

WSSA

**2020 Annual Meeting
Joint Meeting w/ WSWS
March 2-5, 2020
Maui, HI**

**2021 Annual Meeting
February 11-19, 2021
San Antonio, TX**

WEED SCIENCE SOCIETY OF AMERICA

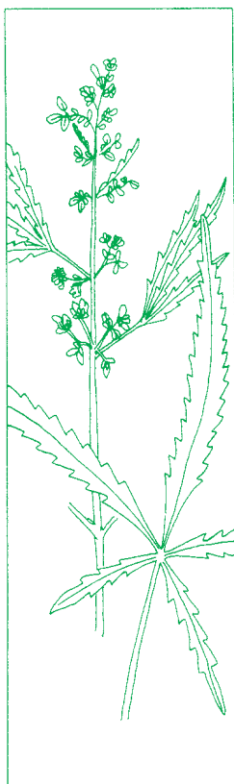
Fifty-Ninth Meeting

2019 MEETING PROGRAM

Sheraton New Orleans

New Orleans, LA

February 11-14, 2019



WSSA Sustaining Members

PRESIDENTIAL

BASF Corporation

Bayer Crop Science

Corteva Agrisciences

Syngenta Crop Protection

LEADERS

Helena Chemical

Valent USA

Winfield United

PATRONS

Nufarm Americas, Inc.

United Phosphorus, Inc.

Gylling Data Management, Inc.

Marrone Bio Innovations, Inc.

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AMVAC Chemical Corp

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Greenleaf Technologies

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ABG Ag Services

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Heartland Technologies

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Minnesota Valley Testing Lab

SePRO

TKI NovaSource

* _____ denotes paid 2019

59th Meeting
Weed Science Society of America

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Local Arrangements Committee 2019 –New Orleans
Co-Chairs Eric Webster, Daniel Stephenson

The WSSA 2019 Program

Welcome to the 2019 Weed Science Society of America (WSSA) Annual Meeting at the Sheraton New Orleans Hotel. The venue is outstanding and close to many interesting attractions in New Orleans. Pre-conference events include a tour of the National WWII Museum and the Mardi Gras World Tour.

The General Session and WSSA Awards Ceremony will begin Monday, Feb 11th at 4:00 PM in the Napoleon Ballroom. Our General Session will begin with a welcome and opening remarks from Mike Strain, the Commissioner of the Louisiana Department of Agriculture. Dr. Scott Senseman will also be providing a presidential address to the membership after an exciting and eventful year as the WSSA President.

The Awards Ceremony will include presentations of the WSSA Fellow and Annual awards. Be sure to attend this session to help recognize all the awardees. Following the Awards Ceremony, WSSA will host an awards reception beginning around 6:00 p.m. All registered attendees are welcome and encouraged to attend. Please be sure spouses and friends that accompany you have registered so that they may attend this fun event.

We are again conducting MS and PhD student poster and oral presentation contests. All of the student contests will be conducted on Tuesday. We have a great lineup of Symposia during the conference and appreciate the enthusiasm of our membership in submitting more topic areas than we could accommodate. Look forward to some additional great topics next year. For this year, beginning on Tuesday and going through Thursday, we are going to have six symposia related to important and impactful subjects that are needing attention in Weed Science. These include: 1) Herbicide Banning: An International Forum, 2) Weed Seeds, Phytosanitary Restrictions and Trade Implications, 3) Understanding Current Status and Implications of Herbicide Resistant Weeds in Turfgrass, Ornamental and Nursery Crops, 4) Integrated Weed Management Approach to Addressing Herbicide Resistance in US Field Crop Production Regions, 5) Long Term Effects of Urbanization of the Population of a Country on the Subsequent Regulation of Agriculture and 6) Weather and the Environment: Understanding the Basics to Better Address Off-Target Pesticide Movement. We will also have a Teaching Workshop again this year on Thursday

morning. The WSSA Business meeting and the student contest awards will be held from 5:00 – 6:45 p.m. on Wednesday evening. We hope that all members will attend to participate in the decision-making process on societal issues and board activities going into 2019.

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

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

Larry Steckel
Program Chair and President-Elect

2019 Program Committee

General Program Chair	Larry Steckel
Vice Chair	William Curran
Agronomic Crops.....	Neha Rana
Horticultural Crops	Katie Jennings
Turf and Ornamentals	Prasanta Bhowmik
Pastures, Rangelands, Forests, & Rights of Way	Joe Omielan
Wildland and Aquatic Invasives.....	Chris Mudge
Regulatory Aspects.....	Monty Dixon
Teaching and Extension	Jatinder Aulakh
Formulation, Adjuvant, & Application Technology.....	Connor Ferguson
.....
Weed Biology and Ecology.....	Vijay Singh
Biocontrol of Weeds.....	Min Rayamajhi
Physiology.....	Christopher Rouse
Soil and Environmental Aspect.....	Paul Te-Ming Tseng
Integrated Weed Management.....	Harry Streck
Sustaining Member Exhibits Session.....	Steve Gyling
Poster Sessions.....	Pratap Devkota
Student Contest	Marty Schraer

Program Booklet and Abstracts

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

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

Posters and Sustaining Member Exhibits

All posters and Sustaining Member Exhibits will be on display from Tuesday at 8am to Thursday at 11am. The times will not be replicated daily throughout the program.

WSSA Committee Meetings

SATURDAY, February 9

7:00 a.m. – 5:00 p.m.

WSSA Board of Directors..... Oak Alley

SUNDAY, February 10

7:00 a.m. – Noon

WSSA Board of Directors.....Oak Alley

1:00 p.m. – 5:00 p.m.

NIFA Fellow Advisory

Committee.....Oak Alley

MONDAY, February 11

7:00 a.m. – 8:00 a.m.

WSSA Board and Committee Chairs Breakfast

.....Southdown

8:00 a.m. – 9:00 a.m.

Weed Science Editorial Board (P2)Oakley

8:00 – 10:00 a.m.

Science Policy Committee (E2)Oak Alley

9:00 a.m. – 10:00 a.m.

Endowment Fund Committee (F3)Gallier A/B

9:00 a.m. – 10:00 a.m.

Weed Technology Editorial Board (P3)Oakley

10:00 a.m. – 12:00 noon

Herbicide Resistance Education (E12b) Oak Alley

10:00 a.m. – 11:00 a.m.

Professional Development (F4)Gallier A/B

10:00 a.m. – 11:00 a.m.

Constitution & Operating Procedures (W10)

.....Southdown

10:00 a.m. – 11:00 a.m.

Biological Control of Weeds (W16)Edgewood A/B

10:00 a.m. – 11:00 a.m.

IPSM Editorial Board (P4)Oakley

11:00 p.m. – 12:00 noon

Weed Loss Committee (E11)Edgewood A/B

11:00 p.m. – 12:00 noon

Formulation, Adjuvant, and Application Technology Committee
(W15)Gallier A/B

11:00 a.m. – 12:00 noon

Publications Board (P1)Oakley

1:00 p.m. – 2:00 pm

Website Committee (E14)Oak Alley

1:00 p.m. – 2:00 p.m.

Sustaining Member Committee (F5)Edgewood A/B

1:00 p.m. – 2:00 pm
Extension Committee (W11)Gallier A/B

1:00 p.m. – 4:00 p.m.
IWSS Board of Directors Oakley

2:00 p.m. – 3:00 p.m.
Herbicide Resistant Plants (E12) Oak Alley

2:00 p.m. – 3:00 p.m.
Extension Award Subcommittee (W3b) Southdown

3:00 p.m. –4:00 p.m.
Herbicides for Minor Use (E10)Gallier A/B

TUESDAY, February 12

7:00 a.m. – 9:00 a.m.
Public Awareness (E13)Southdown

12:00 p.m. – 1:00 p.m.
Environmental Aspects (E8)Southdown

12:00 p.m. – 2:00 p.m.
Women in Weed Science LuncheonOak Alley

5:00 p.m. – 6:00 p.m.
Federal Noxious and Invasive (E4)Southdown

5:30 p.m. – 6:30 p.m.
IWSS General SessionOak Alley

WEDNESDAY, February 13

6:30 a.m. – 8:00 a.m.
President’s Breakfast with Regional Presidents.....
.....Oak Alley

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

12:00 noon – 2:00 p.m.
Graduate Student Workshop/ Luncheon Oak Alley

12:00 noon – 1:00 p.m.
Standardized Plant Names (P22b)Southdown

5:15 p.m. – 7:00 p.m.
WSSA Business Meeting/ Student AwardsOak Alley

THURSDAY, February 14

7:00 a.m. – 9:00 a.m.
Research and Competitive Grants (E6)Southdown

7:00 a.m. – 9:00 a.m.
Graduate Students Breakfast/ SeminarOak Alley

1:00pm – 5:30 p.m.
Board of Directors.....Oak Alley

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 2019 PROGRAM

SATURDAY MORNING, February 9

7:00 a.m. – 5:00 p.m.

WSSA Board of Directors..... Oak Alley

SUNDAY MORNING, February 10

7:00 a.m. – 12:00 noon

WSSA Board of Directors.....Oak Alley

9:00 a.m. – 11:00 a.m.

Mardi Gras Tour.....Hotel Lobby

12:00 noon – 3:00 p.m.

The National WWII Museum TourHotel Lobby

MONDAY, February 11

7:00 a.m. – 8:00 a.m.

WSSA Board & Committee Chairs Breakfast
.....Southdown

9:00 a.m. – 3:30 p.m.

Registration.....Napoleon Foyer

4:00 p.m. – 6:00 p.m.

General Session and WSSA Awards Presentations
.....Napoleon Ballroom B123

6:00 p.m. – 8:00 p.m.

Welcome and Awardee's Reception (open to all attendees and registered guests)Armstrong Foyer

TUESDAY, February 12

6:30 a.m. – 7:45 a.m.

Student Contest Judges Meeting & Breakfast
.....Oak Alley

7:00 a.m. – 5:00 p.m.

Registration.....Napoleon Foyer

7:45 a.m. – 6:00 p.m.

Contest Judges Work Room.....Poydras

8:00 a.m. – 10:00 a.m.

Poster SessionNapoleon Ballroom D123
(Authors of even numbered posters will present)

8:00 a.m. – 5:00 p.m.
Sustaining Member Exhibits
..... Napoleon Ballroom D123

10:15 a.m. – 4:00 p.m.
WSSA Student M.S. Oral Contest Session I
.....Napoleon Ballroom C2

10:15 a.m. – 2:30 p.m.
WSSA Student M.S. Oral Contest Session II
.....Napoleon Ballroom C3

10:00 a.m. – 5:00 p.m.
WSSA Student Ph.D. Oral Contest Session I
.....Napoleon Ballroom A2

10:15 a.m. – 5:00 p.m.
WSSA Student Ph.D. Oral Contest Session II
.....Napoleon Ballroom A3

10:00 a.m. – 5:00 p.m.
Posters on display without authors
..... Napoleon Ballroom D123

8:00 a.m. – 2:00 p.m.
Symposium: Herbicide Banning: An International Forum.....Napoleon Ballroom B123

8:00 a.m. – 5:00 p.m.
Agronomic Crops..... Borgne

8:00 a.m. – 11:30 a.m.
Wildland and Aquatic Invasive Plants.....Maurepas

11:30 a.m. – 12:00 noon
Pasture, Range, Forest, ROW..... Maurepas

1:00 p.m. – 3:00 p.m.
Turf and Ornamental Crops..... Maurepas

3:15 p.m. – 5:00 p.m.
Symposium: Weed Seed in Grain Samples and Trade..... Napoleon Ballroom B123

5:30 p.m. – 7:00 p.m.
IWSS General Session Oak Alley

WEDNESDAY, February 13

7:00 a.m. – 8:00 a.m.
WSSA & Regional Presidents Breakfast Oak Alley

7:30 a.m. – 4:00 p.m.
Registration..... Napoleon Foyer

8:00 a.m. – 10:00 a.m.
Poster Session Napoleon Ballroom D123
(Authors of odd-numbered posters will present)

8:00 a.m. – 5:00 p.m.
Posters on display without authors
..... Napoleon Ballroom D123

- 8:00 a.m. – 5:00 p.m.
Sustaining Members Exhibits
..... Napoleon Ballroom D123
- 8:00 a.m. – 10:15 a.m.
Agronomic Crops..... Borgne
- 8:00 a.m. – 3:00 p.m.
Weed Biology & Ecology Maurepas
- 8:00 a.m. – 11:45 a.m.
Integrated Weed Management.....Napoleon Ballroom A123
- 8:00 a.m. – 12:00 noon
**Symposium: Herbicide Resistant Weeds in Turf,
ornamental and Nursery**.....Napoleon Ballroom B123
- 8:00 a.m. – 4:30 p.m.
**Symposium: Integrated Weed Management to Address
Weed Resistance**..... Napoleon Ballroom C123
- 12:00 noon – 2:00 p.m.
Graduate Student Luncheon/ WorkshopOak Alley
- 1:00 p.m. – 3:00 p.m.
Teaching and Extension Napoleon Ballroom A123
- 1:00 p.m. – 5:00 p.m.
**Symposium: Ag Regulation as Affected by Urbanization of
a Country**..... Napoleon Ballroom B123
- 3:15 p.m. – 4:15 p.m.
Travel Enrichment Experience..... Napoleon Ballroom A123
- 4:30 p.m. – 5:00 p.m.
Regulatory Aspects..... Napoleon Ballroom A123
- 4:00 p.m. – 5:00 p.m.
Horticultural Crops.....Maurepas
- 5:15 p.m. – 6:45 p.m.
WSSA Business Meeting & Student Contest Awards
..... Oak Alley
- THURSDAY, February 14**
- 6:30 a.m. – 8:00 a.m.
Grad Student Breakfast/ Seminar.....Oak Alley
- 8:00 a.m. – 10:00 a.m.
Registration..... Napoleon Foyer
- 8:00 a.m. – 11:00 a.m.
Posters on display without authors
..... Napoleon Ballroom D123
- 8:00 a.m. – 11:00 a.m.
Sustaining Members Exhibits
..... Napoleon Ballroom D123
- 8:00 a.m. – 11:15 a.m.
Formulation, Adjuvant and Application Technology....
..... Borgne

8:00 a.m. – 11:30 a.m.
 Horticultural CropsMaurepas

8:00 a.m. – 11:00 a.m.
**Symposium: Weather and the Environment: Understanding
 the Basics to Address off Target Pesticides**
Napoleon Ballroom B123

8:00 a.m. – 10:00 a.m.
Teaching Workshop..... Napoleon Ballroom C123

1:00 p.m.
Remove Posters and Exhibits

1:00 p.m. – 5:30 p.m.
 WSSA Board of Directors..... Oak Alley

PROGRAM

MONDAY AFTERNOON FEBRUARY 11

General Session

LOCATION: Napoleon Ballroom B123
TIME: 4:00 PM - 6:00 PM
CHAIR/ Lawrence Steckel
MODERATOR: University of Tennessee
Jackson, TN
CO-CHAIR: William Curran
Penn State University
Bozeman, MT

***SPEAKER**

- 4:00** **Introductions and Announcements.** L. Steckel*; University of Tennessee, Jackson, TN
- 4:05** **International Weed Science Congress Update.** Chanya Maneechote*; Weed Science Society of Thailand
- 4:10** **Keynote: Louisiana Department of Agriculture: The next 10 years.** Mike Strain*; Commissioner Louisiana Department of Agriculture, Baton Rouge, LA
- 4:40** **Presidential Address.** S. Senseman*; Syngenta Crop Protection, Greensboro, NC
- 5:00** **Presentation of Awards.** D. Lingenfelter*; Penn State University, University Park, PA
- 5:40** **Presentation of Fellow and Honorary Member Awards.** K. Reddy*; USDA-ARS Crop Production Systems Res Unit, Stoneville, MS
- 6:00** **WSSA Awardee Reception and Member Social.** L. Steckel*; University of Tennessee, Jackson, TN

MONDAY AFTERNOON FEBRUARY 11

WSSA Welcome Reception

LOCATION: Armstrong Foyer
TIME: 6:00 PM - 8:00 PM
CHAIR: Scott Senseman
University of Tennessee
Knoxville, TN

TUESDAY to THURSDAY FEBRUARY 12-14

WSSA Sustaining Member Exhibit Session

Location: Napoleon Ballroom D123

Chair: Steve Gylling, Gylling Data Management

Posters and Sustaining Member Exhibits

All posters and Sustaining Member Exhibits will be on display from Tuesday at 8am to Thursday at 11am. The times will not be replicated daily throughout the program.

TUESDAY to THURSDAY FEBRUARY 12-14

POSTER SESSIONS

Location: Napoleon Ballroom D123

Chair: Pratap Devkota, University of California

Posters may be set up on Monday from 12:00 noon until 3 p.m. and must be removed by 1:00 p.m. on Thursday.

Poster Contest - MS Students

Location: Napoleon Ballroom D123

Chair: Pratap Devkota, University of California

***PRESENTER † STUDENT POSTER CONTEST**

†Effect of Late Season Herbicide Application Seed Production of Glyphosate-resistant Palmer Amaranth. J. H. Scarparo de Sanctis*¹, A. J. Jhala¹; ¹University of Nebraska Lincoln, Lincoln, NE (1)

Droplet Size Effects on Italian Ryegrass (*Lolium multiflorum*) Control in Mississippi Corn (*Zea mays*). M. T. Wesley¹, Z. R. Treadway*², J. Ferguson², J. A. Bond³, E. J. Larson⁴; ¹Mississippi State University, MS State, MS, ²Mississippi State University, Mississippi State, MS, ³Delta Research and Extension Center, Stoneville, MS, ⁴Mississippi State University, Starkville, MS (2)

†Effect of Soil-Applied Herbicide Timing on Cover Crop Establishment. J. Calhoun*¹, D. B. Reynolds²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (3)

†Effects of Pesticide Seed Treatments and Tillage on *Amaranthus spp.* S. A. Palmer*, R. G. Smith, N. Warren; University of New Hampshire, Durham, NH (4)

†Evaluating Native Perennial Grass Tolerance to Indaziflam Treatments. S. J. Nissen*; Colorado State University, Fort Collins, CO (5)

†Herbicide Efficacy as Influenced by Spray Nozzle Design and Weed Density. M. D. Kramer*¹, Z. K. Perry², T. R. Legleiter³; ¹University of Kentucky, Lynn, IN, ²University of Kentucky, Paducah, KY, ³University of Kentucky, Princeton, KY (6)

†Impact of Adjuvants on Quizalofop Antagonism when Mixed with ALS Herbicides. C. Webster*¹, E. P. Webster², B. McKnight², D. C. Walker², S. Rustom²; ¹Louisiana State University, Baton Rouge, AL, ²Louisiana State University, Baton Rouge, LA (7)

†**Influence of Alternative Weed Control Options on Hop (*Humulus lupulus*) Production.** N. Theisen*, H. Hatterman-Valenti; North Dakota State University, Fargo, ND (8)

†**Irrigated and Non-Irrigated Peanut (*Arachis hypogaea* L.) Cultivar Response to Postemergence Paraquat Tank-Mixtures.** K. M. Eason*¹, R. Tubbs², T. L. Grey³, S. Li⁴; ¹University of Georgia, nashville, GA, ²University of Georgia, Tifton, GA, ³University of Georgia, Tifton, GA, ⁴Auburn University, Auburn, AL (9)

†**Managing Palmer Amaranth with Sequential Applications of Dicamba and Glufosinate with and without Acetochlor.** G. K. Flusche Ogden*¹, P. A. Dotray¹, J. D. Everitt²; ¹Texas Tech University, Lubbock, TX, ²Bayer Crop Science, Lubbock, TX (10)

†**Palmer Amaranth (*Amaranthus palmeri*) Survival and Fecundity After Various Herbicide Treatments and Application Timings.** E. B. Scroggs*, M. L. Flessner; Virginia Tech, Blacksburg, VA (11)

†**Safener May Enhance Tolerance to Soil-Applied Herbicide for Winter Wheat Varieties Grown in the Pacific Northwest.** D. A. Raiyemo*¹, J. Campbell¹, R. Ma¹, W. J. Price¹, T. Rauch⁴, T. Prather²; ¹University of Idaho, Moscow, ID, ⁴University Of Idaho/PSES Dept, Moscow, ID (12)

†**Comparison of Herbicide Programs in Conventional, Glufosinate-Resistant, and Glyphosate/Dicamba-Resistant Soybean Across Nebraska.** A. Striegel*¹, S. Z. Knezevic², N. C. Lawrence³, G. L. Hein², G. Kruger⁴, C. Proctor², A. J. Jhala²; ¹University of Nebraska Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Lincoln, NE, ³University of Nebraska-Lincoln, Pullman, WA, ⁴University of Nebraska-Lincoln, North Platte, NE (13)

†**Cover Crops Suppress Weeds in Young Coffee Plantations.** L. S. Resende*, A. O. Alecrim, K. G. Figueiredo, F. C. Medeiros, R. J. Guimarães; Federal University of Lavras, Lavras, Brazil (14)

†**Effect of Carrier Volume and Nozzle Selection on Glufosinate and 2,4-D Efficacy.** S. Davis*¹, D. Dodds², T. W. Eubank³, L. X. Franca², J. McNeal², B. Norris¹, J. J. Williams¹; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS, ³Mississippi State University, Stoneville, MS, (15)

†**Effect of Herbivory and Soil Fertility on Chinese Tallow in Louisiana: Insights for Management.** O. C. Omoyele*; Veronica Manrique, Rodrigo Diaz, Baton Rouge, LA (16)

†**Elevated CO₂ Effect on the Germination Index (GI) and Emergence Index (EI) of Red Rice and Johnsongrass.** J. C. Argenta*, S. Finlayson, T. Gentry, M. V. Bagavathiannan, K. Carson; Texas A&M University, College Station, TX (17)

†**Harvest Weed Seed Control for Johnsongrass in Grain Sorghum: A Feasibility Analysis.** B. L. Young*¹, D. Sarangi¹, N. E. Korres², L. M. Lazaro³, M. J. Walsh⁴, J. K. Norsworthy², M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²University of Arkansas, Fayetteville, AR, ³Louisiana State University AgCenter, Baton Rouge, LA, ⁴University of Sydney, Narrabri, Australia (18)

†**Influence of Dicamba Exposure on Glufosinate Resistant Soybean Canopy Closure.** Z. K. Perry*¹, M. D. Kramer², T. R. Legleiter³; ¹University of Kentucky, Paducah, KY, ²University of Kentucky, Lynn, IN, ³University of Kentucky, Princeton, KY (19)

