p.m. – 4:00 p.m.

NEWSS Photo Judges Armistead

3:00 p.m. – 3:30 p.m.

NEWSS Weed Contest Marshall Boardroom

3:30 p.m. – 4:00 p.m.

NEWSS Student Paper Judging Tubman A

TUESDAY, February 5

5:00 p.m. – 6:00 p.m.

NEWSS Student Paper Judging Armistead

THURSDAY, February 7

7:00 a.m. – 8:00 a.m.

NEWSS EC (old and new) Douglass

WSSA Committee Meetings

SATURDAY, February 2

7:00 a.m. - 5:00 p.m.

Board of Directors Ruth

SUNDAY, February 3

7:00 a.m. – 1:00 p.m.

Board of Directors Ruth

1:00 p.m. – 5:00 p.m.

NE 1047 Johnson

MONDAY, February 4

7:00 a.m. – 8:00 a.m.

WSSA Board and Committee Chairs Breakfast Ruth

8:00 a.m. – 9:00 a.m.

Weed Technology Editorial Board (P3) Tubman A

8:00 a.m. – 10:00 a.m.

Formulation, Adjuvant, and Application Technology
Committee (W15) Tubman B

8:00 a.m. – 10:00 a.m.	Weed Alert Committee (W13)	Peale B
8:00 a.m. – 10:00 a.m.	Weed Loss Committee (E 11)	Peale C
8:00 a.m. – 10:00 a.m.	Herbicide Resistant Plants Committee (E12)	Brent
8:00 a.m. – 10:00 a.m.	Terminology Parent Committee (P22)	Peale A
8:00 a.m. – 10:00 a.m.	Website Committee (E14)	Johnson A
9:00 a.m. – 10:00 a.m.	Weed Science Editorial Board (P2)	Tubman A
9:00 a.m. – 12:00 noon	Photo Contest (W3j)	Armistead
10:00 a.m. – 11:00 a.m.	IPSM Editorial Board (P4)	Tubman A
10:00 a.m. – 12:00 noon	Environmental Aspects Committee (E8)	Tubman B
10:00 a.m. – 12:00 noon	Federal Noxious & Invasive Weeds Committee (E4)	Peale B
10:00 a.m. – 12:00 noon	Public Awareness Committee (E13)	Peale A
10:00 a.m. – 12:00 noon	Herbicide Handbook (P6)	Peale C
10:00 a.m. – 12:00 noon	CAST (E3)	Johnson A
1:00 p.m. – 3:00 p.m.	Extension Committee (W11)	Tubman B
1:00 p.m. – 3:00 p.m.	Biological Control of Weeds (W16)	Peale B
1:00 p.m. – 3:00 p.m.	Professional Development (W21)	Brent
1:00 p.m. – 3:00 p.m.	Herbicides for Minor Uses (E10)	Peale A
1:00 p.m. – 3:00 p.m.	Science Policy Committee (E2)	Peale C

1:00 p.m. – 3:00 p.m.
Publications Board (P1) Tubman A

2:00 p.m. – 3:00
Research and Competitive Grants Committee (E6)
..... Latrobe

WEDNESDAY, February 6

6:00 a.m. – 7:00 a.m.
National and Regional Presidents Breakfast
..... Carroll A and B

7:00 a.m. – 9:00 a.m.
Finance Committee (F1) Stone

THURSDAY, February 7

1:00 p.m. – 5:00 p.m.
Board of Directors Ruth

WSSA Committee meetings are open to all WSSA members. However, some non-WSSA committee meetings (e.g., Herbicide Resistance Action Committee) are open only to invited participants. If in doubt, check at the beginning of the meeting with the Committee Chair.

Contact Kate Counter of Allen Press, Inc. at WSSAmeeting@allenpress.com to arrange space for committee meetings or room assignments not scheduled in this program.

SUMMARY OF 2013 PROGRAM

SATURDAY MORNING, February 2

7:00 a.m. – 5:00 p.m.
Board of Directors Ruth

SUNDAY MORNING, February 3

7:00 a.m. – 1:00 p.m.
Board of Directors Ruth

MONDAY MORNING, February 4

7:00 a.m. – 8:00 a.m.
WSSA Board & Committee Chairs Breakfast Ruth

9:00 a.m. – 12:00 noon
Registration Key East Foyer

9:00 a.m. – 12:00 Noon
WSSA Photo Contest Judging Armistead

MONDAY AFTERNOON, February 4

1:00 p.m. – 3:00 p.m.
Registration Key East Foyer

3:00 p.m. – 4:00 p.m.
NEWSS Photo Judging Armistead

4:00 p.m. – 6:00 p.m.
General Session and WSSA/NEWSS Awards Presentations
..... Holiday 4/5

6:00 p.m. – 8:00 p.m.
WSSA/NEWSS Opening Reception Holiday 6
(Open to all registrants)

TUESDAY MORNING, February 5

6:00 a.m.
Annual PUFF Event Meet in Hotel Lobby

7:00 a.m. – 12:30 p.m.
Registration Key East Foyer

7:00 a.m. – 7:15 a.m.
Poster Session Business Meeting Key 1–6

7:00 a.m. – 8:30 a.m.
Poster Session Key 1–6
Authors of even-numbered posters will be present.

7:00 a.m. – 4:00 p.m.
Exhibits Key 1–6

8:30 a.m. – 4:00 p.m.
Posters on display without authors Key 1–6

8:45 a.m. – 12:00 noon
Symposium: Herbicide Application in the 21st Century
..... Key 8

8:45 a.m. – 11:45 a.m.
NEWSS Graduate Student Paper Contest Key 11/12

8:45 a.m. – 12:00 noon
4. Pasture, Rangeland, Forest, and Rights of Way
..... Key 10

8:45 a.m. – 11:45 a.m.
9. Weed Biology and Ecology Key 7

9:15 a.m.– 11:45 a.m.
13. Integrated Weed Management Key 9

TUESDAY AFTERNOON, February 5

1:30 – 4:00 p.m.

Registration Key East Foyer

1:00 p.m. – 5:00 p.m.

Symposium: Herbicide Resistance Management: The Path Forward Key 8

1:00 p.m. – 4:30 p.m.

NEWSS Graduate Student Paper Contest Key 11/12

1:15 p.m. – 4:00 p.m.

5. Wildland and Aquatic Invasive Plants Key 9

1:15 p.m. – 4:15 p.m.

8. Formulation, Adjuvant and Application Technology
..... Key 7

5:00 p.m. – 6:00 p.m.

WSSA Business Meeting Key 10

WEDNESDAY MORNING, February 6

6:00 a.m. – 7:00 a.m.

WSSA Regional Presidents Breakfast Carroll A/B

6:30 a.m. – 8:30 a.m.

NEWSS Past President's Breakfast Diamond Tavern

7:00 a.m. – 12:00 noon

Registration Key East Foyer

7:00 a.m. – 8:30 p.m.

Poster Session Key 1–6
Authors of odd-numbered posters will be present

7:00 a.m. – 5:00 p.m.

Sustaining Members Exhibits Key 1–6

8:30 a.m. – 5:00 p.m.

Posters on display without authors Key 1–6

8:45 a.m. – 10:15 a.m.

Symposium: Re-aligning Your Course to Improve Student Learning Key 9

8:45 a.m. – 12:00 noon

1. Agronomic Crops Key 8

8:45 a.m. – 12:00 noon

3. Turf and Ornamentals Key 10

8:45 a.m. – 12:00 noon
9. Weed Biology and Ecology Key 7

8:45 a.m. – 10:15 a.m.
12. Soil and Environmental Aspects Key 11/12

10:30 a.m. – 12:00 noon
7. Education and Extension Key 11/12

10:30 a.m. – 12:00 noon
Graduate Student Professional Development Workshop
..... Key 9

12:00 noon – 1:00 p.m.
Graduate Student Luncheon Key 9

WEDNESDAY AFTERNOON, February 6

1:00 p.m. – 3:00 p.m.
Registration Key East Foyer

1:00 p.m. – 5:00 p.m.
Symposium: Environmental Assessment of Herbicide Resistance Key 7

1:00 p.m. – 4:45 p.m.
1. Agronomic Crops Key 8

1:00 p.m. – 5:00 p.m.
2. Turf and Ornamental Crops Key 10

1:15 p.m. – 4:15 p.m.
11. Physiology Key 11/12

5:00 p.m. – 6:30 p.m.
NEWSS Business Meeting Key 10

9:00 p.m. – 11:00 p.m.
Joint Society Dessert Social Key South Foyer

THURSDAY MORNING, February 7

7:00 a.m. – 8:00 a.m.
NEWSS EC Meeting Douglass

7:00 a.m. – 11:00 a.m.
Registration Key East Foyer

8:00 a.m. 12:00 noon
Poster Session: Posters without authors available for
viewing Key 1–6

8:00 a.m. – 12:00 noon
Sustaining Members Exhibits Key 1–6

8:00 a.m. – 12:00 noon.
Symposium: Holistic Invasive Weed Management: Integration of Science, Regulation, and Public Policy Key 8

8:00 a.m. – 11:30 a.m.
1. Agronomic Crops Key 11/12

8:00 a.m. – 12:00 noon
2. Horticultural Crops Key 10

8:00 a.m. – 11:30 a.m.
9. Weed Biology and Ecology Key 9

8:00 a.m. – 11:30 a.m.
11. Physiology Key 7

12:00 noon – 2:00 p.m.
Dismantle Posters and Exhibits

THURSDAY AFTERNOON, February 7

1:00 p.m. – 4:00 p.m.
WSSA Board of Directors Ruth

**COMPLETE PROGRAM
MONDAY PM, February 4**

GENERAL SESSION

Location: Holiday 4/5
Chairs: James Kells and Dwight Lingenfelter

4:00 p.m.
Introduction and Announcements, James Kells, President-Elect, WSSA, Dwight Lingenfelter, President-Elect, NEWSS

4:10 p.m.
Keynote Address: Dr. Sonny Ramaswamy, Director, USDA National Institute of Food and Agriculture, Washington, D.C.

4:45 p.m.
Presentation of WSSA Awards, Dwight Lingenfelter, Chair, Awards Committee, WSSA

5:15 p.m.
Presentation of WSSA Fellow Awards, Jodie Holt, Chair, Fellows and Honorary Member Subcommittee, WSSA

5:30 p.m.

Presentation of NEWSS Awards, Mark VanGessel, Chair,
Awards Committee, NEWSS

6:00 p.m. - 8:00 p.m.

WSSA/NEWSS Awardee Reception Holiday 6

**MONDAY PM to THURSDAY
February 4 to 7**

**WSSA SUSTAINING MEMBERS
EXHIBITS SESSION**

Location: Key 1-6

Chair: James Steffel, LABServices, Inc.

7:00 a.m. Tuesday

Sustaining Members Exhibits Session meeting to elect a
Chair-Elect.

Setup 12:00 noon - 3:00 p.m. Monday

7:00 a.m. - 5:00 p.m. Tuesday

7:00 a.m. - 5:00 p.m. Wednesday

7:00 - 12:00 noon Thursday

Please remove exhibits by 2:00 p.m. on Thursday

Sustaining Member Exhibitor and Representative

LABServices James Steffel
Weed Systems, Inc. Wayne Currey

TUESDAY AM, February 4

Location: Key 1-6

Chair: Vijay Nandula

Posters may be set up on Monday from 12:00 noon until
3:00 pm prior to the General Session. Authors should
remove Posters before 2:00 pm on Thursday afternoon.

7:00 a.m. - 7:15 a.m.

Business Meeting to elect Chair-Elect

7:00 a.m. - 8:30 a.m.

Authors of even-numbered posters will be present.

8:30 a.m. - 5:00 p.m.

