

WSSA

2018 Annual Meeting
January 29–February 1, 2018
Crystal Gateway Marriott
Arlington, VA

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

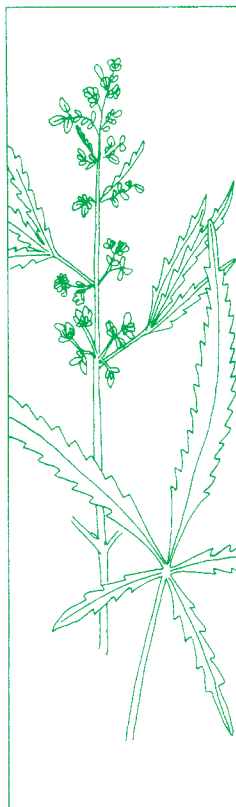
WEED SCIENCE SOCIETY OF AMERICA

Fifty-Seventh Meeting

2017 MEETING PROGRAM

Hilton El Conquistador
Tucson, Arizona

February 6 to 9, 2017



WSSA Sustaining Members WEED SCIENCE SOCIETY OF AMERICA

PRESIDENTIAL

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

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Valent USA
Winfield Solutions

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57th Meeting Weed Science Society of America

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WSSA Sustaining Members.....	Inside Back Cover

Location of Special Committees and Activities February 2017

Registration (Including Guests)	Turquoise Foyer
WSSA Board Meeting (Sat/Sun)	Santa Rita
WSSA Board Meeting (Thurs).....	Santa Rita

Local Arrangements Committee 2017 – Tucson, Arizona

Co-Chairs	Bill McCloskey, Kai Umeda
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The WSSA 2017 Program

Welcome to the 2017 Weed Science Society of America (WSSA) Annual Meeting at the Hilton El Conquistador in Tucson, Arizona. The venue is outstanding and we have an excellent program planned. Pre-conference events include the WSSA Golf Tournament at the Pusch Ridge Golf Course, located on the Hilton property. The tournament will be played on Sunday, Feb. 5th and will begin at 9:00 AM with a Shotgun Start. All proceeds from the golf tournament will go towards the Endowment Fund. A wonderful tour of the Arizona Sonoma Desert Museum will be available on Sunday afternoon from 12:30 to 5:30 p.m.

The General Session and WSSA Awards Ceremony will begin Monday, Feb. 6th at 4:00 PM in the Turquoise III room. Our General Session will begin with a welcome and opening remarks from the Director of the Arizona Department of Agriculture, The Honorable Mark Killian and will be followed by a presentation on the Future of Extension from Dr. Rich Bonanno, the Associate Dean of NC State University's College of Agriculture and Director of North Carolina's Cooperative Extension Service. Dr. Nilda Roma Burgos (representing the International Weed Science Society) will provide an update on the IWSS meetings in Prague. Dr. Kevin Bradley will make a brief presentation to Joyce Lancaster in appreciation of her amazing contributions and 18 years of outstanding service to the WSSA. 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. at the outside terrace and pool area. 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.

For the second year, we will be conducting an MS and PhD poster contest and new for 2017, there will be MS and PhD oral presentation contests. All of the student contests will be conducted on Tuesday. Also on Tuesday morning, there will be a special session on Navigating the New Landscape of Federal Funding organized by Dr. Jim Westwood and Dr. Donn Shilling. Tuesday afternoon's symposium will be on Contributions of USDA, ARS Area Wide Projects in Weed Science

Research and Practice, organized by Dr. John Madsen. Wednesday's program will include a graduate student workshop entitled Utilizing Online Resources for the Development of a Professional Web Presence, followed by the graduate student business meeting and luncheon. Also on Wednesday, there will be an all-day symposium, Understanding and Reducing the Impact of Herbicide Off-Site Movement, organized by Dr. Bryan Young and an afternoon workshop, Teaching Undergraduate Weed Science: Strategies to Improve Learning, organized by Dr. Tom Mueller and Dr. Anita Dille. The WSSA Business meeting and the student contest awards will be held from 5:00 – 6:30 p.m. on Wednesday. On Thursday, there will be the final symposium, Precision Agriculture and Weed Science, organized by Dr. Krishna Reddy.

Special thanks to our local arrangements' co-chairs, Dr. Kai Umeda and Dr. Bill McCloskey, to Dr. Darrin Dodds, organizer of the student contests, Tony Ballard, our meeting manager, Joyce Lancaster and to all of our section chairs and moderators 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.

Janis McFarland
Program Chair and President-Elect

2017 Program Committee

General Program Chair	Janis McFarland
Vice Chair	Scott Senseman
Agronomic Crops.....	Pete Eure
Horticultural Crops	Colin Phillippo
Turf and Ornamentals	Kate Venner
Pastures, Rangelands, Forests, & Rights of Way	Stephen Enloe
Wildland and Aquatic Invasives	Mark Heilman
Regulatory Aspects	Jerry Wells
Teaching and Extension	Paul Tseng
Formulation, Adjuvant, & Application Technology.....	Bryan Young
Weed Biology and Ecology.....	Muthu Bagavathiannan
Biocontrol of Weeds.....	Doug Boyette
Physiology.....	Mithila Jugulam
Soil and Environmental Aspects	Travis Gannon
Integrated Weed Management.....	Ramon Leon
Sustaining Member Exhibits Session.....	James Steffel
Poster Sessions.....	Robert Nurse
Student Contest	Darrin Dodds

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, February 4

7:00 a.m. – 5:00 p.m.	
WSSA Board of Directors.....	Santa Rita

SUNDAY, February 5

7:00 a.m. – Noon	
WSSA Board of Directors.....	Santa Rita

MONDAY, February 6

7:00 a.m. – 8:00 a.m.	
WSSA Board and Committee Chairs Breakfast	White Dove
8:00 a.m. – 9:00 a.m.	
Weed Science Editorial Board	Santa Rita
8:00 – 10:00 a.m.	
Science Policy Committee (E2)	Rincon
9:00 a.m. – 10:00 a.m.	
Weed Technology Editorial Board (P3)	Santa Rita
9:00 a.m. – 10:00 a.m.	
Sustaining Member Committee (F4)	Coronado 2
9:00 a.m. – 11:00 a.m.	
Herbicide Resistant Plants (E12)	Coronado 1
10:00 a.m. – 11:00 a.m.	
IPSM Editorial Board (P2).....	Santa Rita
10:00 a.m. – 11:00 a.m.	
Research and Competitive Grants (E6).....	Joshua Tree 1
11:00 a.m. – 12:00 noon	
Publications Board (P1)	Santa Rita
11:00 a.m. – 12:00 noon	
Public Awareness (E13)	Rincon
11:00 a.m. – 12:00 noon	
Herbicides for Minor Uses (E10).....	Joshua Tree 2
1:00 p.m. – 2:00 p.m.	
Standardized Plant Names (P22b)	Agave 1
1:00 p.m. – 2:00 p.m.	
Professional Development (F4)	Agave 2
1:00 p.m. – 2:00 p.m.	
Constitution & Operating Procedures (W10)	Joshua Tree 1

1:00 p.m. – 2:00 p.m.
Biological Control of Weeds (W16)Joshua Tree 2

1:00 p.m. – 3:00 p.m.
Herbicide Resistance Education (E12b) Rincon

2:00 p.m. – 3:00 p.m.
Weed Loss Committee (E11)Agave 2

2:00 p.m. – 3:00 p.m.
Enivronmental Aspects (E8)Joshua Tree 1

TUESDAY, February 7

7:00 a.m. – 8:00 a.m.
Website Committee (E14)Boardroom

WEDNESDAY, February 8

6:00 a.m. – 8:00 a.m.
President’s Breakfast with Regional Presidents.....
.....White Dove

7:00 a.m. – 8:00 a.m.
USDA-ARS MeetingAgave

7:00 a.m. – 9:00 a.m.
Finance Committee (F2)Joshua Tree 1

THURSDAY, February 9

12:00 Noon – 3:00 p.m.
Board of Directors..... Santa Rita

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 2017 PROGRAM

SATURDAY MORNING, February 4

7:00 a.m. – 5:00 p.m.
WSSA Board of Directors..... Santa Rita

SUNDAY MORNING, February 5

7:00 a.m. – 12:00 noon
WSSA Board of Directors..... Santa Rita

8:00 a.m. – 5:00 p.m.
US HRACJoshua Tree

9:00 a.m. – 1:00 p.m.
Golf Tournament Pusch Ridge Golf Course

12:30 p.m. – 5:30 p.m.
Offsite Desert Museum Tour
.....Arizona – Sonoma Desert Museum

MONDAY MORNING, February 6

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

9:00 a.m. – 12:00 noon
RegistrationTurquoise Foyer

MONDAY AFTERNOON, February 6

1:00 p.m. – 3:30 p.m.
RegistrationTurquoise Foyer

4:00 p.m. – 6:00 p.m.
General Session and WSSA Awards
PresentationsTurquoise III

6:00 p.m. – 8:00 p.m.
Welcome and Awardee’s Reception (open to all attendees and registered guests).....Outdoor Terrace and Pool

TUESDAY, February 7

6:30 a.m. – 7:45 a.m.
Student Contest Judges Meeting & Breakfast
.....White Dove

7:00 a.m. – 5:00 p.m.
RegistrationTurquoise Foyer

7:45 a.m. – 6:00 p.m.
Contest Judges Work RoomPalo Verde

8:00 a.m. – 10:00 a.m.
Poster SessionTurquoise I&II

(Authors of even numbered posters will present)

8:00 a.m. – 10:00 a.m.
Poster Contest Presentations
(All Authors Present)Turquoise I&II

8:00 a.m. – 5:00 p.m.
Sustaining Member ExhibitsTurquoise I&II

9:30 a.m. – 4:30 p.m.
WSSA Student MS Oral ContestJoshua Tree

9:30 a.m. – 5:00 p.m.
WSSA Student PhD Oral ContestAgave

10:00 a.m. – 5:00 p.m.
 Posters on display without authorsTurquoise I&II

10:00 a.m. – Noon
Special Session: Navigating the New Landscape of Federal Funding Turquoise III

10:00 a.m. – 5:00 p.m.
 Agronomic Crops..... Presidio V

10:00 a.m. – 11:15 a.m.
 Wildland & Aquatic Invasives Presidio II

1:00 p.m. – 5:00 p.m.
Symposium: Contributions of USDA, ARS Area Wide Projects in Weed Science Research and Practice Turquoise III

1:00 p.m. – 2:15 p.m.
 Pastures, Rangelands, Forests, and Rights of Way Presidio II

2:15 p.m. – 5:00 p.m.
 Turf and Ornamental Crops Presidio II

2:15 p.m. – 4:30 p.m.
 Teaching and Extension Presidio I

WEDNESDAY, February 8

6:00 a.m. – 8:00 a.m.
 WSSA & Regional Presidents BreakfastWhite Dove

7:00 a.m. – 9:00 a.m.
 USDA-ARS MeetingAgave

7:30 a.m. – 3:00 p.m.
 Registration.....Turquoise Foyer

8:00 a.m. – 10:00 a.m.
 Poster Session Turquoise I&II

(Authors of odd-numbered posters will present)

8:00 a.m. – 5:00 p.m.
 Sustaining Members Exhibits Turquoise I&II

10:00 a.m. – 5:00 p.m.
 Posters on display without authors Turquoise I&II

10:00 a.m. – 12:00 noon
Graduate Student Workshop: Utilizing Online Resources for the Development of a Professional Web PresencePresidio IV

10:00 a.m. – 12:00 noon
Symposium: Understanding and Reducing the Impact of Herbicide Off-Site Movement..... Turquoise III

10:00 a.m. – 2:45 p.m.
 Agronomic Crops..... Presidio V

10:00 a.m. – 4:30 p.m.
 Weed Biology & Ecology Presidio I

10:00 a.m. – 1:45 p.m.
 Integrated Weed Management..... Presidio II

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

1:00 p.m. – 5:00 p.m.
Symposium: Understanding and Reducing the Impact of Herbicide Off-Site Movement Turquoise III

2:00 p.m. – 5:00 p.m.
Workshop: Teaching Undergraduate Weed Science—Strategies to Improve Learning Presidio II

3:30 p.m. – 4:30 p.m.
 Biocontrol of Weeds..... Presidio V

5:00 p.m. – 6:30 p.m.
 WSSA Business Meeting & Student Contest AwardsPresidio IV

THURSDAY MORNING, February 9

8:00 a.m. – 10:00 a.m.
 Registration.....Turquoise Foyer

8:00 a.m. – 11:00 a.m.
 Posters on Display without Authors..... Turquoise I&II

8:00 a.m. – 11:00 a.m.
 Sustaining Members Exhibits Turquoise I&II

8:00 a.m. – 12:00 noon
Symposium: Precision Agriculture and Weed Science Turquoise III

8:00 a.m. – 9:15 a.m.
 Regulatory Aspects Presidio V

8:00 a.m. – 12:00 noon
 Horticultural CropsPresidio IV

8:00 a.m. – 10:45 a.m.
 Physiology Presidio I

8:45 a.m. – 11:30 a.m.
 Weed Biology & Ecology Presidio II

9:45 a.m. – 12:00 noon
 Formulation, Adjuvant and Application Technology
 Presidio V

12:00 noon – 1:00 p.m.
Remove Posters and Exhibits

12:00 noon – 3:00 p.m.
 WSSA Board of Directors..... Santa Rita

COMPLETE PROGRAM

MONDAY PM, February 6 GENERAL SESSION

Location: Turquoise Ballroom III

4:00 p.m.

Introduction and Announcements: Janis McFarland,
 President Elect, WSSA

4:10 p.m.

Welcome and Opening Remarks: Honorable Mark
 Killian, Director of the Arizona Department of
 Agriculture

4:30 p.m.

The Future of Extension: Rich Bonanno, Associate
 Dean of North Carolina State Univ. and Director of North
 Carolina's Cooperative Extension Service.

4:50 p.m.

Update on IWSS: Nilda Burgos

4:55 p.m.

Special Presentation to Joyce Lancaster: Kevin
 Bradley, President WSSA

5:00 p.m.

Presentation of Awards, Dwight Lingenfelter, Chair,
 Awards Committee, WSSA

5:40 p.m.

**Presentation of Fellow and Honorary Member
 Awards,** Krishna Reddy, Chair, Fellows and Honorary
 Member Subcommittee, WSSA

6:00 p.m. – 8:00 p.m.

WSSA Awardee Reception and Member Social

Location: Outdoor Terrace and Pool Area

TUESDAY to THURSDAY February 7–9, 2017

WSSA SUSTAINING MEMBERS EXHIBITS SESSION

Location: Turquoise I&II

Chair: James Steffel, LABServices

7:45 a.m. Tuesday Sustaining Members Exhibits Session
 meeting to elect a Chair-Elect.

Setup 12:00 noon – 3:00 p.m. Monday

8:00 a.m. – 5:00 p.m. Tuesday, Wednesday

8:00 a.m. – 12:00 noon Thursday

Please remove exhibits by 1:00 p.m. on Thursday

TUESDAY February 7 POSTER SESSION

Location: Turquoise I&II

Chair: Robert Nurse

Posters may be set up on Monday from 12:00 noon until 3:00 p.m. prior to the General Session. Authors should remove Posters by 1:00 p.m. on Thursday.

7:45 a.m. – 8:00 a.m.

Business Meeting to elect Chair-Elect

PROGRAM

TUESDAY MORNING FEBRUARY 7 Poster Contest – MS Students

***PRESENTER † STUDENT POSTER CONTEST**

†**Examining Commercial Seed Mixtures for the Presence of Weed Species.** E. G. Oseland*, M. Biggs, M. D. Bish, K. W. Bradley; University of Missouri, Columbia, MO (1)

†**Effects of Sub-lethal Rates of Dicamba and 2,4-D on Sugarbeet.** M. A. Probst*, C. L. Sprague; Michigan State University, East Lansing, MI (2)

†**Effective Weed Management Systems Using XtendFlex Cotton.** K. R. Russell*¹, P. A. Dotray¹, J. Keeling², S. L. Taylor², J. D. Everitt³; ¹Texas Tech University, Lubbock, TX, ²Texas A&M AgriLife Research, Lubbock, TX, ³Monsanto, Lubbock, TX (3)

†**Managing Palmer Amaranth in Michigan: Integrating Soybean Row Widths and a Cereal Rye Cover Crop.** K. M. Rogers*, C. L. Sprague, K. A. Renner; Michigan State University, East Lansing, MI (4)

†**Herbicide Treatment Options for Double Crop Grain Sorghum.** J. J. Albers*, D. E. Peterson, C. R. Thompson, M. M. Hay, A. Dille; Kansas State University, Manhattan, KS (5)

†Optimizing Herbicide and Cover Crop Programs for Integrated Weed Management in No-till Soybeans.

