WSSA

2019 Annual Meeting
February 11–14, 2019
Sheraton New Orleans,
New Orleans, LA

2020 Annual Meeting
March 2-5, 2020
Maui, HI

WEED SCIENCE SOCIETY
OF AMERICA

Fifty-Eighth Meeting

2018 MEETING PROGRAM
Crystal Gateway
Marriott
Arlington, Virginia

January 29 to February 1, 2018
WSSA Sustaining Members

**PRESIDENTIAL**
- BASF Corporation
- Bayer Crop Science
- Dow AgroSciences
- Dupont
- Monsanto Agricultural Company
- Syngenta Crop Protection

**LEADERS**
- Helena Chemical
- Valent USA
- Winfield Solutions

**PATRONS**
- Nufarm Americas, Inc.
- United Phosphorus, Inc.

**CONTRIBUTORS**
- AMVAC Chemical Corp
- FMC Corporation
- Greenleaf Technologies
- Gylling Data Management, Inc.
- ISK Biosciences Corp
- Nichino American, Inc.
- TeeJet Technologies
- Nippon Soda Ltd
- Pentair-Hypro
- ABG Ag Services
- Adjuvants Plus, Inc.
- Chemorse Ltd.
- Clariant Corporation
- Conviron
- Gandy Corporation
- Gowan Company
- Heartland Technologies
- Lehigh Agri & Bio Services, Inc.
- Marrone Bio Innovations, Inc.
- Minnesota Valley Testing Lab
- SePRO
- TKI NovaSource
48th Meeting
Weed Science Society of America

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WSSA Sustaining Members .................. Inside Back Cover

Location of Special Committees and Activities

Registration (Including Guests) .... Arlington Ballroom Foyer
WSSA Board Meeting (Sat/Sun) ......... Pentagon A/B
WSSA Board Meeting (Thurs) ............ Pentagon A/B

Local Arrangements Committee
2018 – Arlington, Virginia

Co-Chairs ................................. Phil Banks, Lee Van Wychen
The WSSA 2018 Program

Welcome to the 2018 Weed Science Society of America (WSSA) Annual Meeting at the Crystal Gateway Marriott in Arlington, Virginia. The venue is outstanding and close to a great deal of historical sites of significance. Pre-conference events include tours of the National Museum of Natural History and the United States Botanical Garden.

The General Session and WSSA Awards Ceremony will begin Monday, Jan. 29th at 4:00 PM in Arlington Salon I, II, and III. Our General Session will begin with a welcome and opening remarks from the United States Department of Agriculture, Agricultural Research Service (USDA-ARS) Administrator, Dr. Chavonda Jacobs-Young. We hope to also have another special guest address our group from the Department of Agriculture, Agriculture Secretary, Sonny Perdue, but we will not be certain until very close to the meeting time. Dr. Janis McFarland will also be providing a presidential address to the membership after an exciting and eventful year as the WSSA President.

The Awards Ceremony will include presentations of the WSSA Fellow and Annual awards. Be sure to attend this session to help recognize all the awardees. Following the Awards Ceremony, WSSA will host an awards reception beginning around 6:00 p.m. 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 again conducting an MS and PhD poster contest and MS and PhD oral presentation contests. All of the student contests will be conducted on Tuesday. Beginning on Tuesday, we are going to have six symposia related to important and impactful subjects that are needing attention in Weed Science. These include: 1) Grade Report for New Dicamba Technology in 2017, 2) Herbicide Metabolism in Crops and Weeds: A Revisit, Current Understanding, and New Insights, 3) Learning by Listening: Herbicide Resistance Listening Sessions, 4) Pesticide Registration in the U.S. and How the WSSA Can Inform the Process, 5) Fostering Sustainable Programs to Improve Pesticide Applications and Promote Resistance Management, and 6) The State of the Weed Control Industry in 2018. We will also have a Teaching Workshop again this year on Tuesday afternoon.

The WSSA Business meeting and the student contest awards will be held from 5:15 – 6:45 p.m. on Wednesday afternoon. We hope that all members will attend to participate in the decision-making process on societal issues and board activities going into 2018.

Special thanks to our local arrangement co-chairs, Dr. Phil Banks and Dr. Lee Van Wychen. Both have been great to work with as we finalized plans for this meeting. I would also like to thank Dr. Marty Schraer and Dr. Darrin Dodds for their help in organizing the student contests. Thanks also to Dr. Janis McFarland for her help and guidance in preparing the program. We had a tremendous group of loyal and committed folks who provided great ideas on symposia this year as well as section chairs who have provided a great deal of help in organizing sections. Thanks to all of you. Finally, I would like to thank my co-program chair, Dr. Larry Steckel, and our meeting manager and executive secretary, Eric Gustafson, for their planning and work to ensure a successful meeting.

We are excited about the great participation and the many opportunities to exchange scientific information on weed science research, education and extension. We hope everyone has a productive and rewarding meeting.

Scott Senseman
Program Chair and President-Elect
2018 Program Committee

General Program Chair .................. Scott Senseman
Vice Chair .................................. Larry Steckel
Agronomic Crops ................................. Ryan Lins
Horticultural Crops ............................ Jayesh Samtani
Turf and Ornamentals ........................... Jeff Derr
Pastures, Rangelands, Forests, & Rights of Way .................. David Russell
Wildland and Aquatic Invasives ................ Stephen Enloe
Regulatory Aspects ............................. Cherilyn Moore
Teaching and Extension ...................... Sandeep Rana
Formulation, Adjuvant, & Application Technology ............... Connor Ferguson
Weed Biology and Ecology ................... Dan Tekiela
Biocontrol of Weeds ............................ Doug Boyette
Physiology ............................... Christopher Van Horn
Soil and Environmental Aspects ............... Travis Gannon
Integrated Weed Management ........ Daniela Ribiero
Sustaining Member Exhibits Session .......... Greg Dahl
Poster Sessions ............................ Martin Laforest
Student Contest ............................. Marty Schraer

Program Booklet and Abstracts

All those registering for the annual meeting will receive a program booklet. All registrants will receive programs at the meeting registration desk. To find the time and location of specific papers, search by the author in the author index in the back of the program.

Please also download the meeting app for the most up to date schedules and information.

WSSA Committee Meetings

SATURDAY, January 27
7:00 a.m. – 5:00 p.m.
WSSA Board of Directors .................. Pentagon A/B

SUNDAY, January 28
7:00 a.m. – Noon
WSSA Board of Directors .................. Pentagon A/B
8:00 a.m. – 5:00 p.m.
Herbicide Resistance Action Committee (HRAC) .................. Fairfax Boardroom
1:00 p.m. – 6:00 p.m.
USDA-ARS Area Wide Meeting .......... Mount Vernon

MONDAY, January 29
7:00 a.m. – 8:00 a.m.
WSSA Board and Committee Chairs Breakfast .................. Rosslyn I&II
8:00 a.m. – 9:00 a.m.
Weed Science Editorial Board (P2) ............... Lee
8:00 a.m. – 9:00 a.m.
Herbicides for Minor Use (E10) .................... Jackson
8:00 – 10:00 a.m.
Science Policy Committee (E2) ............... Jefferson
8:00 a.m. – 9:00 a.m.
Research and Competitive Grants (E6) .......... Madison
9:00 a.m. – 10:00 a.m.
Endowment Fund Committee (F3) ............... Jackson
9:00 a.m. – 10:00 a.m.
Weed Technology Editorial Board (P3) .............. Lee
9:00 a.m. – 10:00 a.m.
Sustaining Member Committee (F5) .......... Madison
9:00 a.m. – 10:00 a.m.
Standardized Plant Names (P22b) .............. Rosslyn II
10:00 a.m. – 11:00 a.m.
Professional Development (F4) ............... Jackson
10:00 a.m. – 11:00 a.m.
Constitution & Operating Procedures (W10) ............. Rosslyn II
10:00 a.m. – 11:00 a.m.
Biological Control of Weeds (W16) ............. Rosslyn I
10:00 a.m. – 11:00 a.m.  
IPSM Editorial Board (P4)  
.................................................. Lee

10:00 a.m. – 11:00 a.m.  
Environmental Aspects (E8)  
.............................................. Madison

10:00 a.m. – 11:00 a.m.  
Herbicide Resistance Education (E12b)  
............................................ Jefferson

11:00 p.m. – 12:00 noon  
Weed Loss Committee (E11)  
............................................... Rosslyn II

11:00 p.m. – 12:00 noon  
Formulation, Adjuvant, and Application Technology Committee (W15)  
............................................................ Jackson

11:00 a.m. – 12:00 noon  
Publications Board (P1)  
.................................................. Lee

11:00 p.m. – 12:00 p.m.  
Federal Noxious and Invasive Weeds Committee (E4)  
............................................................. Madison

1:00 p.m. – 2:00 pm  
Herbicide Resistant Plants (E12)  
............................................... Rosslyn II

1:00 p.m. – 2:00 pm  
Website Committee (E14)  
.................................................. Lee

1:00 p.m. – 2:00 pm  
Extension Committee (W11)  
................................................. Jackson

1:00 p.m. – 4:00 p.m.  
IWSS Board Meeting  
............................................... Madison

TUESDAY, January 30
7:00 a.m. – 9:00 a.m.  
Public Awareness (E13)  
.................................................. Jefferson

5:00 p.m. – 6:00 p.m.  
Herbicide Off-Target Movement  
.................................................. Jefferson

WEDNESDAY, January 31
6:30 a.m. – 8:00 a.m.  
President’s Breakfast with Regional Presidents  
.......................................................... Jefferson

7:00 a.m. – 9:00 a.m.  
USDA-ARS Meeting  
.................................................. Pentagon A

7:00 a.m. – 9:00 a.m.  
Finance Committee (F2)  
............................................... Madison

THURSDAY, February 1
6:30 a.m. – 8:00 a.m.  
Women’s Breakfast  
.................................................. Salon V

2:00 p.m. – 5:30 p.m.  
Board of Directors  
.................................................. Pentagon A/B

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.

SUMMARY OF 2018 PROGRAM

SATURDAY MORNING, January 27
7:00 a.m. – 5:00 p.m.  
WSSA Board of Directors  
.................................................. Pentagon A/B

SUNDAY MORNING, January 28
7:00 a.m. – 12:00 noon  
WSSA Board of Directors  
.................................................. Pentagon A/B

MONDAY MORNING, January 29
7:00 a.m. – 8:00 a.m.  
WSSA Board & Committee Chairs Breakfast  
.................................................. Rosslyn I & II

9:00 a.m. – 12:00 noon  
Registration  
............................................. Arlington Ballroom Foyer

10:00 a.m. – 12:00 noon  
Tour of the Botany Department of the National Museum of Natural History  
.................................................. Hotel Lobby

MONDAY AFTERNOON, January 29
1 p.m. – 3:30 p.m.  
Registration  
............................................. Arlington Ballroom Foyer

1:00 p.m. – 3:00 p.m.  
Tour of the United States Botanic Gardens  
.................................................. Hotel Lobby

4:00 p.m. – 6:00 p.m.  
General Session and WSSA Awards Presentations  
............................................. Arlington Ballroom Salon I, II, and III

6:00 p.m. – 8:00 p.m.  
Welcome and Awardee’s Reception (open to all attendees and registered guests)  
............................................. Arlington Ballroom/ Foyer
TUESDAY, January 30
6:30 a.m. – 7:45 a.m.
Student Contest Judges Meeting & Breakfast
..........................................................Pentagon A/B
7:00 a.m. – 5:00 p.m.
Registration..........................Arlington Ballroom Foyer
7:45 a.m. – 6:00 p.m.
Contest Judges Work Room...............Madison
8:00 a.m. – 10:00 a.m.
Poster Session ..........Arlington Ballroom Salon IV
(Authors of even numbered posters will present)
8:00 a.m. – 10:00 a.m.
Poster Contest Presentations
(All Authors Present) .......... Arlington Ballroom Salon IV
8:00 a.m. – 5:00 p.m.
Sustaining Member Exhibits
..................................................Arlington Ballroom Salon IV
10:00 a.m. – 3:45 p.m.
WSSA Student M.S. Oral Contest Session I
..................................................Arlington Ballroom Salon K
10:00 a.m. – 2:15 p.m.
WSSA Student M.S. Oral Contest Session II
..................................................Arlington Ballroom Salon J
10:00 a.m. – 3:30 p.m.
WSSA Student Ph.D. Oral Contest Session I
..................................................Arlington Ballroom Salon V
10:00 a.m. – 3:15 p.m.
WSSA Student Ph.D. Oral Contest Session II
..................................................Arlington Ballroom Salon VI
10:00 a.m. – 5:00 p.m.
Posters on display without authors
..................................................Arlington Ballroom Salon IV
10:00 a.m. – 5:00 p.m.
Agronomic Crops..................Arlington Ballroom Salon I
10:00 a.m. – 11:00 a.m.
Wildland and Aquatic Invasive Plants...Ballroom Salon II
1:00 p.m. – 3:30 p.m.
1:00 p.m. – 3:00 p.m.
Teaching and Extension.....Arlington Ballroom Salon III
3:00 p.m. – 5:00 p.m.
Workshop: Teaching Undergraduate Weed Science—Strategies to Improve Learning
..................................................Grand Salon J
3:15 p.m. – 5:00 p.m.
Turf and Ornamental Crops...Arlington Ballroom Salon III
3:45 p.m. – 5:00 p.m.
Pastures, Rangelands, Forests, and Rights of Way
..................................................Arlington Ballroom Salon II

WEDNESDAY, January 31
7:00 a.m. – 8:00 a.m.
WSSA & Regional Presidents Breakfast ....... Jefferson
7:00 a.m. – 9:00 a.m.
USDA-ARS Meeting.............................Pentagon A
7:00 a.m. – 9:00 a.m.
Finance Committee (F2)......................Madison
7:30 a.m. – 3:00 p.m.
Registration..........................Arlington Ballroom Foyer
8:00 a.m. – 10:00 a.m.
Poster Session ..........Arlington Ballroom Salon IV
...........................(Authors of odd-numbered posters will present)
8:00 a.m. – 5:00 p.m.
Sustaining Members Exhibits
..................................................Arlington Ballroom Salon IV
10:00 a.m. – 5:00 p.m.
Posters on display without authors
..................................................Arlington Ballroom Salon IV
10:00 a.m. – 5:00 p.m.
Agronomic Crops..................Grand Salon H
10:00 a.m. – 4:45 p.m.
Weed Biology & Ecology..........Grand Salon K
10:00 a.m. – 12:00 p.m.
Integrated Weed Management........Grand Salon J
10:00 a.m. – 2:00 p.m.
Symposium: Pesticide Registration in the US and How the WSSA Can Inform the Process........Salon I&II
10:00 a.m. - 12:00pm
Graduate Student Workshop: Which Road to Take: An Extension, Education, Research and Industry Perspective.........Arlington Ballroom Salon III
12:00 noon – 1:00 p.m.
Graduate Student Luncheon...Arlington Ballroom Salon III
1:00 p.m. – 5:00 p.m.  
Symposium: Fostering Sustainable Program to Improve Pesticide Applications and Promote Resistance Management  
........................................ Arlington Ballroom Salon V & VI

1:55 p.m. – 5:00 p.m.  
Symposium: Grade Report for New Dicamba Technology in 2017 .... Arlington Ballroom Salon I & II

5:15 p.m. – 6:45 p.m.  
WSSA Business Meeting & Student Contest Awards  
........................................ Arlington Ballroom Salon I & II

THURSDAY, February 1  
6:30 a.m. – 8:00 a.m.  
Women’s Breakfast...............Arlington Ballroom Salon V

8:00 a.m. – 10:00 a.m.  
Registration...................... Arlington Ballroom Foyer

8:00 a.m. – 11:00 a.m.  
Posters on display without authors  
........................................ Arlington Ballroom Salon IV

8:00 a.m. – 11:00 a.m.  
Sustaining Members Exhibits  
........................................ Arlington Ballroom Salon IV

8:00 a.m. – 12:00 noon  
Symposium: Learning by Listening: Herbicide Resistance Listening Sessions  
........................................ Arlington Ballroom Salon I & II

8:00 a.m. – 9:45 a.m.  
Regulatory Aspects .................. Grand Salon J

8:00 a.m. – 1:45 p.m.  
Horticultural Crops ................. Grand Salon H

8:00 a.m. – 2:15 p.m.  
Physiology ............................ Arlington Salon III

