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WSSA

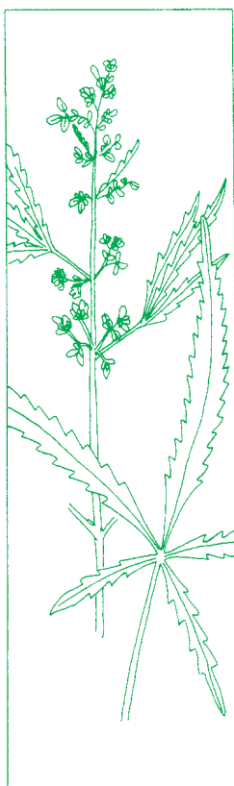
**2022 Annual Meeting
February 21-24, 2022
Vancouver, Canada**

**2023 Annual Meeting
January 30 – February 02, 2023
Arlington, VA**

WEED SCIENCE SOCIETY OF AMERICA

61st Meeting

2021 MEETING PROGRAM February 15-19, 2021



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SePRO

61st Meeting of the Weed Science Society of America

I am excited to invite you to join us for a unique and unprecedented experience at the 2021 Virtual WSSA annual meeting. Each of us will be able to participate from our 'home office' with opportunities to connect with each other online and to learn from each other through sharing our scientific posters and oral papers, and to join in online discussions. We have contracted with Community Brands to host our virtual conference - [WSSA Virtual conference 2021](#)

We needed to plan different ways to complete our WSSA business. All committees were asked to share reports with the WSSA leadership and to have meetings completed by Thursday, February 11, so that the WSSA Board of Directors can learn of your accomplishments during our BOD meetings on Friday, February 12 and Monday, February 15.

We will kick off our annual meeting on Monday, February 15 at 3:00 pm Central time. We will hear from the Peterson Farm Bros., a family of three brothers from Assaria, KS that have become social media sensations as they promote agriculture through music parodies, vlogs, and through Facebook and Twitter. After their presentation, we will recognize our outstanding award winners and new Fellows & Honorary Members of the WSSA. We will host a 'virtual' reception afterwards.

Our scientific program begins on Tuesday morning, February 16 and runs through 12:30 pm Friday, February 19. Each day will consist of three 90-minute sessions with three different concurrent sessions. All times listed are in the Central Time Zone, so from 9:00 to 10:30 am, 11 am to 12:30 pm, and 3:00 to 4:30 pm.

The three concurrent sessions are labeled with names of Kansas Frontier Trails: Oregon Trail, Sante Fe Trail, and the Chisholm Trail. All poster sessions are located on the Pony Express, and the 3MT presentations are on the Smoky Hill Trail. Just like Kansas was on the Frontier for many people to travel westward in the USA, the WSSA is on the Frontier of new and different ways of sharing our science, connecting with our stakeholders, and exploring new ways to understand and manage weed species.

During the long break each afternoon between 12:30 and 3:00 pm CST, there will be extended discussion sessions available to join and connect with each other over topics of common interest. These will be found in our Networking Lounge on the virtual platform.

On Tuesday, February 16, the Women in Weed Science will be able to participate in a networking event from 1:00 to 2:30 pm.

On Wednesday, February 17, the WSSA Graduate Student Organization will be hosting a session from 11:00 am to 12:30 pm CST. This will include a business meeting where new officers will be announced and a fun interactive Quiz Bowl activity with real (*good!*) prizes for the winners!

Throughout the week, we have five different symposia that have brought in a diversity of speakers. Each symposium has time for panel discussions where you can actively participate in asking questions of the panelists.

We have fantastic participation from our Graduate Students in the Poster and 3MT™ contests. The judging will take place during the week prior to the conference as all presentations will be prerecorded and uploaded. All presentations and posters will be available on-demand for you to view in the virtual platform throughout the week and for 30 days after the conference ends.

The Graduate Student 3MT™ and Poster winners will be announced during the WSSA Business meeting (all members and attendees are invited to learn more about WSSA) on Thursday afternoon, February 18 from 3:00 to 4:30 pm.

Thank you to everyone that has provided support and guidance as we navigated this new approach to our WSSA annual meeting. I am looking forward to your active participation in our conference and to 'see' you soon.

Anita Dille
WSSA Program Chair and President-Elect

[WSSA Virtual conference 2021](#)

2021 Program Committee

General Program Chair.....	Anita Dille
Vice Chair.....	Stanley Culpepper
Agronomic Crops.....	Alejandro Perez-Jones
Horticultural Crops.....	Stephen Meyers
Turf and Ornamentals.....	Sandeep Rana
Pastures, Rangelands,.....	David Russell
Forests, Rights of Way, Wildlands and Aquatic Invasive Plants	
Regulatory Aspects	Cherilyn Moore
Teaching and Extension.....	Parminder Chahal
Formulation, Adjuvant,	Vipin Kumar
& Application Technology	
Weed Biology and Ecology.....	Caio Brunharo
Biocontrol of Weeds.....	Min Rayamajhi
Physiology	Zahoor Ganie
Integrated Weed.....	Shilpa Singh
Management	
Sustaining Member Exhibits.....	Kyle Kepner
Poster Sessions.....	Thomas Mueller
Student Poster and 3MT	Darrin Dodds and Marty
Contests.....	Schraer

[WSSA Virtual conference 2021](#)

CONDENSED PROGRAM

WSSA GENERAL MEETINGS

Friday FEBRUARY 12

WSSA Board of Directors 08:00 AM - 05:00 PM zoom

Monday FEBRUARY 15

WSSA Board of Directors 08:00 AM - 12:00 PM zoom

General Session 03:00 PM - 05:00 PM Oregon Trail

Welcome Reception 05:00 PM - 6:00 PM

Tuesday FEBRUARY 16

Women in Weed Science Event 1:00 PM - 02:30 PM

Wednesday FEBRUARY 17

WSSA Graduate Student Organization Meeting 11:00 AM - 12:30 PM Sante Fe Trail

Thursday FEBRUARY 18

WSSA Business Meeting and Student Award Presentations 3:00 PM - 4:30 PM

FRIDAY FEBRUARY 19

WSSA Board of Directors Meeting 01:30 PM - 03:00 PM zoom

PROGRAM

MONDAY AFTERNOON FEBRUARY 15

General Session

LOCATION: Oregon Trail
TIME: 03:00 PM - 05:00 PM
MODERATOR: Anita Dille
Kansas State University
Manhattan, KS

***SPEAKER**

Welcome, Introductions and Announcements.

Anita Dille*; Kansas State University, Manhattan, KS

Keynote: Peterson Farm Bros.

Greg Peterson*, Nathan Peterson, Kendal Peterson;
Assaria, KS

Presidential Address. William S Curran*; Penn State
University, University Park, PA.

Presentation of Awards. Dwight Lingenfelter*;
Penn State University, University Park, PA.

Adjourn for Virtual Welcome and Awards Reception

[WSSA Virtual conference 2021](#)

FEBRUARY 15 to 19

Posters will be available to view for the entire conference (and after the conference for 30 days). Utilize the Chat feature to ask questions from the poster presenters.

All Poster Presenters to participate in Chat on Wednesday February 17 from 1:00 pm to 2:30 pm.

LOCATION: Pony Express
MODERATOR: Thomas C. Mueller
University of Tennessee
Knoxville, TN

POSTER - 01. Agronomic Crops

***PRESENTER**

Herbicide-Resistant Palmer Amaranth (*Amaranthus palmeri* S. Wats.) and Common Waterhemp (*Amaranthus tuberculatus*) in Kansas. Vipin Kumar*, Rui Liu, Taylor Lambert, Phillip Stahlman; Kansas State University, Hays, KS (1)

Reductions in Palmer Amaranth Groundcover Following an Auxin Herbicide Application. Grant L. Priess*¹, Jason K. Norsworthy¹, Rodger B. Farr¹, Thomas R. Butts²; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas System Division of Agriculture, Lonoke, AR (2)

An EnlistDUO Systems Approach to Control Palmer Amaranth. Bradley J. Norris*¹, Jacob P. McNeal¹, Larry C. Walton², William J. Rutland³, Darrin M. Dodds¹, Brian K. Peralisi⁴; ¹Mississippi State University, Mississippi State, MS, ²Corteva Agriscience, Tupelo, MS, ³Mississippi State University, Starkville, MS, ⁴Mississippi State University, Stoneville, MS (3)

Optimal Order and Respray Interval Using Glufosinate, 2,4-D and Dicamba for Waterhemp (*Amaranthus tuberculatus*) Control. Brent S. Heaton*¹, Alexis L. Meadows², Elaina M. Crawford¹, Mark L. Bernards¹; ¹Western Illinois University, Macomb, IL, ²Western Illinois University, Ames, IA (4)

Response to Herbicides with Different Modes of Action on 50 *Amaranthus hybridus* L. Populations in Argentina. Julio A. Scursoni*¹, Martin M. Vila Aiub¹, Daniel Tuesca², Federico Balassone², Juan P. Morello¹, Daniela Medina Herrera¹, C Lescano², N Montero Bulacio², Roberto J. Crespo², M Depetris²; ¹Facultad de Agronomía. Universidad de Buenos Aires, Buenos Aires, Argentina, ²Facultad de Ciencias Agrarias. Universidad de Rosario, Rosario, Argentina (5)

No Seed Means No Weeds or No Herbicide-Resistant Weeds. Taghi Bararpour*, Jason A. Bond, Henry M. Edwards, Jimmy D. Peeples; Mississippi State University, Stoneville, MS (6)

Industrial Hemp Sensitivity to Pre- and Post-emergence Herbicides. Lynn M. Sosnoskie, Elizabeth Maloney*; Cornell University, Geneva, NY (7)

Peanut Response to Diuron. Chad C. Abbott, Eric P. Prostko*, Taylor M. Randell; University of Georgia, Tifton, GA (8)

White-Margined Flatsedge (*Cyperus flavicomus* Michx.): Controlling This New Problematic Weed in Arkansas Rice. Thomas R. Butts*¹, Tom Barber¹, Jason K. Norsworthy²; ¹University of Arkansas System Division of Agriculture, Lonoke, AR, ²University of Arkansas, Fayetteville, AR (9)

Acetochlor Use for Weed Control in Rice. Tristen H. Avent*, Jason K. Norsworthy, Leonard B. Piveta, Mason C. Castner, James W. Beesinger; University of Arkansas, Fayetteville, AR (10)

Use Patterns of Bicyclopyrone in Minor Crops. Eric Rawls*¹, Peter Eure², Gordon D. Vail³, Tom H. Beckett³, Cheryl Dunne¹, Victor Mascarenhas⁴, Henry McLean⁵, Monti Vandiver⁶, John Gordy⁷, Tim Trower⁸, Scott A. Payne⁹; ¹Syngenta Crop Protection, Vero Beach, FL, ²Syngenta Crop Protection, Greensboro, NC, ³Syngenta, Greensboro, NC, ⁴Syngenta Crop Protection, Nashville, NC, ⁵Syngenta Crop Protection, Perry, GA, ⁶Syngenta Crop Protection, Vero Beach, TX, ⁷Syngenta Crop Protection, Pearland, TX, ⁸Syngenta Crop Protection, Oskosh, WI, ⁹Syngenta Crop Protection, Slater, IA (11)

Asulam Tank Mixes with Trifloxysulfuron and Topramezone on Fall Panicum Control in Sugarcane. D Calvin Odero*¹, Raphael Mereb Negrisoli²; ¹University of Florida, Belle Glade, FL, ²University of Florida, Gainesville, FL (12)

Effect of Residual Herbicide Application Timing on Weed Management in 2,4-D- and Dicamba-tolerant Soybean. Daniel O. Stephenson, IV*; LSU Ag Center, Alexandria, LA (13)

Reduction in DGA Dicamba Volatility as a Function of Potassium Tetraborate Tetrahydrate Concentration. Mason C. Castner*, Jason K. Norsworthy, Trenton L. Roberts, Leonard B. Piveta; University of Arkansas, Fayetteville, AR (14)

Impact of Fall-seeded Cereal Rye Cover Crop on Pre-emergence Herbicide Fate and Grain-yield in Wisconsin Food-grade Soybean Production. Nicholas J. Arneson*, Ryan P. DeWerff, John Gaska, Brian Mueller, Shawn P. Conley, Damon Smith, Rodrigo Werle; University of Wisconsin - Madison, Madison, WI (15)

Potential Burndown Options Before Cover Crop Establishment. Dwight Lingenfelter*, John M. Wallace; Pennsylvania State University, University Park, PA (16)

Survey of California Weedy Rice (*Oryza sativa* f. *spontanea*) Acreage: Infestation Patterns and Severity. Whitney Brim-DeForest*¹, Luis Espino², Troy Clark², Timothy Blank³; ¹University of California Division of Agriculture and Natural Resources, Yuba City, CA, ²University of California Division of Agriculture and Natural Resources, Oroville, CA, ³California Crop Improvement Association, Davis, CA (17)

Airborne Hyperspectral Imaging to Classify Different Desiccants Performance in Lentil (*Lens culinaris*) Crop. Keshav D. Singh*, Eric N. Johnson, Hema S. Duddu, Steve J. Shirliffe; University of Saskatchewan, Saskatoon, SK, Canada (18)

Impact of Weedy Invasion on Subsistence Agriculture and Pasture Degradation of Cold Arid Region of Ladakh India. Mahendra Singh Raghuvanshi*¹, Stanzin Landol², Mohammad Raza², Ngawang Dorje²; ¹ICAR-National Bureau of Soil Survey and Land Use Planning, Nagpur, India, ²RRS, ICAR-Central Arid Zone Research Institute, Leh-Ladakh, Leh-ladakh, India (19)

Field Pennycress (*Thlaspi arvense*) Response to Herbicides Applied Postemergence. Kevin Betts¹, M. Scott Wells¹, Debalin Sarangi¹, Mark L. Bernards*², Donald L. Wyse¹; ¹University of Minnesota, St. Paul, MN, ²Western Illinois University, Macomb, IL (20)

Evaluation of Herbicide Programs in Oklahoma Soybean. Todd A. Baughman*, Zachary R. Treadway, Robbie W. Peterson; Oklahoma State University, Ardmore, OK (21)

Identification of Soybean Lines That Have Differential Sensitivity to Dicamba. Matthew Osterholt*¹, Scott McAdam¹, Katy Rainey¹, Caio Canella Vieira², Pengyin Chen², Bryan G. Young³; ¹Purdue University, West Lafayette, IN, ²University of Missouri, Portageville, MO, ³Purdue University, Brookston, IN (22)

Managing Ryegrass (*Lolium multiflorum*) in Northeast Texas Wheat. Curtis A. Jones*; Texas A&M University, Commerce, TX (23)

POSTER - 02. Horticultural Crops

***PRESENTER**

IR-4: Weed Control Project Updates - Food Crops. Roger B. Batts*¹, Jerry J. Baron¹, Daniel L. Kunkel², Michael P. Braverman²; ¹IR-4 Project HQ, NC State University, Raleigh, NC, ²IR-4 Project Headquarters, Princeton, NJ (24)

Canada Thistle Control in Hop with a Sponge Wiper Application of Clopyralid. Marcelo L. Moretti*, David R. King; Oregon State University, Corvallis, OR (25)

Response of Sweetpotato Cultivars to Dicamba and 2,4-D. Ziming Yue*¹, Isabel S. Werle², Steve L. Meyers³, Mark W. Shankle⁴, Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Mississippi State, MS, ²University of Arkansas, Fayetteville, AR, ³Purdue University, West Lafayette, IN, ⁴Mississippi State University, Verona, MS (26)

Table Beet Response to Simulated Carryover of HPPD Herbicides. Lynn M. Sosnoskie*, Elizabeth Maloney; Cornell University, Geneva, NY (27)

Cabbage/Cauliflower Tolerance to Pyridate Formulations. Sushila Chaudhari*, Bernard H. Zandstra, Monique Hemker; Michigan State University, East Lansing, MI (28)

Evaluation of Weed Control Efficacy and Plant Safety of Selected Herbicides for Bearing Avocado (*Persea americana*). Peggy Mauk¹, Sonia I. Rios*², Ben Faber³, Oleg Daugovich³, Dee L. Vega³, Travis Bean⁴; ¹University of California - Riverside, Riverside, CA, ²University of California, Division of Agriculture and Natural Resources, Moreno Valley, CA, ³University of California, Division of Agriculture and Natural Resources, Ventura, CA, ⁴University of California, Division of Agriculture and Natural Resources, Riverside, CA (29)

POSTER - 03. Turf and Ornamentals

***PRESENTER**

Developing a Decision-Support Tool for Facilitating the Selection of Diverse Herbicide Mode of Action in Turf. Vanaja Kankarla*¹, Edicarlos Batista de Castro², Jay McCurdy², Daniel Hathcoat¹, Rebecca Bowling³, Muthukumar V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Mississippi State University, Mississippi, MS, ³Texas A&M University, Dallas, TX (30)

POSTER - 04. Pasture, Range, Forest, & Rights of Ways, Wildland, and Aquatic Invasive Plants

***PRESENTER**

Potassium Application Impacts *Andropogon* Densities in Bahiagrass (*Paspalum notatum*) Pastures. Brent A. Sellers*, Maria L. A. Silveira; University of Florida, Ona, FL (31)

Pursuit: Does it Fit a Forage Weed Control System? John D. Byrd, Jr.*, Hayden D. Quick, Kayla D. Broster; Mississippi State University, Mississippi State, MS (32)

Effect of Mowing Timing on Johnsongrass Herbicide Efficacy: Three Years of Trials. Joe Omielan*, Michael Barrett; University of Kentucky, Lexington, KY (33)

POSTER - 06. Teaching and Extension

***PRESENTER**

2020 Survey Results for the Most Common and Troublesome Weeds in Grass Crops, Pasture and Turf. Lee Van Wyche^{*1}, Lavesta C. Hand²; ¹Weed Science Society of America, Alexandria, VA, ²University of Georgia, Tifton, GA (34)

Time to Make Dilemma-nade: Insights on the Impact of the COVID-19 Pandemic on Weed Science Extension Outreach in the USA. Nicholas J. Arneson, Rodrigo Werle*; University of Wisconsin - Madison, Madison, WI (35)