†**Managing Horseweed in Soybean with Cover Crops and Herbicides.** J. A. Schramski*, C. Sprague, K. Renner; Michigan State University, East Lansing, MI (20)

Phenotypic Characteristics of F1 Hybrid Progenies of *Sorghum bicolor* x *S. halepense*. C. Sias*, G. Hodnett, W. Rooney, M. V. Bagavathiannan; Texas A&M University, College Station, TX (21)

†**Plant Demography of Chinese Tallow in Louisiana: Baseline Information Needed for Sustainable Management.** D. Sevor*¹, V. Manrique¹, R. R. Diaz²; ¹Southern University and A&M College, Baton Rouge, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA (22)

†**Response of Insect Pest and Beneficial Species to the Timing and Severity of Dicamba Injury in Soybean.** W. A. Tubbs*, K. Rice, M. Bish, K. Bradley; University of Missouri, Columbia, MO (23)

Tank-Contamination of Dicamba or 2,4-D Influences Dry Edible Bean Production. S. R. Bales*¹, C. Sprague¹; ¹Michigan State University, East Lansing, MI (24)

†**Bermudagrass Tolerance of Indaziflam Preemergence Applications.** N. L. Hurdle*¹, T. L. Grey¹, P. McCullough³; ¹University of Georgia, Tifton, GA, ³University of Georgia, Griffin, GA (25)

†**Herbicides Leaching Potential in Association with Hydroretent Polymer.** K. G. Figueiredo*, A. T. Reis, C. F. Chagas, A. O. Paiva, L. S. Resende, G. B. Voltolini, F. C. Medeiros; Federal University of Lavras, Lavras, Brazil (26)

†**Off-Target Movement Risk Associated with Flying Strategies, Nozzle Type, and Wind Variability for an Unmanned Aerial Sprayer.** J. E. Hunter*, R. E. Austin, R. Richardson, T. Gannon, J. Neal, R. Leon; North Carolina State University, Raleigh, NC (27)

Rainfall Timing Effects on Preemergence Herbicide Efficacy in Soybean. P. H. Urach Ferreira¹, L. H. Merritt*², D. B. Reynolds¹, J. T. Irby¹, G. Kruger³, J. Ferguson¹; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, MS State, MS, ³University of Nebraska-Lincoln, North Platte, NE (28)

†**Repeat Applications of Postemergence Turfgrass Herbicides for Season-Long Yellow Nutsedge (*Cyperus esculentus*) Control.** N. S. Minaev*¹, J. D. McCurdy¹, M. P. Richard¹, Z. D. Small¹ ¹Mississippi State University, Starkville, MS (29)

Response of Seashore Paspalum (*Paspalum vaginatum* Sw.) and Hybrid Bermudagrass (*Cynodon dactylon* x *C. transvaalensis* L. Pers.) to Topramezone and Triclopyr Mixtures. C. G. Goncalves*¹, A. M. Brown², J. R. Jim Harris², J. S. McElroy²; ¹Auburn University, Auburn, AL, ²Auburn University, Auburn, AL (30)

†**Virtual Models for Weed Science Education.** A. Peart*¹, B. A. Ackley²; ¹The Ohio State University, Columbus, OH, ²Ohio State University, Columbus, OH (31)

†**Weed Species Diversity in Railroad Right-of-Ways.** A. W. Osburn*¹, M. Loux², E. E. Regnier¹, K. Harrison²; ¹The Ohio State University, Columbus, OH, ²Ohio State University, Columbus, OH (32)

TUESDAY MORNING FEBRUARY 12

Poster Contest - PhD Students

Location: Napoleon Ballroom D123

Chair: Pratap Devkota, University of California

***PRESENTER † STUDENT POSTER CONTEST**

†**Effects of Irrigation Water Quality on the Partitioning of Saflufenacil, Indaziflam, and Penoxsulam in Two California Orchard Soils.** K. Martin*¹, B. Hanson²; ¹University of

California, Davis, Davis, CA, ²University of California, Davis, Winters, CA (33)

Differences in Bioavailability of Atrazine, Topramezone and Mesosulfuron-methyl to Sensitive Species Across Varying Soil Textures. S. S. Ramanathan*¹, T. Gannon¹, A. Locke², W. Everman¹; ¹North Carolina State University, Raleigh, NC, ²USDA-ARS and North Carolina State University, Raleigh, NC (34)

†Relative Duration of Residual Control Among Preemergent Herbicides. B. Sperry*¹, D. B. Reynolds², J. Ferguson², J. A. Bond³, G. Kruger⁴, A. Brown-Johnson⁵; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS, ³Delta Research and Extension Center, Stoneville, MS, ⁴University of Nebraska-Lincoln, North Platte, NE, ⁵Mississippi State Chemistry Laboratory, Mississippi State, MS (35)

†Classification of Weeds in Row Crops Using Unmanned Aerial Systems. B. B. Sapkota*, V. Singh, D. Cope, M. V. Bagavathiannan; Texas A&M University, College Station, TX (36)

†Field Evaluation of 2,4-D and Dicamba Formulations on Cotton and Soybean Response. J. T. Buol*, D. B. Reynolds; Mississippi State University, Mississippi State, MS (37)

†Response of Dicamba-Resistant Kochia to Dicamba Applied Preemergence. R. Yadav*¹, P. Jha¹, V. Kumar², S. Leland¹; ¹Montana State University, Huntley, MT, ²Kansas State University, Hays, KS (38)

†*Leptochloa acuminata* Flooding Tolerance in California Water Seeded Rice. K. E. Driver*, A. Godar, K. Al-Khatib; University of California, Davis, Davis, CA (39)

†Relative Uptake of Organic and Inorganic Nitrogen in Eight Common Weed Species. N. D. Warren*¹, E. A. Hobbie¹, J. Chen², R. G. Smith¹; ¹University of New Hampshire, Durham, NH, ²International Atomic Energy Agency, Seibersdorf, Austria (40)

Effect of Crop Canopy and Herbicide Treatment on Kochia Density and Seed Production. E. G. Mosqueda*¹, A. Kniss¹, N. C. Lawrence², P. Jha³, G. Sbatella⁴; ¹University of Wyoming, Laramie, WY, ²University of Nebraska-Lincoln, Pullman, WA, ³Montana State University, Huntley, MT, ⁴University of Wyoming, Powell, WY (41)

†Cover Crops in Almond Orchards: Irrigation and Weed Suppression. S. C. Haring*¹, C. Crézé¹, A. Gaudin¹, B.

Hanson²; ¹University of California, Davis, Davis, CA, ²University of California, Davis, Winters, CA (42)

†**Cover Crop Response to Residual Herbicides in Peanut and Cotton Rotation.** K. J. Price*¹, S. Li¹, A. Price²; ¹Auburn University, Auburn, AL, ²USDA-ARS, Auburn, AL (43)

†**Using Cover Crops to Manage *Kochia scoparia* in Wheat Production Systems of the Western United States.** D. M. Thiemann*¹, S. L. Young²; ¹Utah State University, Nibley, UT, ²University of Nebraska-Lincoln, Ithaca, NY (44)

Postemergence Applications of Oxadiazon Effectively Diagnose Resistance in *Eleusine indica*. B. Bi*¹, Q. Wang¹, J. J. Coleman¹, J. S. McElroy¹, J. M. Peppers², N. Hall¹; ¹Auburn University, Auburn, AL, ²Auburn University, Auburn, AL (45)

Indaziflam Efficacy in the Control of Downy Brome. T. L. Burke*, I. C. Burke; Washington State University, Pullman, WA (46)

†**Examining Negative Plant-Soil Feedback across Cropping Systems for Novel Weed Management.** L. CHENG*¹, J. Kao-Kniffin¹, A. DiTommaso²; ¹CORNELL UNIVERSITY, Ithaca, NY, ²Cornell University, Ithaca, NY (47)

†**Use of Trifludimoxazin Alone and with Various Tank-Mix Partners for Foliar Control of Giant Ragweed (*Ambrosia trifida*).** N. R. Steppig*¹, S. Willingham², D. M. Whalen³, B. G. Young⁴; ¹Purdue University, Lafayette, IN, ²BASF, Seymour, IL, ³University of Missouri, Columbia, MO, ⁴Purdue University, Brookston, IN (48)

Management of Perennial Grass ssp. in Louisiana Rice Production. D. C. Walker*¹, E. P. Webster¹, B. McKnight¹, S. Rustom¹, C. Webster²; ¹Louisiana State University, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, AL (49)

†**Weed Control and Economic Returns of Herbicide Systems.** J. Williams*¹, D. Dodds¹, L. X. Franca¹, B. Norris², S. Davis², J. McNeal³; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MS, ³Mississippi State University, Mississippi State, Mississippi, MS (50)

†**Evaluating the Reproductive Capacities of Select Multiple Herbicide-Resistant *Amaranthus tuberculatus* Populations.** E. A. Jones*¹, M. D. Owen², R. Leon¹, W. Everman¹; ¹North Carolina State University, Raleigh, NC, ²Iowa State University, Ames, IA (51)

†**Effect of Flooding Period and Seed Burial Depth on Palmer Amaranth (*Amaranthus palmeri*) Seed Germination.** L. X. Franca*¹, D. Dodds¹, S. Davis², J. McNeal³, J. J. Williams², B.

Norris²; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MS, ³Mississippi State University, Mississippi State, Mississippi, MS (52)

†**Investigating Palmer Amaranth Resistance to S-Metolachlor in Arkansas.** J. Kouame*¹, N. R. Burgos², C. D. Willett², M. B. Bertucci², E. M. Grantz²; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas, Fayetteville, AR (53)

†**Palmer Amaranth (*Amaranthus palmeri*) and Thrips (*Thrips sp.*) Control with Various Dicamba + Insecticide Tank-Mixes in Cotton (*Gossypium hirsutum*).** J. McNeal*¹, D. Dodds², A. L. Catchot³, S. Davis³, L. X. Franca², B. Norris³, J. J. Williams³; ¹Mississippi State University, Mississippi State, Mississippi, MS, ²Mississippi State University, Mississippi State, MS, ³Mississippi State University, Starkville, MS (54)

†**Residual Control of Palmer Amaranth as Effected by Cover Crop and Herbicide.** C. M. Perkins*¹, K. Bradley², J. K. Norsworthy³, D. B. Reynolds⁴, K. L. Gage⁵, S. Steckel⁶, B. G. Young⁷, L. E. Steckel⁶; ¹The University of Tennessee, Jackson, TN, ²University of Missouri, Columbia, MO, ³University of Arkansas, Fayetteville, AR, ⁴Mississippi State University, Mississippi State, MS, ⁵Southern Illinois University, Carbondale, IL, ⁶University of Tennessee, Jackson, TN, ⁷Purdue University, Brookston, IN (55)

†**Weed Population Herbicide Resistance Control through Sensitive Allele Gene Swamping *in silico* for *Amaranthus tuberculatus*.** B. C. Alexander*¹, A. S. Davis², A. Hager³, P. Tranel⁴; ¹University of Illinois, Champaign, IL, ²N-319 Turner Hall, Urbana, IL, ³University of Illinois, Urbana, IL, ⁴University of Illinois, Urbana, IL (56)

Detection of ACCase-Inhibiting Herbicide Resistance in Southern Crabgrass (*Digitaria ciliaris*) through Gel-Box Bioassay. S. Basak*¹, B. Bi¹, A. M. Brown¹, P. McCullough², J. S. McElroy¹; ¹Auburn University, Auburn, AL, ²University of Georgia, Griffin, GA (57)

Characterization of the Functional Trait Diversity in Ryegrass (*Lolium spp.*) Accessions Collected from Texas Blacklands. A. Maity*¹, S. Abugho¹, V. Singh¹, N. Subramanian¹, G. R. Smith², M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Texas A&M University, Overton, TX (58)

†**Cross-Resistance to ALS Inhibitors in Smooth Pigweed (*Amaranthus hybridus*) from the Campos Gerais Region in Brazil.** R. R. Mendes*¹, R. S. Oliveira Jr.², V. V. Silva³, H. K. Takano⁴; ¹State University of Maringá, Maringá, Brazil, ²State University of Maringá, Maringá, Brazil, ³State University of Maringá, Maringá, Brazil, ⁴Colorado State University, Ft Collins, CO (59)

†**The Function of Cytochrome P450 Monooxygenases in Herbicide Bioactivation and Inactivation.** D. W. Brooks*¹, T. Gaines¹, R. L. Nichols², F. E. Dayan¹; ¹Colorado State University, Fort Collins, CO, ²Cotton Incorporated, Cay, NC (60)

TUESDAY MORNING FEBRUARY 12

Section 1. Agronomic Crops

***PRESENTER**

WSSA Advocates for Weed Controls that Protect Soybean Export Value. C. Moseley*¹, L. Van Wychen², H. Curlett³, J. Schroeder⁴, P. D. Laird⁵, S. P. Conley⁶; ¹Syngenta, Greensboro, NC, ²WSSA, Alexandria, VA, ³APHIS-USDA, Washington, DC, ⁴USDA Office of Pest Management Policy, Arlington, VA, ⁵Syngenta Crop Protection, LLC, Greensboro, NC, ⁶University of Wisconsin, Madison, WI (61)

Evaluation of Preemergence and Postemergence Applications of Metribuzin on Weed Control Programs and Crop Safety in Corn. T. Bararpour*¹, R. R. Hale²; ¹Mississippi State University, Stoneville, MS, ²Mississippi State University, Fayetteville, AR (62)

Effective Herbicide Programs for Managing Glyphosate-Resistant Palmer Amaranth in Roundup Ready 2 Xtend Soybean. V. Kumar*¹, R. Liu¹, T. Lambert², D. Peterson³; ¹Kansas State University, Hays, KS, ²Kansas State University, Hays, KS, ³Kansas State University, Manhattan, KS (63)

Canopy Structure of Wheat Varieties and their Influence on the Weed Suppressive Ability. M. E. Cena¹, H. A. Acciaresi*²; ¹CIC, Pergamino, Argentina, ²Instituto Nacional Tecnologia Agropecuaria, Pergamino, Argentina (64)

Effects of Cover Crop Mixtures in the Weed Emergence and Above Ground Dry Matter. M. V. Buratovich¹, H. A. Acciaresi*²; ¹Inta Pergamino, Pergamino, Argentina, ²Instituto Nacional Tecnologia Agropecuaria, Pergamino, Argentina (65)

Effect of Fallow Sequential Spray of ALS Herbicides in Soybean Grain Yield Productivity. M. A. Principiano*¹, H. A. Acciaresi²; ¹CIC-UNNOBA, Pergamino, Argentina, ²Instituto Nacional Tecnologia Agropecuaria, Pergamino, Argentina (66)

Industrial Hemp Herbicide Tolerance Screening. M. L. Flessner*, J. Byrd, J. Fike, K. W. Bamber; Virginia Tech, Blacksburg, VA (67)

Perspectives on Wheat Yield Losses Due to Weeds in North America. M. L. Flessner*¹, A. Dille², P. Sikkema³, I. C. Burke⁴, W. Everman⁵, M. J. VanGessel⁶; ¹Virginia Tech, Blacksburg, VA, ²Kansas State University, Manhattan, KS, ³University of Guelph, Ridgetown, ON, ⁴Washington State University, Pullman, WA, ⁵North Carolina State University, Raleigh, NC, ⁶University of Delaware, Georgetown, DE (68)

Herbicide Resistance in Montana: Current Status and Future Directions. P. Jha*¹, V. Kumar², C. A. Lim¹, R. Yadav¹, S. Leland¹, J. Anjani¹; ¹Montana State University, Huntley, MT, ²Kansas State University, Hays, KS (69)

The Influence of Application Timing on Sequential Applications of Enlist Duo, Enlist One, and Liberty on Palmer Amaranth Control. D. C. Foster*¹, P. A. Dotray¹, K. R. Russell¹, M. Lovelace²; ¹Texas Tech University, Lubbock, TX, ²Corteva Agriscience, Lubbock, TX (70)

Hyperspectral Reflectance Properties of Redroot Pigweed Versus Okra Leaf Cotton. R. Fletcher*; USDA-ARS, Greenville, MS (71)

Systems Approach to Weed Management in Corn in Wisconsin. R. Werle*¹, R. P. Dewerff², S. V. Striegel³, N. Arsenijevic¹, V. H. Vidal Ribeiro¹, M. Coura Oliveira¹; ¹University of Wisconsin-Madison, Madison, WI, ²Agricultural Research of Wisconsin, LLC, Madison, WI, ³What Cheer, IA (72)

Does Overlap of Provisia Herbicide Impact ACCase-Resistant Rice Tolerance? B. McKnight*¹, E. P. Webster¹, S. Rustom¹, C. Webster², D. C. Walker¹; ¹Louisiana State University, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, AL (73)

Kochia (*Bassia scoparia*) Control and Enlist Cotton (*Gossypium hirsutum*) Response Following Preplant Herbicide Treatments. U. Torres*¹, P. A. Dotray¹, K. R. Russell¹, G. K. Flusche Ogden¹, M. Lovelace²; ¹Texas Tech University, Lubbock, TX, ²Corteva Agriscience, Lubbock, TX (74)

Management of *Bromus* Species with Pyroxasulfone and Metribuzin in Winter Wheat. R. J. Zuger*, I. C. Burke; Washington State University, Pullman, WA (75)

State of Resistance for Palmer Amaranth Populations from the North Carolina Coastal Plain. D. J. Mahoney*¹, D. Jordan², A. T. Hare², N. R. Burgos³, K. M. Jennings², R. Leon²,

M. C. Vann²; ¹North Carolina State University, Cary, NC, ²North Carolina State University, Raleigh, NC, ³University of Arkansas, Fayetteville, AR (76)

Control of *Amaranthus palmeri* with Resistance to Inhibitors of EPSPS and ALS in the Succession of Soybean-Cotton. F. S. Ikeda*¹, S. D. Cavalieri¹, F. Poltronieri², A. Deon²; ¹Embrapa, Sinop, Brazil, ²Federal University of Mato Grosso, Sinop, Brazil (77)

Response of Peanut to Low Rates of *Engenia* at Different Growth Stages. T. Bararpour*¹, R. R. Hale², J. W. Seale¹; ¹Mississippi State University, Stoneville, MS, ²Mississippi State University, Fayetteville, AR (78)

The Susceptibility of Soybean (*Glycine Max*) to Soil Incorporated Palmer Amaranth (*Amaranthus palmeri*) and Pitted Morning Glory (*Ipomoea lacunosa*) Residues. D. D. Joseph*; Clemson University, Clemson, SC (79)

Control of Glyphosate-Resistant Common Ragweed in Corn with Preemergence and Postemergence Herbicides. N. Soltani*, L. R. Brown, P. Sikkema; University of Guelph, Ridgetown, ON (80)

Potential Yield Loss in Corn, Soybean, Dry Bean and Sugar Beet Due to Weed Interference in North America. N. Soltani*¹, A. Dille², T. J. Peters³, I. C. Burke⁴, W. Everman⁵, M. J. VanGessel⁶, V. Davis⁷, P. Sikkema¹; ¹University of Guelph, Ridgetown, ON, ²Kansas State University, Manhattan, KS, ³North Dakota State University, Fargo, ND, ⁴Washington State University, Pullman, WA, ⁵North Carolina State University, Raleigh, NC, ⁶University of Delaware, Georgetown, DE, ⁷BASF, Verona, WI (81)

Grape Hyacinth Control in a Wheat-Soybean Rotation. S. C. Beam*¹, M. L. Flessner², M. J. VanGessel³, K. Vollmer³; ¹Virginia Tech, Concord, NC, ²Virginia Tech, Blacksburg, VA, ³University of Delaware, Georgetown, DE (82)

Comparison of Various Water and Tank Cleaner Rinse Sequences for Effective Removal of Dicamba from Contaminated Sprayer Systems. Z. A. Carpenter*, D. B. Reynolds, A. B. Johnson; Mississippi State University, Mississippi State, MS (83)

Cutleaf Evening Primrose (*Oenothera laciniata*) and Winter Annual Broadleaf Control in Wheat in Mississippi and Oklahoma. C. Ferguson*¹, M. Manuchehri², M. T. Wesley³, L. H. Merritt³, K. L. Broster¹, Z. R. Treadway¹, J. Childers²; ¹Mississippi State University, Mississippi State, MS, ²Oklahoma State University, Stillwater, OK, ³Mississippi State University, MS State, MS (84)

Herbicide Carryover to Various Fall Planted Cover Crop Species. L. S. Rector*¹, M. L. Flessner¹, K. B. Pittman¹, S. C. Beam², K. W. Bamber¹; ¹Virginia Tech, Blacksburg, VA, ²Virginia Tech, Concord, NC (85)

Impact of Reduced Rates of Isoxaflutole on Soybean Growth and Yield. D. Miller*¹, D. O. Stephenson²; ¹Louisiana State University AgCenter, St. Joseph, LA, ²Louisiana State University AgCenter, Alexandria, LA (86)

Season Long Herbicide Programs in Mississippi Peanut Production. K. L. Broster*¹, J. Ferguson¹, T. A. Baughman², B. Zurweller³, B. Rushing⁴; ¹Mississippi State University, Mississippi State, MS, ²Oklahoma State University, Ardmore, OK, ³Mississippi State University, Starkville, MS, ⁴Mississippi State University, Newton, MS (87)

Influence of Six Herbicides Applied to Silage Corn on Fall Planted Rye and Radish Cover Crop Growth in South Dakota Soils. S. Pridie*¹, G. Shaffer², S. Potthoff¹, S. A. Clay¹; ¹South Dakota State University, Brookings, SD, ²South Dakota State University, Aberdeen, SD (88)

Early Development of Horseweed (*Conyza canadensis* L.). W. Molin*, K. Parys, C. L. Beck; USDA-ARS, Stoneville, MS (89)

Effect of Asulam on Fall Panicum Seed Production. D. Odero*, R. Negrisoli; University of Florida, Belle Glade, FL (90)

Saflufenacil, Halauxifen-Methyl, and Other Herbicides for Preplant Weed Control. W. C. Greene*¹, M. L. Flessner², K. B. Pittman², K. W. Bamber², L. S. Rector², S. C. Beam³, C. W. Cahoon⁴; ¹Virginia Tech, Virginia Tech, VA, ²Virginia Tech, Blacksburg, VA, ³Virginia Tech, Concord, NC, ⁴Virginia Tech, Painter, VA (91)