8:00 a.m. – 9:45 a.m.  
Formulation, Adjuvant and Application Technology ....  
........................................ Grand Salon K

9:00 a.m. – 12:00 noon  

10:00 a.m. – 12:00 p.m.  
Soil and Environmental Aspects....... Grand Salon K

1:30 pm – 5:30 p.m.  
................................................Remove Posters and Exhibits

2:00 p.m. – 5:30 p.m.  
WSSA Board of Directors.......... Pentagon A/B

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**PROGRAM**

**MONDAY AFTERNOON  JANUARY 29**

**General Session**

**LOCATION:** Arlington Salon I, II, & III  
**TIME:** 4:00 PM - 6:00 PM  
**CHAIR:** Scott Senseman  
University of Tennessee  
Knoxville, TN

**MODERATOR:** Scott Senseman  
University of Tennessee  
Knoxville, TN

*SPEAKER*

4:00  
Introductions and Announcements. S. Senseman*; University of Tennessee, Knoxville, TN

4:05  
Keynote: United States Department of Agriculture - Agricultural Research Service: The next 10 years. C. Jacobs-Young*; United States Department of Agriculture, Washington, DC

4:25  

4:45  
Presidential Address. J. McFarland*; Syngenta Crop Protection, Greensboro, NC

5:00  
Presentation of Awards. D. Lingenfelter*; Penn State University, University Park, PA

5:40  
Presentation of Fellow and Honorary Member Awards. K. Reddy*; USDA-ARS Crop Production Systems Res Unit, Stoneville, MS

6:00  
WSSA Awardee Reception and Member Social. S. Senseman*; University of Tennessee, Knoxville, TN
**TUESDAY – THURSDAY**
January 30 – February 1

WSSA Sustaining Member Exhibit Session

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**TUESDAY MORNING**
**JANUARY 30**

**Poster Contest - MS Students**

*PRESENTER † STUDENT POSTER CONTEST

†Results from a 2015 and 2016 Survey to Determine the Distribution and Frequency of Herbicide-Resistant Horseweed (Conyza canadensis) in Missouri. E. Oseland*, M. D. Bish, K. Bradley; University of Missouri, Columbia, MO (1)

Optimizing a Cereal Rye (Secale cereale) Cover Crop Program for the Control of Glyphosate-Resistant Horseweed (Conyza canadensis). A. Lamb*, M. Loux, A. Dobbels; The Ohio State University, Columbus, OH (2)

†Cross Resistance Patterns to ALS-Inhibitors in Beggarticks (Bidens spcs.) in Brazil. R. R. Mendes*1, R. S. Oliveira2, J. Constantin1; 1State University of Maringá, Maringá, Brazil, 2Universidade Estadual de Maringá, Maringá, Brazil (3)

†Cotton (Gossypium hirsutum) Response to Combinations of Mepiquat Chloride, Glyphosate, and Dicamba. T. Buck*1, A. York2, D. O. Stephenson3, B. Woolam4, M. Askew5, S. Rustom6; 1LSU Ag Center, Gates, NC, 2North Carolina State University, Cary, NC, 3LSU AgCenter, Alexandria, LA, 4LSU Ag Center, Alexandria, LA, 5North Carolina State University, Gates, NC, 6LSU Baton Rouge, LA (4)

†Effects of Simultaneous Fertilizer and Preemergence Herbicide Applications on Nutrient Uptake and Leaching on Tifway 419 Bermudagrass (Cynodon dactylon). L. Oliveira Ribeiro Maia*1, T. W. Shaddox2, R. Leon3, J. K. Kruse4; 1University of Florida, davenport, FL, 2University of Florida, Raleigh, NC, 3University of Florida, Gainesville, FL (5)

†Interval Between Sequential Glufosinate Applications Influences Palmer Amaranth (Amaranthus palmeri) Control. T. M. Randell*1, J. Smith1, A. Culpepper2; 1University of Georgia, Tifton, GA, 2University of Georgia, Tifton, GA (6)

†Tank-Contamination of Dicamba Tank-Mixtures Impacts Dry Bean (Phaseolus vulgaris) Maturity and Yield. S. R. Bales*, C. Sprague; Michigan State University, East Lansing, MI (7)

**Poster Contest - PhD Students**

*PRESENTER † STUDENT POSTER CONTEST

†Examining Soil Microbes in Search of New Compounds for Herbicide Discovery. L. Cheng*, J. T. Kao-Kniffin; Cornell University, Ithaca, NY (8)

†Identification of Cross- and Multiple-Resistance in Ambrosia artemisiifolia in North Carolina. B. Schrage*, W. Everman, J. Sanders, T. N. OQuinn; North Carolina State University, Raleigh, NC (9)

†Influence of Plant Regulators on Sourgrass (Digitaria insularis) Control. F. G. Machado*1, R. S. Oliveira2, J. Constantin3, F. Rios3; 1State University of Maringá, Maringá - PR, Brazil, 2Universidade Estadual de Maringá, Maringá, Brazil, 3State University of Maringá, Maringá, Brazil (10)

†Biology, Impact, and Management of Sonchus oleraceus L.: a Serious Invasive Weed in Australia. A. M. Peerzada*1, C. C. ODonnell1, S. W. Adkins2; 1The University of Queensland, Brisbane, Australia, 2University of Queensland, Gatton, Australia (11)

†Automated Seed Counts and Verification of Seed Production Estimates of Palmer Amaranth (Amaranthus palmeri) Using a Computerized Particle Analyzer. M.
Management of Glyphosate- and Dicamba-Resistant Kochia (Kochia scoparia) in Roundup Ready® Xtend Soybean. R. Yadav*1, P. Jha1, V. Kumar2, S. Leland1; 1Montana State University, Huntley, MT, 2Kansas State University, Hays, KS (13)

†Influence of Residual Herbicide Application Rate on PPO-Resistant and Susceptible Palmer Amaranth (Amaranthus palmeri) in Tennessee. J. Copeland*1, M. Wiggins2, L. Steckel1; 1University of Tennessee, Jackson, TN, 2FMC, Humboldt, TN (14)

Leaching and Dynamics of Residual Herbicides in Soil and Sugarcane (Saccharum officinarum) Residues in Different Dry Periods. P. V. Da Silva*1, C. A. Carbonari2, E. D. Velini3, R. C. Dias3, P. H. Dos Santos4, P. J. Christoffoleti5, P. A. Monquero6, 1Universidade de Sao Paulo/ESALQ, Fort Collins, CO, 2Unesp - Univ. Estadual Paulista, Botucatu, Brazil, 3Unesp - FCA, Botucatu, Brazil, 4UFSCar - CCA, Araras, Brazil, 5University of Sao Paulo, Piracicaba, Brazil, 6Universidade Federal de Sao Carlos, Araras, Brazil (15)

Indaziflam, Imazapic and Amicarbazone Sorption, Desorption and Interception by Sugarcane (Saccharum officinarum) Residues. P. Da Silva*1, D. J. Sebastian2, S. L. Clark2, M. Ortiz2, M. Figueiredo, F. E. Dayan2, P. A. Monquero3, P. J. Christoffoleti4, S. J. Nissen2; 1University of Sao Paulo - Luiz de Queiroz College of Agriculture (ESALQ/USP), Sao Paulo, Brazil, 2Colorado State University, Fort Collins, CO, 3Universidade Federal de Sao Carlos, Araras, Brazil, 4University of Sao Paulo, Piracicaba, Brazil (16)

†Inheritance of Glyphosate Resistance in Giant Ragweed (Ambrosia trifida L.). K. Segobye*; University of Maryland, College Park, MD (17)

†Nozzle, Carrier Volume, and Weed Size Effect on Glufosinate Efficacy. B. P. Sperry*1, D. Reynolds2; 1Mississippi State University, Micanopy, FL, 2Mississippi State University, Mississippi State, MS (18)

Optimizing Chloracetamide Placement as a Component of Pigweed (Amaranthus spp.) and Kochia (Kochia scoparia) control in Xtend Soybean (Glycine max) and Cotton (Gossypium hirsutum) Production Systems. J.
Metabolism of Drift-Rate Dicamba in Susceptible Soybean Affected by Water Stress. C. D. Willett*, E. M. Grantz, J. Norsworthy; University of Arkansas, Fayetteville, AR (26)

Optimizing Crop Rotations to Best Utilize Crop Canopy Effects on Kochia Seed Bank Reduction: A Multi-Site-Year Study. C. A. Lim*, E. G. Mosqueda2, P. Jha1, A. Kniss2, G. M. Sbatella2, N. C. Lawrence3; 1Montana State University, Huntley, MT, 2University of Wyoming, Laramie, WY, 3University of Nebraska, Pullman, WA (27)

Evaluation of Herbicide Programs in Oklahoma Soybean. T. A. Baughman*1, R. Peterson2, D. Teeter1; 1Oklahoma State University, Ardmore, OK, 2OSU-Institute for Agricultural BioScience, Ardmore, OK (28)

An Updated Meta-analysis of Soybean Response to Dicamba. A. Kniss*; University of Wyoming, Laramie, WY (29)

Evaluation of Inzen Technology as a Weed Management Tool in Southern Great Plains Grain Sorghum. R. Peterson*1, T. A. Baughman2, P. Dotray3, W. Grichar4, W. Keeling5, D. Teeter2; 1OSU-Institute for Agricultural BioScience, Ardmore, OK, 2OSU- Institute for Agricultural Agriculture, Oklahoma State University, Stillwater, OK, 3Texas Tech University, Lubbock, TX, 4Texas A&M University, Yoakum, TX, 5Texas A&M AgriLife Research, Lubbock, TX (30)

POST Herbicide Efficacy Screen on Marestail: Round 2. D. Lingenfelter*, W. Curran; Penn State University, University Park, PA (31)

Cotton Fruiting Pattern Following Dicamba Drift. K. Russell*1, P. Dotray1, G. Ritchie2, S. Byrd3, T. A. Baughman4, G. D. Morgan5; 1Texas Tech University, Lubbock, TX, 2Texas Tech University, Texas A&M AgriLife Research, Lubbock, TX, 3Texas A&M AgriLife Extension, Lubbock, TX, 4Texas A&M University, College Station, TX, 5Texas A&M AgriLife Extension Service, College Station, TX (32)

Canopy Hyperspectral Reflectance Properties of Palmer Amaranth and Okra Leaf Cotton. R. Fletcher*1, R. B. Turley2, K. Reddy3; 1USDA-ARS, Greenville, MS, 2USDA-ARS Crop Genetics Research Unit, Stoneville, MS, 3USDA-ARS Crop Production Systems Res Unit, Stoneville, MS (33)

Weed Management Systems in 2,4-D Tolerant Soybean. C. H. Sanders*, M. W. Marshall; Clemson University, Blackville, SC (34)

Safener-Regulated Tolerance to Herbicides in a Dicotyledonous Crop—Sugar Beet. E. Buescher*1, D. W. Morishita2, R. Ma1; 1University of Idaho, Moscow, ID, 2University of Idaho, Kimberly, ID (35)

Corn Yield Response to N Fertilizer Rate and Proximity to Winter Annual Weeds at Emergence. B. S. Heaton*, M. Bernards; Western Illinois University, Macomb, IL (36)

Palmer Amaranth Response to Glufosinate - Auxin Herbicide Mixtures. W. B. McCloskey*; University of Arizona, Tucson, AZ (37)

Horseweed Management in Oklahoma Winter Wheat. M. Manuchehri*1, J. Crose2, K. Cole2, R. N. Rupp3, B. Lindenmayer4, D. C. Cummings5; 1Oklahoma State University, Stillwater, OK, 2Stillwater, OK, 3FMC, Edmond, OK, 4Syngenta Crop Protection, Perkins, OK, 5Dow AgroSciences, Bonham, TX (38)

Evaluation of Summer Application of Saflufenacil in Non-Dormant Alfalfa. P. Devkota*; University of California Agriculture and Natural Resources, Holtville, CA (39)

On-farm Evaluation of Pre- and Post-emergence Herbicides for Weed Control in Cassava (Manihot esculenta Crantz). F. Ekeleme*, A. Dixon1, G. Atser1, S. Hauser1, H. Usman2, P. M. Oluronmaiye3, A. Olojede4, S. Korie1, S. Weller5; 1International Institute of Tropical Agriculture, Ibadan, Nigeria, 2University of Agriculture Makurdi, Makurdi, Nigeria, 3Federal University of Agriculture, Abeokuta, Nigeria, 4National Root Crops Research Institute, Umuhia, Nigeria, 5Purdue University, West Lafayette, IN (40)

Evolution of ALS-Resistant Downy Brome in Montana Cereal Production. P. Jha*1, V. Kumar2, A. J1, R. Yadav1, C. A. Lim1, S. Leland1; 1Montana State University, Huntley, MT, 2Kansas State University, Hays, KS (41)

Wild Carrot (Daucus carota L.) Control in Corn, Soybean, and Winter Wheat. N. Soltani*, C. Shropshire, P. Sikkema; University of Guelph, Ridgetown, ON (42)
Potential Yield Losses in Corn, Soybean and Dry Bean in North America. N. Soltani*1, A. Dille2, I. C. Burke3, W. Everman4, M. J. VanGessel5, V. Davis6, P. Sikkema1; 1University of Guelph, Ridgetown, ON, 2Kansas State University, Manhattan, KS, 3Washington State University, Pullman, WA, 4North Carolina State University, Raleigh, NC, 5University of Delaware, Georgetown, DE, 6BASF, Verona, WI (43)

Impact of Variety, Planting Date, and Application Timing on Soybean Tolerance to Sublethal Rates of Dicamba. T. N. O’Quinn*, W. Everman; North Carolina State University, Raleigh, NC (44)

Influence of Timing of Weed Control in Dicamba-Tolerant Cotton on Cotton Yield and Economic Return. M. Inman*, D. Jordan1, A. York2, A. Hare3; 1North Carolina State University, Raleigh, NC, 2North Carolina State University, Cary, NC (45)

Change in Weed Species Composition After Six Years of Continuous Use of Glyphosate and Dicamba in Cotton. D. Jordan*, M. Inman, A. Hare; North Carolina State University, Raleigh, NC (46)


Critical Weed Free Period of Grass Species in Grain Sorghum. D. J. Contreras*, W. Everman; North Carolina State University, Raleigh, NC (48)

Effect of Simulated Isoxaflutole Drift on Non-HPPD Tolerant Soybean. D. O. Stephenson*, B. Woolam2, T. Buck3; 1LSU AgCenter, Alexandria, LA, 2LSU Ag Center, Alexandria, LA, 3LSU Ag Center, Gates, NC (49)

Evaluating the Potential for Intercropping Forage Radish (Raphanus sativus) with Winter Wheat. K. B. Pittman*, M. Flessner1, S. Beam2, K. W. Bamber1; 1Virginia Tech, Blacksburg, VA, 2Virginia Tech, Concord, NC (50)

Tolpyralate Crop Selectivity – A New HPPD Inhibitor Herbicide for Postemergence Use in Corn. H. Okamoto*, A. J. Raeder2, H. Kikugawa1, D. Tonks2, M. Parks1, 1ISK Biosciences, Osaka, Japan, 2ISK Biosciences Americas, Concord, OH (51)

Rotational Crop Responses Following Postemergence Applications of Tolpyralate in Corn. A. J. Raeder*, H. Okamoto2, H. Kikugawa2, M. Parks1, D. Tonks1; 1ISK Biosciences Americas, Concord, OH, 2ISK Biosciences, Osaka, Japan (52)

Postemergence Options for Control of Multiple-Resistant Palmer Amaranth in Tennessee. S. Steckel*, J. Copeland, L. Steckel; University of Tennessee, Jackson, TN (53)

Evaluation of 2,4-D and Dicamba Residual Effect on Cotton Establishment and Yield. K. J. Price*, S. Li; Auburn University, Auburn, AL (54)

Variable Response of Kansas Kochia scoparia Accessions to Dicamba. R. P. Engel*, V. Kumar2, P. Stahlman2; 1Fort Hays State University, Hays, KS, 2Kansas State University, Hays, KS (55)

