

**WEED SCIENCE SOCIETY OF
AMERICA -
NORTHEASTERN WEED SCIENCE
SOCIETY
JOINT MEETING**

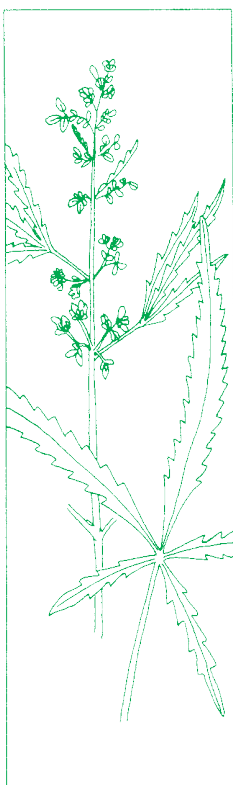
63rd Meeting

2023 MEETING PROGRAM

Crystal Gateway Marriott

Arlington, VA

January 30, 2023 – February 2, 2023



WSSA Sustaining Members

PRESIDENTIAL

BASF Corporation
Bayer Crop Science
Corteva Agrisciences
FMC Corporation
Syngenta Crop Protection
Harpe Bioherbicide

LEADERS

Gowan
UPL NA Inc
ENVU
Valent USA
Winfield United
Helena Agri-Enterprises

PATRONS

Gylling Data Management
Nufarm Americas Inc
Nichino America Inc.
Lehigh Agri & Bio Services, Inc.
Blue River Technology
Precision Laboratories

CONTRIBUTORS

AMVAC Chemical Corp
Greenleaf Technologies
ABG Ag Services
TeeJet Technologies
Nippon Soda Ltd
TKI Novasource
Clariant Corporation
R & D Sprayers
SePRO

**63rd Meeting
Weed Science Society of America/
Northeastern Weed Science Society**

Local Arrangements Committee	1
The 2023 Program	2
2023 Program Committee	4
Summary of 2023 Program	5
Complete Program	11
Meeting Room Maps	94
Author Index	94
WSSA Board of Directors	123
NEWSS Officers and Executive Committee	124
Meeting Conduct	124
Personal Time Schedule	127
Notes	128
WSSA Sustaining Members	Inside Back Cover

Local Arrangements Committee 2023 – Arlington
Co-Chairs Bill Chism and Sudeep Mathew

The WSSA/NEWSS 2023 Program

Welcome to the 2023 joint Weed Science Society of America (WSSA) and the Northeastern Weed Science Society (NEWSS) meeting at the Crystal Gateway Marriott in Arlington, VA. The hotel is only one mile from Reagan National Airport (DCA), two miles to Washington, DC and directly connected to the Crystal City Metro station providing a home base for your visit to the Washington, DC area. Nearby sites include the new National Landing development and Pentagon City; as well as a quick and convenient Metro ride to downtown Washington D.C. and Old Town Alexandria. Several of my favorite museums include the Smithsonian National Museum of Natural History, National Air and Space Museum, and the National Air and Space Museum Steven F. Udvar-Hazy Center (near Dulles). Don't miss visiting the monuments and memorials – I'm partial to the area encompassed between the Washington Monument and Lincoln Memorial. While you are there, don't miss the National Archives Museum with several incredible historical documents and a new display – All American: The Power of Sports.

Now, back to the meeting! We have an exciting line-up of tours, speakers, symposia, meetings, discussions, a dessert social, and many great papers. I always get "re-charged" by the greatest people involved in Weed Science in the world. Even Washington said, "Agriculture is the most helpful, most useful, and most noble employment." The majority of committee meetings will take place ahead of the annual meeting week. Make sure you are in contact with your committee chair to participate in these meetings. There are some that will take place face to face in Arlington, due to the nature of the meeting. BTW – I am so thankful that this meeting will be taking place in person in 2023!! After going online in 2021 and 2022, we are very fortunate to have this meeting in person. The planning committees for the web meetings did an awesome job switching formats, which basically doubled their workload. Thanks to the Stanley Culpepper and Anita Dille's teams, we were able to pull this off. Meeting in person will bring an even higher excitement to the interactions and progress with weed management that will come from these sessions.

Thanks to Bill Chism and Sudeep Mathew, along with the local arrangements committee, we have two exciting tours scheduled for the meeting. Sunday, there will be a tour of the US Botanic Garden Production Facility and the following day a tour of the Smithsonian Gardens Production Greenhouse.

The General Session and WSSA/WSWS Awards Ceremony will begin Monday at 4:00 PM in Salon III. This will include our Keynote Address by Jake Li, Deputy Assistant Administrator for Pesticide Programs within EPA's Office of Chemical Safety and Pollution Prevention. We will also hear from Stanley Culpepper and Jacob Barney, presidents of WSSA and NEWSS, respectively. We will have a short break after the General Session and head directly into the Society Awards, where we will celebrate the accomplishments of many of our Scientists! Make sure that guests are registered so they can participate in

celebrating our WSSA/NEWSS Awardees starting around 7:00 PM at the social.

Tuesday through Thursday will be filled with presentations in the many different sections – including posters, regulatory, integrated weed management, weed biology and ecology, agronomic sections, and many others. Tuesday will include a Graduate Student event, NEWSS Past President’s breakfast, Good, Bad, and Ugly symposium about cover crops, Endangered Species Act symposium, SST (Single Slide Talk) contests for students, NEWSS paper contest, and many other exciting presentations. Wednesday will continue with 2 more symposia, Crop-Weed Management in a Rising CO₂ and Warming World, and WSSA Research Priorities Survey Results – 13 Federal Agencies Perspectives. This day will also include the President’s breakfast, finals of the SST contest, Joint Student and Photo Awards, and a Dessert Social in the evening. Thursday will include a Novel Technologies Symposium, WSSA Business Breakfast, and Board meetings.

We would also like to thank Marty Schraer, and Darrin Dodds for their help in organizing and conducting the student contests. Thanks also to Anita Dille, Stanley Culpepper, and Greg Dahl for their help and guidance preparing the program. A great deal of gratitude is also owed to the Section Chairs, Committee Chairs (over 45 committees), contest organizers, judges, dessert social organizers (thanks Renee Keese, et al.), and other leaders that have pitched in to support the meeting. We had an overwhelming group of committed folks who submitted great symposia ideas this year and some we could not accommodate and hope to have in 2024 in San Antonio. Again, we thank all our Section Chairs for helping to organize the program and especially our WSSA Executive Secretary, Mr. Eric Gustafson, for his commitment to ensure a successful meeting on all levels and the workload he takes on during the month of January. If you run into him at the meeting, please express your gratitude. We are excited about the great participation and the many opportunities to exchange scientific information on weed science research, education, and extension. We look forward to a productive and rewarding meeting.

Carroll Moseley, WSSA Program Chair and President-Elect
Wesley Everman, NEWSS Program Chair and President-Elec

2023 Program Committee

General Program Chair.....	Carroll Moseley
Vice Chair.....	Gregory Dahl
Agronomic Crops.....	Daljit Singh and Craig Alford
Horticultural Crops.....	Kurt Vollmer and Thierry Besancon
Turf and Ornamentals.....	David Hillger and Mayank Milik
Pastures, Rangelands,.....	Scott Nolte and
Forests, Rights of Way, Wildlands and Aquatic Invasive Plants	Byron Sleugh
Regulatory Aspects.....	Amanda Foderaro and Cherilyn Moore
Teaching and Extension.....	Dawn Refsell and Debalin Sarangi
Formulation, Adjuvant, & Application Technology	Joe Ikley and Gourav Harma
Weed Biology and Ecology.....	Debalin Sarangi and Shilpa Singh
Biocontrol of Weeds.....	Rin Ragamaihi
Physiology.....	Chenxi Wu and Chad Brabham
Integrated Weed..... Management	Sarah Kezar and Ramawater Yadav
Sustaining Member Exhibits.....	Kyle Kepner
Poster Sessions.....	Tom Mueller
Student Contest.....	Marty Schraer
Student Travel Enrichment Experience.....	Sarah Kezar

Program Booklet and Abstracts

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

Posters and Sustaining Member Exhibits

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

CONDENSED PROGRAM

SUNDAY JANUARY 29

US Botanic 09:00 AM - 01:00 PM
Garden
Production
Facility Tour

WSSA Board 01:00 PM - 05:00 PM Alexandria
of Directors
Meeting

MONDAY JANUARY 30

WSSA Board 07:00 AM - 09:30 AM Alexandria
of Directors
Meeting

NEWSS Board 08:00 AM - 12:00 PM Lee
of Directors
Meeting

Smithsonian 09:00 AM - 01:00 PM
Greenhouse
Tour

Registration 01:00 PM - 04:00 PM Arlington
 Reception

Women in 02:00 PM - 03:30 PM Rosslyn
Weed Science
Meeting

General 04:00 PM - 07:00 PM Salon III
Session

Awards 07:00 PM - 09:00 PM Foyer
Reception

TUESDAY JANUARY 31

Registration 07:00 AM - 03:00 PM Arlington
Registration

Graduate 07:00 AM - 08:00 AM Salon H
Student Event -
Overcoming
Hurdles - Grad
Student Only

Judges work 07:00 AM - 03:00 PM Alexandria
room

NEWSS Past 07:00 AM - 08:00 AM Salon G
President
Breakfast

POSTER - 08:00 AM - 10:00 AM Salon IV-
Committee VI
Reports

POSTER - 01. 08:00 AM - 10:00 AM Salon IV-
Agronomic VI
Crops -

POSTER - 02. 08:00 AM - 10:00 AM Salon IV-
Horticultural VI
Crops

POSTER - 03. 08:00 AM - 10:00 AM Salon IV-
Turf and VI
Ornamentals

POSTER - 04. 08:00 AM - 10:00 AM Salon IV-VI
Pasture, Range,
Forest, &
Rights of ways,
Wildland, and

Aquatic Invasive plants

POSTER - 06. 08:00 AM - 10:00 AM Salon IV-VI
Teaching and
Extension

POSTER - 07. 08:00 AM - 10:00 AM Salon IV-VI
Formulation, Adjuvant, & Application Technology

POSTER - 08. 08:00 AM - 10:00 AM Salon IV-VI
Weed Biology
and Ecology

POSTER - 09. 08:00 AM - 10:00 AM Salon IV-VI
 Biocontrol of
 Weeds

POSTER - 10. 08:00 AM - 10:00 AM Salon IV-VI
Physiology

POSTER - 11.	08:00 AM - 10:00 AM	Salon IV-VI
Soil and Environmental Aspects		

POSTER - 12. 08:00 AM - 10:00 AM Salon IV-VI
Integrated Weed Management

SYMPOSIUM - 08:00 AM - 12:00 PM Salon III
The good, the
bad, and the ugly
the current state
of cover crops
and weed
management

ORAL - 08. 09:00 AM - 02:00 PM Salon I
Weed Biology
and Ecology

ORAL - 05. 09:00 AM - 01:45 PM Salon II
Regulatory
Aspects

ORAL - 09:00 AM - 04:30 PM Salon J
NEWSS
Student Oral

SST MS 10:15 AM - 11:30 AM Salon G

SST PhD 10:15 AM - 12:00 PM Salon F

SYMPOSIUM - 01:00 PM - 05:00 PM Salon III
Endangered
Species Act: A
workshop to
determine how
the WSSA can
provide useful
science-based
information to
regulators

ORAL - 13. 02:00 PM - 04:30 PM Salon G
Student Travel
Enrichment
Experience

NEWSS 05:00 PM - 07:00 PM Salon II
Business
Meeting

WEDNESDAY FEBRUARY 1

Presidents 06:30 AM - 08:00 AM Salon G
Breakfast

Judges Work 07:00 AM - 03:00 PM Alexandria
Room

POSTER - 08:00 AM - 10:00 AM Salon IV-VI
NEWSS
Student Poster

SYMPOSIUM - 08:00 AM - 12:00 PM Salon II
Crop-Weed
Management in a
Rising CO₂ and
Warming World

Oral 01. 09:00 AM - 05:00 PM Salon III
Agronomic
Crops - Day 1

ORAL - 07. 09:30 AM - 02:00 PM Salon H
Formulation,
Adjuvant, &
Application
Technology

ORAL - 12. 09:00 AM - 05:00 PM Salon I
Integrated Weed
Management

ORAL - 02. 02:00 PM - 05:00 PM Salon K
Horticultural
Crops

ORAL - 03. 09:00 AM - 11:30 AM Salon F
Turf and
Ornamentals

ORAL - 10. 09:00 AM - 02:00 PM Salon G
Physiology

Joint Graduate 11:30 AM - 01:00 PM Salon J
Student
Luncheon

SYMPOSIUM - 01:00 PM - 05:00 PM Salon II
WSSA Research
Priorities Survey
Results: 13
Federal Agency-
Perspectives and
-Funding
Opportunities

ORAL - 09. 02:00 PM - 02:30 PM Salon G
Biocontrol of
Weeds

SST - SST 02:00 PM - 03:00 PM Salon F
PhD - Finals

ORAL - 11. Soil 02:30 PM - 03:00 PM Salon G
and
Environmental
Aspects

Joint Student/
Photo Awards 05:00 PM - 07:00 PM Salon III

Joint Dessert 09:00 PM - 11:00 PM Foyer
Social

THURSDAY FEBRUARY 2

WSSA 06:30 AM - 08:00 AM Salon H
Business
Breakfast

Registration 08:00 AM - 10:00 AM Arlington
Registration

ORAL - 01. 08:00 AM - 12:00 PM Salon III
Agronomic
Crops - Day 2

SYMPOSIUM - 08:00 AM - 12:00 PM Salon I
Novel
Technology for
Weed
Management: An
Update on
WSSA Member
Activities from
Around the US

ORAL - 04. 09:00 AM - 11:30 AM Salon II
Pasture, Range,

Forest, &
Rights of ways,
Wildland, and
Aquatic
Invasive plants

ORAL - 06. 09:00 AM - 12:00 PM Salon J
Teaching and
Extension

US-HRAC 12:00 PM - 04:00 PM Salon K
Meeting

WSSA Board 02:00 PM - 03:30 PM Salon H
of Directors
Meeting

NEWSS Board 02:00 PM - 03:30 PM Salon J
of Directors
Meeting

PROGRAM

SUNDAY MORNING JANUARY 29

US Botanic Garden Production Facility Tour

LOCATION:

TIME: 09:00 AM - 01:00 PM Eastern
Time

**Tours will meet in the Hotel Lobby for
transportation**

SUNDAY AFTERNOON JANUARY 29

WSSA Board of Directors Meeting

LOCATION: Alexandria
TIME: 01:00 PM - 05:00 PM Eastern
Time
MODERATOR: A Stanley Culpepper
University of Georgia
Tifton, GA

MONDAY MORNING JANUARY 30

WSSA Board of Directors Meeting

LOCATION: Alexandria
TIME: 07:00 AM - 09:30 AM Eastern
Time
MODERATOR: A Stanley Culpepper
University of Georgia
Tifton, GA

MONDAY MORNING JANUARY 30

NEWSS Board of Directors Meeting

LOCATION: Lee
TIME: 08:00 AM – 12:00 PM Eastern
Time
MODERATOR: Jacob Barney
Virginia Tech
Blacksburg, VA

MONDAY MORNING JANUARY 30

Smithsonian Greenhouse Tour

LOCATION:

TIME: 09:00 AM - 01:00 PM Eastern
Time

Meet in the hotel Lobby for transportation

MONDAY AFTERNOON JANUARY 30

Registration

LOCATION: Arlington Registration
TIME: 01:00 PM - 04:00 PM Eastern
Time

MONDAY AFTERNOON JANUARY 30

Women in Weed Science Meeting

LOCATION: Rosslyn
TIME: 2:00 PM - 03:30 PM Eastern
Time
MODERATOR: Cara L. McCauley
Corteva Agriscience
Indianapolis, IN

MONDAY AFTERNOON JANUARY 30

General Session

LOCATION: Salon III
TIME: 04:00 PM - 07:00 PM Eastern
Time
MODERATOR: A Stanley Culpepper
University of Georgia
Tifton, GA
CO-MODERATOR: Jacob Barney
Virginia Tech

Blacksburg, VA

***SPEAKER**

- 04:00 PM Introduction and Announcements.** Carroll Moseley*¹, Wesley Everman²; ¹Syngenta, Brown Summit, NC, ²North Carolina State University, Raleigh, NC
- 04:10 PM IWSC 2024 - Jerusalem and IWSS Update.** Nilda Roma-Burgos*; University of Arkansas, Fayetteville, Fayetteville, AR
- 04:20 PM Keynote Presentation - Jake Li - Deputy Assistant Administrator for Pesticide Programs - Protecting Endangered Species from Pesticides: Why it Matters to Your Work.** Jake Li*; US EPA - Deputy Assistant Administrator for Pesticide Programs, Washington, DC
- 05:05 PM Presidential Addresses.** A Stanley Culpepper*¹, Jacob Barney²; ¹University of Georgia, Tifton, GA, ²Virginia Tech, Blacksburg, VA
- 05:30 PM Awards Presentation.** Mandy Bish*¹, Caren A. Schmidt²; ¹University of Missouri, Columbia, MO, ²BASF, Durham, NC
- 06:15 PM Presentation of Honorary Members and Fellows.** Carroll Moseley*¹, Wesley Everman²; ¹Syngenta, Brown Summit, Nc, NC, ²North Carolina State University, Raleigh, NC

MONDAY AFTERNOON JANUARY 30

Awards Reception

LOCATION: Foyer
TIME: 07:00 PM - 09:00 PM Eastern Time

Awardee Reception

TUESDAY MORNING JANUARY 31

Registration

LOCATION: Arlington Registration
TIME: 07:00 AM - 03:00 PM Eastern
Time

TUESDAY MORNING JANUARY 31

Graduate Student Event - Overcoming Hurdles - Grad Student Only

LOCATION: Salon H
TIME: 07:00 AM - 08:00 AM Eastern
Time
MODERATOR: Sarah E. Kezar
Texas A&M University
College Station, TX

Grad students only

TUESDAY MORNING JANUARY 31

Judges work room

LOCATION: Alexandria
TIME: 07:00 AM - 03:00 PM Eastern
Time

TUESDAY MORNING JANUARY 31

NEWSS Past President Breakfast

LOCATION: Salon G
TIME: 07:00 AM - 09:00 AM Eastern
Time
MODERATOR: Jacob Barney

TUESDAY MORNING JANUARY 31

POSTER - Committee Reports

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern
Time

***PRESENTER**

WSSA Public Awareness Committee Update. Theresa Piskackova*¹, Eric Gustafson²; ¹Czech University of Life Sciences Prague, Prague 6 - Suchdol, Czechia (Czech Republic), ²Weed Science Society of America, Westminster, CO

TUESDAY MORNING JANUARY 31

POSTER - 01. Agronomic Crops -

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern
Time

**WSSA Student Competition Posters will be judged
Tuesday only**

**NEWSS Student Competition Posters will be judged
Wednesday only**

***PRESENTER † STUDENT CONTEST**

Taxonomic Pattern in Seed Dormancy and its Breaking Methods in Globally Important Weed Species. Aniruddha Maity*, Akashdeep Singh; Auburn University, Auburn, AL (1)

The Interaction of Pyroxasulfone and Flumioxazin Applied Preemergence for the Control of Multiple-herbicide-resistant Waterhemp [Amaranthus Tuberculatus (Moq) J.D. Sauer] in Soybean. James C. Ferrier, Nader Soltani*, Peter H. Sikkema; University of Guelph, Ridgetown, ON, Canada (2)

†Planting Green in Soybean: Evaluation of Residual Herbicide Interaction, Weed Control Programs, and Soybean Yield. Trey P. Stephens*, Amit J. Jhala; University of Nebraska-Lincoln, Lincoln, NE (3)

Control of Larger Herbicide-Resistant Common Ragweed (*Ambrosia artemisiifolia*) in Soybean. Kurt M. Vollmer*; University of Maryland, Queenstown, MD (4)

†Urea Ammonium Nitrate as the Carrier for Preplant Burndown Herbicides. Kaone Mookodi*¹, Jared Spackman², Albert T. Adjewor¹; ¹University of Idaho, Kimberly, ID, ²University of Idaho, Aberdeen, ID (5)

Brake, Valor, and Their Tank-Mixture Combinations with Residual Herbicides for Broad- Spectrum Weed Management Programs in Mississippi Peanut. Taghi Bararpour*; Mississippi State University, Stoneville, MS (6)

†Weed Control Efficacy and Dry Bean Response to Preemergence Herbicide Activation Timing. Prayusha Bhattarai*¹, Albert T. Adjewor²; ¹University of Idaho, Moscow, ID, ²University of Idaho, Kimberly, ID (7)

Postharvest Control of Russian Thistle (*Salsola kali*) in Spring Wheat Stubble. Fernando H. Oreja*¹, Drew J. Lyon², Jennifer A. Gourlie³, Henry C. Wetzel², Judit Barroso¹; ¹Oregon State University, Adams, OR, ²Washington State University, Pullman, WA, ³Oregon State University, Pendleton, OR (8)

†Identification of Palmer Amaranth Using Machine Learning. Akhilesh Sharma*¹, Vipin Kumar², Ajay Sharda¹, William Hsu¹; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Hays, KS (9)

Drill-Spacing And Bed Width Influence on Canopy Coverage, Weed Control and Yield in Furrow-Irrigated Rice. Koffi Badou-Jeremie Kouame*¹, Thomas R. Butts¹, Noah H. Reed², Brad M. Davis¹, Leah M. Collie³, Troy W. Dillon¹, Jason K. Norsworthy², Tom Barber¹, Jarrod Hardke⁴, Jason A. Bond⁵, Hunter D. Bowman⁶; ¹University of Arkansas System Division of Agriculture, Lonoke, AR, ²University of Arkansas, Fayetteville, AR, ³University of Arkansas, Lonoke, AR, ⁴University of Arkansas System Division of Agriculture, Stuttgart, AR, ⁵Mississippi State University, Stoneville, MS, ⁶Mississippi State University, Starkville, MS (10)

†Evaluating the Metabolic Response of Cloquintocet-Mexyl in Winter Wheat. William Kramer*, Todd A. Gaines, Franck E. Dayan; Colorado State University, Fort Collins, CO (11)

Confirmation of Glyphosate Resistance in New York Palmer Amaranth (*Amaranthus palmeri*) Populations and Response

to Alternative Chemistries. Aleah L. Butler-Jones*¹, Elizabeth C. Maloney², Lynn M. Sosnoskie²; ¹Cornell University, Ithaca, NY, ²Cornell University, Geneva, NY (12)

†Does Row Spacing Matter for Weed Suppression in Corn and Soybean Cropping Systems? A Meta-analysis. Mandeep Singh*¹, Resham Thapa², Navdeep Singh³, Steven Brian Mirsky⁴, Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²USDA-ARS Beltsville Agricultural Research Center, Beltsville, NC, ³Punjab Agricultural University, Ludhiana, India, ⁴USDA ARS, Beltsville, MD (13)

Response of Glyphosate-Resistant Kochia (*Bassia scoparia*) to Dichlorprop-P, 2,4-D, Dicamba Alone or Their Premixture. Sachin Dhanda*¹, Vipin Kumar¹, Augustine Obour¹, Elizabeth Yeager², John Holman³, Anita Dille²; ¹Kansas State University, Hays, KS, ²Kansas State University, Manhattan, KS, ³Kansas State University, Garden City, KS (14)

†Impacts of Florpyrauxifen-benzyl on Rice and Smallflower Umbrella Sedge, *Cyperus difformis*, at Different Growth Stages. Deniz Inci*, Kassim Al-Khatib; University of California, Davis, Davis, CA (15)

Late-Season Control of Glyphosate-Resistant Palmer Amaranth with Glufosinate in XtendFlex Soybean. Vipin Kumar*¹, Sachin Dhanda¹, Rui Liu², Amit J. Jhala³; ¹Kansas State University, Hays, KS, ²Washington State University, Prosser, WA, ³University of Nebraska Lincoln, Lincoln, NE (16)

†Weed Survey in Colorado Sugarbeet Farms Reveals Resistance to Dicamba and Glyphosate. André Lucas Simões Araujo*, Eric P. Westra, Todd A. Gaines; Colorado State University, Fort Collins, CO (17)

†Impact of Soil-Applied Herbicides on Early Planted Soybean. Matthew S. Goddard*, Christy L. Sprague; Michigan State University, East Lansing, MI (18)

Estimating Harvest Loss of Corn from Growers' Fields in Nebraska and Implication for Volunteerism. Trey P. Stephens¹, Vipin Kumar*², Jenny Rees³, Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²Virginia Polytechnic Institute and State University, Painter, VA, ³University of Nebraska-Lincoln, York, NE (19)

†Molecular Basis for Resistance to ACCase-inhibiting Herbicides in Downy Brome (*Bromus tectorum*) Populations. Victor Ribeiro*¹, Caio A. Brunharo², Carol Mallory-Smith¹, Darrin Walenta³, Judit Barroso⁴; ¹Oregon State University, Corvallis, OR, ²Penn State University, University Park, PA, ³Oregon State University, La Grande, OR, ⁴Oregon State University, Adams, OR (20)

Expression Levels of Selected GSTs in Palmer Amaranth Resistant to Trifluralin. Fidel Gonzalez Torralva*, Jason K. Norsworthy; UNIVERSITY OF ARKANSAS, Fayetteville, AR (21)

†Impact of Spring-Applied Herbicides on Cover Crops Planted After Wheat. Claudia R. Walz*, Christy L. Sprague; Michigan State University, East Lansing, MI (22)

PSII Inhibitor Resistance in Italian Ryegrass (*Lolium Multiflorum*) Populations in Louisiana Sugarcane. Alice A. Wright*¹, Gerald A. McCollam¹, Albert J. Orgeron²; ¹USDA-ARS, Houma, LA, ²LSU AgCenter, Baton Rouge, LA (23)

†Optimizing Dicamba and Glufosinate Application Timings for Weed Control in XtendFlex Soybeans in Central Kansas. Monica R. Marrs*¹, Vipin Kumar², Anita Dille¹, Rui Liu³, Augustine Obour²; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Hays, KS, ³Washington State University, Prosser, WA (24)

Optimizing Cover Crop Termination and Herbicide Application Timings to Manage Herbicide-Resistant Waterhemp in Soybean. Ramawatar Yadav*¹, Edward S. Dearden², Ryan Hamberg¹, Alexis L. Meadows¹, Austin H. Schleich¹, Prashant Jha¹; ¹Iowa State University, Ames, IA, ²Iowa State University, Crop Production & Physiology, Ames, IA (25)

†Palmer Amaranth (*Amaranthus palmeri*) Control Options in the Absence of Dicamba. Tyler S. Soignier*, Brian K. Perialisi, Darrin M. Dodds, Jason Krutz, Dave Spencer, Whitney S. Crow, Bradley J. Norris, William J. Rutland, Eli B. Hobbs; Mississippi State University, Starkville, MS (26)

Investigation of Fluroxypyr Resistance in a Kochia Population from Colorado. Eduardo Souza de Amorim*, Olivia E. Todd, Eric P. Westra, André Lucas Simões Araujo, Todd A. Gaines; Colorado State University, Fort Collins, CO (27)

†Fitness of Different Ploidy Plants of F1 Progeny Derived from an Interspecific Cross Between Cultivated Sorghum and Johnsongrass. Usha R. Pedireddi*, Rana Afshang, Maximillian Chung, Kayla Buenaventura, Aleena Jiby, Nithya K. Subramanian, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (28)

Differential Control of ALS- and PPO-inhibiting Herbicide-resistant *Amaranthus Retroflexus* Populations with Other Postemergence Herbicides. Eric A. Jones*, Diego J. Contreras,

Charlie W. Cahoon, Ramon G. Leon, Wesley Everman; North Carolina State University, Raleigh, NC (29)

†**Evaluation of Fall-Applied Residual Herbicides for Weed Management in Chickpeas (*Cicer Arietinum*).** Akamjot S. Brar*¹, Qasim Khan¹, Fabian Menalled¹, Zach Miller¹, Clint Beiermann¹, Kent McVay¹, Lovreet S. Shergill²; ¹Montana State University, Bozeman, MT, ²Montana State University, Huntley, MT (30)

What Are We Missing? Undetected Changes to Fiber Quality from Low Rates of 2,4-D Using AFIS. Kyle R. Russell*¹, Peter A. Dotray², Brendan R. Kelly¹; ¹Texas Tech University, Lubbock, TX, ²Texas Tech University, Texas A&M AgriLife Research, Texas A&M AgriLife Extension, Lubbock, TX (31)

~~†**Effect of Als and 4 hppd Inhibitors Herbicides on Maize Genotypes.** José I. Saavedra ávila*; COLPOS, Texcoco, EM, Mexico (32)~~

Developer of Novel Adjuvant Systems for Herbicides. Jim T. Daniel¹, Chase T. Boman*²; ¹Daniel Ag Consulting, Keenesburg, CO, ²AgraSyst, Spokane, WA (33)

†**Seed-Shattering Phenology of Grass and Broadleaf Weeds at Soybean (*Glycine max*) and Corn (*Zea mays*) Harvest in SE Montana.** Het Samir Desai*¹, Fabian Menalled², Lovreet S. Shergill³; ¹Southern Agricultural Research Center, Montana State University, Huntley, MT, ²Montana State University, Bozeman, MT, ³Montana State University, Huntley, MT (34)

Confirmation of a Three-way (Thifensulfuron, Atrazine and Glyphosate) Herbicide Resistant Population of Palmer Amaranth (*Amaranthus palmeri*) in North Carolina. Ronel J. Argueta*, Eric A. Jones, Diego J. Contreras, Charlie W. Cahoon, Wesley Everman; North Carolina State University, Raleigh, NC (35)

†**Axant™ Flex Cotton Response and Residual Weed Management Using HPPD Inhibiting Herbicides.** Megan Mills*¹, Peter A. Dotray², Gregory B. Baldwin³, Scott Asher⁴, Adam C. Hixson⁴, Maxwell E. Smith¹, Blaine A. Patton¹, Kyle R. Russell¹, Bobby Rodriguez⁵; ¹Texas Tech University, Lubbock, TX, ²Texas Tech University and Texas A&M AgriLife Research & Extension Service, Lubbock, TX, ³BASF, Research Triangle Park, NC, ⁴BASF, Lubbock, TX, ⁵Texas A&M AgriLife Extension, Lubbock, TX (36)

Hybrid Rice Tolerance with Various Fenclorim Seed Treatments and Microencapsulated Acetochlor. Tristen H. Avent*, Jason K. Norsworthy, Leonard B. Piveta, Casey H.

