

WSSA

**2026 Annual Meeting
February 23-26, 2026
Raleigh, NC**

CWSS

**2025 Annual Meeting
November 2-7, 2025
Hilton Lac-Leamy
Gatineau, Québec**

WEED SCIENCE SOCIETY OF AMERICA – CANADIAN WEED SCIENCE SOCIETY JOINT MEETING

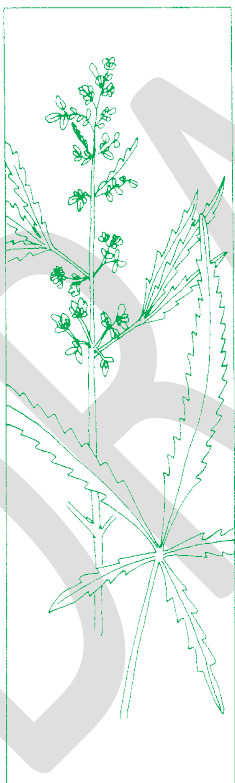
65th Meeting

2025 MEETING PROGRAM

Sheraton Vancouver Wall
Centre

Vancouver, BC

February 24-27, 2025



WSSA Sustaining Members

PRESIDENTIAL

BASF Corporation
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CWSS Sustaining Members

DIAMOND

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PLATINUM

FMC Corporation
Syngenta Crop Protection

GOLD

Gowan
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UPL
Winfield

SILVER

A Horizon AgResearch
Adama
Belchim

**65th Meeting
Weed Science Society of America and
Canadian Weed Science Society**

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CWSS Sustaining Members	Inside Back Cover

Local Arrangements Committee 2025 – Vancouver

Co-Chairs David Clements, Victoria Brookes,
Alida Janmaat, and Breanne Tidemann

The WSSA/CWSS 2025 Program

Welcome to the 2025 joint Weed Science Society of America (WSSA) and Canadian Weed Science Society (CWSS) annual meeting held at the Sheraton Wall Centre in Vancouver, British Columbia. Located in downtown Vancouver, BC on Burrard Street, the hotel offers modern venues and rooms with city centre views. It is close to shopping, restaurants, museums and many great local and regional attractions, such as Stanley Park and Whistler Mountain. Our Pre-Conference tour is a walking tour to Granville Market, scheduled for Monday 9 am-Noon. Two Post-Conference tours are 1) a bus trip to several craft breweries including the agricultural highlights of the Fraser Valley and 2) a harbor boat tour that ends with a comedy show featuring weed science; both are Thursday 12:30-5 pm.

The General Session will begin at 4:15 pm Monday February 24, 2025. We are proud to announce that our Keynote Speaker will be Dr. Jennifer Grenz. She is an Indigenous Scholar (Nlaka'pamux, mixed ancestry) in the Department of Forest Resources Management at the University of British Columbia. Her presentation is entitled, "Are They Rising from the Ashes? Re-learning Invasive Species Management on Post-Wildfire Landscapes in British Columbia". Please plan to visit with Dr. Grenz after the General Session where she will be offering her newly published book, "Medicine Wheel for the Planet: A Journey Toward Personal and Ecological Healing", a book based on her doctoral work. Presidents Greg Dahl (WSSA) and Robert Nurse (CWSS) will collaborate on the Presidential Address followed by the presentation of our annual awards. A food-and-drink reception will follow to celebrate our award winners. Tuesday night dinner options will feature a CWSS tradition called "Dine Arounds"; sign up at the Registration Desk. A general reception for both CWSS and WSSA members will be held Wednesday night.

As always, our meeting is geared towards our students. Students are invited to join in a night of bowling at King Pins (North Vancouver) on Sunday from 6 to 9 pm; transport is on your own. On Monday from Noon to 2 pm, we will host a Student Lunch followed by a Business Meeting, which will feature a presentation on "Stand Out in the Crowd: Job Search and Interview Strategies". Nearly 50 students have entered to compete in either the Single Slide Talk (SST) contest, offered by WSSA, or the 15-minute oral contest offered by CWSS. The contests will start on Tuesday morning with the SST finals to be held on Wednesday morning at 9 AM. A special workshop on "Exploring Bioinformatics in Weed Science" is open to all students and will be held on Tuesday starting at 4:45 PM. Announcements of the contest winners will be made at the CWSS/Student/Photos Awards Ceremony on Wednesday starting at 5:15 PM.