J. M. Bunckek*¹, J. M. Wallace¹, M. J. VanGessel², W. Curran¹, D. A. Mortensen¹; ¹Pennsylvania State University, University Park, PA, ²University of Delaware, Georgetown, DE (6)

†**Integrating Biological Control with Conventional Methods for Enhanced *Tamarix* Management.** L. M. Murray*, E. A. Lehnhoff, B. J. Schutte, C. A. Sutherland; New Mexico State University, Las Cruces, NM (7)

†**The Effects of Mulching, Tillage, and Herbicides on Weed Control and Watermelon Yield.** A. J. Price¹, S. Li², B. Guertal³, J. McElroy³, J. P. Williams*³; ¹USDA-ARS, Auburn, AL, ²Alabama Cooperative Extension Service, Auburn, AL, ³Auburn University, Auburn, AL (8)

†**Stale Seedbeds for Summer Annual Weeds in New Mexico Chile.** A. Sanchez*, B. J. Schutte, L. Beck, O. J. Idowu; New Mexico State University, Las Cruces, NM (9)

†**Fate of Sulfentrazone Applied to Cover Crop Species Prior to Soybean Planting.** D. M. Whalen*, E. Oseland, S. Farrell, B. R. Barlow, Z. Trower, M. D. Bish, M. Biggs, K. W. Bradley; University of Missouri, Columbia, MO (10)

†**Utilizing Geospatial Technology to Assess Off-target Dicamba Injury and Yield Loss in Missouri Soybean Fields.** S. T. Farrell*, K. W. Bradley, M. D. Bish, D. Shannon, E. Oseland; University of Missouri, Columbia, MO (11)

†**Novel Molecular Markers for Monitoring the Gene Flow from Herbicide-resistant Crops to Closely Related Species.** J. J. Ziggafos*¹, R. Werle², A. Jhala³, J. Lindquist¹, M. K. Yerka¹; ¹University of Nebraska – Lincoln, Lincoln, NE, ²University of Nebraska, Lincoln, North Platte, NE, ³University of Nebraska-Lincoln, Lincoln, NE (12)

A Study of Cytochrome P450 Mediated Metabolic Resistance in *Kochia scoparia*. A. Barker*, O. Todd, F. E. Dayan, T. A. Gaines; Colorado State University, Fort Collins, CO (13)

TUESDAY MORNING FEBRUARY 7

Poster Contest – PhD Students

*PRESENTER † STUDENT POSTER CONTEST

†**Effect of Degree of Water Stress on the Growth and Fecundity of Palmer amaranth.** P. Chahal*¹, S. Irmak¹, A. Jhala²; ¹University of Nebraska – Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Lincoln, NE (14)

†**Investigating Palmer amaranth Response to Glufosinate in a North Carolina Population.** D. Copeland*, W. J. Everman, A. C. York; North Carolina State University, Raleigh, NC (15)

†**The Effects of Palmer Amaranth Competition on Soil Moisture Availability in Soybean.** D. D. Joseph*¹, M. W. Marshall²; ¹Clemson University, Clemson, SC, ²Clemson University, Blackville, SC (16)

†**Tolerance of GlyTol®/LibertyLink® Cotton to Various Herbicide Tank Mix Combinations.** M. T. Plumblee*¹, D. M. Dodds¹, C. A. Samples², A. B. Denton², S. Davis², L. X. Franca¹, B. R. Wilson²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (17)

†**Seed Shattering of Six Prevalent Weed Species in North Carolina.** T. A. Reinhardt*, W. J. Everman; North Carolina State University, Raleigh, NC (18)

†**Water-seeding with Anaerobic Germination Tolerant Cultivars in Improving Crop Establishment and Weed Management in Wet Direct Seeded Rice.** B. S. Chamara*¹, B. Marambe², V. Kumar³, B. S. Chauhan⁴; ¹Weed Science, Crop and Environmental Sciences Division, International Rice Research Institute, Philippines, Los Banos, Philippines, ²Department of Crop Science, Faculty of Agriculture, University of Peradeniya, Sri Lanka, Peradeniya, Sri Lanka, ³International Rice Research Institute, Los Banos, Philippines, ⁴The University of Queensland, Gatton, Australia (19)

†**Field Performance of a Novel 2,4-D Tolerant Red Clover (*Trifolium pratense*).** M. Barrett, L. P. Araujo*, L. D. Williams, G. L. Olson; University of Kentucky, Lexington, KY (20)

†**Management Strategies of Johnsongrass (*Sorghum halepense* (L.) Pers.) Resistant to Glyphosate in the Argentine Agricultural Production System.** E. Bracamonte¹, E. Actis², G. Aiassa², R. Montserrat², F. Pussetto², D. Ustarroz³, P. T. Fernandez-Moreno⁴, R. De Prado*⁵; ¹Faculty of Agricultural Sciences, University of Cordoba, Cordoba, Argentina, ²Faculty of Agricultural Sciences-UNC, Cordoba, Argentina, ³INTA EEA Manfredi, Cordoba, Argentina, ⁴University of Cordoba, Cordoba, Spain, ⁵Department of Agricultural Chemistry and Edaphology, University of Cordoba, Cordoba, Spain (21)

†**More Complex Native Forage Mixtures Reduce Weed Seed Bank Density Based on Their Competitive Abilities.** M. Serajchi*¹, M. P. Schellenberg², E. G. Lamb¹; ¹University of Saskatchewan, Saskatoon, SK, ²Agriculture and Agri-Food Canada, Swift Current, SK (22)

†**Glyphosate Resistance in Giant Ragweed (*Ambrosia trifida* L.).** K. Segobye*¹, S. C. Weller², B. Schulz¹; ¹University of Maryland, College Park, MD, ²Purdue University, West Lafayette, IN (23)

2,4-D Dislodge from Turfgrass Vegetation Varies by Sample Collection Method. M. Jeffries*, T. Gannon; North Carolina State University, Raleigh, NC (24)

†**Influence of Biochar Amendments on the Sorption-desorption of Aminocyclopyrachlor in Agricultural Soils.** K. F. Mendes*¹, K. A. Spokas², V. L. Tornisiello³; ¹Center of Nuclear Energy in Agriculture – University of São Paulo, Piracicaba, Brazil, ²University of Minnesota, Saint Paul, MN, ³University of São Paulo, Piracicaba, Brazil (25)

†**Pollen-Mediated Gene Flow from Glyphosate-Resistant to -Susceptible Giant Ragweed (*Ambrosia trifida*) under Field Conditions.** Z. A. Ganie*, A. Jhala; University of Nebraska-Lincoln, Lincoln, NE (26)

†**Identification and Determination of Some Phenolic Compounds in Sunflower (*Helianthus annuus* L.) and Their Evaluation on Seed Germination and Seedling Growth of Some Weed and Crop Species.** S. W. Hamad*, S. S. Wilcockson, E. J. Okello; Newcastle University, Newcastle Upon Tyne, England (27)

†**Molecular, Proteome, and Biochemical Characterization of Multiple Herbicide Resistant *Avena fatua* (L.).** E. E. Burns*, B. K. Keith, W. E. Dyer; Montana State University, Bozeman, MT (28)

Investigating the 2,4-D Resistance Mechanism in Indian Hedge Mustard (*Sisymbrium orientale*) from Australia using RNA-Seq. A. Kuepper*¹, C. Preston², M. Figueiredo¹, T. A. Gaines¹; ¹Colorado State University, Fort Collins, CO, ²University of Adelaide, Adelaide, Australia (29)

†**Flufenacet Resistance Mechanism Characterization in Grasses.** R. Duecker*; Bayer AG, Frankfurt, Germany (30)

†**Barnyardgrass Resistant to Acetolactate Synthase and Acetyl-CoA Carboxylase Inhibitors in Paddy Rice Fields of Korea.** O. Won*¹, I. Park², Z. Andreas³, S. Vinod⁴, J. Lee⁵, K. Park¹; ¹Chungnam National University, Daejeon, South Korea, ²Syngenta Korea Limited, JinCheon, South Korea, ³Syngenta Crop Protection AG, Basel, Switzerland, ⁴Syngenta Asia Pacific Pte. Ltd, Singapore, Singapore, ⁵National Institute of Agricultural Sciences, Wanju, South Korea (31)

Investigating Multiple Resistance Mechanisms of *Amaranthus palmeri* Populations from Arkansas. R. A. Salas*¹, C. Oliveira¹, J. Refatti¹, L. Piveta¹, R. Scott², N. R. Burgos¹; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas-Cooperative Extension Service, Lonoke, AR (32)

TUESDAY MORNING FEBRUARY 7

Section 1. Agronomic Crops

*PRESENTER

International Survey of Herbicide-Resistant Weeds. I. M. Heap*; WeedSmart, Corvallis, OR (33)

Confirmation and Management of Newly Evolved Glyphosate-Resistant Russian-thistle (*Slasola tragus* L.) and Horseweed (*Conyza canadensis* L.) in Montana Cereal Production. V. Kumar*¹, P. Jha², A. J², C. A. Lim², S. Leland¹; ¹Montana State University, Huntley, MT, ²Montana State University-Bozeman, Huntley, MT (34)

Confirmation of Glyphosate, ALS- and PPO-resistant Common Ragweed in North Carolina. B. Schrage, W.

J. Everman*; North Carolina State University, Raleigh, NC (35)

Dissipation of Clomazone in Organic and Mineral Soils of South Florida. D. Odero*, J. V. Fernandez; University of Florida, Belle Glade, FL (36)

Mechanisms Involved in Glyphosate-Resistant Perennial Ryegrass (*Lolium perenne* L.) and Italian Ryegrass (*L. multiflorum* L.) Biotypes from Iberian Peninsula and Fitness Cost Associated to NTSR Mechanism. P. T. Fernandez-Moreno*¹, R. Roldan-Gomez², M. D. Osuna³, R. J. Smeda⁴, R. De Prado⁵; ¹University of Cordoba, Cordoba, Spain, ²Department of Agricultural Chemistry and Edaphology-UNC, Cordoba, Spain, ³Agrarian Research Center “Finca La Orden” Valdesequera, Badajoz, Spain, ⁴University of Missouri, Columbia, MO, ⁵Department of Agricultural Chemistry and Edaphology, University of Cordoba, Cordoba, Spain (37)

Different Levels of Glyphosate-Resistant Rigid Ryegrass (*Lolium rigidum* L.) Biotypes from Southern Spain and France. P. T. Fernandez-Moreno¹, R. Roldan-Gomez², M. D. Osuna³, R. J. Smeda⁴, R. De Prado*⁵; ¹University of Cordoba, Cordoba, Spain, ²Department of Agricultural Chemistry and Edaphology-UNC, Cordoba, Spain, ³Agrarian Research Center “Finca La Orden” Valdesequera, Badajoz, Spain, ⁴University of Missouri, Columbia, MO, ⁵Department of Agricultural Chemistry and Edaphology, University of Cordoba, Cordoba, Spain (38)

Resurrection of Glyphosate Resistant Palmer amaranth Control in Conservation Tillage Engenia Cotton; Soil Health Salvation using Herbicide Technology. A. J. Price*¹, J. Tredaway-Ducar², G. S. Stapleton³; ¹USDA-ARS, Auburn, AL, ²Auburn University, Auburn, AL, ³BASF, Dyersburg, TN (39)

Characterization of a Waterhemp and a Palmer Amaranth Population with Resistance to PPO Inhibiting Herbicides. A. Perez-Jones*, S. Voss, R. Brinker, P. Feng; Monsanto, St Louis, MO (40)

Pre-Emergence Herbicide Longevity on Palmer Amaranth Control in Cotton. S. Steckel*, J. Reeves, L. E. Steckel; University of Tennessee, Jackson, TN (41)

Crop Safety and Weed Control Following Dicamba and Acetochlor Applications in XtendFlex® Cotton.

L. X. Franca*¹, D. M. Dodds¹, J. Bond², D. B. Reynolds³, A. Mills⁴, C. A. Samples¹, M. T. Plumblee¹, A. B. Denton³; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Stoneville, MS, ³Mississippi State University, Mississippi State, MS, ⁴Monsanto Company, Memphis, TN (42)

Weed Management Systems in Enlist Cotton in the Texas High Plains.

P. A. Dotray*¹, J. Keeling², S. L. Taylor², M. Lovelace³; ¹Texas Tech University, Lubbock, TX, ²Texas A&M AgriLife Research, Lubbock, TX, ³Dow AgroSciences, Lubbock, TX (43)

Dicamba Dose Impacts on Various Maturity Group VI Soybean Cultivars.

A. M. Growe*, W. J. Everman; North Carolina State University, Raleigh, NC (44)

Weed Management Programs in Oklahoma Soybean.

T. A. Baughman*, D. L. Teeter, C. D. Curtsinger, R. W. Peterson; Oklahoma State University, Ardmore, OK (45)

Roundup Ready 2 Xtend Soybean Systems.

S. A. Nolte*; Monsanto, St. Louis, MO (46)

Evaluation of Residual Herbicides in Soybean.

D. L. Teeter*, T. A. Baughman, C. D. Curtsinger, R. W. Peterson; Oklahoma State University, Ardmore, OK (47)

Weed Management Systems in Dicamba-Tolerant Soybean.

M. W. Marshall*, C. H. Sanders; Clemson University, Blackville, SC (48)

Relationship Between Aboveground Biomass and Relative Cover of Weeds in Winter Fallow Soybean.

G. Picapietra¹, M. V. Buratovich², M. E. Cena³, H. A. Acciaresi*⁴; ¹Instituto Nacional de Tecnología Agropecuaria, Pergamino, Argentina, ²ECANA-UNNOBA, Pergamino, Argentina, ³CIC, Pergamino, Argentina, ⁴Instituto Nacional Tecnología Agropecuaria, Pergamino, Argentina (49)

GR Canada Fleabane Dose-Response to Saflufenacil, Saflufenacil plus Glyphosate, and Metribuzin plus Saflufenacil plus Glyphosate in Soybean.

N. Soltani*¹, C. M. Budd¹, D. E. Robinson¹, D. C. Hooker¹, R. T. Miller², P. H. Sikkema¹; ¹University of Guelph, Ridgetown, ON, ²BASF Canada, Guelph, ON (50)

Halosulfuron Absorption, Translocation, and Metabolism in Dry Bean.

P. H. Sikkema¹, Z. Li¹, K. C. Kessler², M. Rodrigues Alves², S. J. Nissen², T. A.

Gaines², P. Westra², R. C. Van Acker³, D. E. Robinson¹, N. Soltani*¹; ¹University of Guelph, Ridgetown, ON, ²Colorado State University, Fort Collins, CO, ³University of Guelph, Guelph, ON (51)

Chickpea (Garbanzo Bean) Tolerance to Postemergence Broadleaf Herbicides.

R. A. Boydston*; USDA-ARS, Prosser, WA (52)

Evaluation of Corn Herbicide Programs in Oklahoma.

C. D. Curtsinger*, T. A. Baughman, D. L. Teeter, R. W. Peterson; Oklahoma State University, Ardmore, OK (53)

Thifensulfuron Resistant Mouse-ear Cress (*Arabidopsis thaliana*) Management in Winter Wheat.

R. S. Randhawa*¹, M. L. Flessner¹, C. W. Cahoon², J. H. Westwood¹; ¹Virginia Tech, Blacksburg, VA, ²Virginia Tech, Painter, VA (54)

Effect of Pre-plant Nitrogen (N) Rates on Wheat Yield in Corn/Sorghum-wheat Rotation.

M. K. Bansal*, W. J. Everman; North Carolina State University, Raleigh, NC (55)

Grassy Weed Management in Oklahoma Winter Wheat.

M. R. Manuchehri*¹, T. A. Baughman², A. R. Post³; ¹Oklahoma State University, Stillwater, OK, ²Oklahoma State University, Ardmore, OK, ³North Carolina State University, Raleigh, NC (56)

Preharvest Herbicide Application Effects on Winter Wheat.