Arnold, Pamela Carvalho-Moore; University of Arkansas, Fayetteville, AR (37)

†**Transgenes Flow from Corn Confer Resistance to Glyphosate and Glufosinate-Ammonium in Teosinte (*Zea Mays* Subsp. *Mexicana*)**. Luan Cutti*¹, Paula Sinigaglia Angonese¹, Guilherme Menegol Turra¹, Estéfani Sulzbach¹, Catarine Markus¹, Todd A. Gaines², Aldo Merotto¹; ¹Federal University of Rio Grande do Sul, Porto Alegre, Brazil, ²Colorado State University, Fort Collins, CO (38)

Comparing Remotely-Sensed Data for Estimating Palmer Amaranth and Soybean Canopy Cover. Byron Evers¹, Hannah Buessing², Christopher Weber², Sarah Lancaster*²; ¹Bayer CropScience, Manhattan, KS, ²Kansas State University, Manhattan, KS (39)

†**A Metabolization System Affected by Temperature is Associated with Florypyrauxifen-benzyl Resistance in Barnyardgrass (*Echinochloa Crus-galli*)**. Luan Cutti*¹, Crystal D. Sparks², André Lucas Simões Araujo², Angela Da Cas Bundt³, Catarine Markus¹, Todd A. Gaines², Aldo Merotto¹; ¹Federal University of Rio Grande do Sul, Porto Alegre, Brazil, ²Colorado State University, Fort Collins, CO, ³Corteva Agriscience, Santa Maria, Brazil (40)

Evaluation of the Axant™ Flex Cotton System. Zachary R. Treadway*¹, Jennifer Dudak¹, Todd A. Baughman¹, Adam C. Hixson², Gregory B. Baldwin³; ¹Oklahoma State University, Ardmore, OK, ²BASF, Lubbock, TX, ³BASF, Research Triangle Park, NC (41)

†**Use of New Sorghum Herbicide Technologies to Control Annual Grass Weeds**. Blaine A. Patton*¹, Peter A. Dotray²; ¹Texas Tech University, Lubbock, TX, ²Texas Tech University, Texas A&M AgriLife Research, Texas A&M AgriLife Extension, Lubbock, TX (42)

Distribution of Target Site Mutations in PPO2 Gene in Waterhemp (*Amaranthus Tuberculatus*) and Palmer Amaranth (*A. Palmeri*) Populations in the USA Conferring Resistance to PPO Inhibiting Herbicides. Daljit Singh¹, Jacob S. Montgomery², Jaishree Chittoor³, Chandrashekar Aradhya³, Alejandro Perez-Jones*³; ¹Bayer, Chesterfield, MO, ²Colorado State University, Fort Collins, CO, ³Bayer Crop Science, Chesterfield, MO (43)

Palmer Amaranth (*Amaranthus palmeri*) Management in Kansas Cotton (*Gossypium hirsutum*). Tyler P. Meyeres*¹, Lucas Haag², Gaylon Morgan³, Sarah Lancaster¹; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Colby, KS, ³Cotton Incorporated, Cary, NC (44)

†Changes in Nutrient Partitioning Following Low Rates of 2,4-D. Kyle R. Russell*¹, Peter A. Dotray², Irish L. B. Pabuayon³, Glen L. Ritchie¹; ¹Texas Tech University, Lubbock, TX, ²Texas Tech University, Texas A&M AgriLife Research, Texas A&M AgriLife Extension, Lubbock, TX, ³LSU AgCenter, Rayne, LA (45)

First Report of Multiple-Herbicide Resistance in Walter's Barnyardgrass in Texas Rice. Nithya K. Subramanian*, Tamara T. Mundt, Isidor Ceperkovic, Gabriella Elizarraras, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (46)

†Preemergence Control of *Amaranthus palmeri* and Axant™ Flex Cotton Weed Management Systems Using Isoxaflutole. Maxwell E. Smith*¹, Peter A. Dotray², Adam C. Hixson³; ¹Texas Tech University, Lubbock, TX, ²Texas Tech University, Texas A&M AgriLife Research, Texas A&M AgriLife Extension, Lubbock, TX, ³BASF, Lubbock, TX (47)

Evaluation of Axant Flex Systems in Mid-South Cotton. Bradley J. Norris*, Brian K. Pieralisi, Darrin M. Dodds, Tyler S. Soignier, William J. Rutland; Mississippi State University, Starkville, MS (48)

†Crabgrass and Texas Panicum Control with Group 15 Herbicides Applied Preemergence. Livia Pereira*, Steve Li, Ryan D. Langemeier, Justin T. McCaghren; Auburn University, Auburn, AL (49)

Effect of Grassy Weed Herbicides on Cereal Rye. Ethan B. Whitmoyer*, Dwight Lingenfelter, John M. Wallace; Penn State University, University Park, PA (50)

†Evaluating Weed Control and Crop Response of Pyridate in Field Pea. Adam Leise*¹, Amit J. Jhala¹, Dennis Long²; ¹University of Nebraska Lincoln, Lincoln, NE, ²Belchim, Manchester, TN (51)

Evaluation of Biological Nitrification Inhibition (BNI) Potential in Cover Crops. Nithya K. Subramanian*, Nithya Rajan, Sanjay Antony-Babu, Tamara T. Mundt, Megan L. Schill, Dinesh Phuyal, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (52)

†Long-term Palmer Amaranth (*Amaranthus palmeri*) Management in Dicamba-Resistant Cotton Using Herbicide Programs, Crop Rotations, and Tillage. Rohith Vulchi*¹, 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 (53)

Spot Treatment of Clethodim on Weedy Rice. Rasim Unan*, Liberty B. Galvin, Aaron Becerra-Alvarez; University of California, Davis, Davis, CA (54)

†Utilizing Novel Application Methods to Mitigate Auxin + Graminicide Herbicide Antagonism. Jake A. Patterson*¹, Darrin M. Dodds¹, Antonio Augusto Correa Tavares², Gresham A. Stephens¹, Caleb K. Meyer¹, Sydney C. Baker¹; ¹Mississippi State University, Starkville, MS, ²University of Nebraska-Lincoln, North Platte, NE (55)

Early Season Weed Control in Rice on Organic Soils with Preemergence Herbicides. D Calvin Odera*; University of Florida, Belle Glade, FL (56)

†Impact of Cereal Rye Cover Crop Seeding Rate and Termination Timing on Weed Management in Soybean. Eric Y. Yu*¹, Axel Garcia y Garcia², Lizabeth Stahl³, Ryan P. Miller⁴, Gregg A. Johnson¹, Ce Yang¹, William Lazarus¹, Debalin Sarangi¹; ¹University of Minnesota, St. Paul, MN, ²University of Minnesota, Lamberton, MN, ³University of Minnesota Extension, Worthington, MN, ⁴University of Minnesota, Rochester, MN (57)

Intercropping Soybean and Corn into the New Winter Oilseed Crop Golden Pennycress (*Thlaspi arvense*). Brent S. Heaton*, Tad L. Wesley, Winthrop B. Phippen, Mark L. Bernards; Western Illinois University, Macomb, IL (58)

Quantifying the Impact of Herbicide Drift on Peanuts Using Unmanned Aerial System. Pratap Devkota*, Navjot Singh, Joseph E. Iboyi; University of Florida, Jay, FL (59)

Weed Seed Fate at Corn Harvest. Haylee E. Schreier*¹, Jacob E. Vaughn¹, Kevin W. Bradley¹, Bryan G. Young², Jason K. Norsworthy³, Prashant Jha⁴, Travis Legleiter⁵, Bill Johnson⁶; ¹University of Missouri, Columbia, MO, ²Purdue University, Brookston, IN, ³University of Arkansas, Fayetteville, AR, ⁴Iowa State University, Ames, IA, ⁵University of Kentucky, Princeton, KY, ⁶Purdue University, Brookston, IN (60)

Seed Germination Responses of Branched Broomrape (*Phelipanche ramosa*) to Different Sanitation Chemicals and Exposure Durations. Pershang Hosseini*; Brad Hanson, University of California, Davis, Davis, CA (61)

TUESDAY MORNING JANUARY 31

POSTER - 02. Horticultural Crops

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern Time

WSSA Student Competition Posters will be judged Tuesday only

NEWSS Student Competition Posters will be judged Wednesday only

***PRESENTER † STUDENT CONTEST**

Sensitivity of Selected mid-Atlantic Vegetables to Simulated Dicamba Drift Rates. Maggie H. Wasacz¹, Baylee L. Carr², Mark VanGessel³, Thierry E. Besancon^{*4}; ¹Rutgers University, Wall Township, NJ, ²Rutgers University - Weed Science, Chatsworth, NJ, ³University of Delaware, Georgetown, DE, ⁴Rutgers University, Chatsworth, NJ (62)

†Integrating Pre-emergence Herbicides with Potential Safeners for Purple Nutsedge (*Cyperus rotundus* L.) Management in Florida's Tomato Plasticulture Production. Ruby Tiwari^{*1}, Nathan Boyd², Pamela Roberts¹, Samira Daroub³, Ramdas Kanissery¹; ¹University of Florida, Immokalee, FL, ²University of Florida, Balm, FL, ³University of Florida, Everglades, FL (63)

Carolina Redroot: Long Term Management with Sequential Residual Herbicide Applications in Cranberry. Thierry E. Besancon^{*1}, Baylee L. Carr², Wesley M. Bouchelle¹; ¹Rutgers University, Chatsworth, NJ, ²Rutgers University - Weed Science, Chatsworth, NJ (64)

†Evaluation of Weed Removal Timing for Three Sweetpotato (*Ipomoea batatas* L.) Cultivars. Emmanuel G. Cooper^{*1}, Stephen L. Meyers¹, Jeanine Arana²; ¹Purdue University, West Lafayette, IN, ²Purdue University/Horticulture, West Lafayette, IN (65)

Assessing the Risk of Injury Induced by Chloroacetamide and Diphenylether Mixing in Cole Crops Production. Wesley M. Bouchelle^{*1}, Elizabeth C. Maloney², Lynn M. Sosnoskie², Thierry E. Besancon¹; ¹Rutgers University, Chatsworth, NJ, ²Cornell University, Geneva, NY (66)

†Evaluation of Weed Control Efficacy and Crop Safety of the PPO-inhibiting Herbicide, Tiafenacil in California Orchard Cropping Systems. Guelta Laguerre^{*}; Brad Hanson, UC Davis Department of Plant Sciences, Davis, CA (67)

Evaluating Vision-Guided Spraying for Use in Vineyards. Bethany M. Schulteis^{*1}, Elizabeth C. Maloney², Emily J. Sausser³, Terry Bates¹, Lynn M. Sosnoskie²; ¹Cornell

University, Ithaca, NY, ²Cornell University, Geneva, NY,
³Lebanon Valley College, Annville, PA (68)

†**Interference of Palmer Amaranth (*Amaranthus palmeri*) in Stevia (*Stevia rebaudiana*).** Stephen Ippolito*¹, Katherine M. Jennings¹, David W. Monks¹, Sushila Chaudhari², David L. Jordan¹, Levi D. Moore¹, Colton D. Blankenship¹, Kira C. Sims¹, Fnu Chitra¹; ¹North Carolina State University, Raleigh, NC, ²Michigan State University, East Lansing, MI (69)

Influence of Growth Stage and Dicamba Rate on Eggplant, Cucumber, and Snap Bean Tolerance and Yield Response. Maggie H. Wasacz¹, Lynn M. Sosnoskie², Mark VanGessel³, Thierry E. Besancon*⁴; ¹Rutgers University, Wall Township, NJ, ²Cornell University, Geneva, NY, ³University of Delaware, Georgetown, DE, ⁴Rutgers University, Chatsworth, NJ (70)

†**Effect of S-metolachlor and Flumioxazin Herbicides on Sweetpotato Treated with and without Activated Charcoal Applied Through Transplant Water.** Colton D. Blankenship*¹, Katherine M. Jennings¹, David W. Monks¹, David L. Jordan¹, Stephen L. Meyers², Jonathan R. Schultheis¹, David H. Suchoff¹; ¹North Carolina State University, Raleigh, NC, ²Purdue University, West Lafayette, IN (71)

Tiafenacil Alone and in Combination with Preemergence Herbicides for Burndown and Residual Weed Control in Grapes. Elizabeth C. Maloney*, Lynn M. Sosnoskie; Cornell University, Geneva, NY (72)

In Search of New Weed Management Tools in Spinach, Cilantro, and Parsley for Georgia Farmers. A Stanley Culpepper*, Jenna C. Vance, Taylor M. Randell-Singleton; University of Georgia, Tifton, GA (73)

Current Status of Weed Management in Washington State Vegetable Production. Rui Liu*¹, Tim Waters²; ¹Washington State University, Prosser, WA, ²Washington State University, Pasco, WA (74)

Defoliation Timing and Growth Responses of Seedling Field Bindweed and Honeyvine Milkweed. Melissa McClements*¹, Lynn M. Sosnoskie²; ¹Cornell, Geneva, NY, ²Cornell University, Geneva, NY (75)

Hemp and Weed Competition in New York. Lynn M. Sosnoskie*, Elizabeth C. Maloney; Cornell University, Geneva, NY (76)

Dicamba Residue Persistence in Processing Tomato. Stephen L. Meyers*¹, Jeanine Arana², Brandi C. Woolam³, Nathaly Belen Vargas Arroyo¹, Laura D. Rodriguez Baquero⁴, Luz Aide Cardona Giraldo¹; ¹Purdue University, West Lafayette, IN,

²Purdue University/Horticulture, West Lafayette, IN, ³LSU AgCenter, Alexandria, LA, ⁴University of Wisconsin-Madison, Madison, WI (77)

Weed Surveys of Lima Bean (*Phaseolus lunatus*) Fields in United States Production Systems. Yudai K. Takenaka*¹, Jed Colquhoun², Scott Lukas³, Pavle Pavlovic⁴, Barbara Scott⁵, Mark VanGessel⁵, Martin Williams⁶; ¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University of Wisconsin-Madison, Madison, WI, ³Oregon State University, Hermiston, OR, ⁴University of Illinois, Champaign, IL, ⁵University of Delaware, Georgetown, DE, ⁶USDA-ARS, Urbana, IL (78)

Michigan's Experience with Sugarbeet Tolerance to Acifluorfen. Brian J. Stiles II*, Gary Edward Powell, Christy L. Sprague; Michigan State University, East Lansing, MI (79)

TUESDAY MORNING JANUARY 31

POSTER - 03. Turf and Ornamentals

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern Time

WSSA Student Competition Posters will be judged Tuesday only

NEWSS Student Competition Posters will be judged Wednesday only

***PRESENTER † STUDENT CONTEST**

Efficacy of Organic Turf and Landscape Herbicides in Montgomery County, Maryland. Kelly M. Nichols*; University of Maryland Extension, Derwood, MD (80)

†Ethofumesate Resistant Annual Bluegrass in Oregon Grass Seed Production Systems. Vera Vukovic*, Aaron J. Patton; Purdue University, West Lafayette, IN (81)

Glufosinate and Clethodim Efficacy on Bermudagrass. Joe C. Neal*, Christopher D. Harlow; North Carolina State University, Raleigh, NC (82)

†Site-Specific Treatment of Kyllinga in Golf Fairways Using a Remotely Piloted Aerial Application System. Ubaldo Torres*¹, Daniel E. Martin², Bholuram Gurjar¹, Bishwa B. Sapkota¹, Andrew W. Osburn¹, Chase M. Straw¹, Muthukumar

V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²United States Department of Agriculture, College Station, TX (83)

Non-Target Site Resistance Mechanisms in Annual Bluegrass (*Poa annua*). Ronald R. Rogers*, Travis Gannon, Khalied Ahmed, Mathieu LeCompte; North Carolina State University, Raleigh, NC (84)

†Characterization of Potential Quinclorac-Resistant Smooth Crabgrass (*Digitaria ischaemum*) Population. Claudia A. Rutland*¹, Bridgette C. Johnson², James D. McCurdy³, Joseph S. McElroy²; ¹Auburn University Department of Crop, Soil, and Environmental Sciences, Auburn, AL, ²Auburn University, Auburn, AL, ³Mississippi State University, Starkville, MS (85)

Halosulfuron and Sulfentrazone Combinations for False-green Kyllinga (*Kyllinga Gracillima*) Control. Daniel P. Tuck*¹, Matthew T. Elmore¹, Charles A. Silcox²; ¹Rutgers University, New Brunswick, NJ, ²Amvac Chemical, Lincoln University, PA (86)

†Phenotypic and Reproductive Trait Diversity of *Poa annua* L. (Annual Bluegrass) in Common Garden Experiments Across Multiple Ecoregions in the United States. Andrew W. Osburn*, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (87)

Mowing Height Influences False-Green Kyllinga (*Kyllinga gracillima*) Establishment in Perennial Ryegrass Turf. Matthew T. Elmore*, Daniel P. Tuck; Rutgers University, New Brunswick, NJ (88)

Injury to Nursery Crops from Herbicide Residues in a Contaminated Irrigation Water. Ada C. Montoya*, Joe C. Neal, Wesley Everman, Christopher D. Harlow, Travis Gannon; North Carolina State University, Raleigh, NC (89)

TUESDAY MORNING JANUARY 31

POSTER - 04. Pasture, Range, Forest, & Rights of ways, Wildland, and Aquatic Invasive plants

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern Time

**WSSA Student Competition Posters will be judged
Tuesday only**

**NEWSS Student Competition Posters will be judged
Wednesday only**

***PRESENTER † STUDENT CONTEST**

Guardrail Bareground Applications in KY: Spring or Fall Timing? Control Next Season? Joseph Omielan*; University of Kentucky, Lexington, KY (90)

†Evaluation of Hemp Dogbane (*Apocynum cannabinum*) Response to Auxinic Herbicides. Kayla L. Broster*, John D. Byrd, Jr.; Mississippi State University, Starkville, MS (91)

Environmental Variables Influence Native Plant Composition of Virginia Roadside. Shawn Askew*, Clebson G. Goncalves; Virginia Tech, Blacksburg, VA (92)

Does PRE Herbicide Timing Affect the Control of Foxtail Species (*Setaria* Spp.) in Southern Forages. Nicholas T. Basinger*¹, Chris Bocz¹, Sambit Shome², Hannah C. Lindell³; ¹The University of Georgia, Athens, GA, ²University of Georgia, Athens, GA, ³The University of Georgia Crop and Soil Science, Athens, GA (93)

Do Forage Grasses Tolerate Graminicides? Dwight Lingenfelter*, John M. Wallace; Penn State University, University Park, PA (94)

Invasive Aquatic and Native Marine Vegetation on the Mississippi Barrier Islands. Gray Turnage*, Andrew Sampe; Mississippi State University, Starkville, MS (95)

Vegetation Damage by Ecosystem Disturbance Plants '*Sicyos angulatus* and *Humulus japonicus*' in Korea. Soo-Hyun Lim*; Korea National Open University, Seoul, South Korea (96)

TUESDAY MORNING JANUARY 31

POSTER - 06. Teaching and Extension

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern
 Time

**WSSA Student Competition Posters will be judged
Tuesday only**

**NEWSS Student Competition Posters will be judged
Wednesday only**

***PRESENTER † STUDENT CONTEST**

P23: Join the WSSA Plant Names Committee. Theresa Piskackova*; Czech University of Life Sciences Prague, Prague 6 - Suchbátka, Czechia (Czech Republic) (97)

†WeedR: An R Package and Shiny Application for Weed Scientists. Lucas Kopecky Bobadilla*¹, Patrick Tranel²;
¹University of Illinois, Champaign, IL, ²University of Illinois, Urbana, IL (98)

Weeds of the Northeast - 2nd Edition. Joe C. Neal*¹, Richard H. Uva², Joe M. DiTomaso³, Antonio DiTommaso⁴; ¹North Carolina State University, Raleigh, NC, ²Seaberry Farms, LLC, Federalsburg, MD, ³UC Davis, retired, Davis, CA, ⁴Cornell University, Ithaca, NY (99)

†Comparing the Accuracy of Available Weather Resources for Pesticide Applicators in Texas. Rohith Vulchi*¹, Zachary S. Howard¹, Don Conlee¹, Scott A. Nolte²; ¹Texas A&M University, College Station, TX, ²Texas A&M AgriLife Extension, College Station, TX (100)

~~Things That Work: Integrated Weed Management Teaching Modules That Stood the Test of Time.~~ David A. Mortensen*~~;~~
~~University of New Hampshire, Durham, NH (101)~~

The Importance of Communicating Agricultural Science and Technology □ the Role of CAST and You! Anthony L. Witcher*¹, Jill Schroeder²; ¹Tennessee State University, Mcminnville, TN, ²New Mexico State University, Las Cruces, NM (102)

Undergraduate Student Research Experience -- from Proposal to Poster Presentation in *AGRN 479 Weed Science*. Mark L. Bernards*; Western Illinois University, Macomb, IL (103)

TUESDAY MORNING JANUARY 31

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

LOCATION: Salon IV-VI

TIME: 08:00 AM - 10:00 AM Eastern Time

WSSA Student Competition Posters will be judged Tuesday only

NEWSS Student Competition Posters will be judged Wednesday only

***PRESENTER † STUDENT CONTEST**

†Weed Management Using Unmanned Aerial Systems. Dhiraj Srivastava*¹, Vijay Singh², Vipin Kumar¹; ¹Virginia Polytechnic Institute and State University, Painter, VA, ²Virginia Tech, Painter, VA **(104)**

†Designing and Testing an Ultra-Low Volume Spray System for Site-Specific Herbicide Application Using Ground Robots. Bholuram Gurjar*, Sunil Kumar, Joe Johnson, Robert Hardin, Muthukumar V. Bagavathiannan; Texas A&M university, College Station, TX **(105)**

†Clethodim Antagonism from Dicamba on Volunteer Corn Control in Soybean Was Resolved by Using a Dual Tank/Boom Sprayer. Marcelo Zimmer*¹, Bryan G. Young², William G. Johnson¹, Tristen H. Avent³, Jason K. Norsworthy³, Diego J. Contreras⁴, Wesley Everman⁴, Michael M. Houston⁵, Lauren M. Lazaro⁶, William L. Patzoldt⁶; ¹Purdue University, West Lafayette, IN, ²Purdue University, Brookston, IN, ³University of Arkansas, Fayetteville, AR, ⁴North Carolina State University, Raleigh, NC, ⁵Blue River Technology, Greenville, MS, ⁶Blue River Technology, Sunnyvale, CA **(106)**

TUESDAY MORNING JANUARY 31

POSTER - 08. Weed Biology and Ecology

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern Time

WSSA Student Competition Posters will be judged Tuesday only

NEWSS Student Competition Posters will be judged Wednesday only

***PRESENTER † STUDENT CONTEST**

The Critical Period for Weed 'Seed' Control: Concept and its Application. Charles M. Geddes*¹, Adam S. Davis²;

¹Agriculture and Agri-Food Canada, Lethbridge, AB, Canada,

²University of Illinois, Urbana, IL (107)

†Light Quality Manipulation as a Seedbank Management Tool for Palmer Amaranth (*Amaranthus palmeri*). Sarah E. Kezar*, Shuyang Zhen, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (108)

Quantifying Long-term Competitiveness of Weed Species in a Cereal-legume Rotation. Jose L. Gonzalez-Andujar*¹, Maria J. Aguilera², Rene Van Acker³; ¹Instituto de Agricultura Sostenible (CSIC), Cordoba, Spain, ²Departamento de Física Aplicada, Universidad de Córdoba, Cordoba, Spain, ³Ontario Agricultural College, University of Guelph, Guelph, ON, Canada (109)

†Characteristics of Self-fertilization in *Lilium formosanum* Var. *pricei*. Sawa Seoka*, Hidehiro Inagaki; Shizuoka university, Shizuoka, Japan (110)

The Role of Cytochrome P450 in Herbicide Metabolism. Fatemeh Abdollahi*; Postdoctoral researcher, Fort Collins, CO (111)

†In the Ruins: The Neglected Link Between Archaeology and Weed Science. Alice C. Wolff*¹, Sophie Westbrook², Antonio DiTommaso²; ¹Cornell University/Medieval Studies, Ithaca, NY, ²Cornell University, Ithaca, NY (112)

Rational Design of an Artificial Weed for High-Throughput Soil Bin Physical Weed Control Tool Testing. Sonora Ortiz*¹, Eric R. Gallandt¹, Bashir Khoda¹, Margaret R. McCollough¹, Daniel C. Brainard²; ¹University of Maine, Orono, ME, ²Michigan State University, East Lansing, MI (113)

†Cereal Rye Residue Effects on the Germination of Troublesome Southeastern Weeds. Annu Kumari*¹, Steve Li¹, Andrew J. Price²; ¹Auburn University, Auburn, AL, ²USDA-ARS, Auburn, AL (114)

Elevated CO₂ and Temperature Effects on Growth and Photosynthetic Responses in Purple and Yellow Nutsedge (*Cyperus rotundus* L. and *C. esculentus* L.). Srinivasa Rao Pinnamaneni*, Krishna N. Reddy; Crop Production Systems Research Unit USDA-ARS, Stoneville, MS (115)

†Analysis of the Recently Completed Genome of *Salsola tragus* (Russian Thistle), a Tenacious Tetraploid Tumbleweed. John M. Lemas*¹, Eric L. Patterson², Sarah Morran¹, Nickolas A. Johnson², Jacob S. Montgomery¹, Victor Llaca³, Kevin Fengler³, Philip Westra¹, Todd A. Gaines¹;

¹Colorado State University, Fort Collins, CO, ²Michigan State University, East Lansing, MI, ³Corteva Agriscience, Johnston, IA (116)

Using Weed Extracts to Protect Sweet Potato from Deer Browsing. Ziming Yue¹, Karina Beneton¹, Presley Lee², Mark Hall³, Callie J. Morris¹, Mark W. Shankle³, Te-Ming (Paul) Tseng*¹; ¹Mississippi State University, Starkville, MS, ²North Pontotoc High School, Pontotoc, MS, ³Mississippi State University, Pontotoc, MS (117)

†Competitive Interactions Between Sorghum and Johnsongrass (*Sorghum halepense*) is Influenced by Multiple Abiotic Stress Factors. Vikas C. Tyagi*, Aniruddha Maity, Nithya K. Subramanian, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (118)