Effect of Light Intensity on Efficacy of Dicamba and Glufosinate on Amaranthus palmeri. C. Meyer*, J. Norsworthy, M. Moore, J. Green; University of Arkansas, Fayetteville, AR (56)

The Effect of Palmer Amaranth Competition on Soil Moisture Availability in Soybean. D. Joseph*, M. W. Marshall2; 1Clemson University, Clemson, SC, 2Clemson University, Blackville, SC (57)

TUESDAY MORNING JANUARY 30

Section 2. Horticultural Crops

*PRESENTER

Weed Control Products for Organically Grown Vegetables. J. O’Sullivan*, R. Van Acker2, R. Riddle1, P. H. White1; 1University of Guelph, Simcoe, ON, 2Guelph, Canada (58)
Weed Suppression Varies with Cover Crop Mixture Composition. J. Morales, P. Ahuja, C. A. Chase*; University of Florida, Gainesville, FL (59)

Application Timing and Rate Effects of Oryzalin on Sweetpotato Tolerance. S. Chaudhari*, K. Jennings1, S. Meyers2, D. Miller3; 1North Carolina State University, Raleigh, NC, 2Mississippi State University, Mississippi State, MS, 3LSU AgCenter, St. Joseph, LA (60)

Weed Control and Caladium Tolerance to Sulfonylurea Herbicides. J. Yu1, N. Boyd2; 1University of Florida, Tampa, FL, 2University of Florida, Wimauma, FL (61)

Fiesta (FeHEDTA) Safety to Dormant and Actively Growing Ornamental Nursery Crops. J. Neal*, C. D. Harlow; North Carolina State University, Raleigh, NC (66)

The Main Trouble Weeds in Golf Turf of China. G. Xue*, J. Du2, C. Li2; 1Plant Protection Institute of Jiangsu Academy of Agricultural Science; East China Weed Technology Institute, Nanjing, Peoples Republic, 2East China Weed Technology Institute, Nanjing, Peoples Republic (67)

Effects of Three Fertilization Methods on Weed Growth and Herbicide Performance in Soilless Substrates. C. Stewart*, C. Marble2, B. J. Pearson1, C. Wilson2; 1University of Florida - Mid Florida Research and Education Center, Apopka, FL, 2University of Florida, Apopka, FL, 3University of Florida, Gainesville, FL (68)

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

*PRESENTER

Evaluation of Lespedeza Control Options on a Reclaimed Mine Site. J. Omielan*, S. Flynn2; 1University of Kentucky, Lexington, KY, 2Dow AgroSciences, Lees Summit, MO (70)

Impact of Low Use Rates of Glyphosate on Coastal Bermudagrass Productivity. M. W. Marshall*, C. H. Sanders; Clemson University, Blackville, SC (71)
Section 5. Wildland and Aquatic Invasive Plants

*PRESENTER


A Comparative Analysis of Random Forest with Logistic Regression for Weed Risk Assessment. W. Peer*, C. Harris; University of Maryland, College Park, MD (73)

Section 6. Regulatory Aspects

*PRESENTER

2017 EPA Tour of Western Kansas. D. Peterson*, P. Stahlman2, C. Thompson1, A. Dille1, M. Jugulam1, R. Currie3, M. Barrett4, J. Schroeder5, L. Van Wychen6; 1Kansas State University, Manhattan, KS, 2Kansas State University, Hays, KS, 3Kansas State University, Garden City, KS, 4University of Kentucky, Lexington, KY, 5USDA Office of Pest Management Policy, Arlington, VA, 6WSSA, Alexandria, VA (74)

Kansas Mesonet Real-Time Temperature Inversion Decision Tool. C. Redmond, D. Peterson*, C. Thompson; Kansas State University, Manhattan, KS (75)

Section 7. Teaching and Extension

*PRESENTER

Digital Books for Weed Science. B. Ackley*; The Ohio State University, Columbus, OH (76)

Section 8. Formulation, Adjuvant and Application Technology

*PRESENTER

Enhancing Glyphosate Tensioactive Traits Without Reducing Penetration: A New Approach. J. Menendez*, D. Camacho2, E. Martin3; 1Universidad de Huelva, Palos De La Frontera, Spain, 2Universidad de Huelva, Palos de la Frontera, Spain, 3DASYMA, Zaragoza, Spain (77)

Effect of Drift Control Adjuvants on Droplet Evaporation, pH, and Viscosity Using Engenia™ and Xtendimax™ Approved Tank Mixes. C. Ferguson*, P. H. Urach Ferreira1, M. T. Wesley1, D. Reynolds2; 1Mississippi State University, MS State, MS, 2Mississippi State University, Mississippi State, MS (78)

Effect of New Sphingolipid- and Protein-Based Adjuvants on Glyphosate Adherence and Penetration. J. Menendez*, P. Ramirez-Rubio2, N. Sierras2; 1Universidad de Huelva, Palos De La Frontera, Spain, 2Bioiberica, Barcelona, Spain (79)

Should I Spend Money on AMS or More Glyphosate to Increase Weed Control? M. Bernards*, B. S. Heaton1, B. Young2, R. Zollinger3; 1Western Illinois University, Macomb, IL, 2Purdue University, Brookston, IN, 3North Dakota State University, Fargo, ND (80)
Section 9. Weed Biology and Ecology

*PRESENTER

Baseline Tolerance to Dicamba and 2,4-D of Waterhemp Populations from Across the Corn Belt. J. Scursoni1, M. V. Bagavathiannan2, A. Davis3, F. Forcella*4, G. G. Gramig5, E. Haramoto6, M. Horak7, N. C. Lawrence8, M. Loux9, W. Johnson10, J. Morello1, M. Owen11, C. Sprague12, D. E. Stoltenberg13; 1University of Buenos Aires, Buenos Aires, Argentina, 2University of Arkansas, College Station, TX, 3Illinois State University, Urbana, IL, 4USDA, Morris, MN, 5North Dakota State University, Fargo, ND, 6University of Kentucky, Lexington, KY, 7Monsanto Company, Saint Louis, MO, 8University of Nebraska, Pullman, WA, 9The Ohio State University, Columbus, OH, 10Purdue University, West Lafayette, IN, 11Iowa State University, Ames, IA, 12Michigan State University, East Lansing, MI, 13University of Wisconsin, Madison, WI (82)

Do Escaped Transgenes Persist and Thrive? The Brassica rapa Case. M. Simard*1, M. Laforest2, M. Courrier3; 1Agriculture and Agri-Food Canada, Saint-jean-sur-Richelieu, QC, 2Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, QC, 3Centre de recherche sur les grains (CÉROM), Saint-Mathieu-de-Beloeil, QC (83)

A New Hydrothermal Time Model for Seed Germination. M. B. Mesgaran*1, A. Onofri2, R. D. Cousens3; 1University of California, Davis, CA, 2University of Perugia, Perugia, Italy, 3University of Melbourne, Melbourne, Australia (84)

Potential Yield Loss in Grain Sorghum Due to Weeds. A. Dille*1, C. Thompson1, P. Stahlman2, N. Soltani3, P. Sikkema3, W. Everman4, M. J. VanGessel5; 1Kansas State University, Manhattan, KS, 2Kansas State University, Hays, KS, 3University of Guelph, Ridgetown, ON, 4North Carolina State University, Raleigh, NC, 5University of Delaware, Georgetown, DE (85)

Morphological and Physiological Characterization of California Weedy Rice. T. B. De Leon*1, K. Al-Khatib1, T. Blank2, L. A. Espino3, R. G. Mutters4, M. Leinfelder-Miles5, B. A. Linquist1, W. B. Brim-Deforest6; 1University of California, Davis, CA, 2California Crop Improvement Association, Davis, CA, 3University of California Cooperative Extension, Colusa, CA, 4University of California Cooperative Extension, Oroville, CA, 5University of California Cooperative Extension, Stockton, CA, 6University of California Cooperative Extension, Yuba City, CA (86)

Weed Seedling Emergence in Two Extreme Years in Central New York State. A. DiTommaso*1, C. A. Marschner2, S. H. Morris3, S. Cordeau3; 1Cornell University, Dryden, NY, 2Cornell University, Ithaca, NY, 3INRA, Dijon, France (87)

The Orobanche cumana x Orobanche cernua Genetic System Provides Insight into the Regulation of Germination Specificity in a Parasitic Plant. H. Larose1, D. Plakhine2, N. Wycoff1, H. Eizenberg3, Y. Tadmor2, D. Nelson4, J. Westwood*1; 1Virginia Tech, Blacksburg, VA, 2Newe Ya’ar Research Center, A.R.O., Ramat Yishay, Israel, 3Agricultural Research Organization, Newe Ya’ar Research Center, Ramat Yishay, Israel, 4University of California, Riverside, CA (88)


Surveying the Distribution of Herbicide Resistance in Ryegrass (Lolium spp.) in Wheat Production Systems in Texas. V. Singh*, S. Abuhgo, A. Maity, M. Bagavathiannan; Texas A&M University, College Station, TX (90)

Photosystem II Inhibitors Resistance in Common Ragweed (Ambrosia artemisiifolia). M. Laforest*1, M. Simard2, B. Soufiane1, D. L. Benoit3, F. J. Tardif4; 1Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, QC, 2Agriculture and Agri-Food Canada, Saint-jean-sur-Richelieu, QC, 3Agriculture and Agri-Food
The Research on Biological Characteristics and Control Strategy of *Sagittaria pygmaea* in Central Hunan, China. Y. Zhou¹, Y. Hu², J. li³, X. Liu², X. Zhang², K. Peng¹, C. Jin*²; ¹Hunan University of Humanities, Science and Technology, Loudi, Peoples Republic, ²Hunan University of Humanities, Science and Technology, Loudi, Peoples Republic (92)

Seedbank Persistence of Palmer Amaranth and Waterhemp in the Mid-South United States. N. E. Korres*¹, J. Norsworthy², B. Young³, D. Reynolds⁴, W. Johnson⁵, S. P. Conley⁶, R. Smeda⁷, T. Mueller⁸, M. V. Bagavathiannan⁹; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas, Fayetteville, AR, ³Purdue University, Brookston, IN, ⁴Mississippi State University, Mississippi State, MS, ⁵Purdue University, West Lafayette, IN, ⁶University of Wisconsin, Madison, WI, ⁷University of Missouri, Columbia, MO, ⁸University of Tennessee, Knoxville, TN, ⁹University of Arkansas, College Station, TX (93)

Investigation of Goosegrass Phenotypic Variation. J. S. McElroy*, A. Boyd, J. Harris; Auburn University, Auburn, AL (94)

Seed Germination Ecology of Meadow Knapweed (*Centaurea x moncktonii*) Populations in New York State. A. DiTommaso*¹, L. R. Milbrath², C. A. Marschner³, S. H. Morris³, J. Biazzo²; ¹Cornell University, Dryden, NY, ²USDA-ARS, Ithaca, NY, ³Cornell University, Ithaca, NY (95)

Allowing Temporary Weed Seed Bank Growth does not Affect Cash Crop Yield in an Integrated Livestock-Row Crop Rotation. R. Leon*¹, D. Wright²; ¹University of Florida, Raleigh, NC, ²University of Florida, Quincy, FL (96)

Herbicide Resistance and its Management in Jiangsu Province. Y. Lou*, H. Wang; Institute of Plant Protection, Nanjing, Peoples Republic (97)

Seedling Emergence Model to Optimize Preemergence Herbicide Application in Junglerice (*Echinochloa colona*). G. A. Picapietra¹, H. A. Acciaresi²; ¹Instituto Nacional de Tecnologia Agropecuaria, Pergamino, Argentina, ²Instituto Nacional Tecnologia Agropecuaria, Pergamino, Argentina (98)

Relationship Between Growth Habit and Aboveground Dry Matter in Junglerice (*Echinochloa colona*). G. A. Picapietra¹, H. A. Acciaresi²; ¹Instituto Nacional de Tecnologia Agropecuaria, Pergamino, Argentina, ²Instituto Nacional Tecnologia Agropecuaria, Pergamino, Argentina (99)

Survey of Weed Species and Test of Herbicides Mixed in Barrels for Weeds Control in *Camellia oleifera* Abel Forest in Hunan Province. C. Jin*, X. Zhang, Y. Zhou, Y. Hu; Hunan University of Humanities, Science and Technology, Loudi, Peoples Republic (100)

Cover Crop Utilization Influences Weed Management Potential. E. Haramoto*, R. Pearce; University of Kentucky, Lexington, KY (101)

Potential of *Callisia repens* as a native cover for weed management in perennial tropical plantations. R. Gomez¹, F. García², S. Marin²; ¹University of Costa Rica, San Jose, Costa Rica, ²University of Costa Rica, San José, Costa Rica (102)

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**TUESDAY MORNING JANUARY 30**

Section 10. Biocontrol of Weeds

*PRESENTER*

Mass production of *Fusarium*-based granular mycoherbicide for the management of crenate broomrape in Egypt. Y. M. Shabana*¹, M. M. El-Hawary², M. E. Sadek¹; ¹Mansoura University, El-Mansoura, Egypt, ²Agricultural Research Center, Giza, Egypt (103)

Bacterial Seed Endophytes of Smooth Crabgrass (*Digitaria ischaemum*) Increase Broadleaf Weed Seedling Mortality. M. T. Elmore*¹, J. F. White¹, K. L. Kingsley¹, K. H. Diehl¹, D. P. Tuck¹, S. K. Verma²; ¹Rutgers University, New Brunswick, NJ, ²Banaras Hindu University, Varanasi, India (104)

Use of Hot Water to Enhance Bioherbicidal Performance of a Fungus. C. D. Boyette*¹, R. Hoagland², K. C. Stetina¹; ¹USDA-ARS, Stoneville, MS, ²USDA-ARS, CPSRU, Stoneville, MS (105)
**TUESDAY MORNING  JANUARY 30**

### Section 11. Physiology

*PRESENTER*

**Locating Anthroquinone Biosynthesis in Sicklepod Cells Using its UV Fluorescence Property.** Z. Yue*, T. Tseng; 1Mississippi State University, Starkville, MS, 2Mississippi State University, Mississippi State, MS (106)

**Glyphosate Hormesis in Preconditioned Brachiaria decumbens.** G. L. Gimenes Cotrick Gomes*, E. D. Velini, C. A. Carbonari; 1Faculdade de Ciências Agronômicas / UNESP, Botucatu, Brazil, 2Unesp - Univ. Estadual Paulista, Botucatu, Brazil (107)

**Repeated Low-Dose Selection Results in Reduced Susceptibility of Palmer Amaranth to Mesotrione.** V. Varanasi*, C. Brabham, M. V. Bagavathiannan, J. Norsworthy; University of Arkansas, Fayetteville, AR, 2University of Arkansas, College Station, TX (108)

**The Efficacy of Dicamba on PPO-Inhibitor Resistant and Susceptible Palmer Amaranth Accessions from Arkansas.** C. Brabham*, V. Varanasi, J. Green, J. Norsworthy; University of Arkansas, Fayetteville, AR (109)

**Exploring the Dioecious Nature of Palmer Amaranth.** N. E. Korres*, J. Norsworthy; 1University of Arkansas, Fayetteville, AR, 2University of Arkansas, Fayetteville, AR (110)

**Effect of Temperature and CO₂ Levels on Cyhalofopbutyl Absorption, Translocation and Efficacy in Echinochloa ecotypes (Echinochloa colona).** J. P. Refatti*, L. A. Avila, N. Roma-Burgos, E. R. Camargo, L. H. Ziska, R. Salas; 1Universidade Federal de Pelotas, Pelotas, Brazil, 2University of Arkansas, Fayetteville, AR, 3Federal University of Pelotas, Pelotas, Brazil, 4USDA-ARS, Beltsville, MD (111)

**Parthenium hysterophorus: A New Glyphosate-Resistant Weed in Mexico.** C. Palma-Bautista*, J. A. Dominguez-Valenzuela, P. T. Fernandez-Moreno, H. Cruz-Hipolito, R. Alcantara-de la Cruz, R. De Prado Amian; 1Universidad Chapingo, Texcoco, Mexico, 2Bayer CropScience, Mexico D.C., Brussels, Belgium, 3Bayer CropScience, Mexico D.C., Mexico, 4University of Viçosa, Viçosa, Brazil, 5Córdoba, Spain (112)