G. E. Powell*, K. M. Rogers, C. L. Sprague; Michigan State University, East Lansing, MI (57)

Efficacy and Crop Tolerance of Butte Herbicide (benzobicyclon + halosulfuron-methyl) on California Water-Seeded Rice.

A. S. Godar*¹, W. Brim-DeForest², K. Al-Khatib¹; ¹University of California, Davis, Davis, CA, ²University of California, Davis, CA (58)

Water Quality Analysis and Effect on Efficacy of PPO-inhibiting Herbicides on Palmer amaranth in Mississippi.

V. K. Nandula*; USDA-ARS, Stoneville, MS (59)

Winter Sowed Cover Crops and Diversity of Natural Weed Populations.

M. V. Buratovich¹, M. E. Cena², G. Picapietra³, H. A. Acciaresi*³; ¹ECANA-UNNOBA, Pergamino, Argentina, ²CIC, Pergamino, Argentina, ³Instituto Nacional de Tecnología Agropecuaria, Pergamino, Argentina (60)

POST Herbicide Efficacy Screen on Marestalk. D. Lingenfelter*, W. Curran; Pennsylvania State University, University Park, PA (61)

Hyperspectral Imaging to Detect Glyphosate-Resistant vs. Glyphosate-Susceptible *Kochia scoparia*: Implications for Site-Specific Management. P. Jha*¹, V. Kumar¹, P. Nugent², A. Donelick², B. Scherrer², J. Shaw²; ¹Montana State University, Huntley, MT, ²Montana State University, Bozeman, MT (62)

Wheat Canopy Structure Incidence in Natural Weed Populations Emergence. M. E. Cena¹, M. V. Buratovich², G. Picapietra³, H. A. Acciaresi*⁴; ¹CIC, Pergamino, Argentina, ²ECANA-UNNOBA, Pergamino, Argentina, ³Instituto Nacional de Tecnología Agropecuaria, Pergamino, Argentina, ⁴Instituto Nacional Tecnología Agropecuaria, Pergamino, Argentina (63)

Dynamics of Emergence of Natural Weed Populations Under Winter Cover Crops. M. V. Buratovich¹, M. E. Cena², G. Picapietra³, H. A. Acciaresi*⁴; ¹ECANA-UNNOBA, Pergamino, Argentina, ²CIC, Pergamino, Argentina, ³Instituto Nacional de Tecnología Agropecuaria, Pergamino, Argentina, ⁴Instituto Nacional Tecnología Agropecuaria, Pergamino, Argentina (64)

Seed Germination of Junlerice (*Echinochloa colona*) in Response to Post-harvest Dormancy. G. Picapietra¹, M. V. Buratovich², M. E. Cena³, H. A. Acciaresi*⁴; ¹Instituto Nacional de Tecnología Agropecuaria, Pergamino, Argentina, ²ECANA-UNNOBA, Pergamino, Argentina, ³CIC, Pergamino, Argentina, ⁴Instituto Nacional Tecnología Agropecuaria, Pergamino, Argentina (65)

Using Multispectral Data and Random Forest Classification to Differentiate Velvetleaf from Cotton with Different Leaf Colors. R. S. Fletcher*, K. N. Reddy, R. B. Turley; USDA-ARS, Stoneville, MS (66)

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***PRESENTER**

Enhanced Weed Management for Organic Vegetable Crop Production. J. O'Sullivan*¹, R. C. Van Acker², R. N. Riddle¹, P. H. White¹; ¹University of Guelph, Simcoe, ON, ²University of Guelph, Guelph, ON (67)

Mulch and Biochar Impacts on Organic Strawberry Yield. S. K. Hogstad*, G. G. Gramig; North Dakota State University, Fargo, ND (68)

Interaction of Common Purslane and Palmer amaranth with Two Sweetpotato Cultivars. S. Chaudhari*, K. M. Jennings, D. W. Monks; North Carolina State University, Raleigh, NC (69)

Field Assessments of Flumioxazin for Postemergence-Directed Applications in Chile Pepper. B. J. Schutte*, E. Morris; New Mexico State University, Las Cruces, NM (70)

Field Bindweed (*Convolvulus arvensis*) Responses to PPI and PRE herbicides – A Research Summary. L. M. Sosnoskie*¹, B. Hanson²; ¹University of California, Davis, CA, ²University of California, Davis, CA (71)

Field Bindweed (*Convolvulus arvensis*) Responses to POST Herbicides – A Research Summary. L. M. Sosnoskie*¹, B. Hanson²; ¹University of California, Davis, CA, ²University of California, Davis, CA (72)

Residual Effects of Pre-plant Herbicides on Transplanted Tomatoes. J. Angeles¹, K. J. Hembree², A. Shrestha*¹; ¹California State University, Fresno, CA, ²University of California Cooperative Extension, Fresno, CA (73)

Bicyclopyrone: Major League Weed Control in Minor League Crops. C. L. Dunne*¹, D. Bruns², G. D. Vail³, T. Beckett³; ¹Syngenta, Vero Beach, FL, ²Syngenta, Columbus, OH, ³Syngenta Crop Protection, Greensboro, NC (74)

The Potential Use of Quinclorac in Annual Strawberry (*Fragaria x ananassa*) Production. M. A. Czarnota*; University of Georgia, Griffin, GA (75)

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***PRESENTER**

Mississippi Roadside Rights-of-way: An Inventory of the Vegetation. J. D. Byrd, Jr.*¹, V. L. Maddox¹, D. G. Thompson²; ¹Mississippi State University, Mississippi State, MS, ²Mississippi Department of Transportation, Jackson, MS (76)

Taxonomic Identity and Characterization of an Invasive *Linaria* Hybrid. C. Miller¹, S. E. Sing², S. M. Ward*¹; ¹Colorado State University, Fort Collins, CO, ²US Forest Service, Bozeman, MT (77)

Green Milkweed (*Asclepias viridis*): Friend or Foe, Do We Really Know? D. P. Russell*¹, J. D. Byrd, Jr.², N. H. Thorne¹; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (78)

Bioherbicides Use in Integrated Management of Invasive Weeds in Forestry. R. R. Prasad*; Pacific Forestry Centre, Victoria, BC (79)

Integrated Management of *Bromus tectorum* (Cheatgrass) with Sheep and Herbicide. E. A. Lehnhoff*, L. J. Rew, J. Mangold; Montana State University, Bozeman, MT (80)

Use of Herbicides to Control Western Juniper (*Juniperus occidentalis*) in Sagebrush Community. G. M. Sbatella*¹, S. Twelker²; ¹University of Wyoming, Powell, WY, ²Oregon Department of Agriculture, Madras, OR (81)

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Development of an Educational Mapping Tool for Documenting and Researching the Spread of Herbicide Resistant Weeds in the US. A. Klodd*¹, W. Curran¹, D. Miller¹, S. Crawford¹, D. Lingenfelter¹, A. S. Davis²; ¹Pennsylvania State University, University Park, PA, ²USDA-ARS, Urbana, IL (86)

Development of Tools for In-service Training and Grower Outreach Regarding Resistance Management Concepts. H. A. Sandler*¹, L. G. McDermott², K. M. Ghantous¹; ¹UMass Cranberry Station, East Wareham, MA, ²Cornell University, Ithaca, NY (87)

Economic Costs of Herbicide Resistant Weeds in the United States. G. Frisvold*; University of Arizona, Tucson, AZ (88)

Trash to Treasure: Amaranth Reconsidered as a Source of Nutrition and Alternate Grain Product. A. Taylor*, J. D. Byrd, Jr., Y. Zhang, S. Chang; Mississippi State University, Mississippi State, MS (89)

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Influence of Rainfastness, Adjuvant, Formulation, and Nozzle Type on Efficacy of PPO-inhibiting Herbicides on Palmer amaranth. V. K. Nandula*¹, W. T. Molin²; ¹USDA-ARS, Stoneville, MS, ²USDA, Stoneville, MS (90)

Day and Night Application of 2,4-D choline salt and glyphosate: Control of Glyphosate-resistant *Conyza sumatrensis*. G. L. Gomes*¹, C. A. Carbonari², E. D. Velini², U. R. Antuniassi²; ¹Faculdade de Ciências Agrônomicas / UNESP, Botucatu, Brazil, ²Universidade Estadual Paulista, Botucatu, Brazil (91)

A Two Year Summary of Glufosinate Efficacy Using Different Carrier Volumes and Nozzles. S. L. Taylor*¹, P. A. Dotray², J. Keeling¹, R. Perkins³; ¹Texas A&M AgriLife Research, Lubbock, TX, ²Texas Tech University, Lubbock, TX, ³Bayer CropScience, Lubbock, TX (92)

Non-AMS Adjuvants Effect on Dicamba+Clethodim Tank-mixture Antagonism in Control of *Palmer amaranth* and Volunteer Corn. M. L. Bernards*¹, B. G. Young², G. Obear³, F. Sexton³; ¹Western Illinois University, Macomb, IL, ²Purdue University, West Lafayette, IN, ³Exacto, Inc, Sharon, WI (93)

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The Effects of Seed Shattering Date on Germinability of Redroot Pigweed (*Amaranthus retroflexus*) and Yellow Foxtail (*Setaria glauca*). S. C. Haring*¹, M. L. Flessner¹, W. J. Everman², S. Mirsky³; ¹Virginia Tech, Blacksburg, VA, ²North Carolina State University, Raleigh, NC, ³USDA Sustainable Agricultural Systems Lab, Beltsville, MD (95)

Post-harvest Seed Production Potential of Palmer amaranth and Waterhemp in Southern US: A Nine Site-year Experiment. V. Singh*¹, P. A. Dotray², L. M. Schwartz³, J. K. Norsworthy³, M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Texas Tech University, Lubbock, TX, ³University of Arkansas, Fayetteville, AR (96)

A Replacement Series Experiment to Investigate the Competitiveness of Hybrid Toadflax. S. M. Ward*¹, S. E. Sing²; ¹Colorado State University, Fort Collins, CO, ²US Forest Service, Bozeman, MT (97)

Characterization of Flowering Time Pathways in *Camelina sativa*: a Potential Winter Cover Crop for Northern Climates. J. V. Anderson*¹, K. M. Dorn², W. S. Chao¹, D. P. Horvath¹, M. Dogramaci¹, M. Marks³, R. W. Gesch⁴, M. E. Foley⁵; ¹USDA-ARS, Fargo, ND, ²Kansas State University, Manhattan, KS, ³University of Minnesota, St. Paul, MN, ⁴USDA-ARS, Morris, MN, ⁵USDA ARS, Fargo, ND (98)

Genetic Diversity of *Echinochloa* spp. in Korea Inferred From New Simple Sequence Repeats. J. Lee*¹, I. Lee¹, C. Kim¹, K. Park²; ¹National Institute of Agricultural Sciences, Wanju, South Korea, ²Chungnam National University, Daejeon, South Korea (99)

Barnyardgrass or Junglerice: Using KASP for *Echinochloa* Species Identification. C. E. Rouse*¹, D. Pettinga², C. Oliveira³, T. A. Gaines², N. R. Burgos¹; ¹University of Arkansas, Fayetteville, AR, ²Colorado State University, Fort Collins, CO, ³Universidade Federal de Pelotas, Pelotas, Brazil (100)

Growth and Morphological Comparison of Glyphosate-resistant *Amaranthus palmeri*, *A. spinosus* and their Interspecific Hybrids. W. T. Molin*¹, V. K. Nandula², A. A. Wright³; ¹USDA, Stoneville, MS, ²USDA-ARS, Stoneville, MS, ³Mississippi State University, Stoneville, MS (101)

Dose-response Effects of Glyphosate on Small vs Large Rosettes of Susceptible *Conyza canadensis* in a Greenhouse Experiment. P. Ellis*, Z. T. Beres, A. A. Snow; Ohio State University, Columbus, OH (102)

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A Novel Potential Option to Control the Invasive Weed *Kochia scoparia* by Using Biocontrol Agents. G. V. Reddy*¹, G. Shrestha¹, P. Jha²; ¹Montana State University, Conrad, MT, ²Montana State University, Huntley, MT (103)

The Potential Use of *Sorghum bicolor* (L.) Moench Shoot Extracts as a Bio-herbicide. H. Le thi¹, O. Won¹, Y. Park¹, J. Hwang², S. Park¹, K. Park*¹; ¹Chungnam National University, Daejeon, South Korea, ²National Institute of Crop Science, Jeonju, South Korea (104)

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A Glyphosate-Resistant Palmer Amaranth (*Amaranthus palmeri*) Population Confirmed in California. A. Shrestha*¹, K. M. Steinhauer¹, M. To¹, S. Budhathoki¹, J. Angeles¹, S. Rios², B. Hanson³; ¹California State University, Fresno, CA, ²University of California Cooperative Extension, Riverside, CA, ³University of California, Davis, CA (106)

Resistance to ALS Inhibitors in *Amaranthus tuberculatus* and *A. retroflexus* from Mississippi. V. K. Nandula*¹, J. Ray²; ¹USDA-ARS, Stoneville, MS, ²USDA, Stoneville, MS (107)

Investigations into Suspected Clethodim-Resistant Johnsongrass and Italian Ryegrass from Mississippi. V. K. Nandula*¹, G. Sharma², T. Tseng³, J. Bond⁴; ¹USDA-ARS, Stoneville, MS, ²Mississippi State University, Mississippi State, MS, ³Mississippi State University, Starkville, MS, ⁴Mississippi State University, Stoneville, MS (108)

Investigations of Multiple Herbicide Resistance in Italian Ryegrass Populations from Orchards and Roadsides in California. P. Tehranchian*¹, V. K. Nandula², I. M. Heap³, M. Jasieniuk¹; ¹University of California, Davis, CA, ²USDA-ARS, Stoneville, MS, ³WeedSmart, Corvallis, OR (109)

Identification of Candidate Resistance Genes in Multiple Herbicide Resistant *Echinochloa colona*. A. A. Wright*¹, R. Sasidharan², M. Rodriguez², D. Peterson³, V. K. Nandula⁴, J. Ray⁵, J. Bond¹, D. Shaw³; ¹Mississippi State University, Stoneville, MS, ²BASE, Research Triangle Park, NC, ³Mississippi State University, Mississippi State, MS, ⁴USDA-ARS, Stoneville, MS, ⁵USDA, Stoneville, MS (110)

A Highly Sensitive Continuous Assay for 5-enolpyruvyl-shikimate Synthase. S. M. Duff*, D. Sammons; Monsanto, St. Louis, MO (111)

Italian Ryegrass from Iredell County, North Carolina is Resistant to Glufosinate, ACCase- and ALS-inhibiting Herbicides. W. T. Molin*¹, V. K. Nandula², A. A. Wright³; ¹USDA, Stoneville, MS, ²USDA-ARS, Stoneville, MS, ³Mississippi State University, Stoneville, MS (112)

The EPSPS Replicon: A Prodigious Vector for Gene Copy Number Proliferation in *Amaranthus palmeri*. W. T. Molin*¹, C. Saski²; ¹USDA, Stoneville, MS, ²Clemson University, Clemson, SC (113)

Survey of the Genomic Landscape Surrounding the EPSPS Gene in Glyphosate-resistant *Amaranthus palmeri* from Geographically Distant Locations. W. T. Molin*¹, M. Jugulam², M. J. VanGessel³, R. E. Hoagland⁴, W. B. McCloskey⁵; ¹USDA, Stoneville, MS, ²Kansas State University, Manhattan, KS, ³University of Delaware, Georgetown, DE, ⁴USDA-ARS, Stoneville, MS, ⁵University of Arizona, Tucson, AZ (114)

Influence of Light Intensity and Soil Moisture Levels on Control of Glyphosate-Resistant Junglerice (*Echinochloa colona*) with Postemergence Herbicides. K. M. Steinhauer*, A. Shrestha; California State University, Fresno, CA (115)

GISH and FISH Mapping of EPSPS Copies in Interspecific Hybrids of *Amaranthus spinosus* and *Amaranthus palmeri*. M. Jugulam*¹, S. Menzer¹, D. Koo¹, V. K. Nandula², C. R. Thompson¹, B. Friebe¹, B. S. Gill¹; ¹Kansas State University, Manhattan, KS, ²USDA-ARS, Stoneville, MS (116)