Integrating Ecological Tactics to Manage Multiple Herbicide-Resistant Pigweeds in U.S. Soybean Production. Prashant Jha*¹, Jason K. Norsworthy², Vipin Kumar³, Karla L. Gage⁴; ¹Iowa State University, Ames, IA, ²University of Arkansas, Fayetteville, AR, ³Kansas State University, Hays, KS, ⁴Southern Illinois University Carbondale, Carbondale, IL (119)

†CO₂ And Temperature Effects on Herbicide-resistant and Susceptible Palmer Amaranth Biotypes. Juliana de Souza Rodrigues*¹, Timothy L. Grey², Donn Shilling³, Todd A. Gaines⁴, Nicholas T. Basinger⁵, John Snider², Viktor Tishchenko⁶; ¹University of Georgia/Department of Crop and Soil Science, Tifton, GA, ²University of Georgia, Tifton, GA, ³University of Georgia, Athens, GA, ⁴Colorado State University, Fort Collins, CO, ⁵The University of Georgia, Athens, GA, ⁶University of Georgia, Griffin, GA (120)

Influence of Multiple Abiotic Stress Factors on Pollen Viability and Stigma Receptivity of Johnsongrass (*Sorghum halepense*). Vikas C. Tyagi*, Aniruddha Maity, Nithya K. Subramanian, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (121)

†Differentiation Between Yellow Foxtail (*Setaria pumilla*) and Knotroot Foxtail (*Setaria parviflora*) Via Morphological Characteristics and Genetics Markers. Mikerly M. Joseph*¹, Joseph S. McElroy¹, Claudia A. Rutland²; ¹Auburn University, Auburn, AL, ²Auburn University Department of Crop, Soil, and Environmental Sciences, Auburn, AL (122)

†Insights into Weed Aboveground and Seedbank Dynamics from a Long-Term Cropping Systems Experiment. Natasha Djuric*¹, Michel A. Cavigelli², Steven Brian Mirsky², Eugene P. Law³, Antonio DiTommaso¹, Matthew R. Ryan¹; ¹Cornell University, Ithaca, NY, ²USDAARS, Beltsville, MD, ³University of Delaware, Beltsville, MD (123)

†**Evapotranspiration of Volunteer Corn in Corn, Soybean, and Sorghum Cropping Systems.** Mandeep Singh*¹, John Lindquist², Stevan Knezevic², Suat Irmak³, Vipin Kumar⁴, Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska, Lincoln, NE, ³Penn State University, University Park, PA, ⁴Kansas State University, Hays, KS (124)

†**Predicting Yield Loss Using the Kropff-Spitters Model and Early Season Leaf Area Indices.** Avi S. Goldsmith*, Sandra R. Ethridge, Ramon G. Leon, Robert Austin; North Carolina State University, Raleigh, NC (125)

†**Fate of *Amaranthus palmeri* (Palmer Amaranth) and *A. tuberculatus* (Waterhemp) Seeds Under Cereal Rye Cover Crop Across the North Central Region.** Lily A. Woitaszewski*¹, Sarah Lancaster¹, Anita Dille¹, Kevin W. Bradley², Mandy Bish², William G. Johnson³, Bryan G. Young⁴, Claudia R. Bland³, Joseph T. Ikley⁵, Rodrigo Werle⁶, Nicholas J. Arneson⁶; ¹Kansas State University, Manhattan, KS, ²University of Missouri, Columbia, MO, ³Purdue University, West Lafayette, IN, ⁴Purdue University, Brookston, IN, ⁵North Dakota State University, Fargo, ND, ⁶University of Wisconsin-Madison, Madison, WI (126)

†**Building Reference Genome of Canada Thistle (*Cirsium Arevense*) and Identifying Genomic Regions Behind Sex Determination.** Sofia Marques-hill*¹, Todd A. Gaines²; ¹Colorado State University - Agricultural Biology, Fort Collins, CO, ²Colorado State University, Fort Collins, CO (127)

†**Identifying Genes Associated with Conferring Clopyralid Resistance in Common Ragweed (*Ambrosia artemisiifolia*) Using RNA Sequence Transcriptome Analysis.** Nash D. Hart*¹, Erin E. Burns², Eric L. Patterson²; ¹Michigan State University, Durand, MI, ²Michigan State University, East Lansing, MI (128)

†**Chlorophyll Content and Fluorescence Fail to Detect Crop Injury from Physical Weed Control Tools.** Anthony J. Codega*¹, Ruthie Clements¹, Jordan W. Parks¹, Rebecca Champagne², Eric R. Gallandt¹; ¹University of Maine, Orono, ME, ²The University of Maine, Orono, ME (130)

†**Effective Anthraquinone Derivative Dose; A Weed-based Deer Repellent for Soybean.** Ncomiwe A. Maphalala*¹, Ziming Yue², Te-Ming (Paul) Tseng²; ¹Mississippi State University-Department of Plant and Soil Sciences, Starkville, MS, ²Mississippi State University, Starkville, MS (131)

†**A Novel Allele of *IAA16* is Associated with Dicamba Resistance in *Bassia scoparia*.** Jacob S. Montgomery*¹, Neeta Soni², Sarah Morran¹, Franck E. Dayan¹, Philip Westra¹, Eric L.

Patterson³, Todd A. Gaines¹; ¹Colorado State University, Fort Collins, CO, ²Corteva Agriscience, Indianapolis, IN, ³Michigan State University, East Lansing, MI (132)

TUESDAY MORNING JANUARY 31

POSTER - 09. Biocontrol of Weeds

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern Time

WSSA Student Competition Posters will be judged Tuesday only

NEWSS Student Competition Posters will be judged Wednesday only

***PRESENTER † STUDENT CONTEST**

A Fungal Pathogen (*Colletotrichum shioi*) Reduces Biomass, Flowering, and Competitive Ability of Invasive Beefsteak Plant (*Perilla frutescens*). Michael R. Fulcher*; United States Department of Agriculture, Agricultural Research Service, Fort Detrick, MD (133)

†The Efficacy and Synergistic Effect of Coumarin and Chlorogenic Acid on Glyphosate- Resistant Palmer Amaranth. Alyssa Lea Miller*; Mississippi State University, Starkville, MS (134)

Invasive Weeds Serving as Microbial Reservoirs and Their Role in Pathogen Evolution and Emergence. Matthew A. Tancos*, Michael R. Fulcher; United States Department of Agriculture, Agricultural Research Service, Fort Detrick, MD (135)

†Exploiting the Allelopathic Weed-suppressive Potential of Sweetpotato Varieties Under Field Conditions. Varsha Singh*¹, Worlanyo Segbefia¹, Ziming Yue¹, Callie J. Morris¹, Parth Sharma¹, Mark W. Shankle², Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Pontotoc, MS (136)

Mycorrhizae Mediate the Control of Broomrapes (*Orobanche* Spp.) in Lentils and Sunflowers. Cumali Ozaslan*¹, Antonio DiTommaso²; ¹Dicle University, Diyarbakir, Turkey, ²Cornell University, Ithaca, NY (137)

†**Root Architecture Study for Allelopathic Traits in Cotton for Weed Suppression.** Worlanyo Segbefia*¹, Varsha Singh¹, Parth Sharma¹, Ncomiwe A. Maphalala², Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Starkville, MS, ²Mississippi State University-Department of Plant and Soil Sciences, Starkville, MS (138)

†**Root System Architectural Traits and Genes Linked to Allelopathic Effects in Weedy Rice (*Oryza Sativa* f. *Spontanea*).** Ncomiwe A. Maphalala*¹, Auriana Tucker², Brooklyn C. Schumaker², Swati Shrestha², Shandrea D. Stallworth², Nilda Roma-Burgos³, Te-Ming (Paul) Tseng²; ¹Mississippi State University-Department of Plant and Soil Sciences, Starkville, MS, ²Mississippi State University, Starkville, MS, ³University of Arkansas, Fayetteville, Fayetteville, AR (139)

TUESDAY MORNING JANUARY 31

POSTER - 10. Physiology

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern Time

WSSA Student Competition Posters will be judged Tuesday only

NEWSS Student Competition Posters will be judged Wednesday only

***PRESENTER † STUDENT CONTEST**

†**A Tale of 20 Years: What Can be Learned About Glufosinate Tolerance When Comparing Palmer Amaranth Populations from 2001 Vs. Now?** Pamela Carvalho-Moore*¹, Jason K. Norsworthy¹, Fidel Gonzalez Torralva¹, Leonard B. Piveta¹, Maria Carolina C R Souza², Tom Barber³, Thomas R. Butts³; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas, Fayetteville, AR, ³University of Arkansas System Division of Agriculture, Lonoke, AR (140)

†**A Mutation in a Transcription Factor Imparts Non-target Site Herbicide Resistance in Rice.** Srishti Gupta*; Colorado State University, Fort Collins, CO (141)

†**CRISPR/Cas9 Editing of a *CYP81A* Homoeolog in *Triticum aestivum*.** Olivia A. Landau*¹, Natalya Nersesian², Thomas

Clemente², Dean E. Riechers³; ¹University of Illinois, Urbana, IL, ²University of Nebraska, Lincoln, NE, ³University of Illinois-Urbana, Urbana, IL (142)

†**Reactive Oxygen Species in Herbicidal Activity: What We Know.** Catherine J. Traxler*¹, Todd A. Gaines¹, Peter Luemmen², Franck E. Dayan¹; ¹Colorado State University, Fort Collins, CO, ²Bayer Crop Sciences, Frankfurt, Germany (143)

Activation of a Singlet Oxygen Signaling Pathway by Competition Cues in *Arabidopsis Thaliana*. Nicole Berardi¹, Sasan Amirsadeghi¹, Clarence Swanton*²; ¹University of Guelph, Guelph, ON, Canada, ²University of Guelph, Department of Plant Agriculture, Guelph, ON, Canada (144)

†**Herbicidal Activity of Chalcones.** Raphael M. Garrido*¹, Franck E. Dayan¹, Rosana M. Kolb², Luis O. Regasini³; ¹Colorado State University, Fort Collins, CO, ²São Paulo State University, Assis, Brazil, ³São Paulo State University, São José Do Rio Preto, Brazil (145)

Phytotoxicity of Sorgoleone Revealed by Expression of the Biosynthetic Pathway in *Nicotiana benthamiana*. Zhiqiang Pan*, Joanna Bajsa-Hirschel; USDA-ARS, University, MS (146)

†**An Omics Approach to Investigate the Resistance Mechanism to ACCase Inhibitors in Feather Fingergrass (*Chloris Virgata*).** Luiz Augusto Inojosa Ferreira*¹, Rubem Silvério de Oliveira Jr², Jamil Contantin², Caio A. Brunharo³; ¹Penn State University, State College, PA, ²State University of Maringa, Maringa, Brazil, ³Penn State University, University Park, PA (147)

Resistance of *Sagittaria Montevidentis* Biotypes to Acetolactate Synthase Inhibitor and Bentazon Herbicides. Lariza Benedetti¹, Marcus Vinícius Fipke¹, Vívian Ebeling Viana*¹, Diogo da Silva Moura², Edinaldo Rabaioli Camargo¹, José Alberto Noldin³, Luis Antonio de Avila¹; ¹Federal University of Pelotas, Pelotas, Brazil, ²Centro de Ensino Superior Riograndense, Marau, Brazil, ³Empresa de Pesquisa Agropecuária e Extensão Rural de Santa Catarina, Itajaí, Brazil (148)

†**Protoplast Generation from Cell Suspension Culture in Waterhemp [*Amaranthus tuberculatus* (Moq.) J. D. Sauer].** Peter E. Beerbower*, Robert Sabba, Michael J. Christoffers; North Dakota State University, Fargo, ND (149)

†**Agrematch AI Platform Leads to the Discovery of AS9057 as a Novel Natural Herbicide.** Alyssa Twitty*¹, Yosef Geva², Eyal Simonovsky², Ifat Shub², Yael Phillip², Franck E. Dayan¹; ¹Colorado State University, Fort Collins, CO, ²Agrematch, Rehovot, Israel (150)

†**Transcriptomic Response to Glyphosate in Rapid Response Giant Ragweed (*Ambrosia trifida*)**. Crystal D. Sparks*¹, Christopher Van Horn², Roland S. Beffa³, Todd A. Gaines¹, Franck E. Dayan¹, Philip Westra¹; ¹Colorado State University, Fort Collins, CO, ²Bayer Crop Science, St. Louis, MO, ³Senior Scientist Consultant, Frankfurt, Germany (151)

TUESDAY MORNING JANUARY 31

POSTER - 11. Soil and Environmental Aspects

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern Time

WSSA Student Competition Posters will be judged Tuesday only

NEWSS Student Competition Posters will be judged Wednesday only

***PRESENTER † STUDENT CONTEST**

Relative Soybean Response from 4 Auxin Herbicides Applied POST. Thomas C. Mueller*¹, Larry Steckel²; ¹University of Tennessee, Knoxville, TN, ²University of Tennessee, Jackson, TN (152)

†**Cereal Rye Cover Crop Impacted the Fate of PRE-emergence Herbicides Flumioxazin and Pyroxasulfone in Soybean**. Jose J. Nunes*¹, Eric J. Miller², Lily A. Woitaszewski³, Shelby E. Lanz⁴, Nicholas J. Arneson¹, John M. Wallace⁵, Karla L. Gage⁶, Sarah Lancaster³, Thomas C. Mueller⁴, Rodrigo Werle¹; ¹University of Wisconsin-Madison, Madison, WI, ²Southern Illinois University, Carbondale, IL, ³Kansas State University, Manhattan, KS, ⁴University of Tennessee, Knoxville, TN, ⁵Penn State University, University Park, PA, ⁶Southern Illinois University Carbondale, Carbondale, IL (153)

How Does Environment Influence VLCFA-Inhibitor Efficacy? Tyler P. Meyeres*¹, Lucas Haag², Peter Tomlinson¹, Sarah Lancaster¹; ¹Kansas State University, Manhattan, KS, ²Kansas State University, Colby, KS (154)

TUESDAY MORNING JANUARY 31

POSTER - 12. Integrated Weed Management

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern Time

WSSA Student Competition Posters will be judged Tuesday only

NEWSS Student Competition Posters will be judged Wednesday only

***PRESENTER † STUDENT CONTEST**

†Impact of Blue Light on the Germination Characteristics of Grass Weed Seeds. Sarah A. Chu*, Sarah E. Kezar, Shuyang Zhen, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (155)

Integrated Weed Management Using Biosolarization, Cover Cropping and Strip Tillage. Dwayne D. Joseph*¹, Alan W. Leslie², Kurt M. Vollmer³, Cerruti Rr Hooks²; ¹University of Maryland, Chestertown, MD, ²University of Maryland, College Park, MD, ³University of Maryland, Queenstown, MD (156)

†Ecology and Landscape Scale Management of a Globally Invasive Weed; *Nassella trichotoma* (Serrated Tussock). Talia J. Humphries*; Federation University Australia, Ballarat, Australia (157)

Integrated Weed Management in Olive Orchards. Veronica Pedraza¹, Juan A. Lezaun², Irache Garnica², Jose L. Gonzalez-Andujar*³; ¹Instituto de Agricultura Sostenible (CSIC), Córdoba, Spain, ²Instituto Navarro de Tecnologías e Infraestructuras Agrarias (INTIA), Villava, Spain, ³Instituto de Agricultura Sostenible (CSIC), Cordoba, Spain (158)

†Atrazine Wash Off from Cereal Rye (*Secale cereale* L.) Residue onto the Soil After Simulated Rainfall. Lucas Oliveira Ribeiro Maia*¹, Bryan G. Young², William G. Johnson¹, Eileen J. Kladvikova¹, Shalamar Armstrong¹; ¹Purdue University, West Lafayette, IN, ²Purdue University, Brookston, IN (159)

Changing Labor Landscape in Northeast Weed Management for Specialty Crops. Laura Pineda-Bermudez*, Lynn M. Sosnoskie; Cornell University, Geneva, NY (160)

†**Summer Cover Crop Suppression of Broadleaf, Grass, and Nutsedge Weeds.** Moriah Williams*¹, Nathan Boyd²;
¹University of Florida, Saint Petersburg, FL, ²University of Florida, Balm, FL (161)

Field Scale Evaluation of the Harrington Seed Destructor in Alberta, Canada. Breanne D. Tidemann*¹, K. Neil Harker¹, Hugh Beckie²; ¹Agriculture and Agri-Food Canada, Lacombe, AB, Canada, ²University of Western Australia, Perth, Australia (162)

Weed Suppression Provided by a Second Season Perennial Living Mulch and Self-reseeded Cover Crop. Veronica Yurchak*, Alan W. Leslie, Cerruti Rr Hooks, Bill Phillips; University of Maryland, College Park, MD (163)

Can Exogenous Application of Phytohormones Involved in the Stimulus of Seed Germination Become Part of Integrated Waterhemp (*Amaranthus tuberculatus*) Management Programs? Jose J. Nunes, Nicholas J. Arneson, Rodrigo Werle*; University of Wisconsin-Madison, Madison, WI (164)

†**Integrative Effect of Row Spacing and Herbicide Programs on Photosynthetically Active Radiation (PAR) in Corn Infested with Multiple Herbicide-resistant Palmer Amaranth.** Ramandeep Kaur*¹, Stevan Knezevic², Yeyin Shi², Nevin Lawrence², Parminder Chahal², Rachana Jhala², Amit J. Jhala¹; ¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska, Lincoln, NE (165)

Cover Crops as a Weed Seed Bank Management Tool. Cynthia Sias¹, Bethany R. Wolters², Mark S. Reiter³, Michael L. Flessner*¹; ¹Virginia Tech, Blacksburg, VA, ²University of Tennessee, Martin, TN, ³Virginia Tech, Painter, VA (166)

†**Impacts of Soil Organic Amendments and Weed Control Practices on Nutritional Status and Performance of Valencia Sweet Orange (*Citrus Sinensis* 'Valencia') Trees.** Ankit Pokhrel*, Ute Albrecht, Ramdas Kanissery, Sarah Strauss; University of Florida, Immokalee, FL (167)

Evaluating Different Deep Learning Models for the Detection of Poison Ivy (*Toxicodendron radicans*) in Images. Renato Herrig Furlanetto*¹, Nathan Boyd², Ana Claudia Buzanini¹, Alex G. Rodriguez³; ¹University of Florida, Wimauma, FL, ²University of Florida, Balm, FL, ³University of Florida, Belle Glade, FL (168)

†**Multi-year Herbicide Comparison for Italian Ryegrass (*Lolium Perenne* Ssp. *Multiflorum*) Control in Wheat.** Wyatt J. Stutzman*, Kevin Bamber, Michael L. Flessner; Virginia Tech, Blacksburg, VA (169)

Weed Suppression from Frost-seeded *Brassicaceae* Cover Crops. Huong Nguyen*, Olivia Fisher, Amy Fox, Kristen Loria, Kathryn Marini, Chris J. Pelzer, Adam Sharifi, Domenic Varma, Sandra Wayman, Matthew R. Ryan; Cornell University, Ithaca, NY (170)

Evaluation of Two-pass Herbicide Programs for Broad-spectrum Weed Control in Conventional Corn in Wisconsin Atrazine Prohibition Areas. Ahmadreza Mobli*¹, Ryan P. DeWerff², Nicholas J. Arneson¹, Rodrigo Werle¹; ¹University of Wisconsin-Madison, Madison, WI, ²University of Wisconsin, Madison, WI (171)

†A Multi-state Evaluation of Weed Seed Fate During Soybean Harvest. Jacob E. Vaughn*¹, Joseph T. Ikley², Vipin Kumar³, Sarah Lancaster⁴, Christy L. Sprague⁵, Rodrigo Werle⁶, Nicholas J. Arneson⁶, Kevin W. Bradley¹; ¹University of Missouri, Columbia, MO, ²North Dakota State University, Fargo, ND, ³Kansas State University, Hays, KS, ⁴Kansas State University, Manhattan, KS, ⁵Michigan State University, East Lansing, MI, ⁶University of Wisconsin-Madison, Madison, WI (172)

Cover Crop Residue Management Strategies Impact Deposition and Washoff of Soil-applied Residual Herbicides. Cody Smith¹, John M. Wallace*², Mark VanGessel³, Michael L. Flessner⁴; ¹Penn State University, University Park Pa, PA, ²Penn State University, University Park, PA, ³University of Delaware, Georgetown, DE, ⁴Virginia Tech, Blacksburg, VA (173)

†Goosegrass (*Eleusine indica*) Control Options in Bentgrass Putting Greens. Bridgette C. Johnson*, Joseph S. McElroy; Auburn University, Auburn, AL (174)

US-Herbicide Resistance Action Committee (HRAC): Who We Are and What We Do? Zahoor A. Ganie*¹, Lowell Sandell², Greg Elmore³, Chandrashekar Aradhya⁴; ¹FMC, Newark, DE, ²Valent, Ashland, NE, ³Bayer Crop Science, Saint Louis, MO, ⁴Bayer Crop Science, Chesterfield, MO (175)

†Light Quality Alteration is a Mechanism of Weed Suppression by Cereal Rye Cover Crop. Gustavo Camargo Silva*, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (176)

Building an Agriculture Weed ID Network for New York: Development of Web Based Resources to Interface with Growers and Beyond. Sharon Bachman*¹, Caroline Marschner², Antonio DiTommaso², Isabella Colucci²; ¹Cornell Cooperative Extension, East Aurora, NY, ²Cornell University, Ithaca, NY (177)

†**Weed Control and Rice Response to Florpyrauxifen-benzyl.** Rachelle Berger*; University of Florida, Belle Glade, FL (178)

To Bury or Uproot? Modelling Selectivity of Physical Weed Control in Sensitive Crops. Daniel C. Brainard*, Noelle Connors; Michigan State University, East Lansing, MI (179)

†**Impact of Seeding Rate, Nitrogen Availability, and Disease Pressure in *Bromus tectorum* and Winter Wheat Interactions.** Laura Berrios-Ortiz*¹, Fabian Menalled²; ¹Department of Land Resources and Environmental Sciences-Montana State University, Bozeman, MT, ²Montana State University, Bozeman, MT (180)

†**Effect of Tillage, Cover Crop, and Herbicide on Giant Ragweed (*Ambrosia trifida* L.) Management in Soybean.** Venkatanaga Shiva Datta Kumar Sharma Chiruvelli*¹, Thomas J. Peters², Gregg A. Johnson¹, Debalin Sarangi¹; ¹University of Minnesota, St Paul, MN, ²North Dakota State University, Fargo, ND (181)

Weed Detection Using Convolutional Neural Networks Under Scenarios of Occlusion. Daniel J. Ginn*¹, Ramon G. Leon², Chris Reberg-Horton², Steven Brian Mirsky³, Muthukumar V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²North Carolina State University, Raleigh, NC, ³USDA ARS, Beltsville, MD (182)

†**A Multi-Tactic Waterhemp Management Approach in Soybean-Sugar Beet Rotation.** Navjot Singh*¹, Thomas J. Peters², Seth L. Naeve¹, Ryan P. Miller³, Debalin Sarangi⁴; ¹University of Minnesota, Saint Paul, MN, ²North Dakota State University, Fargo, ND, ³University of Minnesota, Rochester, MN, ⁴University of Minnesota, St. Paul, MN (183)

TUESDAY MORNING JANUARY 31

SYMPOSIUM - 04. The good, the bad, and the ugly the current state of cover crops and weed management

LOCATION: Salon III
TIME: 08:00 AM - 12:00 PM Eastern Time
CHAIR: Erin Haramoto
University of Kentucky
Lexington, KY
MODERATOR: Erin Haramoto

University of Kentucky
Lexington, KY

CO-MODERATOR: Steve Young
USDA ARS
Beltsville, MD

***SPEAKER**

- 08:00 AM Symposium Welcome.** Steve Young*; USDA-ARS, Beltsville, MD **(184)**
- 08:05 AM Current State of Cover Crops and Weed Management □ What Do We Know and How Do We Know It?** Erin Haramoto*; University of Kentucky, Lexington, KY **(185)**
- 08:20 AM Cover Crop Options and Opportunities in Australian Cropping Systems.** Michael Walsh*¹, Asad Shabbir², Saliya Gurusinghe³, Leslie A. Weston⁴; ¹University of Sydney, Narrabri, Australia, ²The University of Sydney, Camden, Australia, ³Charles Sturt University, Bathurst, Australia, ⁴Charles Sturt University, Wagga Wagga, Australia **(186)**
- 08:40 AM What is the Potential for Actually Managing Weeds with Cover Crops? A Reality Check.** Richard G. Smith*; University of New Hampshire, Durham, NH **(187)**
- 09:00 AM Opportunities and Challenges of Growing Cover Crops in the Semi-arid Great Plains.** John Holman*¹, Augustine Obour²; ¹Kansas State University, Garden City, KS, ²Kansas State University, Hays, KS **(188)**
- 09:20 AM Weighing Cover Crop Mediated Weed Management Benefits with Other Risks.** Erin Haramoto*; University of Kentucky, Lexington, KY **(189)**
- 09:40 AM The Highs and Lows of Working with a Perennial Cover Crop for Weed Suppression.** Cerruti Rr Hooks*, Alan W. Leslie, Veronica Yurchak; University of Maryland, College Park, MD **(190)**
- 10:00 AM Coffee Break**
- 10:15 AM Cover Crop-Based Integrated Weed Management: Communicating an Adaptive**

Management Framework. John M. Wallace*; Penn State University, University Park, PA (191)

10:35 AM Emerging Opportunities to Understand Cover Crop x Weed Management Interactions from Data-Model Mashups. Armen R. Kemanian*, Yuning Shi, Curt A. McConnell; Penn State University, State College, PA (192)

10:55 AM Assessing Regional Variations of Weed Suppression with Cover Crops. Steven Brian Mirsky*¹, Victoria Ackroyd², Muthukumar V. Bagavathiannan³, Kevin W. Bradley⁴, William S. Curran⁵, Adam S. Davis⁶, Jeffrey Evans⁷, Wesley Everman⁸, Michael L. Flessner⁹, Nicholas R. Jordan¹⁰, Eugene P. Law¹¹, Lauren M. Lazaro¹², Ramon G. Leon⁸, John Lindquist¹³, Jason K. Norsworthy¹⁴, Lovreet S. Shergill¹⁵, Mark VanGessel¹⁶; ¹USDA ARS, Beltsville, MD, ²University of Maryland, College Park, MD, ³Texas A&M University, College Station, TX, ⁴University of Missouri, Columbia, MO, ⁵Penn State University, Bozeman, MT, ⁶University of Illinois, Urbana, IL, ⁷Five Rivers Conservation Trust, Concord, NH, ⁸North Carolina State University, Raleigh, NC, ⁹Virginia Tech, Blacksburg, VA, ¹⁰University of Minnesota, St. Paul, MN, ¹¹University of Delaware, Beltsville, MD, ¹²Blue River Technology, Sunnyvale, CA, ¹³University of Nebraska, Lincoln, NE, ¹⁴University of Arkansas, Fayetteville, AR, ¹⁵Montana State University, Huntley, MT, ¹⁶University of Delaware, Georgetown, DE (193)

11:15 AM Panel Discussion. Steve Young*; USDA-ARS, Beltsville, MD (194)

TUESDAY MORNING JANUARY 31

ORAL - 08. Weed Biology and Ecology

LOCATION: Salon I
TIME: 09:00 AM - 02:00 PM Eastern Time
CHAIR: Debalin Sarangi
University of Minnesota
St. Paul, MN
MODERATOR: Debalin Sarangi

University of Minnesota
St. Paul, MN

CO-MODERATOR: Shilpa Singh
Texas A&M University
College Station, TX

***SPEAKER**

- 09:00 AM Directional Selection of Competitive Ability in *Setaria faberi* Confirmed with GWAS.** Sandra R. Ethridge¹, Saket Chandra¹, Wesley Everman¹, David L. Jordan¹, Anna M. Locke², Micheal D. Owen³, Ramon G. Leon^{*1}; ¹North Carolina State University, Raleigh, NC, ²USDA-ARS, Raleigh, NC, ³Iowa State University, Ames, IA (195)
- 09:15 AM Impact of Combined Temperature and Moisture Stress on Palmer Amaranth (*Amaranthus palmeri*) Growth and Fecundity: Adaptations and Constraints.** Sarah E. Kezar*, Aniruddha Maity, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (196)
- 09:30 AM The International Weed Genomics Consortium: a Review of Current Reference Genomes and Future Directions.** Sarah Morran^{*1}, Todd A. Gaines¹, Dana R. MacGregor², Eric L. Patterson³, Mithila Jugulam⁴, Roland S. Beffa⁵; ¹Colorado State University, Fort Collins, CO, ²Rothamsted Research, Harpenden, United Kingdom, ³Michigan State University, East Lansing, MI, ⁴Kansas State University, Manhattan, KS, ⁵Senior Scientist Consultant, Frankfurt, Germany (197)
- 09:45 AM New Insights in Amaranth PPO Target Site Resistance and PPO1 and PPO2 Biochemistry.** Jens Lerchl^{*1}, Aimone Porri², Inessa De¹, Lucie Meyer¹, Nilda Roma-Burgos³, Matheus Machado Nogueira⁴, Bernhard Grimm⁵, Boris Hedtke⁵, Daniel Wittmann⁶, Patrick Tranel⁷, Kathryn Seebruck⁸; ¹BASF SE, Limburgerhof, Germany, ²BASF Global Research & Development, Limburgerhof, Germany, ³University of Arkansas, Fayetteville, Fayetteville, AR, ⁴Univ Arkansas, Fayetteville, AR, ⁵Humboldt University, Berlin, Germany, ⁶BASF SE, Berlin, Germany, ⁷University of Illinois, Urbana, IL, ⁸University Illinois, Urbana, IL (198)
- 10:00 AM Coffee Break**