Posters open for viewing without authors

TUESDAY MORNING FEBRUARY 5

Section 1. Agronomic Crops

*PRESENTER † STUDENT POSTER CONTEST

†**PRE- and POST-emergent Herbicide Screening for Bio-energy Crop Safety.** L. L. Smith*, S. Hagood, S. D. Askew, J. N. Barney; Virginia Tech, Blacksburg, VA (1)

†**The Effects of Row Spacing and Population on Weed Competition in Organic Canola Production.** R. A. Atwell*; NC State University, Raleigh, NC (2)

†**N Availability in Corn as Impacted by N Source, Rate and Weed Removal Time.** A. M. Knight*, W. J. Everman, D. Jordan, R. Heiniger, T. J. Smyth; North Carolina State University, Raleigh, NC (3)

Density and Sowing Pattern Effects in Yield and Weed Suppression in Three Maize (*ZEA MAYS*) Varieties. C. Marin*¹, J. Weiner²; ¹Jorge Tadeo Lozano University, Bogota D.C., Colombia, ²University of Copenhagen, Frederiksberg, Denmark (4)

Evaluation of Preemergence Residual Herbicide Programs for Weed Control in Glyphosate-Resistant Corn. P. Jha*, V. Kumar, N. Reichard; Montana State University, Huntley, MT (5)

Evaluation of Pre and Postemergence Herbicides for Control of Palmer Amaranth (*Amaranthus palmeri*) in Corn. K. M. Vollmer*, H. P. Wilson, T. E. Hines; Virginia Tech, Painter, VA (6)

Site-specific Weed Management in Cotton. D. Chachalis*, A. Papadopoulos; Benaki Phytopathological Institute, Athens, Greece (7)

Broad-Spectrum Weed Control Options for Rice Production. B. M. McKnight*¹, E. P. Webster¹, J. C. Fish², N. D. Fickett¹; ¹LSU AgCenter, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA (8)

New Weed Management Options for Rice Production. E. P. Webster*¹, J. C. Fish², N. D. Fickett¹, B. M. McKnight¹; ¹LSU AgCenter, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA (9)

Herbicide Efficacy on Broadleaf and Sedge Weed Control in Rice. N. D. Fickett*¹, E. P. Webster¹, B. M. McKnight¹, J. C. Fish²; ¹LSU AgCenter, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA (10)

†**Propanil Resistance in *Cyperus difformis* of California Rice Fields: a New Challenge.** R. M. Pedroso*¹, L. G. Boddy², A. Fischer³; ¹University of California at Davis, Davis, CA,

²Marrone Bio Innovations, Davis, CA, ³University of California, Davis, Davis, CA (11)

†**Viability and Emergence of Red Rice and Irrigated Rice (*Oryza sativa* L.) are Influenced by Temperature.** G. Sartori¹, E. Marchesan¹, G. M. Telo*², S. A. Senseman², C. Azevedo¹, L. Coelho¹, M. Oliveira¹; ¹Federal University of Santa Maria, Santa Maria, Brazil, ²Texas A&M University, College Station, TX (12)

Newpath + Propanil Interactions Influence Weed Control in Clearfield Rice. J. C. Fish*¹, E. P. Webster², B. M. McKnight², N. D. Fickett², J. Bond³; ¹Louisiana State University, Baton Rouge, LA, ²LSU AgCenter, Baton Rouge, LA, ³Mississippi State University, Stoneville, MS (13)

Weed Control Programs in Sorghum Containing DuPont™ Inzen™ Z Herbicide Tolerance Trait. R. N. Rupp¹, D. D. Ganske², S. K. Rick³, D. Saunders*⁴; ¹DuPont Crop Protection, Edmond, OK, ²DuPont Crop Protection, Winchester, VA, ³DuPont Crop Protection, St. Louis, IL, ⁴DuPont Crop Protection, Johnston, IA (14)

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Williamson², S. Seifert-Higgins³; ¹North Carolina State University, Raleigh, NC, ²Monsanto, St. Louis, MO, ³Monsanto Company, St. Louis, MO (20)

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M. R. Miller*¹, P. J. Dittmar²; ¹University of Florida, Gainesville, FL, ²University of Florida, Gainesville, FL (37)

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S. A. Mathew*¹, M. VanGessel², B. Scott², Q. R. Johnson²; ¹University of Maryland, Cambridge, MD, ²University of Delaware, Georgetown, DE (38)

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Glyphosate Resistance in Spiny Amaranth. V. K. Nandula*¹, A. Wright¹, J. Bond², T. Eubank², W. Molin¹; ¹USDA-ARS, Stoneville, MS, ²Mississippi State University, Stoneville, MS (115)

Overview of Gene Expression and Hormone Changes Associate with Glyphosate-induced Witches Brooming in Leafy Spurge. M. Dogramaci*, M. E. Foley, W. S. Chao, D. P. Horvath, J. V. Anderson; USDA_ARS, Fargo, ND (116)

†Physiological Analysis of *Lolium multiflorum* Resistant to Iodosulfuron-methyl-sodium Herbicide. F. Mariani*¹, L. Vargas², D. S. Fraga³, D. Agostinetto⁴, S. A. Senseman¹; ¹Texas A&M University, College Station, TX, ²Embrapa Trigo, Passo Fundo, Brazil, ³Universidade Federal de Pelotas, Pelotas, Brazil, ⁴UFPel, Pelotas, Brazil (117)

Evaluating Non-target-site Mechanisms of Mesotrione Resistance in a Waterhemp (*Amaranthus tuberculatus*) Population from Illinois. R. Ma*¹, S. S. Kaundun², T. Hawkes², N. E. Hausman¹, P. J. Tranel¹, A. G. Hager¹, E. McIndoe², D. E. Riechers¹; ¹University of Illinois, Urbana, IL, ²Syngenta, Bracknell, Berkshire, England (118)

High-throughput Sequencing Identifies Bidirectional Movement of RNA Molecules Between *Cuscuta* and its Hosts. G. Kim*¹, M. LeBlanc¹, E. Wafula², C. dePamphilis³, J. Westwood¹; ¹Virginia Tech, Blacksburg, VA, ²The Pennsylvania State University, Pennsylvania state, PA, ³The Pennsylvania State University, Pennsylvania State, PA (119)

Section 12. Soil and Environmental Aspects

*PRESENTER

The Interaction Between Soil Moisture and Movement of Pyroxasulfone. D. L. Shaner*¹, E. Westra²; ¹USDA, Fort Collins, CO, ²Colorado State University, Fort Collins, CO (120)

Imidazolinone Leaching in Different Paddy Land Soil Types. J. P. Refatti*, L. A. Avila, D. Agostinetto, R. Manica, D. S. Moura, D. B. Helgueira, L. L. Cassol; UFPel, Pelotas, Brazil (121)

Comparison of Microbial Communities within Rhizospheres of Native Grass Species Little Bluestem, *Schizachyrium scoparium*, and King Ranch Bluestem, *Bothriochloa ischaemum*. K. M. Banick, K. Schoenemann*, F. Healy, K. G. Lyons; Trinity University, San Antonio, TX (122)

An Examination of the Presence and Abundance of Mycorrhizal Fungi on Native and Invasive Perennial Grass Species. C. E. Afflerbach, K. M. Banick*, K. G. Lyons; Trinity University, San Antonio, TX (123)

Section 13. Integrated Weed Management

*PRESENTER

Palmer Amaranth Control in Established Alfalfa under Dryland and Irrigated Conditions. J. A. Putman*, D. Peterson, A. Dille; Kansas State University, Manhattan, KS (124)

Cover Crop Influence on Weeds in Organic Dry Beans. E. C. Taylor*, K. A. Renner, C. L. Sprague; Michigan State University, East Lansing, MI (125)

Growth and Decomposition of 4 Cover Crops in Indiana. C. Zamorano Montanez*, K. Gibson; Purdue University, West Lafayette, IN (126)

The Effect of Different Rotations on Weed Flora in Potato Field. M. Serajchi*, R. Ghorbani, M. H. Rashed Mohassel, K. Shojaie; Ferdowsi University of Mashhad, Mashhad, Iran (127)

PAGMan - Propelled Abrasive Grit to Manage Weeds in Soybean and Corn. F. Forcella*¹, D. Humburg², S. Clay²; ¹USDA, Morris, MN, ²South Dakota State University, Brookings, SD (128)

Pre- and Post-emergence Applications of Herbicides for Control of *Festuca filiformis* in Wild Blueberry Fields. D. E. Yarborough, J. L. D'Appollonio-Cote*; University of Maine, Orono, ME (129)

Flufenacet-Resistant Italian Ryegrass (*Lolium perenne* ssp. *multiflorum*) Populations are not Pyroxasulfone-Resistant. M. Liu*, A. G. Hulting, C. Mallory-Smith; Oregon State University, Corvallis, OR (130)

HPPD Resistance Testing in the USA - Preliminary Bioassay Results. T. Wilde¹, R. S. Beffa*², T. Kleven³, B. Philbrook³, H. Streck²; ¹Bayer CropScience, Frankfurt, Germany, ²Bayer CropScience, Frankfurt am Main, Germany, ³Bayer CropScience, Research Triangle Park, NC (131)

TUESDAY MORNING FEBRUARY 5 Herbicide Application in the 21st Century

LOCATION: Key 8

TIME: 8:45 AM - 12:00 PM

CHAIR: Gregory Dahl, Winfield Solutions LLC, St. Paul, MN

***SPEAKER**

8:45 Introduction

8:50 Drift Reduction Technology vs. Field Weed Control Efficacy. B. Bagley*; Wilbur Ellis, San Antonio, TX (132)

9:10 Setting the Stage for Herbicide Application in the 21st Century. G. K. Dahl*; Winfield Solutions LLC, St. Paul, MN (133)

9:30 EPA DRT Update and Program Review. J. S. Ellenburger*; Environmental Protection Agency, Washington, DC (134)

9:50 Study Design, Data Generation, and Interpretation of Drift Studies. G. R. Kruger*¹, B. K. Fritz², C. Hoffman², A. J. Hewitt³; ¹University of Nebraska-Lincoln, North Platte, NE, ²USDA-ARS Area Wide Pest Management Research Unit, College Station, TX, ³University of Queensland, Lincoln University, Christchurch, Australia (135)

10:10 Bridging Drift Reduction Technology with Tools for Improving Herbicide Applications and Applicator Stewardship. L. C. Magidow*¹, S. Wedryk²; ¹Winfield Solutions, River Falls, WI, ²Winfield Solutions, LLC, St. Paul, MN (136)

10:30 Understanding the Details Surrounding Droplet Formation. C. Hoffman*; USDA-ARS Area Wide Pest Management Research, College Station, TX (137)

10:50 Standards of Adjuvants and Pesticide Application Testing. C. Elsik*; Huntsman Corporation, The Woodlands, TX (138)

11:10 Water Quality: Is it Just Water? A. J. Kazmierczak*, R. Zollinger, J. D. Nalewaja; North Dakota State University, Fargo, ND (139)

11:30 Talking About Efficacy: Issues Associated with Spray Quality. Herbicide Efficacy. B. G. Young*; Southern Illinois University, Carbondale, IL (140)

TUESDAY MORNING FEBRUARY 5 NEWSS Graduate Student Paper Contest

LOCATION: Key 11/12

TIME: 8:45 AM - 11:45 AM

MODERATOR: Adam Smith, Virginia Tech, Blacksburg, VA

***SPEAKER † STUDENT CONTEST**

8:45 †Selective Bermudagrass Control in Cool Season Turf with Topramezone. M. Cox*¹, S. D. Askew¹, K. Venner¹, K. Miller²; ¹Virginia Tech, Blacksburg, VA, ²BASF, Richmond, VA (141)

9:00 †Late Winter Applications Improve Ethephon Efficacy for Annual Bluegrass Seedhead Suppression. A. N. Smith*, S. D. Askew; Virginia Tech, Blacksburg, VA (142)

9:15 †Influence of Cultural Practices and Methiozolin Programs on Creeping Bentgrass Putting Green Recovery. K. Venner*¹, S. D. Askew¹, S. Koo²; ¹Virginia Tech,

Blacksburg, VA, ²Moghu Research Center, Daejeon, South Korea (143)

9:30 †Phenology of Monoecious Hydrilla in North Carolina Over Three Years. R. J. Richardson, S. T. Meadows*; North Carolina State University, Raleigh, NC (144)

9:45 †Novel Combinations of Herbicides for Control in *Amaranthus palmeri*. R. E. Paynter*, W. J. Everman, J. Burton; North Carolina State University, Raleigh, NC (145)

10:00 †Pokeweed Biology and Management in Pennsylvania Field Crops. K. M. Patches*¹, W. Curran²; ¹The Pennsylvania State University, University Park, PA, ²Penn State University, University Park, PA (146)

10:15 Break

10:30 †Alternative Use of PPO Herbicides in High-Yield Soybean Management. J. M. Orlowski*, C. Lee; University of Kentucky, Lexington, KY (147)

10:45 †Different N Sources, Rates, and Weed Removal Timing Impact N Content in Corn and Weeds. A. M. Knight*, W. J. Everman, D. Jordan, R. Heiniger, T. J. Smyth; North Carolina State University, Raleigh, NC (148)

11:00 †Effects of Plant Population, Row Spacing and Herbicide Programs on Weed Management in Sorghum. T. E. Besancon*, R. Riar, R. Weisz, R. Heiniger, W. J. Everman; North Carolina State University, Raleigh, NC (149)