Residual Activity of Thiencarbazone-Methyl with and without Common Soybean Herbicides. Z. D. Lancaster*¹, J. K. Norsworthy¹, G. L. Priess¹, T. Barber²; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas, Lonoke, AR (92)

Impact of Sublethal Dicamba and Glyphosate on Three Chipping Potato Cultivars. M. J. Brooke*; North Dakota State University, Fargo, ND (93)

Geographical Distribution of Cyhalofop-Butyl and Penoxsulam Resistant Echinochloa Species in Korea. D. KIM*¹, J. Kim², S. Lim³; ¹Seoul National University, Seoul, South Korea, ²National Institute of Agricultural Sciences, Wanju, South Korea, ³Universtiy of Illinois, Urbana-Champaign, IL (94)

Weed Management in Saffron. M. A. Haidar*; American University of Beirut, BEIRUT, Lebanon (95)

Evaluation of Pyraclonil for its Weed Control Efficacy and Crop Safety in California Rice. A. S. Godar*¹, K. Al-Khatib¹, J. Gutierrez²; ¹University of California, Davis, Davis, CA, ²Nichino America, Inc., Fresno, CA (96)

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Section 2. Horticultural Crops

***PRESENTER**

IR-4 Project: Update and New Programs to Address Specialty Crop Grower Needs. D. Kunkel*¹, R. B. Batts², M. J. Braverman³, J. Baron⁴; ¹Rutgers University, Princeton, NJ, ²NCSU IR-4 Field Research Center, Raleigh, NC, ³Rutgers University, princeton, NJ, ⁴IR-4 Project, Hillsborough, NJ (97)

Cranberry Response to Rate and Application Timing with Flumioxazin and Sulfentrazone. B. L. Carr¹, T. E. Besancon*²; ¹Rutgers University, Chatsworth, NJ, ²Rutgers University, CHATSWORTH, NJ (98)

Use of Drone Imaging for Assessing Weed Control and Disease Pressure in Highbush Blueberry. M. G. Mars¹, D. C. Nuhn¹, B. L. Carr², T. E. Besancon*³, P. V. Oudemans³; ¹Stockton University, CHATSWORTH, NJ, ²Rutgers University, Chatsworth, NJ, ³Rutgers University, CHATSWORTH, NJ (99)

Herbicide Evaluations for Ontario Grown Quinoa. R. E. Nurse*¹, M. Cowbrough²; ¹Agriculture and Agri-Food Canada, Harrow, ON, ²Ontario Ministry of Agriculture, Food and Rural Affairs, Guelph, ON (100)

Response of Sweetpotato to Fluridone Preplant Followed by Irrigation. S. Chaudhari*, K. M. Jennings, D. Monks, S. C. Smith, L. D. Moore; North Carolina State University, Raleigh, NC (101)

Muscadine Grape (*Vitis rotundifolia*) Tolerance to 2,4-D Choline Applied as a Directed Spray. C. D. Holmberg*¹, K. M. Jennings²; ¹North Carolina State University, Mills River, NC, ²North Carolina State University, Raleigh, NC (102)

Interseeded Cover Crop Tolerance to Herbicides in Non-Transgenic Sweet Corn. E. Peachey, A. Donaldson*; Oregon State University, Corvallis, OR (103)

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Section 3. Turf and Ornamental Crops

***PRESENTER**

Deep Learning for Image-Based Weed Detection. J. Yu*¹, S. M. Shaun², A. W. Schumann², N. Boyd³; ¹University of Florida, Riverview, FL, ²University of Florida, Wimauma, FL, ³University of Florida, Balm, FL (104)

Role of Herbicide Movement through Organic Mulch on Weed Control Efficacy in Nursery Container Production. D. Saha*¹, C. Marble², B. Pearson¹, H. Perez³, G. MacDonald³, D. Otero⁴; ¹Mid-Florida Research and Education Center, University of Florida, Apopka, FL, ²University of Florida, Apopka, FL, ³University of Florida, Gainesville, FL, ⁴University of Florida, Belle Glade, FL (105)

Control Strategies for Nostoc: A Health and Safety Concern in Container Nurseries. J. Neal*, C. D. Harlow, H. Lin; North Carolina State University, Raleigh, NC (106)

On Farm Evaluation of Multiple Mulch Materials for Long-Term Weed Control in Container Nurseries. C. Marble*¹, S. T. Steed²; ¹University of Florida, Apopka, FL, ²University of Florida/IFAS Extension, Seffner, FL (107)

Combination Treatments of Simazine and Trifloxysulfuron for *Poa annua*. E. B. De Castro*¹, M. P. Richard², J. D. McCurdy³; ¹Mississippi State University, STARKVILLE, MS, ²Mississippi State University, Starkville, MS, ³Mississippi State University, Mississippi State University, MS (108)

Rate Response of Select Grass Weeds to Pinoxaden. J. M. Peppers*; Auburn University, Auburn, AL (109)

Seasonal Goosegrass (*Eleusine indica*) Emergence in Turfgrass. M. T. Elmore*¹, D. P. Tuck², K. Diehl¹; ¹Rutgers University, New Brunswick, NJ, ²Rutgers University, North Wales, PA (110)

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

***PRESENTER**

Herbicide Application Timing to Control Bulbous Buttercup (*Ranunculus bulbosus*) in a Pasture. R. S. Chandran*; West Virginia University, Morgantown, WV (111)

Hayfield Sward Response to Herbicide-Impregnated Dry Fertilizer. W. C. Greene¹, M. L. Flessner², K. W. Bamber*², P. L. Burch³, S. Flynn⁴; ¹Virginia Tech, Virginia Tech, VA, ²Virginia Tech, Blacksburg, VA, ³Corteva Agriscience, Christiansburg, VA, ⁴Corteva Agriscience, Lees Summit, MO (112)

Strategies for Controlling Wild Poinsettia in Alabama Roadsides. A. P. Boyd*¹, E. Guertal¹, D. Han¹, H. Peavey²; ¹Auburn University, Auburn, AL, ²Alabama Department of Transportation, Montgomery, AL (113)

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Section 5. Wildland and Aquatic Invasive Plants

***NO PRESENTATION**

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Section 6. Regulatory Aspects

***PRESENTER**

WSSA Hosts US EPA Summer Tour through Nebraska and Iowa. G. Kruger*¹, J. Gizotti de Moraes¹, B. Canella Vieira¹, J. Schroeder², L. Van Wychen³; ¹University of Nebraska-Lincoln, North Platte, NE, ²USDA Office of Pest Management Policy, Arlington, VA, ³WSSA, Alexandria, VA (114)

Section 7. Teaching and Extension

***PRESENTER**

Partnering with Industry to Deliver Weed Science Continuing Education to Florida's Turfgrass Professionals.

F. Fishel*¹, H. Russo²; ¹University of Florida, Gainesville, FL, ²Florida Turfgrass Association, Lakeland, FL (115)

The University of Tennessee's Comprehensive Herbicide Stewardship Program.

N. Rhodes*¹, L. E. Steckel², T. Mueller¹, D. McIntosh¹; ¹University of Tennessee, Knoxville, TN, ²University of Tennessee, Jackson, TN (116)

A Short Course on Herbicide Modes of Action and Herbicide Resistance.

T. Mueller*; University of Tennessee, Knoxville, TN (117)

Burcucumber Management in Pennsylvania: What Have we Learned in 20 years?

D. Lingenfelter*¹, W. S. Curran²; ¹Penn State University, University Park, PA, ²Penn State University, Bozeman, MT (118)

Grower Preferred Extension Topics, Information Sources, and Delivery Methods in Virginia.

K. B. Pittman*, M. L. Flessner; Virginia Tech, Blacksburg, VA (119)

Screening for ALS-Inhibitor Resistance in Shattercane Populations Collected from Sorghum Fields in Texas Gulf Coast.

G. Hodnett¹, W. Rooney¹, M. V. Bagavathiannan¹, S. Shrestha*²; ¹Texas A&M University, College Station, TX, ²Mississippi State University, Starkville, MS (120)

Improving Early Weed Detection in an Era of Rapid Range Expansion through Development of a Weed ID Network in NY State.

A. DiTommaso*, C. A. Marschner; Cornell University, Ithaca, NY (121)

Complicated: Kentucky Grower and Applicator Impressions and Responses following 2018 Dicamba Trainings.

T. R. Legleiter*¹, J. Green²; ¹University of Kentucky, Princeton, KY, ²University of Kentucky, Lexington, KY (122)

An Interactive Web App that Estimates the Risk of Developing Herbicide Resistance.

A. Kniss*¹, A. T. Adjesiwor¹, N. C. Lawrence²; ¹University of Wyoming, Laramie, WY, ²University of Nebraska-Lincoln, Pullman, WA (123)

**Section 8. Formulation, Adjuvant and Application
Technology**

***PRESENTER**

Dicamba Volatility from Nitrogen Fertilizer Enriched Soils. M. Bernards*, B. S. Heaton; Western Illinois University, Macomb, IL (124)

***Hordeum* spp. and *Bromus* spp. with Glyphosate Resistance, as a New Infection Case in Olive Grove from South of Spain.** C. Palma-Bautista¹, A. M. Rojano-Delgado², D. A. Mora², R. Domínguez-Mendez², J. M. Rosario³, J. Vasquez-García², J. Portugal⁴, R. De Prado Amian*⁵; ¹University of Cordoba, CÓRDOBA, Spain, ²University of Cordoba, Cordoba, Spain, ³Universidad Católica Tecnológica del Cibao, La Vega, Dominican Republic, ⁴Polytechnic Institute of Beja, Beja, Portugal, ⁵University of Cordoba, Córdoba, Spain (125)

Influence of CyP450 in the Resistance to PPO-Inhibiting Herbicides: Case of a *Euphorbia heterophylla* Biotype. A. M. Rojano-Delgado¹, C. Palma-Bautista², J. Vazquez-García¹, D. A. Mora¹, J. M. Rosario³, J. Portugal⁴, R. De Prado Amian*⁵; ¹University of Cordoba, Cordoba, Spain, ²University of Cordoba, CÓRDOBA, Spain, ³Universidad Católica Tecnológica del Cibao, La Vega, Dominican Republic, ⁴Polytechnic Institute of Beja, Beja, Portugal, ⁵University of Cordoba, Córdoba, Spain (126)

Multiple Resistance to IMI and FOP Herbicides of *L. rigidum* Biotypes Found in Clearfield Wheat Crops. R. Domínguez-Mendez¹, C. Palma-Bautista², A. M. Rojano-Delgado¹, J. M. Rosario³, M. D. Osuna⁴, J. Portugal⁵, R. De Prado Amian*⁶; ¹University of Cordoba, Cordoba, Spain, ²University of Cordoba, CÓRDOBA, Spain, ³Universidad Católica Tecnológica del Cibao, La Vega, Dominican Republic, ⁴Agrarian Research Center “Finca La Orden Valdesequera”, Badajoz, Spain, ⁵Polytechnic Institute of Beja, Beja, Portugal, ⁶University of Cordoba, Córdoba, Spain (127)

Section 9. Weed Biology and Ecology

***PRESENTER**

Tricotyledenous Giant Ragweed (*Ambrosia trifida* L.). E. R. Page*¹, S. Meloche², J. Bae³, J. Larsen², M. Laforest⁴, R. E. Nurse¹; ¹Agriculture and Agri-Food Canada, Harrow, ON, ²Agriculture and Agri-Food Canada, Harrow, ON, ³Agriculture and Agri-Food Canada, Harrow, BC, ⁴Agriculture and AgriFood Canada, St-jean-sur-Richelieu, QC (128)

An ALA₁₂₂THR Substitution in the AHAS/ALS Gene Confers Imazamox-Resistance in Jointed Goatgrass (*Aegilops cylindrica* Host.). I. C. Burke*, J. Rodriguez, A. Hauvermale, A. Carter; Washington State University, Pullman, WA (129)

Modeling Seed Germination in Palmer Amaranth (*Amaranthus palmeri*). M. Matzrafi*, S. Ohadi, M. Mesgaran; University of California, Davis, Davis, CA (130)

Seed Banks During Five Year on Integrated Crop-Livestock-Forest System Under Different Shading Levels in Sinop, Mato Grosso, Brazil. F. S. Ikeda*¹, S. D. Cavalieri¹, F. Poltronieri², L. Menegatti², F. M. Lima Júnior², L. H. Metz², B. T. Fonseca²; ¹Embrapa, Sinop, Brazil, ²Federal University of Mato Grosso, Sinop, Brazil (131)

Seed Banks Size During Six Years on Single and Integrated Cropping Systems in Sinop, Mato Grosso, Brazil. F. S. Ikeda*¹, S. D. Cavalieri¹, F. Poltronieri², L. Menegatti², F. M. Lima Júnior², L. H. Metz², B. T. Fonseca²; ¹Embrapa, Sinop, Brazil, ²Federal University of Mato Grosso, Sinop, Brazil (132)

The Interaction Between Cover Crops and Herbicide Programs on Weed Management in Tobacco. E. Haramoto*¹, C. J. Lowry², R. Pearce¹; ¹University of Kentucky, Lexington, KY, ²Agricultural Research Service, Urbana, IL (133)

Adaptation of Palmer Amaranth to the Upper Midwest. M. Coura Oliveira*¹, M. Bernards², A. J. Jhala³, C. Proctor³, S. Stepanovic⁴, R. Werle¹; ¹University of Wisconsin-Madison, Madison, WI, ²Western Illinois University, Macomb, IL, ³University of Nebraska-Lincoln, Lincoln, NE, ⁴University of Nebraska-Lincoln, Grant, NE (134)

Effect of Cover Crop Biomass on the Summer Annual Weed Density and Biomass in Soybean. T. Stanton*, E. Haramoto; University of Kentucky, Lexington, KY (135)

Germination Ecology of Carpetweed, Carolina Geranium, Eclipta, and Goosegrass. S. M. Sharpe*¹, N. Boyd²; ¹University of Florida, Wimauma, FL, ²University of Florida, Balm, FL (136)

Do Pesticide Seed Treatments Alter the Abundance and Composition of Weed Communities? R. G. Smith*, S. A. Palmer, N. D. Warren; University of New Hampshire, Durham, NH (137)

Relationship Between the Growth Habit and the Vegetative and Reproductive Aerial Structures of Junglerice (*Echinochloa colona*). G. Picapietra¹, H. A. Acciaresi*²; ¹EEA INTA Pergamino, Argentina, Argentina, ²Instituto Nacional Tecnologia Agropecuaria, Pergamino, Argentina (138)

The Mitochondrial Genome of Goosegrass (*Eleusine indica*) and a Method for Detecting Mitochondrial Gene Content in Species Lacking Assembled Mitochondrial Genomes. N. D. Hall*¹, H. Zhang¹, J. P. Mower², L. R. Goertzen¹, J. S. McElroy¹; ¹Auburn University, Auburn, AL, ²University of Nebraska–Lincoln, Auburn, NE (139)

Can Pollination Bags be Used to Evaluate the Seed Production of Common Ragweed (*Ambrosia artemisiifolia*)? M. Simard*¹, R. E. Nurse², E. R. Page²; ¹Agriculture and Agri-Food Canada, Saint-jean-sur-Richelieu, QC, ²Agriculture and Agri-Food Canada, Harrow, ON (140)

Emergence Characteristics of Palmer Amaranth Populations from the U.S. Central Great Plains. R. Liu*¹, V. Kumar¹, T. Lambert², M. Manuchehri³, N. C. Lawrence⁴, M. V. Bagavathiannan⁵, T. Gaines⁶; ¹Kansas State University, Hays, KS, ²Kansas State University, Hays, KS, ³Oklahoma State University, Stillwater, OK, ⁴University of Nebraska-Lincoln, Pullman, WA, ⁵Texas A&M University, College Station, TX, ⁶Colorado State University, Fort Collins, CO (141)

A New Mutation in the *Amaranthus retroflexus* Acetolactate Synthase Gene Confers Resistance to Imidazolinones, but not Sulfonylureas and Triazolopyrimidines. M. Laforest*¹, B. Soufiane², K. Bisailon²; ¹Agriculture and AgriFood Canada, St-jean-sur-Richelieu, QC, ²Agriculture and AgriFood Canada, St-Jean-sur-Richelieu, QC (142)

Changes in Rice Field Algae Assemblage in Response to Fertilizer Application Rate. S. Ohadi*¹, J. D. Madsen², K. Al-Khatib¹; ¹University of California, Davis, Davis, CA, ²USDA-ARS, Woodland, CA (143)

Wild radish (*Raphanus raphanistrum* L.) Seedling Emergence in NC. T. A. Reinhardt Piskackova*, K. M. Jennings, R. Richardson, C. Reberg-Horton, R. Leon; North Carolina State University, Raleigh, NC (144)

Non-Chemical Management Practices and their Impact on Weed Population Dynamics in Organic Grain Production. S. L. Samuelson*, N. Rajan, R. Schnell, M. V. Bagavathiannan; Texas A&M University, College Station, TX (145)

TUESDAY MORNING FEBRUARY 12

Section 10. Biocontrol of Weeds

***PRESENTER**

Extending the Host Range of a Commercial Bioherbicidal Fungus. C. D. Boyette*¹, R. E. Hoagland², K. C. Stetina¹; ¹USDA-ARS, Stoneville, MS, ²USDA-ARS-CPSRU, Stoneville, MS (146)

Pesta Granular Mycoherbicide for Combating Broomrape in *Vicia faba* Field in Egypt. Y. M. Shabana*¹, M. M. El-Hawary², M. E. Sadek³; ¹Mansoura University, El-Mansoura, Egypt, ²Agricultural Research Center, Giza, Egypt, ³Mansoura University, Mansoura, Egypt (147)

Developing Host-Specific Bioherbicide for Management of *Waterhyacinth* in Egypt. Y. M. Shabana*; Mansoura University, El-Mansoura, Egypt (148)

Isoxazolopyridines – Herbicides with Novel PSII Inhibition Characteristics for Weed Control. D. A. Carrera*¹, S. Rühm¹, R. Campe², J. Lerchl²; ¹BASF SE, Ludwigshafen, Germany, ²BASF SE, Limburgerhof, Germany (149)

Characterization of *Phalaris brachystachys* L. Resistant to ALS Inhibitor Herbicides in Winter Wheat from Iran. S. Golmohammadzadeh¹, J. Gherekhloo¹, C. Palma-Bautista², A. M. Rojano-Delgado³, R. De Prado Amian*⁴; ¹Gorgan University, Iran, ²University of Cordoba, CÓRDOBA, Spain, ³University of Cordoba, Cordoba, Spain, ⁴University of Cordoba, Córdoba, Spain (150)

Allelopathic Rice Varieties for Weed Suppression: A Tool in Organic Rice. S. Abugho*¹, J. L. Samford², A. McClung³, X. Zhou⁴, M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Texas A&M University, Eagle Lake, TX, ³USDA-ARS, Stuttgart, AR, ⁴Texas A&M University, Beaumont, TX (151)

Section 11. Physiology

***PRESENTER**

The Evaluation of Organic Cleaner for Dicamba. G.