The Women in Weed Science Networking Event will be held on Monday from 2-3:30 pm. We hope you will join us early Tuesday morning for a 5K Puff Run/Walk through downtown Vancouver and local parks (there is an impressive inuksuk at the halfway point). Please assemble at 6:45 AM; the run/walk will start at 7 AM. Join us for our Poster Sessions; authors will be with their posters on either Tuesday (odd numbers) or Wednesday (even numbers) morning. We will be offering four symposia during the annual meeting. Things kick off on Tuesday afternoon (1-5 pm) with “Contribution of Genomics to Nontarget Site Resistance Knowledge and Management” organized by Roland Beffa and Caio Brunharo. On Wednesday morning (9:30 am-Noon), we will offer “Not your Old Professor’s Journals: Rapid Change in Academic Publishing”, organized by Sarah Ward and Chris Willenborg; Wednesday afternoon (1-5 pm) will feature, “Endangered Species Act: Description of the EPA’s Herbicide Strategy, Communication Resources, and Scientific Information Useful to Regulators”, organized by Bill Chism and a team of colleagues. We will conclude our symposia offerings on Thursday morning (8-10 am) with “Experiences and Insights from Recently Funded Weed Scientists in NIFA’s Competitive Grant Programs”, organized by Jim Kells and Vijay Nandula.

Special thanks to our local arrangements personnel, Dave Clements, Alida Janmaat, Victoria Brookes, and Breanne Tidemann, and the WSSA Executive Secretary, Eric Gustafson, for keeping both program chairs on course and organizing numerous events. We acknowledge guidance from WSSA Executive board members Greg Dahl, Carroll Moseley, and Ian Burke; their input has been crucial in the development of the program. We thank our Poster Chairs Lovreet Shergill, Vanessa Jones and Virginia Oeggerli, our student representatives Isabel Schlegel Werle and William Kramer, our Contest Chairs Darrin Dodds and Breanne Tidemann, Award Coordinators Marty Schraer and Leonardo Galindo Gonzolez, along with all those who stepped up to be Section Chairs, Moderators, and Judges. We could not do it without you!!

Welcome to Vancouver and have a great meeting!!

Hilary Sandler, WSSA Program Chair and President-Elect
Rob Nurse, CWSS Program Chair and President

2025 Program Committee

General Program Chair.....	Hilary Sandler
Vice Chair.....	Ian Burke
01. Agronomic Crops.....	Scott Nolte and Laura Smith
02. Horticultural Crops.....	Thierry Besançon and Jichul Bae
03. Turf and Ornamentals.....	Hannah Wright
04. Pastures, Rangelands,..... Forests, and Rights of Way	Zachary Howard
05. Wildland and Aquatic Invasives	Andrew Howell and David Clements
06. Regulatory Aspects.....	Bianca Martins and Leonardo Galindo- Gonzalez
07. Teaching and Extension.....	Joe Ikley
08. Formulation, Adjuvant, and Application Technology	Peter Berry and Cody Chytyk
09. Weed Biology and Ecology....	Sarah Kezar and Marie- Josée Simard
10. Biocontrol of Weeds.....	Marcelo Moretti and Alida Janmaat
11. Physiology.....	Carlos Rigon and Eric Page
12. Soil and Environmental Aspects.....	Bill Chism
13. Integrated Weed..... Management	Ian Burke and Dilshan Benaragama
14. Targeted and Autonomous... Weed Control Technologies	Lauren Lazaro and Shaun Sharpe
15. Genomics.....	Jake Montgomery and Martin LaForest
16. Sustaining Member Exhibits...	Kyle Kepner
17. Poster Sessions.....	Lovreet Shergill, Vanessa Jones, and Virginia Oeggerli

18. Student Contest.....	Darrin Dodds and Breanne Tidemann
Student Awards.....	Marty Schraer and Leonardo Galinda Gonzalez
Student Travel Enrichment..... Experience	Cara McCauley
Graduate Student Liaison.....	Isabel Schlegel Werle And William Kramer
Local Arrangements.....	Dave Clements, Victoria Brookes, Alida Janmaat, and Breanne Tidemann

Program Booklet and Abstracts

Please use the link below to access the digital program. Take a few minutes to view the schedule ahead of time and build your own program.