POSTER - 07. Formulation, Adjuvant, & Application Technology

***PRESENTER**

Utility of Roller Wiper Applications of Dicamba for Palmer Amaranth (*Amaranthus palmeri*) Management. Rodger B. Farr^{*1}, Jason K. Norsworthy¹, Thomas R. Butts², James W. Beesinger¹, Tristen H. Avent¹, Grant L. Priess¹; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas System Division of Agriculture, Lonoke, AR (36)

POSTER - 08. Weed Biology and Ecology

***PRESENTER**

Mechanism of Lactofen Resistance in Palmer Amaranth from Kansas. Edinaldo A. Borgato*, Balaji Aravindhan Pandian, Sathishraj Rajendran, Anita Dille, Mithila Jugulam; Kansas State University, Manhattan, KS (37)

Accumulation of Target-site Mutations in Multiple Resistant *Lolium multiflorum* Populations from Southern USA. Gulab Rangani*¹, Nilda Roma-Burgos¹, Ana C. Langaro¹, Robert C. Scott², Reio Salas³; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas - RREC, Stuttgart, AR, ³Dole Philippines, Inc., South Cotabato, Philippines (38)

Non-target-site Resistance of Barnyardgrass [*Echinochloa crus-galli* (L.) P. Beauv.] to Florpyrauxifen-benzyl. Jeong-In Hwang*¹, Jason K. Norsworthy¹, Fidel Gonzalez Torralva¹, Grant L. Priess¹, Tom Barber², Thomas R. Butts²; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas System Division of Agriculture, Lonoke, AR (39)

Glyphosate Resistant Bird Rape Mustard (*Brassica rapa*) Through Introgression of a Transgenic Construct: Distribution and Genetic Characterization. Martin Laforest*¹, Brahim Soufiane², Sara Martin³, Marie-Josée Simard²; ¹AAC-AAFC, St-jean-sur-richelieu, QC, Canada, ²Agriculture and Agri-Food Canada, Saint-jean-sur-richelieu, QC, Canada, ³Agriculture and Agri-Food Canada, Ottawa, ON, Canada (40)

Phenotypic Characteristics of F₁ Hybrid Progenies Originating from Crosses Between *Sorghum bicolor* and *S. halepense*. Usha R. Pedireddi*¹, Cynthia Sias¹, Sara Ohadi², Nithya K. Subramanian¹, George Hodnett¹, William Rooney¹; ¹Texas A&M University, College Station, TX, ²University of California - Davis, Davis, CA (41)

Characterization of Johnsongrass (*Sorghum halepense*) x Grain Sorghum (*S. bicolor*) Hybridization Under Field Conditions. Nithya K. Subramanian*, George Hodnett, William Rooney, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (42)

POSTER - 11. Soil and Environmental Aspects

***PRESENTER**

Future Efficacy of Preemergence Herbicides in Corn Threatened by More Variable Weather. Christopher A. Landau*¹, Aaron Hager¹, Patrick Tranel¹, Adam Davis¹, Nicolas F. Martin², Martin Williams³; ¹University of Illinois, Urbana, IL, ²University of Illinois, Urban, IL, ³USDA-ARS, Urbana, IL (43)

Crossroads: The Intersection of Herbicide Resistant Weed Control, Tillage, and Soil Quality. Andrew Price*¹, Audrey Gamble²; ¹USDA-ARS, Auburn, AL, ²Auburn University, Auburn, AL (44)

How Much Do Perennial Ryegrass and Tall Fescue Crop Residue Retain Herbicides? Seth Bernard E. Abugho*, Caio A. Brunharo, Andrew G. Hulting; Oregon State University, Corvallis, OR (45)

POSTER - 12. Integrated Weed Management

***PRESENTER**

Smooth Brome (*Bromus inermis*) as a Trap for a Wheat Pest: Volatile Profiles Influence Wheat Stem Sawfly Behavior.

Rekha Bhandari*¹, David Weaver², Tracy M. Sterling²; ¹Cornell University, Ithaca, NY, ²Montana State University, Bozeman, MT (46)

Potential Application of High-Intensity Red Light for Weed Seedbank Management.

Albert T. Adjesiwor*¹, Andrew R. Kniss²; ¹University of Idaho, Kimberly, ID, ²University of Wyoming, Laramie, WY (47)

Molecular Marker-based Detection and Characterization of Rice Root-knot Nematodes Infecting Weedy Rice (*Oryza sativa* var *spontanea*) in San Juan, Batangas, Philippines.

Romnick A. Latina, Priscilla M. Barcial, Clare Hazel R. Tabernilla, Analiza Henedina M. Ramirez*; UP Los Banos, College, Los Banos, Laguna, Philippines (48)

The Effect of Row Spacing and Seeding Rate on Russian Thistle (*Salsola tragus*) in Spring Barley and Spring Wheat.

Judit Barroso¹, Nicholas G. Genna*²; ¹Oregon State University, Adams, OR, ²Oregon State University, Pendleton, OR (49)

FEBRUARY 15 to 19

POSTER - PhD Student Contest

LOCATION: Pony Express
MODERATOR: Marty Schraer
Syngenta
Meridian, ID
CO-MODERATOR: Darrin M. Dodds
Mississippi State University
Mississippi State, MS

***PRESENTER † STUDENT CONTEST**

†**Characterize 2,4-D and Dicamba Volatility as Affected by Formulation and Exposure Duration.** Patrick J. Maxwell*, Travis Gannon, Matthew C. Vann; North Carolina State University, Raleigh, NC (50)

†**Supplying Phosphite as a Source of Phosphorus for Weed Suppression in *PtxD* Cotton.** Shilpa Singh*¹, Devendra Pandeya¹, Keerti Rathore¹, Kater Hake², Muthukumar V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Cotton Incorporated, Raleigh-durham, NC (51)

†**Differential Expression Patterns of Three Wheat CYP81A-like Homoeologs in Response to Halauxifen-methyl and Cloquintocet-mexyl Foliar Treatments.** Olivia A. Obenland*, Brendan V. Jamison, Kris N. Lambert, Dean E. Riechers; University of Illinois, Urbana, IL (52)

†**How Are Soybean Yield Components Affected by Reduced Rates of Florpyrauxifen-benzyl?** David C. Walker*¹, Eric Webster², Daniel O. Stephenson, IV³, Samer Y. Rustom¹, Connor Webster¹, Bradley Greer², John A. Williams¹; ¹LSU Ag Center, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA, ³LSU Ag Center, Alexandria, LA (53)

†**Herbicide Application Timing for Barnyardgrass and Palmer Amaranth Control in Furrow-irrigated Rice.** Jay W. Seale*¹, Jason A. Bond¹, Bobby R. Golden¹, Daniel B. Reynolds², Tom W. Allen³, Frank Carey⁴; ¹Mississippi State University, Stoneville, MS, ²Mississippi State University, Mississippi State, MS, ³Delta Research and Extension Center, Stoneville, MS, ⁴Valent USA, Olive Branch, MS (54)

†**Evaluating Interaction of Dicamba, Fluthiacet-methyl, And/or Glyphosate for Control of Velvetleaf (*Abutilon theophrasti*) in Dicamba/Glyphosate-Resistant Soybean.** Jose H. de Sanctis*, Amit J. Jhala; University of Nebraska - Lincoln, Lincoln, NE (55)

†**Are Cover Crops Effective for Weed Management in the Southeast USA? A Meta-analysis.** Nicholas T. Basinger¹, David Weisberger*¹, Virginia Sykes²; ¹University of Georgia, Athens, GA, ²University of Tennessee, Knoxville, TN (56)

†**Effects of Dicamba Vapor on Soybean Injury and Yield.** Ryan D. Langemeier*¹, Steve Li¹, Greg Kruger², Mark L. Bernards³, Katilyn J. Price¹, Bruno C. Vieira⁴; ¹Auburn University, Auburn, AL, ²University of Nebraska - Lincoln, North Platte, NE, ³Western Illinois University, Macomb, IL, ⁴University of Nebraska - Lincoln, Lincoln, NE (57)

†**Residual Herbicide Use in Upland Rice Production.** Connor Webster*¹, Eric Webster², Samer Y. Rustom¹, David C. Walker³, Bradley Greer², John A. Williams¹; ¹LSU AgCenter, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA, ³Mississippi State University, Starkville, MS (58)

†**Trends in Weed Control Research in Kansas Soybeans.** Tyler P. Meyeres*, Dallas E. Peterson, Sarah Lancaster; Kansas State University, Manhattan, KS (59)

†**Large-Scale Field Evaluation of Dicamba Volatilization When Mixed with Glyphosate.** Maria Leticia M. Zaccaro*¹, Jason K. Norsworthy¹, Grant L. Priess¹, Mason C. Castner¹, Thomas C. Mueller²; ¹University of Arkansas, Fayetteville, AR, ²University of Tennessee, Knoxville, TN (60)

†**Transplanted Industrial Hemp Tolerance to Soil-active Herbicides Grown for Cannabidiol.** Michael L. Flessner, Kevin W. Bamber, Cynthia Sias*; Virginia Tech, Blacksburg, VA (61)

†**Rice Weed Management Using Herbicide Coated Fertilizer.** Bradley Greer*¹, Eric Webster¹, Samer Y. Rustom², Connor Webster², John A. Williams², David C. Walker²; ¹Louisiana State University, Baton Rouge, LA, ²LSU AgCenter, Baton Rouge, LA (62)

†**Evaluation of Cover Crops as a Sustainable Weed Management Strategy in Citrus (*Citrus sinensis*) Production.** Miurel T. Brewer*¹, Ramdas Kanissery², Davie M. Kadyampakeni¹; ¹University of Florida, Lake Alfred, FL, ²University of Florida - IFAS, Immokalee, FL (63)

†**Tolerance of Cotton Chromosomal Substitution Lines to 2,4-D: a Dose-response Study.** Willian M. Daróz Matte*¹, Loida M. Perez², Sukumar Saha³, J Connor Ferguson², Te-Ming (Paul) Tseng²; ¹Maringá State University, Maringá - Paraná State, Brazil, ²Mississippi State University, Mississippi State, MS, ³USDA-ARS, Mississippi State, MS (64)

†**Pollen-Mediated Gene Flow Between ALS-Inhibitor-Resistant and -Susceptible Johnsongrass (*Sorghum halepense*).** Aniruddha Maity*, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (65)

†**Seed Production Estimation in Late-season Escapes of *Amaranthus* spp. and *Sorghum halepense* Using Drone-based Multi-spectral Imagery.** Matthew Kutugata*, Chengsong Hu, Bishwa B. Sapkota, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (66)

†**Remote Sensing-Based Estimation of Herbicide Drift Injury and Prediction of Yield Loss in Cotton.** Bishwa B. Sapkota*¹, Zachary S. Howard¹, Scott A. Nolte², Nithya Rajan¹, Peter A. Dotray³, Gaylon Morgan⁴, Muthukumar V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Texas A&M AgriLife Extension, College Station, TX, ³Texas Tech University and Texas A&M AgriLife Research and Extension Service, Lubbock, TX, ⁴Cotton Incorporated, Cary, NC (67)

†**Inheritance of 2,4-D Resistance in Palmer Amaranth Population from Kansas.** Chandrima Shyam*, Dallas E. Peterson, Mithila Jugulam; Kansas State University, Manhattan, KS (68)

†**Cotton Varietal Response to Low Rates of 2,4-D.** Kyle R. Russell*¹, Peter A. Dotray², Irish L. B. Pabuayon¹, Glen L. Ritchie¹; ¹Texas Tech University, Lubbock, TX, ²Texas Tech University and Texas A&M AgriLife Research and Extension Service, Lubbock, TX (69)

†**Evaluation of Shade Cloth to Simulate Palmer Amaranth (*Amaranthus palmeri*) Competition in Sweetpotato.** Levi D. Moore*, Katherine M. Jennings, David Monks, Michael D. Boyette, David L. Jordan, Ramon G. Leon; North Carolina State University, Raleigh, NC (70)

†**Identification of Candidate Sex Determining Genes in *Amaranthus tuberculatus* Through Genomic Approaches.** Brent P. Murphy*, Patrick Tranel; University of Illinois, Urbana, IL (71)

†**Optimizing 2D Image Synthesis Techniques for Training Neural Network-based Weed Detection Models.** Chengsong Hu*¹, Bishwa B. Sapkota¹, John Alex Thomasson², Muthukumar

V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Mississippi State University, Starkville, MS (72)

†**Will a Drift Reducing Adjuvant Impact the Weed Control in a XtendFlex Soybean?** Jesaelen Gizotti de Moraes*, Guilherme Sousa Alves, Jeffrey A. Golus, Greg Kruger; University of Nebraska - Lincoln, North Platte, NE (73)

†**Seedling Emergence Patterns of *Poa annua* in Texas.** Andrew W. Osburn*¹, Muthukumar V. Bagavathiannan¹, Rebecca Bowling²; ¹Texas A&M University, College Station, TX, ²Texas A&M University, Dallas, TX (74)

†**Investigating Transcriptional Regulation of Metabolic Resistance in Palmer Amaranth (*Amaranthus palmeri*).** Carlos Alberto Gonsiorkiewicz Rigon*¹, Anita Küpper², Roland S. Beffa³, Todd A. Gaines¹; ¹Colorado State University, Fort Collins, CO, ²Bayer AG, Frankfurt / Main, Germany, ³Bayer AG, CropScience Division, Frankfurt / Main, Germany (75)

†**Vegetative Growth of Palmer Amaranth (*Amaranthus palmeri*) Surviving Glufosinate Treatments in Soybeans (*Glycine max*).** Eric A. Jones*, Marco Antonio Fajardo Menjivar, Diego J. Contreras, Diego E. Salazar, Charlie W. Cahoon, Ramon G. Leon, Wesley Everman; North Carolina State University, Raleigh, NC (76)

†**Soybean (*Glycine max L.*) Exposure to Low-Rates of Dicamba.** Zachary R. Treadway*¹, Todd A. Baughman¹, Robbie W. Peterson¹, Misha R. Manuchehri²; ¹Oklahoma State University, Ardmore, OK, ²Oklahoma State University, Stillwater, OK (77)

†**Glyphosate Resistance in Palmer Amaranth Lacking EPSPS Amplification.** Matheus Machado Noguera*, Isabel S. Werle, Gulab Rangani, Nilda Roma-Burgos; University of Arkansas, Fayetteville, AR (78)

†**Using Recombinant Inbred Lines of Sorghum for Studying Genetic Control of Inter-specific Hybridization Between *Sorghum bicolor* and *S. halepense*.** Usha R. Pedireddi*, Nithya K. Subramanian, George Hodnett, Patricia Klein, William Rooney, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (79)

†**Developmental Factors Influencing Resistance to PPO Inhibitors.** Abigail Barker*, Franck E. Dayan; Colorado State University, Fort Collins, CO (80)

†**Can Significant Amounts of Glyphosate and Glufosinate Transfer to Almonds During Harvest Operations?** Katie Martin*¹, Brad Hanson²; ¹University of California - Davis, Davis, CA, ²University of California - Davis, Winters, CA (81)

†**Biochemical Characterization of Acetyl-CoA Carboxylase with an Ala2004Val Mutation That Confers Quizalofop Resistance in CoAXium® Wheat.** Raven Bough*, Franck E. Dayan, Todd A. Gaines; Colorado State University, Fort Collins, CO (82)

†**The Effects of Inter-seeded Winter Wheat on Weed Suppression and Soybean Yield.** Madison R. Decker*, Ronald F. Krausz, Karla L. Gage; Southern Illinois University Carbondale, Carbondale, IL (83)

FEBRUARY 15 to 19

POSTER - MS Student Contest

LOCATION: Pony Express

MODERATOR: Marty Schraer
Syngenta
Meridian, ID

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Mississippi State University
Mississippi State, MS

***PRESENTER † STUDENT CONTEST**

†**Investigation of Management Strategies to Optimize Cover Crop-Based Weed Mitigation in Canadian Sweet Corn Production.** Hayley Brackenridge*¹, Jichul Bae², Marie-Josée Simard³, Francois Tardif¹, Kerry Bosveld⁴, Robert E. Nurse⁴; ¹University of Guelph, Guelph, ON, Canada, ²Agriculture and Agri-Food Canada, Agassiz, BC, Canada, ³Agriculture and Agri-Food Canada, Saint-jean-sur-richelieu, QC, Canada, ⁴Agriculture and Agri-Food Canada, Harrow, ON, Canada (84)

†**Crop Response and Weed Management Systems Utilizing Isoxaflutole in HPPD Tolerant Cotton.** Delaney C. Foster*¹, Peter A. Dotray², Corey Thompson³, Greg Baldwin⁴, Frederick T. Moore⁵; ¹Texas Tech University, Lubbock, TX, ²Texas Tech University and Texas A&M AgriLife Research and Extension Service, Lubbock, TX, ³BASF, Abernathy, TX, ⁴BASF, Research Triangle Park, NC, ⁵BASF, Lubbock, TX (85)

†**Assessing St. Augustinegrass (*Stenotaphrum secundatum*) Grow-in Following Preemergence Herbicide Application.** Amy L. Wilber*¹, James D. McCurdy², Joby Czarnecki¹, Barry Stewart¹, Hongxu Dong¹; ¹Mississippi State University,

Mississippi State, MS, ²Mississippi State University, Starkville, MS (86)

†**Crabgrass (*Digitaria sanguinalis*) Control by Tank Mixes and Carrier Volumes Used in 2,4-D Resistant Soybeans.**

Chad J. Lammers*, Sarah Lancaster, Tyler P. Meyeres; Kansas State University, Manhattan, KS (87)

†**Interaction of Trifludimoxazin + Saflufenacil and Pyroxasulfone for Control of False Cleavers (*Galium spurium*).**

Kathryn Aldridge*, Eric N. Johnson, Steve J. Shirlcliffe; University of Saskatchewan, Saskatoon, SK, Canada (88)

†**Efficacy and Crop Safety of Dimethenamid-P, S-Metolachlor, and Pyroxasulfone for Management of ALS-Inhibitor-Resistant Palmer Amaranth (*Amaranthus palmeri*) in Dry Edible Bean.**

Joshua Wa Miranda Teo*¹, Jeff Bradshaw¹, Amit J. Jhala², Nevin Lawrence³; ¹University of Nebraska - Lincoln, Scottsbluff, NE, ²University of Nebraska - Lincoln, Lincoln, NE, ³University of Nebraska, Scottsbluff, NE (89)