**A Novel Amino Acid Substitution Ala-103-Val in EPSPS has been Found in Glyphosate Resistant A. hybridus.** M. J. Garcia-del Rosal, E. Bracamonté, P. T. Fernandez-Moreno, R. Alcantara-de la Cruz, R. De Prado Amian*; 1Departamento de Ecologia, Botánica y Fisiología Vegetal Facultad de Ciencias Universidad de Córdoba Campus de Rabanales, edificio C4, Cordoba, Spain, 2University of Cordoba, Cordoba, Argentina, 3Brussels, Belgium, 4University of Viçosa, Viçosa, Brazil, 5Córdoba, Spain (113)

**Locoweed-Fungal Endophyte Complex: Does Epigenetic Inheritance Play a Role in Locoweed Fecundity and Physiology?** B. K. Keith, S. M. Ward, T. M. Sterling*; 1Montana State University, Bozeman, MT, 2Colorado State University, Fort Collins, CO (114)

**Multiple Resistances to Herbicides in a Diquat-Resistant Epilobium ciliatum in Chile.** B. Khalil Tahmasebi, E. Alcantara, D. Domínguez, P. T. Fernandez-Moreno*, R. Alcantara-de la Cruz, R. De Prado Amian; 1university mohaghegh ardebil, ardebil, Iran, 2University of Cordoba, Cordoba, Spain, 3Brussels, Belgium, 4University of Viçosa, Viçosa, Brazil, 5Córdoba, Spain (115)

**Characterization of ALS-Inhibiting Herbicide Resistance in California Multiple-Resistant Italian Ryegrass Populations.** P. Tehranchian*, V. Nandula, C. Fautt, M. Jasieniuk; 1University of California, Davis, CA, 2USDA-ARS, Stoneville, MS (116)

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**TUESDAY MORNING  JANUARY 30**

### Section 12. Soil and Environmental Aspects

*PRESENTER*

**Effect of Bonechar Addition on Metribuzin Mobility by Soil Thin-Layer Chromatography.** K. F. Mendes*, F. G. Alonso, L. V. Junqueira, V. Takeshita, V. L. Tornisielo; CENA/USP, Piracicaba, Brazil (117)
Effect of Soil Organic Matter Content on Atrazine Bioavailability. R. L. Kanaziz*1, T. Gannon2, K. Ahmed2, S. Brinton2, P. J. Maxwell2; 1North Carolina State University, North Branch, MI, 2North Carolina State University, Raleigh, NC (118)

Evaluation of 2,4-D Spray Drift from a Terrestrial Application Under Field Conditions. M. Noguera*1, E. R. Camargo1, L. Avila1, M. Zimmer2, K. Egewarth1, R. Becker3, F. Brumetto1, J. Hubner1; 1Federal University of Pelotas, Pelotas, Brazil, 2University of Purdue, West Lafayette, IN, 3Adama, Cruz Alta, Brazil (119)

Herbicides Dissolved in Tailwater Irrigation and Their Impact on Susceptible Soybean. M. N. Thompson1, C. D. Willett*1, E. M. Grantz1, D. L. Leslie2, M. L. Reba3, J. Norsworthy1; 1University of Arkansas, Fayetteville, AR, 2Arkansas Tech University, Russellville, AR, 3USDA-ARS, Jonesboro, AR (120)

Dynamics of Herbicides Applied to Eucalyptus and Sugarcane Harvest Residues. C. A. Carbonari*1, G. L. Gominnes Cotrick Gomes2, E. D. Velini1, E. B. Castro1; 1UNESP - Univ. Estadual Paulista, Botucatu, Brazil, 2Faculdade de Ciências Agronômicas / UNESP, Botucatu, Brazil (121)

Indaziflam and Saflufenacil Herbicides in Crops and Microorganisms. B. A. Torres*1, P. V. Da Silva2, P. A. Monquero3; 1UFSCar, Sao Paulo, Brazil, 2Universidade de Sao Paulo/ESALQ, Fort Collins, CO, 3Universidade Federal de Sao Carlos, Araras, Brazil (122)


tuesday morning january 30

Section 13. Integrated Weed Management

*PRESENTER

Remote Sensing Applications for Weed Species Differentiation. J. Sanders, W. Everman*; North Carolina State University, Raleigh, NC (123)

Evaluating Harvest Weed Seed Controls for Italian Ryegrass (Lolium perenne ssp. multiflorum) Management in Mid-Atlantic Wheat Production. S. C. Haring*1, M. Flessner2, W. Everman3; 1University of California, Davis, CA, 2Virginia Tech, Blacksburg, VA, 3North Carolina State University, Raleigh, NC (124)

Integrated Management of Ragweed Parthenium (Parthenium hysterophorus) in Direct-Seeded Rice (Oryza sativa). A. A. Bajwa*1, M. Farooq2, B. S. Chauhan1, S. W. Adkins3; 1The University of Queensland, Gatton, Australia, 2University of Agriculture Faisalabad, Faisalabad, Pakistan, 3University of Queensland, Gatton, Australia (125)

Influence of Cover Crop Species on Weed Emergence. M. N. Thompson1, C. D. Willett*1, E. M. Grantz1, D. L. Leslie2, M. L. Reba3, J. Norsworthy1; 1University of Arkansas, Fayetteville, AR, 2Arkansas Tech University, Russellville, AR, 3USDA-ARS, Jonesboro, AR (120)

Early Vigour: A Useful Trait for Enhanced Wheat Competitiveness Against Weeds. M. Cena1, H. A. Acciaresi*2; 1CIC (Bs.As.), Pergamino, Argentina, 2Instituto Nacional Tecnologia Agropecuaria, Pergamino, Argentina (127)

Cultural Weed Control in Soybean: Does it Matter? J. D. Rosset1, R. H. Gulden*2; 1University of Manitoba, Winnipeg, MB, 2University of Manitoba, Winnipeg, MB (128)

Susceptibility of California Weedy Rice to Herbicides. W. B. Brim-Deforest*1, T. B. De Leon2, K. Al-Khatib2; 1University of California Cooperative Extension, Yuba City, CA, 2University of California, Davis, CA (129)
**TUESDAY MORNING   JANUARY 30**

**Oral Contest - MS Students I**

**LOCATION:** Grand Salon K

**TIME:** 10:00 AM - 12:00 PM

**CHAIR:** Stephen Schraer
Syngenta
Meridian, ID

**CO-CHAIR:** Darrin Dodds
Mississippi State University
Mississippi State, MS

**MODERATOR:** Stephen Schraer
Syngenta
Meridian, ID

*SPEAKER   † STUDENT CONTEST

10:00 †Grain Sorghum (*Sorghum bicolor*) and Grass Weeds: Is There a Critical Period of Weed Control? J. J. Albers*¹, A. Dille¹, D. Peterson¹, P. Stahlman²; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Hays, KS (130)

10:15 †Differential Sensitivity of Weedy Rice (*Oryza sativa* L.) Germplasm to Herbicides. S. Shrestha*¹, N. Roma-Burgos², G. Sharma¹, T. Tseng³; ¹Mississippi State University, Starkville, MS, ²University of Arkansas, Fayetteville, AR, ³Mississippi State University, Mississippi State, MS (131)

10:30 †The History and Spread of Palmer Amaranth (*Amaranthus palmeri*) in Ohio. A. Lamb*, M. Loux; The Ohio State University, Columbus, OH (132)

10:45 †Investigations of the Sensitivity of Various Tree and Ornamental Species to Driftable Fractions of 2,4-D and Dicamba. B. R. Dintelmann*, G. Bunton, M. Warmund, M. D. Bish, K. Bradley; University of Missouri, Columbia, MO (133)

11:00 †Potential Induction of Systemic Acquired Resistance in Soybean (*Glycine max*) by Soil-Applied Herbicides and the Effects on Disease Development. R. Stolte*¹, A. M. Fakhoury², J. P. Bond², K. Gage³; ¹SIU, Carbondale, IL, ²Plant Pathologist, Carbondale, IL, ³Southern Illinois University, Carbondale, IL (134)

11:15 †Tolerance of Sweet Potato (*Ipomoea batatas*) to Herbicides Applied in Plant Propagation Beds. S. Smith*, K. Jennings, D. Monks; North Carolina State University, Raleigh, NC (135)

11:30 †Organic weed management in Pulse Crops. O. Alba*; USASK, Saskatoon, SK (136)

11:45 †Influence of Multiple Herbicide Resistance on Growth and Development in Selected Populations of *Amaranthus tuberculatus* (Waterhemp). E. Jones*, M. Owen; Iowa State University, Ames, IA (137)
TUESDAY MORNING  JANUARY 30

Oral Contest - MS Students II

LOCATION: Grand Salon J
TIME: 10:00 AM - 11:45 AM
CHAIR: Stephen Schraer
Syngenta
Meridian, ID
CO-CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS
MODERATOR: Stephen Schraer
Syngenta
Meridian, ID

SPEAKER  STUDENT CONTEST

10:00  Fall Panicum (Panicum dichotomiflorum) Control and Sugarcane (Saccharum officinarum) Response to Topramezone Alone or in Tank-Mixing with Triazine Herbicides. R. Mereb Negrisoli*, D. Odero, G. E. MacDonald, B. Sellers, H. Laughinghouse; 1University of Florida, Belle Glade, FL, 2University of Florida, Gainesville, FL, 3University of Florida, Ona, FL, 4University of Florida, Fort Lauderdale, FL (138)


10:45  Determining the Effects of Increased Rinse Volumes on Dicamba Removal from Contaminated Sprayers. Z. A. Carpenter*, D. Reynolds, A. B. Johnson; Mississippi State University, Mississippi State, MS (141)

11:00  Conquering Linuron Resistant Pigweed (Amaranthus sp.) in Carrot (Daucus carota). T. J. de Boer*, C. Swanton; University of Guelph, Guelph, ON (142)

11:00  Effect of Nozzle, Carrier Volume, and Cover Crop Residue on Residual Herbicide Efficacy. B. P. Sperry*, D. Reynolds, J. Bond, C. Ferguson, G. Kruger, A. Brown-Johnson; 1Mississippi State University, Micanopy, FL, 2Mississippi State University, Mississippi State, MS, 3Delta Research and Extension Center, Stoneville, MS, 4Mississippi State University, MS State, MS, 5University of Nebraska, North Platte, NE, 6Mississippi State Chemical Laboratory, Mississippi State, MS (143)

11:15  Weed Management and Grain Yield of Six Soybean (Glycine max) Systems in Conventional and No-Till. M. C. Geiger*, J. L. Matthews, R. Krausz, K. Gage; 1SIU, Carbondale, IL, 2Southern Illinois University, Carbondale, IL, 3Southern Illinois University, Belleville, IL (144)

TUESDAY MORNING  JANUARY 30

Oral Contest - PhD Students I

LOCATION: Arlington Salon V
TIME: 10:00 AM - 12:00 PM
CHAIR: Stephen Schraer
Syngenta
Meridian, ID
CO-CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS
MODERATOR: Stephen Schraer
Syngenta
Meridian, ID

10:00  Effect of Soil- vs. Foliar-Applied ALS-Inhibiting Herbicides on Control of ALS-Resistant Horseweed (Conyza canadensis). J. E. Boe*, H. Nie, J. Young, B. Young; 1Purdue University, Lafayette, IN, 2Purdue University, West Lafayette, IN, 3Purdue University, Brookston, IN (140)

10:45  Remote Determination of Weed Species and Density in Sweetpotato (Ipomoea batatas) Using In-Situ Spectroscopy. N. Basinger*, K. Jennings, E. L. Hestir, D. Monks, W. Everman, D. Jordan; 1North Carolina State University, Raleigh, NC, 2University of California, Merced, CA (139)
TUESDAY MORNING  JANUARY 30

Oral Contest - PhD Students II

LOCATION: Arlington Salon VI
TIME: 10:00 AM - 12:00 PM
CHAIR: Stephen Schraer
Syngenta
Meridian, ID
MODERATOR: Stephen Schraer
Syngenta
Meridian, ID

*SPEAKER  † STUDENT CONTEST

10:00 †Validation of Standard Water Conditioning Testing. J. W. Adams*, R. Zollinger; North Dakota State University, Fargo, ND (145)

10:15 †Reduced Uptake and Translocation: a Potential Mechanism for Antagonism Between Tank-Mixtures of Glyphosate, Glufosinate, andDicamba in Echinochloa crus-galli. C. Meyer*1, J. Norsworthy1, R. S. Beffa2; 1University of Arkansas, Fayetteville, AR, 2Bayer CropScience, Frankfort / Main, Germany (146)

10:30 †Time of Day Effects on Peanut (arachis hypogaea) Herbicide Programs. O. Carter*, E. P. Prostko; University of Georgia, Tifton, GA (147)

10:45 †A Preliminary Analysis of the Transcriptome Following 2,4-D Treatment in Susceptible and Tolerant Red Clover (Trifolium pratense) Lines. L. Araujo*, M. Barrett, L. D. Williams, G. L. Olson, R. D. Dinkins, T. Bass; University of Kentucky, Lexington, KY (148)

11:00 †Palmer Amaranth (Amaranthus palmeri) Control Using Various Droplet Sizes of Acifluorfen and Lactofen. L. Franca*1, D. Dodds1, C. Samples1, G. Kruger2, T. Butts2; 1Mississippi State University, Mississippi State, MS, 2University of Nebraska, North Platte, NE (149)

11:15 †The Fate of Glyphosate in Roundup Ready Sugarbeet (Beta vulgaris). A. Barker*, F. E. Dayan; Colorado State University, Fort Collins, CO (150)

11:30 †Modelling of Novel Quizalofop-Resistant ACCase in Wheat. R. Bough*, C. M. Hildebrandt, T. Gaines, F. E. Dayan; Colorado State University, Fort Collins, CO (151)

11:45 †Challenges for Adopting Harvest Weed Seed Controls in an Organic Wheat (Triticum aestivum)-Soybean (Glycine max) Rotation. S. C. Haring*1, M. Flessner2, W. Everman3; 1University of California, Davis, CA, 2Virginia Tech, Blacksburg, VA, 3North Carolina State University, Raleigh, NC (152)

†Validation of Standard Water Conditioning Testing. J. W. Adams*, R. Zollinger; North Dakota State University, Fargo, ND (145)

†Reduced Uptake and Translocation: a Potential Mechanism for Antagonism Between Tank-Mixtures of Glyphosate, Glufosinate, and Dicamba in Echinochloa crus-galli. C. Meyer*1, J. Norsworthy1, R. S. Beffa2; 1University of Arkansas, Fayetteville, AR, 2Bayer CropScience, Frankfort / Main, Germany (146)

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†Palmer Amaranth (Amaranthus palmeri) Control Using Various Droplet Sizes of Acifluorfen and Lactofen. L. Franca*1, D. Dodds1, C. Samples1, G. Kruger2, T. Butts2; 1Mississippi State University, Mississippi State, MS, 2University of Nebraska, North Platte, NE (149)

†The Fate of Glyphosate in Roundup Ready Sugarbeet (Beta vulgaris). A. Barker*, F. E. Dayan; Colorado State University, Fort Collins, CO (150)

†Modelling of Novel Quizalofop-Resistant ACCase in Wheat. R. Bough*, C. M. Hildebrandt, T. Gaines, F. E. Dayan; Colorado State University, Fort Collins, CO (151)

†Challenges for Adopting Harvest Weed Seed Controls in an Organic Wheat (Triticum aestivum)-Soybean (Glycine max) Rotation. S. C. Haring*1, M. Flessner2, W. Everman3; 1University of California, Davis, CA, 2Virginia Tech, Blacksburg, VA, 3North Carolina State University, Raleigh, NC (152)
Oral Contest - MS Students I

LOCATION: Grand Salon K
TIME: 1:00 PM - 5:00 PM
CHAIR: Stephen Schraer
Syngenta
Meridian, ID
CO-CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS
MODERATOR: Stephen Schraer
Syngenta
Meridian, ID

*SPEAKER † STUDENT CONTEST

1:00 †Influence of Formulations and Application Time of Day on Dicamba Air Concentrations Following Treatment. S. Farrell*, R. N. Lerch, M. D. Bish, K. Bradley; University of Missouri, Columbia, MO (161)