Palmer amaranth Gender Differentiation Under Abiotic Stress and Implications for Integrated Control. N. E. Korres*, J. K. Norsworthy; University of Arkansas, Fayetteville, AR (117)

Defining the Locoweed-Fungal Endophyte Complex: A Common Garden Study Comparing Locoweed Growth With and Without its Fungal Endophyte. T. Sterling*, B. K. Keith; Montana State University, Bozeman, MT (118)

Effect of Salinity on Cardinal Temperature of *Malva sylvestris*. O. Ansari¹, J. Gherekhloo¹, B. Kamkar¹, F. Ghaderi Far¹, P. T. Fernandez-Moreno², R. De Prado*³; ¹Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Iran, ²University of Cordoba, Cordoba, Spain, ³Department of Agricultural Chemistry and Edaphology, University of Cordoba, Cordoba, Spain (119)

Fitness Costs and Mechanism of Acetolactate Synthase-inhibiting Herbicide Resistance in Annual Bluegrass. T. Tseng^{*1}, E. Santos², V. K. Nandula³, E. E. Wilson², G. Sharma², J. D. McCurdy²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS, ³USDA-ARS, Stoneville, MS (120)

Germination Response of Sea Barley (*Hordeum marinum*) to Temperature. M. Taheri¹, J. Gharekhloo¹, A. Siahmarguee¹, O. Ansari¹, P. T. Fernandez-Moreno², R. De Prado^{*3}; ¹Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Iran, ²University of Cordoba, Cordoba, Spain, ³Department of Agricultural Chemistry and Edaphology, University of Cordoba, Cordoba, Spain (121)

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***PRESENTER**

Trends in Relative Toxicity of Herbicide Use in the United States, 1990 to 2015. A. R. Kniss^{*}; University of Wyoming, Laramie, WY (122)

Dynamics of Sulfentrazone and Flumioxazin Applied to *Eucalyptus* Harvest Residues. C. A. Carbonari^{*}, G. Gomes, E. D. Velini; Universidade Estadual Paulista, Botucatu, Brazil (123)

Effect of New Auxin Herbicide Formulations on Control of Herbicide Resistant Weeds and on Microbial Activities in the Rhizosphere. V. K. Nandula^{*1}, H. L. Tyler²; ¹USDA-ARS, Stoneville, MS, ²USDA, Stoneville, MS (124)

Effect of Air CO₂ Concentration in Phytoremediation of Imidazolinone Herbicide. L. A. Avila^{*}, L. P. Souza; Universidade Federal de Pelotas, Pelotas, Brazil (125)

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***PRESENTER**

Herbicide Resistance and Management in Flaxleaf Fleabane (*Conyza bonariensis* (L.) Cronquist) from the Southeast Region of Cordoba, Argentina. E. Bracamonte¹, A. Leoni¹, R. Tabasso¹, P. Bellucini², P. T. Fernandez-Moreno³, R. De Prado^{*4}; ¹Faculty of

Agricultural Sciences, University of Cordoba, Cordoba, Argentina, ²INTA EEA Marcos Suarez, Cordoba, Argentina, ³University of Cordoba, Cordoba, Spain, ⁴Department of Agricultural Chemistry and Edaphology, University of Cordoba, Cordoba, Spain (126)

Effect of Mixing 2,4-D and Sulfosulfuron on Wild Mustard Control. S. Akhundi¹, J. Gharekhloo¹, N. Bagherani², P. T. Fernandez-Moreno³, R. De Prado^{*4}; ¹Gorgan University of Agricultural Sciences and Natural Resources, Gorgan, Iran, ²Agricultural Research Center of Glestani, Gorgan, Iran, ³University of Cordoba, Cordoba, Spain, ⁴Department of Agricultural Chemistry and Edaphology, University of Cordoba, Cordoba, Spain (127)

Impact of Palmer amaranth on Soybean Productivity as Influenced by Varying Rates of Metribuzin and Sulfentrazone. M. de Avellar^{*1}, R. Werle²; ¹University of Nebraska, Lincoln, Lincoln, NE, ²University of Nebraska, Lincoln, North Platte, NE (128)

Delayed Glyphosate Application for No-Till Fallow in the Driest Region of the Inland Pacific Northwest. L. Lutchter^{*}; Oregon State University, Corvallis, OR (129)

Cash Cover Crops Suppress Summer Annual Weeds. F. Forcella^{*1}, R. Gesch¹, D. Wyse²; ¹USDA, Morris, MN, ²University of Minnesota, St Paul, MN (130)

Cover Crop Species Response to Single Active Ingredient Residual Herbicides with Simulated Half-life Doses. B. S. Heaton^{*1}, M. L. Bernards¹, R. Werle²; ¹Western Illinois University, Macomb, IL, ²University of Nebraska, Lincoln, North Platte, NE (131)

Comparison of Rolled Cover Crop Mulch and Residual Fall Herbicide for Horseweed (*Conyza canadensis*) Suppression. K. B. Pittman^{*}, M. L. Flessner; Virginia Tech, Blacksburg, VA (132)

Improving Selectivity of Physical Weed Control: New Tricks for Old Dogs? D. C. Brainard^{*}, S. Hitchcock Tilton; Michigan State University, East Lansing, MI (133)

TUESDAY MORNING FEBRUARY 7

Oral Contest – MS Students

LOCATION: Joshua Tree
TIME: 9:30 AM – 12:00 PM
CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS

*SPEAKER † STUDENT CONTEST

- 9:30 †Distribution and Control of Glyphosate-resistant Waterhemp (*Amaranthus tuberculatus* var. *rudis*) in Soybean (*Glycine max*) in Ontario.** M. G. Schryver^{*1}, N. Soltani², D. C. Hooker², D. E. Robinson², P. J. Tranel³, P. H. Sikkema²; ¹University of Guelph, London, ON, ²University of Guelph, Ridgetown, ON, ³University of Illinois, Urbana, IL (134)
- 9:45 †Organic Weed Management Using Air-Propelled Abrasive Grit Management.** M. G. Carlson^{*1}, S. Clay¹, F. Procetta², S. Wortman³; ¹South Dakota State University, Brookings, SD, ²USDA-ARS, Morris, MN, ³University of Nebraska-Lincoln, Lincoln, NE (135)
- 10:00 †Effect of Common Ragweed on Soybean Growth and Yield.** E. Barnes^{*1}, A. Jhala², S. Knezevic¹, P. H. Sikkema³, J. Lindquist⁴; ¹University of Nebraska- Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Lincoln, NE, ³University of Guelph, Ridgetown, ON, ⁴University of Nebraska – Lincoln, Lincoln, NE (136)
- 10:15 †Effects of Interseeded Cover Crops on Weed Seed Predation in Corn.** C. Z. Youngerman^{*1}, A. DiTommaso¹, J. Losey¹, W. Curran², S. Mirsky³, M. Ryan¹; ¹Cornell University, Ithaca, NY, ²Pennsylvania State University, University Park, PA, ³USDA Sustainable Agricultural Systems Lab, Beltsville, MD (137)
- 10:30 †Cotton and Peanut Response to Fluridone.** D. L. Teeter^{*1}, T. A. Baughman¹, P. A. Dotray², C. D. Curtsinger¹, R. W. Peterson¹; ¹Oklahoma State University, Ardmore, OK, ²Texas Tech University, Lubbock, TX (138)

10:45 †The Effects of Cover Crop Quantity and Quality on Rolled Cover Degradation and Cash Crop Yield. K. B. Pittman^{*}, M. L. Flessner; Virginia Tech, Blacksburg, VA (139)

11:00 †Evaluating Herbicide Technologies in Oklahoma Soybean. C. D. Curtsinger^{*}, T. A. Baughman, D. L. Teeter, R. W. Peterson; Oklahoma State University, Ardmore, OK (140)

11:15 †Nicosulfuron as a Suppressant in a Living Mulch of Annual Ryegrass (*Lolium multiflorum* Lam.) in Corn (*Zea mays* L.). T. B. Cholette^{*}, D. E. Robinson, D. C. Hooker, P. H. Sikkema; University of Guelph, Ridgetown, ON (141)

11:30 †Residual Pigweed Control with VLCFA Herbicides. M. M. Hay^{*}, D. E. Peterson, D. E. Shoup; Kansas State University, Manhattan, KS (142)

11:45 †Weed Communities Shift in Response to Organic No-Till Integrated with Grazing. S. K. Hogstad^{*1}, G. G. Gramig¹, P. Carr²; ¹North Dakota State University, Fargo, ND, ²Montana State University, Moccasin, MT (143)

TUESDAY MORNING FEBRUARY 7

Oral Contest – PhD Students

LOCATION: Agave Ballroom
TIME: 9:30 AM – 12:00 PM
CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS

*SPEAKER † STUDENT CONTEST

- 9:30 †A Novel Mechanism that Confers Reduced Glyphosate Sensitivity in *Kochia scoparia*.** N. Soni^{*}, K. Ravet, M. Fleming, S. J. Nissen, P. Westra, T. A. Gaines; Colorado State University, Fort Collins, CO (144)
- 9:45 †Methods to Enhance Germination of the Recalcitrant Giant Ragweed Seed.** N. T. Harre^{*}, S. C. Weller, B. G. Young; Purdue University, West Lafayette, IN (145)

- 10:00 †Transcriptome Profiles of Quinclorac-Resistant *Echinochloa colona* with Resistance to Multiple Herbicides.** C. E. Rouse*¹, C. Saski², A. Lawton-Rauh², N. R. Burgos¹; ¹University of Arkansas, Fayetteville, AR, ²Clemson University, Clemson, SC (146)
- 10:15 †Germination Ecology of Two Australian Biotypes of *Parthenium hysterophorus* L.: Implications for Weed Invasion.** A. A. Bajwa*, B. S. Chauhan, S. W. Adkins; The University of Queensland, Gatton, Australia (147)
- 10:30 †Transference of Herbicide Tolerance from GM Soybean Rootstock to Conventional Soybean Scion.** Y. Chen*, D. Doohan; Ohio State University, Wooster, OH (148)
- 10:45 †Impacts of Environmental and Biological Stressors on the Population Dynamics of Multiple Herbicide Resistant *Avena fatua* (L.).** E. E. Burns*¹, E. A. Lehnhoff², W. E. Dyer¹, F. D. Menalled¹; ¹Montana State University, Bozeman, MT, ²New Mexico State University, Las Cruces, NM (149)
- 11:00 †Dicamba- and Glyphosate-Resistant Genes are not Linked in *Kochia (Kochia scoparia)*.** J. Ou*¹, P. W. Stahlman², A. K. Fritz¹, M. Jugulam¹; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Hays, KS (150)
- 11:15 †Field Dissipation of S-metolachlor in Organic and Mineral Soils in the Everglades Agricultural Area of South Florida.** J. V. Fernandez*¹, D. C. Otero¹, G. E. MacDonald², J. Ferrell², B. Sellers³, P. C. Wilson²; ¹University of Florida, Belle Glade, FL, ²University of Florida, Gainesville, FL, ³University of Florida, Ona, FL (151)
- 11:30 †First Case of Multiple-Resistance to Glyphosate and PPO-Inhibiting Herbicides in Rigid Ryegrass (*Lolium rigidum* L.) Biotypes from Spain.** P. T. Fernandez-Moreno*¹, A. M. Rojano-Delgado¹, J. Menendez-Calle², R. J. Smeda³, R. De Prado⁴; ¹University of Cordoba, Cordoba, Spain, ²University of Huelva, Huelva, Spain, ³University of Missouri, Columbia, MO, ⁴Department of Agricultural Chemistry and Edaphology, University of Cordoba, Cordoba, Spain (152)

- 11:45 †Cover Crop and Weed Management in a Living Mulch Plus Reduced-Rate Herbicide System in Wide-Row Vegetables.** V. Bhaskar*, R. Bellinder, A. DiTommaso, S. Reinert; Cornell University, Ithaca, NY (153)

TUESDAY MORNING FEBRUARY 7

Navigating the New Landscape of Federal Funding for Weed Science Research

LOCATION: Turquoise III
 TIME: 10:00 AM – 12:00 PM
 CHAIR: James Westwood
 Virginia Tech
 Blacksburg, VA

*SPEAKER

- 10:00 Federal Support of Weed Science Research and Extension.** M. Fitzner*; USDA NIFA, Washington, DC (154)
- 10:20 Open Discussion: WSSA Member Input on Key Problems that Need Federal Support for Research & Extension Projects.** J. Westwood*; Virginia Tech, Blacksburg, VA (155)
- 10:40 Mini Workshop to Provide Tips & Tricks for Being Successful in Obtaining NIFA Funding.** M. Fitzner*; USDA NIFA, Washington, DC (156)
- 11:10 Lessons and Impressions from the 2016 Competition.** D. A. Mortensen*; Pennsylvania State University, University Park, PA (157)
- 11:30 Panel Discussion: How to Enhance Weed Science Participation in the Federal Grants Process.** D. Shilling*; University of Georgia, Athens, GA (158)

TUESDAY MORNING FEBRUARY 7

Section 1. Agronomic Crops

LOCATION: Presidio V
TIME: 10:00 AM – 12:00 PM
CHAIR: Pete Eure
Syngenta Crop Protection
Houston, TX

*SPEAKER

- 10:00 Humidome: A New Method to Determine Volatility of Pesticides.** W. K. Gavlick*; Monsanto, St Louis, MO (159)
- 10:15 Planned Comercial Formulations Containing VaporGrip Technology for Use in the Roundup Ready 2 Xtend Crop System.** A. MacInnes*; Monsanto Company, St Louis, MO (160)
- 10:30 Weed Control with Dicamba in the Xtend Crop System.** R. J. Rector*; Monsanto, St. Louis, MO (161)
- 10:45 A New S-metolachlor Plus Dicamba Premix as an Effective Tool in an Integrated Weed Management Program in Dicamba-tolerant Soybeans.** R. Jain*¹, B. Miller², T. Trower², A. J. Moses², D. Porter²; ¹Syngenta Crop Protection, Vero Beach, FL, ²Syngenta Crop Protection, Greensboro, NC (162)
- 11:00 Knowing When to Spray: Monitoring Surface Temperature Inversions and Daily Wind Speed and Air Temperature Profiles in Missouri.** M. D. Bish*, K. W. Bradley; University of Missouri, Columbia, MO (163)
- 11:15 Mitigating Off-Target Applications in the Form of Drift and Tank Contamination.** D. B. Reynolds*¹, G. Kruger², Z. Carpenter¹, T. Foster¹; ¹Mississippi State University, Mississippi State, MS, ²University of Nebraska, Lincoln, NE (164)
- 11:30 Off-Target Dicamba in Tennessee: an Extension Perspective.** L. E. Steckel*; University of Tennessee, Jackson, TN (165)
- 11:45 A Season to Remember: Our Experiences with Off-target Movement of Dicamba in Missouri.** K. W. Bradley*; University of Missouri, Columbia, MO (166)

TUESDAY MORNING FEBRUARY 7

Section 5. Wildland and Aquatic Invasive Plants

LOCATION: Presidio II
TIME: 10:00 AM – 11:45 AM
CHAIR: Mark Heilman
SePRO Corporation
Carmel, IN

*SPEAKER

- 10:00 Using Habitat Suitability Models to Prioiritize Monitoring Efforts for Invasive Plants.** M. J. Renz*, N. Jorgensen; University of Wisconsin Madison, Madison, WI (167)
- 10:15 Evaluation of Kudzu Control Options.** J. Omielan*¹, D. Gumm², M. Barrett¹; ¹University of Kentucky, Lexington, KY, ²Kentucky Transportation Cabinet, Jackson, KY (168)
- 10:30 Field and Mesocosm Evaluations of Future Aquatic Herbicide Use Patterns of PROCELLACOR™.** M. A. Heilman*; SePRO Corporation, Carmel, IN (169)
- 10:45 Evaluations of PROCELLACOR Efficacy and Selectivity for Hydrilla Control.** R. J. Richardson*¹, E. Haug¹, M. A. Heilman²; ¹North Carolina State University, Raleigh, NC, ²SePRO Corporation, Carmel, IN (170)
- 11:00 Can Reduced Rates of Rates of Glyphosate or Imazapyr Improve Torpedograss Control with Graminicides?** S. F. Enloe*; University of Florida, Gainesville, FL (171)
- 11:15 Buffelgrass Susceptibility to Herbicides in Greenhouse Experiments.** W. B. McCloskey*¹, D. Backer²; ¹University of Arizona, Tucson, AZ, ²Saguaro National Park, Tucson, AZ (172)
- 11:30 Section Business Meeting**