†**Activity Interactions of a Gambit Plus Propanil Mixture in Rice Production.**

John A. Williams*¹, Eric Webster², Bradley Greer², David C. Walker¹, Connor Webster¹, Samer Y. Rustom¹; ¹LSU AgCenter, Baton Rouge, LA, ²Louisiana State University, Baton Rouge, LA (90)

†**The Impact of Application Equipment and Methodology on Hexazinone Efficacy for Controlling Smutgrass (*Sporobolus indicus*).**

Mason T. House*¹, Zachary S. Howard¹, Scott A. Nolte²; ¹Texas A&M University, College Station, TX, ²Texas A&M AgriLife Extension, College Station, TX (91)

†**Rice Response and Weed Control of Clomazone Applied at Different Timing in a Continuous Rice Flood System.**

Aaron Becerra-Alvarez*, Kassim Al-Khatib; University of California - Davis, Davis, CA (92)

†**Effects of Interseeding Corn and Alfalfa on Weed Population Dynamics.**

Sarah A. Chu*¹, Erin E. Burns²; ¹Michigan State University, Lansing, MI, ²Michigan State University, East Lansing, MI (93)

†**Confirmation of Widespread Distribution of Herbicide-Resistant Waterhemp (*Amaranthus tuberculatus*) in Wisconsin.**

Felipe A. Faleco*, Nicholas J. Arneson, Mark J. Renz, David E. Stoltenberg, Rodrigo Werle; University of Wisconsin - Madison, Madison, WI (94)

†**Response of Established Peppermint (*Mentha × piperita*) to Pyroxasulfone: a Greenhouse Study.** Jeanine Arana*, Stephen L. Meyers, Brandi C. Woolam; Purdue University, West Lafayette, IN (95)

†**Tolerance of Rice Cultivars to Florpyrauxifen-benzyl Followed by Benzobicyclon.** James W. Beesinger*, Jason K. Norsworthy, Leonard B. Piveta, Tristen H. Avent; University of Arkansas, Fayetteville, AR (96)

†**Rescue Control of Palmer Amaranth (*Amaranthus palmeri*) in 2,4-D Resistant Soybean.** Spencer J. Michael*, Kevin W. Bamber, Michael L. Flessner; Virginia Tech, Blacksburg, VA (97)

†**Sensitivity of Fluazifop-Resistant Grain Sorghum to ACCase-inhibiting Herbicides.** Jacob A. Fleming*¹, Jason K. Norsworthy¹, Muthukumar V. Bagavathiannan², Leonard B. Piveta¹; ¹University of Arkansas, Fayetteville, AR, ²Texas A&M University, College Station, TX (98)

†**Use of Mulches and Herbicides on Non-rooted Cuttings and Their Effect on Root Growth After Transplant.** Isha Poudel*, Anthony L. Witcher; Tennessee State University, Mcminnville, TN (99)

†**Greenhouse and Laboratory Investigations of an ALS-inhibitor Herbicide-Resistant Fall Panicum Accession from Wisconsin.** Jose J. Nunes*¹, Damilola A. Raiyemo², Nicholas J. Arneson¹, Patrick Tranel³, Rodrigo Werle¹; ¹University of Wisconsin - Madison, Madison, WI, ²University of Idaho, Moscow, ID, ³University of Illinois, Urbana, IL (100)

†***Amaranthus palmeri* ppo2 (?G210) Mutation Confers Resistance to Preemergence Application of Fomesafen in Rice.** Pamela Carvalho-Moore*¹, Gulab Rangani¹, Shan Zhao¹, Ana Claudia Langaro², Vibha Srivastava¹, Nilda Roma-Burgos¹; ¹University of Arkansas, Fayetteville, AR, ²Federal University of Rio de Janeiro, Seropedica, Brazil (101)

†**Minimizing Off-target Movement of Florpyrauxifen-benzyl to Soybean.** Bodie Cotter*, Jason K. Norsworthy, James W. Beesinger, Mason C. Castner, Grant L. Priess; University of Arkansas, Fayetteville, AR (102)

†**Field Surveys for Assessing Weed Seedbank Additional Potential and Feasibility of Harvest Weed Seed Control in Texas Rice.** Isidor Ceperkovic*¹, Xin-Gen Zhou², Muthukumar V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Texas A&M University, Beaumont, TX (103)

†**Weed-suppressive Potential of Sweetpotato Cultivars on Targeted Weed Species.** Isabel S. Werle*¹, Matheus Machado Nogueira¹, Pamela Carvalho de Lima¹, Jeremie Kouame¹, Te-

Ming (Paul) Tseng², Nilda Roma-Burgos¹; ¹University of Arkansas, Fayetteville, AR, ²Mississippi State University, Mississippi State, MS (104)

†**Effect of Surfactants on Postemergent Applications of Glyphosate and Glufosinate on Palmer Amaranth (*Amaranthus palmeri*) and Kochia (*Bassia scoparia*).** Ely D. Anderson*¹, Bruno C. Vieira¹, Susan Sun², Greg Kruger¹; ¹University of Nebraska - Lincoln, North Platte, NE, ²Croda Inc., New Castle, DE (105)

†**Metribuzin Tolerance of Winter Wheat Varieties in Oklahoma.** Lane S. Newlin*¹, Misha R. Manuchehri¹, Brett F. Carver¹, Amanda De Oliveira Silva¹, Hannah C. Lindell¹, Justin T. Childers², Caitlyn C. Carnahan¹; ¹Oklahoma State University, Stillwater, OK, ²Oklahoma State University, Marlow, OK (106)

†**Season-Long Horseweed (*Erigeron canadensis* L.) Suppression with Fall-Seeded Cereal Cover Crops and Narrow Soybean Row Widths.** Justine L. Fisher*, Christy Sprague; Michigan State University, East Lansing, MI (107)

†**Weed Management Systems in XtendFlex Soybean.** Adam L. Constine*, Christy Sprague; Michigan State University, East Lansing, MI (108)

†**Interaction of Glyphosate and Dicamba Tank Mixtures on Glyphosate-resistant Horseweed (*Erigeron canadensis*) and Barnyardgrass (*Echinochloa crus-galli*) Control.** Estefania Gomiero Polli*¹, Leandro H S Guimaraes¹, Jose H. de Sanctis², Guilherme Sousa Alves¹, Greg Kruger¹; ¹University of Nebraska - Lincoln, North Platte, NE, ²University of Nebraska - Lincoln, Lincoln, NE (109)

†**Influence of Cover Crop Termination Timing with Soil Residual Herbicides on Palmer Amaranth Control in No-till Soybean.** Isaac N. Effertz*¹, Vipin Kumar², Anita Dille¹, Augustine Obour²; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Hays, KS (110)

†**Testing Redekop® Seed Destructor for Managing Herbicide-Resistant Waterhemp Seed Bank at Soybean Harvest in Iowa.** Alexis L. Meadows*, Prashant Jha, Ramawatar Yadav, Avery J. Bennett, Ryan Hamberg, Edward Dearden; Iowa State University, Ames, IA (111)

†**Potential Sweetpotato Yield Losses Due to Weeds.** Fnu Chitra*¹, Sushila Chaudhari², Katherine M. Jennings¹, Stephen L. Meyers³, Mark W. Shankle⁴, A Stanley Culpepper⁵, Mark VanGessel⁶, Charlie W. Cahoon¹, Donnie Miller⁷, Levi D. Moore¹, Shawn C. Beam⁸, Nilda Roma-Burgos⁹; ¹North Carolina State University, Raleigh, NC, ²Michigan State University, East Lansing, MI, ³Purdue University, West Lafayette, IN, ⁴Mississippi State University, Verona, MS, ⁵University of

Georgia, Tifton, GA, ⁶University of Delaware, Georgetown, DE, ⁷Louisiana State University AgCenter, St. Joseph, LA, ⁸Virginia Tech, Blacksburg, VA, ⁹University of Arkansas, Fayetteville, AR (112)

†**Monitoring the Frequency and Distribution of Herbicide-Resistant Waterhemp (*Amaranthus tuberculatus*)**

Populations in Iowa. Ryan C. Hamberg*, Prashant Jha, Ramawatar Yadav, Avery J. Bennett, Alexis L. Meadows, Edward S. Dearden, Iththiphonh A. Macvilay; Iowa State University, Ames, IA (113)

†***Poa annua* (Annual Bluegrass) Presents a Large Diversity of Mutations That Endow Target-Site Resistance.**

Claudia A. Rutland*¹, Nathan D. Hall¹, James D. McCurdy², Lambert B. McCarty³, James Brosnan⁴, Travis Gannon⁵, Daniel Hathcoat⁶, Muthukumar V. Bagavathiannan⁶, Joseph S. McElroy¹; ¹Auburn University, Auburn, AL, ²Mississippi State University, Starkville, MS, ³Clemson University, Clemson, SC, ⁴University of Tennessee, Knoxville, TN, ⁵North Carolina State University, Raleigh, NC, ⁶Texas A&M University, College Station, TX (114)

†***Poa annua* (Annual Bluegrass) Species Response to Preemergence Herbicides with Differing Target-Site Mutations.**

Eli C. Russell*; Auburn University, Auburn, AL (115)

†**Integrated Management of Rescuegrass (*Bromus catharticus*) in Grain Only Winter Wheat Production in the Southern Great Plains.**

Hannah C. Lindell*¹, Misha R. Manuchehri¹, Todd A. Baughman², Emi Kimura³, Gary Strickland⁴, David Graf⁵, Brett F. Carver¹, Lane S. Newlin¹, Justin T. Childers¹, Caitlyn C. Carnahan¹; ¹Oklahoma State University, Stillwater, OK, ²Oklahoma State University, Ardmore, OK, ³Texas A&M University, Vernon, TX, ⁴Oklahoma State University, Altus, OK, ⁵Texas A&M University, Iowa Park, TX (116)

†**Efficacy of Chaff-Lining in Managing Herbicide-Resistant Waterhemp (*Amaranthus tuberculatus*) Seedbanks.**

Avery J. Bennett*, Prashant Jha, Alexis L. Meadows, Ramawatar Yadav, Ryan Hamberg, Edward Dearden; Iowa State University, Ames, IA (117)

†**Pumpkin Growth and Yield Response to Simulated Dicamba Drift.**

Lindsey M. Orphan*, Karla L. Gage, S. Alan Walters; Southern Illinois University Carbondale, Carbondale, IL (118)

FEBRUARY 15 to 19

3MT PhD Contest

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LOCATION: Smoky Hill Trail
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***PRESENTER † STUDENT CONTEST**

†Flattening the Curve: Using Multiple Tactics to Delay the Spread of Herbicide Resistance. Lavesta C. Hand*¹, Taylor M. Randell¹, Robert L. Nichols², Larry Steckel³, A Stanley Culpepper¹; ¹University of Georgia, Tifton, GA, ²Cotton Incorporated, Cary, NC, ³University of Tennessee, Jackson, TN (119)

†The Effect of Substrate Stratification and Fertilizer Placement on the Common Liverwort (*Marchantia Polymorpha*) Establishment and Growth of Blue Plumbago (*Plumbago Auriculata*) in Container Nursery Production. Yuvraj Khamare*¹, Stephen C. Marble², James Altland³, Annette Chandler¹; ¹University of Florida, Apopka, FL, ²University of Florida - Mid Florida Research and Education Center, Apopka, FL, ³USDA-ARS, Wooster, OH (120)

†Allelopathy: Weeds Practicing Social Distancing. Varsha Varsha*¹, Te-Ming (Paul) Tseng²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (121)

†Variable Weather and Implications for Herbicides Efficacy and Yield Loss Due to Weeds. Christopher A. Landau*¹, Adam Davis¹, Patrick Tranel¹, Aaron Hager¹, Nicolas F. Martin¹, Martin Williams²; ¹University of Illinois, Urbana, IL, ²USDA-ARS, Urbana, IL (122)

†Residual Activity of Glyphosate Damages Transplant Squash but can be Influenced by Tillage and Irrigation. Taylor M. Randell*¹, Jenna C. Vance¹, Lavesta C. Hand¹,

Hannah E. Wright², A Stanley Culpepper¹; ¹University of Georgia, Tifton, GA, ²University of Georgia, Athens, GA (123)

†**The Effect of Florpyrauxifen-benzyl and Other Pasture Herbicides on Sward Composition.** Wykle C. Greene*, Michael L. Flessner, Kevin W. Bamber, Matthew P. Spoth, Cynthia Sias; Virginia Tech, Blacksburg, VA (124)

†**The Effects of Cereal Rye (*Secale cereale*) Seeding Rate and Termination Timing on Weed Control and Soybean Yield.** Alyssa Essman*, Mark Loux, Anthony Dobbels, Alexander Lindsey; The Ohio State University, Columbus, OH (125)

†**Can We Improve Detection Methods for Herbicide Residues in Plants?** Hannah E. Wright*¹, John Shugart², Carrie Crabtree², Taylor M. Randell³, Lavesta C. Hand³, A Stanley Culpepper³; ¹University of Georgia, Athens, GA, ²Georgia Department of Agriculture, Tifton, GA, ³University of Georgia, Tifton, GA (126)

†**Seasonal Herbicide Efficacy for Smutgrass (*Sporobolus indicus*) Control in Improved Pastures in Texas.** Zachary S. Howard*¹, Mason T. House¹, Matthew Matocha², Scott A. Nolte³; ¹Texas A&M University, College Station, TX, ²Texas A&M AgriLife Extension Service, College Station, TX, ³Texas A&M AgriLife Extension, College Station, TX (127)

†**From Pest to Pal: Discovering Stress Tolerant Weedy Rice.** Shandrea D. Stallworth*¹, Swati Shrestha¹, Brooklyn C. Schumaker², Nilda Roma-Burgos³, Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MS, ³University of Arkansas, Fayetteville, AR (128)

†**Utility of Potassium Tetraborate Tetrahydrate as a Dicamba Volatility Reduction Agent.** Mason C. Castner*, Jason K. Norsworthy, Trenton L. Roberts, Maria Leticia M. Zaccaro; University of Arkansas, Fayetteville, AR (129)

†**Optimization of Glufosinate Efficacy in Low-light Conditions.** Grant L. Priess*, Jason K. Norsworthy, Maria Leticia M. Zaccaro, Mason C. Castner, Rodger B. Farr; University of Arkansas, Fayetteville, AR (130)

†**Aspects of Growth and Development of Female and Male Palmer Amaranth (*Amaranthus palmeri*).** Ednaldo A. Borgato*, Mithila Jugulam, Anita Dille; Kansas State University, Manhattan, KS (131)

†**Evaluation of Multi-tactic Weed Management Strategies to Target Palmer Amaranth in Cotton.** Sarah E. Kezar*¹, Delaney C. Foster², Michael M. Houston³, Peter A. Dotray⁴, Jason K. Norsworthy³, Ramon G. Leon⁵, Gaylon Morgan⁶, Muthukumar V. Bagavathiannan¹, Fernando Oreja⁵; ¹Texas

A&M University, College Station, TX, ²Texas Tech University, Lubbock, TX, ³University of Arkansas, Fayetteville, AR, ⁴Texas Tech University and Texas A&M AgriLife Research and Extension Service, Lubbock, TX, ⁵North Carolina State University, Raleigh, NC, ⁶Cotton Incorporated, Cary, NC (132)

†**Could Epigenetics Help to Understand Herbicide Resistance in Weeds?** Gourav Sharma*, Jacob Barney, Shawn Askew, James Westwood, David C. Haak; Virginia Tech, Blacksburg, VA (133)

†**Controlling Palmer Amaranth: A Growing Threat to US Cotton Production Systems.** Rohith Vulchi*¹, Muthukumar V. Bagavathiannan¹, Joshua A. McGinty², Scott A. Nolte³; ¹Texas A&M University, College Station, TX, ²Texas A&M AgriLife Extension, Corpus Christi, TX, ³Texas A&M AgriLife Extension, College Station, TX (134)

†**Using Living Mulch in Reduced Tillage Organic Soybeans.** Veronica Yurchak*, Cerruti R. Hooks; University of Maryland, College Park, MD (135)

†**Assessing Genetic Diversity in Weed-suppressive Cotton Chromosome Substitution Lines.** Worlanyo Segbefia*¹, Grace Fuller¹, Sukumar Saha¹, Te-Ming (Paul) Tseng²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (136)

†**Antagonizing Effects of Dicamba Tank Mixes in Controlling *Echinochloa*.** Clay M. Perkins*¹, Larry Steckel¹, Thomas C. Mueller²; ¹University of Tennessee, Jackson, TN, ²University of Tennessee, Knoxville, TN (137)

†**Influence of Environment and Soybean Trait Adoption on Dicamba Concentrations in Rainwater and Air Deposits in Missouri.** Eric G. Oseland*, Mandy Bish, Kevin W. Bradley; University of Missouri, Columbia, MO (138)

†**Shedding Light on the Power of Plant Competition.** Nicole Berardi*, Clarence Swanton; University of Guelph, Guelph, ON, Canada (139)

†**Maximizing Cotton Defoliation Efficacy.** Jacob P. McNeal*¹, Darrin M. Dodds¹, Brian K. Pieralisi², Greg Kruger³, Bradley J. Norris¹, John J. Williams¹, William J. Rutland⁴, Steven D. Hall⁴; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Stoneville, MS, ³University of Nebraska - Lincoln, North Platte, NE, ⁴Mississippi State University, Starkville, MS (140)

†**Many Little Hammers to Manage Herbicide-Resistant Waterhemp (*Amaranthus tuberculatus*) in Iowa Corn and Soybean.** Ramawatar Yadav*, Prashant Jha, Avery J. Bennett,

Ryan Hamberg, Alexis L. Meadows, Edward Steven Dearden;
Iowa State University, Ames, IA (141)

†**Accessing Genetic Diversity in Cotton Chromosomal Substitution Lines Tolerant to Sublethal Rate of 2,4-D Using Molecular Markers.** Josiane C. Argenta*¹, Te-Ming (Paul) Tseng²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (142)

†**Quantifying Pesticide Concentrations Using a Simulated Vegetable Bed.** Kayla M. Eason*¹, Timothy L. Grey¹, A Stanley Culpepper¹, Nicholas L. Hurdle², Juliana de Souza Rodrigues¹; ¹University of Georgia, Tifton, GA, ²University of Georgia, Collierville, TN (143)