LaBiche*¹, L. M. Lazaro¹, M. R. Foster¹, Z. Liu²; ¹Louisiana State University AgCenter, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA (152)

Investigating Dicamba Uptake and Translocation in Dicamba-Tolerant Tomato Using HPLC. R. Zangouejad¹, M. Alebrahim², T. Tseng*³; ¹Mississippi State University, mississippi st, MS, ²University of Mohaghegh Ardabili, Ardabil, Iran, ³Mississippi State University, Mississippi State, MS (153)

A Non-Destructive Leaf Disc Assay for Rapid Diagnosis of Herbicide Resistance in Weeds. C. Wu*¹, A. Perez-Jones², P. Feng³; ¹Bayer Crop Science, St Louis, MO, ²Bayer Crop Science, Chesterfield, MO, ³Bayer Crop Science, Saint Louis, MO (154)

Importance of the Imazamox Exudation in the Resistance Level of a *Euphorbia heterophylla* Biotype. A. M. Rojano-Delgado¹, C. Palma-Bautista², D. A. Mora¹, J. Vazquez-Garcia¹, J. M. Rosario³, J. Portugal⁴, R. De Prado Amian*⁵; ¹University of Cordoba, Cordoba, Spain, ²University of Cordoba, CÓRDOBA, Spain, ³Universidad Católica Tecnológica del Cibao, La Vega, Dominican Republic, ⁴Polytechnic Institute of Beja, Beja, Portugal, ⁵University of Cordoba, Córdoba, Spain (155)

Multiple Resistance to Herbicides in a *Parthenium hysterophorus* Biotype Found in Caribbean Zone. D. A. Mora¹, J. M. Rosario², C. Palma-Bautista³, R. Domínguez-Mendez¹, A. M. Rojano-Delgado¹, J. Portugal⁴, R. De Prado Amian*⁵; ¹University of Cordoba, Cordoba, Spain, ²Universidad Católica Tecnológica del Cibao, La Vega, Dominican Republic, ³University of Cordoba, CÓRDOBA, Spain, ⁴Polytechnic Institute of Beja, Beja, Portugal, ⁵University of Cordoba, Córdoba, Spain (156)

Resistance to ALS Inhibitors Due to Trp574Leu Substitution in Redroot Pigweed and Tall Waterhemp from Mississippi. V. K. Nandula*¹, D. Giacomini², J. Ray³; ¹USDA-ARS, Cleveland, MS, ²University of Illinois, Urbana, IL, ³USDA, Stoneville, MS (157)

Resistance to Protoporphyrinogen Oxidase (PPO) Inhibitors in Palmer Amaranth from Mississippi. V. K. Nandula*¹, W. Molin²; ¹USDA-ARS, Cleveland, MS, ²USDA-ARS, Stoneville, MS (158)

Herbicide Resistance Screening Studies on a *Phalaris minor* Population from India. V. K. Nandula*¹, S. Singh²; ¹USDA-ARS, Cleveland, MS, ²CCSHAU, Hisar, India (159)

An Interactive Database for Exploring the Physicochemical Properties of Herbicides and Herbicide Leads. J. S. Mylne*, M. N. Gandy, M. G. Corral, K. A. Stubbs; The University of Western Australia, Perth, Australia (160)

Herbicide Discovery and Development 2020, Perth. J. S. Mylne*, K. A. Stubbs, J. Haywood; The University of Western Australia, Perth, Australia (161)

Insights into the Genetic Basis of Glufosinate Resistance in Italian ryegrass (*Lolium multiflorum*) from California. S. Morran*¹, M. Matzrafi¹, P. Tehranchian¹, M. Jasieniuk¹; ¹University of California, Davis, Davis, CA, (162)

TUESDAY MORNING FEBRUARY 12

Section 12. Soil and Environmental Aspects

***PRESENTER**

Soybean Response to Dicamba in Plot-Scale Furrow Irrigation Water. C. D. Willett*, E. M. Grantz, J. Lee, E. L. Archer, R. T. Grewe, J. K. Norsworthy; University of Arkansas, Fayetteville, AR (163)

Dynamics of *Fusarium verticillioides* after Herbicide Treatment on Maize Stubble. W. N. Braz, R. A. Guimarães, J. P. Silva, F. V. Medeiros, F. C. Medeiros*; Federal University of Lavras, Lavras, Brazil (164)

Rice Preemergence Herbicides Washoff from Ryegrass Straw Under Simulated Rainfall. M. Tomazetti, E. R. Camargo*, J. Gomes, L. Vieira, J. Refatti, V. Gehrke; Federal University of Pelotas, Pelotas, Brazil (165)

Relative Toxicity of Selected Organic and Conventional Herbicides to Worms. E. G. Mosqueda, A. T. Adjesiwor*, A. Kniss; University of Wyoming, Laramie, WY (166)

Effect of Bentazon and Iodosulfurom-Methyl on the Antioxidant Metabolism of *Lotus corniculatus* L. N. S. Correa¹, F. Reolon*¹, C. L. Moraes², C. F. Larré¹, D. M. Moraes¹; ¹Federal University of Pelota, Pelotas, Brazil, ²Federal University of Pelota, Pelotas, British Indian Ocean (167)

TUESDAY MORNING FEBRUARY 12

Section 13. Integrated Weed Management

***PRESENTER**

Burning Sugarcane Residue: An Integrated Approach for Managing Surface Deposited Divine Nightshade and Itchgrass Seed. D. J. Spaunhorst*; USDA-ARS, Houma, LA (168)

Control of *Amaranthus palmeri* Resistant to ALS and EPSP Inhibitors with Pre and Postemergence Herbicides in Intercropping of Corn and Marandu Grass. F. S. Ikeda*¹, S. D. Cavalieri¹, F. M. Lima Júnior², L. H. Metz², B. T. Fonseca², F. Poltronieri²; ¹Embrapa, Sinop, Brazil, ²Federal University of Mato Grosso, Sinop, Brazil (169)

Palmer Amaranth (*Amaranthus palmeri*) Control in XtendFlex and Enlist Cotton (*Gossypium hirsutum*). K. R. Russell*¹, P. A. Dotray¹, J. W. Keeling²; ¹Texas Tech University, Lubbock, TX, ²Texas A&M AgriLife Research, Lubbock, TX (170)

Artificial Intelligence Based Semi-Automatic Herbicide Sprayer System. V. Singh*, A. Sosa, A. Gutierrez, A. Knowlton, M. A. Acosta, J. Lusher, S. Kalafatis, M. V. Bagavathiannan; Texas A&M University, College Station, TX (171)

Evaluation of Remotely Piloted Aerial Application Systems (RPAAS) for Herbicide Application. V. Singh*¹, M. Latheef², D. Martin², M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²USDA-ARS, College Station, TX (172)

UAV-Based Imaging for Weed Identification in Row Crops. V. Singh*, B. B. Sapkota, M. Bishop, D. Cope, M. V. Bagavathiannan; Texas A&M University, College Station, TX (173)

Distribution of Herbicide Resistant Waterhemp (*Amaranthus tuberculatus*) Across Row Crop Production Systems in Texas. V. Singh*¹, R. Garetson¹, P. A. Dotray², S. A. Nolte³, G.

Morgan¹, M. V. Bagavathiannan¹, J. McGinty⁴; ¹Texas A&M University, College Station, TX, ²Texas Tech University, Lubbock, TX, ³Texas A&M AgriLife Extension, College Station, TX, ⁴, College Station, TX (174)

Multiple Herbicide Resistant Ragweed *Parthenium* (*Parthenium hysterophorus* L.) Confirmed in Texas, USA. S. Singh*¹, V. Singh¹, N. Subramanian¹, J. McGinty², M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ², College Station, TX (175)

Distribution of Herbicide Resistant Palmer Amaranth (*Amaranthus palmeri*) in Row Crop Production Systems in Texas. V. Singh*¹, R. Garetson¹, P. A. Dotray², M. V. Bagavathiannan¹, S. Singh¹; ¹Texas A&M University, College Station, TX, ²Texas Tech University, Lubbock, TX (176)

"GROW": A Science Based Resource Tool for Integrated Weed Management. C. G. Rubione*¹, M. J. VanGessel¹, M. L. Flessner², S. B. Mirsky³, M. V. Bagavathiannan⁴, L. M. Lazaro⁵, K. B. Pittman²; ¹University of Delaware, Georgetown, DE, ²Virginia Tech, Blacksburg, VA, ³USDA-ARS, Beltsville, MD, ⁴Texas A&M University, College Station, TX, ⁵Louisiana State University AgCenter, Baton Rouge, LA (177)

Understanding Cover Crop Effects on Weed Size Inequality at Time of Herbicide Exposure. J. M. Wallace*¹, W. S. Curran², D. Mortensen¹; ¹Penn State University, University Park, PA, ²Penn State University, Bozeman, MT (178)

Crop Rotation Influence on Maize Productivity and Weeds. M. Z. Brankov*¹, G. Kruger², V. D. Dragicevic¹, M. S. Simic¹; ¹Maize Research Institute, Belgrade, Serbia, ²University of Nebraska-Lincoln, North Platte, NE (179)

Action Mechanism of Bleaching Herbicide Cyclopyrimorate: A Novel Homogentisate Solanesyltransferase Inhibitor. T. Hamada*, M. Shino, Y. Shigematsu, K. Hirase, S. Banba; Mitsui Chemicals Agro, Inc., Mobara-shi, Chiba, Japan (180)

Active Ingredient Effects on Italian Ryegrass (*Lolium multiflorum*) Control in Mississippi Corn (*Zea mays* L.). M. T. Wesley*¹, J. A. Bond², D. B. Reynolds³, E. J. Larson⁴, J. Ferguson³; ¹Mississippi State University, MS State, MS, ²Delta Research and Extension Center, Stoneville, MS, ³Mississippi State University, Mississippi State, MS, ⁴Mississippi State University, Starkville, MS (181)

On a Knife Edge: Conservation Agriculture and Troublesome Weed Control. A. Price*; USDA-ARS, Auburn, AL (182)

Evaluation and Characterization of a Propane Based Flaming System for Weed Control in Onion (*Allium cepa*). R.

N. Lati*¹, Z. Peleg²; ¹Agricultural Research Organization, Newe Ya'ar Research Center, Kfar Tavor, Israel, ²The R.H. Smith Institute of Plant Science & Genetics in Agriculture, Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Rehovot, Israel (183)

Herbicide Resistance Gene Flow in Weeds: Under-Estimated and Under-Appreciated. H. J. Beckie*¹, R. Busi², M. V. Bagavathiannan³; ¹University of Western Australia, Crawley, WA, Australia, ²University Western Australia, CRAWLEY, Australia, ³Texas A&M University, College Station, TX (184)

Inhibitions of Pigweed (*Amaranthus palmeri* S.) Germination and Growth by Cover Crop Residues. A. Shekoofa*, S. Safikhan, T. Raper, L. E. Steckel, S. Butler, D. Copeland; University of Tennessee, Jackson, TN (185)

TUESDAY MORNING FEBRUARY 12

Global Perspective on Herbicides Being Banned

LOCATION: Napoleon Ballroom B123
TIME: 8:00 AM - 2:00 PM
CHAIR/ Nilda Burgos
MODERATOR: University of Arkansas
Fayetteville, AR
CO-CHAIR: Mohsen Mesgaran
University of Melbourne
Melbourne, Australia

***SPEAKER**

- 8:00 Herbicides at Risk: A Global Perspective.** C. Mallory-Smith*¹, N. R. Burgos², C. Maneechote³; ¹Oregon State University, Corvallis, OR, ²University of Arkansas, Fayetteville, AR, ³Department of Agriculture, Bangkok, Thailand (186)
- 8:15 The Dose Makes the Poison: Exposure to Glyphosate.** N. R. Burgos¹, K. R. Solomon*²; ¹University of Arkansas, Fayetteville, AR, ²University of Guelph, Guelph, ON (187)
- 8:45 Environmental Fate and Ecological Impact of Glyphosate.** S. O. Duke*; USDA-ARS-NPURU, Oxford, MS (188)
- 9:15 Glyphosate Ban in the EU - Consequences and Challenges.** S. K. Mathiassen*, P. Kudsk; Aarhus University, Slagelse, Denmark (189)

- 9:45 Discussion**
- 10:00 Break**
- 10:15 The Banning of Bromacil in Costa Rica.** B. E. Valverde*; Investigación y Desarrollo en Agricultura Tropical, Alajuela, Costa Rica (190)
- 10:45 A Overview of Pesticide Ban and Restricted Use in Brazil and South America.** E. R. Camargo*¹, L. A. Avila¹, M. Zapiola²; ¹Federal University of Pelotas, Pelotas, Brazil, ²Pontifical Catholic University of Argentina, buenos aires, Argentina (191)
- 11:15 Toxicology and the Impact of Paraquat Ban on Human Poisoning.** D. KIM*; Seoul National University, Seoul, South Korea (192)
- 11:45 Ban of Herbicides: The Case of Glyphosate in Sri Lanka.** B. Marambe*; University of Peradeniya, Peradeniya, Sri Lanka (193)
- 12:00 Lunch**
- 1:00 Canceled Registration of Herbicides in Israel Affects Weed Distribution and Management.** B. Rubin*¹, H. Eizenberg²; ¹Hebrew University of Jerusalem, Rehovot, Israel, ²Farmers Valley Center, Migdal Haemek, Israel (194)
- 1:15 Risk Analysis of Possible Glyphosate Ban in EU on Turkish Hazelnut Productions and Economy.** H. Mennan*; Ondokuz Mayıs University, Atakum, Turkey (195)
- 1:30 Discussion**

TUESDAY MORNING FEBRUARY 12

Section 1. Agronomic Crops

LOCATION: Borgne
 TIME: 8:00 AM - 5:00 PM
 CHAIR/
 MODERATOR Neha Rana
 Bayer CropScience
 St Louis, MO
 CO-CHAIR: Ryan Lins
 Syngenta Crop Protection
 Rochester, MN

***SPEAKER**

- 8:00** **The Goosegrass (*Eleusine indica*) Genome Resolves Homeologous Gene Relationships within Allotetraploid Crop Plan African Finger Millet (*Eleusine coracana*).** N. Hall*, J. D. Patel, J. S. McElroy, L. R. Goertzen; Auburn University, Auburn, AL (196)
- 8:15** **Critical Time for Weed Removal in Corn and Soybean as Influenced by Pre-Herbicides.** S. Z. Knezevic*¹, O. Osipitan², J. E. Scott²; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Concord, NE (197)
- 8:30** **Improving Mesosulfuron Methyl Performance in Winter Wheat.** M. D. Anderson*¹, J. McGregor²; ¹BAYER CROPSCIENCE, Spangle, WA, ²Research Triangle Park, NC (198)
- 8:45** **Seeding Rate, Row Spacing and Herbicide Effects on Weed Control in Pinto Bean.** D. W. Morishita*, K. D. LeQuia; University of Idaho, Kimberly, ID (199)
- 9:00** **Horseweed (*Conyza canadensis* L.) Management in Oklahoma Winter Wheat.** M. Manuchehri*¹, J. A. Crose¹, T. A. Baughman², J. Childers¹, V. Kumar³; ¹Oklahoma State University, Stillwater, OK, ²Oklahoma State University, Ardmore, OK, ³Kansas State University, Hays, KS (200)
- 9:15** **Management of Grass Weed Species with Soil-Applied Herbicides in Cool-Season Grasses Grown for Seed.** A. G. Hulting*¹, D. W. Curtis², K. C. Roerig², C. Mallory-Smith¹; ¹OREGON STATE UNIVERSITY, Corvallis, OR, ²Oregon State University, Corvallis, OR (201)
- 9:30** **Optimizing Chloroacetamide Placement in Cotton Production Systems.** S. Davis*¹, D. Dodds², L. X. Franca², J. McNeal³, B. Norris¹, J. J. Williams¹; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS, ³Mississippi State University, Mississippi State, Mississippi, MS (202)
- 9:45** **Developing a Laser Weeding Robot for Weed Control in Broad-Scale Production Systems.** G. R. Coleman*, M. J. Walsh; University of Sydney, Narrabri, Australia (203)
- 10:00** **Break**
- 10:15** **Impact of Increasing Levels of Irrigation on Weed Control and Corn Yield with and Without a Wheat**

Cover Crop. R. Currie*, P. Geier; Kansas State University, Garden City, KS (204)

- 10:30 Weed Stress Effects of Cover Crops in Early Corn Growth Stages.** J. M. Miller*, S. A. Clay, D. E. Clay, G. Reicks, D. Joshi; South Dakota State University, Brookings, SD (205)
- 10:45 The Impact of Cover Crop Biomass and C:N Ratio on Early-Season Weed Suppression.** K. B. Pittman*, J. Barney, M. L. Flessner; Virginia Tech, Blacksburg, VA (206)
- 11:00 Cover Crop Response to Residual Herbicides in Peanut and Cotton Rotation.** K. J. Price*¹, S. Li¹, A. Price²; ¹Auburn University, Auburn, AL, ²USDA-ARS, Auburn, AL (207)
- 11:15 Implications of Narrow Crop Row Spacing and Delayed Avena Fatua and Avena Ludoviciana Emergence for Weed Growth and Seed Production in Wheat.** B. S. Chauhan*, G. Mahajan; The University of Queensland, Gatton, Australia (208)
- 11:30 On-farm Assessment of Weed Management and Productivity of Dry-seeded Rice in the Irrigated Rice-Wheat Cropping System.** M. S. Bhullar*¹, N. Dhaliwal², J. Grover³, K. Kaur⁴, A. Kaur⁵, M. Singh⁶, S. Chopra⁷, H. Singh⁸, M. Kaur¹; ¹Punjab Agricultural University, Ludhiana, India, ²Punjab Agricultural University, Sri Muktsar Sahib, India, ³Punjab Agricultural University, Faridkot, India, ⁴Punjab Agricultural University, Amritsar, India, ⁵Punjab Agricultural University, Moga, India, ⁶Punjab Agricultural University, Sangrur, India, ⁷Punjab Agricultural University, Gurdaspur, India, ⁸Punjab Agricultural University, Fatehgarh sahib, India (209)
- 11:45 Lunch**
- 1:00 Influence of Carrier Volume, Nozzle Type, and Weed Size on Glufosinate Efficacy.** J. Calhoun*¹, D. B. Reynolds²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (210)
- 1:15 Glufosinate-Resistant Italian Ryegrass from Oregon: Role of Glutamine Synthetase Isoforms and Herbicide Metabolism in the Resistance Mechanism.** C. A. Brunharo*¹, H. K. Takano², C. Mallory-Smith³, F. E. Dayan⁴, B. Hanson⁵; ¹University of California, Davis, Davis, CA, ²Colorado State University, Ft Collins, CO, ³OREGON STATE UNIVERSITY, Corvallis, OR, ⁴Colorado State University, Fort Collins, CO, ⁵University of California, Davis, Winters, CA (211)

- 1:30 Control of Common Lambsquarters and Velvetleaf by Tank-Mixing Glufosinate and Fluthiacet-Methyl in Glufosinate-Resistant Soybean.** P. Chahal, A. J. Jhala*; University of Nebraska-Lincoln, Lincoln, NE (212)
- 1:45 Characterization of Palmer Amaranth with Reduced Sensitivity to S-metolachlor.** C. Brabham*, J. K. Norsworthy, M. M. Houston; University of Arkansas, Fayetteville, AR (213)
- 2:00 Status of Multiple Herbicide-Resistant Palmer Amaranth in Kansas.** V. Kumar*¹, R. Liu¹, T. Lambert², D. Peterson³; ¹Kansas State University, Hays, KS, ²Kansas State University, Hays, KS, ³Kansas State University, Manhattan, KS (214)
- 2:15 Influence of Sequence and Timing of Synthetic Auxins and Glufosinate on Large Palmer Amaranth Control.** F. B. Browne*, S. Li, K. J. Price; Auburn University, Auburn, AL (215)
- 2:30 Multiple Herbicide-Resistant Horseweed (*Conyza canadensis* L. Cronq.) and Waterhemp (*Amaranthus tuberculatus* Moq. J. D. Sauer) Dose Response to Tolpyralate and Tolpyralate Plus Atrazine.** B. A. Metzger*¹, A. J. Raeder², D. Hooker³, D. Robinson⁴, P. Sikkema⁴; ¹University of Guelph, Wallenstein, ON, ²ISK Biosciences, Concord, OH, ³University of Guelph, Ridge, ON, ⁴University of Guelph, Ridgetown, ON (216)
- 2:45 Predicting the Relative Long-Term Effectiveness of Herbicide Programs Using Syngenta's Resistance Fighter Model.** R. Wuerffel*¹, C. L. Dunne², E. Parker¹, E. Palmer³, D. L. Bowers⁴, D. Kaundun⁵, C. Liu⁵; ¹Syngenta, Vero Beach, FL, ²Syngenta Crop Protection, Vero Beach, FL, ³Syngenta Crop Protection, Greensboro, NC, ⁴Syngenta, Greensboro, NC, ⁵Syngenta, Braknell, England (217)
- 3:00 Break**
- 3:15 Economic Implications of Herbicide Resistant Weed Management in Glyphosate-Resistant Sugarbeet.** A. T. Adjesiwor*¹, N. C. Lawrence², P. Jha³, T. Gaines⁴, E. Westra⁴, A. Kniss¹; ¹University of Wyoming, Laramie, WY, ²University of Nebraska-Lincoln, Pullman, WA, ³Montana State University, Huntley, MT, ⁴Colorado State University, Fort Collins, CO (218)
- 3:30 Efficacy and Economic Comparison of Enlist, Xtend and Liberty Based Weed Control Systems in**

Cotton. S. A. Nolte*¹, R. Vulchi², M. Matocha³, G. Morgan², J. McGinty⁴; ¹Texas A&M AgriLife Extension, College Station, TX, ²Texas A&M University, College Station, TX, ³Texas AgriLife Extension Service, College Station, TX, ⁴, College Station, TX (219)

- 3:45 Investigation of *Conyza canadensis* Control in Kentucky No-Till Soybean Across Three Herbicide Resistant Soybean Varieties.** T. R. Legleiter*¹, J. Green²; ¹University of Kentucky, Princeton, KY, ²University of Kentucky, Lexington, KY (220)
- 4:00 On-Farm Evaluations of Auxin Nozzles for Peanut Pest Management.** E. P. Prostko*¹, M. R. Abney², R. C. Kemerait², G. C. Rains², J. L. Jacobs³, C. T. Powell⁴, W. G. Tyson⁵; ¹University of Georgia, Tifton, GA, ²The University of Georgia, Tifton, GA, ³The University of Georgia, Blackshear, GA, ⁴The University of Georgia, Colquitt, GA, ⁵The University of Georgia, Statesboro, GA (221)
- 4:15 Gramoxone Magnum: A New Option for Burndown and Residual Control.** R. Lins*¹, M. Saini², D. L. Bowers³; ¹Syngenta Crop Protection, Rochester, MN, ²Syngenta Crop Protection, Greensboro, NC, ³Syngenta, Greensboro, NC (222)
- 4:30 Research Results on a Future Residual Herbicide for Dicamba-Tolerant Soybeans.** C. Asmus*¹, K. E. Keller²; ¹BASF, Raleigh, NC, ²BASF, Rougemont, NC (223)

TUESDAY MORNING FEBRUARY 12

Section 5. Wildland and Aquatic Invasive Plants

LOCATION: Maurepas
TIME: 8:00 AM - 11:30 AM
CHAIR/ Christopher Mudge
MODERATOR: U.S. Army Engineer Research and Development Center
Baton Rouge, LA
CO-CHAIR: Mark Renz
University of Wisconsin
Madison, WI

***SPEAKER**

- 8:00 Federal Research and its Linkage with the USEPA Aquatic Herbicide Registration Process.** K. D. Getsinger*¹, C. R. Mudge², B. T. Sartain¹, M. Netherland³; ¹U.S. Army Engineer Research and Development Center, Vicksburg, MS, ²U.S. Army Engineer Research and Development Center, Baton Rouge, LA, ³University of Florida, Gainesville, FL (224)
- 8:15 Concentration and Exposure Time Requirements of Florpyrauxifen-Benzyl for Managing Invasive Aquatic Plants.** C. R. Mudge*¹, K. D. Getsinger², B. T. Sartain², M. Netherland³; ¹U.S. Army Engineer Research and Development Center, Baton Rouge, LA, ²U.S. Army Engineer Research and Development Center, Vicksburg, MS, ³University of Florida, Gainesville, FL (225)
- 8:30 Field Demonstrations of Selective Control of Major US Aquatic Invasive Plants using ProcellaCOR (a.i., florpyrauxifen-benzyl).** M. A. Heilman*¹, K. D. Getsinger², D. Jones³, J. Ferrell⁴; ¹SePRO, Carmel, IN, ²U.S. Army Engineer Research and Development Center, Vicksburg, MS, ³University of Florida, Lake Alfred, FL, ⁴University of Florida, Gainesville, FL (226)
- 8:45 Herbicide Trials with Brazilian Egeria (*Egeria densa*) for Management in the Sacramento / San Joaquin River Delta.** J. D. Madsen*; USDA-ARS, Woodland, CA (227)
- 9:00 Evaluation of Metsulfuron-Methyl for Controlling Giant Salvinia.** W. J. Prevost*¹, C. R. Mudge²; ¹Louisiana State University, Baton Rouge, LA, ²U.S. Army Engineer Research and Development Center, Baton Rouge, LA (228)
- 9:15 Does Giant Salvinia Impact Aerial Colonization of Aquatic Insects?** C. Wahl*; Louisiana State University AgCenter, Baton Rouge, LA (229)
- 9:30 Challenges and Opportunities for Biological Control of Non-Native Weeds in Louisiana.** R. R. Diaz*¹, V. Manrique², M. B. Rayamajhi³, C. Wahl⁴, R. Watson¹; ¹Louisiana State University, Baton Rouge, LA, ²Southern University and A&M College, Baton Rouge, Baton Rouge, LA, ³USDA, Cooper City, FL, ⁴Louisiana State University AgCenter, BATON ROUGE, LA (230)
- 9:45 Is Biological Control Method a Viable Option for Invasive Weed Management? Recent Examples from Florida.** M. B. Rayamajhi*; USDA, Cooper City, FL (231)