11:15 †The Role of Weedy Flora in Supporting Native Bees in Pennsylvania Apple Orchards. M. Kammerer*¹, D. Biddinger², D. Mortensen³; ¹Penn State University, State College, PA, ²Penn State University, Biglerville, PA, ³Penn State University, University Park, PA (150)

11:30 †Effects of Simulated Dicamba Herbicide Drift on Field-edge Plant Communities. J. Egan*¹, D. Mortensen²; ¹Pennsylvania State University, University Park, PA, ²Penn State University, University Park, PA (151)

TUESDAY MORNING FEBRUARY 5

Section 4. Pasture, Rangeland, Forest, and Rights of Way

LOCATION: Key 10

TIME: 8:45 AM - 12:00 PM

CHAIR: Ernest Dickens, The University of Georgia, Statesboro, GA

***SPEAKER**

8:45 Control of Natural Pines using Viewpoint, Streamline, and Krenite. A. W. Ezell*, A. B. Self; Mississippi State University, Starkville, MS (152)

9:00 Foliar Rates of Aminocyclopyrachlor Blends for Japanese Honeysuckle, Trumpet Creeper and Greenbriar Brownout. J. L. Yeiser*, J. Grogan; Stephen F Austin State University, Nacogdoches, TX (153)

9:15 Control of Hickory, Red Maple, Sumac, Red Oaks, and Other Hardwood Species Using Basal Bark Applications of MAT-28. A. W. Ezell*, A. B. Self; Mississippi State University, Starkville, MS (154)

9:30 Evaluation of Indaziflam and Other Preemergence Herbicide Combinations for Bareground Weed Control. J. Johnson*, A. E. Gover, D. A. Despot, J. C. Sellmer; Penn State University, University Park, PA (155)

9:45 Effectiveness of Aminocyclopyrachlor for Basal Bark and Cut Surface Treatments. J. Johnson*, D. A. Despot, J. C. Sellmer; Penn State University, University Park, PA (156)

10:00 Weed Control in Range and Pasture with Aminocyclopyrachlor. V. A. Kleczewski*¹, G. Hannig², R. W. Williams³; ¹DuPont Crop Protection, Westampton, NJ, ²DuPont Crop Protection, Rochester, NY, ³DuPont Crop Protection, Raleigh, NC (157)

10:15 Break

10:30 Hybrid Toadflax: A Major Management Problem? S. M. Ward*¹, M. F. Turner¹, S. E. Sing²; ¹Colorado State University, Fort Collins, CO, ²U.S. Forest Service, Bozeman, MT (158)

10:45 Aminopyralid (Milestone™) Utility in Rangeland Restoration Programs. M. B. Halstvedt¹, V. F. Peterson², R. A. Masters*³, L. A. Brinkworth⁴; ¹Dow AgroSciences LLC, Billings, MT, ²Dow AgroSciences, Mulino, OR, ³Dow AgroSciences, Indianapolis, IN, ⁴Dow AgroSciences LLC, Dublin, Ireland (159)

11:00 Fall and Spring Applications for Tall Fescue (*Festuca arundinacea*) Seedhead Suppression: An Update. J. Omelian*, W. Witt; University of Kentucky, Lexington, KY (160)

11:15 Comparison of Herbicide and Mowing Regimes for Control of Canada Thistle in Grass Groundcover. J.

Johnson*, D. A. Despot, K. L. Lloyd, J. C. Sellmer; Penn State University, University Park, PA (161)

11:30 ROW Monitoring to Protect Sensitive Vegetation and Environments. N. Cain*; Cain Vegetation Inc., Acton, ON (162)

11:45 Section Business Meeting

12:00 Lunch

TUESDAY MORNING FEBRUARY 5

Section 9. Weed Biology and Ecology

LOCATION: Key 7

TIME: 8:45 AM - 11:45 AM

CHAIR: David Gealy, USDA-ARS, Stuttgart, AR

***SPEAKER**

8:45 Occurrence of Arable Weed Species in Roadside Habitats: Implications for Herbicide-Resistance Management. M. V. Bagavathiannan*, J. K. Norsworthy; University of Arkansas, Fayetteville, AR (163)

9:00 Genetic Relationships of Southeastern United States Herbicide Resistant *A. palmeri* Populations. L. Lorentz*¹, T. A. Gaines², A. Figge³, R. Paul³, M. Hess³, P. Westra⁴, H. Streck¹, R. Beffa¹; ¹Bayer CropScience, Frankfurt am Main, Germany, ²University of Western Australia, Crawley, WA, Australia, ³Bayer CropScience, Frankfurt, Germany, ⁴Colorado State University, Fort Collins, CO (164)

9:15 Evolution of EPSPS in Palmer amaranth as Impacted by Glyphosate Selection Pressure. N. R. Burgos*¹, A. L. Lawton-Rauh², E. L. Alcober³, K. Beard², T. Tseng¹, P. J. Tranel⁴; ¹University of Arkansas, Fayetteville, AR, ²Clemson University, Clemson, SC, ³Visayas State University, Leyte, Philippines, ⁴University of Illinois, Urbana, IL (165)

9:30 Glyphosate-resistant *Conyza spp.* in Perennial Crops in Greece: Mechanisms of Resistance and Control Strategies. D. Chachalis*¹, E. Tani¹, I. Travlos², J. Costa³, R. D. Sammons⁴; ¹Benaki Phytopathological Institute, Athens, Greece, ²Agricultural University of Athens, Athens, Greece, ³Monsanto Agricultura España SL, Madrid, Spain, ⁴Monsanto, St. Louis, MO (166)

9:45 Germination of a Variety of International Populations of *Conyza canadensis*. E. Tozzi*¹, R. Van Acker²; ¹University Of Guelph, Guelph, ON, ²University of Guelph, Guelph, ON (167)

10:00 QTL Analysis of Weedy Prickly Lettuce Traits. I. C. Burke*, J. L. Bell, M. Neff; Washington State University, Pullman, WA (168)

10:15 Break

10:30 Weedy Biotypes as a Source of Genetic and Phenotypic Characteristics for Adapting Crops to Rising Carbon Dioxide and Climate Change. L. H. Ziska*; USDA-ARS, Beltsville, MD (169)

10:45 Carbon Dioxide, Climate Change and Crop-Weed Interactions: The Role of Photosynthetic Pathway. L. H. Ziska*, USDA-ARS, Beltsville, MD (170)

11:00 Can Rising CO₂ Levels Alter Gene Flow Between Crops and Weeds? L. H. Ziska*¹; D. Gealy², H. Black², A. Jackson²; ¹USDA-ARS, Beltsville, MD, ²USDA-ARS, Stuttgart, AR (171)

11:15 Hybridization between Clearfield[®] Wheat and Jointed Goatgrass (*Aegilops cylindrica*): Results of a 2-year Survey. B. A. Martins*, C. Mallory-Smith; Oregon State University, Corvallis, OR (172)

11:30 Contrasting Origins and Population Connectivities of Weedy Rice and Cultivated Rice in Arkansas versus California: Escape to Fertility? A. L. Lawton-Rauh*¹, N. R. Burgos², A. Fischer³; ¹Clemson University, Clemson, SC, ²University of Arkansas, Fayetteville, AR, ³University of California, Davis, Davis, CA (173)

TUESDAY MORNING FEBRUARY 5

Section 13. Integrated Weed Management

LOCATION: Key 9

TIME: 9:15 AM - 11:45 AM

CHAIR: Jonathan Huff, Dow AgroSciences, Herrin, IL

***SPEAKER**

9:15 Presence and Characterization of Glyphosate-Resistance Common Waterhemp and Palmer Amaranth in Kansas. J. A. Putman*, D. Peterson; Kansas State University, Manhattan, KS (174)

9:30 Herbicide and Cover Crop Residue Integration for Amaranthus Control in Conservation Agriculture Cotton and Implications for Resistance Management. A. J. Price*¹, K. S. Balkcom¹, L. M. Duzy¹, J. A. Kelton²; ¹USDA-ARS, Auburn, AL, ²Auburn University, Auburn, AL (175)

9:45 HPPD Resistance Testing in the USA - Preliminary Laboratory Results. R. S. Beffa*¹, B. Laber², T. Wilde², H. Menne², T. Kleven³, B. Philbrook³, H. Streck¹; ¹Bayer

CropScience, Frankfurt am Main, Germany, ²Bayer CropScience, Frankfurt, Germany, ³Bayer CropScience, Research Triangle Park, NC (176)

10:00 Preemption, Predation and Burial: Managing the Weed Seedbank. E. Gallandt*, R. Jabbour; University of Maine, Orono, ME (177)

10:15 Break

10:45 Mental Models of Organic Weed Management: Links Between Farmer Knowledge, Perceptions, and Weed Seedbanks. R. Jabbour*¹, S. Zwickle², E. Gallandt¹, K. McPhee¹, R. Wilson², D. Doohan³; ¹University of Maine, Orono, ME, ²Ohio State University, Columbus, OH, ³The Ohio State University, Wooster, OH (178)

11:00 Effects of Soil Fertility and Tillage on Weeds in a Long-term Cash Grain Cropping Systems Experiment. C. Marschner, M. Ryan*, C. L. Mohler, B. Caldwell, L. Drinkwater; Cornell University, Ithaca, NY (179)

11:15 Impact of a Two Year Crop Rotation and Mechanical Control on Weeds in Tomato. C. Zamorano Montanez*, K. Gibson; Purdue University, West Lafayette, IN (180)

11:30 Section Business Meeting

TUESDAY AFTERNOON FEBRUARY 5 Herbicide Resistance Management - The Path Forward

LOCATION: Key 8

TIME: 1:00 PM - 5:00 PM

CHAIR: David Shaw, Mississippi State University, Mississippi State, MS

***SPEAKER**

1:00 Introductory Remarks. D. R. Shaw*; Mississippi State University, Mississippi State, MS (181)

1:05 Weed Resistance: How We Got Into This Mess. H. D. Coble*; USDA, Raleigh, NC (182)

1:25 Evolution of Herbicide Resistance. J. S. Holt*; University of California, Riverside, CA (183)

1:45 Best Management Practices and Recommendations. J. K. Norsworthy*; University of Arkansas, Fayetteville, AR (184)

2:05 Panel Discussion-Herbicide-Resistant Crops: Solution or Extension of the Problem? S. O. Duke*¹, D. Mortensen², M. Peterson³, A. Asmus⁴, J. K. Soteris⁵; ¹USDA, ARS, Oxford, MS, ²Penn State University, University Park, PA,

³Dow AgroSciences, West Lafayette, IN, ⁴Asmus Farm Supply, Inc., Take, IA, ⁵Monsanto Company, St. Louis, MO (185)

3:00 Break

3:15 Panel Discussion - Socio-economic Dimensions of Resistance Management. R. Jussaume*¹, T. Hurley², D. Ervin³, G. Frisvold⁴; ¹Michigan State University, East Lansing, MI, ²University of Minnesota, St. Paul, MN, ³Portland State University, Portland, OR, ⁴University of Arizona, Tucson, AZ (186)

4:00 Panel Discussion - Federal Agency Perspectives on Herbicide Resistance. S. M. Koehler*¹, B. Chism², S. Duke³, N. Widman⁴, M. A. Bowers⁵; ¹USDA-APHIS, Riverdale, MD, ²EPA, Washington, DC, ³USDA-ARS, University, MS, ⁴USDA-NRCS, Washington, DC, ⁵National Institute of Food and Agriculture, Washington, DC (187)

4:50 Summary and Conclusions about the Path Forward. J. Schroeder*; New Mexico State University, Las Cruces, NM (190)

TUESDAY AFTERNOON FEBRUARY 5 NEWS Graduate Student Paper Contest

LOCATION: Key 11/12

TIME: 1:00 PM - 4:30 PM

MODERATOR: Kate Venner, Virginia Tech, Blacksburg, VA

*SPEAKER † STUDENT CONTEST

1:00 †A Design for Selecting Novel Biocontrol Agents from Soil. K. W. Panke-Buisse*, J. T. Kao-Kniffin; Cornell University, Ithaca, NY (191)

1:15 †Reducing Herbicide Use in a Diverse No-Till Cropping System. E. M. Snyder*¹, W. Curran², H. Karsten³, G. Malcolm³; ¹Pennsylvania State University, University Park, PA, ²Penn State University, University Park, PA, ³The Pennsylvania State University, University Park, PA (192)