<https://vmx.m-anage.com/home/us/wssa2025/en-US>

Posters and Sustaining Member Exhibits

All posters and Sustaining Member Exhibits will be on display from Tuesday at 7 am to Thursday at 8 am. The times will not be replicated daily throughout the program.

CONDENSED PROGRAM

SUNDAY FEBRUARY 23

WSSA Board of Directors Meeting	7:30 AM-5:00 PM	Constellation
Student Bowling	7:00-9:00 PM King Pins 1312 Lonsdale Ave N. Vancouver	Transport on your own

MONDAY FEBRUARY 24

CWSS Board of Directors Meeting	7:00 AM-4:00 PM	Constellation
GROW	8:00 AM-12:00 PM	Port McNeil
Granville Walking Tour	9:00 AM-12:00 PM	Lobby
IWSS Board of Directors	9:00 AM-12:00 PM	Pavillion Ballroom AB
Poster Set-up	12:00-4:00 PM	Junior Ballroom ABCD/Foyer
Science Policy Committee	12:00-2:00 PM	Port McNeil
Student Lunch	12:00-1:00 PM	Pavillion
Business Meeting	1:00-2:00 PM	Ballroom D

Registration	1:00-4:00 PM	Junior Ballroom Foyer
U.S.-HRAC	1:00-3:00 PM	Pavillion Ballroom C
Publications	1:00-2:00 PM	Pavillion Ballroom AB
Women in Weed Science <i>Sponsored by Corteva Agrisciences</i>	2:00-3:30 PM	Grand Ballroom CD
Resistance Terminology Special Committee	2:00-4:00 PM	Port McNeil
General Session	4:15-7:00 PM	Grand Ballroom AB
WSSA/CWSS Awards Reception <i>Sponsored by Syngenta Crop Protection</i>	7:00-9:00 PM	Grand Ballroom CD

TUESDAY FEBRUARY 25

Judges Breakfast	6:00-7:00 AM	Pavillion Ballroom D
Registration	7:00 AM-4:00 PM	Jr. Ballroom Foyer
Puff 5K Run/Walk	6:45-8:00 AM	Assemble in Lobby at 6:45 AM
WSSA Finance Committee	7:00-9:00 AM	Constellation

IWGC Board of Directors	7:00-8:00 AM	Port Alberni
Herbicide- Resistant Plants Committee	8:00-9:00 AM	Parksville
Judges Work Room	9:00 AM-4:00 PM	Constellation
Poster Session (Odd-number authors present)	7:00-9:00 AM	Junior Ballroom ABCD/Foyer

POSTER 00. Committee Reports; *In Memoriam*

POSTER 01. Agronomic Crops

POSTER 02. Horticultural Crops

POSTER 03. Turf and Ornamentals

POSTER 04. Pasture, Rangelands, Forests, and
Rights of Way

POSTER 05. Wildland and Aquatic Invasives

POSTER 07. Teaching and Extension

POSTER 08. Formulation, Adjuvants, and
Application Technology

POSTER 09. Weed Biology and Ecology

POSTER 10. Biocontrol of Weeds

POSTER 11. Physiology

POSTER 12. Soil and Environmental Aspects

POSTER 13. Integrated Weed Management

POSTER 14. Targeted and Autonomous Weed Control Technologies

POSTER 15. Genomics

ORAL 18. WSSA-SST Contest	9:00-11:15 AM	Pavillion Ballroom AB
ORAL 18. CWSS 15-minute Contest	9:00 AM-2:30 PM	Port McNeil
ORAL 01. Agronomic Crops	9:00 AM-5:00 PM	Pavillion Ballroom D
ORAL 09. Weed Biology and Ecology	9:00 AM-2:30 PM	Pavillion Ballroom C
Coffee Break	10:00-10:15 AM	Jr. Ballroom ABCD/Foyer
SYMPOSIUM-01. Contribution of Genomics to Nontarget Site Resistance Knowledge and Management	1:00-5:00 PM	Pavillion Ballroom AB
ORAL 06. Regulatory Aspects	2:30-3:00 PM	Parksville
CWSS Annual General Meeting	2:30-3:00 PM	Port McNeil
Coffee Break	3:00-3:15 PM	Jr. Ballroom ABCD/Foyer
ORAL 08. Formulation, Adjuvants, and Application Technology	3:15-4:30 PM	Parksville