TUESDAY AFTERNOON FEBRUARY 7

Oral Contest – MS Students

LOCATION: Joshua Tree
TIME: 1:00 PM – 4:30 PM
CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS

*SPEAKER † STUDENT CONTEST

- 1:00 †Palmer Amaranth Growth in Southeastern South Dakota.** S. Clay, B. M. Van De Stroet*; South Dakota State University, Brookings, SD (173)
- 1:15 †Greenhouse Screening and Field Characterization for Developing Auxin and Glyphosate Tolerant Tomatoes.** G. Sharma^{*1}, Z. Yue², E. Avila dos Santos³, T. Tseng²; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MS, ³Universidade Federal De Santa Maria, Santa Maria, Brazil (174)
- 1:30 †The Role of Late-Season Weather Events on Seed Shattering of Redroot Pigweed (*Amaranthus retroflexus*) and Common Ragweed (*Ambrosia artemisiifolia*).** S. C. Haring^{*1}, M. L. Flessner¹, W. J. Everman², S. Mirsky³; ¹Virginia Tech, Blacksburg, VA, ²North Carolina State University, Raleigh, NC, ³USDA Sustainable Agricultural Systems Lab, Beltsville, MD (175)
- 1:45 †Screening and Characterization for Competitive Traits among Weedy Rice Germplasm.** S. Shrestha*, T. Tseng; Mississippi State University, Starkville, MS (176)
- 2:00 †Evaluation of Post Emergence Herbicides for Goldenrod(*Solidago spp.*) Management in Wildbluerry Fields.** M. Farooq*; Nova Scotia Agricultural College, Truro, NS (177)
- 2:15 †Confirmation and Mechanism of Resistance to Glyphosate in *Eleusine indica* from Brazil.** H. K. Takano*, R. S. Oliveira Jr, J. Constantin; Maringa State University, Maringa, Brazil (178)

- 2:30 †The Effect of Safened Sulfonlyurea Herbicides on ALS-sensitive Field Corn Hybrids.** O. W. Carter^{*1}, E. P. Prostko¹, J. W. Davis²; ¹University of Georgia, Tifton, GA, ²University of Georgia, Griffing, GA (179)
- 2:45 †A Pooled Whole-genome Sequencing Approach to Characterizing ALS-Inhibitor Resistance in Mouse-ear Cress (*Arabidopsis thaliana*).** R. S. Randhawa^{*1}, M. L. Flessner¹, J. H. Westwood¹, C. W. Cahoon², D. C. Haak¹; ¹Virginia Tech, Blacksburg, VA, ²Virginia Tech, Painter, VA (180)
- 3:00 Break**
- 3:30 †Efficacy of Aquathol and KFD-94-10 for Curlyleaf Pondweed (*Potamogeton crispus*) Control Under Simulated Fall Conditions.** M. F. Ortiz^{*1}, J. Scarpin², S. J. Nissen¹, C. J. Gray³; ¹Colorado State University, Fort Collins, CO, ²Universidade de Sao Paulo/ESALQ, Piracicaba, Brazil, ³UPI, Peyton, CO (181)
- 3:45 †De novo Transcriptome Assembly and Analysis of 4-hydroxyphenylpyruvate Dioxygenase Inhibitor Herbicide Resistance in *Amaranthus tuberculatus*.** D. Kohlhasse^{*1}, M. Owen¹, M. Graham²; ¹Iowa State University, Ames, IA, ²USDA-ARS, Ames, IA (182)
- 4:00 †Herbicide Efficacy on Different Morphological Types of the Water Primrose Complex (*Ludwigia uruguayensis*) in Florida.** A. Banu*, S. F. Enloe, C. C. Jacono; University of Florida, Gainesville, FL (183)
- 4:15 †Ploidy Plasticity: Exploring Novel Mechanisms of Stress Tolerance in a Global Invader.** A. L. Smith*, D. C. Haak, D. Z. Atwater, J. N. Barney; Virginia Tech, Blacksburg, VA (184)

TUESDAY AFTERNOON FEBRUARY 7

Oral Contest – PhD Students

LOCATION: Agave Ballroom
TIME: 1:00 PM – 5:00 PM
CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS

*SPEAKER † STUDENT CONTEST

1:00 Absorption and Translocation of Clopyralid in Strawberry and Black Medic. S. M. Sharpe*¹, N. Boyd², P. Dittmar¹, R. Darnell¹, G. E. MacDonald¹, J. Ferrell¹; ¹University of Florida, Gainesville, FL, ²University of Florida, Balm, FL (185)

1:15 †Indaziflam and Imazapic Interception and Sorption by Downy Brome (*Bromus tectorum*), Medusahead (*Taeniatherum caput-medusae*), and Ventenata (*Ventenata dubia*) Thatch. P. V. Da Silva*¹, S. L. Clark², D. J. Sebastian², S. J. Nissen²; ¹Universidade de Sao Paulo/ESALQ, Piracicaba, Brazil, ²Colorado State University, Fort Collins, CO (186)

1:30 Genotypic and Phenotypic Diversity of Glyphosate Resistant Giant Ragweed (*Ambrosia trifida*). J. C. Walker, III*¹, T. Tseng¹, D. B. Reynolds², D. Shaw²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (187)

1:45 †Characterization of Abiotic Stress Tolerant Weedy Rice for Improvement of Rice. S. D. Stallworth*¹, T. Tseng²; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MS (188)

2:00 †Are All Auxin Herbicides Created Equal? Investigating Differences Between 2,4-D and Dicamba. C. L. McCauley*, B. G. Young; Purdue University, West Lafayette, IN (189)

2:15 Hyperpectral Reflectance Spectroscopy for Multiple Crop and Weed Species Differentiation. N. T. Basinger*, K. M. Jennings, D. W. Monks, E. L. Hestir, W. J. Everman, D. L. Jordan; North Carolina State University, Raleigh, NC (190)

2:30 †Palmer Amaranth Control and Tolerance of Sweetpotato (*Ipomoea batatas*) to Flumioxazin/Pyrooxasulfone. S. C. Beam*¹, K. M. Jennings², D. W. Monks², M. D. Waldschmidt², N. T. Basinger², M. B. Bertucci², S. J. McGowen²; ¹Virginia Tech, Blacksburg, VA, ²North Carolina State University, Raleigh, NC (191)

2:45 †Potential Crop Injury with Early Post Applications in XtendFlex Cotton. C. A. Samples*¹, D. M. Dodds², G. Kruger³, D. B. Reynolds¹, J. T. Irby¹, A. Catchot¹, S. Davis¹, M. T. Plumblee², L. X. Franca², B. R. Wilson¹, J. T. Fowler Jr.⁴; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MS, ³University of Nebraska, Lincoln, NE, ⁴Monsanto Company, St. Louis, MO (192)

3:00 Break

3:30 †Influence of Droplet size on Lactofen and Acifluorfen Effectiveness for Palmer amaranth Control. L. X. Franca*¹, D. M. Dodds¹, G. R. Kruger², T. Butts³, C. A. Samples⁴, M. T. Plumblee¹, A. B. Denton⁴, B. R. Wilson⁴, S. Davis⁴; ¹Mississippi State University, Starkville, MS, ²University of Nebraska, North Plate, NE, ³University of Nebraska – Lincoln, Lincoln, NE, ⁴Mississippi State University, Mississippi State, MS (193)

3:45 †Chemical Programs for Annual Bluegrass Seedhead Suppression on Golf Greens. J. R. Brewer*, S. Rana, S. Askew; Virginia Tech, Blacksburg, VA (194)

4:00 †Herbicide Programs for *Rubus* sp. Control in Low-maintenance Turf. J. M. Craft*, J. R. Brewer, S. Askew; Virginia Tech, Blacksburg, VA (195)

4:15 †Changing the ‘hack and squirt’ Paradigm for Woody Invasive Plant Control. C. A. Lastinger*¹, S. F. Enloe²; ¹University of Florida, Lakeland, FL, ²University of Florida, Gainesville, FL (196)

4:30 †Comparing Rangeland Herbicides for Residual Weed Control and Native Species Tolerance. S. L. Clark*, D. J. Sebastian, S. J. Nissen; Colorado State University, Fort Collins, CO (197)

4:45 †Influence of Grafting on the Critical Period for Weed Control in Watermelon. M. B. Bertucci*¹, K. M. Jennings¹, D. W. Monks¹, D. L. Jordan¹, F. J. Louws¹, J. R. Schultheis²; ¹North Carolina State University, Raleigh, NC, ²NC State University, Raleigh, NC (198)

TUESDAY AFTERNOON FEBRUARY 7

Symposium: Contributions of USDA, ARS Areawide Projects in Weed Science Research and Practice

LOCATION: Turquoise III
TIME: 1:00 PM – 5:00 PM
CHAIR: John Madsen
USDA ARS
Davis, CA

***SPEAKER**

1:00 What is an Areawide Pest Management Program, and When is it Needed? R. James*; USDA-ARS, Beltsville, MD (199)

1:20 The California Delta: Awash in Weeds Amidst a Drought. J. D. Madsen*; USDA ARS, Davis, CA (200)

1:45 TAME Melaleuca. P. Pratt*; USDA-ARS, Albany, CA (201)

2:10 TEAM Leafy Spurge – A Long-term Success. R. G. Lym*; North Dakota State University, Fargo, ND (202)

2:35 Developing Decision Support Approaches for Areawide Control of Invasive Annual Grasses on Rangelands. R. Sheley*; USDA-ARS, Burns, OR (203)

3:00 Break

3:30 Why an Areawide Approach is Key to Addressing Herbicide Resistance in Grain Crop Production Systems. A. S. Davis*; USDA-ARS, Urbana, IL (204)

3:55 Factors Influencing Farmer Decision Making in Areawide Weed Management. G. Frisvold*; University of Arizona, Tucson, AZ (205)

4:20 Concluding Remarks: The Future of Areawide Projects in USDA. R. James*; USDA-ARS, Beltsville, MD (206)

TUESDAY AFTERNOON FEBRUARY 7

Section 1. Agronomic Crops

LOCATION: Presidio V
TIME: 1:00 PM – 5:00 PM
CHAIR: Pete Eure
Syngenta Crop Protection
Houston, TX

***SPEAKER**

1:00 Cotton and Peanut Responses to 2,4-D and Dicamba Applied PRE and POST. S. Li*¹, R. G. Leon²; ¹Auburn University, Auburn, AL, ²University of Florida, Jay, FL (207)

1:15 Effect of Simulated Metribuzin Drift on Cotton and Soybean. T. B. Buck*¹, D. Stephenson², B. C. Woolam²; ¹LSU AgCenter, Baton Rouge, LA, ²LSU AgCenter, Alexandria, LA (208)

1:30 Evaluation of Residual Herbicides for Interseeding Cover Crops in Corn. W. Curran*¹, J. M. Wallace¹, S. Mirsky², M. Ryan³; ¹Pennsylvania State University, University Park, PA, ²USDA Sustainable Agricultural Systems Lab, Beltsville, MD, ³Cornell University, Ithaca, NY (209)

1:45 Response of Common Waterhemp and Corn to a Premix of Atrazine, Bicyclopyrone, Mesotrione, and S-metolachlor (Acuron®). D. Sarangi*, A. Jhala; University of Nebraska-Lincoln, Lincoln, NE (210)

2:00 New Premix Herbicide for Use in Corn. G. A. Elmore*; Monsanto, St. Louis, MO (211)

2:15 Minimizing Risk of Metribuzin Injury to Soybeans in Weed Management Systems. N. Rana*¹, K. Kretzmer¹, P. Feng²; ¹Monsanto Company, Chesterfield, MO, ²Monsanto, St Louis, MO (212)

- 2:30 Can Weeds Overtopping Soybean or Adzuki Beans be Mechanically Pulled to Reduce Seed Inputs?** M. Simard^{*1}, R. E. Nurse², E. R. Page²; ¹Agriculture and Agri-Food Canada, Quebec, QC, ²Agriculture and Agri-Food Canada, Harrow, ON (213)
- 2:45 Effect of Acifluorfen, Chlorimuron, and Lactofen Application Timing on Soybean.** D. Stephenson^{*1}, B. C. Woolam¹, T. B. Buck²; ¹LSU AgCenter, Alexandria, LA, ²LSU AgCenter, Baton Rouge, LA (214)
- 3:00 Break**
- 3:30 Soybean Flower and Pod Response to Diphenyl Ether Herbicides.** S. C. Beam^{*}, M. L. Flessner, K. B. Pittman; Virginia Tech, Blacksburg, VA (215)
- 3:45 Evaluation of Liberty Link Soybean Weed Control Programs.** R. W. Peterson^{*1}, T. A. Baughman¹, T. L. Grey², D. L. Teeter¹, C. D. Curtsinger¹; ¹Oklahoma State University, Ardmore, OK, ²University of Georgia, Tifton, GA (216)
- 4:00 Bicyclopyrone + Bromoxynil Herbicide: Introducing a New Postemergence Herbicide for Broadleaf Weed Control in Cereals.** S. M. Schraer^{*1}, P. Forster², D. Porter³, M. Saini³, T. Beckett³; ¹Syngenta Crop Protection, Meridian, ID, ²Syngenta Crop Protection, Eaton, CO, ³Syngenta Crop Protection, Greensboro, NC (217)
- 4:15 Trifludimoxazin: A New PPO Inhibitor That Controls PPO Resistant Weed Biotypes.** G. R. Armel^{*1}, K. Hanzlik², M. Witschel³, D. S. Hennigh¹, S. Bowe¹, A. Simon², R. Liebl¹, L. Mankin¹; ¹BASF Corporation, Research Triangle Park, NC, ²BASF Corporation, Limburgerhof, Germany, ³BASF Corporation, Ludwigshafen, Germany (218)
- 4:30 Novel PPO Herbicide Tolerant Trait Provides Robust Crop Tolerance to Multiple PPO Herbicides.** R. Aponte¹, L. Mankin^{*2}, S. Tresch¹, J. Lerchl¹, M. Witschel³, T. Mietzner³, G. R. Armel², R. Liebl⁴; ¹BASF SE, Limburgerhof, Germany, ²BASF Corporation, Research Triangle Park, NC, ³BASF SE, Ludwigshafen, Germany, ⁴BASF Corporation, Raleigh, NC (219)

- 4:45 Next Generation PPO Herbicides Deliver Broad-spectrum Weed Control Including Grass and PPO Resistant Biotypes.** L. Parra¹, T. Seiser¹, D. S. Hennigh², S. Bowe², G. R. Armel², L. Mankin³, R. Liebl^{*2}; ¹BASF SE, Limburgerhof, Germany, ²BASF Corporation, Research Triangle Park, NC, ³BASF Corp., Research Triangle Park, NC (220)

TUESDAY AFTERNOON FEBRUARY 7

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

LOCATION: Presidio II
 TIME: 1:00 PM – 2:15 PM
 CHAIR: Stephen Enloe
 University of Florida
 Gainesville, FL

*SPEAKER

- 1:00 Loblolly and Longleaf Pine Tolerance and Residual Weed Control Following Site Preparation with Mixes Containing Esplanade and Method.** A. W. Ezell^{*}, A. B. Self; Mississippi State University, Starkville, MS (221)
- 1:15 Use of Indaziflam for Herbaceous Weed Control in Longleaf Pine Plantings.** A. W. Ezell^{*}, A. B. Self; Mississippi State University, Starkville, MS (222)
- 1:30 Extending the Duration of Annual, Biennial, and Perennial Weed Control on Non-Cropland with Indaziflam Tank Mixes.** D. J. Sebastian^{*}, S. L. Clark, P. J. Meiman, S. J. Nissen; Colorado State University, Fort Collins, CO (223)
- 1:45 Managing Ventenata dubia Along the Invasion Curve: Farmer, Rancher and Land Manager Perspectives Shape Future Education Efforts.** T. Prather^{*1}, J. M. Wallace², P. Watson¹, N. Norton³, K. Painter¹; ¹University of Idaho, Moscow, ID, ²Pennsylvania State University, University Park, PA, ³Palouse Land Trust, Moscow, ID (224)
- 2:00 Section Business Meeting**