- 10:00 Break**
- 10:15 Evaluation of Improved Herbicidal Techniques for Crested Floating Heart (*Nymphaoides cristata*) Management.** K. Foley*, R. Richardson; North Carolina State University, Raleigh, NC (232)
- 10:30 Management of Problematic Native Aquatic Vegetation to Enhance Multi-User Benefits in Southeastern Waterbodies.** K. L. Calhoun*, G. N. Ervin, L. G. Turnage; Mississippi State University, Starkville, MS (233)
- 10:45 Can Seawater be Used for Selective Management of Brazilian Peppertree in Mangrove Communities? S.** F. Enloe*, C. C. Jacono; University of Florida, Gainesville, FL (234)
- 11:00 Development of an Autonomous Application System for Aquatic Plant Management.** R. Richardson*¹, S. Hoyle¹, J. Nawrocki²; ¹North Carolina State University, Raleigh, NC, ²UPI, Inc., Raleigh, NC (235)
- 11:15 Bio-Economic Models Prioritizing East Maui Watershed Protection Against Miconia Invasion.** J. J. Leary*¹, N. A. Jorgensen², M. Renz³, K. Burnett⁴, C. Wada⁴, B. V. Mahnken⁵; ¹University of Florida-Institute of Food and Agricultural Sciences, Gainesville, FL, ²University of Wisconsin-Madison, Madison, WI, ³University of Wisconsin, Madison, WI, ⁴University of Hawaii-Manoa, Honolulu, HI, ⁵University of Hawaii-Manoa, Makawao, HI (236)

TUESDAY MORNING FEBRUARY 12

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

- LOCATION:** Maurepas
- TIME:** 11:30 AM - 12:00 PM
- CHAIR:** Joseph Omielan
University of Kentucky
Lexington, KY
- CO-CHAIR:** Lisa Obear
University of Nebraska-Lincoln
Fort Atkinson, WI
- MODERATOR:** Christopher Mudge

U.S. Army Engineer Research
and Development Center
Baton Rouge, LA

***SPEAKER**

- 11:30 A Low-Cost Individual Plant Applicator.** J. D. Byrd, Jr.*; Mississippi State University, Mississippi State, MS (237)
- 11:45 Comparison of Herbicide Options for Guardrails and Cable Barriers.** J. Omielan*; University of Kentucky, Lexington, KY (238)

TUESDAY MORNING FEBRUARY 12

PhD Student Oral Contest Session I

LOCATION: Napoleon Ballroom A2
TIME: 10:00 AM - 5:00 PM
CHAIR/ Stephen Schraer
MODERATOR: Syngenta
Meridian, ID
CO-CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS

***SPEAKER † STUDENT CONTEST**

- 10:00 †Are Non-Synthetic Herbicides Useful for Weed Control in Rice?** S. Abugho*¹, A. V. Pagenotto², X. Zhou³, M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²University of Sao Paulo, Sao Paulo, Brazil, ³Texas A&M University, Beaumont, TX (239)
- 10:15 Efficacy of Trifludimoxazin Alone and in Combination with Glufosinate, Glyphosate, Paraquat, and Saflufenacil on Emerged Tall Waterhemp (*Amaranthus tuberculatus*).** N. R. Steppig*¹, S. Willingham², D. M. Whalen³, B. G. Young⁴; ¹Purdue University, Lafayette, IN, ²BASF, Seymour, IL, ³University of Missouri, Columbia, MO, ⁴Purdue University, Brookston, IN (240)
- 10:30 †Integrated Weed Management Systems to Control Common Ragweed in Virginia Soybean.** S. C. Beam*¹, M. L. Flessner²; ¹Virginia Tech, Concord, NC, ²Virginia Tech, Blacksburg, VA (241)

- 10:45 Cotton (*Gossypium hirsutum*) Defoliation as Affected by Droplet Size and Carrier Volume.** J. McNeal*¹, D. Dodds², G. Kruger³, S. Davis⁴, L. X. Franca², B. Norris⁴, J. J. Williams⁴; ¹Mississippi State University, Mississippi State, Mississippi, MS, ²Mississippi State University, Mississippi State, MS, ³University of Nebraska-Lincoln, North Platte, NE, ⁴Mississippi State University, Starkville, MS (242)
- 11:00 †Antioxidant Responses to Weed Competition in Arabidopsis and Maize.** N. Berardi*, C. J. Swanton, S. Amirsadeghi; University of Guelph, Guelph, ON (243)
- 11:15 †Phytochemical Characterization and Bio-Herbicidal Potential of *Lantana Camara L.* against Selected Weeds of Wheat Crop.** T. Anwar*¹, N. Ilyas¹, R. Qureshi¹, M. Khan Panni²; ¹Pir Mehr Ali Shah Arid Agriculture University, Shamsabad, Murree Road, Rawalpindi, Pakistan, ²Bioactive Natural Products and Phytoceuticals Laboratory, Plant and Soil Building, Michigan State University, East Lansing, MI (244)
- 11:30 †Ecosystem Services Provided by Cover Crops Interseeded in Corn.** A. P. Brooker*¹, K. Renner², C. Sprague², L. Tiemann²; ¹Michigan State University, Haslett, MI, ²Michigan State University, East Lansing, MI (245)
- 11:45 †Physiological Basis for the Contact Activity of Glufosinate.** H. K. Takano*¹, R. S. Beffa², C. Preston³, P. Westra⁴, F. E. Dayan⁴; ¹Colorado State University, Ft Collins, CO, ²Bayer Crop Science, Frankfort / Main, Germany, ³University of Adelaide, Glen Osmond, Australia, ⁴Colorado State University, Fort Collins, CO (246)
- 12:00 Lunch**
- 1:00 †Cereal Rye Cover Crop and Herbicide Application Method Impacts Cotton Stand, Palmer Amaranth Control, and Yield.** L. C. Hand*¹, R. L. Nichols², T. M. Webster³, A. S. Culpepper⁴; ¹University of Georgia, Tifton, GA, ²Cotton Incorporated, Cay, NC, ³USDA-ARS, Tifton, GA, ⁴University of Georgia, Tifton, GA (247)
- 1:15 †Prediction of PPO-Inhibitor Resistance Risk through Genomic Analysis.** A. L. Barker*, F. E. Dayan; Colorado State University, Fort Collins, CO (248)
- 1:30 †Tradeoffs between Planting Date, Cover Crop Biomass, and Weed Suppression in an Organic No-**

till System Using Tarps. N. P. Lounsbury*, R. G. Smith; University of New Hampshire, Durham, NH (249)

- 1:45 †Isoleucine to Leucine Amino Acid Substitution in Plastidic ACCase Confers Resistance to Pinoxaden Herbicide in Southern Crabgrass (*Digitaria ciliaris*).** S. Basak*¹, B. Bi¹, A. M. Brown¹, P. McCullough², J. S. McElroy¹; ¹Auburn University, Auburn, AL, ²University of Georgia, Griffin, GA (250)
- 2:00 †Impact of Crop Rotation, Tillage, and Herbicide Treatment on R:S Ratio of ALS-Resistant Kochia After Four Years.** E. G. Mosqueda*¹, A. Kniss¹, N. C. Lawrence², P. Jha³, G. Sbatella⁴; ¹University of Wyoming, Laramie, WY, ²University of Nebraska-Lincoln, Pullman, WA, ³Montana State University, Huntley, MT, ⁴University of Wyoming, Powell, WY (251)
- 2:15 †Target-Site Mutation in *Conyza canadensis* Biotypes with Extreme Resistance to Glyphosate in Ohio and Iowa, USA.** Z. T. Beres*¹, L. A. Giese¹, D. M. Mackey¹, M. D. Owen², E. R. Page³, A. Snow⁴; ¹Ohio State University, Columbus, OH, ²Iowa State University, Ames, IA, ³Agriculture and Agri-Food Canada, Harrow, ON, ⁴Ohio State University, Dept of EEOB, Columbus, OH (252)
- 2:30 †Fertilizer Placements Affect Weed Growth and Reproduction in Nursery Container Production.** D. Saha*¹, C. Marble², A. Chandler¹; ¹Mid-Florida Research and Education Center, University of Florida, Apopka, FL, ²University of Florida, Apopka, FL (253)
- 2:45 †Single Nucleotide Polymorphism in Plastid Protoporphyrinogen Oxidase Gene (PPO1) Confers Resistance to Oxidiazon in *Eleusine indica*.** B. Bi*¹, Q. Wang¹, J. J. Coleman¹, J. S. McElroy¹, J. M. Peppers², N. Hall¹; ¹Auburn University, Auburn, AL, ²Auburn University, Auburn, AL (254)
- 3:00 Break**
- 3:15 †Evaluation of the Suitability of 13 Summer Cover Crop Species for Southeast Texas.** S. L. Samuelson*, M. V. Bagavathiannan; Texas A&M University, College Station, TX (255)
- 3:30 †Investigation of Metabolism Associated with Quizalofop Resistance in CoAXium Wheat.** R. A. Bough*, F. E. Dayan, T. Gaines; Colorado State University, Fort Collins, CO (256)
- 3:45 Assessing Dicamba Injury Across Different Soybean Varieties and Maturity Groups.** E. A. Jones*¹, W.

Everman¹, J. Sanders², D. J. Contreras¹, M. A. Granadino¹; ¹North Carolina State University, Raleigh, NC, ²North Carolina State University, Holly Springs, NC (257)

- 4:00** †**Genetic Diversity and Molecular Markers for Abiotic Stress Tolerance in Weedy Rice.** S. D. Stallworth*¹, T. Tseng¹, S. Shrestha², B. C. Schumaker²; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MS (258)
- 4:15** ***Leptochloa acuminata* Clomazone Metabolism in California Rice.** K. E. Driver*, C. A. Brunharo, A. Godar, K. Al-Khatib; University of California, Davis, Davis, CA (259)
- 4:30** †**Metabolic Resistance to S-metolachlor in Two Multiple Herbicide-Resistant Waterhemp Populations from Illinois.** S. Strom*¹, L. Gonzini¹, C. Mitsdarfer¹, A. S. Davis², D. E. Riechers³, A. Hager¹; ¹University of Illinois, Urbana, IL, ²N-319 Turner Hall, Urbana, IL, ³, Urbana, IL (260)
- 4:45** †**Investigating Cross-Resistance to the Synthetic Auxins Fluroxypyr and Dicamba in Kochia Scoparia.** O. E. Todd*¹, T. Gaines¹, D. Pettinga¹, P. Westra¹; ¹Colorado State University, Fort Collins, CO, (261)

TUESDAY MORNING FEBRUARY 12

PhD Student Oral Contest Session II

LOCATION: Napoleon Ballroom A3
TIME: 10:15 AM - 5:00 PM
CHAIR/ Stephen Schraer
MODERATOR: Syngenta
Meridian, ID
CO-CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS

***SPEAKER † STUDENT CONTEST**

- 10:15** †**A Novel Kentucky Adapted Red Clover Line Displays Increased 2,4-D Tolerance.** L. P. Araujo*, M. Barrett, T. Pfeiffer, L. D. Williams, G. Olson; University of Kentucky, Lexington, KY (262)

- 10:30 †Integrating Crop Rotation and Herbicide Programs to Control Kochia and Palmer Amaranth in Sugarbeet.** C. W. Beiermann*¹, N. C. Lawrence²; ¹University of Nebraska-Lincoln, Scottsbluff, NE, ²University of Nebraska-Lincoln, Pullman, WA (263)
- 10:45 †Comparison of Soybean Injury and Yield Response to Low-dose Dicamba Particle Drift and Vapor.** F. B. Browne*, S. Li, K. J. Price; Auburn University, Auburn, AL (264)
- 11:00 †Palmer Amaranth Growth and Fecundity in Competition with Various Row Crops in North Carolina.** D. J. Mahoney*¹, D. Jordan², A. T. Hare², N. R. Burgos³, K. M. Jennings², R. Leon², M. C. Vann²; ¹North Carolina State University, Cary, NC, ²North Carolina State University, Raleigh, NC, ³University of Arkansas, Fayetteville, AR (265)
- 11:15 †Evaluating Effectiveness of Dicamba Removal from Contaminated Sprayers Following Various Incubation Periods from Contamination to Clean Out.** Z. A. Carpenter*, D. B. Reynolds, A. B. Johnson; Mississippi State University, Mississippi State, MS (266)
- 11:30 †Response of White and Yellow Popcorn Hybrids to Pre- and Post-Emergence Herbicides.** E. R. Barnes*¹, N. C. Lawrence², S. Z. Knezevic¹, O. R. Rodriguez³, S. Irmak¹, A. J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska-Lincoln, Pullman, WA, ³Conagra Foods, Inc, Brookston, IN (267)
- 11:45 †2,4-D Metabolic Resistance in Waterhemp (*Amaranthus tuberculatus*).** M. Figueiredo*¹, A. Kuepper², D. Giacomini³, M. Jugulam⁴, G. Kruger⁵, P. Tranel⁶, F. E. Dayan¹, P. Westra¹, T. Gaines¹; ¹Colorado State University, Fort Collins, CO, ²Bayer Crop Science, Frankfurt, Germany, ³University of Illinois, Urbana, IL, ⁴Kansas State University, Manhattan, KS, ⁵University of Nebraska-Lincoln, North Platte, NE, ⁶University of Illinois, Urbana, IL (268)
- 12:00 Lunch**
- 1:00 †Bicyclopyrone Efficacy in Sweet Corn.** T. L. Burke*, R. Zuger, I. C. Burke; Washington State University, Pullman, WA (269)

- 1:15 †Can Off-target Movement of Dicamba be Reduced with See & Spray Technology?** Z. D. Lancaster*¹, J. K. Norsworthy¹, J. T. Richburg², T. Barber³; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas, Fayetteville, AR, ³University of Arkansas, Lonoke, AR (270)
- 1:30 †Evaluation of Herbicide Options for Cover Crop Termination.** W. C. Greene*¹, M. L. Flessner², K. B. Pittman², K. W. Bamber², L. S. Rector², C. W. Cahoon³; ¹Virginia Tech, Virginia Tech, VA, ²Virginia Tech, Blacksburg, VA, ³Virginia Tech, Painter, VA (271)
- 1:45 †2,4-D Amine and 2,4-D Butoxyethyl Ester Behavior in Eurasian and Hybrid Watermilfoil.** M. F. Ortiz*¹, M. Figueiredo¹, S. J. Nissen¹, F. E. Dayan¹, R. M. Wersal², W. Ratajczyk²; ¹Colorado State University, Fort Collins, CO, ²Lonza, Alpharetta, GA (272)
- 2:00 †Florpyrauxifen-benzyl Activity on Common Aquatic Weeds in Louisiana Rice.** S. Rustom*¹, E. P. Webster¹, B. McKnight¹, D. C. Walker¹, C. Webster²; ¹Louisiana State University, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, AL (273)
- 2:15 †How does Temperature Rise and *Bacillus sp.* Inoculation Affect Germination and Establishment of Native and Invasive Species within Riparian Forest?** O. Cano*¹, G. Muro-Pérez², J. Sánchez-Salas³, J. Sáenz-Mata³, E. Jurado⁴, J. Flores⁵; ¹Biological Sciences Faculty - UJED, Lerdo, Mexico, ²Biological Sciences Faculty - UJED, Gomez Palacio, Mexico, ³Biological Sciences Faculty - UJED, Gómez Palacio, Mexico, ⁴Forestry Sciences Faculty - UANL, Linares, Mexico, ⁵Environmental Sciences Division - IPICYT, San Luis Potosi, Mexico (274)
- 2:30 †Response of Sweetpotato to Fluridone Alone or in Combination with Flumioxazin Followed by S-metolachlor.** S. C. Smith*, K. M. Jennings, S. Chaudhari, D. Monks; North Carolina State University, Raleigh, NC (275)
- 2:45 †Modeling Flooding and Burial Effects on the Emergence of 5 California Weedy Rice Biotypes.** L. B. Galvin*¹, M. B. Mesgaran², K. Al-Khatib¹, W. B. Brim-DeForest³; ¹University of California, Davis, Davis, CA, ²University of Melbourne, Melbourne, Australia, ³University of California, Davis, Yuba City, CA (276)
- 3:00 Break**

- 3:15** †**Persistence of Atrazine, Topramezone and Mesosulfuron-methyl in Different North Carolina Soil Types: the First Step in Investigating the Potential for Herbicide Carryover Damage to Soybean (*Glycine max*) Crop.** S. S. Ramanathan*¹, T. Gannon¹, A. Locke², W. Everman¹; ¹North Carolina State University, Raleigh, NC, ²USDA-ARS and North Carolina State University, Raleigh, NC (277)
- 3:30** †**A Mechanistic Framework to Explain Yield Loss in Corn (*Zea mays* L.) Caused by Early Season Stress.** H. Gonzalez*, E. A. Lee, L. Lukens, C. J. Swanton; University of Guelph, Guelph, ON (278)
- 3:45** †**Estimating Standing Biomass of an Invasive Plant using sUAS.** A. Howell*¹, R. Richardson²; ¹North Carolina State University, Sanford, NC, ²North Carolina State University, Raleigh, NC (279)
- 4:00** †**Evaluation of Seed Dormancy in Ryegrass (*Lolium* spp.) Accessions Collected from Texas Blacklands.** A. Maity*¹, S. Abugho¹, V. Singh¹, N. Subramanian¹, G. R. Smith², M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Texas A&M University, Overton, TX (280)
- 4:15** †**Interaction of Lactofen with Glyphosate or Glufosinate for Weed Control as Affected by Adjuvants and Droplet Size.** J. Gizotti de Moraes*, C. Chiaranda Rodrigues, B. Vukoja, G. Kruger; University of Nebraska-Lincoln, North Platte, NE (281)
- 4:30** †**Describing Phenology Patterns of Different Natural Cohorts of Sicklepod (*Senna obtusifolia* (L.) Irwin & Barneby) Using Sigmoidal Models.** T. A. Reinhardt Piskackova*, K. M. Jennings, R. Richardson, C. Reberg-Horton, R. Leon; North Carolina State University, Raleigh, NC (282)
- 4:45** †**Evaluation of Soybean Tolerance to Off-Target Loyant™ (florpyrauxifen-benzyl) Deposition.** D. C. Walker*¹, E. P. Webster¹, D. O. Stephenson², B. McKnight¹, S. Rustom¹, C. Webster³; ¹Louisiana State University, Baton Rouge, LA, ²Louisiana State University AgCenter, Alexandria, LA, ³Louisiana State University, Baton Rouge, AL (283)

TUESDAY MORNING FEBRUARY 12

MS Student Oral Contest Session I

LOCATION: Napoleon Ballroom C2
TIME: 10:15 AM - 4:00 PM
CHAIR/ Stephen Schraer
MODERATOR: Syngenta
Meridian, ID
CO-CHAIR: Darrin Dodds
Mississippi State University
Mississippi State, MS

***SPEAKER † STUDENT CONTEST**

- 10:15 †Improving Selectivity of Physical Weed Control in Winter Squash: Cultivation Tolerant Varieties and Traits.** M. M. Benzle*, D. C. Brainard; Michigan State University, East Lansing, MI (284)
- 10:30 †Seed Production Potential Among Diverse Cytoplasmic Male Sterile *Sorghum bicolor* Genotypes Following Natural Pollination with *S. halepense*.** C. Sias*, G. Hodnett, W. Rooney, M. V. Bagavathiannan; Texas A&M University, College Station, TX (285)
- 10:45 †Pollinator Use of Growing Season Cover Crops in an Agroecosystem.** C. J. Bryan*, S. Sipes, L. Kassim, D. Gibson, D. Scott, K. L. Gage; Southern Illinois University, Carbondale, IL (286)
- 11:00 †Browntop Millet (*Urochloa ramosa*) and Broadleaf Signalgrass (*Urochloa platyphylla*) Competition Effects on Growth and Yield of Peanut (*Arachis hypogaea*) Managed with Prohexadione Calcium.** Z. R. Treadway*¹, J. Ferguson¹, J. T. Irby¹, B. Zurweller², J. Gore³; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MS, ³Mississippi State University, Stoneville, MS (287)
- 11:15 †Optimizing Cover Crop and Herbicide Inputs for Weed Management in No-Till Corn and Soybean.** J. M. Bunchek*¹, J. M. Wallace², W. S. Curran³, D. Mortensen², M. J. VanGessel⁴, B. A. Scott⁴; ¹Penn State University, State College, PA, ²Penn State University, University Park, PA, ³Penn State University, Bozeman, MT, ⁴University of Delaware, Georgetown, DE (288)

- 11:30 †Italian Ryegrass (*Lolium multiflorum*) Timing of Removal Effects on Corn (*Zea mays* L.) in Mississippi.** M. T. Wesley*¹, J. A. Bond², D. B. Reynolds³, E. J. Larson⁴, J. Ferguson³; ¹Mississippi State University, MS State, MS, ²Delta Research and Extension Center, Stoneville, MS, ³Mississippi State University, Mississippi State, MS, ⁴Mississippi State University, Starkville, MS (289)
- 11:45 †Pesticide Phytoremediation Potential of Southeastern US Terrestrial Plants: *Iris versicolor*, *Panicum virgatum*, and *Andropogon virginicus*.** T. Gannon¹, F. Yelverton¹, A. M. McKnight*²; ¹North Carolina State University, Raleigh, NC, ²North Carolina State University, Cary, NC (290)
- 12:00 Lunch**
- 1:00 †Utilizing Geospatial Technology to Assess Off-target Dicamba Injury and Yield Loss in Missouri Soybean Fields.** B. R. Dintelmann*¹, S. T. Farrell², K. Shannon², M. Bish², K. Bradley²; ¹University of Missouri, Belleville, IL, ²University of Missouri, Columbia, MO (291)
- 1:15 †Surface and Living Mulches for Strip-Tilled Vegetable Production.** J. J. Puka-Beals*¹, G. G. Gramig¹; ¹North Dakota State University, Fargo, ND (292)
- 1:30 †Investigations of the Effects of Soil pH on the Volatility of Dicamba Formulations.** E. G. Oseland*, M. Bish, K. Bradley; University of Missouri, Columbia, MO (293)
- 1:45 †Weed Suppression and Light Penetration in Standing and Rolled Cereal Rye and Wheat Cover Crop Residue.** L. S. Rector*, M. L. Flessner, D. McCall, W. Thomason; Virginia Tech, Blacksburg, VA (294)
- 2:00 †Boll Distribution and Yield Response to Simulated Dicamba Drift on Non-Dicamba Tolerant Cotton (*Gossypium hirsutum*).** K. R. Russell*, P. A. Dotray, G. L. Ritchie; Texas Tech University, Lubbock, TX (295)
- 2:15 †Examining Environmental Factors and Chemical Control Options for *Juncus* Species.** Z. D. Small*¹, J. D. McCurdy², J. T. Brosnan³, J. D. Byrd, Jr.¹, T. Tseng¹, E. Reasor⁴, M. P. Richard⁵; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Mississippi State University, MS, ³U of TN 252 Ellington Bldg, Knoxville, TN, ⁴PBI-Gordon Corporation, Shawnee, KS, ⁵Mississippi State University, Starkville, MS (296)