†**Investigating Soybean Response from Dicamba and the Environmental and Chemical Influences That Lead to Increased Dicamba Volatility.** Matthew Osterholt*¹, William G. Johnson¹, Manoj Ghaste¹, Joshua R. Widhalm¹, Scott McAdam¹, Bryan G. Young²; ¹Purdue University, West Lafayette, IN, ²Purdue University, Brookston, IN (144)

†**Using Bacterial Endophyte MS79 as Bioherbicide to Control Weeds.** Mohammad R. Alsabri*; University of Kentucky, Lexington, KY (145)

†**The Effects of Increased CO₂ Concentration in the Atmosphere on Weed Morphology, Development and Resistance.** Juliana de Souza Rodrigues*, Timothy L. Grey; University of Georgia, Tifton, GA (146)

†**Understanding 2,4-D Tolerance Mechanisms in Cotton Chromosome Substitution Lines.** Loida M. Perez*¹, Isabel S. Werle¹, Sukumar Saha², Johnie Jenkin², David M. Stelly³, Jeffrey F. D. Dean¹, Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Mississippi State, MS, ²USDA-ARS, Mississippi State, MS, ³Texas A&M University, College Station, TX (147)

FEBRUARY 15 to 19

3MT MS Contest

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LOCATION: Smoky Hill Trail
MODERATOR: Darrin M. Dodds
Mississippi State University
Mississippi State, MS
CO-MODERATOR: Marty Schraer
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Meridian, ID

***PRESENTER † STUDENT CONTEST**

†**Novel Advances in Allelopathy: A Pragmatic Solution to Weed Pestilence.** Kira Howell*¹, Shandrea D. Stallworth², Te-Ming (Paul) Tseng²; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Mississippi State, MS (148)

†**Quantifying Vegetable Crops Response to Simulated Dicamba Drift Rates Using Image Analysis Techniques.** Maggie H. Wasacz*¹, David J. Mayonado², Mark VanGessel³, Matthew T. Elmore⁴, Thierry E. Besancon⁵; ¹Rutgers University, Wall Township, NJ, ²Affiliation Not Specified, Hebron, MD, ³University of Delaware, Georgetown, DE, ⁴Rutgers University, New Brunswick, NJ, ⁵Rutgers University, Chatsworth, NJ (149)

†**What's Old is New Again: Revisiting Alternative Weed Management Strategies for Palmer Amaranth (*Amaranthus palmeri*) Control.** Rodger B. Farr*¹, Jason K. Norsworthy¹, Tom Barber², Thomas R. Butts², Grant L. Priess¹, James W. Beesinger¹; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas System Division of Agriculture, Lonoke, AR (150)

†**Use of an Unmanned Aerial System for Detecting Low Rates of 2,4-D Injury in Cotton.** Ubaldo Torres*¹, Peter A. Dotray², Kyle R. Russell¹, Wenxuan Guo³, Murilo M. Maeda⁴; ¹Texas Tech University, Lubbock, TX, ²Texas Tech University and Texas A&M AgriLife Research and Extension Service, Lubbock, TX, ³Texas Tech University and Texas A&M AgriLife Research, Lubbock, TX, ⁴Texas A&M AgriLife Extension, Lubbock, TX (151)

†**Improving Cotton, the Fabric of Your Life.** Mary Gracen A. Fuller*; Mississippi State University, Starkville, MS (152)

†**Safening of Chloroacetamide Applications with a Rice Seed Treatment.** Tristen H. Avent*¹, Jason K. Norsworthy¹, Scott Rushing², Andy Hurst³; ¹University of Arkansas, Fayetteville, AR, ²UPL, Jonesboro, AR, ³UPL, Macon, GA (153)

†**Evapotranspiration of Palmer Amaranth (*Amaranthus palmeri*) in Corn/soybean and Non-crop Situation Under Subsurface Drip and Center-pivot Irrigation Systems.** Jasmine M. Mausbach*¹, Saat Irmak¹, Debalin Sarangi², John Lindquist¹, Amit J. Jhala¹; ¹University of Nebraska - Lincoln, Lincoln, NE, ²University of Wyoming, Laramie, WY (154)

†**Auxin-type Herbicide and Rhizobia Application for Weed Control and Nodulation Potential in Auxin-Tolerant Soybean.** Joy Amajioyi*, Sharon Clay; South Dakota State University, Brookings, SD (155)

†**Harvest Loss in Corn and Volunteerism.** Trey Stephens*, Jenny Rees, Amit J. Jhala; University of Nebraska - Lincoln, Lincoln, NE (156)

†**Effect of Herbicide and Nitrogen Inhibitors on Nitrification in Corn.** William Neels*, Amit J. Jhala, Richard Little, Bijesh Maharjan, Laila Puntel, Javed Iqbal; University of Nebraska - Lincoln, Lincoln, NE (157)

†**Economics of Overlapping Residual Herbicide Programs for Control of Glyphosate-resistant Palmer Amaranth in Soybean.** Shawn T. McDonald*¹, Adam Striegel¹, Prashant Jha², Amit J. Jhala¹; ¹University of Nebraska - Lincoln, Lincoln, NE, ²Iowa State University, Ames, IA (158)

†**Evaluation of Electrocutation as a Method of Managing Problematic Weeds.** Haylee E. Schreier*, Kevin W. Bradley, Mandy Bish, Brian Dintelmann; University of Missouri, Columbia, MO (159)

†**A Multi-state Evaluation of the Response of Waterhemp Populations to Dicamba and Glufosinate.** Travis Winans*, Brian Dintelmann, Mandy Bish, Kevin W. Bradley; University of Missouri, Columbia, MO (160)

†**Impact of Tillage Regime and Cover Cropping on Weed Dynamics in Organic Cotton Production.** McKenzie J. Barth*, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (161)

†**Integrated Physical and Cultural Weed Management in Table Beets.** Daniel M. Priddy*, Daniel C. Brainard, Zachary D. Hayden, Monique Hemker; Michigan State University, East Lansing, MI (162)

†**Response of Non-Irrigated Peanut to Delayed Flumioxazin Applications.** Nicholas L. Hurdle*¹, Timothy L. Grey², Walter S. Monfort²; ¹University of Georgia, Collierville, TN, ²University of Georgia, Tifton, GA (163)

TUESDAY MORNING FEBRUARY 16

"Weed Genomics"

ORAL - 10. Physiology

LOCATION: Sante Fe Trail
TIME: 09:00 AM - 10:30 AM Central Time
MODERATOR: Zahoor A. Ganie
FMC
Newark, DE

***SPEAKER**

09:00 AM The International Weed Genomics Consortium: The Growing Community Resources for Weed Genomics Research. Todd A. Gaines*¹, Eric L. Patterson², Sarah Morran¹, Dana R. MacGregor³, Roland S. Beffa⁴, Joseph S. McElroy⁵, Mithila Jugulam⁶, Patrick Tranel⁷; ¹Colorado State University, Fort Collins, CO, ²Michigan State University, East Lansing, MI, ³Rothamsted Research, Harpenden, United Kingdom, ⁴Bayer AG, CropScience Division, Frankfort / Main, Germany, ⁵Auburn University, Auburn, AL, ⁶Kansas State University, Manhattan, KS, ⁷University of Illinois, Urbana, IL (164)

09:15 AM The Reactivation and Expansion of FHY3/FAR1-Like Genes in *Bassia scoparia* (Kochia) and its Impact of Glyphosate Resistance. Jinyi Chen¹, Nathan D. Hall*¹, Christopher A. Saski², Todd A. Gaines³, Eric L. Patterson¹; ¹Michigan State University, East Lansing, MI, ²Clemson University, Clemson, SC, ³Colorado State University, Fort Collins, CO (165)

09:30 AM Putting it Together: Multiomic Insights into Epigenetic Driven Herbicide Stress Responses. Suzanne Laliberte*, Gourav Sharma, Jacob Barney,

Shawn Askew, James Westwood, David C. Haak;
Virginia Tech, Blacksburg, VA (166)

09:45 AM **How Sub-Lethal Doses of Herbicides and Abiotic Stresses Shape the *Sorghum bicolor* Methylome.** Gourav Sharma*, Jacob Barney, Shawn Askew, James Westwood, David C. Haak; Virginia Tech, Blacksburg, VA (167)

10:00 AM **Analysis of *Poa annua* (Annual Bluegrass) Genome Reveals Subgenome Bias for Herbicide-Resistance-Endowing Mutations.** Claudia A. Rutland*, Nathan D. Hall, Joseph S. McElroy; Auburn University, Auburn, AL (168)

10:15 AM **Family Dynamics of EPSPS Gene Copy Number and Gene Flow in Glyphosate-Resistant Kochia.** Philip Westra*, Andrew Effertz, Todd A. Gaines, Crystal D. Sparks; Colorado State University, Fort Collins, CO (169)

TUESDAY MORNING FEBRUARY 16

"Herbicide Efficacy in Horticultural Crops"

ORAL - 02. Horticultural Crops

LOCATION: Chisholm Trail
TIME: 09:00 AM - 10:30 AM Central
 Time
MODERATOR: Stephen L. Meyers
 Purdue University
 West Lafayette, IN

***SPEAKER**

09:00 AM **Holistic Carrot Production Systems for Season-Long Weed Management: A Model for Other Crops?** Jed Colquhoun*, Richard Rittmeyer, Daniel J. Heider; University of Wisconsin - Madison, Madison, WI (170)

09:15 AM **Which Way Should Pendimethalin be Applied in Onion: PRE, Delayed PRE, or Early POST?** Harlene M. Hatterman-Valenti*, Collin P. Auwarter; North Dakota State University, Fargo, ND (171)

- 09:30 AM Weed Control in Direct-Seeded Onion with Pyroxasulfone Herbicide.** Joel Felix*, Joey Ishida; Oregon State University, Ontario, OR (172)
- 09:45 AM Acorn Squash, Butternut Squash, and Bell Pepper Response to Fomesafen PRE.** Stephen L. Meyers*, Jeanine Arana, Brandi C. Woolam; Purdue University, West Lafayette, IN (173)
- 10:00 AM Evaluation of Herbicide Combinations for Improving Weed Control Efficacy in Florida Citrus.** Ramdas Kanissery*; University of Florida - IFAS, Immokalee, FL (174)
- 10:15 AM Peppermint (Mentha x Piperita) Response to Post-harvest Application of Tiafenacil.** Brandi C. Woolam*, Stephen L. Meyers, Jeanine Arana; Purdue University, West Lafayette, IN (175)

TUESDAY MORNING FEBRUARY 16

SYMPOSIUM - 1. Sustainable Weed Management – What is it and How are we Doing?

LOCATION: Oregon Trail
TIME: 09:00 AM - 12:30 PM Central Time
MODERATOR: Cara L. McCauley
Corteva Agriscience
Indianapolis, IN

***SPEAKER**

- 09:00 AM Introduction to Symposium**
- 09:10 AM Sustainability and Weed Control - is it a Compatible Tank Mix?** Travis Legleiter*; University of Kentucky, Princeton, KY (176)
- 09:30 AM Beyond Sustainable: A Food System to Restore the Planet.** Michael Doane*; The Nature Conservancy, Kansas City, MO (177)
- 09:50 AM What Sustainable Innovation Means to Me.** Reza Rasoulpour*; Corteva Agriscience, Indianapolis, IN (178)

- 10:10 AM Perspectives on Sustainability from the WSSA-Herbicide Resistance Education Committee.** Jill Schroeder*; New Mexico State University, Las Cruces, NM (179)
- 10:30 AM Break**
- 11:00 AM Integrated Weed Management, from Buzzword to Reality.** Catherine M. De Vulder*; Bayer AG, Monheim, Germany (180)
- 11:20 AM How Corteva is Shaping a Sustainable Future: Corteva Sustainability 2030 Goals.** Todd Pilcher*; Corteva Agriscience, Indianapolis, IN (181)
- 11:40 AM 5 Simple Ways to Communicate Our Role in Sustainability.** Karen Meinders*; Corteva Agriscience, Indianapolis, IN (182)
- 12:00 PM Panel Discussion**

TUESDAY MORNING FEBRUARY 16

"Herbicide Resistance in Turf, Ornamental, and Horticultural Crops"

ORAL - 03. Turf and Ornamentals

LOCATION: Sante Fe Trail
TIME: 11:00 AM - 12:30 PM Central Time
MODERATOR: Sandeep S. Rana
Bayer Crop Science
Galena, MD

***SPEAKER**

- 11:00 AM Understanding the Basis for Increased 2,4-D Tolerance in Red Clover (*Trifolium pratense*): Field Evaluations, Metabolism, and Gene Expression.** Lucas Araujo*¹, Michael Barrett¹, Randy Dinkins², Troy Bass², Gene Olson¹, Linda D. Williams¹; ¹University of Kentucky, Lexington, KY, ²U. S. Department of Agriculture, Lexington, KY (183)
- 11:15 AM ALS Inhibitor Resistance in *Cyperus difformis* Has Multiple Metabolic Pathways.** Alex R.

Ceseski*, Kassim Al-Khatib; University of California - Davis, Davis, CA (184)

11:30 AM Indaziflam Resistance in Annual Bluegrass (*Poa annua* L). Jinyi Chen*¹, Eric L. Patterson²;
¹Michigan State University, East Lansing, MI,
²Clemson University, Clemson, SC (185)

11:45 AM Identification of Goosegrass (*Eleusine indica*) Resistant to Dithiopyr and Dinitroaniline Herbicides. Eli C. Russell*; Auburn University, Auburn, AL (186)

12:00 PM Characterizing Herbicide Resistance in Native and Invasive Populations of Palmer Amaranth (*Amaranthus palmeri*). Romy C. Lum*¹, Anil Shrestha², Katherine Waselkov¹; ¹California State University, Fresno, Fresno, CA, ²California State University, Fresno, Fresno, CA (187)

12:15 PM Control of Purple Amaranth, an Emerging Weed in Michigan Vegetable Production. Sushila Chaudhari*, Erin C. Hill; Michigan State University, East Lansing, MI (188)

TUESDAY MORNING FEBRUARY 16

"Potential for Pesticide Movement and Impacts"

ORAL – 11. Soil and Environmental Aspects

LOCATION: Chisholm Trail
TIME: 11:00 AM - 12:30 PM Central Time
MODERATOR: Hayden Quick
Mississippi State University
Mississippi State, MS

***SPEAKER**

11:00 AM Pesticide Movement in the Atmosphere: It's Complicated. Mandy Bish*, Eric G. Oseland, Kevin W. Bradley; University of Missouri, Columbia, MO (189)

11:15 AM Evaluation of Dicamba Volatility Reducing Agents Under Different Environmental Conditions. Ryan D. Langemeier*¹, Steve Li¹, Rodrigo Werle², Greg Kruger³, Katilyn J. Price¹,

Sarah V. Striegel², Bruno C. Vieira⁴; ¹Auburn University, Auburn, AL, ²University of Wisconsin - Madison, Madison, WI, ³University of Nebraska - Lincoln, North Platte, NE, ⁴University of Nebraska - Lincoln, Lincoln, NE (190)

11:30 AM Characterize the Effect of Off-Target Synthetic Auxin Exposure to Tobacco. Patrick J. Maxwell*, Travis Gannon, Matthew C. Vann; North Carolina State University, Raleigh, NC (191)

11:45 AM Impact of Spray Target Surface and Glufosinate on Dicamba Volatility. Maria Leticia M. Zaccaro*, Jason K. Norsworthy, Leonard B. Piveta, Michael M. Houston; University of Arkansas, Fayetteville, AR (192)

12:00 PM Snap Bean Morphological and Yield Response to Sublethal Rates of Dicamba. Maggie H. Wasacz*¹, Baylee L. Carr², Mark VanGessel³, Lynn M. Sosnoskie⁴, Thierry E. Besancon²; ¹Rutgers University, Wall Township, NJ, ²Rutgers University, Chatsworth, NJ, ³University of Delaware, Georgetown, DE, ⁴Cornell University, Geneva, NY (193)

12:15 PM Response of Peach Trees to Low Rates of Dicamba Using Sequential Applications and Varying Droplet Sizes. Matthew B. Bertucci*, Jason K. Norsworthy, Michael M. Houston, Leonard B. Piveta; University of Arkansas, Fayetteville, AR (194)

TUESDAY AFTERNOON FEBRUARY 16

"Connecting with our Stakeholders"

ORAL - 06. Teaching and Extension

LOCATION: Oregon Trail
TIME: 03:00 PM - 04:30 PM Central
Time
MODERATOR: Parminder Chahal
FMC
Lincoln, NE

***SPEAKER**

- 03:00 PM** **Connecting Electronically with Farmers and Agronomy Professionals.** Jeanne S. Falk Jones*; Kansas State University, Colby, KS (195)
- 03:15 PM** **Farmer's Perception of Weedy Rice (*Oryza sativa* Var *spontanea*) from Southern Luzon, Philippines.** Analiza Henedina M. Ramirez*, Clare Hazel R. Tabernilla, Priscilla M. Barcial; UP Los Banos, College, Los Banos, Laguna, Philippines (196)
- 03:30 PM** **Bridging the Knowing-Doing Gap in the Science, Policy, and Management of Invasive Species.** Jacob Barney*, Vasiliy T. Lakoba, David C. Haak, Scott Salom, Todd Schenk, Bryan Brown; Virginia Tech, Blacksburg, VA (197)
- 03:45 PM** **The Drivers of Herbicide Use Among Arable Farmers in Central Canterbury, New Zealand.** Martin Espig*; AgResearch, Lincoln, New Zealand (198)
- 04:00 PM** **A Review of Selected Published Herbicide Resistance Validations.** Harry J. Streck*¹, Ian M. Heap², Mark Peterson³; ¹Bayer AG, Frankfurt / Main, Germany, ²WeedScience LLC, Corvallis, OR, ³Affiliation Not Specified, West Lafayette, IN (199)
- 04:15 PM** **Insights into Publishing in Weed Science.** William K. Vencill*; University of Georgia, Athens, GA (200)

TUESDAY AFTERNOON FEBRUARY 16

"Studying Herbicide-Resistant Waterhemp"

ORAL - 10. Physiology

LOCATION: Sante Fe Trail
TIME: 03:00 PM - 04:30 PM Central
Time
MODERATOR: Zahoor A. Ganie
FMC
Newark, DE

***SPEAKER**

- 03:00 PM** **The Genetic Architecture of HPPD-Inhibitor Resistance in *Amaranthus tuberculatus*.** Brent P. Murphy*, Patrick Tranel; University of Illinois, Urbana, IL (201)
- 03:15 PM** **Identifying and Quantifying Resistance to Soil-Applied Herbicides in Multiple-Resistant Waterhemp (*Amaranthus tuberculatus*) Seedlings Using a Soilless Greenhouse Assay.** Dylan R. Kerr*, Seth A. Strom, Jeanafior Crystal T. Concepcion, Dean E. Riechers; University of Illinois, Urbana, IL (202)
- 03:30 PM** **Resistance Mechanism to a Non-Selective HPPD-inhibiting Herbicide in Waterhemp Involves Multiple Detoxification Pathways.** Jeanafior Crystal T. Concepcion*¹, Shiv S. Kaundun², James A. Morris², Sarah-Jane Hutchings², Anatoli V. Lygin¹, Dean E. Riechers¹; ¹University of Illinois, Urbana, IL, ²Syngenta, Bracknell, United Kingdom (203)
- 03:45 PM** **Herbicide-Resistance in Waterhemp (*Amaranthus tuberculatus*) Identified in Israel is Due to a Long Distance Gene Transfer.** Inon Yadid, Aviv Zinger, Zvi Peleg, Baruch Rubin*; Hebrew University of Jerusalem, Rehovot, Israel (204)
- 04:00 PM** **Distinct Metabolic Mechanisms for Tolerance and Resistance to S-Metolachlor in Corn and Two Illinois Waterhemp (*Amaranthus tuberculatus*) Populations.** Seth Strom*¹, Aaron Hager¹, Adam Davis¹, Shiv S. Kaundun², Dean E.