1:30 †Weed Suppression and Organic Soybean Performance As Influenced by Rye Cultivars in the “Roll-Killed” Cover-Crop System. M. Wells*¹, S. Reberg-Horton², C. Brinton³; ¹NCSU Crop Science, Raleigh, NC, ²North Carolina State University, Raleigh, NC, ³NCSU, Raleigh, NC (193)

1:45 †Reliance on Cover Crops for Organic Weed Control in the Mid-Atlantic. C. L. Keene*¹, W. Curran², M. Ryan³, S. Mirsky⁴, M. VanGessel⁵, M. Dempsey⁶, B. Scott⁵, L. Young⁴; ¹The Pennsylvania State University, State College,

PA, ²Penn State University, University Park, PA, ³Cornell University, Ithaca, NY, ⁴USDA-ARS, Beltsville, MD, ⁵University of Delaware, Georgetown, DE, ⁶The Pennsylvania State University, University Park, PA (194)

2:00 †Effects of Different Cutting Methods and Timing on Seed Viability and Germination of Three Annual Weed Species. F. Kordbacheh*¹, C. L. Mohler², A. DiTommaso², H. Rahimian Mashhadi¹; ¹University of Tehran, Tehran, Iran, ²Cornell University, Ithaca, NY (195)

2:15 †Is Controlling Japanese Stiltgrass Worth It? Forest Understory Community Response. D. R. Tekiela*, A. R. Post, S. D. Askew, J. N. Barney; Virginia Tech, Blacksburg, VA (196)

2:30 †Preliminary Studies on Seed Dispersal of Swallow-wort (*Vincetoxicum* spp.). C. A. Stokes*¹, A. DiTommaso¹, C. L. Mohler¹, L. R. Milbrath²; ¹Cornell University, Ithaca, NY, ²USDA-ARS, Ithaca, NY (197)

2:45 †Effects of Timing and Frequency of Flame Cultivation Treatments on Dewberry. K. M. Ghantous*¹, H. A. Sandler², W. R. Autio¹; ¹University of Massachusetts Amherst, Amherst, MA, ²University of Massachusetts Amherst, East Wareham, MA (198)

3:00 Break

3:15 †The Invasion Cliff: The Interaction Between Propagule Pressure and Invasiveness. M. Ho*, L. L. Smith, J. N. Barney; Virginia Tech, Blacksburg, VA (199)

3:30 †Parameterizing the First Stage of Invasion: Evaluation of *Miscanthus x giganteus* Seed Establishment. L. L. Smith*, J. N. Barney; Virginia Tech, Blacksburg, VA (200)

3:45 †Naturalized Biotypes of *Miscanthus Sinensis* Show Greater Tolerance to Light and Moisture Stress than Ornamental Cultivars. R. F. Dougherty*¹, L. Quinn², T. Voigt², J. N. Barney¹; ¹Virginia Tech, Blacksburg, VA, ²University of Illinois Urbana-Champaign, Urbana-Champaign, IL (201)

4:00 †Tolerance of *Arundo donax* to Postemergence Herbicides. B. A. Hicks*¹, W. J. Everman¹, S. Brake²; ¹North Carolina State University, Raleigh, NC, ²Biofuels Center of North Carolina, Oxford, NC (202)

4:15 †Synthesis and evaluation of potential herbicidal activity of novel chemistry in corn and various weed species. J. J. Vargas*¹, J. T. Brosnan¹, G. R. Armel², M. D. Best³, C. Do-Thanh¹; ¹The University of Tennessee, Knoxville, TN, ²BASF, Raleigh, NC, ³University of Tennessee, Knoxville, TN (203)

TUESDAY AFTERNOON FEBRUARY 5
Section 5. Wildland and Aquatic Invasive Plants

LOCATION: Key 9

TIME: 1:15 PM - 4:00 PM

CHAIR: Atul Puri, DuPont Crop Protection, Newark, DE

***SPEAKER**

1:15 Demographic Matrix Model for Informing Swallowwort (*Vincetoxicum* spp.) Biological Control. L. R. Milbrath*¹, J. Biazzo¹, A. Davis²; ¹USDA-ARS, Ithaca, NY, ²USDA-ARS, Urbana, IL (204)

1:30 The Growing Threat of the Submersed Invasive Aquatic Weed *Hydrilla verticillata* in the Northern US and the Successful Use of Sonar[®] Aquatic Herbicide (a.i., Fluridone) for Containment and Eradication. M. A. Heilman*, T. J. Koschnick; SePRO Corporation, Carmel, IN (205)

1:45 Comparison of Herbicide Mixtures for Exotic Shrub Suppression in Wildland Settings. A. E. Gover*¹, R. K. Wagoner², J. L. Huffman³; ¹Penn State University, University Park, PA, ²PA Dept. of Conservation and Natural Resources, Harrisburg, PA, ³University of Illinois, Urbana, IL (206)

2:00 Can We Enhance Suppression of Reed Canarygrass by Glyphosate-based Treatments in Revegetation Settings? A. E. Gover*¹, J. L. Huffman²; ¹Penn State University, University Park, PA, ²University of Illinois, Urbana, IL (207)

2:15 Integrated Tamarisk (*Tamarix* spp.) Management: Comparing Strategies and Their Ecological Impact. C. Douglass*, S. Nissen; Colorado State University, Fort Collins, CO (208)

2:30 Community Assembly and the Interplay Between Invasive Plants and Abundant Deer. K. Averill*¹, D. Mortensen²; ¹Penn State, University Park, PA, ²Penn State University, University Park, PA (209)

2:45 Break

3:15 A Novel Method to Detect and Quantify Non-riparian Water Dispersal of the Invasive Grass *Microstegium vimineum*. D. R. Tekiela*, J. N. Barney; Virginia Tech, Blacksburg, VA (210)

3:30 Understanding the Origins of the Invasive Australian Aquatic Weed, Delta Arrowhead (*Sagittaria platyphylla*, Alismataceae), to Improve Management and Control. L. M. Broadhurst*¹, R. Kwong²; ¹CSIRO, Canberra, Australia, ²Department of Primary Industries Victoria, Melbourne, Australia (211)

3:45 Section Business Meeting

TUESDAY AFTERNOON FEBRUARY 5
Section 8. Formulation, Adjuvant and Application
Technology

LOCATION: Key 7

TIME: 1:15 PM - 4:15 PM

CHAIR: Greg Kruger, University of Nebraska-Lincoln, North Platte, NE

MODERATOR: Greg Kruger, University of Nebraska-Lincoln, North Platte, NE

***SPEAKER**

1:15 Science of Pesticide Application Technology. R. N. Klein*; University of Nebraska, North Platte, NE (212)

1:30 Simulated Spray Drift versus Spray Tank Contamination Studies: What are the Differences and Why does it Matter? P. A. Banks*¹, T. C. Mueller², J. Schroeder³; ¹Marathon-Agric. & Environ. Consulting, Inc., Las Cruces, NM, ²University of Tennessee, Knoxville, TN, ³New Mexico State University, Las Cruces, NM (213)

1:45 Determination in a Wind Tunnel of the Effect of Nozzle Selection on Droplet Size Spectra for Spray Solutions Containing Dicamba and Glyphosate. T. B. Orr*¹, K. M. Remund¹, J. N. Travers², A. J. Hewitt³; ¹Monsanto Company, St Louis, MO, ²Monsanto Co., St. Louis, MO, ³University of Queensland, Lincoln University, Christchurch, Australia (214)

2:00 Efficacy of Ten Herbicides Using a Conventional Sprayer and an Ultra-low Volume Sprayer. J. Ferguson*¹, R. E. Gaussoin¹, J. A. Eastin², R. S. Henry³, G. Kruger³; ¹University of Nebraska-Lincoln, Lincoln, NE, ²Kamterter LLC, Waverly, NE, ³University of Nebraska-Lincoln, North Platte, NE (215)

2:15 A Comparison of AI and TTI Nozzles to Mitigate Off-Target Movement of Dicamba Under Field Conditions. J. L. Cobb¹, D. B. Reynolds*¹, J. K. Norsworthy², L. E. Steckel³, A. Mills⁴, R. Montgomery⁵, J. Sandbrink⁶, K. M. Remund⁷; ¹Mississippi State University, Mississippi State, MS, ²University of Arkansas, Fayetteville, AR, ³University of Tennessee, Jackson, TN, ⁴Monsanto, Collierville, TN, ⁵Monsanto, Union City, TN, ⁶Monsanto, St. Louis, MO, ⁷Monsanto Company, St Louis, MO (216)

2:30 Impact of Spray Nozzle Technology on Enlist Duo Weed Control and Crop Tolerance. J. A. Huff*¹, L. L. Walton², J. Richburg³, D. Ruen⁴; ¹Dow AgroSciences, Herrin, IL, ²Dow AgroSciences, Tupelo, MS, ³Dow AgroSciences, Headland, AL, ⁴Dow AgroSciences, Lanesboro, MN (217)

2:45 Enhancement of Herbicide Activity with Nano Technology. C. J. Swanton*¹, K. Chandler¹, C. Hall², D.

Anderson³; ¹University of Guelph, Guelph, ON, ²The University Of Guelph, Guelph, ON, ³Vive Crop Protection, Guelph, ON (218)

3:00 Break

3:15 Advancements in Developing Roundup® Xtend™ Glyphosate/ Dicamba Premix Formulations. A. MacInnes*¹, J. Sandbrink¹, D. R. Wright¹, J. A. Kendig¹, E. Urbanczyk-Wochniak¹, D. A. Findley¹, J. N. Travers²; ¹Monsanto, St. Louis, MO, ²Monsanto Co., St. Louis, MO (219)

3:30 A Survey on Efficiency of Various Adjuvants on Nicosulfuron Efficiency in Corn Field. A. R. Ghafouri*¹, M. A. Baghestani², E. E. Zand³, J. J. Daneshian⁴, H. K. Kishani Farahani⁵; ¹Islamic Azad Uuniversity, Takestan Branch, Iran, Tehran, Iran, ²Department of Weed Research, Plant Protection Research Institute, Iran, Tehran, Iran, ³Department of Weed Research, Plant Protection Research Institute, Iran, Tehran, Iran, ⁴Seed and Plant Improvement Institute, Oil Seeds, Iran, Karaj, Iran, ⁵University of Tehran, Karaj, Iran, Tehran, Iran (220)

3:45 Images from Unmanned Aircraft Systems (UAS) are Useful to Assess Herbicide Efficacy. J. C. Streibig*, J. Rasmussen, J. Nielsen; University of Copenhagen, Taastrup, Denmark (221)

4:00 Section Business Meeting

TUESDAY AFTERNOON FEBRUARY 5 WSSA Business Meeting

LOCATION: Key 10

TIME: 5:00 PM - 6:00 PM

MODERATOR: Rodney Lym, North Dakota State University, Fargo, ND

WEDNESDAY MORNING FEBRUARY 6 Re-aligning Your Course to Improve Student Learning

LOCATION: Key 9

TIME: 8:45 AM - 12:00 PM

CHAIR: Joe Dauer, Michigan State University, East Lansing, MI

WEDNESDAY MORNING FEBRUARY 6 Section 1. Agronomic Crops

LOCATION: Key 8

TIME: 8:45 AM - 12:00 PM

CHAIR: Vince Davis, University of Wisconsin, Madison, WI

***SPEAKER**

8:45 Early Physiological Mechanisms of Weed Competition. C. J. Swanton*, M. Afifi; University of Guelph, Guelph, ON (222)

9:00 Weed Interference in Soybean: Transcriptome Analysis. S. A. Clay*¹, D. Horvath², S. Hansen¹, D. Clay¹; ¹South Dakota State Univ., Brookings, SD, ²USDA-ARS, Fargo, ND (223)

9:15 Early Season Weed Control Shortens ASI and Prevents Kernel Loss in a Drought Tolerant Maize Hybrid. A. Reid*¹, E. A. Lee¹, L. Lukens¹, P. Sikkema², C. J. Swanton¹; ¹University of Guelph, Guelph, ON, ²The University Of Guelph, Ridgetown, ON (224)

9:30 Thiamethoxam as a Seed Treatment Alters the Physiological Response of Maize Seedlings to Neighboring Weeds. C. J. Swanton*, M. Afifi; University of Guelph, Guelph, ON (225)

9:45 Comparison of Roundup Ready and Conventional Soybean for Yield and Economic Profitability. B. L. Gaban*, T. C. Mueller; University of Tennessee, Knoxville, TN (226)