GRADUATE. STUDENT WORKSHOP: Protein Modeling of Herbicide Resistance: From Mutation to Resistance	4:45-6:15 PM	Pavillion Ballroom C
Saskatchewan Pulse Growers	5:00-6:00 PM	Port Alberni
IWGC Member Meeting	5:00-6:00 PM	Parksville
Dine-Around Events	7:00 PM	Meet in Lobby; Sign up at Registration

WEDNESDAY FEBRUARY 26

Presidents' Breakfast	6:30-8:00 AM	Constellation
Poster Session (Even-number authors present)	7:00-9:00 AM	Junior Ballroom ABCD/Foyer
Registration	7:00 AM-4:00 PM	Jr. Ballroom Foyer
ORAL 18. WSSA-SST Finals	9:00-9:30AM	Pavillion Ballroom AB
SYMPOSIUM-02. Not your Old Professor's Journals: Rapid Change in Academic Publishing	9:30 AM-12 PM	Pavillion Ballroom D

ORAL 13. Integrated Weed Management	9:00 AM-3:00 PM	Pavillion Ballroom C
ORAL 11. Physiology	9:00-11:15 AM	Port McNeil
Coffee Break	10:00-10:15 AM	Jr. Ballroom ABCD/Foyer
ORAL 10. Biocontrol	11:15 AM-12 PM	Port McNeil
SYMPOSIUM-03. Description of the EPA's Herbicide Strategy, Communication Resources, and Scientific Scientific Information Useful to Regulators	1:00-5:00 PM	Pavillion Ballroom D
ORAL 14. Targeted and Autonomous Weed Control Technologies	1:00-4:45 PM	Pavillion Ballroom AB
ORAL 15. Genomics	1:00-4:45 PM	Port McNeil
Coffee Break	3:00-3:15 PM	Jr. Ballroom ABCD/Foyer
ORAL 18. Travel Enrichment Experience and Science Policy Fellows	3:15-5:00 PM	Pavillion Ballroom C
AWARDS: CWSS, Student, Photo	5:15-7:00 PM	Pavillion Ballroom D
WSSA/CWSS SOCIETY RECEPTION <i>Sponsored by BASF Corporation</i>	7:00-9:00 PM	Pavillion Foyer

THURSDAY FEBRUARY 27

WSSA Business Breakfast	6:30-8:00 AM	Pavillion Ballroom D
Registration	8:00 AM-12 PM	Jr. Ballroom Foyer
Poster Take-Down	8:00 AM-12 PM	Jr. Ballroom ABCD/Foyer
SYMPOSIUM-0.4 Experiences and Insights From Recently Funded Weed Scientists in NIFA's Competitive Grants Program	8:00-10:00 AM	Pavillion Ballroom C
ORAL 02. Horticultural Crops	8:00-11:45 AM	Pavillion Ballroom AB
ORAL 05. Wildland and Aquatic Invasives	8:00-10:00 AM	Port McNeil
ORAL 03. Turf and Ornamentals	8:00-9:45 AM	Parksville
Coffee Break	10:00-10:15 AM	Junior Ballroom Foyer
ORAL 07. Teaching and Extension	10:15-11:15 AM	Parksville
ORAL 12. Soil and Environmental Aspects	10:15-11:30 AM	Port McNeil

ORAL 04. Pastures, Rangelands, Forests, and Rights of Way	10:15-11:45 AM	Pavillion Ballroom C
TOUR Craft Beers and Fraser Valley	12:30-5:00 PM	Lobby
TOUR Harbor Boat Trip and Weed Science Comedy Show	12:30-5:00 PM	Lobby

PROGRAM

SUNDAY FEBRUARY 23

WSSA Board of Directors Meeting

LOCATION: Constellation
TIME: 7:30 AM-5:00 PM Pacific
MODERATOR: Greg Dahl
Retired, Winfield United
Eagan, MN
CO-MODERATOR: Hilary A. Sandler
UMass Cranberry Station
East Wareham, MA