Riechers¹; ¹University of Illinois, Urbana, IL,
²Syngenta, Bracknell, United Kingdom (205)

04:15 PM Suppressing Herbicide-Resistant *Amaranthus* Populations by Inhibiting Reproduction. Efrat Lidor Nili*¹, Ido Shwartz¹, Herve Huet¹, Miriam Aminia¹, A Stanley Culpepper², Micheal D. Owen³, Orly Noivirt-Brik¹; ¹WeedOUT, Ness Ziona, Israel, ²University of Georgia, Tifton, GA, ³Affiliation Not Specified, Ames, IA (206)

TUESDAY AFTERNOON FEBRUARY 16

"Pesticide Spray Drift and Non-Target Impacts"

ORAL - 11. Soil and Environmental Aspects

LOCATION: Chisholm Trail
TIME: 03:00 PM - 04:00 PM Central Time
MODERATOR: Hayden Quick
Mississippi State University
Mississippi State, MS

***SPEAKER**

03:00 PM Spray Drift of Florpyrauxifen-Benzyl from Ground Spray Equipment and Agricultural Aircraft. Thomas R. Butts*¹, Tom Barber¹, Jason K. Norsworthy², W Jeremy Ross¹, Gus M. Lorenz³, John J. Adamczyk⁴; ¹University of Arkansas System Division of Agriculture, Lonoke, AR, ²University of Arkansas, Fayetteville, AR, ³University of Arkansas, Lonoke, AR, ⁴USDA-ARS, West Poplarville, MS (207)

03:15 PM 2,4-D Drift Delays Hazelnut Abscission. Marcelo L. Moretti*, Larissa Larocca De Souza; Oregon State University, Corvallis, OR (208)

03:30 PM Effect of Simulated Herbicide Drift on Agronomic Crops. Ronald R. Rogers*, Travis Gannon, Patrick J. Maxwell, Daniel Freund, Shwetha S. Ramanathan, Mathieu LeCompte; North Carolina State University, Raleigh, NC (209)

03:45 PM Assessment of Triclopyr Non-Target Injury to Native Shrubs Following Basal Bark Treatment.

Stephen F. Enloe*, Conrad Oberweger; University
of Florida, Gainesville, FL (210)

TUESDAY AFTERNOON FEBRUARY 16

"Science Policy Fellow Report"

LOCATION: Chisholm Trail
TIME: 04:00 PM - 04:30 PM Central
Time
MODERATOR: Hayden Quick
Mississippi State University
Mississippi State, MS

***SPEAKER**

**04:00 PM The Intersection of Weed Science and Politics:
What We Learned During Our Virtual Science
Policy Fellowships.** Vasily T. Lakoba*¹, Lavesta
C. Hand², Lee Van Wychen³; ¹Virginia Tech,
Blacksburg, VA, ²University of Georgia, Tifton,
GA, ³Weed Science Society of America,
Alexandria, VA (211)

WEDNESDAY MORNING FEBRUARY 17

"Using Cover Crops for Weed Management"

ORAL - 12. Integrated Weed Management

LOCATION: Sante Fe Trail
TIME: 09:00 AM - 10:30 AM Central Time
MODERATOR: Shilpa Singh
Texas A&M University
College Station, TX

***SPEAKER**

- 09:00 AM Weed Control and Herbicide Tolerance of Establishing White Clover (*Trifolium repens*) as a Living Mulch.** Nicholas T. Basinger*, Nicholas S. Hill; University of Georgia, Athens, GA (212)
- 09:15 AM Multi-Species and Intensified Cover Crops for California Nut Tree Orchards.** Steven C. Haring*¹, Brad Hanson²; ¹University of California - Davis, Davis, CA, ²University of California - Davis, Winters, CA (213)
- 09:30 AM Using Weed-Suppressive Corn and Cover Crops for Weed Management and Increased Profitability of Corn.** Rachel Nobles*¹, Gracen A. Fuller², W. Brien Henry¹, Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Starkville, MS (214)
- 09:45 AM Evaluating Cover Crop Termination Timing on Cover Crop Biomass, Weed Suppression, and Ultimate Yield Goal Outcome.** Cynthia Sias*, Michael L. Flessner, Kevin W. Bamber; Virginia Tech, Blacksburg, VA (215)
- 10:00 AM Evaluation of Cover Crop, Herbicide, and Tillage Combinations for Integrated Weed Management.** Kurt M. Vollmer*¹, Mark VanGessel², Barbara A. Scott², Quintin R. Johnson²; ¹University of Maryland, Queenstown, MD, ²University of Delaware, Georgetown, DE (216)
- 10:15 AM Using Soil Steaming and Cover-Crops for Weed Management and Increased Profitability of**

Organic Tomato Production. Sydney Stockwell*¹, Shandrea D. Stallworth¹, Isabel S. Werle¹, Clay Cheroni², Shaun R. Broderick², Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Mississippi State, MS, ²Mississippi State University, Crystal Springs, MS (217)

WEDNESDAY MORNING FEBRUARY 17

"Management Strategies for Invasive Plants"

ORAL - 04. Pasture, Range, Forest, & Rights of ways, Wildland, and Aquatic Invasive Plants

LOCATION: Chisholm Trail
TIME: 09:00 AM - 10:30 AM Central Time
MODERATOR: David P. Russell
Auburn University
Belle Mina, AL

***SPEAKER**

- 09:00 AM INHABIT: a Web Application to Deliver Habitat Suitability Models and Bridge the Scientist-Practitioner Divide.** Peder S. Engelstad*¹, Catherine Jarnevich², Terri Hogan³, Helen Sofaer⁴, Ian Pearse², Jennifer Sieracki³, Nicholas E. Young¹, Janet Prevey², Jillian LaRoe², Pairsa Belmaric²; ¹Colorado State University, Fort Collins, CO, ²U.S. Geological Survey, Fort Collins Science Center, Fort Collins, CO, ³National Park Service, Fort Collins, CO, ⁴U.S. Geological Survey, Pacific Island Ecosystems Science Center, Hawaii National Park, HI (218)
- 09:15 AM Niche Dynamics of a Global Invader.** Vasiliy T. Lakoba*¹, Daniel Z. Atwater², Jacob Barney¹; ¹Virginia Tech, Blacksburg, VA, ²Earlham College, Richmond, IN (219)
- 09:30 AM Evaluating the Impact of Timed Hexazinone Applications on Brunswickgrass.** Clay Cooper*¹, Brent A. Sellers²; ¹University of Florida, Lecanto, FL, ²University of Florida, Ona, FL (220)
- 09:45 AM Field-release of *Pseudophilothrips ichini* on Brazilian Peppertree (*Schinus terebinthifolia*) Infestations and Monitoring its Longterm**

Impact Has Begun in Florida. Min B. Rayamajhi*¹, Dale A. Halbritter², Jorge G. Leidi², Jenna Owens²; ¹USDA-ARS - IPRL, Cooper City, FL, ²USDA-ARS, Fort Lauderdale, FL (221)

10:00 AM Current Status of Mycoherbicide Use in the Bio-control of Noxious Weeds. Ajay Kumar Singh*; Principal Scientist & Head R&D, Hyderabad, India (222)

WEDNESDAY MORNING FEBRUARY 17

SYMPOSIUM - 2. A History, Overview, and Plan of Action on PPO Inhibiting Herbicides

LOCATION: Oregon Trail
TIME: 09:00 AM - 12:30 PM Central Time
MODERATOR: Franck E. Dayan
Colorado State University
Fort Collins, CO
CO-MODERATOR: John Pawlak
Valent USA Corporation
Lansing, MI

***SPEAKER**

09:00 AM Introduction to Symposium

09:10 AM Discovery and Mode of Action of Protoporphyrinogen Oxidase-Inhibiting Herbicides. Stephen O. Duke*¹, Franck E. Dayan², Abigail Barker²; ¹University of Mississippi, Oxford, MS, ²Colorado State University, Fort Collins, CO (223)

09:30 AM History and Distribution of PPO-Resistant Weeds. Roland S. Beffa*; Bayer AG, CropScience Division, Frankfort / Main, Germany (224)

09:50 AM Mechanisms of Resistance to PPO Inhibitors. Patrick Tranel*; University of Illinois, Urbana, IL (225)

- 10:10 AM Greenhouse and Lab Methodologies for Detection of Resistance to PPO-Inhibiting Herbicides.** R Joseph Wuerffel*; Syngenta, Gerald, MO (226)
- 10:30 AM Break**
- 11:00 AM How Does Resistance to PPO-inhibitors Compare with Other MOA Resistance?** Bryan G. Young*; Purdue University, West Lafayette, IN (227)
- 11:20 AM PPO Biochemistry and Protein Structure as Tools for Optimizing New Herbicide Candidates and Resistance Research.** Aimone Porri*¹, Rex A. Liebl², Raphael Aponte¹, Douglas A. Findley³, Michael Betz¹, Jens Lerchl¹; ¹BASF Corp, Limburgerhof, Germany, ²BASF Corp, Raleigh, NC, ³BASF Corp, Research Triangle Park, NC (228)
- 11:40 AM Herbicide Resistant Management Options Versus Mandatory Practices.** A Stanley Culpepper*¹, Kevin W. Bradley², Bryan G. Young³; ¹University of Georgia, Tifton, GA, ²University of Missouri, Columbia, MO, ³Purdue University, Brookston, IN (229)

WEDNESDAY MORNING FEBRUARY 17

SYMPOSIUM - 3. Optimizing Invasive Aquatic Plant Management, Monitoring, and Outreach Efforts to Meet Regional Needs

LOCATION: Chisholm Trail
TIME: 11:00 AM - 04:30 AM Central Time
MODERATOR: Robert J. Richardson
North Carolina State University
Raleigh, NC

***SPEAKER**

- 11:00 AM Introduction to Symposium**
- 11:10 AM Implementing Invasive Aquatic Plant Management Programs Within the California Regulatory System. A Case Study of the California Delta Program.** John D. Madsen*; USDA-ARS, Davis, CA (230)
- 11:30 AM Lake Istokpoga: Addressing Complex Stakeholder Relations.** Jason Ferrell*; University of Florida, Gainesville, FL (231)
- 11:50 AM Increased Invasiveness of Hybrid Species. A Case Study of Hybrid Watermilfoil.** Ryan Thum*; Montana State University, Bozeman, MT (232)
- 12:10 PM Biology and Management of Flowering Rush in the Northern US.** Ryan M. Wersal*; Minnesota State University, Mankato, Mankato, MN (233)
- 12:30 PM Break**
- 03:00 PM Monoecious Hydrilla: Researching Plant Biology, Sensing Techniques, and Herbicide Optimization for Management in Disparate Systems.** Robert J. Richardson*; North Carolina State University, Raleigh, NC (234)
- 03:20 PM Water Soldier in Canada: Development of Research and Management Programs to Address This Invader.** Holly Simpson*; Ontario

Ministry of Natural Resources and Forestry,
Peterborough, ON, Canada (235)

- 03:40 PM Aquatic Plant Management in Middle Earth. Development of Management Programs for Unique Environments in New Zealand.** Deborah Hofstra*; National Institute of Water & Atmospheric Research Ltd, Hamilton, New Zealand (236)
- 04:00 PM Aquatic Plant Management in the Victoria, Australia Irrigation System.** Tony Dugdale*; Agriculture Victoria Research, Bundoora, Australia (237)
- 04:20 PM Panel Discussion**

WEDNESDAY AFTERNOON FEBRUARY 17

"Latest Technologies for Weed Management"

**ORAL - 07. Formulation, Adjuvant, &
Application Technology**

LOCATION: Oregon Trail
TIME: 03:00 PM - 04:30 PM Central
Time
MODERATOR: Vipin Kumar
Kansas State University
Hays, KS

***SPEAKER**

- 03:00 PM Influence of Sodium Cation and Various AMS Adjuvants on the Performance of Various Glyphosate Formulations.** Gregory K. Dahl*¹, David A. Van Dam², Martin M. Carr², Amanda Flipp³, Laura J. Hennemann³, Joshua J. Skelton⁴; ¹Winfield United, Eagan, MN, ²Winfield United Canada, Saskatoon, SK, Canada, ³Winfield United, River Falls, WI, ⁴WinField United, Saint Paul, MN (238)
- 03:15 PM Smooth Scouringrush (*Equisetum laevigatum*) Control with Glyphosate is Affected by Surfactant, Rate, and Timing.** Mark E. Thorne*, Drew J. Lyon; Washington State University, Pullman, WA (239)
- 03:30 PM Precision See & Spray™ - Enabling New Opportunities for Weed Management.** William L. Patzoldt*; Blue River Technology, Sunnyvale, CA (240)
- 03:45 PM Efficacy of a Precision Herbicide Applicator for Row Middles in Plasticulture Production Systems.** Ravneet K. Sandhu*¹, Nathan Boyd², Arnold W. Schumann³, Shaun M. Sharpe⁴; ¹University of Florida, Wimauma, FL, ²University of Florida, Balm, FL, ³University of Florida, Lake Alfred, FL, ⁴Agriculture and Agri-Food Canada, Saskatoon, SK, Canada (241)
- 04:00 PM Deep Learning-Based Weed Recognition in Australian Ginger (*Zingiber officinale*) Production.** Caleb Squires*¹, Guy Coleman², Michael J. Walsh³; ¹University of Sydney,

Brownlow Hill, Australia, ²University of Sydney, Camden, Australia, ³University of Sydney, Narrabri, Australia (242)

04:15 PM Introduction of the CPDA Application Enhancement Program. Joe V. Gednalske*¹, Susan Sun², Greg Kruger³, Bradley K. Fritz⁴, Jim Reiss⁵; ¹CPDA, River Falls, WI, ²Croda Inc., New Castle, DE, ³University of Nebraska - Lincoln, North Platte, NE, ⁴USDA-ARS, College Station, TX, ⁵Precision Lab, Waukegan, IL (243)

WEDNESDAY AFTERNOON FEBRUARY 17

"Physical & Mechanical Weed Control Tools"

ORAL - 12. Integrated Weed Management

LOCATION: Sante Fe Trail
TIME: 03:00 PM - 04:30 PM Central Time
MODERATOR: Shilpa Singh
Texas A&M University
College Station, TX

***SPEAKER**

03:00 PM Initial Impressions of the Redekop Seed Control Unit for Harvest Weed Seed Control. Michael L. Flessner*¹, Steven Mirsky²; ¹Virginia Tech, Blacksburg, VA, ²USDA-ARS, Beltsville, MD (244)

03:15 PM Phenological Shifts in Flowering Due to Selection Pressures of Harvest Weed Seed Control. Lauren M. Lazaro*¹, Gabrielle LaBiche¹, Daniel O. Stephenson, IV², Josh T. Copes³, Donnie Miller⁴; ¹Louisiana State University AgCenter, Baton Rouge, LA, ²LSU Ag Center, Alexandria, LA, ³LSU AgCenter, St. Joseph, LA, ⁴Louisiana State University AgCenter, St. Joseph, LA (245)

03:30 PM Integration of Chaff Lining into Weed Management Programs in Soybean. Katie M. Mestayer*¹, Gabrielle LaBiche¹, Karla L. Gage², Steven Mirsky³, Claudio G. Rubione⁴, Lovreet S. Shergill⁵, Mark VanGessel⁴, Lauren M. Lazaro¹; ¹Louisiana State University AgCenter, Baton Rouge, LA, ²Southern Illinois University

Carbondale, Carbondale, IL, ³USDA-ARS, Beltsville, MD, ⁴University of Delaware, Georgetown, DE, ⁵USDA-ARS & University of Delaware, Beltsville, MD (246)

- 03:45 PM Soil Surface Effects on Finger and Flextime Cultivation Efficacy in Vegetables.** Daniel M. Priddy*¹, Daniel C. Brainard¹, Zachary D. Hayden², Monique Hemker¹; ¹Michigan State University, East Lansing, MI, ²Michigan State University, East Lansing, MI (247)
- 04:00 PM Electrical Discharge Systems for Weed Control in Agronomic and Horticultural Crops.** Lynn M. Sosnoskie*¹, Bryan Brown², Elizabeth Maloney¹, Julie Kikkert³; ¹Cornell University, Geneva, NY, ²New York State Integrated Pest Management Program, Geneva, NY, ³Cornell Cooperative Extension, Canandaigua, NY (248)
- 04:15 PM Control of Annual Ryegrass (*Lolium rigidum*) and Turnipweed (*Rapistrum rugosum*) with a Diode Laser.** Guy Coleman*¹, Michael J. Walsh²; ¹University of Sydney, Camden, Australia, ²University of Sydney, Narrabri, Australia (249)

THURSDAY MORNING FEBRUARY 18

"Herbicide Efficacy in Agronomic Crops A"