- 10:15 AM Modeling the Effect of Density, Emergence Time, Inter- and Intra-Specific Competition of Barnyard Grass (*Echinochloa Crus-Galli*) on Growth and Yield of Dry-Seeded Rice: Simulations with INTERCOM.** Tahir Hussain Awan*¹, Bhagirath Singh Chauhan², John Lindquist³; ¹Rice Research Institute, Kala Shah Kaku, Punjab, Pakistan, Lahore, Pakistan, ²The Centre for Plant Science, Queensland Alliance for Agriculture and Food Innovation (QAAFI), The University of Queensland, Gatton 4343, Queensland, Australia, Queensland, Australia, ³University of Nebraska, Lincoln, NE (199)
- 10:30 AM A Comparative Genomics Approach to Investigate the Parallel Evolution of Weediness in *Alopecurus myosuroides* (Black Grass) and *Alopecurus aequalis* (Orange Foxtail).** Dana R. MacGregor*¹, Jon Wright², Hannah Rees², Christian Harrison¹, Jun Li³, Paul Neve⁴, Seanna McTaggart², Anthony Hall²; ¹Rothamsted Research, Harpenden, United Kingdom, ²Earlham Institute, Norwich, United Kingdom, ³Nanjing Agricultural University, Nanjing, China, ⁴University of Copenhagen, Copenhagen, Denmark (200)
- 10:45 AM Does the Emergence Pattern of *Echinochloa crus-gali* (Barnyardgrass) Differ with EPOST Timings in Corn?** Theresa Piskackova*; Czech University of Life Sciences Prague, Prague 6 - Suchbát, Czechia (Czech Republic) (201)
- 11:00 AM A Single GST Identified Via an Association Mapping and Transcriptomics Approach Endows High Levels of Resistance to Atrazine in *Amaranthus palmeri*.** Shiv S. Kaundun*; Syngenta, Bracknell, United Kingdom (202)
- 11:15 AM Utilizing Thermal Requirements of California Weedy Rice (*Oryza sativa spontanea*) to Predict Seedling Emergence Timing Under Field Conditions.** Liberty B. Galvin*¹, Whitney Brim-DeForest², Kassim Al-Khatib¹; ¹University of California, Davis, Davis, CA, ²University of California, Davis, Yuba City, CA (203)
- 11:30 AM *In-vitro* Screening to Phenotype Cereal Rye (*Secale cereale*) Lines for Allelopathic Activity.** Democrito B. Rebong*¹, Ramon G. Leon¹, Chris Reberg-Horton¹, J. Paul Murphy¹, Virginia Moore², Steven Brian Mirsky³, Lisa Kucek⁴, Nancy Ehlke⁵; ¹North Carolina State University, Raleigh, NC,

²Cornell University, Ithaca, NY, ³USDA ARS, Beltsville, MD, ⁴USDA Agricultural Research Service, Madison, WI, ⁵University of Minnesota, St. Paul, MN (204)

11:45 AM Demographic Implications of Self-fertilization and Migration for the Maintenance of Genetic Variation and Successful Adaptation to New Environments in Annual Weeds. Samuel R. Revolinski*, Ian Burke; Washington State University, Pullman, WA (205)

12:00 PM Lunch

01:00 PM Mapping of Metabolic Resistance to Tembotrione in Palmer Amaranth. Carlos Alberto Gonsiorkiewicz Rigon*¹, Jacob S. Montgomery¹, Anita Küpper², Roland S. Beffa³, Franck E. Dayan¹, Todd A. Gaines¹; ¹Colorado State University, Fort Collins, CO, ²Bayer AG, Frankfurt, Germany, ³Senior Scientist Consultant, Frankfurt, Germany (206)

01:15 PM Coupling Seedbank Management and Cultivation Tool Stacking for Improved Weed Control in Organic Vegetables. Margaret R. McCollough*¹, Rebecca Champagne², Eric R. Gallandt¹, Daniel C. Brainard³; ¹University of Maine, Orono, ME, ²The University of Maine, Orono, ME, ³Michigan State University, East Lansing, MI (207)

01:30 PM Phenotypic Variation Among Populations of the Invasive Weed *Parthenium hysterophorus* L. (Asteraceae) as a Tool to Assess Multiple Introductions. Maor Matzrafi*¹, Sahar Malka², Hanan Eizenberg³; ¹039904412, Ramat-yishay, Israel, ²The Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Jerusalem, Israel, ³Department of Plant Pathology and Weed Research, Agricultural Research Organization □ Volcani Institute, Newe-Ya□ar Research Center, Ramat-yishay, Israel (208)

TUESDAY MORNING JANUARY 31

ORAL - 05. Regulatory Aspects

LOCATION: Salon II
TIME: 09:00 AM - 01:45 PM Eastern Time
CHAIR: Amanda Foderaro
North Carolina State University
Raleigh, NC
MODERATOR: Amanda Foderaro
North Carolina State University
Raleigh, NC
CO-MODERATOR: Cherilyn Moore
Syngenta Crop Protection, LLC
Greensboro, NC

***SPEAKER**

- 09:00 AM EPA's Plant Assessment Tool: A Non-Target Plant Exposure Model Used in Endangered Species Assessments.** Melissa Bridges*¹, Elizabeth Donovan¹, Gretchen E. Dykes¹, William P. Eckel¹, Frank T. Farruggia¹, Jerrett Fowler¹, Kristina Garber¹, Brian Kiernan¹, Stephan Miller², Chuck Peck¹, Dana Spatz¹, Holly Summers¹, Peter Tellez¹, Dirk Young¹; ¹US Environmental Protection Agency, Washington, DC, ²US Environmental Protection Agency, Washington, VA (209)
- 09:15 AM EPA's Consideration of Pesticide Use, Mitigating Environmental Exposure, and Updating Labels in Endangered Species Evaluations.** Frank T. Farruggia*¹, Amy Adams², Jennifer Connolly³, Kristina Garber¹, Stephen Muela⁴, Tracy Perry³; ¹US Environmental Protection Agency, Washington, DC, ²United States Environmental Protection Agency, Washington, DC, ³United States Environmental Protection Agency, Washington, DC, ⁴United States Environmental Protection Agency, Washington, DC (210)
- 09:30 AM Public Comment Periods: How Can WSSA Help EPA? Part 1.** Kelly V. Tindall*, Bradley Kells; US Environmental Protection Agency - Office of Pesticide Programs, Washington, DC (211)
- 09:45 AM Public Comment Periods: How Can WSSA Help EPA? Part 2.** Bradley Kells*, Kelly V. Tindall; US Environmental Protection Agency - Office of Pesticide Programs, Washington, DC (212)
- 10:00 AM The Importance of Herbicide Resistance Information for Regulatory Agencies.** Cameron

H. Douglass¹, John Orlowski*²; ¹US Department of Agriculture, Office of the Chief Economist, Office of Pest Management Policy, Washington, DC, ²US Environmental Protection Agency, Office of Pesticide Programs, Biological and Economic Analysis Division, Washington, DC (213)

10:15 AM Coffee Break

10:30 AM Climate Impacts of Herbicide Regulations: Case Studies with Cover Cropping and No-till. Laura Dodson¹, Fengxia Dong², Cameron H. Douglass*³, Rebecca Nemec⁴, Ryan Olver², Michelle Ranville³; ¹US Department of Agriculture, Economic Research Service, Washington, DC, ²US Department of Agriculture, Economic Research Service, Kansas City, MO, ³US Department of Agriculture, Office of the Chief Economist, Office of Pest Management Policy, Washington, DC, ⁴US Department of Agriculture, Office of the Chief Economist, Washington, DC (214)

10:45 AM Pesticide Task Forces: Role, Function, and Benefits. Montague U. Dixon*; Syngenta Crop Protection, Greensboro, NC (215)

11:00 AM ESA And FIFRA: A Regulatory Perspective on Successes and Challenges. Reuben D. Baris*; Corteva Agriscience, Indianapolis, IN (216)

11:15 AM Types of Registrations Under FIFRA - Section 3, Special Local Needs, Section 18 Emergency Use: What They Are and How They Are Utilized. Rachel Hardie*; Syngenta Crop Protection, Greensboro, NC (217)

11:30 AM Paraquat Dichloride Interim Registration Review Decision Update. Jordan Moseley*; Syngenta Crop Protection, LLC, Greensboro, NC (218)

11:45 AM Regulatory Update on Atrazine. Mark White*; Syngenta, Macon, MO (219)

12:00 PM Lunch

01:00 PM Persistent Herbicides in Compost: A Regulatory Pathway. Travis Bui*; Corteva Agriscience, Indianapolis, IN (220)

01:15 PM Introduction to the Center for Excellence in Regulatory Science in Agriculture at North Carolina State University. Keith L. Edmisten*,

Danesha Seth Carley; North Carolina State
University, Raleigh, NC (221)

**01:30 PM The Economic, Nutritional, and Environmental
Benefits of International Cooperation for the
Establishment of MRLs on Specialty Crops.** Dirk
C. Drost*; Minor Use Foundation, Inc, Raleigh, NC
(222)

TUESDAY MORNING JANUARY 31

ORAL - NEWSS Student Oral

LOCATION: Salon J
TIME: 09:00 AM - 04:30 PM Eastern
 Time
CHAIR: Arthur E. Gover
 Penn State
 University Park, PA
MODERATOR: Arthur E. Gover
 Penn State
 University Park, PA

***SPEAKER † STUDENT CONTEST**

**09:00 AM †Influence of *Sorghum halepense*
(Johnsongrass) Density on Early Growth of *Zea
mays* (Corn).** Ryan P. O'Briant*¹, Antonio
DiTommaso², Lynn M. Sosnoskie³; ¹Cornell
University - Soil and Crop Sciences, Brooktondale,
NY, ²Cornell University, Ithaca, NY, ³Cornell
University, Geneva, NY (223)

**09:15 AM †Competitive and Hormetic Responses of
Velvetleaf (*Abutilon theophrasti*) Historical Seed
Collection.** Sandra R. Ethridge*¹, Saket Chandra¹,
Wesley Everman¹, Anna M. Locke², David L.
Jordan¹, Micheal D. Owen³, Ramon G. Leon¹;
¹North Carolina State University, Raleigh, NC,
²USDA-ARS, Raleigh, NC, ³Iowa State University,
Ames, IA (224)

**09:30 AM †Soybean and Palmer Amaranth Identification
Using Machine Learning.** Dhiraj Srivastava*¹,
Vijay Singh²; ¹Virginia Polytechnic Institute and
State University, Painter, VA, ²Virginia Tech,
Painter, VA (225)

- 09:45 AM †Do Cover Crops Affect Weed Community Structure?** Uriel D. Menalled*¹, Stephane Cordeau², Antonio DiTommaso¹, Richard G. Smith³, Matthew R. Ryan¹; ¹Cornell University, Ithaca, NY, ²INRAE, Lyon, France, ³University of New Hampshire, Durham, NH (226)
- 10:00 AM Coffee Break**
- 10:15 AM †Varietal Tolerance of Cucurbits Crops with Postemergence Applications of S-Metolachlor.** Carrie J. Mansue*¹, Thierry E. Besancon², Lynn M. Sosnoskie³, Kurt M. Vollmer⁴; ¹Rutgers University, Mays Landing, NJ, ²Rutgers University, Chatsworth, NJ, ³Cornell University, Geneva, NY, ⁴University of Maryland, Queenstown, MD (227)
- 10:30 AM †Neutral Weed Communities: the Junction Point Between Crop Productivity, Biodiversity, and Ecosystem Services.** Marco Esposito*¹, Valerio Cirillo², Albino Maggio², Antonio DiTommaso³; ¹Cornell University & University of Napoli Federico II, Ithaca, NY, ²University of Naples Federico II, Naples, Italy, ³Cornell University, Ithaca, NY (228)
- 10:45 AM †Optimizing Impregnated Pyroxasulfone for Cotton.** Brock A. Dean*, Charlie W. Cahoon, Zackary R. Taylor, Jose H. de Sanctis, Jacob Forehand, Hunter Lee; North Carolina State University, Raleigh, NC (229)
- 11:00 AM †Anaerobic Soil Disinfestation: A Catalyst for Organic Watermelon Production in South Carolina?** Sohaib Chattha*, Matthew A. Cutulle; Clemson University, Charleston, SC (230)
- 11:15 AM †Weed Potential of Roll-crimped Cereal Rye Differs Across Cultural Practices.** Laurel Wellman*¹, John M. Wallace²; ¹Penn State University, State College, PA, ²Penn State University, University Park, PA (231)
- 11:30 AM †False-Green *Kyllinga* (*Kyllinga gracillima*) Establishment from Seed is Influenced by Turfgrass Management Regime.** Trevor S. Watson*, Matthew T. Elmore, Daniel P. Tuck; Rutgers University, New Brunswick, NJ (232)
- 11:45 AM †Soybean Response to Simulated Drift of Herbicides Commonly Used to Manage Roadside Weeds.** Estefania Gomiero Polli*, Travis Gannon, Ronald R. Rogers, Mathieu

LeCompte, Khalied Ahmed; North Carolina State University, Raleigh, NC (233)

12:00 PM Lunch

01:00 PM †Multi-Seed *Zea* Pellets (MSZP) for Increasing Agroecosystem Biodiversity. Sophie Westbrook*¹, Masoume Amirkhani², Alan G. Taylor², Michael T. Loos², John E. Losey¹, Antonio DiTommaso¹; ¹Cornell University, Ithaca, NY, ²Cornell University, Geneva, NY (234)

01:15 PM †Using 3-D Image Reconstruction to Characterize Canopy Architecture and Predict Biomass. April M. Dobbs*¹, Daniel J. Ginn², Søren K. Skovsen³, Muthukumar V. Bagavathiannan², Steven Brian Mirsky⁴, Chris Reberg-Horton¹, Prashant Jha⁵, Ramawatar Yadav⁵; ¹North Carolina State University, Raleigh, NC, ²Texas A&M University, College Station, TX, ³Aarhus University, Aarhus, Denmark, ⁴USDA ARS, Beltsville, MD, ⁵Iowa State University, Ames, IA (235)

01:30 PM †Cover Crops and Falls Residual Herbicides for Managing Multiple Herbicide-Resistant Italian Ryegrass. Jose H. de Sanctis*, Charlie W. Cahoon, Wesley Everman, Travis Gannon, Zachary R. Taylor; North Carolina State University, Raleigh, NC (236)

01:45 PM †Herbicides Affect White Clover Bloom Morphology and Pollinator Foraging in Lawn Turf. Navdeep Godara*, Shawn Askew; Virginia Tech, Blacksburg, VA (237)

02:00 PM †Effect of Metcamifen on Trifloxysulfuron Absorption, Translocation and Metabolism in Turfgrass Systems. Ronald R. Rogers*, Travis Gannon, Khalied Ahmed; North Carolina State University, Raleigh, NC (238)

02:15 PM †Confirmation of Glufosinate Resistance and Inheritance in a North Carolina Palmer Amaranth (*Amaranthus Palmeri*) Population. Eric A. Jones*, Jeffrey Dunne, Diego J. Contreras, Charlie W. Cahoon, Katherine M. Jennings, Ramon G. Leon, Wesley Everman; North Carolina State University, Raleigh, NC (239)

02:30 PM †Factors That Influence Uniform Droplet Deposition from an Agricultural Spray Drone. Daewon Koo*¹, Navdeep Godara¹, John M.

Peppers¹, Clebson G. Goncalves², Shawn Askew¹;
¹Virginia Tech, Blacksburg, VA, ²University of
California, Agriculture and Natural Resources,
Ukiah, CA (240)

**02:45 PM †The Confirmation and Characterization of
Auxinic Herbicide Resistance in a Population of
Green Pigweed (*Amaranthus powellii*) from
Ontario, Canada.** Isabelle Aicklen*¹, Peter
Smith¹, Brendan Metzger², Todd A. Gaines³,
Mithila Jugulam⁴, Darren E. Robinson⁵, Peter H.
Sikkema⁵, Francois Tardif¹; ¹University of Guelph,
Guelph, ON, Canada, ²BASF Canada, Morden,
MB, Canada, ³Colorado State University, Fort
Collins, CO, ⁴Kansas State University, Manhattan,
KS, ⁵University of Guelph, Ridgetown, ON,
Canada (241)

03:00 PM Coffee Break

**03:15 PM †Speed, Angle and Spacing Effects on Finger
Weeder Performance.** Jordan W. Parks*,
Margaret R. McCollough, Eric R. Gallandt;
University of Maine, Orono, ME (242)

**03:30 PM †Interaction of See and Spray™ Model
Sensitivity and Application Timing in Soybean.**
Diego J. Contreras*¹, Wesley Everman¹, Jason K.
Norsworthy², Tristen H. Avent², Bryan G. Young³,
Marcelo Zimmer⁴, Jasmine M. Mausbach⁵, Lauren
M. Lazaro⁶, William L. Patzoldt⁶; ¹North Carolina
State University, Raleigh, NC, ²University of
Arkansas, Fayetteville, AR, ³Purdue University,
Brookston, IN, ⁴Purdue University, West Lafayette,
IN, ⁵University of Nebraska-Lincoln, Lincoln, NE,
⁶Blue River Technology, Sunnyvale, CA (243)

**03:45 PM †Residual Control of Palmer Amaranth Varies
Across VLCFA-Inhibiting Herbicides.** Jackson
W. Alsdorf*¹, Amanda M. Foderaro², Eric A.
Jones¹, Diego J. Contreras¹, Wesley Everman¹;
¹North Carolina State University, Raleigh, NC,
²Syngenta, Raleigh, NC (244)

TUESDAY MORNING JANUARY 31

SST - SST MS

LOCATION: Salon G

TIME: 10:15 AM - 11:30 AM Eastern Time

CHAIR: Marty Schraer
Syngenta
Meridian, ID

MODERATOR: Marty Schraer
Syngenta
Meridian, ID

*SPEAKER † STUDENT CONTEST

- 10:15 AM †Confirmation of Paraquat Resistance in Horseweed (*Erigeron canadensis*) in New York.** Bethany M. Schulteis*¹, Elizabeth C. Maloney², Caio A. Brunharo³, Lynn M. Sosnoskie²; ¹Cornell University, Ithaca, NY, ²Cornell University, Geneva, NY, ³Penn State University, University Park, PA (245)
- 10:20 AM †Preliminary Responses of Weeds, the Weed Soil Seedbank, and Microarthropod Communities to Zasso Electrical Weeding.** Aleah L. Butler-Jones*¹, Elizabeth C. Maloney², Charlee R. Smith³, Emily J. Sausser⁴, Lynn M. Sosnoskie²; ¹Cornell University, Ithaca, NY, ²Cornell University, Geneva, NY, ³The Ohio State University, Columbus, OH, ⁴Lebanon Valley College, Annville, PA (246)
- 10:25 AM †Improved Herbicide Selectivity in Tomato by Safening Action of Benoxacor, Fenclorim, Melatonin, and 2,4,6- Trichlorophenoxyacetic Acid.** Tabata Raissa De Oliveira*, Antonio Augusto Tavares, Josiane C. Argenta, Varsha Varsha, Te-Ming (Paul) Tseng; Mississippi State University, Starkville, MS (247)
- 10:30 AM †Sulfentrazone Efficacy and Safety in Cabbage and Broccoli.** Laura Pineda-Bermudez*¹, Elizabeth C. Maloney¹, Baylee L. Carr², Wesley M. Bouchelle³, Thierry E. Besancon³, Lynn M. Sosnoskie¹; ¹Cornell University, Geneva, NY, ²Rutgers University - Weed Science, Chatsworth, NJ, ³Rutgers University, Chatsworth, NJ (248)
- 10:35 AM †Weed Impacts on Alfalfa Forage Accumulation and Nutritive Value.** Chandra L. Montgomery*¹, Albert T. Adjesiwor²; ¹University of Idaho, Moscow, ID, ²University of Idaho, Kimberly, ID (249)

- 10:40 AM** †**GST Inhibition - Influence on Quinalofop P-ethyl Metabolism in Winter Wheat.** Amber Pelon*¹, Franck E. Dayan², Todd A. Gaines²; ¹Colorado State University, Berthoud, CO, ²Colorado State University, Fort Collins, CO **(250)**
- 10:45 AM** †**Weed Suppression Via Cotton Chromosome Substitution Lines at Different Cover Crop Systems.** Alyssa Lea Miller*; Mississippi State University, Starkville, MS **(251)**
- 10:50 AM** †**Surface Ponds as a Source of Weed Contamination in Container Nurseries.** Alisha O. Ray*¹, Anthony LeBude¹, James Altland², Christopher D. Harlow¹, Joe C. Neal¹; ¹North Carolina State University, Raleigh, NC, ²USDA-ARS, Wooster, OH **(252)**

TUESDAY MORNING JANUARY 31

SST - SST PhD

LOCATION: Salon F

TIME: 10:15 AM - 12:00 PM Eastern Time

CHAIR: Marty Schraer
Syngenta
Meridian, ID

MODERATOR: Marty Schraer
Syngenta
Meridian, ID

***SPEAKER † STUDENT CONTEST**

- 10:15 AM** †**Investigating New Peanut Cultivar Responses to Postemergence Applications of Chlorimuron.** Nicholas J. Shay*¹, Eric P. Prostko²; ¹The University of Georgia, Tifton, GA, ²University of Georgia, Tifton, GA **(253)**
- 10:20 AM** †**Weed Community Shift in Nitrogen Immobilized Soils.** Maria A. Gannett*, Antonio DiTommaso, Jenny Kao-Kniffin; Cornell University, Ithaca, NY **(254)**
- 10:25 AM** †**Effect of Fall- or Spring-Planted Cover Crops on Weed Suppression in High Plains.** Sachin Dhanda*¹, Vipin Kumar¹, Augustine Obour¹,

Elizabeth Yeager², John Holman³, Anita Dille²;
¹Kansas State University, Hays, KS, ²Kansas State
 University, Manhattan, KS, ³Kansas State
 University, Garden City, KS (255)

10:30 AM †**Utility of John Deere's See & Spray™ Ultimate in Southern U.S. Row Crops.** Tristen H. Avent^{*1}, Jason K. Norsworthy¹, William L. Patzoldt², Lauren M. Lazaro²; ¹University of Arkansas, Fayetteville, AR, ²Blue River Technology, Sunnyvale, CA (256)

10:35 AM †**Transgenerational Effect of Weed Competition on Wheat.** Albert O. Kwarteng^{*1}, Albert T. Adjesiwor²; ¹University of Idaho, Moscow, ID, ²University of Idaho, Kimberly, ID (257)

10:40 AM †**Assessing the Efficacy of a Biculture Living and Dead Cover Crop Mixture for Weed Suppression in Sweet Corn.** Veronica Yurchak^{*}, Alan W. Leslie, Bill Phillips, Cerruti Rr Hooks; University of Maryland, College Park, MD (258)

10:45 AM †**A Deep Learning Approach for Nutsedge (*Cyperus* Spp.) Detection in Strawberry Plasticulture Production.** Alex G. Rodriguez^{*1}, Arnold W. Schumann², Nathan Boyd³; ¹University of Florida, Wimauma, FL, ²University of Florida, Lake Alfred, FL, ³University of Florida, Balm, FL (259)

10:50 AM †**Weed Seed Fate in the Combine During Wheat and Soybean Harvest.** Eli C. Russell^{*}, Michael L. Flessner, Matthew P. Spoth, Kevin Bamber; Virginia Tech, Blacksburg, VA (260)

10:55 AM †**Evaluating the Effect of Cover Crop Termination Management on Palmer Amaranth (*Amaranthus Palmeri*) Suppression in Soybean.** Cynthia Sias^{*}, Michael L. Flessner, Kevin Bamber; Virginia Tech, Blacksburg, VA (261)

11:00 AM †**Using Black Soldier Fly Larvae Composting to Reduce Weed Seed Germination.** Jeanine Arana^{*1}, Stephen L. Meyers², Luz Aide Cardona Giraldo², Nathaly Belen Vargas Arroyo², Laura D. Rodriguez Baquero³; ¹Purdue University/Horticulture, West Lafayette, IN, ²Purdue University, West Lafayette, IN, ³University of Wisconsin-Madison, Madison, WI (262)

- 11:05 AM †Weed Genetic Control: Potential Application for Controlling Dioecious Amaranths.** Lucas Kopecky Bobadilla*¹, Patrick Tranel²; ¹University of Illinois, Champaign, IL, ²University of Illinois, Urbana, IL **(263)**
- 11:10 AM †Determining the Critical Period of Weed Control in Organic Carrots.** Emma Kubinski*¹, Mac Burgess², Fabian Menalled³; ¹Montana State University/Land Resources and Environmental Science, Bozeman, MT, ²Montana State University/ Plant Sciences and Plant Pathology, Bozeman, MT, ³Montana State University, Bozeman, MT **(264)**
- 11:15 AM †Allelopathic Weed-suppressive Effect of Cotton Chromosome Substitution Lines Under Field Conditions.** Worlanyo Segbefia*¹, Varsha Singh¹, Ncomiwe A. Maphalala², Tabata Raissa De Oliveira¹, Ziming Yue¹, Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Starkville, MS, ²Mississippi State University-Department of Plant and Soil Sciences, Starkville, MS **(265)**
- 11:20 AM †Biochemical Profiling of Sweetpotato Roots for Weed-Suppressing Allelochemicals.** Varsha Singh*¹, Worlanyo Segbefia¹, Ziming Yue¹, Mark W. Shankle², Te-Ming (Paul) Tseng¹; ¹Mississippi State University, Starkville, MS, ²Mississippi State University, Pontotoc, MS **(266)**
- 11:25 AM †Prediction of Weed Emergence Patterns in a Rice-Wheat Cropping System Using Population-Based Threshold Models.** Faryal Ali*¹, Irfan Afzal²; ¹University of agriculture Faisalabad Pakistan, Mardan, Pakistan, ²University of agriculture Faisalabad Pakistan, Faisalabad, Pakistan **(267)**
- 11:30 AM †Soybean Weed Management with Residual Herbicide Programs.** Zachary R. Treadway*, Jennifer Dudak, Todd A. Baughman; Oklahoma State University, Ardmore, OK **(268)**
- 11:35 AM †Evaluation of Pre-emergence Herbicides for Weed Management in Florida's Strawberry Plasticulture Production.** Ruby Tiwari*¹, Nathan Boyd², Pamela Roberts¹, Samira Daroub³, Ramdas Kanissery¹; ¹University of Florida, Immokalee, FL, ²University of Florida, Balm, FL, ³University of Florida, Everglades, FL **(269)**

- 11:40 AM** †**Johnsongrass (*Sorghum halepense*) Promotes Biological Nitrification Inhibition in its Rhizosphere.** Megan L. Schill*, Dinesh Phuyal, Nithya Rajan, Nithya K. Subramanian, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (270)
- 11:45 AM** †**Subtelomeric Rearrangements Cause Glyphosate Resistance in *Eleusine indica*.** Nicholas A. Johnson*¹, Nathan D. Hall², Qin Yu³, Chun Zhang⁴, Eric L. Patterson¹; ¹Michigan State University, East Lansing, MI, ²Michigan State, East Lansing, MI, ³University of Western Australia, Perth, Australia, ⁴Guangdong Academy of Agricultural Sciences, Guangzhou, China (129)

TUESDAY AFTERNOON JANUARY 31

SYMPOSIUM - 01. Endangered Species Act: A workshop to determine how the WSSA can provide useful science-based information to regulators