Student Bowling

LOCATION: King Pins Bowling, Pool
Table and Bar: 1312 Lonsdale
Ave, P200, North Vancouver.
Transport on your own.
TIME: 7:00-9:00 PM Pacific
MODERATORS: William Kramer
Colorado State University
Fort Collins, CO
Isabel Schlegel Werle
University of Illinois
Urbana-Champaign, IL

MONDAY MORNING FEBRUARY 24

CWSS Board of Directors Meeting

LOCATION: Constellation
TIME: 7:00 AM-4:00 PM Pacific
MODERATOR: Robert Nurse
Agriculture and Agri-Food
Canada, Harrow, ON

GROW Meeting

LOCATION: Port McNeil
TIME: 8:00 AM-12:00 PM Pacific
MODERATOR: Emily Ungelsbee
Virginia Tech
Rockville, MD

TOUR-Granville Market

LOCATION: Meet in Lobby
TIME: 9:00 AM-12:00 PM Pacific
MODERATOR: David Clements
Trinity Western University
Langley, BC

IWSS Board of Directors Meeting

LOCATION: Pavillion Ballroom AB
TIME: 9:00 AM-12:00 PM Pacific
MODERATOR: Samunder Singh
President, IWSS
Hisar (Haryana), India

MONDAY AFTERNOON FEBRUARY 24

Science Policy Committee Meeting

LOCATION: Port McNeil
TIME: 12:00-2:00 PM Pacific
MODERATOR: Lee Van Wychen
WSSA
Alexandria, VA

Graduate Student Lunch/Business Meeting

LOCATION: Pavillion Ballroom D
TIME: 12:00-2:00 PM Pacific
MODERATORS: Isabel Schlegel Werle
University of Illinois
Urbana-Champaign, IL
William Kramer
Colorado State University
Fort Collins, CO

Featured Talk: Stand out in the Crowd: Job Search and Interview Strategies.

Featured Speakers: Crystal Sparks, Enko Chem; Jacob Montgomery, University of Chicago; Olivia Landau, USDA-ARS; Tasha Valente BASF Corporation; and Victor Ribeiro, Oregon State University.

WSSA Publications Committee Meeting

LOCATION: Pavillion Ballroom AB
TIME: 1:00-2:00 PM Pacific
MODERATOR: Chris Willenborg
University of Saskatchewan
Saskatoon, SK, Canada

MONDAY AFTERNOON FEBRUARY 24

US-HRAC Committee Meeting

LOCATION: Pavillion Ballroom C
TIME: 1:00-3:00 PM Pacific
MODERATOR: Craig Alford
Corteva Agriscience
Ankeny, IA

Registration

LOCATION: Junior Ballroom Foyer
TIME: 1:00-4:00 PM Pacific
MODERATOR: Eric Gustafson
IMI Group

**Resistance Terminology Special
Committee Meeting**

LOCATION: Port McNeil
TIME: 2:00-4:00 PM Pacific
MODERATOR: Caio Brunharo
Pennsylvania State University
University Park, PA

Women in Weed Science

LOCATION: Grand Ballroom CD
TIME: 2:00-3:30 PM Pacific
MODERATOR: Cara McCauley
Corteva Agriscience
Indianapolis, IN

Sponsored by Corteva Agriscience

MONDAY AFTERNOON FEBRUARY 24

General Session

LOCATION: Grand Ballroom AB
TIME: 4:15-7:00 PM Pacific
CHAIR: Greg Dahl
Retired, Winfield United
Eagan, MN
MODERATORS: Greg Dahl
Retired, Winfield United
Eagan, MN, and
Robert Nurse
Agriculture and Agri-Food
Canada, Harrow, ON

*SPEAKER

- 4:15 PM Welcome to the 2025 WSSA/CWSS Joint Annual Meeting.** Hilary A. Sandler*¹ and Robert Nurse². ¹University of Massachusetts Cranberry Station, E. Wareham, MA, ²Agriculture and Agri-Food Canada, Harrow, ON.
- 4:20 PM Welcome to Vancouver.**
- 4:30 PM Keynote: Are They Rising from the Ashes? Re-Learning Invasive Species Management on Post-Wildfire Landscapes in British Columbia.** Jennifer Grenz*, University of British Columbia, BC.
- 5:10 PM WSSA Presidential Address.** Greg Dahl*, Retired, Winfield United, Eagan, MN
- 5:20 PM CWSS Presidential Address.** Robert Nurse*, Agriculture and Agri-Food Canada, Harrow, ON.
- 5:30 PM Washington, DC Update.** Lee Van Wychen*, WSSA, Alexandria, VA
- 5:45 PM IWSS Update,** Samunder Singh*, IWSS, Hisar (Haryana), India.