ORAL - 01. Agronomic Crops

LOCATION: Sante Fe Trail
TIME: 09:00 AM - 10:30 AM Central Time
MODERATOR: Alejandro Perez-Jones
Bayer Crop Science
Chesterfield, MO

***SPEAKER**

09:00 AM Acuron XR Herbicide - Residual Weed Control, Crop Safety and Yield in Corn. Scott E. Cully*¹, Mark J. Kitt², Tom H. Beckett³; ¹Syngenta Crop Protection, Marion, IL, ²Syngenta Crop Protection, Greensboro, NC, ³Syngenta, Greensboro, NC **(250)**

09:15 AM Do Tank Mix Partners with Isoxaflutole Increase Soil Residual Activity Across the Cotton Belt? Delaney C. Foster*¹, Peter A. Dotray², Todd A. Baughman³, Seth A. Byrd⁴, A Stanley Culpepper⁵, Darrin M. Dodds⁶, Steven D. Hall⁷, Jacob P. McNeal⁶, Bradley J. Norris⁶, Reagan L. Noland⁸, Scott A. Nolte⁹, Mason T. House¹⁰, Jason K. Norsworthy¹¹, Rodger B. Farr¹¹, Larry Steckel¹², Corey Thompson¹³; ¹Texas Tech University, Lubbock, TX, ²Texas Tech University and Texas A&M AgriLife Research and Extension Service, Lubbock, TX, ³Oklahoma State University, Ardmore, OK, ⁴Oklahoma State University, Stillwater, OK, ⁵University of Georgia, Tifton, GA, ⁶Mississippi State University, Mississippi State, MS, ⁷Mississippi State University, Starkville, MS, ⁸Texas A&M AgriLife Extension, San Angelo, TX, ⁹Texas A&M AgriLife Extension, College Station, TX, ¹⁰Texas A&M University, College Station, TX, ¹¹University of Arkansas, Fayetteville, AR, ¹²University of Tennessee, Jackson, TN, ¹³BASF, Abernathy, TX **(251)**

09:30 AM Acuron GT Launch: T-minus Spring 2021. Ryan D. Lins*¹, Tom H. Beckett², Mark J. Kitt³; ¹Syngenta Crop Protection, Rochester, MN, ²Syngenta, Greensboro, NC, ³Syngenta Crop Protection, Greensboro, NC **(252)**

09:45 AM Influence of Various Broadleaf Herbicides on the Control of Corn and Other Grasses with Clethodim Herbicides. Gregory K. Dahl¹, Joshua J. Skelton*², Laura J. Hennemann³, Ryan J. Edwards³, Amanda Flipp³; ¹Winfield United, Eagan, MN, ²WinField United, Saint Paul, MN, ³Winfield United, River Falls, WI (253)

10:00 AM Do New Herbicide Technologies for Grain Sorghum Differ in Effectiveness on Arkansas Johnsongrass Accessions? Jacob A. Fleming*, Jason K. Norsworthy; University of Arkansas, Fayetteville, AR (254)

10:15 AM Evaluation of Herbicide-Resistant Grain Sorghum Technologies for Grass Weed Control in High Plains. Vipin Kumar*¹, Isaac N. Effertz², Taylor Lambert¹, Rui Liu¹, Brent Bean³; ¹Kansas State University, Hays, KS, ²Kansas State University, Manhattan, KS, ³Sorghum Checkoff Program, Lubbock, TX (255)

10:30 AM Break

THURSDAY MORNING FEBRUARY 18

"Herbicide Efficacy in Agronomic Crops B"

ORAL - 01. Agronomic Crops

LOCATION: Sante Fe Trail
TIME: 11:00 AM - 12:30 PM Central Time
MODERATOR: Alejandro Perez-Jones
Bayer Crop Science
Chesterfield, MO

***SPEAKER**

11:00 AM Impact CORE: A New Herbicide Premixture for Postemergence Use in Corn. Richard M. Porter¹, Joseph A. Bruce*²; ¹AMVAC Chemical Corporation, Ankeny, IA, ²AMVAC Chemical Corporation, Glen Carbon, IL (256)

11:15 AM Do Planting Date and Environmental Conditions Impact Rice Tolerance to Florpyrauxifen-benzyl? James W. Beesinger*,

Jason K. Norsworthy, Leonard B. Piveta, Mason C. Castner; University of Arkansas, Fayetteville, AR (257)

- 11:30 AM Impregnating Florpyrauxifen-benzyl on Urea for Weed Control in Rice.** Bodie Cotter*, Jason K. Norsworthy, James W. Beesinger, Tristen H. Avent, Leonard B. Piveta; University of Arkansas, Fayetteville, AR (258)
- 11:45 AM The Effects of Rate and Timing of Pre-harvest Glyphosate on Malting Barley (*Hordeum vulgare*).** Breanne D. Tidemann*¹, John T. O'Donovan¹, Hiroshi Kubota¹, K. Neil Harker¹, T. Kelly Turkington¹, William May², Eric N. Johnson³, Brian Beres⁴, Marta Izydorczyk⁵, Lori Oatway⁶, Patricia Juskiw⁶, Henry de Gooijer², Alick Mulenga⁷; ¹Agriculture and Agri-Food Canada, Lacombe, AB, Canada, ²Agriculture and Agri-Food Canada, Indian Head, SK, Canada, ³University of Saskatchewan, Saskatoon, SK, Canada, ⁴Agriculture and Agri-Food Canada, Lethbridge, AB, Canada, ⁵Canadian Grain Commission, Winnipeg, MB, Canada, ⁶Alberta Agriculture and Forestry, Lacombe, AB, Canada, ⁷Agriculture and Agri-Food Canada, Scott, SK, Canada (259)
- 12:00 PM Topramezone + Glufosinate: A Unique Premixture.** Richard K. Zollinger*¹, Peter Porpiglia²; ¹AMVAC Chemical Corporation, Spokane Valley, WA, ²AMVAC Chemical Corporation, Newport Beach, CA (260)
- 12:15 PM Diuron Use in Oklahoma Wheat Double-crop Soybean Systems.** Misha R. Manuchehri*¹, Todd A. Baughman², Robbie W. Peterson², Zachary R. Treadway², Hannah C. Lindell¹, Lane S. Newlin¹, Caitlyn C. Carnahan¹, Justin T. Childers³; ¹Oklahoma State University, Stillwater, OK, ²Oklahoma State University, Ardmore, OK, ³Oklahoma State University, Marlow, OK (261)

THURSDAY MORNING FEBRUARY 18

"Phytochemical Impacts on Weeds"

ORAL - 08. Weed Biology and Ecology

LOCATION: Chisholm Trail
TIME: 09:00 AM - 10:30 AM Central
Time
MODERATOR: Caio A. Brunharo
Oregon State University
Corvallis, OR

***SPEAKER**

- 09:00 AM Phytotoxic Activity of Bioactive Compounds from Four Plants Against Selected Weeds.** Tauseef Anwar*¹, Huma Qureshi²; ¹Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan, ²Institute of Biological Sciences, Gomal University, Dera Ismail Khan, Pakistan (262)
- 09:15 AM Characterization of Sicklepod Extract as a Deer Repellent and Insecticide for Soybean Looper (Lepidoptera: Noctuidae).** Ziming Yue*¹, Charles L. Cantrell², Natraj Krishnan¹, David J. Lang¹, Mark W. Shankle³, Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Mississippi State, MS, ²USDA ARS Natural Products Utilization Research Unit, Oxford, MS, ³Mississippi State University, Verona, MS (263)
- 09:30 AM Suppression of Germination and Growth by Industrial Hemp (*Cannabis sativa* L.) Extracts and Residue.** Avery Shikanai*; Southern Illinois University Carbondale, Carbondale, IL (264)
- 09:45 AM The Effect of Variability in Climatic Conditions on the Control Efficacy of Tumble Pigweed (*Amaranthus albus*) in Processing Tomatoes.** Roni Gafni*¹, Lior Blank², Hanan Eizenberg³; ¹Hebrew University of Jerusalem, Rehovot, Israel, ²Agricultural Research Organization, Volcani Center, Rishon Lezion, Israel, ³Newe Ya'ar Research Center, Ramat Yishay, Israel (265)
- 10:00 AM Assessing Impacts of Drought on Weed Communities in the Great Lakes Region.** Allyson M. Rumler, Erin E. Burns*; Michigan State University, East Lansing, MI (266)

10:15 AM Influence of Cover Crops on Soil Microbial Activity and Degradation of Atrazine and S-Metolachlor. William G. Johnson¹, Bryan G. Young², Shalamar Armstrong¹, Eileen J. Kladvik¹, Joshua R. Widhalm¹, Manoj S. Ghaste¹, Lucas Oliveira Ribeiro Maia*¹; ¹Purdue University, West Lafayette, IN, ²Purdue University, Brookston, IN (267)

10:30 AM Break

THURSDAY MORNING FEBRUARY 18

"Dynamics of Weed Seed Germination and Emergence"

ORAL - 08. Weed Biology and Ecology

LOCATION: Chisholm Trail
TIME: 11:00 AM - 12:30 PM Central Time
MODERATOR: Caio A. Brunharo
Oregon State University
Corvallis, OR

***SPEAKER**

11:00 AM Impact of Bio-solarization on Soil Conditions and Weed Seedbank in Tomato Field. O. Adewale Osipitan*¹, Jesus D. Fernandez-Bayo¹, Brad Hanson², Mohsen B. Mesgaran¹; ¹University of California - Davis, Davis, CA, ²University of California - Davis, Winters, CA (268)

11:15 AM Cranberry Seed Germination as Affected by Environmental Conditions. Thierry E. Besancon*; Rutgers University, Chatsworth, NJ (269)

11:30 AM Thermal Time to Emergence of California Weedy Rice (*Oryza sativa* f. *spontanea*) Under Flooded Field Conditions: A 2-year Study. Liberty B. Galvin*¹, Whitney Brim-DeForest², Kassim Al-Khatib¹; ¹University of California - Davis, Davis, CA, ²University of California Division of Agriculture and Natural Resources, Yuba City, CA (270)

- 11:45 AM Emergence Pattern of Economically Important Weeds in the North-Central, Mid-Atlantic, and South-Central Regions of the United States.** Lovreet S. Shergill*¹, Adam Davis², Jason A. Bond³, Jason K. Norsworthy⁴, John Lindquist⁵, Kevin W. Bradley⁶, Lauren M. Lazaro⁷, Mandy Bish⁶, Mark VanGessel⁸, Michael L. Flessner⁹, Muthukumar V. Bagavathiannan¹⁰, Nicholas Jordan¹¹, Steven Mirsky¹²; ¹Montana State University, Huntley, MT, ²University of Illinois, Urbana, IL, ³Mississippi State University, Stoneville, MS, ⁴University of Arkansas, Fayetteville, AR, ⁵University of Nebraska - Lincoln, Lincoln, NE, ⁶University of Missouri, Columbia, MO, ⁷Louisiana State University AgCenter, Baton Rouge, LA, ⁸University of Delaware, Georgetown, DE, ⁹Virginia Tech, Blacksburg, VA, ¹⁰Texas A&M University, College Station, TX, ¹¹University of Minnesota, St. Paul, MN, ¹²USDA-ARS, Beltsville, MD (271)
- 12:00 PM Light and Red/Far-Red Ratio Responses of Bohemian Knotweed (*Reynoutria × bohemica*) Seed Germination and Seedling Growth.** Virginia Oeggerli*¹, David R. Clements¹, Vanessa L. Jones¹, Delia D. Anderson¹, Jichul Bae²; ¹Trinity Western University, Langley, BC, Canada, ²Agriculture and Agri-Food Canada, Agassiz, BC, Canada (272)
- 12:15 PM Weed Community Response to Four Years of Repeated Application of Calcium or Magnesium Sulfate to Soil.** Andrea Leiva Soto*¹, Catherine P. Herms¹, Allison M. Robinson¹, Steve Culman¹, Douglas Doohan²; ¹The Ohio State University, Wooster, OH, ²The Ohio State University, Wooser, OH (273)

THURSDAY MORNING FEBRUARY 18

**SYMPOSIUM - 4. Beyond the Boom – Benefits of
Weed and Brush Management in Grasslands**

LOCATION: Oregon Trail
TIME: 09:00 AM - 12:30 PM Central
Time
MODERATOR: Byron B. Sleugh
Corteva Agriscience
Carmel, IN

***SPEAKER**

09:00 AM Introduction to Symposium

09:05 AM Beyond the Boom – Benefits of Managing Weeds and Brush in Grasslands. Morgan Treadwell*; Texas A&M AgriLife Extension, San Angelo, TX (274)

09:30 AM Realizing the Value of Managing Weeds and Brush in Conservation Grassland Sites. Mark J. Renz*; University of Wisconsin - Madison, Madison, WI (275)

09:50 AM Toxic Plants in Grasslands and the Impact on Livestock. Catherine Barr*; Texas A&M Veterinary Medical Diagnostic Lab, College Station, TX (276)

10:10 AM Panel Discussion

10:30 AM Break

11:00 AM Livestock Performance Benefits as A Result of Managing Weeds and Brush in Grassland. Jose Debeux*; University of Florida, Marianna, FL (277)

11:15 AM Forage Response and Economic Benefits of Weed and Brush Management in Grasslands. Scott Flynn*¹, Byron B. Sleugh²; ¹Corteva Agriscience, Lees Summit, MO, ²Corteva Agriscience, Carmel, IN (278)

- 11:30 AM New Technology to Enhance Management of Weeds and Brush in Grasslands.** Charles Hart*; Corteva Agriscience, Abilene, TX (279)
- 11:45 AM If We Build It, Will They Come? Challenges, Opportunities, and Needs in Weed and Brush Management Research in Grasslands.** Daniel Tekiela¹, Byron B. Sleugh^{*2}; ¹University of Wyoming, Laramie, WY, ²Corteva Agriscience, Carmel, IN (280)
- 12:00 PM Panel Discussion**

THURSDAY AFTERNOON FEBRUARY 18

WSSA Business Meeting and
Student Contest Awards

All WSSA members and conference attendees are invited to participate in the WSSA Business Meeting. You will hear updates from your WSSA leadership team.

Agenda for meeting will be available online.

LOCATION: Oregon Trail
TIME: 03:00 PM - 04:30 PM Central Time
MODERATOR: William Curran
Penn State University
University Park, PA

Student Contest winners will be announced following the business meeting.

CO-MODERATOR: Darrin M. Dodds
Mississippi State University
Mississippi State, MS
CO-MODERATOR: Marty Schraer
Syngenta
Meridian, ID

FRIDAY MORNING FEBRUARY 19

"New Insights into Weed Competition"

ORAL - 08. Weed Biology and Ecology

LOCATION: Chisholm Trail
TIME: 09:00 AM - 10:30 AM Central Time
MODERATOR: Caio A. Brunharo
Oregon State University
Corvallis, OR

***SPEAKER**

- 09:00 AM The Critical Period for Photosynthesis and the Legacy of Competition.** Andrew McKenzie-Gopsill*¹, Sasan Amirsadeghi², Sherry Fillmore³, Clarence Swanton²; ¹Agriculture and Agri-Food Canada, Charlottetown, PE, Canada, ²University of Guelph, Guelph, ON, Canada, ³Agriculture and Agri-Food Canada, Kentville, NS, Canada (281)
- 09:15 AM The Importance of Singlet Oxygen in Resource-independent Competition.** Nicole Berardi*, Clarence Swanton; University of Guelph, Guelph, ON, Canada (282)
- 09:30 AM Using Plant Growth Regulators to Enhance Carrot Competitiveness with Weeds.** Jordan Schuler*, Jed Colquhoun, Richard Rittmeyer, Daniel J. Heider; University of Wisconsin - Madison, Madison, WI (283)
- 09:45 AM Faba Bean Crop Competition Effects on Common Sowthistle (*Sonchus oleraceus*) Growth and Reproductive Development.** Asad Shabbir*¹, Adam McKiernan², Michael Widderick², Michael J. Walsh³; ¹The University of Sydney, Camden, Australia, ²Department of Agriculture and Fisheries, Toowoomba, Australia, ³University of Sydney, Narrabri, Australia (284)
- 10:00 AM Linkages Among Weed Control, Weather Variability, and Soybean Management on Yield Loss Due to Weeds.** Christopher A. Landau*¹, Aaron Hager¹, Martin Williams²; ¹University of Illinois, Urbana, IL, ²USDA-ARS, Urbana, IL (285)

10:15 AM Multiple Years of Competition Between *Ailanthus altissima* (Tree of Heaven) and *Rhus typhina* (Staghorn Sumac: Removal Success and Impacts of an Herbivore. Cynthia Huebner*; USDA Forest Service - Northern Research Station, Morgantown, WV (286)

FRIDAY MORNING FEBRUARY 19

"Herbicide Efficacy in Broadleaf Crops"

ORAL - 01. Agronomic Crops

LOCATION: Sante Fe Trail
TIME: 09:00 AM - 10:30 AM Central Time
MODERATOR: Alejandro Perez-Jones
Bayer Crop Science
Chesterfield, MO

***SPEAKER**

09:00 AM A23372A - A Broad-Spectrum Solution for Superior Weed Management in Soybean. Brett R. Miller*¹, Peter Eure², Tom H. Beckett³, Ryan Jackson⁴; ¹Syngenta Crop Protection, Fargo, ND, ²Syngenta Crop Protection, Greensboro, NC, ³Syngenta, Greensboro, NC, ⁴Syngenta Crop Protection, Carrollton, MS (287)

09:15 AM Biologically Effective Dose of Bromoxynil, Applied Alone and Tankmixed with Metribuzin, for the Control of Glyphosate-Resistant Canada Fleabane (*Conyza canadensis*) Applied Preplant in Soybean. Peter Sikkema, David Hooker, David Westerveld*, Darren Robinson; University of Guelph, Ridgetown, ON, Canada (288)

09:30 AM Response of Putative Glyphosate-resistant Horseweed Accessions from Wisconsin to Spring Burndown Herbicides. Alexandre T. Rosa*, Nicholas J. Arneson, Nikola Arsenijevic, Rodrigo Werle; University of Wisconsin - Madison, Madison, WI (289)

09:45 AM Pollen-Mediated Gene Flow from Dicamba/Glyphosate-Resistant- to Conventional Soybean (*Glycine max*). Zahoor A. Ganie*¹,