LOCATION: Salon III

TIME: 01:00 PM - 05:00 PM Eastern Time

CHAIR: William J. Chism
US EPA
Point of Rocks, MD

MODERATOR: William J. Chism
US EPA
Point of Rocks, MD

***SPEAKER**

- 01:00 PM** **Introduction to Workshop, Objectives and Format.** William J. Chism*; US EPA, Point Of Rocks, MD (271)
- 01:10 PM** **Keynote.** Jake Li*; US EPA - Deputy Assistant Adminsitrator for Pesticide Programs, Washington, DC (272)
- 01:30 PM** **Keynote.** Kyle Kunkler*; American Soybean Association, St Louis, MO (273)

- 01:50 PM Discuss WSSA Comments to EPA Endangered Species Workplan.** William J. Chism*; US EPA, Point of Rocks, MD (274)
- 02:05 PM Description of Workshop Topics.** William J. Chism*; US EPA, Point Of Rocks, MD (275)
- 02:55 PM Coffee Break**
- 03:10 PM Workgroup Discussion Sessions.** William J. Chism*; US EPA, Point Of Rocks, MD (276)
- 04:40 PM Post Workshop Discussion.** William J. Chism*; US EPA, Point Of Rocks, MD (277)

TUESDAY AFTERNOON JANUARY 31

ORAL - 13. Student Travel Enrichment Experience

LOCATION: Salon G

TIME: 02:00 PM - 04:30 PM Eastern Time

***SPEAKER**

- 02:00 PM A Tour Through Corteva Headquarters: A Global Perspective of an Integrated Field Science Organization.** Estefania Gomiero Polli*; North Carolina State University, Raleigh, NC (278)
- 02:15 PM Travel Enrichment Experience at Beltsville Agricultural Research Center, Maryland.** Sachin Dhanda*; Kansas State University, Hays, KS (279)
- 02:30 PM Travel Enrichment Experience with the Weed Research Lab at Colorado State University.** Joshua W. Miranda*; Oregon State University, Corvallis, OR (280)
- 02:45 PM From East to West: Biocontrol Musings from Montana.** Emily Duenk*; University of Guelph, Ridgetown, ON, Canada (281)
- 03:00 PM Coffee Break**
- 03:15 PM Weed Science Research, Policy, and Partnerships with USDA-ARS: 2022 Travel Enrichment Experience.** Sarah E. Kezar*¹, Steve

Young²; ¹Texas A&M University, College Station, TX, ²USDA-ARS, Beltsville, MD (282)

03:30 PM Science Policy Fellowship: A Unique Learning Opportunity for Aspiring Weed Scientists.
Taylor M. Randell-Singleton*¹, Navdeep Godara²,
Lee Van Wyche³; ¹University of Georgia, Tifton, GA, ²Virginia Tech, Blacksburg, VA, ³Weed
Science Society of America, Alexandria, VA (283)

TUESDAY AFTERNOON JANUARY 31

NEWSS Business Meeting

LOCATION: Salon II
TIME: 05:00 PM - 07:00 PM Eastern
Time
MODERATOR: Jacob Barney
Virginia Tech
Blacksburg, VA

WEDNESDAY MORNING FEBRUARY 1

Presidents Breakfast

LOCATION: Salon G
TIME: 06:30 AM - 08:00 AM Eastern
Time
MODERATOR: A Stanley Culpepper
University of Georgia
Tifton, GA

WEDNESDAY MORNING FEBRUARY 1

Judges Work Room

LOCATION: Alexandria

TIME: 07:00 AM - 03:00 PM Eastern
Time

WEDNESDAY MORNING FEBRUARY 1

POSTER - NEWSS Student Poster

LOCATION: Salon IV-VI
TIME: 08:00 AM - 10:00 AM Eastern
Time

**WSSA Student Competition Posters will be judged
Tuesday only**

**NEWSS Student Competition Posters will be judged
Wednesday only**

***PRESENTER † STUDENT CONTEST**

**†Increased Soil Temperature Effects on Weed Seed
Mortality Vary Across Species.** Ashley N. Isaacson^{*1}, Richard
G. Smith², Chris Stamplis³, Alix Contosta², Carolyn J. Lowry⁴;
¹Penn State University, State College, PA, ²University of New
Hampshire, Durham, NH, ³Pennsylvania State University,
University Park, PA, ⁴The Pennsylvania State University,
University Park, PA (284)

†Steam Disinfestation of Soil with and without Accelerants.
Donald E. Fox^{*1}, Emma Volk¹, Mark Hoffmann¹, Steve
Fennimore², Joe C. Neal¹; ¹North Carolina State University,
Raleigh, NC, ²University of California - Davis, Salinas, CA
(285)

**†Acreage Allocation for Variable Density Planting to
Optimize Crop Yield and Weed Suppression.** Sandra R.
Ethridge^{*1}, Wesley Everman¹, Anna M. Locke², David L.
Jordan¹, Ramon G. Leon¹; ¹North Carolina State University,
Raleigh, NC, ²USDA-ARS, Raleigh, NC (286)

**†Degradation of Spring Applied Methiozolin and its Effects
on Smooth Crabgrass and Goosegrass Control.** John M.
Peppers^{*}, Shawn Askew; Virginia Tech, Blacksburg, VA (287)

**†Weed Risk Assessment of *Brassica carinata* in the
Southeastern U.S.** April M. Dobbs^{*}, Chris Reberg-Horton, Lori
Unruh Snyder, Ramon G. Leon; North Carolina State University,
Raleigh, NC (288)

†Response of Italian Ryegrass Accessions from South-Central North Carolina to Spring Burndown Herbicides.

Jose H. de Sanctis*, Charlie W. Cahoon, Wesley Everman, Travis Gannon; North Carolina State University, Raleigh, NC (289)

†Optimizing Application Time of Residual Herbicides in a Planted Green Soybean System. Megan R. Czekaj*¹, John M. Wallace², Mark VanGessel³, Michael L. Flessner⁴; ¹Penn State University- Agricultural and Environmental Plant Science, State College, PA, ²Penn State University, University Park, PA, ³University of Delaware, Georgetown, DE, ⁴Virginia Tech, Blacksburg, VA (290)

†Do Plant Growth Regulator Admixtures Influence Annual Bluegrass Control by Methiozolin? Navdeep Godara*, Shawn Askew, John M. Peppers; Virginia Tech, Blacksburg, VA (291)

†Evaluation of Various Preemergent Herbicides at Different Rates to Control False-Green Kyllinga (*Kyllinga gracillima*) from Seed. Matthew T. Elmore¹, Brandon C. McNally¹, Aaron J. Patton², Daniel P. Tuck¹, Trevor S. Watson*¹; ¹Rutgers University, New Brunswick, NJ, ²Purdue University, West Lafayette, IN (292)

†Discrimination Between PPO-inhibiting Herbicide-resistant Redroot Pigweed (*Amaranthus Retroflexus*) Utilizing Spectral Reflectance. Eric A. Jones*, Robert Austin, Diego J. Contreras, Jeffrey Dunne, Charlie W. Cahoon, Ramon G. Leon, Wesley Everman; North Carolina State University, Raleigh, NC (293)

†Influence of Tall Fescue Canopy Architecture on Weed Emergence. Daewon Koo*¹, Clebson G. Goncalves², Shawn Askew¹; ¹Virginia Tech, Blacksburg, VA, ²University of California, Agriculture and Natural Resources, Ukiah, CA (294)

†Control of Common Row Crop Weeds with Dicamba and Glufosinate Applied Alone, Mixed, and Sequentially. Jackson W. Alsdorf*, Eric A. Jones, Diego J. Contreras, Charlie W. Cahoon, Ramon G. Leon, Wesley Everman; North Carolina State University, Raleigh, NC (295)

†Effect of Increased Soil Temperatures on Weed Seed Mortality Vary Across Species. Ashley N. Isaacson*¹, Carolyn J. Lowry²; ¹Penn State University, State College, PA, ²The Pennsylvania State University, University Park, PA (296)

WEDNESDAY MORNING FEBRUARY 1

SYMPOSIUM - 03. Crop-Weed Management in a Rising CO₂ and Warming World

LOCATION: Salon II
TIME: 08:00 AM - 12:00 PM Eastern
Time
CHAIR: Martin Williams
USDA-ARS
Urbana, IL
MODERATOR: Martin Williams
USDA-ARS
Urbana, IL

***SPEAKER**

- 08:00 AM Our Changing Climate: Science, Impacts, and Vulnerabilities.** Donald J. Wuebbles*; University of Illinois, Urbana, IL (297)
- 08:20 AM Modeling Invasive Weed Distributions Under Future Climate Scenarios.** Antonio DiTommaso*¹, Sophie Westbrook¹, Emma K. Nikkel², David R. Clements³, Caroline Marschner¹; ¹Cornell University, Ithaca, NY, ²University of British Columbia, Vancouver, BC, Canada, ³Trinity Western University, Langley, BC, Canada (298)
- 08:40 AM Effect of CO₂ on Weedy Rice Growth, Seed Shattering, and Seed Dormancy.** Luis A. Avila*; Universidade Federal de Pelotas, Pelotas, Brazil (299)
- 09:00 AM Impact of High Temperature Stress on Crops, Weeds, and Herbicide Efficacy.** Pv V. Prasad*; Kansas State University, Manhattan, KS (300)
- 09:20 AM Climate Change and Pest Treatment Costs: What is Happening?** Bruce A. McCarl*; Texas A & M University, College Station, TX (301)
- 09:40 AM Weeds and Weed Management in a Warmer, Wetter World.** Carolyn J. Lowry*¹, Ashley N. Isaacson², Alix Contosta³, Erin Haramoto⁴, Richard G. Smith³, John M. Wallace⁵; ¹The Pennsylvania State University, University Park, PA, ²Penn State University, State College, PA, ³University of New Hampshire, Durham, NH, ⁴University of Kentucky, Lexington, KY, ⁵Penn State University, University Park, PA (302)

10:00 AM Coffee Break

10:15 AM Does Environmental Change Increase the Impact of Weeds? Montserrat Vilà*; Estación Biológica de Doñana (EBD-CSIC), Sevilla, Spain (303)

10:35 AM Combined Effects of Climate Change and Intensification on Potential Yield. Jonathan Storkey*; Rothamsted Research, Harpenden, United Kingdom (304)

10:55 AM Crops and Weeds Running to Stand Still in the Red Queen's Climate Change. David R. Clements*; Trinity Western University, Langley, BC, Canada (305)

11:15 AM Climate Change, Weed Biology and Public Health. Lewis H. Ziska*; Columbia University, Baltimore, MD (306)

WEDNESDAY MORNING FEBRUARY 1

Oral 01. Agronomic Crops - Day 1

LOCATION: Salon III
TIME: 09:00 AM - 05:00 AM Eastern Time
CHAIR: Daljit Singh
Bayer
Chesterfield, MO
MODERATOR: Daljit Singh
Bayer
Chesterfield, MO
CO-MODERATOR: Craig M. Alford
Corteva
Ankeny, IA

***SPEAKER**

09:00 AM Diflufenican: a Tool for Managing *Amaranthus* Species in Corn and Soybean Cropping Systems. John Buol*, Carl Coburn, Richard Leitz, Eric Riley, Ananda Datta; Bayer, St. Louis, MO (307)

09:15 AM Depletion of Multiple-Herbicide-Resistant Waterhemp Seed in the Soil Seed Bank with

Integrated Weed Management Strategies. Peter H. Sikkema*, Nader Soltani; University of Guelph, Ridgeway, ON, Canada (308)

- 09:30 AM How is Soybean Biomass Partitioning to Vegetation, Floral Development and Pod Formation Affected by Exposure to Simulated Drift Rates of Auxin Herbicides?** Koffi Badou-Jeremie Kouame*¹, Thomas R. Butts¹, Brad M. Davis¹, Leah M. Collie², Troy W. Dillon¹, Jeremy K. Sutterfield¹, Benjamin C. Thrash¹, Nick R. Bateman³, John J. Adamczyk⁴, Gus M. Lorenz²; ¹University of Arkansas System Division of Agriculture, Lonoke, AR, ²University of Arkansas, Lonoke, AR, ³University of Arkansas System Division of Agriculture, Fayetteville, AR, ⁴USDA, Poplarville, MS (309)
- 09:45 AM Effectiveness of Tirexor® and Voraxor® on Glufosinate-Resistant Palmer Amaranth.** Pamela Carvalho-Moore*¹, Jason K. Norsworthy¹, Ty Smith¹, Casey H. Arnold¹, Matthew C. Woolard¹, Maria Leticia Zaccaro-Gruener¹, Tom Barber²; ¹University of Arkansas, Fayetteville, AR, ²University of Arkansas System Division of Agriculture, Lonoke, AR (310)
- 10:00 AM Coffee Break**
- 10:15 AM Agriculturally Significant Weeds and Associated Soil Nematodes of South-Central New Jersey: the Good, the Bad, the Ugly.** Melissa A. Bravo*; Rutgers, The State University of New Jersey, Woodstown, NJ (311)
- 10:30 AM A Survey of Twelve Common Rowcrop Weeds and Associated Soil Nematodes of Salem County, NJ.** Melissa A. Bravo*; Rutgers, The State University of New Jersey, Woodstown, NJ (312)
- 10:45 AM The Potential of Inter-row Non-selective Herbicide Application to Manage Wild Oat (*Avena fatua* L.) in Wheat.** Eric N. Johnson*, Christian Willenborg, Steve Shirliffe; University of Saskatchewan, Saskatoon, SK, Canada (313)
- 11:00 AM Discovery of Tetflupyrolimet: A New Mode-of-Action Herbicide Interfering with De Novo Pyrimidine Biosynthesis for Effective Management of Herbicide-Resistant Grass Weeds Globally.** Atul Puri*, Thomas Selby, Steve

Gutteridge, Mark Holliday, Adam Prestegord;
FMC Corporation, Newark, DE (314)

- 11:15 AM Control of Multiple-Herbicide-Resistant Waterhemp (*Amaranthus tuberculatus*) with Acetochlor-based Tank Mixtures in Soybean.** Hannah E. Symington^{*1}, Nader Soltani², Allan Kaastra³, David C. Hooker², Darren E. Robinson², Peter H. Sikkema²; ¹University of Guelph, Rr#3 Watford, ON, Canada, ²University of Guelph, Ridgetown, ON, Canada, ³Bayer Crop Science, Guelph, ON, Canada (315)
- 11:45 AM Spatiotemporal Changes in Glyphosate Efficacy on Key Weed Species in the US and Canada.** Christopher A. Landau^{*1}, Kevin W. Bradley², Erin E. Burns³, Ryan P. DeWerff⁴, Michael L. Flessner⁵, Karla L. Gage⁶, Aaron G. Hager⁷, Joseph T. Ikley⁸, Prashant Jha⁹, William G. Johnson¹⁰, Paul O. Johnson¹¹, Sarah Lancaster¹², Dwight Lingenfelter¹³, Mark M. Loux¹⁴, Eric J. Miller¹⁵, Scott A. Nolte¹⁶, Debalin Sarangi¹⁷, Peter H. Sikkema¹⁸, Christy L. Sprague³, Mark VanGessel¹⁹, Rodrigo Werle²⁰, Martin Williams²¹, Bryan G. Young²²; ¹University of Illinois, Crop Sciences, Urbana, IL, ²University of Missouri, Columbia, MO, ³Michigan State University, East Lansing, MI, ⁴University of Wisconsin, Madison, WI, ⁵Virginia Tech, Blacksburg, VA, ⁶Southern Illinois University Carbondale, Carbondale, IL, ⁷University of Illinois, Urbana, IL, ⁸North Dakota State University, Fargo, ND, ⁹Iowa State University, Ames, IA, ¹⁰Purdue University, West Lafayette, IN, ¹¹South Dakota State University, Brookings, ND, ¹²Kansas State University, Manhattan, KS, ¹³Penn State University, University Park, PA, ¹⁴The Ohio State University, Columbus, OH, ¹⁵Southern Illinois University, Carbondale, IL, ¹⁶Texas A&M AgriLife Extension, College Station, TX, ¹⁷University of Minnesota, St. Paul, MN, ¹⁸University of Guelph, Ridgetown, ON, Canada, ¹⁹University of Delaware, Georgetown, DE, ²⁰University of Wisconsin-Madison, Madison, WI, ²¹USDA-ARS, Urbana, IL, ²²Purdue University, Brookston, IN (317)
- 12:00 PM Lunch**
- 01:00 PM Chaff Lining for Management of Weeds in Winter Wheat.** Matthew P. Spoth¹, Michael L. Flessner^{*1}, Kevin Bamber¹, Wykle C. Greene¹, Cynthia Sias¹, Eli C. Russell¹, Vipin Kumar², Vijay Singh³; ¹Virginia Tech, Blacksburg, VA, ²Virginia

Polytechnic Institute and State University, Painter, VA, ³Virginia Tech, Painter, VA (318)

- 01:15 PM Changes in Weed Population Density After Harvest with a Seed Impact Mill.** Eli C. Russell*, Michael L. Flessner, Matthew P. Spoth, Wykle C. Greene, Kevin Bamber; Virginia Tech, Blacksburg, VA (319)
- 01:30 PM Reduction in Palmer Amaranth (*Amaranthus Palmeri*) Emergence and Growth Rate in Response to Cover Crop Termination Timing: Applications for Optimizing Herbicide Programs.** Cynthia Sias*, Michael L. Flessner, Kevin Bamber; Virginia Tech, Blacksburg, VA (320)
- 01:45 PM The Cover Crop Evolution/Revolution- Past, Present, Future.** William S. Curran*; Penn State University, Bozeman, MT (321)
- 02:00 PM Cross Resistance to Acetyl-CoA Carboxylase-Inhibiting Herbicides in a Johnsongrass [*(Sorghum halepense* (L.) Pers.) Accession Collected in Arkansas.** Fidel Gonzalez Torralva*, Jason K. Norsworthy; UNIVERSITY OF ARKANSAS, Fayetteville, AR (322)
- 02:15 PM Georgia's Endangered Species Pilot Program: A Team Approach to Help Protect Species and the Farm.** Taylor M. Randell-Singleton*¹, Jenna C. Vance¹, William J. Chism², A Stanley Culpepper¹; ¹University of Georgia, Tifton, GA, ²US EPA, Point Of Rocks, MD (323)
- 02:30 PM Survey of Herbicide Resistance in Pigweed (*Amaranthus* Spp.) Escapes in North Dakota Row Crops.** Joseph T. Ikley*¹, Stephanie DeSimini¹, Michael J. Christoffers¹, Megan O'Neil², Zack Bateson²; ¹North Dakota State University, Fargo, ND, ²National Agricultural Genotyping Center, Fargo, ND (324)
- 02:45 PM Does Interseeded Cover Crop Seed Size Influence Tolerance to Residual Herbicide Programs?** Tosh R. Mazzone*¹, John M. Wallace¹, Matthew R. Ryan², Chris J. Pelzer²; ¹Penn State University, University Park, PA, ²Cornell University, Ithaca, NY (325)
- 03:00 PM Coffee Break**

- 03:15 PM A23980B: Corn Weed Control from Four Complimentary Active Ingredients.** Craig Austin^{*1}, Seth A. Strom², Mark Kitt¹, Thomas Beckett¹; ¹Syngenta, Greensboro, NC, ²Syngenta Crop Protection, Monticello, IL **(326)**
- 03:30 PM Introducing Golden Pennycress (*Thlaspi arvense*) into the Corn-Soybean Rotation.** Mark L. Bernards*, Brent S. Heaton; Western Illinois University, Macomb, IL **(327)**
- 03:45 PM Investigating the Genetic Control of Interspecific Hybridization Between *Sorghum bicolor* and *S. halepense* Using Recombinant Inbred Lines (RILs).** Usha R. Pediredi*, Nithya K. Subramanian, George Hodnett, Patricia Klein, William Rooney, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX **(328)**
- 04:00 PM Classification of Herbicide Symptomology in Cotton Using Digital Images and Deep Learning.** Ubaldo Torres^{*1}, Joe Johnson¹, Shefali Sarang¹, Bishwa B. Sapkota¹, Scott A. Nolte², Muthukumar V. Bagavathiannan¹; ¹Texas A&M University, College Station, TX, ²Texas A&M AgriLife Extension, College Station, TX **(329)**
- 04:15 PM Evaluation of Crop Herbicide Tolerance Using UAV Obtained Multispectral Imagery.** Ryan D. Langemeier*, Livia Pereira, Justin T. McCaghren, Steve Li; Auburn University, Auburn, AL **(330)**

WEDNESDAY MORNING FEBRUARY 1

ORAL - 07. Formulation, Adjuvant, & Application Technology

- LOCATION:** Salon H
- TIME:** 09:30 AM - 02:00 PM Eastern Time
- CHAIR:** Joseph T. Ikley
North Dakota State University
Fargo, ND
- MODERATOR:** Joseph T. Ikley
North Dakota State University
Fargo, ND
- CO-MODERATOR:** Gourav Sharma

Virginia Tech
Blacksburg, VA

***SPEAKER**

- 09:30 AM Comparison of Weed Control Outcomes When Using Precision Application Versus Traditional Approaches in Corn (*Zea mays*). Isaac H. Barnhart*¹, Greg Kruger², Calvin Andrew Miller³, Chris Proctor⁴, Rodrigo Werle⁵, Anita Dille¹; ¹Kansas State University, Manhattan, KS, ²University of Nebraska - Lincoln, North Platte, NE, ³BASF, Seymour, IL, ⁴University of Nebraska-Lincoln, Lincoln, NE, ⁵University of Wisconsin-Madison, Madison, WI (331)**
- 09:45 AM Weed Control in Soybeans (Glycine Max) Using Precision Sprayers. Isaac H. Barnhart*¹, Proctor Chris², Thiago H. Vitti², Calvin Andrew Miller³, Greg Kruger⁴, Anita Dille¹; ¹Kansas State University, Manhattan, KS, ²University of Nebraska-Lincoln, Lincoln, NE, ³BASF, Seymour, IL, ⁴University of Nebraska - Lincoln, North Platte, NE (332)**
- 10:00 AM Coffee Break**
- 10:15 AM Effects of PRE Herbicides on Precision Post Emergence Herbicide Application in Plasticulture Production. Ana Claudia Buzanini*¹, Arnold W. Schumann², Nathan Boyd³; ¹University of Florida, Wimauma, FL, ²University of Florida, Lake Alfred, FL, ³University of Florida, Balm, FL (333)**
- 10:30 AM Herbicide Options in Industrial Hemp. Wyatt J. Stutzman*, Kevin Bamber, Cynthia Sias, Eli C. Russell, Michael L. Flessner; Virginia Tech, Blacksburg, VA (334)**
- 10:45 AM Assessing Deposition and Plant Responses Following Dicamba Applications in Cotton and Soybean Using Hooded and Open Boom Sprayers. Devin Hammer*, Naresh Pai, Allen Olmstead; Bayer Crop Science, St. Louis, MO (335)**
- 11:00 AM A Novel Tool for Improving Selection of Nozzles and Adjuvants, CPDA's New *Application Enhancement Certification Program*. James Reiss*; Precision Laboratories, LLC, Lake Geneva, WI (336)**

- 11:15 AM Dicamba Applications Using Drop Nozzles to Reduce Drift in Texas Cotton.** Hayden R. Taylor*¹, Scott A. Nolte², Peter A. Dotray³, Joshua A. McGinty⁴; ¹Texas A&M University, College Station, TX, ²Texas A&M AgriLife Extension, College Station, TX, ³Texas Tech University, Texas A&M Texas Tech University, Texas A&M AgriLife Research, Texas A&M AgriLife Extension, Lubbock, TX, ⁴Texas A&M AgriLife Extension, Corpus Christi, TX **(337)**
- 11:30 AM Developer of Novel Adjuvant Systems for Herbicides.** Jim T. Daniel*¹, Chase T. Boman²; ¹Daniel Ag Consulting, Keenesburg, CO, ²AgraSyst, Spokane, WA **(338)**
- 11:45 AM Evaluation of Soybean and Cotton Injury to Low Volume Applications as Influenced by Application Type and GPA.** Livia Pereira*, Steve Li, Ryan D. Langemeier, Justin T. McCaghren; Auburn University, Auburn, AL **(339)**
- 12:00 PM Lunch**
- 01:00 PM What's New at the Winfield United Innovation Center?** Gregory K. Dahl*¹, Eric P. Spandl², Ryan J. Edwards², Joshua J. Skelton³, Steven A. Fredericks², Aszhia K. Albrecht⁴, Elizabeth R. Alonzi², Elizabeth Buescher², Cody Hoerning², Derick Jiwan²; ¹Winfield United, Eagan, MN, ²Winfield United, River Falls, WI, ³WinField United, Saint Paul, MN, ⁴Land O' Lakes - Winfield United, River Falls, WI **(340)**
- 01:15 PM Single Tank vs Dual Tank See and Spray™ Programs in Soybean.** Wesley Everman*¹, Diego J. Contreras¹, Jason K. Norsworthy², Tristen H. Avent², Bryan G. Young³, Marcelo Zimmer⁴, Jasmine M. Mausbach⁵, Michael M. Houston², Lauren M. Lazaro⁶, William L. Patzoldt⁶; ¹North Carolina State University, Raleigh, NC, ²University of Arkansas, Fayetteville, AR, ³Purdue University, Brookston, IN, ⁴Purdue University, West Lafayette, IN, ⁵University of Nebraska-Lincoln, Lincoln, NE, ⁶Blue River Technology, Sunnyvale, CA **(341)**

WEDNESDAY MORNING FEBRUARY 1

ORAL - 12. Integrated Weed Management

LOCATION: Salon I
TIME: 09:00 AM - 05:00 PM Eastern Time
CHAIR: Sarah E. Kezar
Texas A&M University
College Station, TX
MODERATOR: Sarah E. Kezar
Texas A&M University
College Station, TX

***SPEAKER**

- 09:15 AM Integrated Strategies of Weed Control in Semiarid Central Great Plains.** Vipin Kumar*¹, Rui Liu², Sachin Dhanda¹, Prashant Jha³, Jason K. Norsworthy⁴; ¹Kansas State University, Hays, KS, ²Washington State University, Prosser, WA, ³Iowa State University, Ames, IA, ⁴University of Arkansas, Fayetteville, AR (342)
- 09:30 AM Development of a Novel Electrocutation-Based Robotic Platform for Weed Control in Vegetables and Field Crops.** Ran Nisim Lati*¹, Avital Bechar²; ¹Department of Plant Pathology and Weed Research, Newe Yaar Research Center, Agricultural Research Organization (ARO) - Volcani Center, Ramat Yishay, Israel, ²Institute of Agricultural Engineering, Agricultural Research Organization, The Volcani Center, Bet-Dagan, Israel, Bet Dagan, Israel (343)
- 09:45 AM Investigating Novel Integrated Weed Management Systems on the Canadian Prairies.** Breanne D. Tidemann*¹, K. Neil Harker¹, Steve Shirtliffe², Christian Willenborg², Eric N. Johnson², Robert Gulden³, Newton Lupwayi⁴, T. Kelly Turkington¹, Emma Stephens⁴, Charles M. Geddes⁴; ¹Agriculture and Agri-Food Canada, Lacombe, AB, Canada, ²University of Saskatchewan, Saskatoon, SK, Canada, ³University of Manitoba, Winnipeg, MB, Canada, ⁴Agriculture and Agri-Food Canada, Lethbridge, AB, Canada (344)
- 10:00 AM Coffee Break**
- 10:15 AM Soil Residual Herbicide Degradation as Influenced by Soil Microbial Activity in Cover Cropping Systems.** Lucas Oliveira Ribeiro Maia*¹, William G. Johnson¹, Bryan G. Young², Eileen J. Kladvik¹, Shalamar Armstrong¹; ¹Purdue

University, West Lafayette, IN, ²Purdue University, Brookston, IN (345)