10:00 Palmer Amaranth Management in Enlist Cotton Systems in the Texas High Plains. M. R. Manuchehri*¹, P. A. Dotray¹, J. D. Reed², W. Keeling², J. Lee³; ¹Texas Tech University, Lubbock, TX, ²Texas A&M AgriLife Research, Lubbock, TX, ³Dow AgroSciences, Lubbock, TX (227)

10:15 Break

10:30 Herbicide Programs for Glufosinate and Glyphosate-Resistant Soybean. J. M. Stachler*¹, A. L. Carlson²; ¹NDSU and U. of MN, Fargo, ND, ²North Dakota State University and University of Minnesota, Fargo, ND (228)

10:45 HPPD-inhibitor herbicide resistance in the USA – a Syngenta perspective. L. Glasgow*¹, V. K. Shivrain¹, G. Vail¹, B. Manley², S. S. Kaundun³, B. Miller⁴; ¹Syngenta, Greensboro, NC, ²Syngenta, Research Triangle Park, NC, ³Syngenta, Bracknell, England, ⁴Syngenta, Minnetonka, MN (229)

11:00 Response of Palmer amaranth and Waterhemp Accessions from 10 States to Flexstar®. V. K. Shivrain*¹, C. L. Dunne², R. Jain², L. Glasgow¹, D. J. Porter¹; ¹Syngenta, Greensboro, NC, ²Syngenta, Vero Beach, FL (230)

11:15 Glyphosate- and Acetolactate Synthase Inhibitor-Resistant Kochia (*Kochia scoparia*) in Western Canada. H. J. Beckie*¹, R. E. Blackshaw², R. Low³, L. M. Hall³, C. A. Sauder⁴, S. Martin⁴, R. N. Brandt², S. W. Shirriff⁵; ¹Agriculture and Agri-Food Canada, Saskatoon, SK, ²AAFC, Lethbridge, AB, ³University of Alberta, Edmonton, AB, ⁴AAFC, Ottawa, ON, ⁵AAFC, Saskatoon, SK (231)

11:30 Non-Glyphosate Herbicide Programs for Kochia Management. P. Jha*, V. Kumar, N. Reichard; Montana State University, Huntley, MT (232)

WEDNESDAY MORNING FEBRUARY 6

Section 3. Turf and Ornamental Crops

LOCATION: Key 10

TIME: 8:45 AM - 12:15 PM

CHAIR: Michael Barrett, University of Kentucky, Lexington, KY

***SPEAKER**

8:45 Prohibiting Pesticides on Turf: What We Have Learned from New York State. J. T. Kao-Kniffin*; Cornell University, Ithaca, NY (233)

9:00 Towards Sustainable Turf: Potential Benefits of Clover Inclusion within Traditional Warm Season Turf. J. D. McCurdy*, J. McElroy, E. A. Guertal, C. W. Wood; Auburn University, Auburn, AL (234)

9:15 Selectivity of Methiozolin for Annual Bluegrass Control in Creeping Bentgrass as Influenced by Temperature and Application Timing. P. McCullough*¹, D. Gomez de Barreda², J. Yu¹; ¹University of Georgia, Griffin, GA, ²Polytechnic Univ. of Valencia, Valencia, Spain (235)

9:30 Ethephon Influences Creeping Bentgrass and Annual Bluegrass Response to Methiozolin. K. Venner*, A. R. Post, S. D. Askew; Virginia Tech, Blacksburg, VA (236)

9:45 Soil Type and Rooting Depth Effects on Amicarbazone and Methiozolin Applications for Weed Control in Creeping Bentgrass. J. Thomas*¹, J. T. Brosnan², G. K. Breeden², B. L. Gaban¹, G. Henry³, H. D. Coble⁴, M. Serajchi⁵, T. Serensits⁶; ¹University of Tennessee, Knoxville, TN, ²The University of Tennessee, Knoxville, TN, ³University of Georgia, Athens, GA, ⁴USDA, Raleigh, NC, ⁵Ferdowsi University of Mashhad, Faculty of Agriculture, Mashhad, Iran, ⁶Pennsylvania State University, University Park, PA (237)

10:00 Primisulfuron Plus Methiozolin Combinations for Annual and Roughstalk Bluegrass Control in Kentucky Bluegrass. A. R. Post*, K. Venner, S. D. Askew; Virginia Tech, Blacksburg, VA (238)

10:15 Break

10:30 Uptake, Translocation, and Metabolism of Dithiopyr in Large and Smooth Crabgrass as Influenced by Environment, Growth Stage, and Adjuvants. D. Gomez de Barreda*¹, P. McCullough², J. Yu²; ¹Polytechnic Univ. of Valencia, Valencia, Spain, ²University of Georgia, Griffin, GA (239)

10:45 Investigating a Suspected Oxadiazon-Resistant Goosegrass Population in Turf. D. R. Spak*¹, S. D. Askew², D. Myers³, M. Cox², A. Parker⁴; ¹BayerCropScience, Cary, NC, ²Virginia Tech, Blacksburg, VA, ³Bayer CropScience, Cary, NC, ⁴Bayer CropScience, Clayton, NC (240)

11:00 Uptake, Translocation, and Metabolism of Methiozolin in Five Weed Species. D. Gomez de Barreda¹, P. McCullough², J. Yu², S. Sidhu*²; ¹Polytechnic Univ. of Valencia, Valencia, Spain, ²University of Georgia, Griffin, GA (241)

11:15 Seedling Broadleaf Weed Control with MBI-005. J. Neal*¹, R. Schiavone¹, C. Harlow²; ¹North Carolina State University, Raleigh, NC, ²N. C. State University, Raleigh, NC (242)

11:30 Dithiopyr and Florasulam Combinations for Broadleaf Weed Control in Turf. D. Loughner¹, J. M. Breuninger², V. F. Peterson*³; ¹Dow AgroSciences, Lawrenceville, NJ, ²Dow AgroSciences, Indianapolis, IN, ³Dow AgroSciences, Mulino, OR (243)

11:45 Broadleaf Weed Management in Warm-Season Turfgrass. B. J. Brecke*, R. G. Leon, B. Unruh; University of Florida, Jay, FL (244)

12:00 Section Business Meeting

WEDNESDAY MORNING FEBRUARY 6 Section 9. Weed Biology and Ecology

LOCATION: Key 7

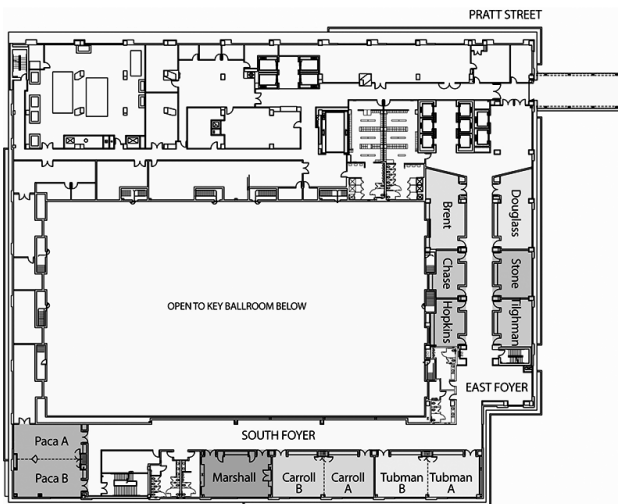
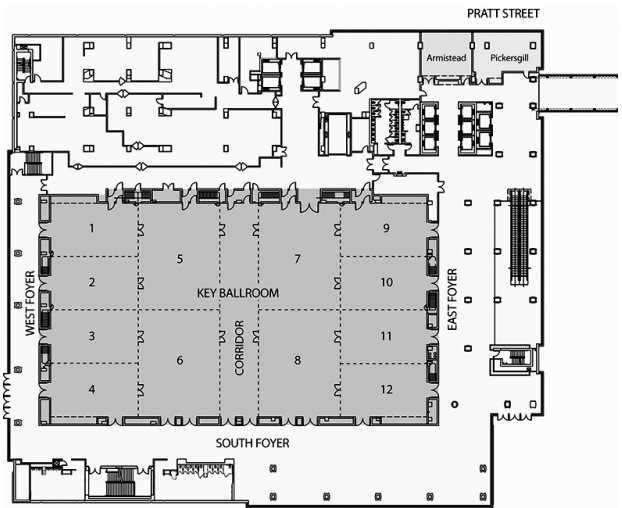
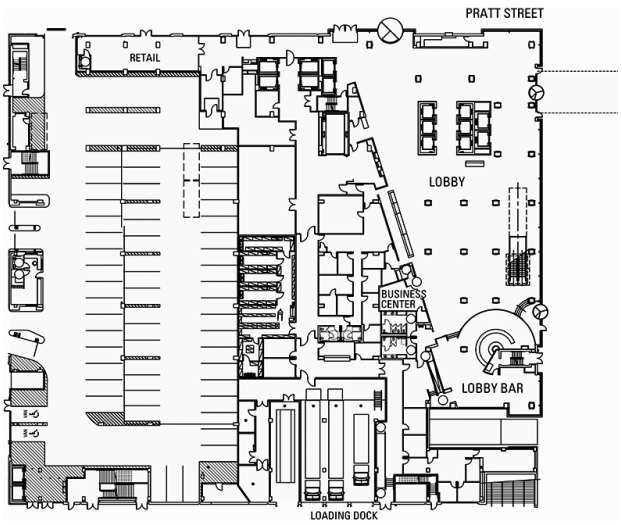
TIME: 8:45 AM - 12:00 PM

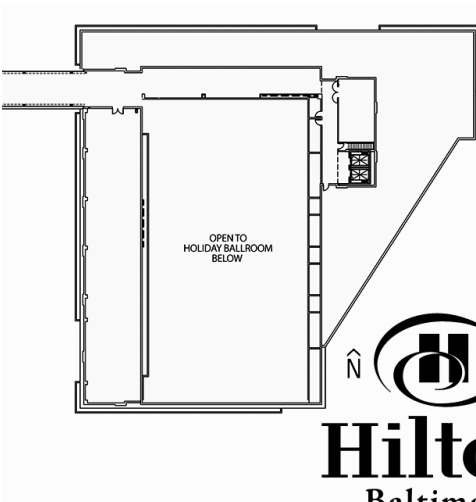
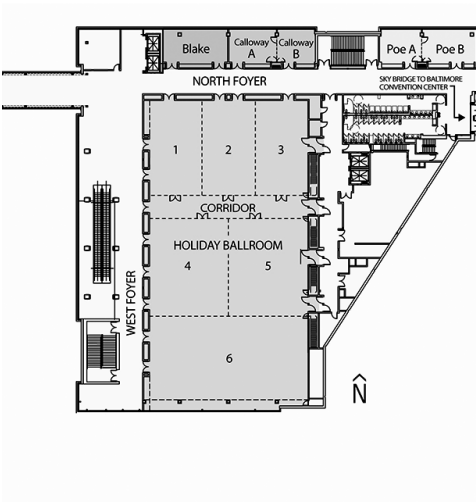
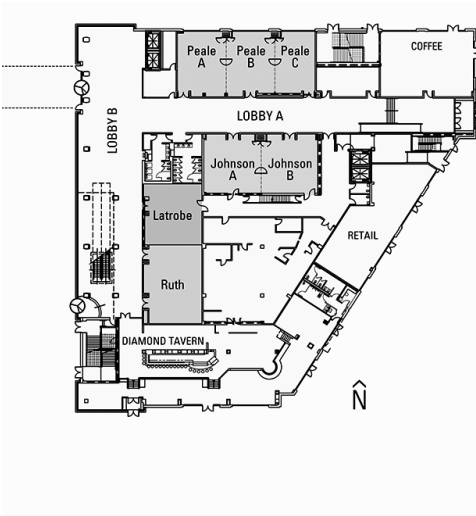
CHAIR: David Gealy, USDA-ARS, Stuttgart, AR

***SPEAKER**

8:45 Predicting Weed Germination and Emergence in Rice Fields. L. G. Boddy*¹, K. J. Bradford², A. Fischer²; ¹Marrone Bio Innovations, Davis, CA, ²University of California, Davis, Davis, CA (245)

9:00 Seedling Age Affects Critical Weed-crop Competition Period in Intensive Rice Production. A. R. Chadhar*¹, M. A. Nadeem², A. Tanveer², M. Yaseen², J. Cardina¹; ¹Ohio







Hilton

 Baltimore

State University, Wooster, OH, ²University of Agriculture, Faisalabad, Faisalabad, Pakistan (246)

9:15 Inter and Intraspecific Competition Effects on Stand Uniformity, Development and Yield in Maize (*Zea mays* L.). E. R. Page¹, H. Gonzalez*², C. J. Swanton²; ¹Agriculture and Agri-Food Canada, Harrow, ON, ²University of Guelph, Guelph, ON (247)