Parminder Chahal², Amit J. Jhala²; ¹FMC, Newark, DE, ²University of Nebraska - Lincoln, Lincoln, NE (290)

10:00 AM Are Dicamba and Glufosinate Still Viable Options for Palmer Amaranth in U.S. Soybean Production Systems? Jason K. Norsworthy*¹, Tom Barber², Grant L. Priess¹, Michael M. Houston¹, Leonard B. Piveta¹, Kevin W. Bradley³, Karla L. Gage⁴, Aaron Hager⁵, Greg Kruger⁶, Larry Steckel⁷, Daniel B. Reynolds⁸, Bryan G. Young⁹; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas System Division of Agriculture, Lonoke, AR, ³University of Missouri, Columbia, MO, ⁴Southern Illinois University Carbondale, Carbondale, IL, ⁵University of Illinois, Urbana, IL, ⁶University of Nebraska - Lincoln, North Platte, NE, ⁷University of Tennessee, Jackson, TN, ⁸Mississippi State University, Mississippi State, MS, ⁹Purdue University, Brookston, IN (291)

10:15 AM Reduction of Palmer Amaranth (*Amaranthus palmeri*) Growth Surviving Glufosinate Treatments in Cotton (*Gossypium hirsutum*). Eric A. Jones*, Marco Antonio Fajardo Menjivar, Diego J. Contreras, Diego E. Salazar, Charlie W. Cahoon, Ramon G. Leon, Wesley Everman; North Carolina State University, Raleigh, NC (292)

10:30 AM Break

FRIDAY MORNING FEBRUARY 19

"Challenges with Palmer amaranth Management"

ORAL - 10. Physiology

LOCATION: Sante Fe Trail
TIME: 11:00 AM - 12:30 PM Central Time
MODERATOR: Zahoor A. Ganie
FMC
Newark, DE

***SPEAKER**

11:00 AM Frequency of Herbicide Resistance in Palmer Amaranth (*Amaranthus palmeri*) Introduced

into North Dakota Through Sunflower Screenings. Joseph T. Ikley*, Nathan H. Haugrud, Stephanie A. DeSimini; North Dakota State University, Fargo, ND (293)

- 11:15 AM Improvements in Genetic Testing for the Identification of Palmer Amaranth in Seed Mixtures.** Anthony Brusa*; University of Minnesota, Saint Paul, MN (294)
- 11:30 AM The Potential of 1,4-naphthoquinone Natural Products as Bioherbicides for the Control of Herbicide-Resistant Amaranthus Species.** Clarence Swanton*, Peter Smith; University of Guelph, Guelph, ON, Canada (295)
- 11:45 AM NTSR And Cross Resistance to PPO Inhibitors in Palmer Amaranth.** Matheus Machado Noguera*¹, Isabel S. Werle¹, Gulab Rangani¹, Reiofeli Salas-Perez², Taghi Bararpour³, Nilda Roma-Burgos¹; ¹University of Arkansas, Fayetteville, AR, ²Dole Philippines, Inc., South Cotabato, Philippines, ³Mississippi State University, Stoneville, MS (296)
- 12:00 PM Reduced Sensitivity to Dicamba in Palmer Amaranth Populations from Mid-southern US.** Nilda Roma-Burgos*¹, Matheus Machado Noguera¹, Isabel S. Werle¹, Gulab Rangani¹, Larry Steckel², Taghi Bararpour³, James Heiser⁴; ¹University of Arkansas, Fayetteville, AR, ²University of Tennessee, Jackson, TN, ³Mississippi State University, Stoneville, MS, ⁴University of Missouri, Portageville, MO (297)
- 12:15 PM Metabolic Resistance to HPPD Inhibitors in Palmer Amaranth (*Amaranthus palmeri*) Does Not Facilitate Resistance Evolution to Glufosinate.** Anita Küpper*¹, Erica Manesso¹, Roland S. Beffa², Todd A. Gaines³; ¹Bayer AG, Frankfurt / Main, Germany, ²Bayer AG, CropScience Division, Frankfurt / Main, Germany, ³Colorado State University, Fort Collins, CO (298)

FRIDAY MORNING FEBRUARY 19

SYMPOSIUM - 5. Advances in Sensor-Based Weed Detection and Precision Management

LOCATION: Oregon Trail
TIME: 09:00 AM - 12:30 PM Central Time
MODERATOR: Muthukumar V. Bagavathiannan
Texas A&M University
College Station, TX
CO-MODERATOR: Vijay Singh
Virginia Tech
PAINTER, VA

***SPEAKER**

- 09:00 AM Introduction to Symposium**
- 09:05 AM Precision Weeds Technologies: A Multi-national Effort to Automate Sensing Weed Species, Density, Cover, and Biomass for Researchers and Farmers.** Steven Mirsky*; USDA-ARS, Beltsville, MD (299)
- 09:20 AM Potential and Pitfalls Experienced Utilizing AI/ML for Weed Detection and Classification in the Pursuit of Actable Weedmaps.** Rasmus N. Jorgensen*; Aarhus University, Aarhus, Denmark (300)
- 09:35 AM Machine Learning for Weed Detection and Classification: Applications in Weed Ecology and Precision Management.** Muthukumar V. Bagavathiannan*¹, Chengsong Hu¹, Bishwa B. Sapkota¹, Matthew Kutugata¹, Steven Mirsky²; ¹Texas A&M University, College Station, TX, ²USDA-ARS, Beltsville, MD (301)
- 09:50 AM 3D Mapping of Weeds for Weed Biomass Estimation.** Paula Ramos Giraldo*; North Carolina State University, Raleigh, NC (302)
- 10:00 AM Hyperspectral Imaging for Weed Species Detection and Herbicide Resistance Monitoring**

In-crop. Prashant Jha*; Iowa State University, Ames, IA (303)

10:15 AM A Weed Recognition System That Enables In-crop Physical Weed Control in Australian Cropping Systems. Michael J. Walsh*¹, Guy Coleman²; ¹University of Sydney, Narrabri, Australia, ²University of Sydney, Camden, Australia (304)

10:30 AM Break

11:00 AM Precision Weed Management with UAVs and Ground Robots. Vijay Singh*¹, Daniel E. Martin², Muthukumar V. Bagavathiannan³; ¹Virginia Tech, Painter, VA, ²USDA-ARS, College Station, TX, ³Texas A&M University, College Station, TX (305)

11:15 AM Spray Drift Characterization of Hydraulic Nozzles for Remotely Piloted Aerial Application Systems. Daniel E. Martin*; USDA-ARS, College Station, TX (306)

11:30 AM Automated Weed Removal in Vegetable Crops. Steve Fennimore*; University of California - Davis, Salinas, CA (307)

11:45 AM Precision Weed Management in Florida Vegetable Production. Nathan Boyd*¹, Arnold W. Schumann², Shaun M. Sharpe³; ¹University of Florida, Balm, FL, ²University of Florida, Lake Alfred, FL, ³Agriculture and Agri-Food Canada, Saskatoon, SK, Canada (308)

12:00 PM Panel Discussion

AUTHOR INDEX

Abbott, Chad C.	8
Abugho, Seth Bernard E.	45
Adamczyk, John J.	207
Adjesiwor, Albert T.	47
Aldridge, Kathryn	88
Al-Khatib, Kassim	92, 184, 270
Allen, Tom W.	54
Alsabri, Mohammad R.	145
Altland, James	120
Amajjioyi, Joy	155
Aminia, Miriam	206
Amirsadeghi, Sasan	281
Anderson, Delia D.	272
Anderson, Ely D.	105
Anwar, Tauseef	262
Aponte, Raphael	228
Arana, Jeanine	95, 173, 175
Araujo, Lucas	183
Argenta, Josiane C.	142
Armstrong, Shalamar	267
Arneson, Nicholas J.	15, 35, 94, 100, 289
Arsenijevic, Nikola	289
Askew, Shawn	133, 166, 167
Atwater, Daniel Z.	219
Auwarter, Collin P.	171
Avent, Tristen H.	10, 36, 96, 153, 258
Bae, Jichul	84, 272
Bagavathiannan, Muthukumar V.	30, 42, 51, 65, 66, 67, 72, 74, 79, 98, 103, 114, 132, 134, 161, 271, 301, 305
Balassone, Federico	5
Baldwin, Greg	85
Bamber, Kevin W.	61, 97, 124, 215
Bararpour, Taghi	6, 296, 297
Barber, Tom	9, 39, 150, 207, 291

Barcial, Priscilla M.	48, 196
Barker, Abigail	80, 223
Barney, Jacob	133, 166, 167, 197, 219
Baron, Jerry J.	24
Barr, Catherine	276
Barrett, Michael	33, 183
Barroso, Judit	49
Barth, McKenzie J.	161
Basinger, Nicholas T.	56, 212
Bass, Troy	183
Batts, Roger B.	24
Baughman, Todd A.	21, 77, 116, 251, 261
Beam, Shawn C.	112
Bean, Brent	255
Bean, Travis	29
Becerra-Alvarez, Aaron	92
Beckett, Tom H.	11, 250, 252, 287
Beesinger, James W.	10, 36, 96, 102, 150, 257, 258
Beffa, Roland S.	75, 164, 224, 298
Belmaric, Pairsa	218
Bennett, Avery J.	111, 113, 117, 141
Berardi, Nicole	139, 282
Beres, Brian	259
Bernards, Mark L.	4, 20, 57
Bertucci, Matthew B.	194
Besancon, Thierry E.	149, 193, 269
Betts, Kevin	20
Betz, Michael	228
Bhandari, Rekha	46
Bish, Mandy	138, 159, 160, 189, 271
Blank, Lior	265
Blank, Timothy	17
Bond, Jason A.	6, 54, 271
Borgato, Edinaldo A.	37, 131
Bosveld, Kerry	84
Bough, Raven	82

Bowling, Rebecca	30, 74
Boyd, Nathan	241, 308
Boyette, Michael D.	70
Brackenridge, Hayley	84
Bradley, Kevin W.	138, 159, 160, 189, 229, 271, 291
Bradshaw, Jeff	89
Brainard, Daniel C.	162, 247
Braverman, Michael P.	24
Brewer, Miurel T.	63
Brim-DeForest, Whitney	17, 270
Broderick, Shaun R.	217
Brosnan, James	114
Broster, Kayla D.	32
Brown, Bryan	197, 248
Bruce, Joseph A.	256
Brunharo, Caio A.	45
Brusa, Anthony	294
Burns, Erin E.	93, 266
Butts, Thomas R.	2, 9, 36, 39, 150, 207
Byrd, Seth A.	251
Byrd, Jr., John D.	32
Cahoon, Charlie W.	76, 112, 292
Canella Vieira, Caio	22
Cantrell, Charles L.	263
Carey, Frank	54
Carnahan, Caitlyn C.	106, 116, 261
Carr, Baylee L.	193
Carr, Martin M.	238
Carvalho-Moore, Pamela	101, 104
Carver, Brett F.	106, 116
Castner, Mason C.	10, 14, 60, 102, 129, 130, 257
Ceperkovic, Isidor	103
Ceseski, Alex R.	184
Chahal, Parminder	290
Chandler, Annette	120

Chaudhari, Sushila	28, 112, 188
Chen, Jinyi	165, 185
Chen, Pengyin	22
Cheroni, Clay	217
Childers, Justin T.	106, 116, 261
Chitra, Fnu	112
Chu, Sarah A.	93
Clark, Troy	17
Clay, Sharon	155
Clements, David R.	272
Coleman, Guy	242, 304, 249
Colquhoun, Jed	170, 283
Concepcion, Jeanafior Crystal T.	202, 203
Conley, Shawn P.	15
Constine, Adam L.	108
Contreras, Diego J.	76, 292
Cooper, Clay	220
Copes, Josh T.	245
Cotter, Bodie	102, 258
Crabtree, Carrie	126
Crawford, Elaina M.	4
Crespo, Roberto J.	5
Cully, Scott E.	250
Culman, Steve	273
Culpepper, A Stanley	112, 119, 123, 126, 143, 206, 229, 251
Czarnecki, Joby	86
Dahl, Gregory K.	238, 253
Daróz Matte, Willian M.	64
Daugovish, Oleg	29
Davis, Adam	43, 122, 205, 271
Dayan, Franck E.	80, 82, 223
de Castro, Edicarlos Batista	30
de Gooijer, Henry	259
De Oliveira Silva, Amanda	106

de Sanctis, Jose H.	55, 109
de Souza Rodrigues, Juliana	143, 146
De Vulder, Catherine M.	180
Dean, Jeffrey F. D.	147
Dearden, Edward S.	111, 113, 117, 141
Debeux, Jose	277
Decker, Madison R.	83
Depetris, M	5
DeSimini, Stephanie A.	293
DeWerff, Ryan P.	15
Dille, Anita	37, 110, 131
Dinkins, Randy	183
Dintelmann, Brian	159, 160
Doane, Michael	177
Dobbels, Anthony	125
Dodds, Darrin M.	3, 140, 251
Dong, Hongxu	86
Doohan, Douglas	273
Dorje, Ngawang	19
Dotray, Peter A.	67, 69, 85, 132, 151, 251
Duddu, Hema S.	18
Dugdale, Tony	237
Duke, Stephen O.	223
Dunne, Cheryl	11
Eason, Kayla M.	143
Edwards, Henry M.	6
Edwards, Ryan J.	253
Effertz, Andrew	169
Effertz, Isaac N.	110, 255
Eizenberg, Hanan	265
Elmore, Matthew T.	149
Engelstad, Peder S.	218
Enloe, Stephen F.	210
Espig, Martin	198
Espino, Luis	17
Essman, Alyssa	125

Eure, Peter	11, 287
Everman, Wesley	76, 292
Faber, Ben	29
Fajardo Menjivar, Marco Antonio	76, 292
Faleco, Felipe A.	94
Falk Jones, Jeanne S.	195
Farr, Rodger B.	2, 36, 130, 150, 251
Felix, Joel	172
Fennimore, Steve	307
Ferguson, J Connor	64
Fernarndez-Bayo, Jesus D.	268
Ferrell, Jason	231
Fillmore, Sherry	281
Findley, Douglas A.	228
Fisher, Justine L.	107
Fleming, Jacob A.	98, 254
Flessner, Michael L.	61, 97, 124, 215, 244, 271
Flipp, Amanda	238, 253
Flynn, Scott	278
Foster, Delaney C.	85, 132, 251
Freund, Daniel	209
Fritz, Bradley K.	243
Fuller, Gracen A.	136, 152, 214
Gafni, Roni	265
Gage, Karla L.	83, 118, 246, 291
Gaines, Todd A.	75, 82, 164, 165, 169, 298
Galvin, Liberty B.	270
Gamble, Audrey	44
Ganie, Zahoor A.	290
Gannon, Travis	209, 50, 114, 191
Gaska, John	15
Gednalske, Joe V.	243
Genna, Nicholas G.	49
Ghaste, Manoj S.	144, 267

Gizotti de Moraes, Jesaelen	73
Golden, Bobby R.	54
Golus, Jeffrey A.	73
Gomiero Polli, Estefania	109
Gonzalez Torralva, Fidel	39
Gordy, John	11
Graf, David	116
Greene, Wykle C.	124
Greer, Bradley	53, 58, 62, 90
Grey, Timothy L.	143, 146, 163
Guimaraes, Leandro H S	109
Guo, Wenxuan	151
Haak, David C.	133, 166, 167, 197
Hager, Aaron	43, 122, 205, 285, 291
Hake, Kater	51
Halbritter, Dale A.	221
Hall, Nathan D.	114, 165, 168
Hall, Steven D.	140, 251
Hamberg, Ryan	111, 113, 117, 141
Hand, Lavesta C.	34, 119, 123, 126, 211
Hanson, Brad	81, 213, 268
Haring, Steven C.	213
Harker, K. Neil	259
Hart, Charles	279
Hathcoat, Daniel	30, 114
Hatterman-Valenti, Harlene M.	171
Haugrud, Nathan H.	293
Hayden, Zachary D.	162, 247
Heap, Ian M.	199
Heaton, Brent S.	4
Heider, Daniel J.	170, 283
Heiser, James	297
Hemker, Monique	28, 162, 247
Hennemann, Laura J.	253, 238
Henry, W. Brien	214

Herms, Catherine P.	273
Hill, Erin C.	188
Hill, Nicholas S.	212
Hodnett, George	41, 42, 79
Hofstra, Deborah	236
Hogan, Terri	218
Hooker, David	288
Hooks, Cerruti R.	135
House, Mason T.	91, 127, 251
Houston, Michael M.	132, 192, 194, 291
Howard, Zachary S.	67, 91, 127
Howell, Kira	148
Hu, Chengsong	66, 72, 301
Huebner, Cynthia	286
Huet, Herve	206
Hulting, Andrew G.	45
Hurdle, Nicholas L.	143, 163
Hurst, Andy	153
Hutchings, Sarah-Jane	203
Hwang, Jeong-In	39
Ikley, Joseph T.	293
Iqbal, Javed	157
Irmak, Suat	154
Ishida, Joey	172
Izydorczyk, Marta	259
Jackson, Ryan	287
Jamison, Brendan V.	52
Jarnevich, Catherine	218
Jenkin, Johnie	147
Jennings, Katherine M.	70, 112
Jha, Prashant	111, 113, 117, 141, 158, 303
Jhala, Amit J.	55, 89, 154, 156, 157, 158, 290
Johnson, Eric N.	18, 88, 259
Johnson, Quintin R.	216
Johnson, William G.	144, 267

Jones, Curtis A.	23
Jones, Eric A.	76, 292
Jones, Vanessa L.	272
Jordan, David L.	70
Jordan, Nicholas	271
Jorgensen, Rasmus N.	300
Jugulam, Mithila	37, 68, 131, 164
Juskiw, Patricia	259
Kadyampakeni, Davie M.	63
Kanissery, Ramdas	63, 174
Kankarla, Vanaja	30
Kaundun, Shiv S.	203, 205
Kerr, Dylan R.	202
Kezar, Sarah E.	132
Khamare, Yuvraj	120
Kikkert, Julie	248
Kimura, Emi	116
King, David R.	25
Kitt, Mark J.	250, 252
Kladivko, Eileen J.	267
Klein, Patricia	79
Kniss, Andrew R.	47
Kouame, Jeremie	104
Krausz, Ronald F.	83
Krishnan, Natraj	263
Kruger, Greg	57, 105, 190, 291, 73, 109, 140, 243
Kubota, Hiroshi	259
Kumar, Vipin	1, 110, 255
Kunkel, Daniel L.	24
Küpper, Anita	75, 298
Kutugata, Matthew	66, 301
LaBiche, Gabrielle	245, 246
Laforest, Martin	40
Lakoba, Vasiliy T.	197, 211, 219
Laliberte, Suzanne	166