1:15 †Targeted Sequencing of SSR Markers and ALS-Herbicide Resistance Alleles in Grain Sorghum (Sorghum bicolor) and Weedy Relatives. J. Zigafoos*, R. Werle, J. Lindquist, A. Jhala, D. L. Hyten, M. K. Yerka; University of Nebraska, Lincoln, NE, University of Nebraska, North Platte, NE, University of Nevada, Reno, NV (162)

1:30 †Band Sowing and Cultivation for Weed Management in Organic Grains. M. R. McCollough*, E. Gallandt; University of Maine, Orono, ME (163)

1:45 †Persistence of Dicamba and 2,4-D Herbicide Residues Following Low-Dose Applications in Sugarbeet (Beta vulgaris). M. Probst*, C. Sprague; Michigan State University, East Lansing, MI (164)

2:00 †Controlling Conyza canadensis with Cover Crops and Herbicides. A. D. Sherman*, E. Haramoto, J. Green; University of Kentucky, Humboldt, IL, University of Kentucky, Lexington, KY (165)

2:15 †Control of False-Green Kyllinga (Kyllinga gracillima) with Various Herbicides. K. H. Diehl*, M. T. Elmore, D. P. Tuck, A. J. Patton, J. Carleo, J. Sawyer; Rutgers University, New Brunswick, NJ, Purdue University, W Lafayette, IN, NJAES, Cape May, NJ (166)

2:30 †Integration of Residual Herbicides and Cover Crops for Weed Control in a Soybean (Glycine max) Production System. D. Whalen*, M. D. Bish, M. Biggs, R. N. Lerch, K. Bradley; University of Missouri, Columbia, MO (167)

2:45 †Effectiveness of Pre-emergence Applied HPPD Herbicides on Controlling HPPD-Resistant Palmer Amaranth (Amaranthus palmeri). G. J. Gundy*, M. Hay, C. Thompson, A. Dille; Kansas State University, Manhattan, KS (168)

3:00 Break
3:15 †Evaluation of Fluridone in Cotton (*Gossypium hirsutum*) and Peanut (*Arachis hypogaea*). D. Teeter¹, T. A. Baughman¹, R. Peterson²; ¹Oklahoma State University, Ardmore, OK, ²OSU- Institute for Agricultural BioScience, Ardmore, OK (169)

3:30 †Control of Glyphosate-resistant Waterhemp (*Amaranthus tuberculatus* var. *rudis*) in Ontario with the Roundup Ready 2 Xtend® Crop System. B. Hedges*, D. C. Hooker, P. Sikkema, D. E. Robinson; University of Guelph, Ridgetown, ON (170)

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**TUESDAY AFTERNOON JANUARY 30**

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**Oral Contest - MS Students II**

LOCATION: Grand Salon J

TIME: 1:00 PM - 3:00 PM

CHAIR: Stephen Schraer
Syngenta
Meridian, ID

CO-CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS

MODERATOR: Stephen Schraer
Syngenta
Meridian, ID

*SPEAKER † STUDENT CONTEST

1:00 †XtendFlex and Enlist Cotton (*Gossypium hirsutum*) Weed Management Systems in West Texas. K. Russell¹, P. Dotray¹, W. Keeling²; ¹Texas Tech University, Lubbock, TX, ²Texas A&M AgriLife Research, Lubbock, TX (171)


1:30 †Efficacy of Chemical Control Methods on Giant Hogweed (*Heracleum mantegazzianum*). M. Grguric*, M. Cowbrough², F. J. Tardif¹; ¹University of Guelph, Guelph, ON, ²OMAFRA, Guelph, ON (173)

1:45 Break

2:00 †Biologically-Effective Dose of Tolpyralate Applied Post-Emergence for Annual Weed Control in Corn (*Zea mays* (L.)). B. Metzger*, A. J. Raeder², D. C. Hooker¹, D. E. Robinson¹, P. Sikkema¹; ¹University of Guelph, Ridgetown, ON, ²ISK Biosciences Americas, Concord, OH (174)

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**TUESDAY AFTERNOON JANUARY 30**

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**Oral Contest - PhD Students I**

LOCATION: Arlington Salon V

TIME: 1:00 PM - 5:00 PM

CHAIR: Stephen Schraer
Syngenta
Meridian, ID

CO-CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS

MODERATOR: Stephen Schraer
Syngenta
Meridian, ID

*SPEAKER † STUDENT CONTEST

1:00 †XtendFlex and Enlist Cotton (*Gossypium hirsutum*) Weed Management Systems in West Texas. K. Russell¹, P. Dotray¹, W. Keeling²; ¹Texas Tech University, Lubbock, TX, ²Texas A&M AgriLife Research, Lubbock, TX (171)
1:00 †Glufosinate-Resistant Italian Ryegrass (Lolium multiflorum): Involvement of Herbicide Metabolism and Mobility in the Mechanism of Resistance. C. Brunharo*1, C. Mallory-Smith2, B. Hanson3; 1University of California, Davis, CA, 2Oregon State University, Corvallis, OR, 3University of California, Winters, CA (175)

1:15 †Evaluating the Relative Contributions of Crop Rotation, Tillage, and Herbicide Diversity for Proactive Herbicide Resistant Kochia (Kochia scoparia) Management. E. G. Mosqueda*1, A. Kniss, P. Jha, N. C. Lawrence, G. M. Sbatella; 1University of Wyoming, Laramie, WY, 2Montana State University, Huntley, MT, 3University of Nebraska, Pullman, WA (176)

1:30 †FTIR Spectroscopy as a Method for the Detection and Differentiation of Various Auxin Herbicide Formulations Found in Damaged Cotton (Gossypium hirsutum) and Soybean (Glycine max) Plant Tissue. J. Buol*1, D. Reynolds, A. Brown-Johnson; 1Mississippi State University, Mississippi State, MS, 2Mississippi State Chemical Laboratory, Mississippi State, MS (177)

1:45 †Research Needs for Sustainable Weed Management in Australian Agriculture. A. M. Peerzada*1, S. Manalil, C. C. O'Donnell, S. W. Adkins; 1The University of Queensland, Brisbane, Australia, 2University of Queensland, Gatton, Australia (178)

2:00 †Determining Genetic Diversity of Glyphosate Resistant Giant Ragweed (Ambrosia trifida) Using Molecular Markers. J. C. Walker*1, T. Tseng, D. Reynolds, D. Shaw; 1PhD Candidate, Starkville, MS, 2Mississippi State University, Mississippi State, MS (179)

2:15 †Influence of Physical Properties of Landscape Mulch on Germination of Large Crabgrass (Digitaria sanguinalis) and Garden Spurge (Chamaesyce hirta). D. Saha, C. Marble, G. E. MacDonald, D. Odero, B. J. Pearson, H. E. Perez; 1Mid-Florida Research and Education Center, University of Florida, Apopka, FL, 2University of Florida, Apopka, FL, 3University of Florida, Gainesville, FL, 4University of Florida, Belle Glade, FL, 5University of Florida - Mid Florida Research and Education Center, Apopka, FL (180)

2:30 †Relationship Between Glufosinate Phytotoxicity, Inhibition of Glutamine Synthetase and Ammonia Accumulation. H. K. Takano, P. Westra, F. E. Dayan; Colorado State University, Fort Collins, CO (181)


3:00 Break

3:15 †Are all Auxin Herbicides Created Equal? A Transcriptome Analysis of the Auxin Herbicide Response in Horseweed (Conyza canadensis). C. McCauley, B. Young; 1Purdue University, Crawfordsville, IN, 2Purdue University, Brookston, IN (183)
**TUESDAY AFTERNOON JERUARY 30**

**Oral Contest - PhD Students II**

**LOCATION:** Arlington Salon VI  
**TIME:** 1:00 PM - 5:00 PM  
**CHAIR:** Stephen Schraer  
Syngenta  
Meridian, ID  
**MODERATOR:** Stephen Schraer  
Syngenta  
Meridian, ID

* SPEAKER † STUDENT CONTEST

1:00  †Impact of Climate Change on Biology and Chemistry of An Invasive Weed Species, *Parthenium hysterophorus* L. A. A. Bajwa*1, B. S. Chauhan1, S. W. Adkins2; 1The University of Queensland, Gatton, Australia, 2University of Queensland, Gatton, Australia (184)

1:15  †Are Pre-Emergence Herbicides Better for Effective Weed Management in Glyphosate-Resistant Cotton (*Gossypium hirsutum*). N. Iqbal*1, S. Manalil1, B. S. Chauhan2, S. W. Adkins1; 1University of Queensland, Gatton, Australia, 2The University of Queensland, Gatton, Australia (185)

1:30  †Critical Time of Weed Removal in Popcorn (*Zea mays everta*) as Influence by Pre-Emergence Herbicides. E. Barnes*1, S. Knezevic2, N. C. Lawrence3, S. Irmak1, O. Rodriguez1, A. Jhala1; 1University of Nebraska, Lincoln, NE, 2University of Nebraska, Concord, NE, 3University of Nebraska, Pullman, WA (186)

1:45  †Sorption and Desorption of Indaziflam, Imazapic, and Amicarbazone in Soils with Varying Physical and Chemical Properties. P. V. Da Silva*1, S. L. Clark2, D. J. Sebastian2, M. Ortiz2, M. Faletti3, M. Figueiredo2, L. Ma4, P. A. Monquero5, P. J. Christoffoleti6, S. J. Nissen2; 1Universidade de Sao Paulo/ESALQ, Fort Collins, CO, 2Colorado State University, Fort Collins, CO, 3Saint Louis, MO, 4University of British Columbia, Vancouver, BC, 5Universidade Federal de Sao Carlos, Araras, Brazil, 6University of Sao Paulo, Piracicaba, Brazil (187)

2:00  †Using Historical Data of *Miconia calvescens* to Optimize Management and Containment Across the East Maui Watershed. N. A. Jorgensen*1, J. Leary2, M. Renz1; 1University of Wisconsin, Madison, WI, 2University of Hawaii, Kula, HI (188)

2:15  †Impact of Palmer Amaranth (*Amaranthus palmeri*) Size on Yield in LibertyLink® Cotton (*Gossypium hirstutum*). M. Plumblee*1, D. Dodds2, S. Garris3, L. Franca2, C. Samples2; 1Mississippi State University, Mississippi State University, MS, 2Mississippi State University, Mississippi State, MS, 3Bayer CropScience, Bentonia, MS (189)

2:30  †Investigating the Population Genetic Structure of Glyphosate-Resistant and -Susceptible Palmer amaranth (*Amaranthus palmeri*) Populations. A. Küpper*1, T. Gaines1, D. Giacomini2, E. Patterson1, W. B. McCloskey3, H. K. Manmathan1; 1Colorado State University, Fort Collins, CO, 2University of Illinois, Urbana, IL, 3University of Arizona, Tucson, AZ (190)

2:45  †Three Year Evaluation of Herbicide Programs in XtendFlex™ Cotton (*Gossypium hirstutum*) on Growth, Development, and Yield. C. Samples*1, D. Dodds1, M. Plumblee2, L. Franca1; 1Mississippi State University, Mississippi State, MS, 2Mississippi State University, Mississippi State University, MS (191)
Section 1. Agronomic Crops

LOCATION: Arlington Salon I
TIME: 10:00 AM - 12:00 PM
CHAIR: Ryan Lins
Syngenta Crop Protection
Rochester, MN

CO-CHAIR: Sandeep Rana
Monsanto Company
Galena, MD

MODERATOR: Ryan Lins
Syngenta Crop Protection
Rochester, MN

*SPEAKER

10:00 Rediscovering a Dormant Molecule. H. Kraus*1, B. Sievernich2, S. Kevis3, R. L. Nielson4, S. Kandru5, G. Kraemer6, I. K. Francis7; 1BASF, Research Triangle Park, NC, 2Limburgerhof, Germany, 3BASF plc, Bury St. Edmunds, England, 4BASF, Limburgerhof, Germany, 5BASF South East Asia Pte. Ltd., Singapore, Singapore, 6BASF SE, Limburgerhof, Germany, 7BASF, Tamworth, Australia (193)


10:45 Trifludimoxazin: A Global Perspective on a Versatile PPO Herbicide. G. R. Armel*1, R. L. Nielson2, R. A. Liebl1, S. Bowe1, D. S. Hennigh1, I. K. Francis3, M. D. Oostlander4, R. A. Ramos5; 1BASF, Research Triangle Park, NC, 2BASF, Limburgerhof, Germany, 3BASF, Tamworth, Australia, 4BASF, Diamond City, AB, 5BASF, Sao Paulo, Brazil (196)

11:00 Analysis of Weather and Environmental Factors Associated with On-Target and Off-Target Dicamba Applications in 2017. M. D. Bish*1, L. Steckel2, P. Sikkema3, D. Peterson4, W. Johnson5, K. Bradley1; 1University of Missouri, Columbia, MO, 2University of Tennessee, Jackson, TN, 3University of Guelph, Ridgetown, ON, 4Kansas State University, Manhattan, KS, 5Purdue University, West Lafayette, IN (197)

11:15 An Update on Roundup Xtend™ Herbicide with VaporGrip® Technology, Pending Regulatory Approvals. R. Rector*, N. Rana2; 1Monsanto Company, St. Louis, MO, 2Monsanto Company, St Louis, MO (198)

11:30 XtendiMax® Herbicide with VaporGrip® Technology Update. J. E. Herrmann*, S. Allen2; 1Monsanto Company, St. Louis, MO, 2Monsanto Company, Saint Louis, MO (199)

11:45 XtendiMax® Herbicide with VaporGrip® Technology Field Studies. J. Hemminghaus*; Monsanto Company, Chesterfield, MO (200)
Section 1. Agronomic Crops

LOCATION: Arlington Salon I
TIME: 1:00 PM - 5:00 PM
CHAIR: Ryan Lins
Syngenta Crop Protection
Rochester, MN
CO-CHAIR: Sandeep Rana
Monsanto Company
Galena, MD
MODERATOR: Ryan Lins
Syngenta Crop Protection
Rochester, MN

*SPEAKER

1:00  XtendiMax® Herbicide with VaporGrip® Technology in Roundup Ready® 2 Xtend Soybean System. A. Barreiro, N. Rana*; Monsanto Company, St Louis, MO (201)

1:15  Performance of DiFlexx and DiFlexx Duo for Weed Management in Texas Corn. M. Matocha*, S. A. Nolte; 1Texas AgriLife Extension Service, College Station, TX, 2Texas A&M AgriLife Extension, College Station, TX (202)

1:30  Weed Control with Engenia Herbicide Systems in XtendFlex Cotton. S. A. Nolte*, M. Matocha; 1Texas A&M AgriLife Extension, College Station, TX, 2Texas AgriLife Extension Service, College Station, TX (203)

1:45  A No Observable Effect Level for Dicamba in Soybean and Cotton. G. Kruger*, D. Latorre, B. Bruss, C. Sayer, R. Shaw; 1University of Nebraska, North Platte, NE, 2Nufarm, Raleigh, NC, 3Nufarm, Laverton North, Australia, 4AgriThority LLC, Kansas City, MO (204)

2:00  The Effect of Formulation on Dicamba Volatility as Measured by Low Tunnels. T. Barber, A. Culpepper, G. Kruger, J. Norsworthy, R. Rector, G. Oakley, D. Reynolds, R. Scott, D. O. Stephenson, B. Young; 1University of Arkansas, Lonoke, AR, 2University of Georgia, Tifton, GA, 3University of Nebraska, North Platte, NE, 4University of Arkansas, Fayetteville, AR, 5Monsanto Company, St. Louis, MO, 6Mississippi State University, Mississippi State, MS, 7University of Arkansas Co-op Extension, Lonoke, AR, 8LSU AgCenter, Alexandria, LA, 9Purdue University, Brookston, IN (205)

2:15  Secondary Movement of Xtendimax and Engenia in Drift Trials: Is this Volatility? J. Norsworthy, T. Barber, G. Kruger, D. Reynolds, L. Steckel, B. Young, K. Bradley; 1University of Arkansas, Fayetteville, AR, 2University of Arkansas, Lonoke, AR, 3University of Nebraska, North Platte, NE, 4Mississippi State University, Mississippi State, MS, 5University of Tennessee, Jackson, TN, 6Purdue University, Brookston, IN, 7University of Missouri, Columbia, MO (206)

2:30  Quantitative Analysis of Sprayer Cleaning Efficacy Following 2,4-D and Dicamba Applications. F. B. Browne*, S. Li, K. J. Price; Auburn University, Auburn, AL (207)