9:30 Mortality of Weeds Due to Tine Weeding and Inter-row Cultivation in Corn and Soybeans. C. L. Mohler*, B. Caldwell, C. Marschner, A. DiTommaso; Cornell University, Ithaca, NY (248)

9:45 Effect of Tansy Mustard on Subsequent Corn Establishment. R. Werle*¹, L. L. Perez², L. D. Sandell¹, J. L. Lindquist³; ¹University of Nebraska Lincoln, Lincoln, NE, ²Faculdade de Ciencias Agronomicas - UNESP, Botucatu, Brazil, ³University of Nebraska, Lincoln, NE (249)

10:00 When does a Soybean Seedling Meet its Neighbour? A. McKenzie-Gopsill*, E. Lee, L. Lukens, C. J. Swanton; University of Guelph, Guelph, ON (250)

10:15 Break

10:30 Estimating the Heritable Variation in Early Seedling Vigor of Soybeans for Improving Weed Suppressive Ability. S. Reberg-Horton*¹, T. E. Carter², G. T. Place³; ¹North Carolina State University, Raleigh, NC, ²USDA_ARS, Raleigh, NC, ³Peace Corps, Panama City, Panama (251)

10:45 The Non-Native Vascular Flora at Brookhaven National Laboratory, Long Island, New York. R. Stalter*; St Johns University, Queens, NY (252)

11:00 Will the Real Impact Please Stand Up? A novel Framework for Integrating Invasive Plant Ecological Impacts. J. N. Barney*¹, D. R. Tekiel¹, E. S. Dollete¹, B. J. Tomasek²; ¹Virginia Tech, Blacksburg, VA, ²University of Illinois, Urbana, IL (253)

11:15 Potential Allelochemicals of the Invasive Species *Carduus nutans* L. and *C. acanthoides* L. S. O. Duke*¹, A. L. Cerdeira², C. L. Cantrell¹, F. M. Silva³, N. Corniani³, E. D. Velini³, M. A. Donega⁴; ¹USDA, ARS, Oxford, MS, ²EMBRAPA, Jaguariuna, Brazil, ³UNESP, Botucatu, Brazil, ⁴Univ Sao Paulo, Piracicaba, Brazil (254)

11:30 Mechanisms of Competition in Yellow Bluestem (*Bothriochloa ischaemum*). K. G. Lyons*; Trinity University, San Antonio, TX (255)

WEDNESDAY MORNING FEBRUARY 6
Section 12. Soil and Environmental Aspects

LOCATION: Key 11/12

TIME: 8:45 AM - 10:15 AM

CHAIR: Mark Bernards, Western Illinois University, Macomb, IL

***SPEAKER**

8:45 Effect of Flooding on Atrazine Dissipation in Soil. T. C. Mueller*, D. R. Kincer; University of Tennessee, Knoxville, TN (256)

9:00 Adsorption and Desorption of Pyroxsulam in Inland Pacific Northwest Silt Loam Soils. A. J. Raeder*¹, I. C. Burke¹, J. Yenish², R. E. Gast³; ¹Washington State University, Pullman, WA, ²Dow AgroSciences, Billings, MT, ³Dow AgroSciences, Indianapolis, IN (257)

9:15 XDE-729 Methyl: Fate in Monocot Species and Soil. N. M. Satchivi*¹, G. J. de Boer¹, A. C. McVeigh², M. J. Hastings¹, M. R. Weimer¹; ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences, Indianapolis, IN (258)

9:30 Emerging Rhizosphere Molecular Techniques for Selective Weed Control. S. C. Carver*, J. T. Kao-Kniffin; Cornell University, Ithaca, NY (259)

9:45 Social and Climate Changes as Major Threats to the Weed Biodiversity of High Altitude Northwest Region in Pakistan. M. A. Khan*; Agricultural University Peshawar, Peshawar, Pakistan (260)

10:00 Section Business Meeting

WEDNESDAY MORNING FEBRUARY 6
Graduate Student Professional Development
Workshop

LOCATION: Key 9

TIME: 10:30 AM - 12:00 PM

WEDNESDAY MORNING FEBRUARY 6
Section 7. Education and Extension

LOCATION: Key 11/12

TIME: 10:30 AM - 12:15 PM

CHAIR: Eric Prostko, University of Georgia, Tifton, GA

***SPEAKER**

10:30 The Importance of Herbicides in Worldwide Crop Production. L. Gianessi*; CropLife Foundation, Washington, DC (261)

10:45 Teaching Weed Science at Pyongyang University of Science and Technology, Pyongyang, DPRK. D. Doohan*; The Ohio State University, Wooster, OH (262)

11:00 Challenges in Conducting and Success in Demonstrating Herbicide Persistence and Carryover Research and Principles. W. Curran*¹, C. S. Dillon¹, D. Lingenfelter²; ¹Penn State University, University Park, PA, ²Penn State, University Park, PA (263)

11:15 Economic and Agronomic Considerations of Glyphosate Resistant Weed Management in a Sugar Beet Cropping System. D. W. Morishita*, D. L. Shouse; University of Idaho, Kimberly, ID (264)

11:30 Update of Herbicide Resistances in Common Waterhemp: An Iowa Perspective. M. D. Owen*; ISU, Ames, IA (265)

11:45 Preparing for Off-Target Movement of 2,4-D, Dicamba, and Glufosinate from Cotton/Soybean Fields to Peanut Fields. E. P. Prostko*, T. L. Grey, R. M. Merchant, P. M. Eure; University of Georgia, Tifton, GA (266)

12:00 Section Business Meeting

WEDNESDAY AFTERNOON FEBRUARY 6 Graduate Student Luncheon

LOCATION: Key 9

TIME: 12:00 PM - 1:00 PM

MODERATOR: Kurt Vollmer, Virginia Tech, Painter, VA

WEDNESDAY AFTERNOON FEBRUARY 6 Environmental Assessment of Herbicide Resistance

LOCATION: Key 7

TIME: 1:00 PM - 5:00 PM

CHAIR: Timothy Grey, University of Georgia, Tifton, GA

***SPEAKER**

1:00 Herbicide Resistance: Understanding Human Behavior Affecting Common Pool Resources and the Implications for Agri-environmental Management Systems. D. Ervin*; Portland State University, Portland, OR (267)

1:20 An Historical Review of Herbicide Resistance Issues. D. L. Shaner*; USDA, Fort Collins, CO (268)

1:40 Federal Policies Impacting Herbicide Resistance Management. L. Van Wychen*; Director of Science Policy, WSSA, Alexandria, VA (269)

1:55 Glyphosate-Resistant Palmer Amaranth Increases Herbicide Use, Tillage, and Hand Weeding in Georgia Cotton. A. S. Culpepper*¹, L. Sosnoskie²; ¹University of Georgia, Tifton, GA, ²UC Davis, Davis, CA (270)

2:10 Herbicide-resistant Weeds in the Midwest: Current Status and Impacts. K. W. Bradley*; University of Missouri, Columbia, MO (271)

2:25 Glyphosate Resistance: Lessons from the West. C. Mallory-Smith*¹, A. G. Hulting¹, B. D. Hanson²; ¹Oregon State University, Corvallis, OR, ²University of California, Davis, Davis, CA (272)

2:40 Environmental Impact of Glyphosate-Resistant Weeds in Canada. H. J. Beckie*¹, J. Y. Leeson²; ¹Agriculture and Agri-Food Canada, Saskatoon, SK, ²AAFC, Saskatoon, SK (273)

2:55 Break

3:10 Environmental Implications of Herbicide Resistance: Soil Biology and Ecology. R. J. Kremer*; USDA-ARS, Columbia, MO (274)

3:30 Environmental Implications of Herbicide Resistance: Edge-of-field Management. M. A. Locke*; USDA-ARS, Oxford, MS (275)

3:50 Environmental Implications of Herbicide Resistance: In-Field Management. D. R. Shaw*; Mississippi State University, Mississippi State, MS (276)

4:10 The Future of Herbicides and Genetic Technology: Ramifications for Environmental Stewardship. S. A. Senseman*; Texas A&M University, College Station, TX (277)

4:30 Industry Perspective: Providing Diversified Weed Management in Consideration of Environmental Stewardship and Herbicide Resistance. J. K. Soteres*¹, L. Glasgow²; ¹Monsanto Company, St. Louis, MO, ²Syngenta, Greensboro, NC (278)

WEDNESDAY AFTERNOON FEBRUARY 6

Section 1. Agronomic Crops

LOCATION: Key 8

TIME: 1:00 PM - 4:45 PM

CHAIR: Vince Davis, University of Wisconsin, Madison, WI

***SPEAKER**

1:00 Evaluation of Weed Management Programs and Response of FG72 Soybeans to HPPD-inhibiting Herbicides. J. Schultz*¹, J. Allen², M. Weber³, K. W. Bradley¹; ¹University of Missouri, Columbia, MO, ²Bayer CropScience, Research Triangle Park, NC, ³Bayer CropScience, Indianola, IA (279)

1:15 A New Mesotrione, Glufosinate and Isoxaflutole Tolerant Trait for Soybean Weed Management. B. Miller*¹, G. Vail², A. Silverstone³, B. Erdahl⁴, R. Jain⁵, J. Allen⁶, J. Fischer⁷, S. Van Wert⁸; ¹Syngenta, Minnetonka, MN, ²Syngenta, Greensboro, NC, ³Syngenta, Research Triangle Park, NC, ⁴Syngenta, Clinton, IL, ⁵Syngenta, Vero Beach, FL, ⁶Bayer CropScience, Research Triangle Park, NC, ⁷Bayer CropScience, Middleton, WI, ⁸Bayer CropScience, Monheim, Germany (280)

1:30 University Evaluation of Isoxaflutole Weed Management Programs in HPPD Tolerant Soybean System. J. Allen¹, M. Mahoney*², M. Weber³; ¹Bayer CropScience, Research Triangle Park, NC, ²Bayer CropScience, Oxford, MD, ³Bayer CropScience, Indianola, IA (281)

1:45 Weed Management Programs Utilizing Mesotrione in Herbicide Tolerant Soybeans. R. D. Lins*¹, D. Bruns², T. Beckett³, G. Vail³; ¹Syngenta, Byron, MN, ²Syngenta, Marysville, OH, ³Syngenta, Greensboro, NC (282)

2:00 Weed Control Options in Enlist™ Soybeans. E. F. Scherder*¹, J. M. Ellis², R. B. Lassiter³, B. W. Hopkins⁴, L. L. Walton⁵, J. A. Huff⁶, B. B. Haygood⁷; ¹Dow AgroSciences, Huxley, IA, ²Dow AgroSciences, Smithville, MO, ³Dow AgroSciences, Little Rock, AR, ⁴Dow AgroSciences, Westerville, OH, ⁵Dow AgroSciences, Tupelo, MS, ⁶Dow AgroSciences, Herrin, IL, ⁷Dow AgroSciences, Collierville, TN (283)

2:15 Enlist™ Soybean Tolerance to Applications from Emergence to R2 Growth Stage. D. M. Simpson*¹, E. F. Scherder², H. H. Perry³, S. Ditmarsen⁴, B. D. Olson⁵; ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences, Huxley, IA, ³Dow AgroSciences, Greenville, MS, ⁴Dow AgroSciences, Madison, WI, ⁵Dow AgroSciences, Geneva, NY (284)

2:30 Weed Control Programs for Roundup Ready® 2 Xtend Soybeans. S. Seifert-Higgins*¹, J. Willis², A. Mills³, D. J. Mayonado⁴; ¹Monsanto Company, St. Louis, MO, ²Monsanto, St. Louis, MO, ³Monsanto, Collierville, TN, ⁴Monsanto, Salisbury, MD (285)

2:45 Preemergence and Postemergence Efficacy of Dicamba on Glyphosate-Resistant Palmer amaranth. B. Edwards*¹, T. Eubank², D. R. Shaw³, L. E. Steckel⁴; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Stoneville, MS, ³Mississippi State University, Mississippi State, MS, ⁴University of Tennessee, Jackson, TN (286)

3:00 Break

3:15 PRE and POE Weed Management in Roundup Ready® 2 Xtend Soybeans in the Northeast. D. J. Mayonado*¹, S. Hagood², R. L. Ritter³, M. VanGessel⁴, H. P. Wilson⁵; ¹Monsanto, Salisbury, MD, ²Virginia Tech, Blacksburg, VA, ³University of Maryland, College Park, MD, ⁴University of Delaware, Georgetown, DE, ⁵Virginia Tech, Painter, VA (287)