- 10:30 AM Incorporating Winter Camelina or Canola into Rotational Cropping Systems of Colder Climates to Reduce Weed Pressure.** James V. Anderson^{*1}, Wun S. Chao¹, Xuehui Li², Russ W. Gesch³, Marisol T. Berti², David P. Horvath¹; ¹USDA-ARS, Fargo, ND, ²North Dakota State University, Fargo, ND, ³USDA-ARS, Morris, MN (346)
- 10:45 AM Cereal Rye Cover Crop Effects on Fiber Hemp (*Cannabis sativa* L.) in Southeast Texas.** Jodie M. McVane^{*}, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (347)
- 11:00 AM Cereal Rye Cover Crop Significantly Delays Weed Emergence in Cotton.** Gustavo Camargo Silva^{*}, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (348)
- 11:15 AM Early Detection of Herbicide Resistance Using Commercial Weed Map Data.** Gregory E. Stewart^{*1}, Devin Kirk², Charles M. Geddes³; ¹Geco Engineering, North Vancouver, BC, Canada, ²Geco Engineering, Vancouver, BC, Canada, ³Agriculture and Agri-Food Canada, Lethbridge, AB, Canada (349)
- 11:30 AM Effects of Cover Crop Management on Weed Emergence Across the Eastern United States.** Eugene P. Law^{*1}, Mark VanGessel², Steven Brian Mirsky³, Victoria Ackroyd⁴, Muthukumar V. Bagavathiannan⁵, Kevin W. Bradley⁶, William S. Curran⁷, Adam S. Davis⁸, Jeffrey Evans⁹, Wesley Everman¹⁰, Michael L. Flessner¹¹, Nicholas R. Jordan¹², Lauren M. Lazaro¹³, Ramon G. Leon¹⁰, John Lindquist¹⁴, Jason K. Norsworthy¹⁵, Lovreet S. Shergill¹⁶; ¹University of Delaware, Beltsville, MD, ²University of Delaware, Georgetown, DE, ³USDA ARS, Beltsville, MD, ⁴University of Maryland, College Park, MD, ⁵Texas A&M University, College Station, TX, ⁶University of Missouri, Columbia, MO, ⁷Penn State University, Bozeman, MT, ⁸University of Illinois, Urbana, IL, ⁹Five Rivers Conservation Trust, Concord, NH, ¹⁰North Carolina State University, Raleigh, NC, ¹¹Virginia Tech, Blacksburg, VA, ¹²University of Minnesota, St. Paul, MN, ¹³Blue River Technology, Sunnyvale, CA, ¹⁴University of Nebraska, Lincoln, NE, ¹⁵University of Arkansas,

Fayetteville, AR, ¹⁶Montana State University,
Huntley, MT (350)

- 11:45 AM Using "Stacked" Cultivation Implements to Improve Weed Control Selectivity.** Bryan Brown*¹, Daniel C. Brainard², Percy Marshall³;
¹New York State Integrated Pest Management Program, Cornell University, Geneva, NY,
²Michigan State University, East Lansing, MI,
³University of Arkansas, Fayetteville, AR (351)
- 12:00 PM Lunch**
- 01:00 PM Integrating Electrocuting as a Supplemental Weed Control Tool in No-till Organic Soybean.** Madhav Dhakal*, Carolyn Garrity, Reza Afshar; Rodale Institute, Kutztown, PA (352)
- 01:15 PM A New Enemy in Town: Resistant Ryegrass Heading North in Europe.** Alberto Collavo*, Bianca Assis Barbosa Martins, Bodo Peters; Bayer AG, Frankfurt Am Main, Germany (353)
- 01:30 PM Effect of Winter *Brassica carinata* Production on Weed Control in Subsequent Peanut.** Pratap Devkota*, Sithin Mathew, Navjot Singh; University of Florida, Jay, FL (354)
- 01:45 PM Automated Intra-row Weeding Informed by Sugar Beet Response to Hoeing and Flaming Across Early Growth Stages.** Margaret R. McCollough*¹, Frank Poulsen², Bo Melander³;
¹University of Maine, Orono, ME, ²F. Poulsen Engineering Aps., Hvalsø, Denmark, ³Aarhus University, Department of Agroecology, Slagelse, Denmark (355)
- 02:00 PM HRAC Global Validation Criteria for Unique Herbicide Resistance Cases.** Harry J. Strek*¹, Mark A. Peterson², Marcel S C de Melo³, Caio V S Rossi⁴, Ian M. Heap⁵; ¹HRAC Global, Frankfurt Am Main, Germany, ²Dow AgroSciences LLC (Ret.), Indianapolis, IN, ³Bayer Brasil, Paulínia, Brazil, ⁴Corteva, Mogi Mirim, Brazil, ⁵The International Herbicide-Resistant Weed Database, Corvallis, OR (356)
- 02:15 PM Pairing Nanoparticles with FANA Technology for Spray-on Gene Silencing in Weeds.** Katie Martin*¹, Todd A. Gaines¹, Veenu Aishwarya²;
¹Colorado State University, Fort Collins, CO,
²AUM Lifetech, Philadelphia, PA (357)

- 02:30 PM Species-Level Weed Biomass Estimation from Video Imagery Using 3D Point Clouds.** Daniel J. Ginn*¹, Paula J. Ramos-Giraldo², Michael A. Alcorn³, Maria L. Cangiano³, April M. Dobbs², Søren K. Skovsen⁴, Matthew Kutugata¹, Ramon G. Leon², Chris Reberg-Horton², Muthukumar V. Bagavathiannan¹, Steven Brian Mirsky⁵; ¹Texas A&M University, College Station, TX, ²North Carolina State University, Raleigh, NC, ³USDA, Beltsville, MD, ⁴Aarhus University, Aarhus, Denmark, ⁵USDA ARS, Beltsville, MD (358)
- 02:45 PM Hard Water Effect on Glyphosate Grass Control in the Enlist Weed System.** Justin T. McCaghren*, Steve Li, Ryan D. Langemeier, Livia Pereira; Auburn University, Auburn, AL (359)
- 03:00 PM Multistate Assessment of Cowpea Cover Crop Germplasm, Seeding Rate, and Termination Timing Effects on Weed Suppression.** Carlene A. Chase*¹, Daniel A. Boakye¹, Parmeshwor Aryal¹, Nicholas T. Basinger², Lisa Fultz³, Audrey V. Gamble⁴, Erin Haramoto⁵, Nithya Rajan⁶, Vitalis Temu⁷, Elide Valencia⁸; ¹University of Florida, Gainesville, FL, ²The University of Georgia, Athens, GA, ³Louisiana State University, Baton Rouge, LA, ⁴Auburn University, Auburn, AL, ⁵University of Kentucky, Lexington, KY, ⁶Texas A&M University, College Station, TX, ⁷Virginia State University, Petersburg, VA, ⁸University of Puerto Rico, Mayaguez, Mayaguez, PR (360)
- 03:15 PM Integrated Weed Management Practices to Control ALS and PPO-Inhibitor Resistant Palmer Amaranth.** Justin T. McCaghren*, Steve Li, Ryan D. Langemeier, Livia Pereira; Auburn University, Auburn, AL (361)
- 03:30 PM Cultural Tactics Prevail in the War on Multiple Herbicide-Resistant Kochia (*Bassia scoparia*).** Charles M. Geddes*¹, Louis J. Molnar¹, Cindy A. Gampe², Prabhath Lokuruge²; ¹Agriculture and Agri-Food Canada, Lethbridge, AB, Canada, ²Agriculture and Agri-Food Canada, Scott, SK, Canada (362)
- 03:45 PM Cover Crop Monocultures and Mixtures Affect Weed Seedbank Diversity in the Southeast United States.** Aniruddha Maity*¹, Audrey V. Gamble¹, Annu Kumari¹, Anna Murry Johnson¹, Andrew J. Price²; ¹Auburn University, Auburn, AL, ²USDA-ARS, Auburn, AL (363)

04:00 PM Community Management of Herbicide Resistance: Insights from the Pacific Northwest. Nick Bergmann*¹, Ian Burke¹, Chloe Wardropper²; ¹Washington State University, Pullman, WA, ²University of Illinois, Champaign, IL (364)

WEDNESDAY AFTERNOON FEBRUARY 1

ORAL - 02. Horticultural Crops

LOCATION: Salon K
TIME: 02:00 PM - 05:00 PM Eastern Time
CHAIR: Kurt M. Vollmer
University of Maryland
Queenstown, MD
MODERATOR: Kurt M. Vollmer
University of Maryland
Queenstown, MD
CO-MODERATOR: Thierry E. Besancon
Rutgers University
CHATSWORTH, NJ

***SPEAKER**

02:00 PM IR-4 Weed Science Update - Food Crops. Roger B. Batts*, Jerry Baron, Venkat Pedibhotla; IR-4 Project HQ, NC State University, Raleigh, NC (365)

02:15 PM Weed Control and Crop Tolerance as Influenced by Pendimethalin Rate and Timing of Application in Cranberry Production. Thierry E. Besancon*¹, Marcelo L. Moretti², Katherine Ghantous³, Jed Colquhoun⁴, Cyrus A. Smith⁵; ¹Rutgers University, Chatsworth, NJ, ²Oregon State University, Corvallis, OR, ³UMass Amherst, UMass Cranberry Station, East Wareham, MA, ⁴University of Wisconsin-Madison, Madison, WI, ⁵Ocean Spray Cranberries, Inc., Bandon, OR (366)

02:30 PM Reducing Herbicide Inputs in Plasticulture Peppers Using Spring-seeded Grass Cover Crops. Dwayne D. Joseph¹, Thierry E. Besancon*², Cerruti Rr Hooks³, Alan W. Leslie³, Kurt M. Vollmer⁴; ¹University of Maryland, Chestertown, MD, ²Rutgers University, Chatsworth, NJ,

³University of Maryland, College Park, MD,

⁴University of Maryland, Queenstown, MD (367)

- 02:45 PM Can Vegetable Crop Seed Treatments Enhance Competitiveness with Weeds?** Jed Colquhoun*, Jacklyn Slivicke, Emma Schmidt; University of Wisconsin-Madison, Madison, WI (368)
- 03:00 PM Coffee Break**
- 03:15 PM Integrating Spring-seeded Grass Cover Crops for Weed Management in Cucurbit Production.** Kurt M. Vollmer^{*1}, Thierry E. Besancon², Alan W. Leslie³, Dwayne D. Joseph⁴, Cerruti Rr Hooks³; ¹University of Maryland, Queenstown, MD, ²Rutgers University, Chatsworth, NJ, ³University of Maryland, College Park, MD, ⁴University of Maryland, Chestertown, MD (369)
- 03:30 PM Flumioxazin Application Rate and Timing for Improved Crop Safety While Maintaining Efficacy in Potato.** Harlene M. Hatterman-Valenti*, Collin Auwarter, Avery Shikanai; North Dakota State University, Fargo, ND (370)
- 03:45 PM An Update on NY Research in Snap Beans, Table Beets, and Carrots.** Lynn M. Sosnoskie*, Elizabeth C. Maloney; Cornell University, Geneva, NY (371)
- 04:00 PM Evaluating In-season Management Strategies for Branched Broomrape Control in California Processing Tomatoes.** Matthew Fatino*, Bradley D. Hanson; University of California, Davis, Davis, CA (372)
- 04:15 PM Weed Control and Hazelnut (*Corylus avellana* L.) Tolerance with Tiafenacil.** Joshua W. Miranda*, Marcelo L. Moretti; Oregon State University, Corvallis, OR (373)
- 04:30 PM Speculations on Weed Management and Herbicide Use Under Agrivoltaic Panels in Cranberry Production.** Hilary A. Sandler^{*1}, Giverson Mupambi², Dwayne Breger³, Samantha Glaze-Corcoran⁴; ¹UMass Cranberry Station, East Wareham, MA, ²University of Massachusetts Amherst / Cranberry Station, East Wareham, MA, ³UMass Clean Energy Extension, Amherst, MA, ⁴University of Massachusetts, Amherst, MA (374)
- 04:45 PM Development of Sustainable Weed Management Strategies for Michigan Cherry Growers by**

Identify Promising New Herbicides. Sushila Chaudhari*, Christopher G. Galbraith, Monique Mose; Michigan State University, East Lansing, MI (375)

WEDNESDAY MORNING FEBRUARY 1

ORAL - 03. Turf and Ornamentals

LOCATION: Salon F
TIME: 09:00 AM - 11:30 AM Eastern Time
CHAIR: David E. Hillger
Corteva Agriscience
Thorntown, IN
MODERATOR: David E. Hillger
Corteva Agriscience
Thorntown, IN

***SPEAKER**

09:00 AM Weed Encroachment into a Fine Fescue Mixture Affected by Different Seeding Timings. Ross C. Braun¹, Aaron J. Patton¹, Eric Watkins², Andrew B. Hollman², James A. Murphy³, Bradley S. Park^{*3}, Alexander R. Kowalewski⁴, Emily T. Braithwaite⁴; ¹Purdue University, West Lafayette, IN, ²University of Minnesota, St. Paul, MN, ³Rutgers University, New Brunswick, NJ, ⁴Oregon State University, Corvallis, OR (376)

09:15 AM Influence of Mowing Heights and Post-treatment Irrigation on Annual Bluegrass Control with Methiozolin. John M. Peppers*, Shawn Askew; Virginia Tech, Blacksburg, VA (377)

09:30 AM Seedbank Persistence of Annual Bluegrass (*Poa annua* L.) Across Multiple Climatic Zones in the United States. Andrew W. Osburn*, Muthukumar V. Bagavathiannan; Texas A&M University, College Station, TX (378)

09:45 AM Weed Control in Christmas Trees with Fluridone. Marcelo L. Moretti*; Oregon State University, Corvallis, OR (379)

10:00 AM Coffee Break

- 10:15 AM Factors Associated with the Exposure of Sub-canopy Stolons and Shoots to Herbicides in Dormant Zoysiagrass.** Shawn Askew*, Jordan M. Craft, Clebson G. Goncalves; Virginia Tech, Blacksburg, VA (380)
- 10:30 AM Common Ragweed Control in Southern Appalachian Fraser Fir Christmas Tree Production.** Joe C. Neal*¹, Christopher D. Harlow¹, Jeff Owen², Brad Edwards³; ¹North Carolina State University, Raleigh, NC, ²North Carolina State University, Raleigh, NC, ³North Carolina Cooperative Extension, Jefferson, NC (381)
- 10:45 AM Impact of Temperature on Germination and Growth of Japanese Stiltgrass [*Microstegium vimineum* (Trin.) A. Camus].** Jeffrey Derr*¹, Aman Rana²; ¹Virginia Tech, Virginia Beach, VA, ²Virginia Tech HRAREC, Virginia Beach, VA (382)
- 11:00 AM Investigating the Genetic Relatedness of Herbicide Resistant *Poa annua* Populations.** Claudia A. Rutland*¹, Joseph S. McElroy², Jinesh Patel²; ¹Auburn University Department of Crop, Soil, and Environmental Sciences, Auburn, AL, ²Auburn University, Auburn, AL (383)
- 11:15 AM Evaluation of Goosegrass (*Eleusine indica*) Populations Suspected Resistant to Revolver and Dismiss.** Bridgette C. Johnson*, Joseph S. McElroy; Auburn University, Auburn, AL (384)
- 11:30 AM Pre-emergent Herbicides and Mulches in Propagation - Rooting and Growth After Transplant.** Anthony L. Witcher*¹, Isha Poudel²; ¹Tennessee State University, Mcminnville, TN, ²University of Tennessee, Jackson, TN (385)

WEDNESDAY MORNING FEBRUARY 1

ORAL - 10. Physiology

LOCATION: Salon G
 TIME: 09:00 AM - 02:00 PM Eastern Time
 CHAIR: Chenxi Wu

Bayer CropScience
St Louis, MO
MODERATOR: Chenxi Wu
Bayer CropScience
St Louis, MO

***SPEAKER**

- 09:00 AM Florpyrauxifen-benzyl Resistance in Barnyardgrass (*Echinochloa crus-galli*) Evolved Prior to the Commercialization of Loyant™.**
Hudson K. Takano*, Scott Greenwalt, David Ouse, Moriah Zielinski, Paul Schmitzer; Corteva Agriscience, Indianapolis, IN (386)
- 09:15 AM Molecular Targets of Herbicides and Insecticides - Are There Useful Overlaps?**
Stephen O. Duke*¹, Amar G. Chittiboyina¹, Thomas C. Sparks², Daniel R. Swale³; ¹University of Mississippi, Oxford, MS, ²Agriluent LLC, Greenfield, IN, ³University of Florida, Gainesville, FL (387)
- 09:30 AM Glyphosate Selection Increases EPSPS Copy Number and Glyphosate Resistance Within Individual Plants of *Hordeum glaucum*.**
Christopher Preston*¹, Patricia Adu-Yeboah¹, Jenna M. Malone¹, Gurjeet Singh Gill²; ¹University of Adelaide, Glen Osmond, Australia, ²University of Adelaide, Adelaide, Australia (388)
- 09:45 AM Herbicides Pose a Unique Challenge: Insights from Omics Analyses of Plants Responding to Sublethal Stresses.** Jim Westwood*, Gourav Sharma, Suzanne R. Laliberte, Shawn Askew, Jacob Barney, David C. Haak; Virginia Tech, Blacksburg, VA (389)
- 10:00 AM Coffee Break**
- 10:15 AM Chromosome-Scale Draft Genomes of Common and Giant Ragweed Reveal a Potential Mechanism of Glyphosate Resistance.** Eric Page*¹, Martin Laforest², Sara Martin³, Katherine Bisaillon⁴, Brahim Soufiane⁴, Sydney Meloche¹, Francois Tardif⁵; ¹Agriculture and Agri-Food Canada, Harrow, ON, Canada, ²Agriculture and Agri-Food Canada, Saint-jean-sur-richelieu, QC, ³Agriculture and Agri-Food Canada, Ottawa, ON, ⁴Agriculture and Agri-Food Canada, Saint-jean-sur-richelieu, QC, Canada, ⁵University of Guelph, Guelph, ON, Canada (390)

- 10:30 AM A Deeper Understanding of Resistance to Glufosinate in *Amaranthus palmeri*.** Matheus Machado Noguera*¹, Aimone Porri², Eduarda P. Mena Barreto¹, Juan Camilo Velásquez R¹, Martin Penkert³, James W. Heiser⁴, Jens Lerchl⁵, Nilda Roma-Burgos⁶; ¹University of Arkansas, Fayetteville, AR, ²BASF Global Research & Development, Limburgerhof, Germany, ³BASF SE, Ludwigshafen, Germany, ⁴University of Missouri, Portageville, MO, ⁵BASF SE, Limburgerhof, Germany, ⁶University of Arkansas, Fayetteville, Fayetteville, AR (391)
- 10:45 AM Dose-Response Characteristics of Global Metabolome as a Potential Avenue to Capture the Secondary Toxicity of Herbicides in Weeds.** Shalini priya Etukuri*, Pawanjit Kaur Sandhu, Jisun Lee, Nishanth Tharayil; Clemson University, Clemson, SC (392)
- 11:00 AM Identification and Characterization of GST Genes Involved in Group 15 Herbicide Detoxification in Resistant Grasses.** Evlampia Parcharidou¹, Rebecka Duecker¹, Roland S. Beffa*²; ¹Georg-August Universität Göttingen, Göttingen, Germany, ²Senior Scientist Consultant, Frankfurt, Germany (393)
- 11:15 AM Genetic Factors Influencing Snap Bean Tolerance to Preemergence Herbicides from Three Site-of-Action Groups.** Ana I. Saballos*¹, Nicholas Hausman¹, Ed Peachey², Patrick Tranel³, Martin Williams⁴; ¹Global Change and Photosynthesis Research, US Department of Agriculture, Agricultural Research Service, Urbana, IL, ²Oregon State University, Corvallis, OR, ³University of Illinois, Urbana, IL, ⁴USDA-ARS, Urbana, IL (394)
- 11:30 AM Genome-wide Characterization of MADS-box Transcription Factors Family in Dioecious Amaranth Species.** Lucas Kopecky Bobadilla*¹, Patrick Tranel²; ¹University of Illinois, Champaign, IL, ²University of Illinois, Urbana, IL (395)
- 11:45 AM Metabolic Resistance Profiles of Palmer Amaranth (*Amaranthus palmeri*) Populations to HPPD-inhibiting Herbicides.** Jeanafior Crystal T. Concepcion*¹, Shiv S. Kaundun², James A. Morris², Devin Koester¹, Sarah-Jane Hutchings², Dean E. Riechers³; ¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Syngenta,

Bracknell, United Kingdom, ³University of Illinois-Urbana, Urbana, IL (396)

12:00 PM Lunch

01:00 PM Comparative Analysis of S-Metolachlor Metabolism Among Palmer Amaranth (*Amaranthus palmeri*) and Waterhemp (*A. tuberculatus*) Populations from the U.S. Jeanaflor Crystal T. Concepcion¹, Noeleen K. Brown², James A. Morris³, Sarah-Jane Hutchings³, Shiv S. Kaundun³, Dean E. Riechers*²; ¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University of Illinois-Urbana, Urbana, IL, ³Syngenta, Bracknell, United Kingdom (397)

01:15 PM Overcoming Weed Resistance with Discovery of Novel Modes of Action. Karthik Putta*, Paolo Castiglioni, Neville Anthony, David Lauffer, David Vierra, Balaji Aravindhan Pandian, Gary Schaefer, Peter Stchur, Brittany Baisch, Timothy Panosian, Jacqueline Heard, Thomas Meade; ENKO, Mystic, CT (398)

01:30 PM Which Summer Annual Weeds May Emerge as Important Candidates as Model Species for Research to Combat Climate Change and Global Food Security? Philip Westra*¹, Todd A. Gaines¹, Eric L. Patterson², Jacob S. Montgomery¹, John M. Lemas¹; ¹Colorado State University, Fort Collins, CO, ²Michigan State University, East Lansing, MI (399)

WEDNESDAY MORNING FEBRUARY 1

Graduate Student Luncheon

LOCATION: Salon J
TIME: 11:30 AM - 01:00 PM Eastern
 Time
MODERATOR: Sarah E. Kezar
 Texas A&M University
 College Station, TX

WEDNESDAY AFTERNOON FEBRUARY 1

**SYMPOSIUM - 05. WSSA Research Priorities
Survey Results: 13 Federal Agency-Perspectives
and -Funding Opportunities**

LOCATION: Salon II
TIME: 01:00 PM - 05:00 PM Eastern
Time
CHAIR: James Kells
Michigan State University
East Lansing, MI
MODERATOR: James Kells
Michigan State University
East Lansing, MI
CO-MODERATOR: Steve Young
USDA ARS
Beltsville, MD

***SPEAKER**

- 01:00 PM Introductions and Objectives.** James J. Kells*; Michigan State University, East Lansing, MI **(400)**
- 01:20 PM Summary and Interpretation of WSSA Research Priorities Survey.** Daniel C. Brainard*¹, Erin Haramoto², Ramon G. Leon³, James J. Kells¹, Lee Van Wychen⁴, Pratap Devkota⁵, Mithila Jugulam⁶, Jacob Barney⁷; ¹Michigan State University, East Lansing, MI, ²University of Kentucky, Lexington, KY, ³North Carolina State University, Raleigh, NC, ⁴Weed Science Society of America, Alexandria, VA, ⁵University of Florida, Jay, FL, ⁶Kansas State University, Manhattan, KS, ⁷Virginia Tech, Blacksburg, VA **(401)**
- 02:05 PM Question and Answer Session on Survey Results.** Daniel C. Brainard*; Michigan State University, East Lansing, MI **(402)**
- 02:50 PM Coffee Break**
- 03:05 PM Research Panel Discussion.** Stephen O. Duke*; University of Mississippi, Oxford, MS **(403)**
- 03:50 PM Management Panel Discussion.** Lee Van Wychen*; Weed Science Society of America, Alexandria, VA **(404)**

04:35 PM Closing Comments and Next Steps. James J. Kells*; Michigan State University, East Lansing, MI (405)

WEDNESDAY AFTERNOON FEBRUARY 1

ORAL - 09. Biocontrol of Weeds

LOCATION: Salon G
TIME: 02:00 PM - 02:30 PM Eastern Time

***SPEAKER**

02:00 PM Development of the Brazilian Peppertree Biological Control Agent *Pseudophilothrips ichini* (Thysanoptera: Phlaeothripidae) in Florida. Gregory Wheeler*; USDA, Davie, FL (406)

02:15 PM Allelopathic Potential of *Parthenium hysterophorus* Against Selected Weeds of Wheat Crop. Tauseef Anwar*¹, Huma Qureshi²;
¹Department of Botany, The Islamia University of Bahawalpur, Bahawalpur-63000, Punjab, Pakistan, Bahawalpur, Pakistan, ²Institute of Biological Sciences, Gomal University, Dera Ismail Khan-29050, Khyber Pakhunkhwa, Pakistan, Dera Ismail Khan, Pakistan (407)

WEDNESDAY AFTERNOON FEBRUARY 1

SST - SST PhD - Finals

LOCATION: Salon F
TIME: 02:00 PM - 03:00 PM Eastern Time
CHAIR: Marty Schraer
Syngenta
Meridian, ID
MODERATOR: Marty Schraer
Syngenta
Meridian, ID

***SPEAKER † STUDENT CONTEST**

WEDNESDAY AFTERNOON FEBRUARY 1

ORAL - 11. Soil and Environmental Aspects

LOCATION: Salon G
TIME: 02:30 PM - 03:00 PM Eastern
Time
CHAIR: David P. Russell
Auburn University
Madison, AL
MODERATOR: David P. Russell
Auburn University
Madison, AL

***SPEAKER**

02:30 PM Dicamba Research Update. Thomas C. Mueller*¹,
Larry Steckel²; ¹University of Tennessee,
Knoxville, TN, ²University of Tennessee, Jackson,
TN (408)

WEDNESDAY AFTERNOON FEBRUARY 1

Joint Student/ Photo Awards

LOCATION: Salon III
TIME: 05:00 PM - 07:00 PM Eastern
Time
MODERATOR: Mandy Bish
University of Missouri
Columbia, MO

WEDNESDAY AFTERNOON FEBRUARY 1

Joint Dessert Social

LOCATION: Foyer
TIME: 09:00 PM - 11:00 PM Eastern
Time

THURSDAY MORNING FEBRUARY 2

WSSA Business Meeting/Breakfast

LOCATION: Salon H
TIME: 06:30 AM - 08:00 AM Eastern
Time
MODERATOR: A Stanley Culpepper
University of Georgia
Tifton, GA
CO-MODERATOR: Carroll Moseley
Syngenta
Brown Summit, NC

THURSDAY MORNING FEBRUARY 2

Registration

LOCATION: Arlington Registration
TIME: 08:00 AM - 10:00 AM Eastern
Time

THURSDAY MORNING FEBRUARY 2

ORAL - 01. Agronomic Crops - Day 2

LOCATION: Salon III
TIME: 08:00 AM - 12:00 PM Eastern
Time
CHAIR: Daljit Singh
Bayer
Chesterfield, MO

MODERATOR: Daljit Singh
Bayer
Chesterfield, MO
CO-MODERATOR: Craig M. Alford
Corteva
Ankeny, IA

***SPEAKER**

- 08:00 AM Use of a Spray Drone for Corn Harvest Aid Herbicide Applications.** Ryan D. Langemeier*, Livia Pereira, Justin T. McCaghren, Steve Li; Auburn University, Auburn, AL (409)
- 08:15 AM Investigations of Suspected Weed Resistance to XtendiMax® Herbicide with VaporGrip® Technology.** Aruna V. Varanasi*, Chandrashekar Aradhya, Jeffrey Herrmann, John Willis; Bayer CropScience, Chesterfield, MO (410)
- 08:30 AM Evaluation of Physical Control Strategies for Kochia (*Bassia scoparia*) Patch Management.** Shaun M. Sharpe*, Julia Y. Leeson, Haben Asgedom Telda, Jennifer Town, Tim Dumonceaux, Krista Gill; Agriculture and Agri-Food Canada, Saskatoon, SK, Canada (411)
- 08:45 AM Response of Soybean at Different Growth Stages to Sub-lethal Rates of Imazapyr.** Michael W. Marshall*; Clemson University, Blackville, SC (412)
- 09:00 AM Detection and Site-Specific Treatment of Late-Season Weed Escapes in Rice Using Unmanned Aerial Systems and Deep Learning.** Bholuram Gurjar*¹, Bishwa B. Sapkota¹, Isidor Ceperkovic¹, Ubaldo Torres², Matthew Kutugata¹, Daniel E. Martin³, Muthukumar V. Bagavathiannan¹; ¹Texas A&M university, College Station, TX, ²Texas Tech University, College Station, TX, ³United States Department of Agriculture, College Station, TX (413)
- 09:15 AM Effects of Delaying Rye Cover Crop Termination on Cover Crop Biomass, Weed Suppression, and Corn Yield.** Daniel A. Boakye*¹, Parmeshwor Aryal¹, Carlene A. Chase¹, Muthukumar V. Bagavathiannan², Andrea Basche³, Heather Darby⁴, Michael L. Flessner⁵, Erin Haramoto⁶, Ramon G. Leon⁷, Steven Brian Mirsky⁸, Alison Robertson⁹, Matt Ruark¹⁰, Matthew R. Ryan¹¹, Nicholas J. Seiter¹², Kelley