2:45  Co-Application of Glyphosate with 2,4-D Accentuates 2,4-D Injury in Glyphosate-Resistant Corn. P. Sikkema*, N. Soltani; University of Guelph, Ridgetown, ON (208)

3:00  Break

3:15  New Alternatives for Weed Control Based on Rinskor™ Active Herbicide. M. Morell*, H. Perry, N. Dalla Valle, N. M. Carranza, X. Huang; 1Dow AgroSciences LLC, Indianapolis, IN, 2Dow AgroSciences, Leland, MS, 3Dow AgroSciences, Bologna, Italy, 4Dow AgroSciences, Ibague, Colombia, 5Dow AgroSciences, Indianapolis, IN (209)
3:30 Performance of Upland Rice (Oryza sativa, L) as Affected by Weed Control Treatments, Poultry Manure and Stand Density. D. olanrewaju*1, D. Oliver2, B. Olson3, W. A. Olson4, K. Omand5, J. Omielan6, R. Ondoua7, S. Oneto8, A. Orgeron9, J. Orlowski10, L. Ortiz-Ribbing11, E. Oselend12, G. Osteen13, Z. Ostojic14, E. Ott15, B. Ottis16; 1Federal University Dutse Nigeria, Dutse, Niue, 2, Fayetteville, AR, 3Dow AgroSciences LLC, Gothenburg, NE, 4Heartland Technologies Inc, Fishers, IN, 5, Nantucket, MA, 6University of Kentucky, Lexington, KY, 7Montana State University, Conrad, MT, 8, Jackson, CA, 9LSU, Baton Rouge, LA, 10Mississippi State University, Stoneville, MS, 11, Saint Paul, MN, 12University of Missouri, Columbia, MO, 13, Bakersfield, CA, 14, Zagreb, 15Valent USA Corporation, Greenfield, IN, 16, Houston, TX (210)

3:45 Increasing Weed Management Options in Australian Pulse Production. D. Mao*1, S. Michelmore1, T. Sutton1, J. Paull2, L. McMurray3, C. Preston4; 1South Australian Research and Development Institute, South Australia, Australia, 2University of Adelaide, South Australia, Australia, 3South Australian Research and Development Institute, South Australian, Australia, 4University of Adelaide, Glen Osmond, Australia (211)

4:00 Herbicide Programs Affecting Palmer Amaranth Control in Conventional Soybeans. D. Sarangi*, A. Jhala; University of Nebraska, Lincoln, NE (212)

4:15 Survey of Palmer Amaranth (Amaranthus palmeri) Populations from Mississippi and Arkansas for Resistance to Fomesafen, Dicamba, and Glufosinate. A. Perez-Jones*1, C. Wu2, P. Feng3; 1Monsanto Company, Chesterfield, MO, 2Monsanto Company, Urbana, IL, 3Monsanto Company, Saint Louis, MO (213)

4:30 Precision Agriculture and the Diversity-Stability Hypothesis. C. Swanton*, V. Capmourteres, M. Anand, J. Adams, A. Berg; University of Guelph, Guelph, ON (214)

4:45 Role of Crop Competition in Managing Weeds. B. S. Chauhan*; The University of Queensland, Gatton, Australia (215)
Section 3. Turf and Ornamental Crops

LOCATION: Arlington Salon III
TIME: 3:00 PM - 5:00 PM
CHAIR: Jeffrey Derr
Virginia Tech
Virginia Beach, VA
MODERATOR: Jeffrey Derr
Virginia Tech
Virginia Beach, VA

*SPEAKER

3:00 Selective Controls for Doveweed (*Murdannia nudiflora*). J. Derr*; Virginia Tech, Virginia Beach, VA (219)

3:15 A Biotype of Annual Bluegrass with Potential Resistance to PPO-Inhibitors from Georgia. P. McCullough*1, J. Yu2, M. A. Czarnota3; 1University of Georgia, Griffin, GA, 2University of Florida, Tampa, FL, 3University of Georgia, Williamson, GA (220)

3:30 Evaluation of Basamid Regimes for Non-Selective Bermudagrass Control. T. Gannon, F. Yelverton, S. Brinton*; North Carolina State University, Raleigh, NC (221)

3:45 Colonial Bentgrass (*Agrostis capillaris*) Injury Following Pre-Emergence Herbicide Application. M. T. Elmore*1, D. P. Tuck1, B. S. Park2, J. A. Murphy2; 1Rutgers University, New Brunswick, NJ, 2Rutgers University, New Brunswick, NJ (222)

4:00 Seedling Emergence Patterns of Goosegrass (*Eleusine indica*) in Turfgrass. D. P. Tuck*, K. H. Diehl, M. T. Elmore; Rutgers University, New Brunswick, NJ (223)

4:15 Tolerance of Several Sedum Species to Postemergence Herbicides. A. Senesac*; Cornell Cooperative Extension, Riverhead, NY (224)

4:30 Response of Some Herbaceous Ornamentals to Two Pre-packaged Herbicide Mixtures. J. S. Aulakh*1, A. Witcher2; 1The Connecticut Agricultural Experiment Station, Windsor, CT, 2Tennessee State University, McMinnville, TN (225)

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

LOCATION: Arlington Salon II
TIME: 3:45 PM - 5:00 PM
CHAIR: David Russell
Mississippi State University
Mississippi State, MS

CO-CHAIR: Joseph Omelian
University of Kentucky
Lexington, KY

MODERATOR: David Russell
Mississippi State University
Mississippi State, MS

*SPEAKER

3:45 Giant Smutgrass and Bahiagrass Response to Burning, Grazing Intensity, and Hexazinone Rate. J. Dias*1, B. Sellers1, J. Ferrell2, S. Enloe2, J. Vendramini1, P. Moriel1; 1University of Florida, Ona, FL, 2University of Florida, Gainesville, FL (226)

4:00 Green Antelopehorn (*Asclepias viridis*) Response to Integrated Vegetation Management Practices. J. D. Byrd, Jr.*, N. H. Thorne, D. Russell; Mississippi State University, Mississippi State, MS (227)

4:30  First Year Loblolly Pine Growth Following Herbaceous Weed Control with Indaziflam, Sulfometuron, Imazapyr, and Hexazinone. A. Ezell*1, A. Self2, J. Belcher3; 1Mississippi State University, Mississippi State, MS, 2Mississippi State, University, Grenada, MS, 3Bayer CropScience, Auburn, AL (229)

4:45  Crop Tolerance of Loblolly Pine Seedlings to Applications of Frequency or Cleartraxx Treatments. A. Ezell*1, A. Self2; 1Mississippi State University, Mississippi State, MS, 2Mississippi State, University, Grenada, MS (230)

TUESDAY AFTERNOON  JANUARY 30

Section 7. Teaching and Extension

LOCATION: Arlington Salon III
TIME: 1:00 PM - 3:00 PM
CHAIR: Sandeep Rana
Monsanto Company
Galena, MD
MODERATOR: Sandeep Rana
Monsanto Company
Galena, MD

*SPEAKER

1:00  WSSA Herbicide Resistance Portal: Helping End-Users Find Useful Information to Manage a Serious Problem. M. Horak*1, M. V. Bagayathiannan2, C. Rouse3, D. Shaw4, R. Leon5; 1Monsanto Company, Saint Louis, MO, 2University of Arkansas, College Station, TX, 3University of Arkansas, Fayetteville, AR, 4Mississippi State University, Mississippi State, MS, 5University of Florida, Raleigh, NC (231)


1:45  WEEducator: A Digital Tool for Organic Weed Management Education. S. K. Birthsiesl*, E. Gallandt; University of Maine, Orono, ME (234)

2:00  Dicamba Off-Target Injury Issues in Nebraska. A. Jhala*; University of Nebraska, Lincoln, NE (235)

2:15  Tools and Techniques to Encourage Student Engagement: What Works in Weed Science Lectures? A. Dille*, G. J. Gundy, M. Hay; Kansas State University, Manhattan, KS (236)

2:30  Weedy Rice in California: Lessons Learned in Research and Extension. W. B. Brim-Deforest*1, L. A. Espino2, B. A. Linquist3, M. Leinfelder-Miles4, R. G. Mutter5, K. Al-Khatib6; 1University of California Cooperative Extension, Yuba City, CA, 2University of California Cooperative Extension, Colusa, CA, 3University of California, Davis, CA, 4University of California Cooperative Extension, Stockton, CA, 5University of California Cooperative Extension, Oroville, CA (237)

2:45  Break
Herbicide Metabolism in Crops and Weeds: A Revisit, Current Understanding, and New Insights

LOCATION: Arlington Salon II
TIME: 1:00 PM - 4:30 PM
CHAIR: Vijay Nandula
USDA-ARS
Stoneville, MS
MODERATOR: Vijay Nandula
USDA-ARS
Stoneville, MS

*SPEAKER

1:00 Herbicide Safener-Regulated Transcripts and Metabolites reveal Complex Signaling, Defense, and Detoxification Pathways in Grain Sorghum Shoots. D. E. Riechers¹, R. Ma², Y. Baek¹, L. Goodrich³, A. V. Lygin¹, P. J. Brown¹; ¹University of Illinois, Urbana, IL, ²University of Idaho, Moscow, ID, ³University of Illinois, Savoy, IL (238)

1:15 Metabolism Contributions to Clomazone Activity and Selectivity. Y. Ferhatoglu¹, M. Barrett²; ¹University of Saskatchewan, Saskatoon, SK, ²University of Kentucky, Lexington, KY (239)

1:30 Glyphosate Metabolism in Crops and Weeds. S. Duke*; USDA-ARS, Oxford, MS (240)

1:45 Bioactivation of Natural Phytotoxins: The Exception or the Rule? F. E. Dayan*; Colorado State University, Fort Collins, CO (241)

2:00 The Regulation of Non-Target Site Herbicide Resistance in Wild Grasses. R. Edwards*; Newcastle University, Newcastle, England (242)

2:15 Metabolic Resistance Mechanisms and Genes in Lolium rigidum. T. Gaines*, R. Busi², E. Patterson¹, A. Porri², Q. Yu², H. Han², S. Iwakami³, S. Gonzalez³, R. S. Beffa⁵, S. Powles⁶; ¹Colorado State University, Fort Collins, CO, ²University of Western Australia, Crawley, Australia, ³Kyoto University, Kyoto, Japan, ⁴Bayer CropScience, Frankfurt am Main, Germany, ⁵Bayer CropScience, Frankfort / Main, Germany, ⁶Nedlands, Australia (243)

2:30 Mechanism of Multiple-Herbicide Resistance in Echinochloa phyllopogon. S. Iwakami*; Kyoto University, Kyoto, Japan (244)

2:45 Metabolic and Multiple Resistance in Junglerice. V. Nandula*; USDA-ARS, Stoneville, MS (245)

3:00 Metabolism-Based Resistance Predisposes Evolution of Cross Resistance to Herbicides: Palmer Amaranth - A Classic Example. M. Jugulam*, S. Nakka, A. Vennapusa, C. Thompson; Kansas State University, Manhattan, KS (246)

TUESDAY AFTERNOON  JANUARY 30

Teaching Workshop

LOCATION:  Grand Salon J
TIME:  3:00 PM - 5:00 PM
CHAIR:  Tom Mueller
        University of Tennessee
        Knoxville, TN
MODERATOR:  Tom Mueller
        University of Tennessee
        Knoxville, TN

*SPEAKER

3:00 Virtual Reality in Weed Science Education. T. Tseng*; Mississippi State University, Mississippi State, MS (248)

3:30 Discussions Toward a WSSA Online Textbook. T. Mueller*; University of Tennessee, Knoxville, TN (249)

4:00 Plagiarism in Higher Education Today. T. Mueller*; University of Tennessee, Knoxville, TN (250)

WEDNESDAY MORNING  JANUARY 31

Section 1. Agronomic Crops

LOCATION:  Grand Salon H
TIME:  10:00 AM - 12:00 PM
CHAIR:  Ryan Lins
        Syngenta Crop Protection
        Rochester, MN
CO-CHAIR:  Sandeep Rana
        Monsanto Company
        Galena, MD
MODERATOR:  Ryan Lins
        Syngenta Crop Protection
        Rochester, MN

*SPEAKER

10:00 Cover Crops Mediate Weed - Corn Competition. B. Baraibar*1, D. A. Mortensen2; 1Penn State University, State College, PA, 2Penn State University, University Park, PA (251)

10:15 Advances in Broadleaf Weed Management in Red and White Clovers Grown for Seed in Oregon. A. G. Hulting*, K. Roerig, D. W. Curtis, C. Mallory-Smith; Oregon State University, Corvallis, OR (252)

10:30 Targeting Seed Production of Herbicide Resistant Wild Mustard in Lentil with Weed Wiper Herbicide Application. L. D. Syrovy*1, S. J. Shirtliffe1, E. Johnson2, C. J. Willenborg1; 1University of Saskatchewan, Saskatoon, SK, 2College of Agriculture and Bioresources, University of Saskatchewan, Saskatoon, SK (253)

WEDNESDAY MORNING  JANUARY 31

Graduate Student Workshop

LOCATION:  Arlington Salon III
TIME:  10:00 AM - 1:00 PM
CHAIR:  Chase Samples
        Mississippi State University
        Mississippi State, MS
MODERATOR:  Chase Samples
        Mississippi State University
        Mississippi State, MS
10:45  Enhanced Tolerance of Common Lambsquarters (Chenopodium album) to Glyphosate in Corn-Sugar beet Rotations in the Western U.S. V. Kumar*1, P. Jha2, D. W. Morishita3, R. Yadav4, A. J2, C. A. Lim2; 1Kansas State University, Hays, KS, 2Montana State University, Huntley, MT, 3University of Idaho, Kimberly, ID, 4Montana State University, Huntley, MT (254)

11:00  Effect of Elevated CO₂ Levels and Increased Temperatures on Glyphosate Efficacy. M. Matzrafi*, C. Fautt, M. Jasieniuk; University of California, Davis, CA (255)

11:15  Cultivation and Reduced-Rate Herbicides for Cost-Effective Weed Control in Sugarbeet Grown for Biofuel. W. C. Johnson III*1, T. M. Webster1, T. Grey2; 1USDA-ARS, Tifton, GA, 2University of Georgia, Tifton, GA (256)

11:30  A New Brake Herbicide for Weed Control in Cotton. K. Briscoe*; SePRO Corporation, Rocky Mount, NC (257)

11:45  Evaluation of 2,4-D and Dicamba Residual Effect on Cotton Establishment and Yield. K. J. Price*, S. Li; Auburn University, Auburn, AL (258)

*SPEAKER

1:00  Evaluation of Elevore™ on Glyphosate-Resistant Horseweed in Tennessee. J. Copeland*1, L. Steckel1, B. Haygood2, J. Ellis3; 1University of Tennessee, Jackson, TN, 2, Collierville, TN, 3Dow AgroSciences, Sterlington, LA (259)

1:15  Harness MAX Herbicide: A New Product for Weed Management in Corn. E. Riley*1, G. Elmore1, R. Montgomery2; 1Monsanto Company, Saint Louis, MO, 2Monsanto Company, Union City, TN (260)

1:30  Broadleaf and Grass Weed Control with Tolpyralate in US Corn. A. J. Raeder*1, H. Kikugawa2, H. Okamoto2, M. Parks1, D. Tonks1; 1ISK Biosciences Americas, Concord, OH, 2ISK Biosciences, Osaka, Japan (261)

1:45  HPPD plus Growth Regulator Herbicides for Control of Divine Nightshade in Ratoon Sugarcane. D. J. Spaunhorst*1, A. Orgeron2; 1USDA-ARS, Houma, LA, 2LSU, Baton Rouge, LA (262)

2:00  Break

WEDNESDAY AFTERNOON  JANUARY 31

Section 1. Agronomic Crops

LOCATION:  Grand Salon H
TIME:  1:00 PM - 2:30 PM
CHAIR:  Ryan Lins
Syngenta Crop Protection
Rochester, MN
CO-CHAIR:  Sandeep Rana
Monsanto Company
Galena, MD
MODERATOR:  Ryan Lins
Syngenta Crop Protection
Rochester, MN