5:50 PM Awards Presentations. Scott Senseman*,
University of Oklahoma, Stillwater, OK and
Leonardo Galindo Gonzalez*, Canadian Food
Inspection Agency, Ottawa, ON.

**6:30 PM Presentation of Honorary Members and
Fellows.** Hilary A. Sandler*, University of
Massachusetts, East Wareham, MA.

MONDAY EVENING FEBRUARY 24

Awards Reception

LOCATION: Grand Ballroom CD
TIME: 7:00-9:00 PM Pacific

Sponsored by Syngenta Crop Protection

TUESDAY MORNING FEBRUARY 25

Judges Breakfast

LOCATION: Pavillion Ballroom D
TIME: 6:00-7:00 AM Pacific

MODERATORS: Darrin Dodds
Mississippi State University
Mississippi State, MS

 Marty Schraer
Syngenta Crop Protection
Meridian, ID

 Breanne Tidemann
Agriculture and Agri-Food
Canada, Lacombe, AB

TUESDAY MORNING FEBRUARY 25

Registration

LOCATION: Junior Ballroom Foyer
TIME: 7:00-4:00 PM Pacific
MODERATOR: Eric Gustafson
IMI Group

Puff 5K Walk/Run

LOCATION: Meet in Lobby
TIME: Assemble: 6:45 AM
7:00-8:00 AM Pacific
MODERATOR: David Clements
Trinity Western University
Langley, BC

WSSA Finance Committee Meeting

LOCATION: Constellation
TIME: 7:00-9:00 AM Pacific
MODERATOR: Lauren Lazaro
Blue River Technology
Sunnyvale, CA

IWGC Board of Directors Meeting

LOCATION: Port Alberni
TIME: 7:00-8:00 AM Pacific
MODERATOR: Todd A. Gaines
Colorado State University
Fort Collins, CO

**Herbicide-Resistant Plants
Committee Meeting**

LOCATION: Parksville
TIME: 8:00-9:00 AM Pacific
MODERATOR: Caio Brunharo
Pennsylvania State University
University Park, PA

TUESDAY MORNING FEBRUARY 25

Judges Work Room

LOCATION: Constellation
TIME: 9:00 AM-4:00 PM Pacific

Poster Session-Odd Numbers

LOCATION: Junior Ballroom
ABCD/Foyer

TIME: 7:00-9:00 AM Pacific

MODERATORS: Darrin Dodds
Mississippi State University
Mississippi State, MS

Marty Schraer
Syngenta Crop Protection,
Meridian, ID

Lovreet Shergill
Colorado State University
Fort Collins, CO

Vanessa Jones
University of British Columbia
Vancouver, BC

Virginia Oeggerli
University of British Columbia
Vancouver, BC

All Competition Posters will be judged on Tuesday.

Authors with odd-numbered posters will be present on Tuesday. Authors with even-numbered posters will be present on Wednesday.

POSTER PRESENTATIONS

***PRESENTING AUTHOR**

► WSSA STUDENT CONTEST

🍁 CWSS COMPETITION

POSTER - 01. Agronomic Crops

Very Long Chain Fatty Acid-Inhibiting Herbicides: Past, Present, And Future. Amit J. Jhala¹, Mandeep Singh¹, Alex Chmielewski^{1*}, Lovreet Shergill², Rishabh Singh³, Mithila Jugulam³, Dean E. Riechers⁴, Zahoor A. Ganie⁵, Thomas P. Selby⁵, Rodrigo Werle⁶, and Jason K. Norsworthy⁷. ¹University of Nebraska, Lincoln, NE; ²Montana State University, Huntley, MT; ³Kansas State University, Manhattan, KS; ⁴University of Illinois, Urbana, IL; ⁵Stine Research Center, FMC Corporation, Newark, DE; ⁶University of Wisconsin, Madison, WI; ⁷University of Arkansas, Fayetteville, AR. (1)