- 2:30** †**Weedy Rice Genomic Regions Contributing to Allelopathy.** B. C. Schumaker*¹, T. Tseng², S. Shresth³, S. D. Stallworth²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS, ³Texas A&M, College Station, TX (297)
- 2:45** †**The Interaction of Plant Cutting and Burndown Herbicides on Horseweed Control To Improve Management in Double-Crop Soybeans Following Wheat.** C. P. Carmody*¹, K. L. Gage¹, R. F. Krausz²; ¹Southern Illinois University, Carbondale, IL, ²Southern Illinois University, Belleville, IL (298)
- 3:00** **Break**
- 3:15** †**Comparison of Nozzle Type and Application Pressure on Weed Control in Peanut.** K. L. Broster*¹, J. Ferguson¹, T. A. Baughman², B. Zurweller³, B. Rushing⁴; ¹Mississippi State University, Mississippi State, MS, ²Oklahoma State University, Ardmore, OK, ³Mississippi State University, Starkville, MS, ⁴Mississippi State University, Newton, MS (299)
- 3:30** †**Scaling Up Brazilian Peppertree (*Schinus terebinthifolia*) IPT Research with Contractors in South Florida.** M. E. Bell*; University of Florida, Gainesville, FL (300)
- 3:45** †**Droplet Size Effects on Preemergence Herbicide Efficacy in Soybean.** P. H. Urach Ferreira¹, L. H. Merritt*², D. B. Reynolds¹, J. T. Irby¹, G. Kruger³, J. Ferguson¹; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, MS State, MS, ³University of Nebraska-Lincoln, North Platte, NE (301)

TUESDAY MORNING FEBRUARY 12

MS Student Oral Contest Session II

LOCATION: Napoleon Ballroom C3
 TIME: 10:15 AM - 2:30 PM
 CHAIR/ Stephen Schraer
 MODERATOR: Syngenta
 Meridian, ID
 CO-CHAIR: Darrin Dodds
 Mississippi State University
 Mississippi State, MS

***SPEAKER † STUDENT CONTEST**

- 10:15 †Efficacy of HPPD-Inhibiting Herbicides Applied Preemergence or Postemergence for Control of Multiple Resistant Waterhemp (*Amaranthus tuberculatus* var. *rudis*).** L. Benoit*¹, P. Sikkema², D. Hooker³, D. Robinson²; ¹University of Guelph, Kirkton, ON, ²University of Guelph, Ridgetown, ON, ³University of Guelph, Ridge, ON (302)
- 10:30 †Out with the Old-World Climbing Fern, in with the New: Evaluation of Florpyrauxifen-Benzyl and Triclopyr for *Lygodium microphyllum* Control in South Florida.** J. S. Glueckert*¹, S. F. Enloe²; ¹University of Florida, Boynton Beach, FL, ²University of Florida, Gainesville, FL (303)
- 10:45 Physiological Parameters of Velvetleaf Under Normal and Elevated CO₂ Treated with Tembotrione.** J. C. Argenta*¹, Q. Ruchel², S. Finlayson¹, T. Gentry¹, M. V. Bagavathiannan¹, K. Carson¹; ¹Texas A&M University, College Station, TX, ²Federal University of Pelotas, Pelotas, Brazil (304)
- 11:00 †PPO Arg128 Substitutions: What are the Options?** K. Lillie*¹, P. Tranel², J. Lerchl³, A. Porri⁴; ¹University of Illinois, Urbana, IL, ²University of Illinois, Urbana, IL, ³BASF SE, Limburgerhof, Germany, ⁴BASF SE, Ludwigshafen am Rhein, Germany (305)
- 11:15 †Is the Grass Greener?: Opting for Graminicides over Broad Spectrum Herbicides for West Indian Marsh Grass Control.** K. H. Quincy*, S. F. Enloe; University of Florida, Gainesville, FL (306)
- 11:30 Accuracy and Efficiency of Herbicide applications of an Integrated System using an UAV-Sprayer and Remote Sensor-Generated Weed Map.** J. E. Hunter*, R. E. Austin, R. Richardson, T. Gannon, J. Neal, R. Leon; North Carolina State University, Raleigh, NC (307)
- 11:45 †Interval Between Sequential Glufosinate Applications Influences Weed Control in Cotton.** T. M. Randell*¹, L. C. Hand¹, J. C. Vance¹, A. S. Culpepper²; ¹University of Georgia, Tifton, GA, ²University of Georgia, Tifton, GA (308)
- 12:00 Lunch**
- 1:00 †Weed Management in Isoxaflutole-Resistant Soybean Using a Two-Pass Herbicide Program.** A. Smith*¹, A. Kaastra², D. Hooker³, D. Robinson⁴, P. Sikkema⁴; ¹n/a, Ancaster, ON, ²Bayer CropScience,

Guelph, ON, ³University of Guelph, Ridge,
ON, ⁴University of Guelph, Ridgetown, ON (309)

- 1:15 Evaluation of Quizalofop Mixture Interactions with Reduced Rates of Halosulfuron in Provisia Rice.** C. Webster*¹, E. P. Webster², B. McKnight², S. Rustom², D. C. Walker²; ¹Louisiana State University, Baton Rouge, AL, ²Louisiana State University, Baton Rouge, LA (310)
- 1:30 †Variation in Herbicide Performance on *Kalanchoe* Control in Florida Dune Communities.** J. Solomon*; University of Florida, Gainesville, FL (311)
- 1:45 †Evaluation of Early and Late-Season Marestalk Management in Soybeans.** H. Summers*¹, D. Lingenfelter², H. Karsten¹; ¹Pennsylvania State University, University Park, PA, ²Penn State University, University Park, PA (312)
- 2:00 The Effectiveness of Integrated Tactics for Managing Johnsongrass in Inzen Sorghum.** B. L. Young*¹, N. E. Korres², L. M. Lazaro³, M. J. Walsh⁴, J. K. Norsworthy², M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²University of Arkansas, Fayetteville, AR, ³Louisiana State University AgCenter, Baton Rouge, LA, ⁴University of Sydney, Narrabri, Australia (313)
- 2:15 †Potential Safening of Topramezone on Creeping Bentgrass (*Agrostis stolonifera* L.) with Additive Product Combinations.** C. G. Goncalves*¹, J. M. Peppers¹, A. M. Brown², J. S. McElroy²; ¹Auburn University, auburn, AL, ²Auburn University, Auburn, AL (314)

TUESDAY AFTERNOON FEBRUARY 12

Section 3. Turf and Ornamental Crops

LOCATION: Maurepas
TIME: 1:00 PM - 3:00 PM
CHAIR/ Prasanta Bhowmik
MODERATOR: University of Massachusetts
Amherst, MA
CO-CHAIR: Jatinder Aulakh
The Connecticut Agricultural
Experiment Station
Windsor, CT

***SPEAKER**

- 1:00 Weed Control Efficacy and Christmas Tree Tolerance to Pre and Postemergence Herbicides.** J. S. Aulakh*; The Connecticut Agricultural Experiment Station, Windsor, CT (315)
- 1:15 Deep Learning with Convolutional Neural Network: A Method for Precision Weed Control in Turfgrass.** J. Yu*¹, A. W. Schumann², S. M. Shaun², N. Boyd³; ¹University of Florida, Riverview, FL, ²University of Florida, Wimauma, FL, ³University of Florida, Balm, FL (316)
- 1:30 Evaluation of Newly Established Buffalograss for Tolerance to Glyphosate.** M. B. Bertucci*, D. Karcher, M. Richardson, D. OBrien; University of Arkansas, Fayetteville, AR (317)
- 1:45 Efficacy of Avenue South in Tall Fescue (*Festuca arundinacea*).** J. Derr*, A. Nichols; Virginia Tech, Virginia Beach, VA (318)
- 2:00 Preemergence Control of *Praxelis clematidea*, an Emerging Weed in Florida Nurseries.** C. Marble*¹, N. Boyd², S. T. Steed³; ¹University of Florida, Apopka, FL, ²University of Florida, Balm, FL, ³University of Florida/IFAS Extension, Seffner, FL (319)
- 2:15 Greenhouse and Field Evaluation of Preemergence Herbicide Effects upon Native Warm Season Grass Establishment for Golf Course Roughs.** M. P. Richard*¹, J. D. McCurdy², B. S. Baldwin¹, J. I. Morrison³; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State University, MS, ³Mississippi State University, Mississippi State, MS (320)
- 2:30 Strategy for the Control of Panic Liverseedgrass (*Urochloa panicoides*) in Desert Turf.** K. Umeda*; University of Arizona, Phoenix, AZ (321)
- 2:45 SwitchBlade™: A Non-2,4-D Option for Control of Weeds in Turfgrass.** E. Reasor*¹, J. W. Marvin², B. A. Aynardi³, R. C. Williamson⁴; ¹PBI-Gordon Corporation, Shawnee, KS, ²PBI-Gordon Corporation, Overland Park, KS, ³PBI-Gordon Corporation, State College, PA, ⁴PBI-Gordon Corporation, Defiance, OH (322)

TUESDAY AFTERNOON FEBRUARY 12

Weed Seed in Grain Samples and Trade

LOCATION: Napoleon Ballroom B123
TIME: 3:15 PM - 4:45 PM
CHAIR: Shawn Conley
University of Wisconsin
Madison, WI
CO-CHAIR: Lee Van Wychen
WSSA
Alexandria, VA
MODERATOR: Carroll Moseley
Syngenta
Greensboro, NC

***SPEAKER**

- 3:15 National Overview of Weed Seeds and Phytosanitary Restrictions in Foreign Trade.** G. Galasso*; USDA-APHIS, Riverdale, MD (323)
- 3:30 Costs and Benefits of a 1% Cap on Foreign Material in US Soybean Exports.** S. Naeve*; University of Minnesota, St. Paul, MN (324)
- 3:45 Eliminating Weed Seeds at Soybean Harvest: Lessons Learned from the Area-Wide IWM Team.** S. B. Mirsky*¹, J. K. Norsworthy², A. S. Davis³, M. V. Bagavathiannan⁴, S. C. Beam⁵, J. A. Bond⁶, K. Bradley⁷, W. S. Curran⁸, J. Evans⁹, W. Everman¹⁰, M. L. Flessner⁵, G. Frisvold¹¹, N. R. Jordan¹², L. M. Lazaro¹³, J. Lindquist¹⁴, L. S. Shergill⁷, L. E. Steckel¹⁵, M. J. VanGessel¹⁶; ¹USDA-ARS, Beltsville, MD, ²University of Arkansas, Fayetteville, AR, ³N-319 Turner Hall, Urbana, IL, ⁴Texas A&M University, College Station, TX, ⁵Virginia Tech, Blacksburg, VA, ⁶Delta Research and Extension Center, Stoneville, MS, ⁷University of Missouri, Columbia, MO, ⁸Penn State University, Bozeman, MT, ⁹Farmscape Analytics, Concord, NH, ¹⁰North Carolina State University, Raleigh, NC, ¹¹University of Arizona, Tucson, AZ, ¹²University of Minnesota, St. Paul, MN, ¹³Louisiana State University AgCenter, Baton Rouge, LA, ¹⁴University of Nebraska, Lincoln, NE, ¹⁵University of Tennessee, Jackson, TN, ¹⁶University of Delaware, Georgetown, DE (325)
- 4:00 The Best-Laid Plans for Weeds by Man Sometimes Go Awry.** A. Hager*; University of Illinois, Urbana, IL (326)
- 4:15 What Weed Seeds are Actually Found in Soybean Grain Samples in Louisiana.** L. M. Lazaro*¹, J. T. Copes², D. O. Stephenson³, D. Miller⁴, A.

Orgeron¹; ¹Louisiana State University AgCenter, Baton Rouge, LA, ²Louisiana State University AgCenter, Saint Joseph, LA, ³Louisiana State University AgCenter, Alexandria, LA, ⁴Louisiana State University AgCenter, St. Joseph, LA (327)

- 4:30 Weed Seeds, Phytosanitary Restrictions, and Trade Implications.** L. Van Wychen*¹, S. P. Conley²; ¹WSSA, Alexandria, VA, ²University of Wisconsin, Madison, WI (328)

TUESDAY AFTERNOON FEBRUARY 12

IWSS General Session

LOCATION: Oak Alley
TIME: 5:30 PM - 7:00 PM
CHAIR/ Nilda Burgos
MODERATOR: University of Arkansas
Fayetteville, AR

WEDNESDAY MORNING FEBRUARY 13

Section 1. Agronomic Crops

LOCATION: Borgne
TIME: 8:00 AM - 10:00 AM
CHAIR/ Neha Rana
MODERATOR: Bayer CropScience
St Louis, MO
CO-CHAIR: Ryan Lins
Syngenta Crop Protection
Rochester, MN

***SPEAKER**

- 8:00 The Effect of Multiple Dicamba Exposures on Soybean Growth and Yield.** J. A. Bond¹, K. Bradley², N. Corbin³, K. L. Gage⁴, M. Loux⁵, E. J. Miller⁶, J. K. Norsworthy⁷, D. B. Reynolds*⁸, L. E. Steckel⁹, B. G. Young¹⁰; ¹Delta Research and Extension Center, Stoneville, MS, ²University of Missouri, Columbia, MO, ³Mississippi State University, Stoneville, MS, ⁴Southern Illinois University, Carbondale, IL, ⁵Ohio State University, Columbus, OH, ⁶Southern Illinois University, Carbondale, IL, ⁷University of Arkansas, Fayetteville, AR, ⁸Mississippi State

University, Mississippi State, MS, ⁹University of Tennessee, Jackson, TN, ¹⁰Purdue University, Brookston, IN (329)

- 8:15 Comparative Responses of Non-Dicamba Tolerant Soybean Varieties to Dicamba.** O. Osipitan*¹, J. E. Scott¹, S. Z. Knezevic²; ¹University of Nebraska-Lincoln, Concord, NE, ²University of Nebraska-Lincoln, Lincoln, NE (330)
- 8:30 Dicamba Durability in Roundup Ready® Xtend Crop System.** N. Rana, S. Evans*; Bayer CropScience, St Louis, MO (331)
- 8:45 Effect of Carrier Volume and Spray Quality on Soybean Response to Dicamba.** B. Sperry*¹, J. Calhoun¹, D. B. Reynolds², J. Ferguson², G. Kruger³; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS, ³University of Nebraska-Lincoln, North Platte, NE (332)
- 9:00 Engenia Herbicide Research Update.** C. Asmus*¹, S. K. Bangarwa²; ¹BASF, Raleigh, NC, ²BASF Corporation, Durham, NC (333)
- 9:15 Dicamba Findings in 2018.** J. K. Norsworthy*¹, T. Barber²; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas, Lonoke, AR (334)
- 9:30 The Effect of Tank Mix Partners on Xtendimax Volatility.** M. Bernards¹, A. S. Culpepper², G. Kruger³, S. A. Nolte⁴, J. K. Norsworthy⁵, D. de Oliveira Latorre⁶, D. B. Reynolds*⁷, P. Sikkema⁸, B. Sperry⁹, C. Sprague¹⁰, D. O. Stephenson¹¹, R. Werle¹², B. G. Young¹³; ¹Western Illinois University, Macomb, IL, ²University of Georgia, Tifton, GA, ³University of Nebraska-Lincoln, North Platte, NE, ⁴Texas A&M AgriLife Extension, College Station, TX, ⁵University of Arkansas, Fayetteville, AR, ⁶University of Nebraska, Lincoln, NE, ⁷Mississippi State University, Mississippi State, MS, ⁸University of Guelph, Ridgetown, ON, ⁹Mississippi State University, Starkville, MS, ¹⁰Michigan State University, East Lansing, MI, ¹¹Louisiana State University AgCenter, Alexandria, LA, ¹²University of Wisconsin-Madison, Madison, WI, ¹³Purdue University, Brookston, IN (335)
- 9:45 Use of Field Evaluations to Better Understand Dicamba Volatility.** C. Brabham*¹, J. K. Norsworthy¹, M. Zaccaro¹, V. K. Varanasi¹, T. Mueller²; ¹University of Arkansas, Fayetteville, AR, ²University of Tennessee, Knoxville, TN (336)

Section 9. Weed Biology and Ecology

LOCATION: Maurepas
TIME: 8:00 AM - 3:00 PM
CHAIR/ Vijay Singh
MODERATOR: Texas A&M University
College Station, TX
CO-CHAIR: Mohsen Mesgaran
University of Melbourne
Melbourne, Australia

***SPEAKER**

- 8:00 The Problem with Resource Dependent Plant Competition.** C. J. Swanton*, S. Amirsadeghi; University of Guelph, Guelph, ON (337)
- 8:15 Artificial and Surrogate Weeds for Physical Weed Control Research.** E. Gallandt*¹, L. Pedrosa²; ¹University of Maine, Orono, ME, ²Federal University of Mato Grosso, Sinip, MT, Brazil (338)
- 8:30 Influence of Management Practices on Palmer Amaranth Emergence Pattern in South Central Nebraska.** P. Chahal*, E. R. Barnes, A. J. Jhala; University of Nebraska-Lincoln, Lincoln, NE (339)
- 8:45 Weed Syndromes as Cultural Phenomena.** J. Cardina*; Ohio State University, Wooster, OH (340)
- 9:00 Genomics for Weed Science: De Novo Assembly, Annotation, and First Analysis of an Invasive and Troublesome Weed.** A. Porri*¹, J. Lerchl², R. A. Aponte³; ¹BASF SE, Ludwigshafen am Rhein, Germany, ²BASF SE, Limburgerhof, Germany, ³, Ludwigshafen, Germany (341)
- 9:15 QTL Analysis of Seed Dormancy in Japonica-like Weedy Rice.** T. Imaizumi*¹, K. Ebana¹, Y. Kawahara¹, J. Hosoi²; ¹NARO, Tsukuba, Japan, ²Nagano Prefecture Agricultural Experiment Station, Suzaka, Japan (342)
- 9:30 Whole-Genome Sequencing Provides Insights into Waterhemp Evolution.** J. Kreiner¹, D. Giacomini², B. Waithaka³, F. Bemm³, C. Lanz³, J. Hildebrandt³, J. Regalado³, P. Sikkema⁴, P. Tranel*⁵, D. Weigel³, J. Stinchcombe¹, S. Wright¹; ¹University of Toronto, Toronto, ON, ²University of Illinois, Urbana, IL, ³Max Planck Institute for Developmental Biology, Tubingen,

Germany, ⁴University of Guelph, Ridgetown, ON, ⁵University of Illinois, Urbana, IL (343)

- 9:45 Comparative Analysis of Glyphosate Resistant and Sensitive Genomes Indicates Genome Rearrangement as a Mechanism of Adaptation.** E. L. Patterson*¹, W. Molin², D. G. Peterson³, C. A. Sasaki¹; ¹Clemson University, Clemson, SC, ²USDA-ARS, Stoneville, MS, ³Mississippi State University, Mississippi State, MS (344)
- 10:00 Break**
- 10:15 Exploitation of Sex for Weed Management.** M. Matzrafi, S. Ohadi, M. Mesgaran*; University of California, Davis, Davis, CA (345)
- 10:30 Advances in Precision Weed Management.** V. Singh*¹, M. Bishop¹, D. Martin², M. Latheef², B. B. Sapkota¹, A. Filippi¹, M. V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²USDA-ARS, College Station, TX (346)
- 10:45 Ecological Strategies to Manage Herbicide-Resistant Kochia Seed Bank in Irrigated Cropping Systems of the US Great Plains.** P. Jha*¹, A. Kniss², N. C. Lawrence³, R. Yadav¹; ¹Montana State University, Huntley, MT, ²University of Wyoming, Laramie, WY, ³University of Nebraska-Lincoln, Pullman, WA (347)
- 11:00 Early Season Exposure to Weed Reflected Light has Season Long Implications for Sugarbeet.** A. T. Adjesiwor, A. Kniss*; University of Wyoming, Laramie, WY (348)
- 11:15 Weed Community Dynamics Affected by Long-Term (36 Years) Tillage Practices in Southeast Texas.** P. Govindasamy, D. Sarangi*, J. Mowrer, N. Rajan, T. Provin, F. M. Hons, M. V. Bagavathiannan; Texas A&M University, College Station, TX (349)
- 11:30 Looking for ‘Rare’ Weeds of Agronomic Concern in a Changing Climate.** S. K. Birthisel*¹, B. J. Brown², E. Gallandt¹; ¹University of Maine, Orono, ME, ²Cornell University, Geneva, NY (350)
- 11:45 A Weed Seedbank Survey in Bihar and Eastern UP Reveals Variations in Wheat Weed Communities.** C. J. Lowry*¹, D. C. Brainard², V. Kumar³, R. Malik⁴, R. Jat⁵, S. Poonia⁶, M. Singh⁶, P. Kumar⁷, A. Kumar⁸, V. Kumar⁹, R. K. Joon⁸, A. McDonald⁸; ¹Agricultural Research Service, Urbana, IL, ²Michigan State University, East Lansing, MI, ³IRRI, Manila, Philippines, ⁴CIMMYT-CSISA Hub, Patna, India, ⁵CIMMYT, Delhi, India, ⁶CIMMYT, Patna,

India, ⁷CIMMYT, Samastipur, India, ⁸CIMMYT, New Delhi, India, ⁹IRRI, New Delhi, India (351)

12:00 Lunch

- 1:00 Increased Temperatures and Elevated CO₂ Levels Reduce the Sensitivity of *Conyza canadensis* and *Chenopodium album* to Glyphosate.** M. Matzrafi*¹, C. A. Brunharo¹, P. Tehranchian², B. Hanson³, M. Jasieniuk¹; ¹University of California, Davis, Davis, CA, ²University of Arkansas, Davis, CA, ³University of California, Davis, Winters, CA (352)
- 1:15 A Meta-Analysis of Alternative Weed Hosts for Plant Pathogens in the North Central United States.** E. Burns*; Michigan State University, East Lansing, MI (353)
- 1:30 Interference of *Amaranthus palmeri* S. Wats. and *Digitaria sanguinalis* (L.) Scop. in Soybean.** N. T. Basinger*¹, K. M. Jennings², D. Monks², W. Everman², D. Jordan², E. L. Hestir³; ¹University of Georgia, Athens, GA, ²North Carolina State University, Raleigh, NC, ³University of California, Merced, Merced, CA (354)
- 1:45 Dormancy Behavior and Biology of African Mustard Weed (*Brassica tournefortii*) in Australia.** G. Mahajan*, B. S. Chauhan; The University of Queensland, Gatton, Australia (355)
- 2:00 Development of a Goosegrass (*Eleusine indica*) Draft Genome and Application to Weed Science Research.** H. Zhang*¹, J. S. McElroy¹, N. Hall¹, L. R. Goertzen¹, B. Bi¹, C. Charles¹, E. Peatman¹, E. K. Lowe²; ¹Auburn University, Auburn, AL, ²Georgia Institute of Technology, Atlanta, GA (356)
- 2:15 Detection of Resistance to PPO-Inhibiting Herbicides using the Syngenta Herbicide Resistance Leaf (HRL) Test.** S. S. Kaundun*¹, J. J. Downes¹, L. V. Jackson¹, R. Wuerffel², S. Hutchings¹; ¹Syngenta, Bracknell, England, ²Syngenta, Vero Beach, FL (357)
- 2:30 Regional Differences in *Kochia* Germination from the US Great Plains: Effect of Water Potential.** R. Yadav*¹, P. Jha¹, A. Kniss², N. C. Lawrence³, G. Sbatella⁴; ¹Montana State University, Huntley, MT, ²University of Wyoming, Laramie, WY, ³University of Nebraska-Lincoln, Pullman, WA, ⁴University of Wyoming, Powell, WY (358)
- 2:45 Tillage and Cover Crops Influence Weed-Insect Interactions in Winter Squash.** D. C. Brainard*¹, M. M. Benzle¹, Z. Szendrei¹, L. R.