WEDNESDAY MORNING  JANUARY 31

Section 13. Integrated Weed Management

LOCATION:  Grand Salon J
TIME:  10:00 AM - 12:00 PM
CHAIR:  Daniela Ribeiro
Monsanto Company
Leland, MS
CO-CHAIR:  Harry Strek
Bayer Cropscience
Leverkusen, Germany
MODERATOR:  Daniela Ribeiro
Monsanto Company
Leland, MS
10:00  Cereal Rye Management Affects Weed Control in Soybeans. M. J. VanGessel*, Q. Johnson, B. Scott, K. Vollmer; University of Delaware, Georgetown, DE (263)

10:15  Farmer Attitudes Toward Cooperative Approaches to Herbicide Resistance Management. D. E. Ervin*¹, E. Breshears², G. Frisvold³, K. Dentzman⁴, W. Everman⁵, J. Gunsolus⁶, T. Hurley⁷, R. Jussaume⁸, J. Norsworthy⁹, M. Owen⁹; ¹Portland State University, Portland, OR, ²Michigan State University, East Lansing, MI, ³University of Arizona, Tucson, AZ, ⁴Washington State University, Pullman, WA, ⁵North Carolina State University, Raleigh, NC, ⁶University of Minnesota, SAINT PAUL, MN, ⁷University of Minnesota, Minneapolis, MN, ⁸University of Arkansas, Fayetteville, AR, ⁹Iowa State University, Ames, IA (264)

10:30  Do Growers Manage Weeds on Owned and Rented Land Differently? Evidence from U.S. Corn and Soybean Farms. G. Frisvold*¹, J. Albright², K. Dentzman³, D. E. Ervin⁴, T. Hurley⁵, R. Jussaume⁶, J. Norsworthy⁷, M. Owen⁸, W. Everman⁹, J. Gunsolus¹⁰; ¹University of Arizona, Tucson, AZ, ²Allstate Insurance, Naperville, IL, ³Washington State University, Pullman, WA, ⁴Portland State University, Portland, OR, ⁵University of Minnesota, Minneapolis, MN, ⁶Michigan State University, East Lansing, MI, ⁷University of Arkansas, Fayetteville, AR, ⁸Iowa State University, Ames, IA, ⁹North Carolina State University, Raleigh, NC, ¹⁰University of Minnesota, SAINT PAUL, MN (265)

10:45  Applying Machine Learning. J. Colquhoun*, Y. Saikai, F. Dong, P. Mitchell; University of Wisconsin, Madison, WI (266)

11:00  Dose, pattern and targeted tissue of irradiation affect weed seedling response to laser. C. Hu*, F. Michel¹, D. Doohan²; ¹The Ohio State University, Wooster, OH, ²The Ohio State University, Wooster, OH (267)

11:15  3-D Image Driven Morphological Crop Analysis - A Novel Method for Detection of Broomrape Initial Subsoil Parasitism. R. N. Lati*, S. Filin², H. Eizenberg¹; ¹Agricultural Research Organization, Newe Ya’ar Research Center, Ramat Yishay, Israel, ²Technion – Israel Institute of Technology, Haifa, Israel (268)

11:30  Sensor-Based Approach for Weed Species Detection and Differentiation for Precision Agriculture. V. Singh*, A. Prosvirin, N. Rajan, J. Higby, A. Filippi, M. Bishop, M. Bagavathiannan; Texas A & M University, College Station, TX (269)

11:45  Integrating Decision Making Processes into Cranberry Weed Management: Dodder as a Case Study. H. A. Sandler*, K. M. Ghantous; UMass Cranberry Station, East Wareham, MA (270)

WEDNESDAY MORNING  JANUARY 31

Pesticide Registration in the U.S. and How the WSSA Can Inform the Process

LOCATION: Arlington Salon I & II
TIME: 10:00 AM - 12:00 PM
CHAIR: Michael Barrett
University of Kentucky
Lexington, KY

CO-CHAIR: William Chism
U.S. Environmental Protection Agency
Point of Rocks, MD

MODERATOR: William Chism
U.S. Environmental Protection Agency
Point of Rocks, MD
10:00 Introduction to the Symposium and an EPA-OPP Overview of Pesticide Laws – FIFRA, FFDCA, FQPA, and PRIA plus the Definition of a Pesticide. R. P. Keigwin, Jr.*, W. J. Chism, M. Barrett; ¹Environmental Protection Agency - Office of Pesticide Programs, Arlington, VA, ²U.S. Environmental Protection Agency, Point of Rocks, MD, ³University of Kentucky, Lexington, KY (271)

10:15 Biotechnology in the Office of Pesticide Programs. E. Milewski*; Environmental Protection Agency - Office of Pesticide Programs, Arlington, VA (272)

10:45 The Registration Program: New Active Ingredients, New Uses of Registered Herbicides, Emergency Exemptions (FIFRA Section 18s), and Other Registration Actions. D. Kenny*; US Environmental Protection Agency, Washington, DC (273)

11:00 The Registration Review Program: Data Needed to Support Re-evaluations Under the Registration Review Program. B. Smith*; Environmental Protection Agency - Office of Pesticide Programs, Arlington, VA (274)

11:15 Overview of Risk Assessments: Human Health. M. Metzger*; Environmental Protection Agency - Office of Pesticide Programs, Arlington, VA (275)

11:30 Overview of Risk Assessments: Ecological Risk. S. Sankula*; Environmental Protection Agency - Office of Pesticide Programs, Arlington, VA (276)

11:45 Overview of Risk Assessments: Endangered Species. B. Anderson*; Environmental Protection Agency - Office of Pesticide Programs, Arlington, VA (277)
10:45 Could Recent Increases in Atmospheric Carbon Dioxide Act as a Selection Factor in Wild Oat Populations? A Case Study. L. H. Ziska*; USDA-ARS, Beltsville, MD (281)

11:00 Sicklepod Extract as an Effective Deer Repellent: Field Data. Z. Yue*¹, T. Tseng², M. Lashley¹, S. Shrestha¹, G. Captu¹; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (282)

11:15 Root Foraging Strategies of Maize and Four Common Agricultural Weeds: Implications for Belowground Competition. C. J. Lowry*¹, M. R. Ryan², R. G. Smith¹; ¹University of New Hampshire, Durham, NH, ²Cornell University, Ithaca, NY (283)

11:30 Life-Cycle Analysis and Fitness Characteristics of Glyphosate Susceptible and Resistant Common Ragweed (Ambrosia artemisiifolia L.). J. Bae*¹, R. E. Nurse², E. R. Page²; ¹Agriculture and Agri-Food Canada, Harrow, BC, ²Agriculture and Agri-Food Canada, Harrow, ON (284)

11:45 Distribution and Frequency of Herbicide-Resistant Italian Ryegrass Populations in the Central Valley of California. P. Tehranchian*¹, I. M. Heap², T. Deveaud³, M. Matzrafi¹, M. Jasieniuk¹; ¹University of California, Davis, CA, ²WeedSmart, Corvallis, OR, ³AgroParis Tech, Paris, France (285)

WEDNESDAY AFTERNOON    JANUARY 31

Section 9. Weed Biology and Ecology

LOCATION: Grand Salon K
TIME: 1:00 PM - 5:00 PM
CHAIR: Dan Tekiela
Virginia Tech
Laramie, WY

CO-CHAIR: Vijay Singh
Texas A&M University
College Station, TX

MODERATOR: Dan Tekiela
Virginia Tech
Laramie, WY

*SPEAKER

1:00 Genomewide Characterization of California Weedy Red Rice Reveals Multiple Possible Origins. T. B. De Leon*¹, C. Andaya², V. Andaya², K. B. McKenzie², K. Al-Khatib¹, L. A. Espino³, T. Blank⁴, R. G. Mutters⁵, M. Leinfelder-Miles⁶, B. A. Linquist¹, W. B. Brim-Deforest⁷; ¹University of California, Davis, CA, ²California Rice Experiment Station, Biggs, CA, ³University of California Cooperative Extension, Colusa, CA, ⁴California Crop Improvement Association, Davis, CA, ⁵University of California Cooperative Extension, Oroville, CA, ⁶University of California Cooperative Extension, Stockton, CA, ⁷University of California Cooperative Extension, Yuba City, CA (286)

1:15 Elucidating the Differential Physiological Responses to Glyphosate in Palmer Amaranth Biotypes with Varying Resistance to Glyphosate. A. S. Maroli*¹, V. Nandula², N. Tharayil¹; ¹Clemson University, Clemson, SC, ²USDA-ARS, Stoneville, MS (287)

1:30 One in a Million? Empirical Determination of Mutation Frequency for Herbicide Resistance. F. Casale¹, P. Tranel*²; ¹University of Illinois, Urbana, IL, ²University of Illinois, Urbana, IL (288)
Pesticide Registration in the U.S. and How the WSSA Can Inform the Process

**LOCATION:** Arlington Salon I & II

**TIME:** 1:00 PM - 2:00 PM

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

**CO-CHAIR:** William Chism
U.S. Environmental Protection Agency
Point of Rocks, MD

**MODERATOR:** William Chism
U.S. Environmental Protection Agency
Point of Rocks, MD

**SPEAKER**
Fostering Sustainable Programs to Improve Pesticide Applications and Promote Resistance Management

LOCATION: Arlington Salon V & VI
TIME: 1:00 PM - 5:00 PM
CHAIR: A. S. Culpepper
University of Georgia
Tifton, GA
MODERATOR: A. S. Culpepper
University of Georgia
Tifton, GA

*SPEAKER

1:00 Benefits/Impact Analyses: Herbicide Risk Management Case Studies - Paraquat and Enlist Duo. W. J. Chism*¹, T. Wyatt²; ¹U.S. Environmental Protection Agency, Point of Rocks, MD, ²Environmental Protection Agency - Office of Pesticide Programs, Arlington, VA (300)

1:15 Information needs for the EPA-Office of Pesticide Programs. T. Kiely*; Environmental Protection Agency - Office of Pesticide Programs, Arlington, VA (301)

1:30 How can the EPA and WSSA Improve Information Transfer to Users? M. Barrett*; University of Kentucky, Lexington, KY (302)

1:45 Break

2:05 Tank Mixtures Improve Weed Control and Reduce Herbicide Resistance - South. A. Culpepper*¹, A. York²; ¹University of Georgia, Tifton, GA, ²North Carolina State University, Cary, NC (306)


2:45 Improving On-Target Aerial Pesticide Applications. S. Bretthauer*; National Agricultural Aviation Association, Alexandria, VA (308)

3:05 Break

3:15 USDA's Role in Helping Growers Manage Herbicide Resistance. J. Schroeder*¹, S. Able², S. Koehler²; ¹USDA Office of Pest Management Policy, Arlington, VA, ²USDA, Washington, DC (309)

3:35 Restrictions and Regulations are Overwhelming at the Farm Level - Developing a More Friendly Approach. L. Steckel*; University of Tennessee, Jackson, TN (310)


4:15 How can EPA, WSSA, and Industry work together to Foster New Herbicide MOA Development? W. Miller*¹, A. Jones¹, W. J. Chism², J. Becker¹; ¹U.S. Environmental Protection Agency, Washington, DC, ²U.S. Environmental Protection Agency, Point of Rocks, MD (312)

**Section 10. Biocontrol of Weeds**

**LOCATION:** Grand Salon J

**TIME:** 1:00 PM - 2:00 PM

**CHAIR:** Clyde Boyette
USDA-ARS
Stoneville, MS

**CO-CHAIR:** Min Rayamajhi
USDA
Fort Lauderdale, FL

**MODERATOR:** Clyde Boyette
USDA-ARS
Stoneville, MS

*SPEAKER

1:00 **Performance of* Orseolia javanica*(Diptera: Cecidomyiidae), a Candidate Biological Control Agent, on Two Florida Biotypes of Cogongrass, *Imperata cylindrica*. J. P. Cuda*,1 P. Hidayat*,2 K. Simamora*,2 1University of Florida, Gainesville, FL, 2Bogor Agricultural University, Bogor, Malaysia (314)

1:15 **A Review of Winter Annual Invasive Grass Biocontrol.** D. R. Tekiela*; Virginia Tech, Laramie, WY (315)

1:30 **Suppression of Air Potato Vine Infestations in Florida and Beyond by Using Biological Control Agent* Lilioceris cheni*. M. B. Rayamajhi*,1 P. D. Pratt*, E. Rohrig*, P. W. Tipping*, C. Kerr; 1USDA, Fort Lauderdale, FL, 2USDA, Albany, CA, 3Florida Department of Agriculture, Gainesville, FL (316)

1:55 **Setting the Stage.** G. Dahl*; WinField United, Eagan, MN (317)

2:00 **U. S. Environmental Protection Agency Considerations.** G. Rowland*; U.S. Environmental Protection Agency, Arlington, VA (318)

2:15 **Drift and Getting Droplet Size Right.** G. Kruger*; University of Nebraska, North Platte, NE (319)

2:30 **Monsanto Considerations.** R. Rector*, T. Witten; Monsanto Company, St. Louis, MO (320)

2:45 **Engenia Herbicide Stewardship for 2018.** C. Asmus*; BASF, Research Triangle Park, NC (321)

3:00 **Break**

3:15 **Distributor Considerations.** L. C. Magidow*, E. Spandl*, R. L. Pigati*; 1WinField United, Maplewood, MN, 2WinField United, Shoreview, MN (322)

3:30 **Dealer/Applicator Considerations.** B. Baddeley*; Asmus Farm Supply, Esterville, CO (323)

3:45 **Southern Extension Weeds Specialist Concerns.** L. Steckel*; University of Tennessee, Jackson, TN (324)
WEDNESDAY AFTERNOON  JANUARY 31

WSSA Business Meeting
LOCATION: Arlington Salon I & II
TIME: 5:30 PM - 6:30 PM
CHAIR: Janis McFarland
Syngenta Crop Protection
Greensboro, NC
MODERATOR: Janis McFarland
Syngenta Crop Protection
Greensboro, NC

*SPEAKER

4:00  Mid-West Extension Weed Specialist Concerns. R. Zollinger*; North Dakota State University, Fargo, ND (325)

4:15  State Regulator Considerations. D. Slade*; Missouri Department of Agriculture, Jefferson City, CO (326)

4:30  Dicamba Considerations and Concerns of the Specialty Crop Industry. S. Smith*; Red Gold, Inc., Elwood, IN (327)

4:45  Dicamba, a Resource and a Challenge for the Cotton Industry. R. Nichols*; Cotton Incorporated, Cay, NC (328)

5:00  Questions and Answers. G. Dahl*; WinField United, Eagan, MN (329)

THURSDAY MORNING  FEBRUARY 1

Section 2. Horticultural Crops

LOCATION: Grand Salon H
TIME: 8:00 AM - 12:00 PM
CHAIR: Jayesh Samtani
Virginia Tech
Virginia Beach, VA
CO-CHAIR: Katherine Jennings
North Carolina State University
Raleigh, NC
MODERATOR: Jayesh Samtani
Virginia Tech
Virginia Beach, VA

*SPEAKER

8:00  Precision Application Technology for Weed Management in Plasticulture Vegetable Production. N. Boyd*, A. Schumann1, A. Schumann2; 1University of Florida, Wimauma, FL, 2University of Florida, Lake Alfred, FL (330)

8:15  Application of Dimethenamid-p Through Drip Irrigation Lines Controls Yellow Nutsedge in Direct-seeded Onion. J. Felix*, J. Ishida; Oregon State University, Ontario, OR (331)

8:30  The Final Word in Onion Weed Control. B. Zandstra*, C. Phillippo; Michigan State University, East Lansing, MI (332)

8:45  Potato Weed Management: Active Ingredients Exhibiting Potential for the Future. D. Heider*, J. Colquhoun, R. A. Rittmeyer; University of Wisconsin, Madison, WI (333)

9:00  Chipping Potato Response to Sublethal Doses of Glyphosate and/or Dicamba. H. Hatterman-Valenti*, J. E. Stenger, C. P. Auwarter; North Dakota State University, Fargo, ND (334)
9:15 Effect of Simulated Rice Herbicide Drift on English Walnut (*Juglans regia*) Growth and Development. M. F. Galla*¹, K. Al-Khatib², B. Hanson³; ¹UCCE, Orland, CA, ²University of California, Davis, CA, ³University of California, Winters, CA (335)