TUESDAY AFTERNOON FEBRUARY 7

Section 3. Turf and Ornamental Crops

LOCATION: Presidio II
TIME: 2:15 PM – 5:00 PM
MODERATOR: Kai Umeda
University of Arizona
Phoenix, AZ

*SPEAKER

- 2:15 A Three-year Study of Roughstalk Bluegrass Control with Methiozolin and Other Herbicides.** S. Askew*, S. Rana; Virginia Tech, Blacksburg, VA (225)
- 2:30 Application Temperature Impact on Efficacy of Postemergence Broadleaf Herbicides.** J. Derr*; Virginia Tech, Virginia Beach, VA (226)
- 2:45 Arylex™ Active: A New, Innovative Herbicide for the Control of Broadleaf Weeds in Turfgrass.** V. F. Peterson*¹, J. Breuninger², A. L. Alexander³, D. Loughner⁴; ¹Dow AgroSciences, Fort Collins, CO, ²Dow AgroSciences, Indianapolis, IN, ³Dow AgroSciences, Atlanta, GA, ⁴Dow AgroSciences, Lawrenceville, NJ (227)
- 3:00 Break**
- 3:30 Control of Turfgrass Weeds with Two New Arylex™ Active Formulations (GF-3566 and GF-2687) in Cool and Warm Season Turfgrass.** V. F. Peterson*¹, J. Breuninger², A. L. Alexander³, D. Loughner⁴; ¹Dow AgroSciences, Fort Collins, CO, ²Dow AgroSciences, Indianapolis, IN, ³Dow AgroSciences, Atlanta, GA, ⁴Dow AgroSciences, Lawrenceville, NJ (228)
- 3:45 Pinoxaden: A New Herbicide for Tropical Signalgrass (*Urochloa subquadriflora*) Management in Bermudagrass Turf.** N. G. Young*¹, R. G. Leon², J. R. James³; ¹Turfgrass Environmental Research Inc., Fort Lauderdale, FL, ²University of Florida, Jay, FL, ³Syngenta Crop Protection, Greensboro, NC (229)
- 4:00 Selective Summer Grass Weed Control in Desert Turf.** K. Umeda*; University of Arizona, Phoenix, AZ (230)

- 4:15 Postemergence Contact Herbicide Evaluation for Municipal Use in Response to Community Concerns.** C. Wilen*; University of California Cooperative Extension, San Diego, CA (231)

- 4:30 Soil Organic Matter and Volumetric Water Content as Explanatory Variables for Off Target Herbicide Injury.** T. Gannon, M. Jeffries, S. Brinton*; North Carolina State University, Raleigh, NC (232)

- 4:45 Section Business Meeting**

TUESDAY AFTERNOON FEBRUARY 7

Section 7. Education and Extension

LOCATION: Presidio 1
TIME: 2:15 PM – 4:30 PM
CHAIR: Te-Ming Paul Tseng
Mississippi State University
Starkville, MS

*SPEAKER

- 2:15 The Global Herbicide Resistance Action Committee – Industry Engagement and Commitment.** M. A. Peterson*¹, A. Cotie², M. Horak³, A. Landes⁴, G. le Goupil⁵, T. Obrigawitch⁶, D. Refsell⁷, M. Bonnet⁸, S. Shinn⁹; ¹Dow AgroSciences, West Lafayette, IN, ²Bayer Crop Science, Raleigh, NC, ³Monsanto, St. Louis, MO, ⁴BASF, Limburgerhof, Germany, ⁵Syngenta Crop Protection, Basel, Switzerland, ⁶DuPont Crop Protection, Wilmington, DE, ⁷Sumitomo Chemical, Walnut Creek, CA, ⁸Arysta LifeScience, Ougrée, Belgium, ⁹FMC, Philadelphia, PA (233)
- 2:30 Zero Tolerance: Replicating a Community-based Herbicide Resistance Management Model from Arkansas.** M. V. Bagavathiannan*¹, J. K. Norsworthy², T. Barber³, R. L. Nichols⁴, K. Smith⁵; ¹Texas A&M University, College Station, TX, ²University of Arkansas, Fayetteville, AR, ³University of Arkansas, Little Rock, AR, ⁴Cotton Inc., Cary, NC, ⁵FMC Corporation, Groveton, TX (234)

- 2:45 Next-gen Students: A Hands-on Approach to Teaching Molecular Biology and Genomics for Weed Science.** J. Westwood*¹, H. Mehl², D. C. Haak¹; ¹Virginia Tech, Blacksburg, VA, ²Virginia Tech, Suffolk, VA (235)
- 3:00 Break**
- 3:30 Stigmas revealed: Improved visualization using photo-stacking.** R. F. Norris*; University of California, Davis, CA (236)
- 3:45 Fenceline Vegetation Management: A Teaching Module for Extension Agents.** D. P. Russell*¹, J. D. Byrd, Jr.²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (237)
- 4:00 Establishment of a Weed Science Graduate Program at the Agriculture and Forestry University, Nepal.** A. Shrestha*¹, S. Sah², S. Dhakal², S. Marahatta², V. R. Duwadi³, C. Bhattachan³, A. Thapa³; ¹California State University, Fresno, CA, ²Agriculture and Forestry University, Rampur, Nepal, ³Winrock International, Lalitpur, Nepal (238)
- 4:15 Section Business Meeting**

WEDNESDAY MORNING FEBRUARY 8
Graduate Student Workshop: Utilizing Online Resources for the Development of a Professional Web Presence

LOCATION: Presidio IV
 TIME: 10:00 AM – 12:00 PM
 CHAIR: Nicholas Basinger
 North Carolina State University
 Raleigh, NC

WEDNESDAY MORNING FEBRUARY 8
Symposium: Understanding and Reducing the Impact of Herbicide Off-Site Movement

LOCATION: Turquoise III
 TIME: 10:00 AM – 4:40 PM
 CHAIR: Bryan Young
 Purdue University
 West Lafayette, IN

***SPEAKER**

- 10:00 Symposium Overview and Goals.** B. G. Young*; Purdue University, West Lafayette, IN (239)
- 10:10 A Retail Perspective on the Challenges and Costs Associated with Managing Pesticide Applications.** J. A. Bunting*; Growmark, Bloomington, IL (240)
- 10:35 A State Regulatory Perspective on Mitigating, Investigating, and Enforcing Off-Target Herbicide Movement.** D. E. Scott*; Office of Indiana State Chemist, West Lafayette, IN (241)
- 11:00 Assessing Pesticide Risks To Plants: An Overview of EPA's Standard Approach to Plant Risk Assessments.** E. Odenkirchen*, F. Farruggia, A. Overstreet; EPA, Washington, DC (242)
- 11:25 Case Studies Illustrating EPA's Process for Evaluating Plant Risk Mitigation Strategies.** F. Farruggia*, E. Odenkirchen, A. Overstreet; EPA, Washington, DC (243)
- 11:50 Discussion**
- 12:00 Lunch**
- 1:00 The Mechanics of Drift Reduction Technologies.** J. Ferguson*; Northwest Missouri State University, Maryville, MO (244)
- 1:25 The Chemistry in Drift Reduction Technologies.** S. Sun*; Croda, New Castle, DE (245)
- 1:50 Review of Herbicide Interactions: Predictable Trends or Interaction Soup?** B. G. Young*; Purdue University, West Lafayette, IN (246)
- 2:15 Experimental Design and Data Analysis for Herbicide Interaction Research.** A. R. Kniss*; University of Wyoming, Laramie, WY (247)
- 2:40 Discussion**
- 3:00 Break**
- 3:30 Panel Discussion**
- 4:20 Meeting the Challenge: How Do We Move Forward?** M. Barrett*; University of Kentucky, Lexington, KY (248)

WEDNESDAY MORNING FEBRUARY 8

Section 1. Agronomic Crops

LOCATION: Presidio V
TIME: 10:00 AM – 12:00 PM
CHAIR: Pete Eure
Syngenta Crop Protection
Houston, TX

*SPEAKER

10:00 Time of Day and Temperature Influence Palmer amaranth Efficacy with Glufosinate. D. Copeland*, W. J. Everman; North Carolina State University, Raleigh, NC (249)

10:15 Controlling PPO-resistant Palmer amaranth Using Preemergence Herbicides. T. A. Reinhardt*, D. Copeland, W. J. Everman; North Carolina State University, Raleigh, NC (250)

10:30 PPO-resistant Palmer amaranth: What We Have Learned After One Year of On-farm Research in Arkansas. T. Barber*¹, J. K. Norsworthy², R. Scott³; ¹University of Arkansas, Little Rock, AR, ²University of Arkansas, Fayetteville, AR, ³University of Arkansas-Cooperative Extension Service, Lonoke, AR (251)

10:45 A Survey of BMP Adoption for Resistance Management in U.S. Row Crops. J. K. Norsworthy*¹, M. Owen², J. Gunsolus³, W. J. Everman⁴, D. E. Ervin⁵, G. Frisvold⁶, T. Hurley⁷, R. Jussaume⁸, S. Welcher⁹; ¹University of Arkansas, Fayetteville, AR, ²Iowa State University, Ames, IA, ³University of Minnesota, St. Paul, MN, ⁴North Carolina State University, Raleigh, NC, ⁵Portland State University, Portland, OR, ⁶University of Arizona, Tucson, AZ, ⁷University of Minnesota, St Paul, MN, ⁸Michigan State University, East Lansing, MI, ⁹USDA, Beltsville, MD (252)

11:00 How Far is Argentina from Managing Herbicide Resistant Weeds Compared to USA and Australia? C. G. Rubione*, Claudio Rubione, Ciudad Autónoma de Buenos Aires, Argentina (253)

11:15 Socio-economic Factors Affecting Farmer Use of Weed Best Management Practices. G. Frisvold*¹, D. E. Ervin², W. J. Everman³, J. Gunsolus⁴, T. Hurley⁵, R. Jussaume⁶, J. K. Norsworthy⁷, M. Owen⁸, K. Dentzman⁶; ¹University of Arizona, Tucson, AZ, ²Portland State University, Portland, OR, ³North Carolina State University, Raleigh, NC, ⁴University of Minnesota, St. Paul, MN, ⁵University of Minnesota, St Paul, MN, ⁶Michigan State University, East Lansing, MI, ⁷University of Arkansas, Fayetteville, AR, ⁸Iowa State University, Ames, IA (254)

11:30 Rinskor™ Active, a Novel Herbicide Alternative for Global Weed Control in Rice. M. Morell*¹, R. K. Mann¹, N. M. Carranza², N. Dalla Valle³, D. Le⁴, H. Perry⁵, O. Shevchuk⁶, M. Yadav⁷; ¹Dow AgroSciences LLC, Indianapolis, IN, ²Dow AgroSciences, Ibague, Colombia, ³Dow AgroSciences, Bologna, Italy, ⁴Dow AgroSciences, Ho Chi Minh, Vietnam, ⁵Dow AgroSciences LLC, Greenville, MS, ⁶Dow AgroSciences, Valbonne, France, ⁷Dow AgroSciences, Mumbai, India (255)

11:45 Provisia (TM) Rice System – New Technology for Control of Red Rice and other Grasses. C. D. Youmans*¹, S. Tan², A. Rhodes³, J. Guice⁴, J. Schultz⁵, D. Westberg²; ¹BASF Crop., Dyersburg, TN, ²BASF Corp., RTP, NC, ³BASF Corp., Madison, MS, ⁴BASF Corp., Winnesboro, LA, ⁵BASF Corp., North Little Rock, AR (256)

WEDNESDAY MORNING FEBRUARY 8

Section 9. Weed Biology and Ecology

LOCATION: Presidio 1
TIME: 10:00 AM – 12:00 PM
CHAIR: Muthukumar Bagavathiannan
Texas A&M University
College Station, TX

*SPEAKER

10:00 Methodology, an Important Yet Often Ignored Component of Invasive Plant Impact Quantification. D. R. Tekiela*, J. N. Barney; Virginia Tech, Blacksburg, VA (257)

10:15 Differing Impacts of CO₂ and Drought Due to Competitive Interactions Between Annual and Perennial Grass. L. J. Rew*¹, C. Larson¹, E. A. Lehnhoff²; ¹Montana State University, Bozeman, MT, ²New Mexico State University, Las Cruces, NM (258)

10:30 A Chrono-geographical Assessment of Glyphosate resistance in Canadian Populations of *Conyza canadensis* L. E. R. Page*¹, C. Grainger², F. Tardif², I. Rajcan², M. Laforest³, R. E. Nurse¹; ¹Agriculture and Agri-Food Canada, Harrow, ON, ²University of Guelph, Guelph, ON, ³Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, ON (259)

10:45 Assessing Spatial Factors Influencing Evolution of Herbicide Resistance in a Population With an Individual Based Model. P. Hegedus*, B. D. Maxwell; Montana State University, Bozeman, MT (260)

11:00 Glyphosate-resistant and -susceptible Junglerice (*Echinochloa colona*) Biotype Responses to Temperature and Shade. L. M. Sosnoskie*¹, B. Hanson²; ¹University of California, Davis, CA, ²University of California, Davis, CA (261)

11:15 Differential Tolerance of a Glyphosate-Resistant and a -Susceptible Type of Junglerice (*Echinochloa colona*) to Environmental Stresses and Inter-specific Competition. A. Shrestha*, L. L. de Souza, R. Cox, P. Yang, K. M. Steinhauer, S. Budhathoki; California State University, Fresno, CA (262)

11:30 Managing glyphosate-resistant Common Ragweed (*Ambrosia artemisiifolia* L.): Effect of Glyphosate-phenoxy Tank-mixes on Growth, Fecundity and Seed Viability. J. Bae*¹, R. E. Nurse¹, M. Simard², E. R. Page¹; ¹Agriculture and Agri-Food Canada, Harrow, ON, ²Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, QC (263)

11:45 Confirmation and Control of Glyphosate Resistance in Weedy Sunflower (*Helianthus annuus*) in Texas Row Crops. V. Singh*¹, L. Etheredge², J. McGinty³, G. D. Morgan¹, M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Monsanto, Llano, TX, ³Texas A&M University, Corpus Christi, TX (264)

WEDNESDAY MORNING FEBRUARY 8

Section 13. Integrated Weed Management

LOCATION: Presidio II
TIME: 10:00 AM – 12:00 PM
CHAIR: Ramon Leon
University of Florida
Jay, FL
MODERATOR: Daniela Ribeiro
Monsanto
Chesterfield, MO

*SPEAKER

10:00 The impact of field demonstration programs in changing farmer thinking and behavior for weed resistance management. H. J. Strek*¹, G. Chancrin², D. Kerlen³, H. Naunheim³, M. Verbiest⁴, R. Beffa¹; ¹Bayer CropScience AG, Frankfurt, Germany, ²Bayer S.A.S., Lyon, France, ³Bayer CropScience AG, Langenfeld, Germany, ⁴Bayer CropScience NV, Diegem, Belgium (265)

10:15 Weed Management in Lettuce: Why Herbicide Resistant Weeds are a Nonissue. S. A. Fennimore*; University of California Davis, Salinas, CA (266)

10:30 Influence of Wheat Crop Production on the Efficacy of Harvest Weed Seed Control Systems. M. J. Walsh*¹, J. Broster², C. Aves³; ¹University of Sydney, Narrabri, Australia, ²Charles Sturt University, Wagga Wagga, Australia, ³University of Melbourne, Dookie, Australia (267)

10:45 Stacking Intra-row Cultivation Tools for Increased Efficacy: Evidence of Synergy. B. Brown*, E. Gallandt; University of Maine, Orono, ME (268)

11:00 Farmer Perspectives and Expectations: What is Thought About Herbicide-resistant Weed Management. M. D. Owen^{*1}, W. J. Everman², J. Gunsolus³, J. K. Norsworthy⁴, K. Dentzman⁵, G. Frisvold⁶, R. Jussaume⁵, T. Hurley³, S. Wechsler⁷; ¹Iowa State University, Ames, IA, ²North Carolina State University, Raleigh, NC, ³University of Minnesota, St. Paul, MN, ⁴University of Arkansas, Fayetteville, AR, ⁵Michigan State University, East Lansing, MI, ⁶University of Arizona, Tucson, AZ, ⁷USDA, Washington DC, MD (269)

11:15 The Role of Fall Cover Cropping in Diversifying Weed Management of Horseweed in Conservation Tillage Systems. J. M. Wallace^{*1}, W. Curran¹, M. J. VanGessel², D. A. Mortensen¹, J. M. Bunchek¹; ¹Pennsylvania State University, University Park, PA, ²University of Delaware, Georgetown, DE (270)