3:30 Weed Management with Engenia™ Herbicide in Dicamba Tolerant Crops. J. C. Frihauf*, W. E. Thomas, S. J. Bowe, L. L. Bozeman, T. D. Klingaman, C. D. Youmans; BASF Corporation, Research Triangle Park, NC (288)

3:45 A Meta-analysis on the Effects of Drift Level-doses of 2,4-D and Dicamba on Yields of Soybean and Cotton. J. Egan*¹, K. Barlow², D. Mortensen³; ¹Pennsylvania State University, University Park, PA, ²Penn State University, State College, PA, ³Penn State University, University Park, PA (289)

4:00 Influence of Simulated 2,4-D Drift Rates on Peanut Yield. R. M. Merchant*, E. P. Prostko, P. M. Eure; University of Georgia, Tifton, GA (290)

4:15 Impact of Nozzle Selection on Engenia Performance. W. E. Thomas*¹, M. Staal¹, S. J. Bowe¹, J. C. Frihauf¹, G. Kruger²; ¹BASF Corporation, Research Triangle Park, NC, ²University of Nebraska-Lincoln, North Platte, NE (291)

4:30 Soybean Herbicide Efficacy as Affected by Carrier Volume. C. F. Creech*; University of Nebraska-Lincoln, Lincoln, NE (292)

WEDNESDAY AFTERNOON FEBRUARY 6

Section 3. Turf and Ornamental Crops

LOCATION: Key 10

TIME: 1:00 PM - 5:00 PM

CHAIR: Michael Barrett, University of Kentucky, Lexington, KY

***SPEAKER**

- 1:00 Efficacy of Aminocyclopyrachlor for Controlling Crabgrass, Swinecress, and Virginia Buttonweed in Tall Fescue.** T. Reed*, P. McCullough; University of Georgia, Griffin, GA (293)
- 1:15 Physiological Effects of Temperature on Turfgrass Injury to Amicarbazone.** J. Yu*, P. McCullough; University of Georgia, Griffin, GA (294)
- 1:30 Differential Responses of Kentucky Annual Bluegrass (*Poa annua*) Biotypes to PGR and Herbicide Treatments.** A. P. Williams*, M. Barrett, D. W. Williams; University of Kentucky, Lexington, KY (295)
- 1:45 Pesticide Programs for Season Long Silvery Thread-moss Control on Creeping Bentgrass Putting Greens.** A. R. Post*, S. D. Askew, D. S. McCall; Virginia Tech, Blacksburg, VA (296)
- 2:00 Fall Applications of Prodiamine + Sulfentrazone for Preemergence Control of Annual Bluegrass and Crabgrass.** C. Johnston*¹, P. McCullough²; ¹University of Georgia, Athens, GA, ²University of Georgia, Griffin, GA (297)
- 2:15 Dithiopyr Plus Florasulam for Smooth Crabgrass Control and Broadleaf Weed Suppression in Cool Season Turf.** M. Cox*¹, K. Venner¹, S. D. Askew¹, D. Loughner²; ¹Virginia Tech, Blacksburg, VA, ²Dow AgroSciences, Lawrenceville, NJ (298)
- 2:30 Postemergence Control of Creeping Lilyturf, *Liriope spicata*.** K. T. Adams*, C. H. Gilliam, G. R. Wehtje, S. F. Enloe; Auburn University, Auburn, AL (299)
- 2:45 Postemergence Management Of Liverwort With Dormant And Non-Dormant Application of Nonselective Herbicides.** A. Senesac*, I. Tsontakis-Bradley; Cornell Cooperative Extension, Riverhead, NY (300)
- 3:00 Break**
- 3:15 Liverwort Herbicide Trial Evaluations in MI Nurseries.** H. M. Mathers*; Ohio State University, Columbus, OH (301)
- 3:30 Tolerance Of Container Ornamentals To Sprays Of Indaziflam and Current Herbicides.** S. Barolli*¹, J. Ahrens²; ¹Imperial Nurseries, Granby, CT, ²Weed Scientist, Windsor, CT (302)
- 3:45 Pre and Post Budbreak Applications of Indaziflam in Field-grown Conifers.** J. Ahrens*¹, T. L. Mervosh²; ¹Weed Scientist, Windsor, CT, ²Connecticut Agricultural Experiment Station, Windsor, CT (303)
- 4:00 Indaziflam Granules and Dimethenamid-p Sprays for Container-grown Ornamentals.** T. L. Mervosh*¹, J. Ah-

rens²; ¹Connecticut Agricultural Experiment Station, Windsor, CT, ²Weed Scientist, Windsor, CT (304)

4:15 Establishment Of Between Row Cover Crops After Field Nursery Applications Of Indaziflam. A. Senesac*, I. Tsontakis-Bradley; Cornell Cooperative Extension, Riverhead, NY (305)

4:30 Evaluations of Several Herbicide and Herbicide Combinations for Containerized Ornamentals at an Ohio Nursery. H. M. Mathers¹, L. T. Case*²; ¹Ohio State University, Columbus, OH, ²The Ohio State University, Columbus, OH (306)

4:45 Leaching Behavior of Two Pendimethalin Formulations in a Soiless Mix. J. Derr*; Virginia Tech, Virginia Beach, VA (307)

WEDNESDAY AFTERNOON FEBRUARY 6

Section 11. Physiology

LOCATION: Key 11/12

TIME: 1:15 PM - 4:15 PM

CHAIR: Alejandro Perez-Jones, Monsanto, St Louis, MO

*SPEAKER

1:15 Do Soil Microorganisms Play a Role in the Evolution of Glyphosate Resistance in Weeds? J. R. Schafer*, S. G. Hallett, W. G. Johnson; Purdue University, West Lafayette, IN (308)

1:30 How Many Different Glyphosate Resistant Mechanisms Can There Be? R. D. Sammons*, D. Wang, E. Ostrander; Monsanto, St. Louis, MO (309)

1:45 Miniature Inverted-repeat Transposable Elements (MITEs) Associated with EPSPS Gene Amplification in *Amaranthus palmeri*. W. Molin*¹, T. A. Gaines², A. Wright¹, L. Lorentz³, C. W. Riggins⁴, P. J. Tranel⁴, R. Beffa³, P. Westra⁵, S. B. Powles⁶; ¹USDA-ARS, Stoneville, MS, ²University of Western Australia, Crawley, WA, Australia, ³Bayer CropScience, Frankfurt am Main, Germany, ⁴University of Illinois, Urbana, IL, ⁵Colorado State University, Fort Collins, CO, ⁶University of Western Australia, Crawley, Australia (310)

2:00 The Inheritance of Amplified EPSPS Gene Copies in Palmer Amaranth (*Amaranthus palmeri*). D. A. Giacomini*¹, P. Westra¹, S. M. Ward¹, R. D. Sammons²; ¹Colorado State University, Fort Collins, CO, ²Monsanto, St. Louis, MO (311)

2:15 Identifying Differential Expression in Non-Target Site Herbicide Resistance Genes in *Lolium rigidum* using High-

Throughput Sequencing. T. A. Gaines*¹, L. Lorentz², F. Maiwald³, M. Ott³, P. Perret², Q. Yu⁴, H. Han⁴, R. Busi⁴, H. Streck², R. Beffa², S. B. Powles⁴; ¹University of Western Australia, Crawley, WA, Australia, ²Bayer CropScience, Frankfurt am Main, Germany, ³Bayer CropScience, Monheim, Germany, ⁴University of Western Australia, Crawley, Australia (312)

2:30 Glyphosate Resistance Mechanism in Tall Waterhemp from Mississippi. V. K. Nandula*¹, J. D. Ray¹, D. N. Ribeiro², Z. Pan³, K. N. Reddy¹; ¹USDA-ARS, Stoneville, MS, ²Mississippi State University, Starkville, MS, ³USDA-ARS, Oxford, MS (313)

2:45 Break

3:15 Investigations into *Ambrosia artemisiifolia* (Common Ragweed) Glyphosate Resistance Mechanisms. J. T. Parrish*¹, M. M. Loux¹, D. Mackey¹, L. McHale¹, C. Van Horn², P. Westra², A. Wiersma²; ¹The Ohio State University, Columbus, OH, ²Colorado State University, Fort Collins, CO (314)

3:30 Investigation into the Molecular and Biochemical Mechanisms of Resistance to Glyphosate in Two Populations of Giant Ragweed (*Ambrosia trifida*). T. M. Jeffery*¹, C. Hall¹, M. Lawton², P. Sikkema³, F. J. Tardif¹; ¹The University Of Guelph, Guelph, ON, ²Monsanto, Guelph, ON, ³The University Of Guelph, Ridgeway, ON (315)

3:45 Regional Whole Plant and Molecular Response of Kochia to Glyphosate. P. Westra*¹, A. Wiersma¹, J. Leach², a. Reddy²; ¹Colorado State University, Fort Collins, CO, ²CSU, Fort Collins, CO (316)

4:00 Hyperspectral Reflectance Properties of Glyphosate-Resistant and -Susceptible Palmer Amaranth and Potential for Remote Sensing Applications. K. N. Reddy*, Y. Huang, V. K. Nandula, R. S. Fletcher; USDA-ARS, Stoneville, MS (317)

WEDNESDAY AFTERNOON FEBRUARY 6 NEWSS Business Meeting

LOCATION: Key 10

TIME: 5:00 PM - 6:30 PM

MODERATOR: Dwight Lingenfelter, Penn State, University Park, PA

THURSDAY MORNING FEBRUARY 7
Holistic Invasive Weed Management: Integration
of Science, Statutes, and Society

LOCATION: Key 8

TIME: 8:00 AM - 12:00 PM

CHAIR: William Bruckart, USDA, ARS, FDWSRU, Ft. Detrick, MD

***SPEAKER**

8:00 Introduction. W. L. Bruckart*, USDA, ARS, FDWSRU, Ft. Detrick, MD (318)

8:15 Invasive Weeds: The Role of Science in Policy. J. Thompson*; Consultant - USDA, Upper Marlborough, MD (319)

8:45 Objectivity, Inclusiveness, and Sustainability in Developing Invasive Plant Management Programs. J. M. DiTomaso*; University of California, Davis, CA (320)

9:15 The Successful Program of TEAM Leafy Spurge. R. G. Lym*; North Dakota State University, Fargo, ND (321)

9:35 Eradication of *Caulerpa taxifolia*: A timely Consilience of Science and Societal Values. L. W. Anderson*; USDA-ARS, Davis, CA (322)

9:55 Biological Control of Tamarisk: Riparian Restoration is the Final Step to Success. D. W. Bean*¹, T. L. Dudley²; ¹Colorado Department of Agriculture, Palisade, CO, ²Marine Science Institute, University of California, Santa Barbara, CA (323)

10:15 Break

10:30 The Fragmentary Legal Framework for Invasive Weeds Management. J. Gregory*; University of Arizona James E. Rogers College of Law, Tucson, AZ (324)

11:00 Taking a Holistic Approach to Invasive Species: Science, Society, and Adaptation to Change. B. Larson*; University of Waterloo, Waterloo, ON (325)

11:30 Panel Discussion

THURSDAY MORNING FEBRUARY 7
Section 1. Agronomic Crops

LOCATION: Key 11/12

TIME: 8:00 AM - 11:30 AM

CHAIR: Vince Davis, University of Wisconsin, Madison, WI

*SPEAKER

8:00 Influence of Glyphosate Timing(s) on Kochia Cohorts in Glyphosate-Resistant Sugar Beet. V. Kumar*¹, P. Jha¹, M. K. Riar², N. Reichard¹, J. R. KC¹; ¹Montana State University, Huntley, MT, ²Montana State University, Billings, MT (326)

8:15 Waterhemp Management in Glyphosate-Resistant Sugarbeet. J. M. Stachler*¹, A. L. Carlson²; ¹NDSU and U. of MN, Fargo, ND, ²North Dakota State University and University of Minnesota, Fargo, ND (327)

8:30 Weed Control and Peanut Tolerance to Pyroxasulfone. P. M. Eure*, E. P. Prostko, R. M. Merchant; University of Georgia, Tifton, GA (328)

8:45 Bicyclopyrone, a Novel Herbicide for Weed Control in Corn. G. D. Vail*¹, S. E. Cully², T. H. Beckett³, J. P. Foresman³, B. J. Ulmer⁴; ¹Syngenta Crop Protection, Greensboro, NC, ²Syngenta, Marion, IL, ³Syngenta, Greensboro, NC, ⁴Syngenta, Basle, Switzerland (329)