9:30 Evaluation of Pre- and Post-emergence Herbicides for Carolina Redroot Control in New Jersey Cranberry Bogs. T. E. Besancon*; Rutgers University, CHATSWORTH, NJ (336)

9:45 Comparison of Alternative Weed Management Strategies with Four Interspecific Grape Cultivars. J. E. Stenger, H. Hatterman-Valenti*, C. P. Auwarter; North Dakota State University, Fargo, ND (337)

10:00 Break

10:15 An Alternative Approach to Preplant Fumigation with Paper Pellet and Mustard Seed Meal in Annual Strawberry Production. J. Samtani*, S. Das; Virginia Tech, Virginia Beach, VA (338)

10:30 Evaluation of Multiple Rates of Paladin EC and Paladin Pic-21 EC for Weed Control in Florida Tomato. J. Yu*¹, N. Boyd²; ¹University of Florida, Tampa, FL, ²University of Florida, Wimauma, FL (339)

10:45 Rye Mulch has Potential for Weed Management in Edamame. L. Crawford¹, M. M. Williams²*, S. E. Wortman³; ¹University of Illinois, urbana, IL, ²USDA-ARS, Urbana, IL, ³University of Nebraska, Urbana, IL (340)

11:00 Weed Management in Lettuce on Organic Soils in Florida. D. Odero*¹, A. L. Wright²; ¹University of Florida, Belle Glade, FL, ²University of Florida, Fort Pierce, FL (341)

11:15 Using Living Mulch and Strip Tillage to Suppress Weeds in Organic Vegetables. A. W. Leslie*, C. R. Hooks; University of Maryland, College Park, MD (342)

11:30 Integrated Weed Management Strategies with Rye Mulch in Processing Vegetable Legumes. Y. Kitis*¹, M. M. Williams², N. Hausman², J. Moody³; ¹Akdeniz University, Antalya, Turkey, ²USDA-ARS, Urbana, IL, ³University of Illinois, Urbana, IL (343)

11:45 Integrated Vegetable Weed Management with Bicyclopyrone. C. Phillippo*, B. Zandstra; Michigan State University, East Lansing, MI (344)
1:30  Base-editing Efficiently Creates Non-GM Herbicide Resistant Plants. L. Jiang*; China Agricultural University, Beijing, Peoples Republic (347)

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THURSDAY MORNING  FEBRUARY 1

Learning by Listening: Herbicide Resistance Listening Sessions

LOCATION: Arlington Salon I & II
TIME: 8:00 AM - 12:00 PM
CHAIR: Jill Schroeder
USDA Office of Pest Management Policy
Arlington, VA

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

MODERATOR: Jill Schroeder
USDA Office of Pest Management Policy
Arlington, VA

*SPEAKER

8:00  Introduction to the Symposium and Summary of the Listening Sessions. D. Shaw¹, M. Barrett², J. Schroeder*³; ¹Mississippi State University, Mississippi State, MS, ²University of Kentucky, Lexington, KY, ³USDA Office of Pest Management Policy, Arlington, VA (348)

8:30  Panel discussion 1: Representative Stakeholders from the Regional Listening Sessions: Impressions of the Listening Sessions and Recommendations for Next Steps. M. Barrett¹, J. Schroeder², D. Shaw*³; ¹University of Kentucky, Lexington, KY, ²USDA Office of Pest Management Policy, Arlington, VA, ³Mississippi State University, Mississippi State, MS (349)

10:00 Break

10:15  Panel discussion 2: Listening Session Coordinators: Outcomes, Impressions, and Recommendations for Next Steps. J. Schroeder¹, D. Shaw², M. Barrett*³; ¹USDA Office of Pest Management Policy, Arlington, VA, ²Mississippi State University, Mississippi State, MS, ³University of Kentucky, Lexington, KY (350)

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THURSDAY MORNING  FEBRUARY 1

Section 6. Regulatory Aspects

LOCATION: Grand Salon J
TIME: 8:00 AM - 10:00 AM
CHAIR: Cherilyn Moore
Syngenta Crop Protection, LLC
Greensboro, NC

MODERATOR: Cherilyn Moore
Syngenta Crop Protection, LLC
Greensboro, NC

*SPEAKER

8:00  An Overview of the New EPA Mandated Requirements for Paraquat Containing Products: What Does That Mean for the End-User and Registrant? M. U. Dixon*; Syngenta Crop Protection, Greensboro, NC (351)

8:15  Taking Advantage of Global Field Trial Exchangeability and Crop Grouping for Pesticide Residue Studies. D. Kunkel¹, J. J. Baron², W. P. Barney²; ¹Rutgers University, Princeton, NJ, ²Rutgers University, IR-4 Project, Princeton, NJ (352)

8:30  Pollinator Habitats - Weeds & Management Challenges. C. Savinelli*; D. Campbell, J. McFarland, C. Moseley; Syngenta Crop Protection, Greensboro, NC (353)
THURSDAY MORNING  FEBRUARY 1

The State of the Weed Control Industry In 2018

LOCATION: Arlington Salon V & VI
TIME: 9:00 AM - 12:00 PM
CHAIR: Steve Fennimore
University of California
Salinas, CA
MODERATOR: Steve Fennimore
University of California
Salinas, CA

*SPEAKER

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9:00 The Business of Weed Control. S. A. Fennimore*; University of California, Salinas, CA (358)


9:40 Consolidation and Competition in the Agricultural Chemical Industry. J. MacDonald*; USDA, Washington, DC (360)

10:00 Evolution of the Herbicide Marketplace. P. J. Porpiglia*; AMVAC Chemical Corporation, Irvine, CA (361)

10:20 Break

10:35 The Role of Smart Machines in the Business of Weed Control. W. Patzoldt*1, E. Ehn2, M. Keely1, B. Chostner1; Blue River Technology, Sunnyvale, CA, 2Blue River Technology, Capitola, CA (362)

10:55 Innovative Automation for Vegetable Production. R. Herbon*; Agmechtronix, Silver City, NM (363)

11:15 Balancing Declining Herbicide Efficacy with New Technology. D. A. Mortensen*; Penn State University, University Park, PA (364)

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THURSDAY MORNING  FEBRUARY 1

Section 8. Formulation, Adjuvant and Application Technology

LOCATION: Grand Salon K
TIME: 8:00 AM - 10:00 AM
CHAIR: Connor Ferguson
Mississippi State University
MS State, MS
MODERATOR: Bryan Young
Purdue University
Brookston, IN

*SPEAKER
8:00 Effects of Selected Adjuvants on Weed Control with Glufosinate-Ammonium in Colorado and South Dakota. J. Daniel*, P. Westra, E. Westra, P. Johnson; 1Daniel Ag Consulting, Hudson, CO, CO, 2Colorado State University, Fort Collins, CO, 3South Dakota State University, Brookings, SD (365)

8:15 AccuDrop™ - A New Drift Control and Deposition Adjuvant. T. A. Hayden*, G. Dahl, R. Edwards, J. A. Gillilan, R. L. Pigati, J. Gednalske, E. Spandl, L. C. Magidow, D. C. Bissell; 1WinField United, Owensboro, KY, 2WinField United, Eagan, MN, 3WinField United, River Falls, WI, 4WinField United, Springfield, TN, 5WinField United, Shoreview, MN, 6River Falls, WI, 7WinField United, Maplewood, MN, 8WinField United, River Falls, WV (366)


8:45 Nozzle and Pressure Effects on Herbicide Efficacy using Enlist One™, Engenia™, and Xtendimax™ Approved Tank Mixes. C. Ferguson, P. H. Urach Ferreira, M. T. Wesley, D. Reynolds; 1Mississippi State University, MS State, MS, 2Mississippi State University, Mississippi State, MS (368)

9:00 Collection of Quantitative Herbicide Performance Data: Why Should We not Rely Solely on Visible Assessments? N. E. Korres*, J. Norsworthy; 1University of Arkansas, Fayetteville, AR, 2University of Arkansas, Fayetteville, AR (369)


9:30 Performance of New High Loaded 2,4-D and Dicamba Formulations with Built-In Drift Reduction Technology. J. Daniel, E. Westra*, P. Westra, G. Kruger, S. K. Parrish; 1Daniel Ag Consulting, Hudson, CO, CO, 2Colorado State University, Fort Collins, CO, 3University of Nebraska, North Platte, NE, 4Agrasyst Inc., Spokane, WA (371)
10:30  **Response of Five Cover Crop Species to Glyphosate and Aminomethylphosphonic acid (AMPA) Residues in Silty Clay Soil.** Z. Ganie*, A. Jhala; University of Nebraska, Lincoln, NE (374)

10:45  **Soil Volumetric Water Content Influence Herbicide Bioavailability and Lateral Mobility.** T. Gannon, S. Brinton, P. J. Maxwell*; North Carolina State University, Raleigh, NC (375)

11:00  **Dicamba Volatility under Field and Controlled conditions.** T. Mueller*, L. Steckel; 1University of Tennessee, Knoxville, TN, 2University of Tennessee, Jackson, TN (376)

11:15  **Humidome study on the volatility of dicamba from soil surfaces.** C. D. Willett*, E. M. Grantz, J. Norsworthy; University of Arkansas, Fayetteville, AR (377)

11:30  **Comparison of 2,4-D amine and 2,4-D choline volatility under field conditions.** T. Mueller*, C. Sayer, P. Hay, C. Silva, B. Bruss; 1University of Tennessee, Knoxville, TN, 2Nufarm, Laverton North, Australia, 3Nufarm, Raleigh, NC (378)

11:45  **Air sampler demonstration and discussion: Lessons learned.** T. Mueller*, L. Steckel; 1University of Tennessee, Knoxville, TN, 2University of Tennessee, Jackson, TN (379)

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**Section 11. Physiology**

**LOCATION:** Arlington Salon III

**TIME:** 8:00 AM - 12:00 PM

**CHAIR:** Christopher Van Horn

**USDA**

**Parlier, CA**

**CO-CHAIR:** Christopher Rouse

**University of Arkansas**

**Fayetteville, AR**

**MODERATOR:** Christopher Van Horn

**USDA**

**Parlier, CA**

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**8:00 Field Evaluation of the Potential Herbicide Tolerant Tomato Screened from Diverse Germplasm.** G. Sharma*, C. Barickman, R. Snyder; 1Mississippi State University, Starkville, MS, 2Mississippi State University, Mississippi State, MS (380)

**8:15 Characterizing the Tolerance Mechanism of Rice Cultivars to the HPPD-inhibitor Benzobicyclon.** C. Brabham*, V. Varanasi, J. Norsworthy; University of Arkansas, Fayetteville, AR (381)

**8:30 Study on Sensitivity of Different Leaf Age of Barnyardgrass to Bispyrabac-sodium and Cyhalofop-butyl.** X. Liu, Y. Deng, J. Li, C. Jin; Hunan University of Humanities, Science and Technology, Loudi, Peoples Republic (382)

**8:45 Multiple Resistance to Glyphosate, Paraquat, ACCase- and ALS-inhibitors in California Italian Ryegrass: Confirmation, Control and Resistance Mechanisms.** P. Tehranchian*, V. Nandula, M. Jugulam, M. Jasieniuk; 1University of California, Davis, CA, 2USDA-ARS, Stoneville, MS, 3Kansas State University, Manhattan, KS (383)
9:00  Non-Target Site Resistance to Flucarbazone, Imazamethabenz, and Pinoxaden is Controlled by Three Linked Genes in Avena fatua. E. E. Burns*1, B. K. Keith2, L. E. Talbert2, W. e. Dyer2; 1Michigan State University, East Lansing, MI, 2Montana State University, Bozeman, MT (384)

9:15  Differential Synthetic Auxin Binding to TIR1 and AFB5 and Comparative Downstream Perception of 2,4-D and Florpyrauxifen-benzyl in Arabidopsis thaliana. P. R. Schmitzer*1, J. L. Bell2, J. Prusinska3, R. Napier3, D. Riar1, M. Donahue1, N. Elango1; 1Dow AgroSciences LLC, Indianapolis, IN, 2Dow Agrosciences, Brownsburg, IN, 3University of Warwick, Coventry, England (385)

9:30  Co-evolution of Abiotic Stress Adaptation and Quinclorac Resistance in Echinochloa colona. C. Rouse*1, N. R. Burgos1, C. A. Saksi2, R. E. Noorai2, V. Shankar2; 1University of Arkansas, Fayetteville, AR, 2Clemson University, Clemson, SC (386)

9:45  Convergence of Gene Networks in Multiple-Resistant Echinochloa. N. Roma-Burgos*1, C. Rouse1, C. A. Saksi2, R. E. Noorai2, A. L. Lawton-Rauh2, V. Shankar2; 1University of Arkansas, Fayetteville, AR, 2Clemson University, Clemson, SC (387)

10:00 Break


10:45  EPSPS Amplification Triggers Genome Alteration and Rapid Evolution of Glyphosate Resistance in Amaranthus tuberculatus. M. Jugulam*1, D. Koo2, B. Friebe2, B. S. Gill2; 1Kansas State University, Manhattan, KS, 2Educational, Manhattan, KS (390)

11:00 Expression Hotspots in Herbicide Resistant Waterhemp (Amaranthus tuberculatus). D. Giacomini*1, T. Gaines2, R. S. Beffa3, P. Tranel4; 1University of Illinois, Urbana, IL, 2Colorado State University, Fort Collins, CO, 3Bayer CropScience, Frankfort / Main, Germany, 4University of Illinois, Urbana, IL (391)

11:15  Identification of the Genetic Basis for Dicamba Resistance in Kochia scoparia. P. Westra*1, S. LeClere2, D. Sammons3, T. Gaines1; 1Colorado State University, Fort Collins, CO, 2Monsanto Company, St Louis, MO, 3, Chesterfield, MO (392)

11:30  Herbicide Metabolic Resistance Characterization. A Review. R. S. Beffa*; Bayer CropScience, Frankfort / Main, Germany (393)

11:45  Genes Driving Detoxification in Amaranthus palmeri Under Glyphosate Exposure. W. Molin*1, C. A. Saksi2; 1USDA-ARS, Stoneville, MS, 2Clemson University, Clemson, SC (394)
**Section 11. Physiology**

**LOCATION:** Arlington Salon III  
**TIME:** 1:00 PM - 2:30 PM  
**CHAIR:** Christopher Van Horn  
USDA  
Parlier, CA  
**CO-CHAIR:** Christopher Rouse  
University of Arkansas  
Fayetteville, AR  
**MODERATOR:** Christopher Van Horn  
USDA  
Parlier, CA

*SPEAKER*

1:00 Inheritance and Comparison of PPO-inhibitor Resistance Mechanisms in Palmer amaranth. V. Varanasi*, C. Brabham, J. Norsworthy; University of Arkansas, Fayetteville, AR (395)

1:15 A Novel Amino Acid Substitution (Gly<sub>399</sub>Ala) in Protoporphyrinogen Oxidase 2 Confers Broad Spectrum PPO-Inhibitor Resistance in *Amaranthus palmeri*. G. Rangani<sup>1</sup>, R. Salas*<sup>1</sup>, R. A. Aponte<sup>2</sup>, A. Landes<sup>2</sup>, N. Roma-Burgos<sup>1</sup>; <sup>1</sup>University of Arkansas, Fayetteville, AR, <sup>2</sup>BASF SE, Limburgerhof, Germany (396)

1:30 Are Resistant Weeds More Resilient? Differential Induction of Secondary Metabolite Profiles Across Glyphosate Susceptible and Resistant Populations of *Amaranthus palmeri* in Response to Abiotic Stressors. N. Tharayil*<sup>1</sup>, E. M. Leonard<sup>1</sup>, A. S. Maroli<sup>1</sup>, V. Nandula<sup>2</sup>, S. Duke<sup>3</sup>; <sup>1</sup>Clemson University, Clemson, SC, <sup>2</sup>USDA-ARS, Stoneville, MS, <sup>3</sup>USDA-ARS, Oxford, MS (397)

1:45 WeedGenomics: An Online Repository for Genomic Information of Weeds. J. S. McElroy*, S. Sivaraj, S. Wilkhu, H. Zhang; Auburn University, Auburn, AL (398)

2:00 Possibilities and Potential Consequences of Microbiome Mediated Herbicide Resistance. J. Gressel*; Weizmann Institute of Science, Rehovot, Israel (399)
Chapel
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