11:30 Neighbor and Community Effects of Herbicide Resistance Management: A National Survey of Farm Operators. D. E. Ervin^{*1}, K. Dentzman², W. J. Everman³, G. Frisvold⁴, J. Gunsolus⁵, R. Jussaume², J. K. Norsworthy⁶, T. Hurley⁷, M. Owen⁸, S. Wechsler⁹; ¹Portland State University, Portland, OR, ²Michigan State University, East Lansing, MI, ³North Carolina State University, Raleigh, NC, ⁴University of Arizona, Tucson, AZ, ⁵University of Minnesota, St. Paul, MN, ⁶University of Arkansas, Fayetteville, AR, ⁷University of Minnesota, St Paul, MN, ⁸Iowa State University, Ames, IA, ⁹U.S. Dept Agriculture, Washington, DC, DC (271)

11:45 Cover Crops for Weed Suppression in Kansas Cropping Systems. A. Dille^{*}, C. Ahlquist, D. E. Peterson; Kansas State University, Manhattan, KS (272)

1:00 Community Participation in Herbicide Resistance Surveying: A Case Study in California Rice. W. B. Brim-DeForest^{*1}, A. S. Godar², A. J. Fischer², K. Al-Khatib³; ¹University of California, Yuba City, CA, ²University of California, Davis, Davis, CA, ³University of California Davis, Davis, CA (273)

1:15 Evaluation of Pre- and Post-emergence Herbicides for Weed Control in Cassava Systems. F. Ekeleme^{*1}, A. Dixon², S. Hauser³, G. Atser³, S. C. Weller⁴, H. Usman⁵, P. M. Olorunmaiye⁶, D. Korieocha⁷; ¹International Institute of Tropical Agriculture, Ibadan, Germany, ²International Institute of Tropical Agriculture, Free Town, Sierra Leone, ³International Institute of Tropical Agriculture, Ibadan, Germany, ⁴Purdue University, West Lafayette, IN, ⁵University of Agriculture Makurdi, Makurdi, Germany, ⁶Federal University of Agriculture, Abeokuta, Germany, ⁷National Root Crops Research Institute, Umudike, Germany (274)

1:30 Venice mallow (*Hibiscus trionum*) control in dry edible beangrown for seed. G. M. Sbatella^{*}; University of Wyoming, Powell, WY (275)

1:45 Interactions Among Cultivation, Weeds, and Diseases in Organic Peanut Production: Has a Paradigm been Broken? W. C. Johnson III^{*1}, A. K. Culbreath²; ¹USDA-ARS, Tifton, GA, ²Univeristy of Georgia, Tifton, GA (276)

2:00 Managing Weeds in Inzen Sorghum: A New Technology. C. R. Thompson^{*1}, R. S. Currie², P. W. Stahlman³; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Garden City, KS, ³Kansas State University, Hays, KS (277)

2:15 Brake[®] Herbicide: Optimizing the Performance of a Cotton Weed Control System. K. R. Briscoe^{*}; SePRO Corporation, Whitakers, NC (278)

2:30 Section Business Meeting

WEDNESDAY AFTERNOON FEBRUARY 8

Section 1. Agronomic Crops

LOCATION: Presidio V
 TIME: 1:00 PM – 2:45 PM
 CHAIR: Pete Eure
 Syngenta Crop Protection
 Houston, TX

***SPEAKER**

WEDNESDAY AFTERNOON FEBRUARY 8

Section 9. Weed Biology and Ecology

LOCATION: Presidio 1
TIME: 1:00 PM – 4:30 PM
CHAIR: Muthukumar Bagavathiannan
Texas A&M University
College Station, TX

*SPEAKER

- 1:00 Palmer amaranth (*Amaranthus palmeri*) Adaptations to Cropping Systems: Looking Beyond Glyphosate-resistance.** W. Bravo¹, R. G. Leon^{*2}, J. Ferrell¹, M. Mulvaney², W. Wood²; ¹University of Florida, Gainesville, FL, ²University of Florida, Jay, FL (279)
- 1:15 A Neighbour's Light Will Stress You Out.** A. McKenzie-Gopsill¹, S. Amirsadeghi², C. J. Swanton^{*2}; ¹Agriculture and Agri-Food Canada, Charlottetown, PE, ²University of Guelph, Guelph, ON (280)
- 1:30 Plant Competition and the Concept of an Energy Imbalance.** C. J. Swanton^{*1}, E. R. Page², A. McKenzie-Gopsill³; ¹University of Guelph, Guelph, ON, ²Agriculture and Agri-Food Canada, Harrow, ON, ³Agriculture and Agri-Food Canada, Charlottetown, PE (281)
- 1:45 Effects of N Form and Crop Diversity on Weed-crop Competition.** R. G. Smith^{*}, N. Warren, E. Hobbie; University of New Hampshire, Durham, NH (282)
- 2:00 Weed Seed Bank Density in No-Till System.** M. A. Haidar^{*}; American University of Beirut, Beirut, Lebanon (283)
- 2:15 Weedy Rice Management in Direct Seeded Rice Systems.** V. Kumar^{*}, O. Namuco, J. Lawas-Opeña, K. P. Valencia, T. Migo; International Rice Research Institute, Los Banos, Philippines (284)
- 2:30 Tillage and Cover Crop Effects on Seed Persistence of Powell amaranth and Large Crabgrass.** M. Frost^{*}, D. C. Brainard, K. A. Renner, L. Tiemann; Michigan State University, East Lansing, MI (285)

- 2:45 Influences of Cover Crop Seeding Rate and Species Selection on Winter Annual Weeds Prior to Soybean.** E. Haramoto^{*}, M. Allen; University of Kentucky, Lexington, KY (286)

3:00 Break

- 3:30 Solarization in the Northeast Controls Weeds and Does Not Harm Soil Microbes.** S. K. Birthisel^{*}, E. Gallandt; University of Maine, Orono, ME (287)
- 3:45 Pasteurization of Mushroom Compost Reduces Weed Seed Viability.** K. M. Vollmer^{*}, M. J. VanGessel; University of Delaware, Georgetown, DE (288)
- 4:00 Time of Wild Oat Panicle Clipping on Seed Viability.** K. Harker^{*1}, B. D. Tidemann¹, J. T. ODonovan¹, C. J. Willenborg², S. J. Shirliffe², E. N. Johnson², L. A. Michielsen¹, P. L. Reid¹, E. A. Sroka¹, J. A. Zuidhof¹; ¹Agriculture & Agri-Food Canada, Lacombe, AB, ²University of Saskatchewan, Saskatoon, SK (289)
- 4:15 Identifying Potential Target Weeds for Harvest Weed Seed Control in Western Canada.** B. D. Tidemann^{*1}, L. M. Hall², K. Harker¹, H. J. Beckie³, E. N. Johnson⁴, F. Stevenson⁵; ¹Agriculture & Agri-Food Canada, Lacombe, AB, ²University of Alberta, Edmonton, AB, ³Agriculture & Agri-Food Canada, Saskatoon, SK, ⁴University of Saskatchewan, Saskatoon, SK, ⁵Private Consultant, Saskatoon, SK (290)

WEDNESDAY AFTERNOON FEBRUARY 8

Section 13. Integrated Weed Management

LOCATION: Presidio II
TIME: 1:00 PM – 1:45 PM
CHAIR: Ramon Leon
University of Florida
Jay, FL
MODERATOR: Daniela Ribeiro
Monsanto
Chesterfield, MO

*SPEAKER

**1:00 Integrated Harrington Seed Destructor:
How Effective Is It?** L. M. Schwartz*¹, J.
K. Norsworthy¹, M. J. Walsh²; ¹University of
Arkansas, Fayetteville, AR, ²University of Sydney,
Narrabri, Australia (291)

**1:15 Black Grass (*Alopecurus myosuroides* Huds.)
Resistance to ALS- Inhibitors: A Case Study
Approach to Study Causes and Predict Weed
Resistance to Herbicides.** J. Herrmann*¹, R.
Beffa², H. Strek², M. Hess², B. Peters², O. Richter¹;
¹TU Braunschweig, Braunschweig, Germany,
²Bayer AG, Frankfurt, Germany (292)

1:30 Section Business Meeting

WEDNESDAY AFTERNOON FEBRUARY 8
**Teaching Undergraduate Weed Science:
Strategies to Improve Learning**

LOCATION: Presidio II
TIME: 2:00 PM – 5:00 PM
CHAIR: Thomas Mueller
University of Tennessee
Knoxville, TN

***SPEAKER**

**2:00 Teaching Undergraduate Weed Science:
Strategies to Improve Learning.** T. C. Mueller*;
University of Tennessee, Knoxville, TN (293)

**2:15 Teaching Weed Science: a New Faculty
Perspective.** E. Haramoto*; University of
Kentucky, Lexington, KY (294)

**2:30 Field Scouting and Developing Weed
Management Recommendations: Hands-on
at the Agronomy Learning Farm.** A. Dille*;
Kansas State University, Manhattan, KS (295)

**2:50 Weed Identification in Weed Science Teaching:
A Continuum of Approaches.** A. DiTommaso*;
Cornell University, Ithaca, NY (296)

**3:10 How to Successfully Incorporate Team Projects
into your Undergraduate Weed Science Class.**
T. C. Mueller*, S. A. Senseman; University of
Tennessee, Knoxville, TN (297)

**4:00 How to Write Exam and Quiz Questions to
Accurately Assess Student Learning.** T. C.
Mueller*; University of Tennessee, Knoxville, TN
(298)

WEDNESDAY AFTERNOON FEBRUARY 8
Section 10. Biocontrol of Weeds

LOCATION: Presidio V
TIME: 3:30 PM – 4:30 PM
CHAIR: Clyde Boyette
USDA-ARS
Stoneville, MS

***SPEAKER**

**3:30 *Melaleuca quinquenervia* Seed Rain
Dynamics Before and After Biocontrol
Introduction: An Experience from Florida.**
M. B. Rayamajhi*; Invasive PLant Research
Laboratory, Fort Lauderdale, FL (299)

**3:45 In Vitro Growth Effects of Sorgoleone
(sorghum root exudate) on Different Wheat and
Weed Species.** M. K. Bansal*, W. J. Everman;
North Carolina State University, Raleigh, NC
(300)

**4:00 Improvement of Fungal Bioherbicidal Efficacy
Using a Formulation-Based Approach.** C. D.
Boyette*, R. E. Hoagland, K. C. Stetina; USDA-
ARS, Stoneville, MS (301)

4:15 Section Business Meeting

THURSDAY MORNING FEBRUARY 9
**Symposium: Precision Agriculture and Weed
Science**

LOCATION: Turquoise III
TIME: 8:00 AM – 12:00 PM
CHAIR: Krishna Reddy
USDA-ARS
Stoneville, MS

***SPEAKER**

**8:00 Precision Agriculture and Weed Science—
Opportunities and Challenges.** R. James*;
USDA-ARS, Beltsville, MD (302)

**8:10 Geographic Information System Database
for Pigweed Distribution in the Southeastern
United States.** R. S. Fletcher*, K. N. Reddy;
USDA-ARS, Stoneville, MS (303)

8:35 Discussion

- 8:40 Development and Testing of an Electronic Plant Species Identification System.** G. E. Meyer*, T. R. Riddle; University of Nebraska, Lincoln, NE (304)
- 9:05 Discussion**
- 9:10 Identifying Resilience Thresholds With Automated On-Farm Experimentation Using Precision Agriculture Technologies.** B. D. Maxwell*; Montana State University, Bozeman, MT (305)
- 9:35 Discussion**
- 9:40 Low-altitude Remote Sensing for Precision Weed Management.** Y. Huang*, K. N. Reddy; USDA-ARS, Stoneville, MS (306)
- 10:05 Discussion**
- 10:10 Break**
- 10:25 Using Satellite Remote Sensing to Map Changes in Aquatic Invasive Plant Cover in the Sacramento-San Joaquin River Delta of California.** C. S. Potter*; NASA, Moffett Field, CA (307)
- 10:50 Discussion**
- 10:55 Landscape Level Weed Monitoring in the Florida Everglades Using Digital Aerial Sketch Mapping.** L. Rodgers*; South Florida Water Management District, West Palm Beach, FL (308)
- 11:20 Discussion**
- 11:25 Moving to Truly Integrated Weed Management Using Advanced Technologies.** S. Young*; Cornell University, Ithaca, NY (309)
- 11:50 Final Comments**

THURSDAY MORNING FEBRUARY 9

Section 2. Horticultural Crops

LOCATION: Presidio IV
 TIME: 8:00 AM – 12:00 PM
 CHAIR: Colin Phillippo
 Michigan State University
 East Lansing, MI

***SPEAKER**

- 8:00 Field Bindweed Suppression in Processing Tomatoes with Sub-surface Trifluralin Applications.** L. M. Sosnoskie*, B. Hanson²; ¹University of California, Davis, CA, ²University of California, Davis, CA (310)
- 8:15 Weed Management in Asparagus with New Herbicides.** B. H. Zandstra*, C. J. Phillippo; Michigan State University, East Lansing, MI (311)
- 8:30 Bicyclopyrone in Vegetable Crop Weed Management.** C. J. Phillippo*, B. H. Zandstra; Michigan State University, East Lansing, MI (312)
- 8:45 Weed Management in Vegetable Crops with Bicyclopyrone.** C. Hu*, Y. Chen¹, D. Bruns², D. Doohan¹; ¹Ohio State University, Wooster, OH, ²Syngenta, Columbus, OH (313)
- 9:00 Response of Vegetable Crops to Preplant Glufosinate Applications.** A. S. Leiva Soto*, R. J. Edwards², E. Chapman², C. Hu¹, D. Doohan¹; ¹Ohio State University, Wooster, OH, ²Department of Horticulture and Crop Science, The Ohio State University, Wooster, OH (314)
- 9:15 Dissipation of Fomesafen in Florida Strawberry Production.** T. V. Reed*, P. C. Wilson¹, N. Boyd²; ¹University of Florida, Gainesville, FL, ²University of Florida, Balm, FL (315)
- 9:30 Mint Tolerance to Linuron Applied as a Dormant and Early Postemergence Treatment.** S. C. Weller*, R. A. Boydston², J. Colquhoun³, C. Mallory-Smith⁴, A. Hulting⁴, R. Wilson⁵; ¹Purdue University, West Lafayette, IN, ²USDA-ARS, Prosser, WA, ³University of Wisconsin, Madison, WI, ⁴Oregon State University, Corvallis, OR, ⁵University of California, Tulelake, CA (316)
- 9:45 Herbicide Testing in Douglas Fir Nurseries.** T. W. Miller*; Washington State University, Mount Vernon, WA (317)
- 10:00 Break**
- 10:30 Use and Benefits of Simazine in Fruit and Nut Crops through 2015.** R. S. Fawcett*; Fawcett Consulting, Huxley, IA (318)

10:45 Acetyl-CoA Carboxylase Overexpression in Herbicide Resistant Crabgrass (*Digitaria sanguinalis*). R. E. Nurse^{*1}, K. Obeid², E. R. Page¹, M. Simard³, M. LaForest³; ¹Agriculture and Agri-Food Canada, Harrow, ON, ²Ontario Ministry of Agriculture, Food and Rural Affairs, Harrow, ON, ³Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, QC (319)

11:00 A Cover Crop Mixture for Weed and Sting Nematode Management. C. A. Chase*, S. B. Coplin; University of Florida, Gainesville, FL (320)

11:15 Challenges Using Roller-crimped Rye and Vetch Cover Crops in No-till Snap Bean. M. M. Williams II^{*1}, R. A. Boydston²; ¹USDA-ARS, Urbana, IL, ²USDA-ARS, Prosser, WA (321)

11:30 Preemergence Herbicides in Cover Crops During the Fallow Period for Weed Control in Leafy Brassica Crops. P. J. Dittmar^{*1}, N. Boyd²; ¹University of Florida, Gainesville, FL, ²University of Florida, Balm, FL (322)

11:45 Section Business Meeting

THURSDAY MORNING FEBRUARY 9

Section 6. Regulatory Aspects

LOCATION: Presidio V
TIME: 8:00 AM – 9:15 AM
CHAIR: Jerry Wells
Syngenta
Greensboro, NC