Lambert, Kris N.	52
Lambert, Taylor	1, 255
Lammers, Chad J.	87
Lancaster, Sarah	59, 87
Landau, Christopher A.	43, 122, 285
Landol, Stanzin	19
Lang, David J.	263
Langaro, Ana C.	38, 101
Langemeier, Ryan D.	57, 190
Larocca De Souza, Larissa	208
LaRoe, Jillian	218
Latina, Romnick A.	48
Lawrence, Nevin	89
Lazaro, Lauren M.	245, 246, 271
LeCompte, Mathieu	209
Legleiter, Travis	176
Leidi, Jorge G.	221
Leiva Soto, Andrea	273
Leon, Ramon G.	70, 76, 132, 292
Lerchl, Jens	228
Lescano, C	5
Li, Steve	57, 190
Lidor Nili, Efrat	206
Liebl, Rex A.	228
Lindell, Hannah C.	106, 116, 261
Lindquist, John	154, 271
Lindsey, Alexander	125
Lingenfelter, Dwight	16
Lins, Ryan D.	252
Little, Richard	157
Liu, Rui	1, 255
Lorenz, Gus M.	207
Loux, Mark	125
Lum, Romy C.	187
Lygin, Anatoli V.	203
Lyon, Drew J.	239

MacGregor, Dana R.	164
Machado Noguera, Matheus	78, 104, 296
Macvilay, Iththiphonh A.	113
Madsen, John D.	230
Maeda, Murilo M.	151
Maharjan, Bijesh	157
Maity, Aniruddha	65
Maloney, Elizabeth	7, 27, 248
Manesso, Erica	298
Manuchehri, Misha R.	77, 106, 116, 261
Marble, Stephen C.	120
Martin, Daniel E.	305, 306
Martin, Katie	81
Martin, Nicolas F.	43, 122
Martin, Sara	40
Mascarenhas, Victor	11
Matocha, Matthew	127
Mauk, Peggy	29
Mausbach, Jasmine M.	154
Maxwell, Patrick J.	50, 191, 209
May, William	259
Mayonado, David J.	149
McAdam, Scott	22, 144
McCarty, Lambert B.	114
McCurdy, James D.	30, 86, 114
McDonald, Shawn T.	158
McElroy, Joseph S.	114, 164, 168
McGinty, Joshua A.	134
McKenzie-Gopsill, Andrew	281
McKiernan, Adam	284
McLean, Henry	11
McNeal, Jacob P.	3, 140, 251
Meadows, Alexis L.	4, 111, 113, 117, 141
Medina Herrera, Daniela	5
Meinders, Karen	182

Mereb Negrisoni, Raphael	12
Mesgaran, Mohsen B.	268
Mestayer, Katie M.	246
Meyeres, Tyler P.	59, 87
Meyers, Stephen L.	26, 95, 112, 173, 175
Michael, Spencer J.	97
Miller, Brett R.	287
Miller, Donnie	112, 245
Miranda Teo, Joshua Wa	89
Mirsky, Steven	299, 244, 246, 271, 301
Monfort, Walter S.	163
Monks, David	70
Montero Bulacio, N	5
Moore, Frederick T.	85
Moore, Levi D.	70, 112
Morello, Juan P.	5
Moretti, Marcelo L.	25, 208
Morgan, Gaylon	67, 132
Morran, Sarah	164
Morris, James A.	203
Mueller, Brian	15
Mueller, Thomas C.	60, 137
Mulenga, Alick	259
Murphy, Brent P.	71, 201
Neels, William	157
Newlin, Lane S.	106, 116, 261
Nichols, Robert L.	119
Nobles, Rachel	214
Noguera, Matheus Machado	297
Noivirt-Brik, Orly	206
Noland, Reagan L.	251
Nolte, Scott A.	67, 91, 127, 134, 251
Norris, Bradley J.	3, 140, 251
Norsworthy, Jason K.	2, 9, 10, 14, 36, 39, 60, 96, 98, 102, 129, 130, 132, 150, 153, 192, 194, 207,

251, 254, 257, 258, 271,
291

Nunes, Jose J.	100
Nurse, Robert E.	84
Oatway, Lori	259
Obenland, Olivia A.	52
Oberweger, Conrad	210
Obour, Augustine	110
Odero, D Calvin	12
O'Donovan, John T.	259
Oeggerli, Virginia	272
Ohadi, Sara	41
Oliveira Ribeiro Maia, Lucas	267
Olson, Gene	183
Omielan, Joe	33
Oreja, Fernando	132
Orphan, Lindsey M.	118
Osburn, Andrew W.	74
Oseland, Eric G.	138, 189
Osipitan, O. Adewale	268
Osterholt, Matthew	22, 144
Owen, Micheal D.	206
Owens, Jenna	221
Pabuayon, Irish L. B.	69
Pandeya, Devendra	51
Pandian, Balaji Aravindhan	37
Patterson, Eric L.	164, 165, 185
Patzoldt, William L.	240
Payne, Scott A.	11
Pearse, Ian	218
Pedireddi, Usha R.	41, 79
Peeples, Jimmy D.	6
Peleg, Zvi	204
Perez, Loida M.	64, 147
Perkins, Clay M.	137

Peterson, Dallas E.	59, 68
Peterson, Mark	199
Peterson, Robbie W.	21, 77, 261
Pieralisi, Brian K.	3, 140
Pilcher, Todd	181
Piveta, Leonard B.	10, 14, 96, 98, 192, 194, 257, 258, 291
Porpiglia, Peter	260
Porri, Aimone	228
Porter, Richard M.	256
Poudel, Isha	99
Prevey, Janet	218
Price, Andrew	44
Price, Katilyn J.	57, 190
Priddy, Daniel M.	162, 247
Priess, Grant L.	2, 36, 39, 60, 102, 130, 150, 291
Prostko, Eric P.	8
Puntel, Laila	157
Quick, Hayden D.	32
Qureshi, Huma	262
Raghuvanshi, Mahendra Singh	19
Rainey, Katy	22
Raiyemo, Damilola A.	100
Rajan, Nithya	67
Rajendran, Sathishraj	37
Ramanathan, Shwetha S.	209
Ramirez, Analiza Henedina M.	48, 196
Ramos Giraldo, Paula	302
Randell, Taylor M.	8, 119, 123, 126
Rangani, Gulab	38, 78, 101, 296, 297
Rasoulpour, Reza	178
Rathore, Keerti	51
Rawls, Eric	11
Rayamajhi, Min B.	221
Raza, Mohammad	19

Rees, Jenny	156
Reiss, Jim	243
Renz, Mark J.	94, 275
Reynolds, Daniel B.	54, 291
Richardson, Robert J.	234
Riechers, Dean E.	52, 202, 203, 205
Rigon, Carlos Alberto Gonsiorkiewicz	75
Rios, Sonia I.	29
Ritchie, Glen L.	69
Rittmeyer, Richard	170, 283
Roberts, Trenton L.	14, 129
Robinson, Allison M.	273
Robinson, Darren	288
Rogers, Ronald R.	209
Roma-Burgos, Nilda	38, 78, 101, 104, 112, 128, 296, 297
Rooney, William	41, 42, 79
Rosa, Alexandre T.	289
Ross, W Jeremy	207
Rubin, Baruch	204
Rubione, Claudio G.	246
Rumler, Allyson M.	266
Rushing, Scott	153
Russell, Eli C.	115, 186
Russell, Kyle R.	69, 151
Rustom, Samer Y.	53, 58, 62, 90
Rutland, Claudia A.	114, 168
Rutland, William J.	3, 140
Saha, Sukumar	64, 136, 147
Salas-Perez, Reiofeli	38, 296
Salazar, Diego E.	76, 292
Salom, Scott	197
Sandhu, Ravneet K.	241
Sapkota, Bishwa B.	66, 67, 72, 301
Sarangi, Debalin	20, 154
Saski, Christopher A.	165

Schenk, Todd	197
Schreier, Haylee E.	159
Schroeder, Jill	179
Schuler, Jordan	283
Schumaker, Brooklyn C.	128
Schumann, Arnold W.	241, 308
Scott, Barbara A.	216
Scott, Robert C.	38
Scursoni, Julio A.	5
Seale, Jay W.	54
Segbefia, Worlanyo	136
Sellers, Brent A.	31, 220
Shabbir, Asad	284
Shankle, Mark W.	26, 112, 263
Sharma, Gourav	133, 166, 167
Sharpe, Shaun M.	241, 308
Shergill, Lovreet S.	246, 271
Shikanai, Avery	264
Shirtliffe, Steve J.	18, 88
Shrestha, Anil	187
Shrestha, Swati	128
Shugart, John	126
Shwartz, Ido	206
Shyam, Chandrima	68
Sias, Cynthia	41, 61, 124, 215
Sieracki, Jennifer	218
Sikkema, Peter	288
Silveira, Maria L. A.	31
Simard, Marie-Josee	40, 84
Simpson, Holly	235
Singh, Ajay Kumar	222
Singh, Keshav D.	18
Singh, Shilpa	51
Singh, Vijay	305
Skelton, Joshua J.	238, 253
Sleugh, Byron B.	278, 280
Smith, Damon	15

Smith, Peter	295
Sofaer, Helen	218
Sosnoskie, Lynn M.	7, 27, 193, 248
Soufiane, Brahim	40
Sousa Alves, Guilherme	73, 109
Sparks, Crystal D.	169
Spoth, Matthew P.	124
Sprague, Christy	107, 108
Squires, Caleb	242
Srivastava, Vibha	101
Stahlman, Phillip	1
Stallworth, Shandrea D.	128, 148, 217
Steckel, Larry	119, 137, 251, 291, 297
Stelly, David M.	147
Stephens, Trey	156
Stephenson, IV, Daniel O.	13, 53, 245
Sterling, Tracy M.	46
Stewart, Barry	86
Stockwell, Sydney	217
Stoltenberg, David E.	94
Strek, Harry J.	199
Strickland, Gary	116
Striegel, Adam	158
Striegel, Sarah V.	190
Strom, Seth A.	202, 205
Subramanian, Nithya K.	41, 42, 79
Sun, Susan	105, 243
Swanton, Clarence	139, 281, 282, 295
Sykes, Virginia	56
Tabernilla, Clare Hazel R.	48, 196
Tardif, Francois	84
Tekiela, Daniel	280
Thomasson, John Alex	72
Thompson, Corey	85, 251
Thorne, Mark E.	239

Thum, Ryan	232
Tidemann, Breanne D.	259
Torres, Ubaldo	151
Tranel, Patrick	43, 71, 100, 122, 164, 201, 225
Treadway, Zachary R.	21, 77, 261
Treadwell, Morgan	274
Trower, Tim	11
Tseng, Te-Ming (Paul)	263, 26, 64, 104, 121, 128, 136, 142, 147, 148, 214, 217
Tuesca, Daniel	5
Turkington, T. Kelly	259
Vail, Gordon D.	11
Van Dam, David A.	238
Van Wychen, Lee	34, 211
Vance, Jenna C.	123
Vandiver, Monti	11
VanGessel, Mark	112, 149, 193, 216, 246, 271
Vann, Matthew C.	50, 191
Varsha, Varsha	121
Vega, Dee L.	29
Vencill, William K.	200
Vieira, Bruno C.	57, 105, 190
Vila Aiub, Martin M.	5
Vollmer, Kurt M.	216
Vulchi, Rohith	134
Walker, David C.	53, 58, 62, 90
Wallace, John M.	16
Walsh, Michael J.	242, 249, 284, 304
Walters, S. Alan	118
Walton, Larry C.	3
Wasacz, Maggie H.	149, 193
Waselkov, Katherine	187
Weaver, David	46
Webster, Connor	53, 58, 62, 90
Webster, Eric	53, 58, 62, 90

Weisberger, David	56
Wells, M. Scott	20
Werle, Isabel S.	26, 78, 104, 147, 217, 296, 297
Werle, Rodrigo	15, 35, 94, 100, 190, 289
Wersal, Ryan M.	233
Westerveld, David	288
Westra, Philip	169
Westwood, James	133, 166, 167
Widderick, Michael	284
Widhalm, Joshua R.	144, 267
Wilber, Amy L.	86
Williams, John A.	53, 58, 62, 90
Williams, John J.	140
Williams, Linda D.	183
Williams, Martin	43, 122, 285
Winans, Travis	160
Witcher, Anthony L.	99
Woolam, Brandi C.	95, 173, 175
Wright, Hannah E.	123, 126
Wuerffel, R Joseph	226
Wyse, Donald L.	20
Yadav, Ramawatar	111, 113, 117, 141
Yadid, Inon	204
Young, Bryan G.	22, 144, 229, 267, 291, 227
Young, Nicholas E.	218
Yue, Ziming	26, 263
Yurchak, Veronica	135
Zaccaro, Maria Leticia M.	60, 129, 130, 192
Zandstra, Bernard H.	28
Zhao, Shan	101
Zhou, Xin-Gen	103
Zinger, Aviv	204
Zollinger, Richard K.	260

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Meeting Conduct Reminder

The WSSA Code of Ethics defines professional conduct binding on all members of the Society. Members should recognize that this code of ethics and conduct signifies a voluntary assumption of the obligation of self-discipline and members should strive to uphold and maintain the honor and dignity of the Society.

The following rules and standards of conduct have been developed for the safe and efficient operation of the WSSA and for the benefit and protection of the rights and safety of all.

WSSA members are expected to observe the highest standards of professional conduct at all times, while at work or engaged in Society business.

1. Obey all laws, rules and regulations governing our business. The WSSA is subject to applicable federal laws in the state or country of the meeting or event. It is the policy of the WSSA that all laws, rules and regulations are complied with fully and completely. If it is unclear whether an action or activity is a legal or ethical violation, contact the WSSA President and/or Executive Secretary immediately for advice. Any incident or situation that violates the law or this policy should be immediately reported to the President and/or Executive Secretary; in person or via this contact information: info@wssa.net or 720-445-4789.

2. Be honest, truthful, fair and trustworthy in all WSSA activities and relationships. The WSSA expects each member to treat other members with respect and honesty. This includes providing information that is accurate, complete, objective, timely, relevant, and understandable.

3. Respect and protect WSSA assets. Assets are anything of value owned by the WSSA. All WSSA members are expected to be custodians of those assets. Members are responsible to maintain Society assets in good condition and to protect them from loss. This includes, but is not limited to, real assets and equipment as well as “soft assets” such as intellectual property, member lists, and other confidential information owned by the Society. WSSA assets of any kind should not be used for personal benefit.

4. Avoid all conflicts of interest between Society business and personal affairs. All WSSA members are expected to act with total objectivity regarding WSSA business. Accordingly, it is improper for a WSSA member to be in a position where their personal interests’ conflict, or appears to conflict, with WSSA interests. WSSA members should not use their position within the WSSA to influence WSSA members or others for their personal benefit. If a member believes that a conflict of interest has developed or may develop, it should be promptly reported to the WSSA President and/or Executive Secretary. The Society’s Conflict of Interest Policy is outlined in 5.8.

5. Promote a culture of respect for all WSSA members. The WSSA supports and adheres to laws and regulations dealing with fair member practices. Membership discrimination in our Society based on sex, race, age, religion, national origin, or sexual preference will not be tolerated. Sexual harassment will not be tolerated. Sexual harassment is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature that explicitly or implicitly affects an individual's membership in the society, unreasonably interferes with an individual's activities within the society, or creates an intimidating, hostile or offensive society environment. This also includes inappropriate use of nudity and/or sexual images in public spaces (including within visual presentations, Twitter, and other online media); deliberate intimidation, stalking, or unwelcome following; harassing photography or recording; and sustained disruption of talks or other events.

6. Use your best efforts to maintain a safe environment and protect the Society. The WSSA believes in and supports the laws designated to keep our Society safe and designed to protect the environment. If you believe that an unsafe condition exists in our Society, bring it immediately to the attention of the President, a member of the Board, or Executive Secretary. If an accident takes place, report it pursuant to policy and immediately take action to address the problem. Any incident or situation that violates the law or this policy should be immediately reported to the President and/or Executive Secretary; in person or via this contact information: info@wssa.net or 720-445-4789.

7. Promote an ethical culture for all WSSA members. The WSSA always expects all of its members to conduct themselves ethically and to encourage and support that behavior in their fellow members. Members exercise integrity in scientific research activities and in the reporting of results.

8. Relation of professionals to the public. They shall not knowingly permit the publication of reports or other documents for any unsound or illegitimate undertaking.

9. Respect fellow WSSA members. Members shall freely give credit for work done by others to whom the credit is due and shall refrain from plagiarism in oral and written communication, and not knowingly accept credit rightfully due to another person.

10. Reporting alleged violations. Violation of the WSSA Code of Ethics and Conduct may subject a member to disciplinary action up to and including membership revocation. At the annual conference, when "Safe WSSA" members become aware of a complaint, they will seek out the alleged victim(s) and offender(s) separately and gather facts. Immediate responses at the conference may range from warning a harasser to cease his or her behavior immediately, to ending a speaker's talk early if the speaker uses inappropriate language or images, to requiring a

harasser to leave the conference immediately with no refund, to banning a harasser from future events “either indefinitely or for a certain time period.” Law enforcement may be engaged if circumstances require.

PERSONAL TIME SCHEDULE (Central Time)

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9:00					
9:15					
9:30					
9:45					
10:00					
10:15					
Break					
11:00					
11:15					
11:30					
11:45					
12:00					
12:15					
Discussion Sessions			Chat with Poster Presenters		
3:00	General Session and Awards Ceremony			WSSA Business Meeting and Student Awards	
3:15					
3:30					
3:45					
4:00					
4:15					
4:30	Virtual Award Reception				
4:45					
5:00					
5:15					
5:30					
5:45					

Section Business meetings to attend:

Date:	Time:	Section:

Discussion Sessions to attend:

Date:	Time:	Topic:

NOTES