Appenfeller²; ¹Michigan State University, East Lansing, MI, ²Michigan State University, East Lansing, MI (359)

WEDNESDAY MORNING FEBRUARY 13

Section 13. Integrated Weed Management

LOCATION: Napoleon Ballroom A123
TIME: 8:00 AM - 11:45 AM
CHAIR/ Harry Streck
MODERATOR: BayerCropscience
Leverkusen, Germany
CO-CHAIR: Vijay Singh
Texas A&M University
College Station, TX

***SPEAKER**

- 8:00 Multiple Resistance: The Rest of the Story.** D. Simpson*¹, M. Peterson², T. Wright³; ¹Corteva Agrisciences, Indianapolis, IN, ²Dow AgroSciences, West Lafayette, IN, ³Dow DuPont, Ag Division, Carmel, IN (360)
- 8:15 Direct Seeded Rice in Sequence with No-Till Wheat in North-Western India: Weed Dynamics, Weed Management and Emerging Issues.** D. Yadav*¹, A. Yadav², R. Malik³, G. Gill⁴; ¹CCS Haryana Agricultural University, Karnal, India, ²CCS Haryana Agricultural University, Hisar, India, ³CIMMYT-CSISA Hub, Patna, India, ⁴University of Adelaide, Adelaide, Australia (361)
- 8:30 Chaff Lining: A Recently Developed Low Cost Harvest Weed Seed Control Method for Australian Cropping Systems.** J. C. Broster*¹, A. E. Rayner², A. Ruttledge³, M. J. Walsh⁴; ¹Charles Sturt University, Wagga Wagga, Australia, ²University of Sydney, Sydney, Australia, ³Queensland Department of Agriculture and Fisheries, Toowoomba, Australia, ⁴University of Sydney, Narrabri, Australia (362)
- 8:45 Weeds as Indicators of Soil Imbalance and other Rural Legends.** D. Doohan*¹, M. Kleinhenz², C. Brock², D. Jackson-Smith², S. Culman³, S. Kumarappan², C. Herms², A. Levia Soto²; ¹Ohio State University, Wooster, OH, ²Ohio State University, Wooster, OH, ³Ohio State University, wooster, OH (363)

- 9:00** **Effects of Day and Night Application of Glufosinate on Ammonia Accumulation, Electron Transport Rate, and Weed Control.** E. B. De Castro*¹, C. A. Carbonari², F. H. Krenchinski³, E. D. Velini³, M. F. Dias³, T. Tseng⁴; ¹Mississippi State University, STARKVILLE, MS, ²Sao Paulo State University, Botucatu, Brazil, ³Sao Paulo State University, BOTUCATU, Brazil, ⁴Mississippi State University, Mississippi State, MS (364)
- 9:15** **Integrating Cultural Practices and Herbicides for Managing Glyphosate-Resistant Palmer Amaranth in Sorghum.** R. Liu*¹, V. Kumar¹, R. Perumal², T. Lambert²; ¹Kansas State University, Hays, KS, ²Kansas State University, Hays, KS (365)
- 9:30** ***Chenopodium album* Resistance in India and its Management Strategies.** S. Singh*; CCSHAU, Hisar, India (366)
- 9:45** **Weed Identification by Mobile Device.** H. J. Santel*, M. P. Schikora; BASF, Langenfeld, Germany (367)
- 10:00** **Break**
- 10:15** **Living Mulch as a Tool for Integrated Weed Management in Organic Vegetables.** C. R. Hooks¹, A. W. Leslie², V. L. Yurchak*¹; ¹University of Maryland, College Park, MD, ²University of Maryland, Glenn Dale, MD (368)
- 10:30** **Spring-Seeded Cereal Rye for Weed Suppression in Watermelon.** K. M. Vollmer*¹, M. J. VanGessel², B. A. Scott², T. E. Besancon³, B. L. Carr⁴; ¹University of Delaware, Delaware, VA, ²University of Delaware, Georgetown, DE, ³Rutgers University, CHATSWORTH, NJ, ⁴Rutgers University, Chatsworth, NJ (369)
- 10:45** **Evaluation of Field Pennycress as a Useful Oilseed Cover Crop for Suppression of Weeds in the Northern Great Plains.** J. V. Anderson*¹, A. Nobriga¹, B. Bigger¹, M. Berhow², S. Vaughn²; ¹USDA-ARS, Edward T. Schafer Agricultural Research Center, Fargo, ND, ²USDA-ARS, National Center for Agricultural Utilization Research, Peoria, IL (370)
- 11:00** **Modify the Wheat Architecture as an Agro-Technical Tool to Improve its Competitiveness with Weeds in an Integrated Weed Management (IWM).** R. N. Lati*¹, Z. Peleg², R. Ben-David³; ¹Agricultural Research Organization, Newe Ya'ar Research Center, Kfar Tavor, Israel, ²The R.H. Smith Institute of Plant Science & Genetics in

Agriculture, Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Rehovot, Israel, ³Agricultural Research Organization, Bet Dagan, Israel (371)

- 11:15 Rewarding Best Pest Management Practices via Reduced Crop Insurance Premiums.** H. J. Beckie*¹, S. J. Smyth², M. D. Owen³, S. Gleim²; ¹University of Western Australia, Crawley, WA, Australia, ²University of Saskatchewan, Saskatoon, SK, ³Iowa State University, Ames, IA (372)
- 11:30 Remote Detection of Goosegrass in Tomato and Strawberry Plasticulture Production using Machine Vision.** S. M. Sharpe*¹, A. W. Schumann¹, N. Boyd²; ¹University of Florida, Wimauma, FL, ²University of Florida, Balm, FL (373)

WEDNESDAY MORNING FEBRUARY 13

Section 12. Soil and Environmental Aspects

LOCATION: Napoleon Ballroom A123
TIME: 11:45 AM - 12:15 PM
CHAIR/ Te-Ming Tseng
MODERATOR: Mississippi State University
Mississippi State, MS
CO-CHAIR: Daljit Singh
Monsanto
Wildwood, MO

***SPEAKER**

- 11:45 Indaziflam Soil Dissipation from Georgia Pecan Groves.** T. L. Grey*¹, K. M. Eason²; ¹University of Georgia, Tifton, GA, ²University of Georgia, Nashville, GA (374)
- 12:00 Linking the Invasion of Weedy Species to Altered Functional Adaptations of Soil Microbes.** K. Min*¹, N. Tharayil¹, P. C. Bhowmik², V. Suseela¹; ¹Clemson University, Clemson, SC, ²University of Massachusetts, Amherst, MA (375)

WEDNESDAY MORNING FEBRUARY 13

**Herbicide Resistant Weeds in Turf, Ornamental
and Nursery Crops**

LOCATION: Napoleon Ballroom B123
TIME: 8:00 AM - 12:00 PM
CHAIR/ Prasanta Bhowmik
MODERATOR: University of Massachusetts
Amherst, MA
CO-CHAIR: Jatinder Aulakh
The Connecticut Agricultural
Experiment Station
Windsor, CT

***SPEAKER**

- 8:00 Introduction to the Symposium.** P. C. Bhowmik*; University of Massachusetts, Amherst, MA (376)
- 8:10 Problems Associated with Confirming Novel Resistance Mechanism.** J. S. McElroy*; Auburn University, Auburn, AL (377)
- 8:30 Novel Mechanisms of Glyphosate Resistance In Amaranthus Species & Its Implication.** M. Jugulam*, D. Koo, B. Gill; Kansas State University, Manhattan, KS (378)
- 8:50 A Chance to Change the Ending.** J. T. Brosnan*; U of TN 252 Ellington Bldg, Knoxville, TN (379)
- 9:10 Resistant weed management in cool-season turfgrass.** S. Askew*; Virginia Tech, Blacksburg, VA (380)
- 9:30 A Manufacturer's Perspective on Herbicide Resistant Weeds in Turf, Ornamentals and Nursery Crops.** J. M. Breuninger*; Corteva Agriscience, Indianapolis, IN (381)
- 9:45 Break**
- 10:00 Resistant Weed Management in the Southern United States.** L. Tredway*; Syngenta, Raleigh, NC (382)
- 10:20 Herbicide-Resistance in Broadleaf Weeds and Sedges in Turfgrass.** P. McCullough*; University of Georgia, Griffin, GA (383)

- 10:40 Herbicide-Resistant Weeds in Managed Landscapes and Nursery Crops: Current Status and Potential Impacts.** J. Derr*¹, J. Neal²; ¹Virginia Tech, Virginia Beach, VA, ²North Carolina State University, Raleigh, NC (384)
- 10:50 Resistant Weeds in Managed Landscapes and Nursery Crops.** J. Neal*; North Carolina State University, Raleigh, NC (385)
- 11:00 Critical Next Steps in Combating Herbicide Resistance: What we Heard, Think and Plan on doing after the Resistance Listening Sessions.** M. Barrett*¹, J. Schroeder², D. R. Shaw³, A. Asmus⁴, D. E. Ervin⁵, R. Jussaume⁶, H. D. Coble⁷; ¹University of Kentucky, Lexington, KY, ²USDA Office of Pest Management Policy, Arlington, VA, ³Mississippi State University, Mississippi State, MS, ⁴Rake, IA, ⁵Portland State University, Portland, OR, ⁶Michigan State University, East Lansing, MI, ⁷USDA, Cary, NC (386)
- 11:20 Discussion**
- 11:40 Discussion**

WEDNESDAY MORNING FEBRUARY 13

Integrated Weed Management to Address Weed Resistance

LOCATION: Napoleon Ballroom C123
TIME: 8:00 AM - 4:30 PM
CHAIR/ Lauren Lazaro
MODERATOR: Louisiana State University
 AgCenter
 Baton Rouge, LA

***SPEAKER**

- 8:00 Introduction to Symposium and area-wide projects.** L. M. Lazaro*; Louisiana State University AgCenter, Baton Rouge, LA (387)
- 8:10 Have We Gotten Lost in the Weeds? Where We've Been and Where We're Headed with Weed Management in U.S. Agriculture.** K. Bradley*; University of Missouri, Columbia, MO (388)

- 8:35 The Importance of Harvest Weed Seed Control in Integrated Weed Management Decisions.** M. J. Walsh*; University of Sydney, Narrabri, Australia (389)
- 9:00 Current Status and Future of Harvest Weed Seed Control in the US.** M. V. Bagavathiannan*¹, J. K. Norsworthy², L. M. Lazaro³, S. Mirsky⁴, M. J. Walsh⁵; ¹Texas A&M University, College Station, TX, ²University of Arkansas, Fayetteville, AR, ³Louisiana State University AgCenter, Baton Rouge, LA, ⁴USDA-ARS, Beltsville, MD, ⁵University of Sydney, Narrabri, Australia (390)
- 9:25 Break**
- 10:00 Weed Seed Rain Phenology: An Areawide Approach.** L. M. Lazaro*¹, J. Evans², J. K. Norsworthy³, S. B. Mirsky⁴, A. S. Davis⁵, K. Bradley⁶, L. E. Steckel⁷, M. V. Bagavathiannan⁸, J. A. Bond⁹, J. Lindquist¹⁰, N. R. Jordan¹¹, M. L. Flessner¹², M. J. VanGessel¹³, W. Everman¹⁴, W. S. Curran¹⁵, N. E. Korres³; ¹Louisiana State University AgCenter, Baton Rouge, LA, ²Farmscape Analytics, Concord, NH, ³University of Arkansas, Fayetteville, AR, ⁴USDA-ARS, Beltsville, MD, ⁵N-319 Turner Hall, Urbana, IL, ⁶University of Missouri, Columbia, MO, ⁷University of Tennessee, Jackson, TN, ⁸Texas A&M University, College Station, TX, ⁹Delta Research and Extension Center, Stoneville, MS, ¹⁰University of Nebraska, Lincoln, NE, ¹¹University of Minnesota, St. Paul, MN, ¹²Virginia Tech, Blacksburg, VA, ¹³University of Delaware, Georgetown, DE, ¹⁴North Carolina State University, Raleigh, NC, ¹⁵Penn State University, Bozeman, MT (391)
- 10:25 Role of Cover Crops and Tillage in Weed Management.** W. S. Curran*¹, J. M. Wallace²; ¹Penn State University, Bozeman, MT, ²Penn State University, University Park, PA (392)
- 10:50 A National Assessment of Cover Crops in an IWM Program.** S. Mirsky*¹, J. K. Norsworthy², A. S. Davis³, M. V. Bagavathiannan⁴, J. A. Bond⁵, K. Bradley⁶, W. S. Curran⁷, J. Evans⁸, W. Everman⁹, M. L. Flessner¹⁰, G. Frisvold¹¹, N. R. Jordan¹², L. M. Lazaro¹³, J. Lindquist¹⁴, L. S. Shergill⁶, L. E. Steckel¹⁵, M. J. VanGessel¹⁶; ¹USDA-ARS, Beltsville, MD, ²University of Arkansas, Fayetteville, AR, ³N-319 Turner Hall, Urbana, IL, ⁴Texas A&M University, College Station, TX, ⁵Delta Research and Extension Center, Stoneville, MS, ⁶University of Missouri, Columbia, MO, ⁷Penn State University, Bozeman, MT, ⁸Farmscape Analytics, Concord, NH, ⁹North Carolina State University, Raleigh, NC, ¹⁰Virginia

Tech, Blacksburg, VA, ¹¹University of Arizona, Tucson, AZ, ¹²University of Minnesota, St. Paul, MN, ¹³Louisiana State University AgCenter, Baton Rouge, LA, ¹⁴University of Nebraska, Lincoln, NE, ¹⁵University of Tennessee, Jackson, TN, ¹⁶University of Delaware, Georgetown, DE (393)

- 11:15 Crop Rotation and Cropping System Design for Effective Weed Management.** M. Liebman*, V. Nichols, D. Weisberger; Iowa State University, Ames, IA (394)
- 11:45 Lunch**
- 1:00 Regional Discussion Breakout: What is Adoptable, Practical, and Economical in each Region South Central: Dr Norsworthy North Central: Dr Hagar Northeast: Dr Mirsky Southeast: Dr Everman.** L. M. Lazaro*; Louisiana State University AgCenter, Baton Rouge, LA (395)
- 1:45 Addressing Longterm Integrated Weed Management Decisions through Modeling.** J. A. Evans*¹, A. S. Davis², S. B. Mirsky³; ¹Farmscape Analytics, Concord, NH, ²N-319 Turner Hall, Urbana, IL, ³USDA-ARS, Beltsville, MD (396)
- 2:10 GROW (Getting Rid of Weeds): A National Extension Effort Driving Adoption of Integrated Weed Management.** M. L. Flessner*¹, M. J. VanGessel², M. V. Bagavathiannan³, L. M. Lazaro⁴, K. B. Pittman¹, C. G. Rubione², S. B. Mirsky⁵; ¹Virginia Tech, Blacksburg, VA, ²University of Delaware, Georgetown, DE, ³Texas A&M University, College Station, TX, ⁴Louisiana State University AgCenter, Baton Rouge, LA, ⁵USDA-ARS, Beltsville, MD (397)
- 2:35 Break**
- 3:00 Socioeconomics.** G. Frisvold*; University of Arizona, Tucson, AZ (398)
- 3:25 Where is Integrated Weed Management Headed?** J. K. Norsworthy*; University of Arkansas, Fayetteville, AR (399)
- 3:50 Discussion**

WEDNESDAY MORNING FEBRUARY 13

Section 11. Physiology

LOCATION: Borgne
TIME: 11:00 AM - 5:00 PM

CHAIR/ Christopher Rouse
MODERATOR: FMC
Newark, DE
CO-CHAIR: Te-Ming Tseng
Mississippi State University
Mississippi State, MS

***SPEAKER**

- 11:00 Antimalarial Herbicides and Herbicidal Antimalarials: Exploiting the Plant-*Plasmodium* Connection.** J. S. Mylne*; The University of Western Australia, Perth, Australia (400)
- 11:15 Investigating the Role of Allelic Contribution to Glyphosate Resistance in Polyploid Weed Species.** S. Morran*¹, C. A. Brunharo¹, M. Jasieniuk¹, B. Hanson²; ¹University of California, Davis, Davis, CA, ²University of California, Davis, Winters, CA (401)
- 11:30 Comparative Analysis of Glyphosate Resistant and Sensitive Genomes Indicates Genome Rearrangement as a Mechanism of Rapid Adaption.** E. L. Patterson*¹, W. Molin², D. G. Peterson³, C. A. Sasaki¹; ¹Clemson University, Clemson, SC, ²USDA-ARS, Stoneville, MS, ³Mississippi State University, Mississippi State, MS (402)
- 11:45 Photooxidative Stress Conditions Elicit Contrasting Responses in Paraquat Resistant and Susceptible Italian Ryegrass Biotypes.** C. A. Brunharo*¹, B. Hanson²; ¹University of California, Davis, Davis, CA, ²University of California, Davis, Winters, CA (403)
- 12:00 Lunch**
- 1:00 Abiotic Stressors and Herbicide Differentially Regulate the Global Metabolome of *Amaranthus palmeri* Biotypes that Exhibit Contrasting Glyphosate Susceptibilities.** N. Tharayil*¹, E. M. Leonard², V. K. Nandula³, S. O. Duke⁴; ¹Clemson University, Clemson, SC, ²Clemson University, CLEMSON, SC, ³USDA-ARS, Cleveland, MS, ⁴USDA-ARS-NPURU, Oxford, MS (404)
- 1:15 Expression Variation in Phenoxy Resistant and Susceptible Buckhorn Plantain (*Plantago lanceolata*) following 2,4-D Exposure.** J. S. McElroy*¹, A. J. Patton², P. McCullough³, Q. D. Law⁴; ¹Auburn University, Auburn, AL, ²Purdue University, W Lafayette, IN, ³University of Georgia,

Griffin, GA, ⁴Purdue University, West Lafayette, IN (405)

- 1:30 Mechanisms of Glyphosate Resistance in Palmer Amaranth: Insights from Transcriptome and Epigenetic Profiling.** W. Molin*¹, C. A. Saski²; ¹USDA-ARS, Stoneville, MS, ²Clemson University, Clemson, SC (406)
- 1:45 Is Resistance to PPO Inhibitors in Palmer and Waterhemp Explained Solely by Target-Site Based Mechanisms?** C. Wu*¹, A. Perez-Jones², P. Feng³, L. E. Flagel¹, S. S. Navarro¹; ¹Bayer Crop Science, St Louis, MO, ²Bayer Crop Science, Chesterfield, MO, ³Bayer Crop Science, Saint Louis, MO (407)
- 2:00 Metabolic Resistance to Pre-Emergence Herbicides: The Case of Rye-Grass.** R. Duecker¹, V. Brabetz¹, P. Zoellner¹, S. Ries¹, A. Collavo¹, P. Luemmen¹, R. S. Beffa*²; ¹Bayer Crop Science, Frankfurt, Germany, ²Bayer Crop Science, Frankfurt / Main, Germany (408)
- 2:15 Comparison of EPSPS Tandem Duplication Sequence Across Glyphosate-Resistant *Kochia scoparia* Populations.** T. Gaines*¹, E. L. Patterson², A. Dixon³, C. Sparks¹, K. Ravet¹, A. Kuepper⁴, P. Westra¹; ¹Colorado State University, Fort Collins, CO, ²Clemson University, Clemson, SC, ³Rothamsted Research, Harpenden, England, ⁴Bayer Crop Science, Frankfurt, Germany (409)
- 2:30 Metabolic Resistance to Preemerging Herbicides in Grasses: The Case of Blackgrass.** E. Parcharidou¹, R. Dücker², V. Brabetz¹, A. Kuepper*¹, R. S. Beffa³; ¹Bayer Crop Science, Frankfurt, Germany, ²University of Göttingen, Frankfurt, Germany, ³Bayer Crop Science, Frankfurt / Main, Germany (410)
- 2:45 *Ambrosia confertiflora*, a Perennial Invasive Weed in Israel.** B. Rubin*, Y. Yair; Hebrew University of Jerusalem, Rehovot, Israel (411)
- 3:00 Break**
- 3:15 New Insight on the Mechanism of Action of PPO Inhibitors.** F. E. Dayan*, A. L. Barker; Colorado State University, Fort Collins, CO (412)
- 3:30 Mechanisms Causing 2,4-D Resistance in *Sonchus oleraceus*.** M. Krishnan*¹, T. Petrovic², A. Merriam², G. Velappan², C. Preston²; ¹University of Adelaide, Urrbrae, Australia, ²University of Adelaide, Glen Osmond, Australia (413)

- 3:45** **Glyphosate-Resistant *Echinochloa colona* from Mississippi and Tennessee: Magnitude and Resistance Mechanisms.** V. K. Nandula*¹, G. Montgomery², A. Vennapusa³, M. Jugulam³, D. Giacomini⁴, J. Ray⁵, J. A. Bond⁶, P. Tranel⁷; ¹USDA-ARS, Cleveland, MS, ²University of Tennessee, Knoxville, TN, ³Kansas State University, Manhattan, KS, ⁴University of Illinois, Urbana, IL, ⁵USDA, Stoneville, MS, ⁶Delta Research and Extension Center, Stoneville, MS, ⁷University of Illinois, Urbana, IL (414)
- 4:00** **Resistance to Clethodim in Italian ryegrass (*Lolium perenne* ssp. *multiflorum*) from Mississippi and North Carolina.** V. K. Nandula*¹, D. Giacomini², B. Lawrence³, W. Molin⁴, J. A. Bond⁵; ¹USDA-ARS, Cleveland, MS, ²University of Illinois, Urbana, IL, ³Mississippi State University, Stoneville, MS, ⁴USDA-ARS, Stoneville, MS, ⁵Delta Research and Extension Center, Stoneville, MS (415)
- 4:15** **Palmer Amaranth and Kochia Impacts and Research in Colorado.** P. Westra*¹, T. Gaines¹, E. L. Patterson², A. Effertz³; ¹Colorado State University, Fort Collins, CO, ²Clemson University, Clemson, SC, ³Colorado State University, Ft. Collins, CO (416)
- 4:30** **What Can Drive Resistance to Chloroacetamides in Amaranthus?** N. R. Burgos*¹, G. Rangani¹, L. Benedetti², R. A. Salas-Perez¹; ¹University of Arkansas, Fayetteville, AR, ²Universidade Federal do Pelotas, Pelotas, Brazil (417)

WEDNESDAY AFTERNOON FEBRUARY 13

Graduate Student Workshop/ Lunch

LOCATION: Oak Alley
TIME: 12:00 PM - 2:00 PM
CHAIR/ Jess Buncek
MODERATOR: Penn State University
 State College, PA

This year's annual Graduate Student Organization (GSO) workshop promotes professional development. Ask the panel of WSSA professionals your questions about how to "Elevate Yourself" via elevator pitches, networking in a variety of settings, fellowships and

funding, job acquisition, and more in this Question & Answer format! Be sure to stick around afterwards for the annual GSO luncheon and business meeting.