Tilmon¹³, Peter Tomlinson¹⁴, John F. Tooker¹⁵, Mark VanGessel¹⁶, John M. Wallace¹⁷, Jared Adam¹⁵, Tauana Ferreira de Almeida¹⁸, Ashley Decker¹², Kristen Loria¹¹, Rashelle Matthiessen-Anderson⁹, Jodie M. McVane², Fernando H. Oreja⁷, DeAnn Presley¹⁴, Amy Raudenbush¹⁹, Lindsey Ruhl²⁰, Cynthia Sias⁵, Barbara Scott¹⁶, Ethan Sweep²¹, Ashley Waggoner²²; ¹University of Florida, Gainesville, FL, ²Texas A&M University, College Station, TX, ³University of Nebraska, Lincoln, NE, ⁴The University of Vermont, St. Albans, VT, ⁵Virginia Tech, Blacksburg, VA, ⁶University of Kentucky, Lexington, KY, ⁷North Carolina State University, Raleigh, NC, ⁸USDA ARS, Beltsville, MD, ⁹Iowa State University, Ames, IA, ¹⁰University of Wisconsin, Madison, WI, ¹¹Cornell University, Ithaca, NY, ¹²University of Illinois, Urbana, IL, ¹³Ohio State University, Wooster, OH, ¹⁴Kansas State University, Manhattan, KS, ¹⁵The Pennsylvania State University, University Park, PA, ¹⁶University of Delaware, Georgetown, DE, ¹⁷Penn State University, University Park, PA, ¹⁸University of Nebraska, Lincoln, NE, ¹⁹The Ohio State University, Wooster, OH, ²⁰University of Vermont, St. Albans, VT, ²¹USDA Agricultural Research Service, Beltsville, MD, ²²University of Wisconsin, Mas, WI (414)

09:30 AM Maverick™ Corn Herbicide: Application Flexibility with Broad-Spectrum Control. Jonathon Kohrt*¹, Garrison J. Gundy², Trevor D. Israel³, Chad L. Smith⁴, John Pawlak⁵, Eric Ott⁵; ¹Valent USA LLC, West Des Moines, IA, ²Valent U.S.A LLC, Mcpherson, KS, ³Valent USA, Harrisburg, SD, ⁴Valent USA, Hallsville, MO, ⁵Valent USA LLC, San Ramon, CA (415)

09:45 AM Response of North Carolina Palmer Amaranth Accessions to Very-Long-Chain-Fatty-Acid Inhibiting Herbicides. Amanda M. Foderaro*; Syngenta, Raleigh, NC (416)

10:00 AM Coffee Break

10:15 AM Survey and Screening to Evaluate Herbicide Efficacy in Triple Stack Sugarbeet Cropping Systems in SE Montana. Het Samir Desai*¹, Fabian Menalled¹, Lovreet S. Shergill²; ¹Montana State University, Bozeman, MT, ²Montana State University, Huntley, MT (417)

- 10:30 AM Multi-state Survey of Waterhemp (*Amaranthus Tuberculatus*) and Palmer Amaranth (*Amaranthus Palmeri*) in the USA on Sensitivity to Multiple Herbicides.** Daljit Singh*¹, Alejandro Perez-Jones², Drew Tyre³, Chandrashekar Aradhya²; ¹Bayer, Chesterfield, MO, ²Bayer Crop Science, Chesterfield, MO, ³Bayer Crop Science, Lincoln, NE **(418)**
- 10:45 AM Evaluation of See & Spray Programs for Weed Management in Cotton Production.** William L. Patzoldt*¹, Lauren M. Lazaro¹, Michael M. Houston¹, Diego J. Contreras², Wesley Everman², Tristen H. Avent³, Jason K. Norsworthy³; ¹Blue River Technology, Sunnyvale, CA, ²North Carolina State University, Raleigh, NC, ³University of Arkansas, Fayetteville, AR **(419)**
- 11:00 AM A23980B: A Step Change for Residual Weed Control in Corn.** Sudeep A. Mathew*¹, Scott E. Cully², Mark Kitt³; ¹Syngenta, Germantown, MD, ²Syngenta Crop Protection, Marion, IL, ³Syngenta, Greensboro, NC **(420)**
- 11:15 AM What's New in Industry.** Sudeep A. Mathew*¹, Marshall Hay², Mark Kitt³; ¹Syngenta, Germantown, MD, ²Syngenta Crop Protection, Vero Beach, FL, ³Syngenta, Greensboro, NC **(421)**
- 11:30 AM Estimating Dry-down Performance of Desiccants in Lentils Using Hyperspectral Imaging.** Charles M. Geddes¹, Keshav Dev Singh², Prabahar Ravichandran*³; ¹Agriculture and Agri-Food Canada, Lethbridge, AB, Canada, ²University of Saskatchewan, Lethbridge, AB, Canada, ³Agriculture and Agri-Food Canada, Truro, NS, Canada **(422)**

THURSDAY MORNING FEBRUARY 2

SYMPOSIUM - 02. Novel Technology for Weed Management: An Update on WSSA Member Activities from Around the US

LOCATION: Salon I
 TIME: 08:00 AM - 12:00 PM Eastern Time
 CHAIR: Lynn M. Sosnoskie

Cornell University
Geneva, NY
MODERATOR: Lynn M. Sosnoskie
Cornell University
Geneva, NY
CO-MODERATOR: Marcelo L. Moretti
Oregon State University
Corvallis, OR

***SPEAKER**

- 08:00 AM Novel Technology for Weed Management - Symposium Introduction.** Lynn M. Sosnoskie*¹, Marcelo L. Moretti²; ¹Cornell University, Geneva, NY, ²Oregon State University, Corvallis, OR (423)
- 08:09 AM Identifying and Overcoming Barriers of Adoption for Robotic Weed Control Implementation in Specialty Crops.** Matthew A. Cutulle*¹, Lynn M. Sosnoskie², Thierry E. Besancon³, Nathan Boyd⁴, Sushila Chaudhari⁵, Matthew B. Bertucci⁶, Joe Maja⁷, Tara Wade⁸, Felipe Silva⁹, Laura Pineda-Bermudez²; ¹Clemson University, Charleston, SC, ²Cornell University, Geneva, NY, ³Rutgers University, Chatsworth, NJ, ⁴University of Florida, Balm, FL, ⁵Michigan State University, East Lansing, MI, ⁶University of Arkansas, Fayetteville, AR, ⁷Clemson University, Blackville, SC, ⁸University of Florida, Gainesville, FL, ⁹Clemson University, Clemson, SC (424)
- 08:27 AM Smart Weed Control in Vegetables with Band Steaming.** Steve Fennimore*; University of California - Davis, Salinas, CA (425)
- 08:45 AM Electrical Weed Control in Perennial Cropping Systems.** Marcelo L. Moretti*; Oregon State University, Corvallis, OR (426)
- 09:03 AM Electrical Weeding and Inter-row Mowing in Annual Crops.** Annika Rowland*¹, Lynn M. Sosnoskie², Chris J. Pelzer¹, Matthew R. Ryan¹; ¹Cornell University, Ithaca, NY, ²Cornell University, Geneva, NY (427)
- 09:21 AM The Future of Precision Weed Management in Specialty Crops.** Nathan Boyd*¹, Arnold W. Schumann², Ana Claudia Buzanini³; ¹University of Florida, Balm, FL, ²University of Florida, Lake Alfred, FL, ³University of Florida, Wimauma, FL (428)

- 09:39 AM Weed Control Efficacy and Perennial Crop Tolerance Using an Herbicide Sprayer Based on Chlorophyll Fluorescence Sensing in Perennial Crops.** Thierry E. Besancon*¹, Lynn M. Sosnoskie², Wesley M. Bouchelle¹, Elizabeth C. Maloney², Bethany M. Schulteis³; ¹Rutgers University, Chatsworth, NJ, ²Cornell University, Geneva, NY, ³Cornell University, Ithaca, NY **(429)**
- 09:57 AM Coffee Break**
- 10:12 AM See & Spray Ultimate - A New Tool for Weed Management in Agronomic Crops.** Lauren M. Lazaro*¹, William L. Patzoldt¹, Scott Brown¹, Jesaalen Gizotti de Moraes¹, Michael M. Houston², Gaylia Ostermier³, Chad Yagow³; ¹Blue River Technology, Sunnyvale, CA, ²Blue River Technology, Stoneville, MS, ³John Deere, Urbandale, IA **(430)**
- 10:30 AM Advances in Unmanned Aerial Systems-based Spray Applications, 2023.** Vijay Singh*¹, Dhiraj Srivastava², Vipin Kumar², Daniel E. Martin³, William Reynolds⁴; ¹Virginia Tech, Painter, VA, ²Virginia Polytechnic Institute and State University, Painter, VA, ³United States Department of Agriculture, College Station, TX, ⁴LeadingEdge Aerial Technologies, New Smyrna Beach, FL **(431)**
- 10:48 AM Current Status of Harvest Weed Seed Control Research in the Eastern United States.** Michael L. Flessner*¹, Prashant Jha², Lovreet S. Shergill³, Lynn M. Sosnoskie⁴, Muthukumar V. Bagavathiannan⁵, Wesley Everman⁶, Eugene P. Law⁷, Lauren M. Lazaro⁸, Steven Brian Mirsky⁹, Mark VanGessel¹⁰; ¹Virginia Tech, Blacksburg, VA, ²Iowa State University, Ames, IA, ³Montana State University, Huntley, MT, ⁴Cornell University, Geneva, NY, ⁵Texas A&M University, College Station, TX, ⁶North Carolina State University, Raleigh, NC, ⁷University of Delaware, Beltsville, MD, ⁸Blue River Technology, Sunnyvale, CA, ⁹USDA ARS, Beltsville, MD, ¹⁰University of Delaware, Georgetown, DE **(432)**
- 11:06 AM Implementing Harvest Weed Seed Control Strategies in the Midwestern and Southern U.S.** Prashant Jha*¹, Jason K. Norsworthy², Vipin Kumar³, Karla L. Gage⁴, Steven Brian Mirsky⁵, Muthukumar V. Bagavathiannan⁶, Michael L. Flessner⁷, Michael Walsh⁸, Avery J. Bennett¹, Alexis L. Meadows¹, Austin H. Schleich¹; ¹Iowa State University, Ames, IA, ²University of

Arkansas, Fayetteville, AR, ³Kansas State University, Hays, KS, ⁴Southern Illinois University Carbondale, Carbondale, IL, ⁵USDA ARS, Beltsville, MD, ⁶Texas A&M University, College Station, TX, ⁷Virginia Tech, Blacksburg, VA, ⁸University of Sydney, Narrabri, Australia (433)

11:24 AM Current Status of Harvest Weed Seed Control Research in the Northern Great Plains and Pacific Northwest Region of the United States. Lovreet S. Shergill*¹, Todd A. Gaines², Ian Burke³, Drew J. Lyon³, Judit Barroso⁴, Eric P. Westra²; ¹Montana State University, Huntley, MT, ²Colorado State University, Fort Collins, CO, ³Washington State University, Pullman, WA, ⁴Oregon State University, Adams, OR (434)

THURSDAY MORNING FEBRUARY 2

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

LOCATION: Salon II
TIME: 09:00 AM - 11:30 AM Eastern Time
CHAIR: Scott A. Nolte
Texas A&M AgriLife Extension
College Station, TX
MODERATOR: Scott A. Nolte
Texas A&M AgriLife Extension
College Station, TX
CO-MODERATOR: Byron B. Sleugh
Corteva Agriscience
Carmel, IN

***SPEAKER**

09:00 AM Will it Dye or Die? Effects of Application Speed on Droplet Distribution and Swath Width of Boomless Nozzles. Kayla L. Broster*, Thomas H. Duncan, John D. Byrd, Jr.; Mississippi State University, Starkville, MS (435)

- 09:15 AM Chemical Control of Terrestrial Alligatorweed in Mississippi.** Gray Turnage*; Mississippi State University, Starkville, MS (436)
- 09:30 AM Assessment of Reverse Cut Stem Treatments for Difficult to Control Tropical Vines.** Stephen F. Enloe*; University of Florida, Gainesville, FL (437)
- 09:45 AM Aquatic Weed Control Research Update.** Benjamin P. Sperry*; US Army Corps of Engineers, Gainesville, FL (438)
- 10:00 AM Coffee Break**
- 10:15 AM Smutgrass (*Sporobolus Indicus*) Identification and Management with Unmanned Aerial Systems.** Zachary S. Howard*¹, Scott A. Nolte², Daniel E. Martin³, Chenghai Yang³; ¹Texas A&M University, College Station, TX, ²Texas A&M AgriLife Extension, College Station, TX, ³United States Department of Agriculture, College Station, TX (439)
- 10:30 AM How Much Pre-plant Weed Suppression is Practical for Riparian Forest Buffer Establishment?** Arthur E. Gover*, Emily N. Rojik; Penn State, University Park, PA (440)
- 10:45 AM Evaluation of Factors That Influence Herbicide Spray Retention on Floating and Emergent Aquatic Vegetation.** Christopher R. Mudge*¹, Benjamin P. Sperry², Michael W. Durham³, Kurt D. Getsinger⁴; ¹U.S. Army Engineer Research & Development Center, Baton Rouge, LA, ²US Army Corps of Engineers, Gainesville, FL, ³University of Florida, Gainesville, FL, ⁴U.S. Army Engineer Research and Development Center, Vicksburg, MS (441)
- 11:00 AM Control of Wolftail Sedge (*Carex cherokeensis*) in Forages.** David P. Russell*; Auburn University, Madison, AL (442)

THURSDAY MORNING FEBRUARY 2

ORAL - 06. Teaching and Extension

LOCATION: Salon J

TIME: 09:00 AM - 12:00 PM Eastern Time

CO-MODERATOR: Debalin Sarangi
University of Minnesota
St. Paul, MN

***SPEAKER**

09:00 AM Preventing Preventable Problems on the Farm.
Eric P. Prostko*; University of Georgia, Tifton, GA (443)

09:15 AM And You Think Pigweed Control is a Challenge!! John D. Byrd, Jr.*; Kayla L. Broster, Thomas H. Duncan; Mississippi State University, Starkville, MS (444)

09:30 AM US-Herbicide Resistance Action Committee (HRAC): Who We Are and What We Do?
Zahoor A. Ganie¹, Greg Elmore², Lowell Sandell³, Chandrashekar Aradhya*⁴; ¹FMC, Newark, DE, ²Bayer Crop Science, Saint Louis, MO, ³Corteva, Ashland, NE, ⁴Bayer Crop Science, Chesterfield, MO (445)

09:45 AM Public Parks, Family Farms, and Cover Crops: Implementing Ecological Weed Management with Diverse Stakeholders in Oregon Hazelnuts.
Steven Haring*, Marissa Lane-Massee, Cal Penkauskas, Alejandro Brambila, Ari Brown, Lauren Hallett; University of Oregon, Eugene, OR (446)

10:00 AM Coffee Break

10:15 AM Challenges with Co-existence of Multiple Herbicide-Resistant Soybean Traits. Amit J. Jhala*; University of Nebraska Lincoln, Lincoln, NE (447)

10:30 AM Climate Change and Weed Management: Synthesizing Information for New York Farmers. Caroline Marschner*¹, Sharon Bachman², Catalina Ferreria-Dias³, Isabella Colucci¹, Rebecca Stup¹, Claire Liu¹, Antonio DiTommaso¹; ¹Cornell University, Ithaca, NY, ²Cornell Cooperative Extension, East Aurora, NY, ³Cornell University, Santa Ana, CA (448)

10:45 AM Advancing Physical Weed Control: Farmers Love Field Days, But On-farm Research is Very Challenging. Eric R. Gallandt*¹, Daniel C.

Brainard²; ¹University of Maine, Orono, ME,
²Michigan State University, East Lansing, MI (449)

**11:00 AM A Story of Success and Challenges in
Eradicating Palmer Amaranth (*Amaranthus
palmeri*) in Minnesota.** Debalin Sarangi*¹, Eric Y.
Yu¹, Anthony Brusa², Shane Blair³, Monika
Chandler³, Denise Thiede³, Anthony Cortilet³,
Melissa Wilson¹, Jeffrey Gunsolus¹, Roger
Becker¹, Thomas J. Peters⁴; ¹University of
Minnesota, St. Paul, MN, ²University of
Minnesota, Saint Paul, MN, ³Minnesota
Department of Agriculture, St. Paul, MN, ⁴North
Dakota State University, Fargo, ND (450)

THURSDAY AFTERNOON FEBRUARY 2

US-HRAC Meeting

LOCATION: Salon K
TIME: 12:00 PM - 04:00 PM Eastern
Time

THURSDAY AFTERNOON FEBRUARY 2

WSSA Board of Directors Meeting

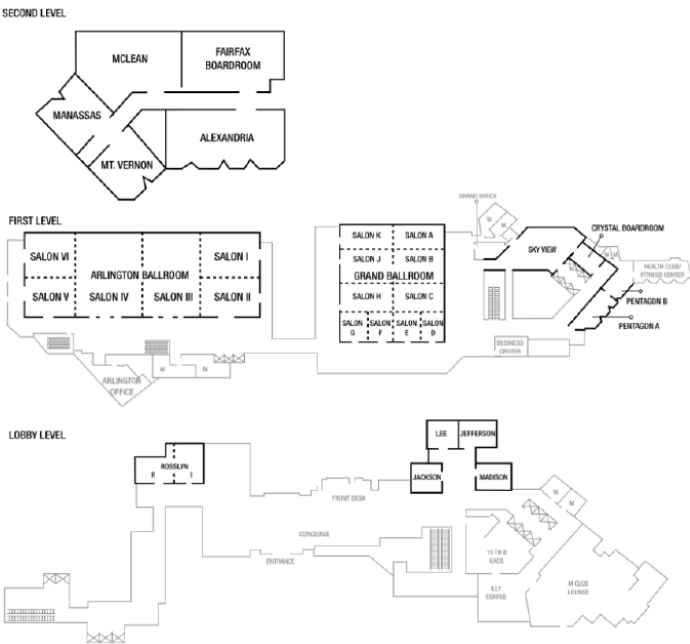
LOCATION: Salon H
TIME: 02:00 PM - 03:30 PM Eastern
Time
MODERATOR: Carroll Moseley
Syngenta
Brown Summit, NC
CO-MODERATOR: Gregory K. Dahl
Winfield United
Eagan, MN

THURSDAY AFTERNOON FEBRUARY 2

NEWSS Board of Directors Meeting

LOCATION: Salon J
TIME: 02:00 PM - 03:30 PM Eastern Time
MODERATOR: Wesley Everman
North Carolina State University
Raleigh, NC

Crystal Gateway Marriott



AUTHOR INDEX

Abdollahi, Fatemeh	111
Ackroyd, Victoria	193, 350
Adam, Jared	414

Adamczyk, John J.	309
Adams, Amy	210
Adjewor, Albert T.	5, 7, 249, 257
Adu-Yeboah, Patricia	388
Afshang, Rana	28
Afshar, Reza	352
Afzal, Irfan	267
Aguilera, Maria J.	109
Ahmed, Khalied	84, 233, 238
Aicklen, Isabelle	241
Aishwarya, Veenu	357
Albrecht, Aszhia K.	340
Albrecht, Ute	167
Alcorn, Michael A.	358
Ali, Faryal	267
Al-Khatib, Kassim	15, 203
Alonzi, Elizabeth R.	340
Alsdorf, Jackson W.	244, 295
Altland, James	252
Amirkhani, Masoume	234
Amirsadeghi, Sasan	144
Anderson, James V.	346
Angonese, Paula Sinigaglia	38
Anthony, Neville	398
Antony-Babu, Sanjay	52
Anwar, Tauseef	407
Aradhya, Chandrashekar	43, 175, 410, 418, 445
Arana, Jeanine	65, 77, 262
Argenta, Josiane C.	247
Argueta, Ronel J.	35
Armstrong, Shalamar	159, 345
Arneson, Nicholas J.	126, 153, 164, 171, 172
Arnold, Casey H.	37, 310
Aryal, Parmeshwor	360, 414

Asgedom Telda, Haben	411
Asher, Scott	36
Askew, Shawn	92, 237, 240, 287, 291, 294, 377, 380, 389
Assis Barbosa Martins, Bianca	353
Austin, Craig	326
Austin, Robert	125, 293
Auwarter, Collin	370
Avent, Tristen H.	37, 106, 243, 256, 341, 419
Avila, Luis A.	299
Awan, Tahir Hussain	199
Bachman, Sharon	177, 448
Bagavathiannan, Muthukumar V.	28, 46, 52, 83, 87, 105, 108, 118, 121, 155, 176, 182, 193, 196, 235, 270, 328, 329, 347, 348, 350, 358, 378, 413, 414, 432, 433
Baisch, Brittany	398
Bajsa-Hirschel, Joanna	146
Baker, Sydney C.	55
Baldwin, Gregory B.	36, 41
Bamber, Kevin	169, 260, 261, 318, 319, 320, 334
Bararpour, Taghi	6
Barber, Tom	10, 140, 310
Baris, Reuben D.	216
Barney, Jacob	389, 401
Barnhart, Isaac H.	331, 332
Baron, Jerry	365
Barroso, Judit	8, 20, 434
Basche, Andrea	414
Basinger, Nicholas T.	93, 120, 360
Bateman, Nick R.	309
Bates, Terry	68
Bateson, Zack	324
Batts, Roger B.	365

Baughman, Todd A.	41, 268
Becerra-Alvarez, Aaron	54
Bechar, Avital	343
Becker, Roger	450
Beckett, Thomas	326
Beckie, Hugh	162
Beerbower, Peter E.	149
Beffa, Roland S.	151, 197, 206, 393
Beiermann, Clint	30
Benedetti, Lariza	148
Beneton, Karina	117
Bennett, Avery J.	433
Berardi, Nicole	144
Berger, Rachelle	178
Bergmann, Nick	364
Bernards, Mark L.	58, 103, 327
Berrios-Ortiz, Laura	180
Berti, Marisol T.	346
Bertucci, Matthew B.	424
Besancon, Thierry E.	62, 64, 66, 70, 227, 248, 366, 367, 369, 424, 429
Bhattarai, Prayusha	7
Bisaillon, Katherine	390
Bish, Mandy	126
Blair, Shane	450
Bland, Claudia R.	126
Blankenship, Colton D.	69, 71
Boakye, Daniel A.	360, 414
Bocz, Chris	93
Boman, Chase T.	33, 338
Bond, Jason A.	10
Bouchelle, Wesley M.	64, 66, 248, 429
Bowman, Hunter D.	10
Boyd, Nathan	63, 161, 168, 259, 269, 333, 424, 428

Bradley, Kevin W.	60, 126, 172, 193, 317, 350
Brainard, Daniel C.	113, 179, 207, 351, 401, 402, 449
Braithwaite, Emily T.	376
Brambila, Alejandro	446
Brar, Akamjot S.	30
Braun, Ross C.	376
Bravo, Melissa A.	311, 312
Breger, Dwayne	374
Bridges, Melissa	209
Brim-DeForest, Whitney	203
Broster, Kayla L.	91, 435, 444
Brown, Ari	446
Brown, Bryan	351
Brown, Noeleen K.	397
Brown, Scott	430
Brunharo, Caio A.	20, 147, 245
Brusa, Anthony	450
Buenaventura, Kayla	28
Buescher, Elizabeth	340
Buessing, Hannah	39
Bui, Travis	220
Bundt, Angela Da Cas	40
Buol, John	307
Burgess, Mac	264
Burke, Ian	205, 364, 434
Burns, Erin E.	128, 317
Butler-Jones, Aleah L.	12, 246
Butts, Thomas R.	10, 140, 309
Buzanini, Ana Claudia	168, 333, 428
Byrd, Jr., John D.	91, 435, 444
Cahoon, Charlie W.	29, 35, 229, 236, 239, 289, 293, 295
Camargo Silva, Gustavo	176, 348
Cangiano, Maria L.	358

Cardona Giraldo, Luz Aide	77, 262
Carley, Danesha Seth	221
Carr, Baylee L.	62, 64, 248
Carvalho-Moore, Pamela	37, 140, 310
Castiglioni, Paolo	398
Cavigelli, Michel A.	123
Ceperkovic, Isidor	46, 413
Chahal, Parminder	165
Champagne, Rebecca	130, 207
Chandler, Monika	450
Chandra, Saket	195, 224
Chao, Wun S.	346
Chase, Carlene A.	360, 414
Chattha, Sohaib	230
Chaudhari, Sushila	69, 375, 424
Chauhan, Bhagirath Singh	199
Chiruvelli, Venkatanaga Shiva Datta Kumar Sharma	181
Chism, William J.	271, 274, 275, 276, 277, 323
Chitoor, Jaishree	43
Chitra, Fnu	69
Chittiboyina, Amar G.	387
Chris, Proctor	332
Christoffers, Michael J.	149, 324
Chu, Sarah A.	155
Chung, Maximillian	28
Cirillo, Valerio	228
Clemente, Thomas	142
Clements, David R.	298, 305
Clements, Ruthie	130
Coburn, Carl	307
Codega, Anthony J.	130

Collavo, Alberto	353
Collie, Leah M.	10, 309
Colquhoun, Jed	78, 366, 368
Colucci, Isabella	177, 448
Concepcion, Jeanafior	396, 397
Crystal T.	
Conlee, Don	100
Connolly, Jennifer	210
Connors, Noelle	179
Contantin, Jamil	147
Contosta, Alix	284, 302
Contreras, Diego J.	29, 35, 106, 239, 243, 244, 293, 295, 341, 419
Cooper, Emmanuel G.	65
Cordeau, Stephane	226
Correa Tavares, Antonio Augusto	55
Cortilet, Anthony	450
Craft, Jordan M.	380
Crow, Whitney S.	26
Cully, Scott E.	420
Culpepper, A Stanley	73, 323
Curran, William S.	193, 321, 350
Cutti, Luan	38, 40
Cutulle, Matthew A.	230, 424
Czekaj, Megan R.	290
da Silva Moura, Diogo	148
Dahl, Gregory K.	340
Daniel, Jim T.	33, 338
Darby, Heather	414
Daroub, Samira	63, 269
Datta, Ananda	307
Davis, Adam S.	107, 193, 350
Davis, Brad M.	10, 309
Dayan, Franck E.	11, 132, 143, 145, 150, 151, 206, 250
De, Inessa	198

de Avila, Luis Antonio	148
de Melo, Marcel S C	356
De Oliveira, Tabata Raissa	247, 265
de Oliveira Jr, Rubem Silvério	147
de Sanctis, Jose H.	229, 236, 289
de Souza Rodrigues, Juliana	120
Dean, Brock A.	229
Dearden, Edward S.	25
Decker, Ashley	414
Derr, Jeffrey	382
Desai, Het Samir	34, 417
DeSimini, Stephanie	324
Devkota, Pratap	59, 354, 401
DeWerff, Ryan P.	171, 317
Dhakar, Madhav	352
Dhanda, Sachin	14, 16, 255, 279, 342
Dille, Anita	14, 24, 126, 255, 331, 332
Dillon, Troy W.	10, 309
DiTomaso, Joe M.	99
DiTommaso, Antonio	99, 112, 123, 137, 177, 223, 226, 228, 234, 254, 298, 448
Dixon, Montague U.	215
Djuric, Natasha	123
Dobbs, April M.	235, 288, 358
Dodds, Darrin M.	26, 48, 55
Dodson, Laura	214
Dong, Fengxia	214
Donovan, Elizabeth	209
Dotray, Peter A.	31, 36, 42, 45, 47, 337
Douglass, Cameron H.	213, 214
Drost, Dirk C.	222
Dudak, Jennifer	41, 268
Duecker, Rebecka	393
Duenk, Emily	281

Duke, Stephen O.	387, 403
Dumonceaux, Tim	411
Duncan, Thomas H.	435, 444
Dunne, Jeffrey	239, 293
Durham, Michael W.	441
Dykes, Gretchen E.	209
Ebeling Viana, Vívian	148
Eckel, William P.	209
Edmisten, Keith L.	221
Edwards, Brad	381
Edwards, Ryan J.	340
Ehlke, Nancy	204
Eizenberg, Hanan	208
Elizarraras, Gabriella	46
Elmore, Greg	175, 445
Elmore, Matthew T.	86, 88, 232, 292
Enloe, Stephen F.	437
Esposito, Marco	228
Ethridge, Sandra R.	125, 195, 224, 286
Etukuri, Shalini priya	392
Evans, Jeffrey	193, 350
Everman, Wesley	29, 35, 89, 106, 193, 195, 224, 236, 239, 243, 244, 286, 289, 293, 295, 341, 350, 419, 432
Evers, Byron	39
Farruggia, Frank T.	209, 210
Fatino, Matthew	372
Fengler, Kevin	116
Fennimore, Steve	285, 425
Ferreira de Almeida, Tauana	414
Ferreria-Dias, Catalina	448
Ferrier, James C.	2
Fipke, Marcus Vinícius	148
Fisher, Olivia	170