9:00 Corn and Sorghum Yields with Atrazine versus Atrazine Alternatives: US University Herbicide Efficacy Studies Analysis: 2006–2010. R. S. Fawcett*; Fawcett Consulting, Huxley, IA (330)

9:15 Susceptibility of Shattercane X ALS-Resistant Sorghum Hybrids and their Parents to Rimsulfuron and Nicosulfuron. R. Werle*¹, M. L. Bernards², S. E. Sattler³, J. L. Lindquist⁴; ¹University of Nebraska Lincoln, Lincoln, NE, ²Western Illinois University, Macomb, IL, ³University of Nebraska-Lincoln, Lincoln, NE, ⁴University of Nebraska, Lincoln, NE (331)

9:30 XDE-729 Methyl: A New Post-emergent, Broadleaf Herbicide for Cereal Grains. P. R. Schmitzer*¹, T. Balko², N. M. Satchivi², M. R. Weimer², M. Li¹; ¹Dow AgroSciences LLC, Indianapolis, IN, ²Dow AgroSciences, Indianapolis, IN (332)

9:45 XDE-729 Methyl: Utility in Western Canadian Spring Cereals. R. F. Degenhardt*¹, W. R. McGregor¹, L. T. Juras², D. D. Hare¹, G. C. Turnbull³; ¹Dow AgroSciences, Edmonton, AB, ²Dow AgroSciences, Saskatoon, SK, ³Dow AgroSciences, Winnipeg, MB (333)

10:00 Preemergence Herbicide Screening and Tolerance Evaluation for Seeded-type *Miscanthus giganteus*. X. Li*¹, T. L. Grey², W. K. Vencill¹, D. Lee²; ¹University of Georgia, Athens, GA, ²University of Georgia, Tifton, GA (334)

10:15 Break

10:30 Management of Diuron Resistant Annual Bluegrass in Grasses Grown for Seed with Pyroxasulfone and Pyroxasulfone Plus Flumioxazin. A. G. Hulting*, D. W. Curtis, K. Roerig, C. Mallory-Smith; Oregon State University, Corvallis, OR (335)

10:45 Evaluating Field Pea Varieties for Competitive Ability in Organic Systems. A. Anand*, G. Gramig; North Dakota State University, Fargo, ND (336)

11:00 Effect of Ambient Temperature on Thermal Weed Control using Microwave Radiation. A. Rana*, J. Derr; Virginia Tech, Virginia Beach, VA (337)

11:15 Section Business Meeting

THURSDAY MORNING FEBRUARY 7

Section 2. Horticultural Crops

LOCATION: Key 10

TIME: 8:00 AM - 12:00 PM

CHAIR: Joel Felix, Oregon State University, Ontario, OR

***SPEAKER**

8:00 Fifty years of Providing Crop Protection Solutions to Specialty Crop Growers: The IR-4 Program. D. Kunkel*¹, J. Baron², M. Arsenovic³, M. Braverman¹, E. Lurvey⁴; ¹Rutgers University, Princeton, NJ, ²IR-4, Princeton, NJ, ³IR-4 Project, Princeton, NJ, ⁴Cornell University, Geneva, NY (338)

8:15 Update on 2012 Weed Science Research in the IR-4 Ornamental Horticulture Program. C. Palmer*¹, J. Baron², E. Veas³; ¹IR-4 Project, Princeton, NJ, ²IR-4, Princeton, NJ, ³IR-4, Crownsville, MD (339)

8:30 Phosphorus Application Influences the Critical Period of Weed Control in Lettuce. D. C. Odero*, A. L. Wright; University of Florida, Belle Glade, FL (340)

8:45 Effect of Timing and Combinations of Preemergence Herbicide for Weed Control in Wild blueberry Fields. D. E. Yarborough*; University of Maine, Orono, ME (341)

9:00 Evaluation of Hexazinone Alternatives and Tankmixes for use in Lowbush Blueberry. N. S. Boyd*; University of Florida, Wimauma, FL (342)

9:15 Herbicide Movement in Blueberry Production Pinebark Beds. P. J. Dittmar*; University of Florida, Gainesville, FL (343)

9:30 Efficacy of Napropamide and Mesotrione on New Cranberry Plantings. H. A. Sandler*¹, K. M. Ghantous², K. DeMoranville¹; ¹UMass Amherst Cranberry Station, East

Wareham, MA, ²University of Massachusetts Amherst, Amherst, MA (344)

9:45 Evaluation of an Automatic Steam Applicator in Strawberry for Control of Weeds and Other Soilborne Pests. S. A. Fennimore*, T. Miller; University of California Davis, Salinas, CA (345)

10:00 Combined Cover Crop with Newspaper Sheet Mulch for Weed Management in Collards. N. A. Read*, E. E. Regnier, K. Harrison, M. A. Bennett, J. D. Metzger; The Ohio State University, Columbus, OH (346)

10:15 Break

10:30 Maximum Weed Control in Onion with Pre and Postemergence Herbicides. B. H. Zandstra*¹, J. J. Morrice²; ¹Michigan State University, East Lansing, MI, ²Michigan State University, Lansing, MI (347)

10:45 Response of Grapes to Simulated 2,4-D, Dicamba, & Glyphosate Drift. S. J. Wolfe*, D. Doohan; The Ohio State University, Wooster, OH (348)

11:00 Response of Various Crops to Fomesafen Soil Residues 12 Months after Application. J. Felix*; Oregon State University, Ontario, OR (349)

11:15 Resistance to Linuron in Carrot Fields in Ontario. G. Davis*¹, F. J. Tardif²; ¹University of Guelph, Guelph, ON, ²The University Of Guelph, Guelph, ON (350)

11:30 New Solutions for the Control of Herbicide Resistant Redroot Pigweed (*Amaranthus retroflexus* L.) in Carrot. C. J. Swanton*¹, K. Callow², R. Nurse³, D. Robinson⁴; ¹University of Guelph, Guelph, ON, ²Ontario Ministry of Agriculture, Food and Ruaral Affairs, Harrow, ON, ³Agriculture and Agri-Food Canada, Harrow, ON, ⁴University of Guelph, Ridgetown, ON (351)

11:45 Movement of Weeds from Seepage Irrigation Furrows into Potato (*Solanum tuberosum*) Crop Rows. C. E. Rouse*, P. J. Dittmar; University of Florida, Gainesville, FL (352)

12:00 Section Business Meeting

THURSDAY MORNING FEBRUARY 7

Section 9. Weed Biology and Ecology

LOCATION: Key 9

TIME: 8:30 AM - 12:00 PM

CHAIR: David Gealy, USDA-ARS, Stuttgart, AR

***SPEAKER**

8:30 Ecology of Redflower Ragleaf (*Crassocephalum crepidioides*). M. A. Hossain*, H. Akamine, I. Nakamura, M. Tamaki; University of the Ryukyus, Okinawa, Japan (353)

8:45 Variation in Seed Predation Across a Farmscape. S. K. Birthisel*, E. Gallandt, R. Jabbour, F. Drummond; University of Maine, Orono, ME (354)

9:00 Soil Surface Seed Bank and Vegetative Cover Influence Post Dispersal Weed Seed Predation. G. Gramig*; North Dakota State University, Fargo, ND (355)

9:15 Spatial and Commodity Demographics of Weeds Submitted to the Virginia Weed Clinic. A. R. Post*, T. Wieboldt, S. Hagood, S. D. Askew; Virginia Tech, Blacksburg, VA (356)

9:30 Modeling the Growth of New Japanese Knotweed Infestations. J. Dauer*¹, E. Jongejans²; ¹Michigan State University, East Lansing, MI, ²Radboud University Nijmegen, Nijmegen, Netherlands (357)

9:45 Using Growing Degree Days for Predicting Itchgrass (*Rottboellia cochinchinensis*) Emergence in the Tropics. R. G. Leon*¹, J. L. Gonzalez-Andujar²; ¹University of Florida, Jay, FL, ²Consejo Superior de Investigaciones Cientificas, Cordoba, Spain (358)

10:00 Defining Species-specific Functional Densities for Improving Replacement Series Experimental Designs. S. Mirsky*¹, H. Poffenbarger², J. R. Teasdale¹, J. Spargo³, J. Maul¹, M. Cavigelli¹; ¹USDA-ARS, Beltsville, MD, ²USDA-ARS/University of Maryland, Beltsville, MD, ³University of Massachusetts, Amherst, MA (359)

10:15 Break

10:30 Weed-crop Competition in Soils under Long-term Organic and Conventional Agricultural Management. H. Poffenbarger*¹, S. Mirsky², J. R. Teasdale², J. Spargo³, D. Timlin², J. Maul², M. Cavigelli²; ¹USDA-ARS/University of Maryland, Beltsville, MD, ²USDA-ARS, Beltsville, MD, ³University of Massachusetts, Amherst, MA (360)

10:45 Weed Management in Organic Vegetable Systems. C. Marschner*, C. L. Mohler, M. Ryan, B. Caldwell, A. DiTommaso, L. Drinkwater; Cornell University, Ithaca, NY (361)

11:00 Weed Management in Squash using Biodegradable Mulch Materials and its Effect on the Pollinator, *Peponapis pruinosa*. C. Splawski*¹, E. E. Regnier¹, K. Harrison¹, M. A. Bennett¹, J. D. Metzger¹, K. Goodell²; ¹The Ohio State University, Columbus, OH, ²The Ohio State University, Newark, OH (362)

11:15 Section Business Meeting

THURSDAY MORNING FEBRUARY 7

Section 11. Physiology

LOCATION: Key 7

TIME: 8:30 AM - 12:00 PM

CHAIR: Alejandro Perez-Jones, Monsanto, St Louis, MO

***SPEAKER**

8:30 Multiple Mechanisms of Palmer amaranth (*Amaranthus palmeri*) Resistance to ALS-inhibiting Herbicides. W. K. Vencill*¹, X. Li¹, T. L. Grey²; ¹University of Georgia, Athens, GA, ²University of Georgia, Tifton, GA (363)

8:45 Strategies for Countering Herbicide Resistance. R. D. Sammons*, D. Wang, B. Duncan, G. Griffith, J. A. Kendig, D. A. Findley; Monsanto, St. Louis, MO (364)

9:00 Domesticated Microalgae Have “Weeds” and Need Transgenic Herbicide Resistances. J. Gressel*; Weizmann Institute of Science, Rehovot, Israel (365)

9:15 Development of RHS (Roundup Hybridization System): A Novel Use of Glyphosate for Production of Hybrid Corn Seeds. P. Feng*¹, Y. Qi¹, T. Chiu², M. A. Stoecker², J. Huang²; ¹Monsanto Co, St Louis, MO, ²Monsanto Co, St. Louis, MO (366)

9:30 ¹⁴C-Glyphosate Mobility in Purple Nutsedge (*Cyperus rotundus*). T. L. Grey*¹, T. M. Webster², J. W. Davis³; ¹University of Georgia, Tifton, GA, ²USDA-ARS, Tifton, GA, ³Univeristy of Georgia, Griffin, GA (367)

9:45 Leaf Disc Assay to Measure Early Steps of the MEP Pathway. N. Corniani*¹, E. D. Velini¹, F. M. Silva¹, D. Nanayakkara², F. E. Dayan³; ¹UNESP, Botucatu, Brazil, ²University of Mississippi, University, MS, ³USDA-ARS, University, MS (368)

10:00 Synthesis and Evaluation of Heterocyclic Analogs of Bromoxynil. M. A. Cutulle*¹, G. R. Armel², J. T. Brosnan³, D. A. Kopsell¹, M. D. Best¹, J. J. Vargas³, J. Thomas¹; ¹University of Tennessee, Knoxville, TN, ²BASF, Raleigh, NC, ³The University of Tennessee, Knoxville, TN (369)

10:15 Break

10:30 The Mode of Action of Indaziflam. C. B. Brabham*, S. Debolt; University of Kentucky, Lexington, KY (370)

10:45 XDE-729 Methyl: Mechanism of Tolerance in Wheat. G. J. de Boer*¹, N. M. Satchivi¹, Y. Adelfinskaya², J. Godbey², M. Madary²; ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences LLC, Indianapolis, IN (371)

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7:00		Poster Session	Poster Session		
7:15					
7:30					
7:45					
8:00					
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4:00	WSSA/ NEWSS General Session & Awards Presentation				
4:15					
4:30					
4:45					
5:00			WSSA Business Meeting	NEWSS Business Meeting	
5:15					
5:30					
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6:00	WSSA/ NEWSS Opening Reception				
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9:00				Joint Society Dessert Social	
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