WEDNESDAY AFTERNOON FEBRUARY 13

Section 7. Teaching and Extension

LOCATION: Napoleon Ballroom A123
TIME: 1:00 PM - 3:00 PM
CHAIR/ Jatinder Aulakh
MODERATOR: The Connecticut Agricultural
Experiment Station
Windsor, CT
CO-CHAIR: Sandeep Rana
Monsanto
Galena, MD

***SPEAKER**

- 1:00 Helping Farmers Navigate Complex Decisions About Managing Weeds in Organic Systems.** D. Doohan*¹, D. Bessette², C. Beaudrie³, S. Culman⁴, R. Wilson⁵; ¹Ohio State University, Wooster, OH, ²Michigan State University, East Lansing, MI, ³Compass Resource Management Ltd., Vancouver, BC, ⁴Ohio State University, Wooster, OH, ⁵Ohio State University, Columbus, OH (418)
- 1:15 Complementary Applications of Analytic Techniques in Field Research.** J. T. Buol*¹, A. Brown-Johnson², D. B. Reynolds¹; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State Chemistry Laboratory, Mississippi State, MS (419)
- 1:30 Predatory Publishing: Where Are We Now?** S. M. Ward*; Colorado State University, Fort Collins, CO (420)
- 1:45 How can Weed Scientists Address the California Glyphosate Verdict?** J. D. Byrd, Jr.*; Mississippi State University, Mississippi State, MS (421)
- 2:00 A Cropping-System Weed Science Survey of Brazil, a Breadbasket Country in the Tropics.** M. Coura Oliveira*¹, A. Lencina da Silva², A. R. Ulguim², R. Werle¹; ¹University of Wisconsin-Madison, Madison, WI, ²Universidade Federal de Santa Maria, Santa Maria, Brazil (422)

- 2:15** **Survey of 2017 and 2018 Dicamba Use in Nebraska and Wisconsin Soybean Production Systems.** R. Werle*¹, A. J. Jhala², P. D. Mitchell¹, M. Coura Oliveira¹; ¹University of Wisconsin-Madison, Madison, WI, ²University of Nebraska-Lincoln, Lincoln, NE (423)
- 2:30** **Evaluating Many Sides of an Issue: Teaching with Case Studies.** A. Dille*; Kansas State University, Manhattan, KS (424)
- 2:45** **Break**

WEDNESDAY AFTERNOON FEBRUARY 13

Ag Regulation as Affected by Urbanization of a Country

LOCATION: Napoleon Ballroom B123
 TIME: 1:00 PM - 5:00 PM
 CHAIR/ Tom Mueller
 MODERATOR: University of Tennessee
 Knoxville, TN

***SPEAKER**

- 1:00** **Millions of People, Millions of Acres: Co-Existing In a Big Ag, Big Urban State.** J. Payne*¹, T. Mueller²; ¹Illinois Fertilizer and Chemical Association, Bloomington, IL, ²University of Tennessee, Knoxville, TN (425)
- 1:55** **Societal Developments and Expectations in Europe – Implications on Environmental Regulation of Agriculture.** J. Keppler*¹, T. Mueller²; ¹Bayer Crop Science, Frankfurt/Main, Germany, ²University of Tennessee, Knoxville, TN (426)
- 2:50** **Break**
- 3:05** **Our Land and Water; Perspectives on how Market Forces and Regulation are Shaping the Future of NZ Farming.** R. Dynes*¹, T. Mueller²; ¹New Zealand Ag Research, Christchurch, New Zealand, ²University of Tennessee, Knoxville, TN (427)
- 4:00** **Restrictions to Farming in the Pacific Northwest, from Endangered Salmon Runs to Impacts from Urban Gardens.** T. W. Miller*¹, T.

Mueller²; ¹Washington State University - Mt Vernon,
Mount Vernon, WA, ²University of Tennessee,
Knoxville, TN (428)

WEDNESDAY AFTERNOON FEBRUARY 13

Travel Enrichment Experience

LOCATION: Napoleon Ballroom A123
TIME: 3:15 PM - 4:15 PM
CHAIR/ Jess Bunchek
MODERATOR: Penn State University
State College, PA

***SPEAKER**

- 3:15 Educational Experience at Corteva Agriscience Western Research Center, Fresno, California.** D. Saha^{*1}, J. Armstrong², C. Marble³; ¹Mid-Florida Research and Education Center, University of Florida, Apopka, FL, ²Corteva Agriscience Western Research Center, Fresno, CA, ³University of Florida, Apopka, FL (429)
- 3:25 We're Not in Row Crops Anymore: A Boilermaker's Tale of California Agriculture.** C. McCauley*; Corteva Agriscience, Indianapolis, IN (430)
- 3:35 2018 WSSA Travel Enrichment Experience with the University of Georgia at Tifton.** J. Gizotti de Moraes*; University of Nebraska-Lincoln, North Platte, NE (431)
- 3:45 Travel Enrichment Experience: Herbicide Resistance in the Mississippi Delta and Beyond.** S. C. Haring*; University of California, Davis, Davis, CA (432)
- 3:55 Surveying Syngenta in Greensboro, North Carolina.** J. J. Puka-Beals*; North Dakota State University, Fargo, ND (433)

WEDNESDAY AFTERNOON FEBRUARY 13

Section 2. Horticultural Crops

LOCATION: Maurepas
TIME: 4:00 PM - 5:00 PM
CHAIR/
MODERATOR: Katherine Jennings
North Carolina State University
Raleigh, NC
CO-CHAIR: Matthew Cutulle
Clemson University
Charleston, SC

***SPEAKER**

- 4:00 Carolina Redroot (*Lachnanthes caroliniana*) Growth and Rhizome Production Response to Environmental Conditions.** T. E. Besancon*; Rutgers University, CHATSWORTH, NJ (434)
- 4:15 The Long-Term Effects of Cover Crops and Fumigants on Weed Populations in Florida.** N. Boyd*¹, S. M. Sharpe², J. Yu³; ¹University of Florida, Balm, FL, ²University of Florida, Wimauma, FL, ³University of Florida, Riverview, FL (435)
- 4:30 Pyroxasulfone for Weed Control in Chickpea, Lentil, and Fava Bean.** H. Hatterman-Valenti*¹, B. Johnson²; ¹North Dakota State University, Fargo, ND, ²North Dakota State University, FARGO, ND (436)
- 4:45 Sweetpotato Tolerance to Off-Target Movement of Dicamba.** M. W. Shankle*, S. L. Meyers; Mississippi State University, Pontotoc, MS (437)

WEDNESDAY AFTERNOON FEBRUARY 13

Section 6. Regulatory Aspects

LOCATION: Napoleon Ballroom A123
TIME: 4:30 PM - 5:00 PM
CHAIR/
MODERATOR: Montague Dixon
Syngenta
Greensboro, NC
CO-CHAIR: Cherilyn Moore
Syngenta Crop Protection, LLC
Greensboro, NC

***SPEAKER**

- 4:30 EPA's Registration Review Process and its Potential Impact on Herbicide Use.** C. Moore*; Syngenta Crop Protection, LLC, Greensboro, NC (438)
- 4:45 An Update of the New EPA Mandated Requirements for Paraquat Containing Products: What Does This Mean for the End-User and Registrant.** M. U. Dixon*; Syngenta, Greensboro, NC (439)

WEDNESDAY AFTERNOON FEBRUARY 13

WSSA Business Meeting

- LOCATION:** Oak Alley
- TIME:** 5:15 PM - 6:45 PM
- CHAIR:** Lawrence Steckel
University of Tennessee
Jackson, TN
- CO-CHAIR:** William Curran
Penn State University
Bozeman, MT

THURSDAY MORNING FEBRUARY 14

Graduate Student Breakfast/ Seminar

- LOCATION:** Oak Alley
- TIME:** 7:00 AM - 9:00 aM
- CHAIR/** Jess Bunchek
- MODERATOR:** Penn State University
State College, PA

The inaugural Graduate Student Wellness Breakfast will highlight the challenges of graduate school in an informal setting. Join in casual conversation and learn tips for balancing work and personal time, overcoming the hurdle of completing degrees, and other pertinent topics. This event will also raise awareness on graduate student mental health and the importance of open discussion.

**Section 8. Formulation, Adjuvant and Application
Technology**

LOCATION: Borgne
TIME: 8:00 AM - 11:15 AM
CHAIR/
MODERATOR: J Connor Ferguson
Mississippi State University
Mississippi State, MS
CO-CHAIR: Mayank Malik
Monsanto
Chesterfield, MO

***SPEAKER**

- 8:00 Antares Prime and Antares Pro: New Products for the Agronomic Crop and T&O Markets.** M. C. Cox*, M. Wayland; Helena Agri-Enterprises, Memphis, TN (440)
- 8:15 Ethoxylated Fatty Acid Methyl Esters (EFAME™): A New Class of Surfactants for Agriculture.** K. Crosby*¹, T. Anderson²; ¹Adjuvants Unlimited, LLC, Memphis, TN, ², Liberty Township, OH (441)
- 8:30 Droplet Size Impact on Acifluorfen and Lactofen Efficacy for Palmer amaranth (*Amaranthus palmeri*) Control.** L. X. Franca*¹, D. Dodds¹, G. Kruger², T. R. Butts², J. McNeal³, S. Davis⁴, J. J. Williams⁴, B. Norris⁴; ¹Mississippi State University, Mississippi State, MS, ²University of Nebraska-Lincoln, North Platte, NE, ³Mississippi State University, Mississippi State, Mississippi, MS, ⁴Mississippi State University, Starkville, MS (442)
- 8:45 Deep Learning for Crop and Weed Detection.** W. L. Patzoldt*; Blue River Technology, Sunnyvale, CA (443)
- 9:00 Redesigning HSMSO Adjuvants: Novel Terpene Polymer Containing Formulation.** P. M. McMullan*¹, M. Fiery²; ¹Ramulus LLC, Grimes, IA, ²Miller Chemical & Fertilizer, LLC, Hanover, PA (444)
- 9:15 Paraquat: An Examination for Discovery.** R. K. Zollinger*¹, P. J. Porpiglia²; ¹AMVAC, Spokane Valley, WA, ²AMVAC, Putnam Valley, NY (445)

- 9:30 New Findings on Ultra-Coarse Sprays and Test Methods.** D. C. Bissell*¹, S. Fredricks², B. Olson², C. Hogan², G. K. Dahl¹, L. C. Magidow³, J. Gednalske⁴; ¹Winfield United, River Falls, WI, ²University of Minnesota, Minneapolis, MN, ³Winfield United, Maplewood, MN, ⁴, River Falls, WI (446)
- 9:45 Permeate: A New NPE Free, Non-Ionic Surfactant from Winfield United.** R. J. Edwards*¹, G. K. Dahl², J. A. Gillilan³, T. Hayden⁴, E. P. Spandl⁵, J. Gednalske⁶; ¹WinField United, River Falls, WI, ²Winfield United, River Falls, WI, ³WinField United, Nashville, TN, ⁴WinField United, Owensboro, KY, ⁵Winfield United, Arden Hills, MN, ⁶, River Falls, WI (447)
- 10:00 Break**
- 10:15 Improving Herbicide Effectiveness and Minimizing Impacts with Research, Analysis, Visualization and Demonstration.** G. K. Dahl*¹, R. J. Edwards², E. P. Spandl³, A. D. Makepeace³, J. J. Skelton⁴, L. C. Magidow⁵, D. C. Bissell¹; ¹Winfield United, River Falls, WI, ²WinField United, River Falls, WI, ³Winfield United, Arden Hills, MN, ⁴WinField United, Saint Paul, MN, ⁵Winfield United, Maplewood, MN (448)
- 10:30 Effects of Selected Adjuvants Over Two Seasons on Weed Control in Corn and Soybeans with Glufosinate-Ammonium.** J. T. Daniel*¹, T. Hoverstad², M. D. Owen³, P. Johnson⁴, P. Westra⁵, E. Westra⁵; ¹Jim T Daniel, Keenesburg, CO, ²University of Minnesota Southern Research and Outlet Center, Waseca, MN, ³Iowa State University, Ames, IA, ⁴South Dakota State University, Brookings, SD, ⁵Colorado State University, Fort Collins, CO (449)
- 10:45 Nozzle Type and Timing of Application Effects on Weed Control in Mississippi Cotton.** C. Ferguson*¹, P. H. Urach Ferreira¹, M. T. Wesley², L. H. Merritt², Z. R. Treadway¹, K. L. Broster¹, N. Fleitz³; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, MS State, MS, ³Pentair-Hypro, New Brighton, MN (450)
- 11:00 Emergence of Multiple Resistance in *Conyza canadensis* Resistant to Glyphosate.** C. Palma-Bautista*¹, D. A. Mora², R. Domínguez-Mendez², A. M. Rojano-Delgado², J. Portugal³, R. De Prado Amian⁴; ¹University of Cordoba, CÓRDOBA, Spain, ²University of Cordoba, Cordoba, Spain, ³Polytechnic Institute of Beja, Beja, Portugal, ⁴University of Cordoba, Córdoba, Spain (451)

Section 2. Horticultural Crops

LOCATION: Maurepas
TIME: 8:00 AM - 11:30 AM
CHAIR/ Katherine Jennings
MODERATOR: North Carolina State University
Raleigh, NC
CO-CHAIR: Matthew Cutulle
Clemson University
Charleston, SC

***SPEAKER**

- 8:00 Non-Target Impacts of Herbicides on *Tetranychus urticae* and its Predator, *Phytoseiulus persimilis*: Implications for Biological Control.** M. A. Cutulle*, R. A. Schmidt-Jeffris; Clemson University, Charleston, SC (452)
- 8:15 Comparison of Alternative Weed Control Methods with Four Cold Hardy White Wine Grapes.** j. M. Stenger, A. Svyantek, c. M. Auwarter, H. Hatterman-Valenti*; North Dakota State University, Fargo, ND (453)
- 8:30 Sweetpotato Tolerance to Pendimethalin.** S. L. Meyers*¹, K. M. Jennings², D. Miller³, M. W. Shankle¹, J. L. Main¹, S. C. Smith², C. J. Morris¹, L. D. Moore², M. D. Waldschmidt²; ¹Mississippi State University, Pontotoc, MS, ²North Carolina State University, Raleigh, NC, ³Louisiana State University AgCenter, St. Joseph, LA (454)
- 8:45 Cultivation Method and Frequency to Reduce Weed Density Prior to Direct Seeded Bok Choy.** P. J. Dittmar*¹, D. D. Treadwell¹, R. Randhawa², D. Farnsworth¹, J. Perez¹; ¹University of Florida, Gainesville, FL, ²Virginia Tech, Blacksburg, VA (455)
- 9:00 Selecting for Bunch Type Sweetpotato Lines: A Weed Science Perspective.** M. A. Cutulle*¹, H. T. Campbell¹, P. Wadl²; ¹Clemson University, Charleston, SC, ²USDA-ARS, Charleston, SC (456)
- 9:15 Weed Control in Organic Blueberries: Comparing Thermal, Mechanical, and Chemical Tools.** E. N. Augerson, M. L. Moretti*; Oregon State University, Corvallis, OR (457)

- 9:30 Asparagus Weed Control Past, Present, and Future.** B. H. Zandstra*¹, C. J. Phillippo²; ¹Michigan State University, East Lansing, MI, ²N/A, East Lansing, MI (458)
- 9:45 An IR-4 Collaboration Success Story: Edamame.** M. M. Williams*¹, M. Arsenovic², W. Barney², D. Kunkel²; ¹USDA-Agricultural Research Service, Urbana, IL, ²Rutgers University, Princeton, NJ (459)
- 10:00 Break**
- 10:15 Robotic Weeders: An Easier Path to New Weed Control Technology for Vegetable Crops.** S. A. Fennimore*; University of California, Davis, Salinas, CA (460)
- 10:30 Crop Response and Weed Control from Carfentrazone Applied to Stevia (*Stevia rebaudiana*) Row Middles.** J. A. Cheek*, R. B. Batts; NCSU IR-4 Field Research Center, Raleigh, NC (461)
- 10:45 Weed Control Research Efforts in North Carolina Stevia (*Stevia rebaudiana*).** R. B. Batts*, J. A. Cheek; NCSU IR-4 Field Research Center, Raleigh, NC (462)
- 11:00 Handweeding Organic Vidalia Sweet Onion - Necessity and Practicality.** W. C. Johnson III*; USDA-ARS, Tifton, GA (463)
- 11:15 Management of Parasitic *Dendrophthoe* in Semi-Temperate and Temperate Fruit Crops of Jammu-Kashmir Himalayas.** A. Kumar*, R. Puniya; Sher-e-Kashmir University of Agricultural Sciences and Technology - Jammu, India (464)

THURSDAY MORNING FEBRUARY 14

Weather and the Environment: Understanding basics to address off target pesticides

LOCATION: Napoleon Ballroom B123
 TIME: 8:00 AM - 11:00 AM
 CHAIR/ Mandy Bish
 MODERATOR: University of Missouri
 Columbia, MO

***SPEAKER**

8:00 Introduction to Symposium. M. Bish*; University of Missouri, Columbia, MO (465)

- 8:05 Earth, Air, Sun, Outer Space, and Pesticide Dispersion.** J. Nielsen-Gammon*; Texas A&M, College Station, TX (466)
- 8:35 Understanding Weather Data: Making Sense of an Increasing Amount of Available Information.** D. Todey*; USDA-ARS, Ames, IA (467)
- 8:55 Surface Temperature Inversions and Lessons Learned in Collaborating with Weed Scientists.** P. Guinan*; University of Missouri, Columbia, MO (468)
- 9:15 Comparison of Dicamba Air Concentration from Applications made during Inversion and Non-Inversion Conditions.** S. T. Farrell*¹, R. Lerch², M. Bish¹, K. Bradley¹; ¹University of Missouri, Columbia, MO, ²USDA-ARS, Columbia, MO (469)
- 9:35 Break**
- 9:50 Processes Controlling the Fate of Pesticides in the Environment.** R. Lerch*; USDA-ARS, Columbia, MO (470)
- 10:20 Analysis of Weather and Environment Surrounding Off-Target Dicamba Applications.** M. Bish*, K. Bradley; University of Missouri, Columbia, MO (471)
- 10:40 Discussion**

THURSDAY MORNING FEBRUARY 14

Teaching Workshop

LOCATION: Napoleon Ballroom C123
 TIME: 8:00 AM - 10:00 AM
 CHAIR/
 MODERATOR Tom Mueller
 University of Tennessee
 Knoxville, TN

***SPEAKER**

8:00 Online Weed Science Classes and Content. B. A. Ackley*¹, T. Mueller²; ¹Ohio State University, Columbus, OH, ²University of Tennessee, Knoxville, TN (472)

- 8:30 Learning Outcomes and Assessment Tools.** K. Renner*¹, T. Mueller²; ¹Michigan State University, East Lansing, MI, ²University of Tennessee, Knoxville, TN (473)
- 9:00 Labs to Enhance Student Learning and Sharing Ideas About Them.** E. Hill¹, S. A. Clay², M. Bernards³, T. Mueller*⁴; ¹Michigan State University, East Lansing, MI, ²South Dakota State University, Brookings, SD, ³Western Illinois University, Macomb, IL, ⁴University of Tennessee, Knoxville, TN (474)

SHERATON NEW ORLEANS HOTEL

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