Flessner, Michael L.	166, 169, 173, 193, 260, 261, 290, 317, 318, 319, 320, 334, 350, 414, 432, 433
Foderaro, Amanda M.	244, 416
Forehand, Jacob	229
Fowler, Jerrett	209
Fox, Amy	170
Fox, Donald E.	285
Fredericks, Steven A.	340
Fulcher, Michael R.	133, 135
Fultz, Lisa	360
Gage, Karla L.	119, 153, 317, 433
Gaines, Todd A.	11, 17, 27, 38, 40, 116, 120, 127, 132, 143, 151, 197, 206, 241, 250, 357, 399, 434
Galbraith, Christopher G.	375
Gallandt, Eric R.	113, 130, 207, 242, 449
Galvin, Liberty B.	54, 203
Gamble, Audrey V.	360, 363
Gampe, Cindy A.	362
Ganie, Zahoor A.	175, 445
Gannett, Maria A.	254
Gannon, Travis	84, 238, 89, 233, 236, 289
Garber, Kristina	209, 210
Garcia y Garcia, Axel	57
Garnica, Irache	158
Garrido, Raphael M.	145
Garrity, Carolyn	352
Geddes, Charles M.	107, 344, 349, 362, 422
Gesch, Russ W.	346
Getsinger, Kurt D.	441
Geva, Yosef	150
Ghantous, Katherine	366
Gill, Gurjeet Singh	388
Gill, Krista	411
Ginn, Daniel J.	182, 235, 358

Gizotti de Moraes, Jesaelen	430
Glaze-Corcoran, Samantha	374
Godara, Navdeep	237, 240, 283, 291
Goddard, Matthew S.	18
Goldsmith, Avi S.	125
Gomiero Polli, Estefania	233, 278
Goncalves, Clebson G.	92, 240, 294, 380
Gonzalez Torralva, Fidel	21, 140, 322
Gonzalez-Andujar, Jose L.	109, 158
Gourlie, Jennifer A.	8
Gover, Arthur E.	440
Greene, Wykle C.	318, 319
Greenwalt, Scott	386
Grey, Timothy L.	120
Grimm, Bernhard	198
Gulden, Robert	344
Gundy, Garrison J.	415
Gunsolus, Jeffrey	450
Gupta, Srishti	141
Gurjar, Bholuram	83, 105, 413
Gurusinghe, Saliya	186
Gutteridge, Steve	314
Haag, Lucas	44, 154
Haak, David C.	389
Hager, Aaron G.	317
Hall, Anthony	200
Hall, Mark	117
Hall, Nathan D.	129
Hallett, Lauren	446
Hamberg, Ryan	25
Hammer, Devin	335
Hanson, Bradley D.	372

Haramoto, Erin	185, 189, 302, 360, 401, 414
Hardie, Rachel	217
Hardin, Robert	105
Hardke, Jarrod	10
Haring, Steven	446
Harker, K. Neil	162, 344
Harlow, Christopher D.	82, 89, 252, 381
Harrison, Christian	200
Hart, Nash D.	128
Hatterman-Valenti, Harlene M.	370
Hausman, Nicholas	394
Hay, Marshall	421
Heap, Ian M.	356
Heard, Jacqueline	398
Heaton, Brent S.	58, 327
Hedtke, Boris	198
Heiser, James W.	391
Herrig Furlanetto, Renato	168
Herrmann, Jeffrey	410
Hixson, Adam C.	36, 41, 47
Hobbs, Eli B.	26
Hodnett, George	328
Hoerning, Cody	340
Hoffmann, Mark	285
Holliday, Mark	314
Hollman, Andrew B.	376
Holman, John	14, 188, 255
Hooker, David C.	315
Hooks, Cerruti Rr	156, 163, 190, 258, 367, 369
Horvath, David P.	346
Hosseini, Pershang	61
Houston, Michael M.	106, 341, 419, 430
Howard, Zachary S.	100, 439
Hsu, William	9

Humphries, Talia J.	157
Hutchings, Sarah-Jane	396, 397
Iboyi, Joseph E.	59
Ikley, Joseph T.	126, 172, 317, 324
Inagaki, Hidehiro	110
Inci, Deniz	15
Inojosa Ferreira, Luiz Augusto	147
Ippolito, Stephen	69
Irmak, Suat	124
Isaacson, Ashley N.	284, 296, 302
Israel, Trevor D.	415
Jennings, Katherine M.	69, 71, 239
Jha, Prashant	25, 60, 119, 235, 317, 342, 432, 433
Jhala, Amit J.	3, 13, 16, 19, 51, 124, 165, 447
Jhala, Rachana	165
Jiby, Aleena	28
Jiwan, Derick	340
Johnson, Anna Murry	363
Johnson, Bill	60
Johnson, Bridgette C.	85, 174, 384
Johnson, Eric N.	313, 344
Johnson, Gregg A.	57, 181
Johnson, Joe	105, 329
Johnson, Nicholas A.	116, 129
Johnson, Paul O.	317
Johnson, William G.	106, 126, 159, 317, 345
Jones, Eric A.	29, 35, 239, 244, 293, 295
Jordan, David L.	69, 71, 195, 224, 286
Jordan, Nicholas R.	193, 350
Joseph, Dwayne D.	156, 367, 369
Joseph, Mikerly M.	122
Jugulam, Mithila	197, 241, 401
Kaastra, Allan	315

Kanissery, Ramdas	63, 167, 269
Kao-Kniffin, Jenny	254
Kaundun, Shiv S.	202, 396, 397
Kaur, Ramandeep	165
Kells, Bradley	211, 212
Kells, James J.	400, 401, 405
Kelly, Brendan R.	31
Kemanian, Armen R.	192
Kezar, Sarah E.	108, 155, 196, 282
Khan, Qasim	30
Khoda, Bashir	113
Kiernan, Brian	209
Kirk, Devin	349
Kitt, Mark	326, 420, 421
Kladivko, Eileen J.	159, 345
Klein, Patricia	328
Knezevic, Stevan	124, 165
Koester, Devin	396
Kohrt, Jonathon	415
Kolb, Rosana M.	145
Koo, Daewon	240, 294
Kopecky Bobadilla, Lucas	98, 263, 395
Kouame, Koffi Badou- Jeremie	10, 309
Kowalewski, Alexander R.	376
Kramer, William	11
Kruger, Greg	331, 332
Krutz, Jason	26
Kubinski, Emma	264
Kucek, Lisa	204
Kumar, Sunil	105
Kumar, Vipin	9, 14, 16, 24, 119, 124, 172, 255, 342, 433
Kumar, Vipin	19, 104, 318, 431
Kumari, Annu	114, 363

Kunkler, Kyle	273
Küpper, Anita	206
Kutugata, Matthew	358, 413
Kwarteng, Albert O.	257
Laforest, Martin	390
Laguerre, Guelta	67
Laliberte, Suzanne R.	389
Lancaster, Sarah	39, 44, 126, 153, 154, 172, 317
Landau, Christopher A.	317
Landau, Olivia A.	142
Lane-Massee, Marissa	446
Langemeier, Ryan D.	49, 330, 339, 359, 361, 409
Lanz, Shelby E.	153
Lati, Ran Nisim	343
Lauffer, David	398
Law, Eugene P.	123, 193, 350, 432
Lawrence, Nevin	165
Lazaro, Lauren M.	106, 193, 243, 256, 341, 350, 419, 430, 432
Lazarus, William	57
LeBude, Anthony	252
LeCompte, Mathieu	84, 233
Lee, Hunter	229
Lee, Jisun	392
Lee, Presley	117
Leeson, Julia Y.	411
Legleiter, Travis	60
Leise, Adam	51
Leitz, Richard	307
Lemas, John M.	116, 399
Leon, Ramon G.	29, 125, 182, 193, 195, 204, 224, 239, 286, 288, 293, 295, 350, 358, 401, 414
Lerchl, Jens	198, 391
Leslie, Alan W.	156, 163, 190, 258, 367, 369

Lezaun, Juan A.	158
Li, Jake	272
Li, Jun	200
Li, Steve	49, 114, 330, 339, 359, 361, 409
Li, Xuehui	346
Lim, Soo-Hyun	96
Lindell, Hannah C.	93
Lindquist, John	199, 124, 193, 350
Lingenfelter, Dwight	50, 94, 317
Liu, Claire	448
Liu, Rui	16, 24, 342, 74
Llaca, Victor	116
Locke, Anna M.	195, 224, 286
Lokuruge, Prabhath	362
Long, Dennis	51
Loos, Michael T.	234
Lorenz, Gus M.	309
Loria, Kristen	170, 414
Losey, John E.	234
Loux, Mark M.	317
Lowry, Carolyn J.	284, 296, 302
Luemmen, Peter	143
Lukas, Scott	78
Lupwayi, Newton	344
Lyon, Drew J.	8, 434
MacGregor, Dana R.	197, 200
Machado Noguera, Matheus	391
Maggio, Albino	228
Maity, Aniruddha	1, 118, 121, 196, 363
Maja, Joe	424
Malka, Sahar	208
Mallory-Smith, Carol	20
Malone, Jenna M.	388
Maloney, Elizabeth C.	12, 66, 68, 72, 76, 245, 246, 248, 371, 429

Mansue, Carrie J.	227
Maphalala, Ncomiwe A.	131, 138, 139, 265
Marini, Kathryn	170
Markus, Catarine	38, 40
Marques-hill, Sofia	127
Marrs, Monica R.	24
Marschner, Caroline	448, 177, 298
Marshall, Michael W.	412
Marshall, Percy	351
Martin, Daniel E.	83, 413, 431, 439
Martin, Katie	357
Martin, Sara	390
Mathew, Sithin	354
Mathew, Sudeep A.	420, 421
Matthiessen-Anderson, Rashelle	414
Matzrafi, Maor	208
Mausbach, Jasmine M.	243, 341
Mazzone, Tosh R.	325
McCaghren, Justin T.	49, 330, 339, 359, 361, 409
McCarl, Bruce A.	301
McClements, Melissa	75
McCollam, Gerald A.	23
McCollough, Margaret R.	113, 207, 242, 355
McConnell, Curt A.	192
McCurdy, James D.	85
McElroy, Joseph S.	85, 122, 174, 383, 384
McGinty, Joshua A.	53, 337
McNally, Brandon C.	292
McTaggart, Seanna	200
McVane, Jodie M.	347, 414
McVay, Kent	30
Meade, Thomas	398
Meadows, Alexis L.	25, 433
Melander, Bo	355

Meloche, Sydney	390
Mena Barreto, Eduarda P.	391
Menalled, Fabian	30, 34, 180, 264, 417
Menalled, Uriel D.	226
Merotto, Aldo	38, 40
Metzger, Brendan	241
Meyer, Caleb K.	55
Meyer, Lucie	198
Meyeres, Tyler P.	44, 154
Meyers, Stephen L.	65, 71, 77, 262
Miller, Alyssa Lea	134, 251
Miller, Eric J.	153, 317
Miller, Kalvin Andrew	331, 332
Miller, Ryan P.	57, 183
Miller, Stephan	209
Miller, Zach	30
Mills, Megan	36
Miranda, Joshua W.	280, 373
Mirsky, Steven Brian	13, 123, 182, 193, 204, 235, 350, 358, 414, 432, 433
Mobli, Ahmadreza	171
Molnar, Louis J.	362
Monks, David W.	69, 71
Montgomery, Chandra L.	249
Montgomery, Jacob S.	43, 116, 132, 206, 399
Montoya, Ada C.	89
Mookodi, Kaone	5
Moore, Levi D.	69
Moore, Virginia	204
Moretti, Marcelo L.	366, 373, 379, 423, 426
Morgan, Gaylon	44
Morran, Sarah	116, 132, 197
Morris, Callie J.	117, 136
Morris, James A.	396, 397
Mortensen, David A.	401

Mose, Monique	375
Moseley, Jordan	218
Mudge, Christopher R.	441
Muela, Stephen	210
Mueller, Thomas C.	152, 153, 408
Mundt, Tamara T.	46, 52
Mupambi, Giverson	374
Murphy, J. Paul	204
Murphy, James A.	376
Naeve, Seth L.	183
Neal, Joe C.	82, 89, 99, 252, 285, 381
Nemec, Rebecca	214
Nersesian, Natalya	142
Neve, Paul	200
Nguyen, Huong	170
Nichols, Kelly M.	80
Nikkel, Emma K.	298
Noguera, Matheus Machado	198
Noldin, José Alberto	148
Nolte, Scott A.	53, 100, 317, 329, 337, 439
Norris, Bradley J.	26, 48
Norsworthy, Jason K.	10, 21, 37, 60, 106, 119, 140, 193, 243, 256, 310, 322, 341, 342, 350, 419, 433
Nunes, Jose J.	153, 164
Obour, Augustine	14, 24, 188, 255
O'Briant, Ryan P.	223
Odero, D Calvin	56
Oliveira Ribeiro Maia, Lucas	159, 345
Olmstead, Allen	335
Olver, Ryan	214
Omielan, Joseph	90
O'Neil, Megan	324
Oreja, Fernando H.	8, 414
Orgeron, Albert J.	23

Orlowski, John	213
Ortiz, Sonora	113
Osburn, Andrew W.	83, 87, 378
Ostermier, Gaylia	430
Ott, Eric	415
Ouse, David	386
Owen, Jeff	381
Owen, Micheal D.	195, 224
Ozaslan, Cumali	137
Pabuayon, Irish L. B.	45
Page, Eric	390
Pai, Naresh	335
Pan, Zhiqiang	146
Pandian, Balaji	398
Aravindhan	
Panosian, Timothy	398
Parcharidou, Evlampia	393
Park, Bradley S.	376
Parks, Jordan W.	130, 242
Patel, Jinesh	383
Patterson, Eric L.	116, 128, 129, 132, 197, 399
Patterson, Jake A.	55
Patton, Aaron J.	81, 292, 376
Patton, Blaine A.	36, 42
Patzoldt, William L.	106, 243, 256, 341, 419, 430
Pavlovic, Pavle	78
Pawlak, John	415
Peachey, Ed	394
Peck, Chuck	209
Pedibhotla, Venkat	365
Pedireddi, Usha R.	28, 328
Pedraza, Veronica	158
Pelon, Amber	250
Pelzer, Chris J.	170, 325, 427
Penkauskas, Cal	446
Penkert, Martin	391

Peppers, John M.	240, 287, 291, 377
Pereira, Livia	49, 330, 339, 359, 361, 409
Perez-Jones, Alejandro	43, 418
Perry, Tracy	210
Peters, Bodo	353
Peters, Thomas J.	181, 183, 450
Peterson, Mark A.	356
Phillip, Yael	150
Phillips, Bill	163, 258
Phippen, Winthrop B.	58
Phuyal, Dinesh	52, 270
Pieralisi, Brian K.	26, 48
Pineda-Bermudez, Laura	160, 248, 424
Pinnamaneni, Srinivasa Rao	115
Piskackova, Theresa	97, 201
Piveta, Leonard B.	37, 140
Pokhrel, Ankit	167
Porri, Aimone	198, 391
Poudel, Isha	385
Poulsen, Frank	355
Powell, Gary Edward	79
Prasad, Pv V.	300
Presley, DeAnn	414
Prestegord, Adam	314
Preston, Christopher	388
Price, Andrew J.	114, 363
Proctor, Chris	331
Prostko, Eric P.	253, 443
Puri, Atul	314
Putta, Karthik	398
Qureshi, Huma	407
Rabaioli Camargo, Edinalvo	148
Rajan, Nithya	52, 270, 360

Ramos-Giraldo, Paula J.	358
Rana, Aman	382
Randell-Singleton, Taylor M.	73, 283, 323
Ranville, Michelle	214
Raudenbush, Amy	414
Ravichandran, Prabahar	422
Ray, Alisha O.	252
Reberg-Horton, Chris	182, 204, 235, 288, 358
Rebong, Democrito B.	204
Reddy, Krishna N.	115
Reed, Noah H.	10
Rees, Hannah	200
Rees, Jenny	19
Regasini, Luis O.	145
Reiss, James	336
Reiter, Mark S.	166
Revolinski, Samuel R.	205
Reynolds, William	431
Ribeiro, Victor	20
Riechers, Dean E.	142, 396, 397
Rigon, Carlos Alberto Gonsiorkiewicz	206
Riley, Eric	307
Ritchie, Glen L.	45
Roberts, Pamela	63, 269
Robertson, Alison	414
Robinson, Darren E.	241, 315
Rodriguez, Alex G.	168, 259
Rodriguez, Bobby	36
Rodriguez Baquero, Laura D.	77, 262
Rogers, Ronald R.	84, 233, 238
Rojik, Emily N.	440
Roma-Burgos, Nilda	139, 198, 391

Rooney, William	328
Rossi, Caio V S	356
Rowland, Annika	427
Ruark, Matt	414
Ruhl, Lindsey	414
Russell, David P.	442
Russell, Eli C.	260, 318, 319, 334
Russell, Kyle R.	31, 36, 45
Rutland, Claudia A.	85, 122, 383
Rutland, William J.	26, 48
Ryan, Matthew R.	123, 170, 226, 325, 414, 427
Saavedra-ávila, José I.	32
Saballos, Ana I.	394
Sabba, Robert	149
Sampe, Andrew	95
Sandell, Lowell	175, 445
Sandhu, Pawanjit Kaur	392
Sandler, Hilary A.	374
Sapkota, Bishwa B.	83, 329, 413
Sarang, Shefali	329
Sarangi, Debalin	57, 181, 183, 317, 450
Sausser, Emily J.	68, 246
Schaefer, Gary	398
Schill, Megan L.	52, 270
Schleich, Austin H.	25, 433
Schmidt, Emma	368
Schmitzer, Paul	386
Schreier, Haylee E.	60
Schroeder, Jill	102
Schulteis, Bethany M.	68, 245, 429
Schultheis, Jonathan R.	71
Schumaker, Brooklyn C.	139
Schumann, Arnold W.	259, 333, 428
Scott, Barbara	78, 414

Seebruck, Kathryn	198
Segbefia, Worlanyo	136, 138, 265, 266
Seiter, Nicholas J.	414
Selby, Thomas	314
Seoka, Sawa	110
Shabbir, Asad	186
Shankle, Mark W.	117, 136, 266
Sharda, Ajay	9
Sharifi, Adam	170
Sharma, Akhilesh	9
Sharma, Gourav	389
Sharma, Parth	136, 138
Sharpe, Shaun M.	411
Shay, Nicholas J.	253
Shergill, Lovreet S.	30, 34, 193, 350, 417, 432, 434
Shi, Yeyin	165
Shi, Yuning	192
Shikanai, Avery	370
Shilling, Donn	120
Shirtliffe, Steve	313, 344
Shome, Sambit	93
Shrestha, Swati	139
Shub, Ifat	150
Sias, Cynthia	166, 261, 318, 320, 334, 414
Sikkema, Peter H.	2, 241, 308, 315, 317
Silcox, Charles A.	86
Silva, Felipe	424
Simões Araujo, André Lucas	17, 27, 40
Simonovsky, Eyal	150
Sims, Kira C.	69
Singh, Akashdeep	1
Singh, Daljit	43, 418
Singh, Keshav Dev	422
Singh, Mandeep	13, 124

Singh, Navdeep	13
Singh, Navjot	59, 183, 354
Singh, Varsha	136, 138, 265, 266
Singh, Vijay	104, 225, 318, 431
Skelton, Joshua J.	340
Skovsen, Søren K.	235, 358
Slivicke, Jacklyn	368
Smith, Chad L.	415
Smith, Charlee R.	246
Smith, Cody	173
Smith, Cyrus A.	366
Smith, Maxwell E.	36, 47
Smith, Peter	241
Smith, Richard G.	187, 226, 284, 302
Smith, Ty	310
Snider, John	120
Soignier, Tyler S.	26, 48
Soltani, Nader	2, 308, 315
Soni, Neeta	132
Sosnoskie, Lynn M.	12, 66, 68, 70, 72, 75, 76, 160, 223, 227, 245, 246, 248, 371, 423, 424, 427, 429, 432
Soufiane, Brahim	390
Souza, Maria Carolina C R	140
Souza de Amorim, Eduardo	27
Spackman, Jared	5
Spandl, Eric P.	340
Sparks, Crystal D.	40, 151
Sparks, Thomas C.	387
Spatz, Dana	209
Spencer, Dave	26
Sperry, Benjamin P.	438, 441
Spoth, Matthew P.	260, 318, 319
Sprague, Christy L.	18, 22, 79, 172, 317
Srivastava, Dhiraj	104, 225, 431

Stahl, Lizabeth	57
Stallworth, Shandrea D.	139
Stamplis, Chris	284
Stchur, Peter	398
Steckel, Larry	152, 408
Stephens, Emma	344
Stephens, Gresham A.	55
Stephens, Trey P.	3, 19
Stewart, Gregory E.	349
Stiles II, Brian J.	79
Storkey, Jonathan	304
Strauss, Sarah	167
Straw, Chase M.	83
Strek, Harry J.	356
Strom, Seth A.	326
Stup, Rebecca	448
Stutzman, Wyatt J.	169, 334
Subramanian, Nithya K.	28, 46, 52, 118, 121, 270, 328
Suchoff, David H.	71
Sulzbach, Estéfani	38
Summers, Holly	209
Sutterfield, Jeremy K.	309
Swale, Daniel R.	387
Swanton, Clarence	144
Sweep, Ethan	414
Symington, Hannah E.	315
Takano, Hudson K.	386
Takenaka, Yudai K.	78
Tancos, Matthew A.	135
Tardif, Francois	241, 390
Tavares, Antonio Augusto	247
Taylor, Alan G.	234
Taylor, Hayden R.	337
Taylor, Zachary R.	229, 236

Tellez, Peter	209
Temu, Vitalis	360
Thapa, Resham	13
Tharayil, Nishanth	392
Thiede, Denise	450
Thrash, Benjamin C.	309
Tidemann, Breanne D.	162, 344
Tilmon, Kelley	414
Tindall, Kelly V.	211, 212
Tishchenko, Viktor	120
Tiwari, Ruby	63, 269
Todd, Olivia E.	27
Tomlinson, Peter	154, 414
Tooker, John F.	414
Torres, Ubaldo	83, 329, 413
Town, Jennifer	411
Tranel, Patrick	198, 98, 263, 394, 395
Traxler, Catherine J.	143
Treadway, Zachary R.	41, 268
Tseng, Te-Ming (Paul)	117, 131, 136, 138, 139, 247, 265, 266
Tuck, Daniel P.	86, 88, 232, 292
Tucker, Auriana	139
Turkington, T. Kelly	344
Turnage, Gray	95, 436
Turra, Guilherme Menegol	38
Twitty, Alyssa	150
Tyagi, Vikas C.	118, 121
Tyre, Drew	418
Unan, Rasim	54
Unruh Snyder, Lori	288
Uva, Richard H.	99
Valencia, Elide	360
Van Acker, Rene	109
Van Horn, Christopher	151

Van Wychen, Lee	283, 401, 404
Vance, Jenna C.	73, 323
VanGessel, Mark	62, 70, 78, 173, 193, 290, 317, 350, 414, 432
Varanasi, Aruna V.	410
Vargas Arroyo, Nathaly Belen	77, 262
Varma, Domenic	170
Varsha, Varsha	247
Vaughn, Jacob E.	60, 172
Velásquez R, Juan Camilo	391
Vierra, David	398
Vilà, Montserrat	303
Vitti, Thiago H.	332
Volk, Emma	285
Vollmer, Kurt M.	4, 156, 227, 367, 369
Vukovic, Vera	81
Vulchi, Rohith	53, 100
Wade, Tara	424
Waggoner, Ashley	414
Walenta, Darrin	20
Wallace, John M.	50, 94, 153, 173, 191, 231, 290, 302, 325, 414
Walsh, Michael	186, 433
Walz, Claudia R.	22
Wardropper, Chloe	364
Wasacz, Maggie H.	62, 70
Waters, Tim	74
Watkins, Eric	376
Watson, Trevor S.	232, 292
Wayman, Sandra	170
Weber, Christopher	39
Wellman, Laurel	231
Werle, Rodrigo	126, 153, 164, 171, 172, 317, 331
Wesley, Tad L.	58

Westbrook, Sophie	112, 234, 298
Weston, Leslie A.	186
Westra, Eric P.	17, 27, 434
Westra, Philip	116, 132, 151, 399
Westwood, Jim	389
Wetzel, Henry C.	8
Wheeler, Gregory	406
White, Mark	219
Whitmoyer, Ethan B.	50
Willenborg, Christian	313, 344
Williams, Martin	78, 317, 394
Williams, Moriah	161
Willis, John	410
Wilson, Melissa	450
Witcher, Anthony L.	102, 385
Wittmann, Daniel	198
Woitaszewski, Lily A.	126, 153
Wolff, Alice C.	112
Wolters, Bethany R.	166
Woolam, Brandi C.	77
Woolard, Matthew C.	310
Wright, Alice A.	23
Wright, Jon	200
Wuebbles, Donald J.	297
Yadav, Ramawatar	25, 235
Yagow, Chad	430
Yang, Ce	57
Yang, Chenghai	439
Yeager, Elizabeth	14, 255
Young, Bryan G.	60, 106, 126, 159, 243, 317, 341, 345
Young, Dirk	209
Young, Steve	184, 194, 282
Yu, Eric Y.	57, 450
Yu, Qin	129
Yue, Ziming	117, 131, 136, 265, 266

Yurchak, Veronica	163, 190, 258
Zaccaro-Gruener, Maria Leticia	310
Zhang, Chun	129
Zhen, Shuyang	108, 155
Zielinski, Moriah	386
Zimmer, Marcelo	106, 243, 341
Ziska, Lewis H.	306

2022-2023 Weed Science Society of America Board of Directors

President, Stanley Culpeper

President-Elect, Carroll Moseley

Vice-President, Greg Dahl

Past-President, Anita Dille

Secretary, Lauren Lazaro

Treasurer, Greg Elmore

Director of Publications, Chris Willenborg

Chair, Constitution and Operating Procedures, John
Lindquist

Member-at-Large, Michael Flessner

Member-at-Large, Lynn Sosnoskie

Graduate Student Member, Sarah Kezar

Aquatic Plant Management Society, Ben Sperry

Canadian Weed Science Society, Darren Robinson

North Central Weed Science Society, Brett Miller

Northeastern Weed Science Society, Steve Pyle

Southern Weed Science Society, John Byrd

Western Society of Weed Science, Alan Helm

Executive Director of Science Policy, Lee VanWychen

Executive Secretary, Eric Gustafson

2022-2023 Northeastern Weed Science Society Officers and Executive Committee

President, Jacob Barney

President-Elect, Wes Everman

Vice-President, Erin Hitchner

Treasurer, Larissa Smith

Past President, Caren Schmidt

Membership Chair, Matt Elmore

Editor, Lane Heimer

Graduate Student Rep., Eric Jones

Graduate Student Rep. Elect, Katie Diehl

Research & Education, Carolyn Lowry

Sustaining Membership, John Wallace

Public Relations, John Kaminski

WSSA Representative, Steve Pyle

CAST Representative, Anthony Witcher

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

Time	Monday		Tuesday	Wednesday	Thursday
6:30					
7:00					
7:30					
8:00			Poster Session	Poster Session	
8:30					
9:00					
9:15					
9:30					
9:45					
10:00					
10:15					
10:30					
10:45					
11:00					
11:15					
11:30					
11:45					
Noon					
1:00					
1:15					
1:30					
1:45					
2:00					
2:15					
2:30					
2:45					
3:00					
3:15					
3:30					
3:45					
4:00	General Session and Awards Presentation				
4:15					
4:30					
4:45					
5:00					
5:30					
6:00					
6:30					
7:00		Awards Reception			
7:30					
8:00					
8:30					
9:00					

NOTES

NOTES

WSSA

2024 Annual Meeting
January 22-25, 2024
San Antonio, TX

2025 Annual Meeting
February 24-27, 2025
Vancouver, Canada

NEWSS

2024 Annual Meeting
January 8-11, 2024
TBD