*SPEAKER

8:00 Exploring the Potential for a Regulatory Change to Encourage Diversity in Herbicide Use. S. B. Powles¹, T. A. Gaines^{*2}; ¹University of Western Australia, Perth, Australia, ²Colorado State University, Fort Collins, CO (323)

8:15 A Bioeconomic Analysis of Triazine Herbicide Use in U.S. Corn and Grain Sorghum. D. C. Bridges*; Abraham Baldwin Agricultural College, Tifton, GA (324)

8:30 Weed Science in China: Opportunities and Challenges. L. Jiang, Z. Li*; China Agricultural University, Beijing, Peoples Republic (325)

8:45 The U.S. EPA's Herbicide Resistance Management Approach. B. J. Chism^{*1}, J. Becker², A. Jones²; ¹US Environmental Protection Agency, Point of Rocks, MD, ²US Environmental Protection Agency, Washington, DC (326)

9:00 Section Business Meeting

THURSDAY MORNING FEBRUARY 9

Section 11. Physiology

LOCATION: Presidio 1
TIME: 8:00 AM – 11:00 AM
CHAIR: Mithila Jugulam
Kansas State University
Manhattan, KS

*SPEAKER

8:00 Field-Evolved Resistance of Downy Brome (*Bromus tectorum*) to Imazamox in Cereal Production. P. Jha^{*1}, V. Kumar¹, A. J², S. Leland¹; ¹Montana State University, Huntley, MT, ²Montana State University-Bozeman, Huntley, MT (327)

8:15 Confirmation and Characterization of a Glufosinate-resistant Italian Ryegrass Population From a California Grain Field. P. Tehranchian^{*1}, I. M. Heap², M. Jasieniuk¹; ¹University of California, Davis, CA, ²WeedSmart, Corvallis, OR (328)

8:30 Mechanisms Conferring Herbicide Resistance in a Multiple-resistant Waterhemp (*Amaranthus rudis*) Population from Missouri. L. S. Shergill*, M. D. Bish, K. W. Bradley; University of Missouri, Columbia, MO (329)

8:45 Characterization of Glyphosate-Resistant Russian-thistle (*Salsola tragus* L.) Populations in Montana and Pacific Northwest. V. Kumar^{*1}, P. Jha², J. F. Spring³, A. J², V. K. Nandula⁴, K. N. Reddy⁴, D. Lyon³, I. C. Burke³; ¹Montana State University, Huntley, MT, ²Montana State University-Bozeman, Huntley, MT, ³Washington State University, Pullman, WA, ⁴USDA-ARS, Stoneville, MS (330)

- 9:00 Glyphosate Resistant *Echinochloa* spp. from Tennessee and Mississippi – Molecular Analysis.** V. K. Nandula*¹, D. A. Giacomini², J. Ray³, J. Bond⁴, L. E. Steckel⁵, P. J. Tranel²; ¹USDA-ARS, Stoneville, MS, ²University of Illinois, Urbana, IL, ³USDA, Stoneville, MS, ⁴Mississippi State University, Stoneville, MS, ⁵University of Tennessee, Jackson, TN (331)
- 9:15 RNA-Seq Analysis of *Amaranthus palmeri* Transcriptomic Response to Glufosinate.** R. A. Salas*¹, C. Saski², R. E. Noorai², A. Lawton-Rauh², S. Srivastava¹, R. L. Nichols³, N. R. Burgos¹; ¹University of Arkansas, Fayetteville, AR, ²Clemson University, Clemson, SC, ³Cotton Inc., Cary, NC (332)
- 9:30 Transcriptome Profiles of Cytochrome P450s in Multiple-resistant *Echinochloa colona* in Response to Propanil.** N. R. Burgos*¹, S. Srivastava¹, C. E. Rouse¹, R. E. Noorai², A. Lawton-Rauh², C. Saski²; ¹University of Arkansas, Fayetteville, AR, ²Clemson University, Clemson, SC (333)
- 9:45 Progress in the Characterization of Herbicide Detoxification Mechanisms in Rye-grass Resistant to ALs- and ACCase-inhibitors.** R. Beffa*, Bayer AG, Frankfurt, Germany (334)
- 10:00 Using the Genome of *Kochia scoparia* to Inform Crop Improvement Research.** P. Westra*, T. A. Gaines, F. E. Dayan; Colorado State University, Fort Collins, CO (335)
- 10:15 Lack of Effect of Glyphosate on Mineral Nutrition, Amino Acid Content, and Yield in Glyphosate-Resistant Soybean and Corn.** S. O. Duke*¹, K. N. Reddy², A. M. Rimando¹, J. V. Cizdziel³, M. M. Williams⁴, J. E. Maul⁵; ¹USDA, ARS, Oxford, MS, ²USDA-ARS, Stoneville, MS, ³University of Mississippi, Oxford, MS, ⁴USDA, ARS, Urbana, IL, ⁵USDA, ARS, Maryland, MD (336)
- 10:30 A Depsipeptide from the Pathogenic Fungi *Burkholderia* sp. A396 Targets Plant Histone Deacetylases.** F. E. Dayan*¹, D. Owens², C. Carbonari³, G. Giovanna³, R. Asolkar⁴, L. Boddy⁴; ¹Colorado State University, Fort Collins, CO, ²University of Hawaii, Honolulu, HI, ³Sao

Paulo State University, Botucatu, Brazil, ⁴Marrone BioInnovations, Davis, CA (337)

10:45 Section Business Meeting

THURSDAY MORNING FEBRUARY 9 Section 9. Weed Biology and Ecology

LOCATION: Presidio II
TIME: 8:45 AM – 11:30 AM
CHAIR: Muthukumar Bagavathiannan
Texas A&M University
College Station, TX

*SPEAKER

- 8:45 Seed Production and Retention of *Amaranthus palmeri* and *Echinochloa crus-galli* in Soybean at Harvest.** L. M. Schwartz*, J. K. Green, J. K. Norsworthy; University of Arkansas, Fayetteville, AR (338)
- 9:00 Knowledge of Palmer amaranth Biology, Phenology, and Photochemistry Aids Development of Sound Management Strategies.** N. E. Korres*, J. K. Norsworthy; University of Arkansas, Fayetteville, AR (339)
- 9:15 Population Structure of Weedy Rice in Japan.** T. Imaizumi*; National Agriculture and Food Research Organization, Tsukuba, Japan (340)
- 9:30 Population Dynamics of Adaptive Evolution to Herbicide Stress in *Amaranthus palmeri*.** A. Lawton-Rauh*¹, J. D. Burton², N. R. Burgos³, R. L. Nichols⁴, A. O. Disharoon¹, K. E. Beard¹; ¹Clemson University, Clemson, SC, ²North Carolina State University, Raleigh, NC, ³University of Arkansas, Fayetteville, AR, ⁴Cotton Inc., Cary, NC (341)
- 9:45 Towards a Novel Control Strategy for Dioecious Amaranths: Identification of Gender-Specific DNA Sequences.** A. Sadeque, P. J. Brown, P. J. Tranel*; University of Illinois, Urbana, IL (342)
- 10:00 Break**
- 10:15 Overexpression of a Native EPSPS Gene Can Enhance Fitness in *Arabidopsis thaliana*: Implications for Glyphosate-resistant Weeds.** Z. T. Beres, X. Yang, L. Jin, D. M. Mackey, J. T. Parrish, W. Zhao, A. A. Snow*; Ohio State University, Columbus, OH (343)

10:30 Induction of Biochemical and Molecular Seed Defenses by a Seed Decay Pathogen in Dormant Wild Oat and Wheat Caryopses. E. Fuerst*¹, M. S. James¹, A. T. Pollard¹, P. A. Okubara²; ¹Washington State University, Pullman, WA, ²USDA-ARS, Washington State University, Pullman, WA (344)

10:45 Weed Control Programs for Conyza summatrensis glyphosate-resistant biotypes in Enlist E3™ soybeans in Argentina. R. L. Frene*; Dow AgroSciences, Buenos Aires, Argentina (345)

11:00 60% of Organic Farmers in the Eastern Cornbelt Believe that Weeds Can Be Controlled Through Soil Balancing: Does the Evidence Match the Appeal? C. Herms*¹, S. Culman², M. Kleinhenz², V. Chaganti², D. Doohan²; ¹Ohio State University/OARDC, Wooster, OH, ²Ohio State University, Wooster, OH (346)

11:15 Section Business Meeting

THURSDAY MORNING FEBRUARY 9
Section 8. Formulation, Adjuvant and Application Technology

LOCATION: Presidio V
TIME: 9:45 AM – 12:00 PM
CHAIR: Bryan Young
Purdue University
West Lafayette, IN

***SPEAKER**

9:45 The Herbicidal Activity of Coronatine to *Amaranthus retroflexus* L., *Cyperus iria* L., and *Digitaria sanguinalis* L. Z. Li, L. Jiang*; China Agricultural University, Beijing, Peoples Republic (347)

10:00 Use of Unmanned Aerial Systems (UAS) for Precision Weed Detection and Management in Row Crops: Progress Made at TAMU. A. Rana*¹, M. Lonesome², S. C. Popescu², D. Cope², J. Valasek², M. Bishop², S. Yeyin³, A. Thomasson³, M. V. Bagavathiannan²; ¹Virginia Tech, Virginia Beach, VA, ²Texas A&M University, College Station, TX, ³TAMU, College Station, TX (348)

10:15 Quantitative Assessment of Spray Deposition and Canopy Penetration with Fluorescent Tracers. J. A. Gillilan¹, M. Ledebuhr², G. K. Dahl³, R. Edwards⁴, S. Wedryk⁵, J. J. Skelton*⁶; ¹WinField Solutions, Springfield, TN, ²Application Insight, LLC, Lansing, MI, ³Winfield, River Falls, WI, ⁴WinField Solutions, Eagan, MN, ⁵WinField Solutions, Shoreview, MN, ⁶WinField Solutions, Franklin, TN (349)

10:30 Tractor Speed and Boom Height Effects on Spray Coverage. E. P. Prostko*, G. C. Rains; University of Georgia, Tifton, GA (350)

10:45 Nozzle Orientation, Pressure, and Nozzle Flow Rate Effects on Spray Coverage on Artificial Collectors. J. Ferguson*¹, C. C. O'Donnell², A. J. Hewitt²; ¹Northwest Missouri State University, Maryville, MO, ²The University of Queensland, Gatton, Australia (351)

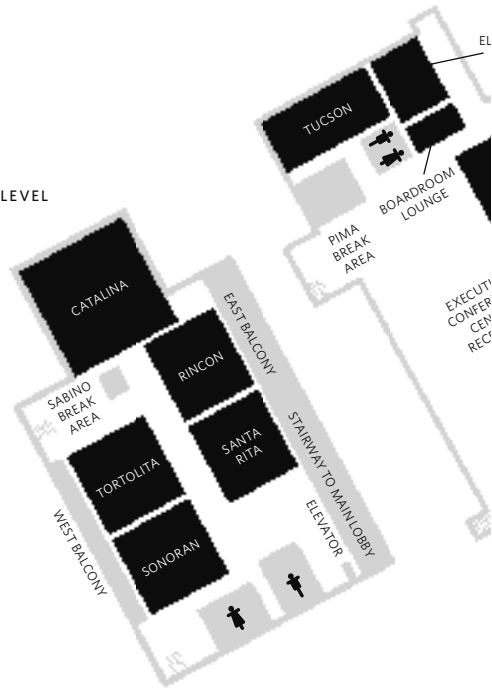
11:00 Introducing StrikeLock™; A Novel Adjuvant System. G. K. Dahl*¹, R. Edwards², J. A. Gillilan³, A. Clark¹, E. P. Spandl⁴, J. V. Gednalske¹; ¹Winfield, River Falls, WI, ²WinField Solutions, Eagan, MN, ³WinField Solutions, Springfield, TN, ⁴Winfield, St. Paul, MN (352)

11:15 VaporGrip Technology; How it Works and its Benefits. A. MacInnes*; Monsanto Company, St Louis, MO (353)

11:30 Simulated Spray Tank-contamination with 2,4-D and Dicamba Combinations on Glyphosate- and Dicamba-resistant Soybean. M. L. Moretti*¹, J. M. Young¹, W. G. Johnson¹, A. G. Hager², S. P. Conley³, K. W. Bradley⁴, L. E. Steckel⁵, D. B. Reynolds⁶, J. K. Norsworthy⁷, G. R. Kruger⁸, B. G. Young¹; ¹Purdue University, West Lafayette, IN, ²University of Illinois, Urbana, IL, ³University of Wisconsin, Madison, WI, ⁴University of Missouri, Columbia, MO, ⁵University of Tennessee, Jackson, TN, ⁶Mississippi State University, Mississippi State, MS, ⁷University of Arkansas, Fayetteville, AR, ⁸University of Nebraska, North Platte, NE (354)

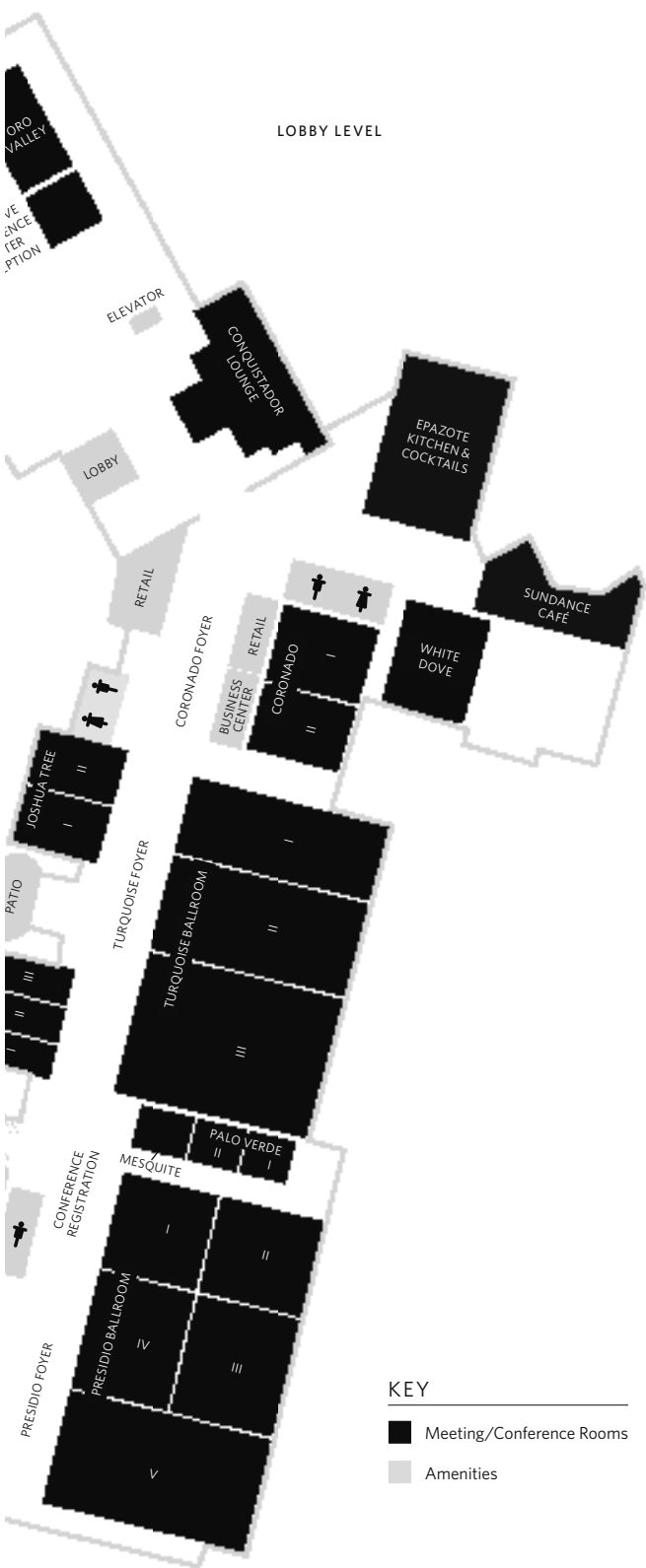
11:45 Section Business Meeting

UPPER LEVEL



CONQUISTADOR BOARDROOM

LOBBY LEVEL



KEY

- Meeting/Conference Rooms
- Amenities

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5:15			WSSA Business Meeting	
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6:15	WSSA Awardee Reception			
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