Screening the Louisiana Sugarcane Germplasm for Clethodim Tolerance. Alice Wright^{*1}, Matthew Foster², Albert Orgeron², James Todd¹. ¹USDA-ARS, Houma, LA; ²Louisiana State University, AgCenter, Baton Rouge, LA. (2)

► Reduced Plant-back Burndown Programs in Rice Using ALS-inhibiting Herbicides. Eve Williams*, Connor Webster, Ronnie Levy, Gavin Sparks, Maranda Hains, Ben Stoker, Wesley Carr. Louisiana State University AgCenter, Baton Rouge, LA. (3)

Assessing Herbicide Injury in Cotton Using UAV-based Thermal and Multispectral Imagery. Bismark Anokye^{*1}, Ubaldo Torres¹, Bholum Gurjar¹, Chenghai Yang², Muthu Bagavathiannan¹. ¹Texas A&M University, College Station, TX; ²USDA-ARS, College Station, TX. (4)

Impact of Long-Term Cover Cropping on Weed Seed Bank: The Old Rotation Experiment (circa 1896). Gourav Chahal^{*1}, Carter Bonnell², Andrew Price², Audrey Gamble¹, Steve Li¹. ¹Auburn University, Auburn, AL; ²USDA-NSDL, Auburn, AL. (5)

Early-Season Fall Panicum (*Panicum dichotomiflorum* Michx.) Control and Sugarcane Tolerance to a Premix of Atrazine, Mesotrione, and S-Metolachlor. Calvin Odero*. University of Florida, Belle Glade, FL. (6)

Mapping the Distribution of Troublesome U.S. Agricultural Weeds with EDDMapS. Cameron Douglass^{*1}, Rodrigo Werle², Joe LaForest³, Allison Jones⁴,

Steve Hoffman⁵. ¹USDA-Office of Pest Management Policy, Washington, DC; ²University of Wisconsin, Madison, WI; ³University of Georgia, Tifton, GA; ⁴National Association of Independent Crop Consultants (NAICC), Vonore, TN; ⁵InDepthAgronomy, Manitowoc, WI. (7)

► **Development of a Rapid Throughput Screen Bioassay for Quizalofop Tolerance to Experimental CoAxium Wheat Seed Lines.** Amber Pelon*, Franck Dayan, Todd Gaines. Colorado State University, Fort Collins, CO. (8)

Simulated Herbicide Mixtures Delay Both Monogenic and Polygenic Resistance Evolution in Weeds. Chandrashekar Aradhya*¹, Michael Renton², Alan Willse³, Andrew Tyre⁴, Graham Head¹. Bayer Crop Science, Chesterfield, MO; ²University of Western Australia, Perth, Australia; ³Bayer Crop Science, Des Moines, IA; ⁴Bayer Crop Science, Lincoln, NE. (9)

🍁 **Survey Reveals the Frequency and Distribution of Herbicide-Resistant Weeds in Alberta.** Charles Geddes*¹, Mattea Pittman¹, Breanne Tidemann², Julia Leeson³. ¹Agriculture and Agri-Food Canada, Lethbridge, AB; ²Agriculture and Agri-Food Canada, Lacombe, AB; ³Agriculture and Agri-Food Canada, Saskatoon, SK. (10)

► **Corn Tolerance to an Amicarbazone-Metribuzin Premixture: Exploring the Impact of Application Timing.** Michael Dodde*¹, Jason Norsworthy¹, Ryan Henry², Pamela Carvalho-Moore¹, Maria Carolina Souza¹, Rhet Baxley¹. ¹University of Arkansas, Fayetteville, AR; ²UPL-Ltd. Fort Wayne, IN. (11)

Using Fall Residual Herbicides and Cover Crop to Mitigate Herbicide-Resistant Italian Ryegrass (*Lolium perenne* L. ssp. *multiflorum*) Seedbank. Connor McKoin*, Donnie Miller, Prashant Jha, Ashley Barfield, Bhupesh Dhaka. Louisiana State University AgCenter, Baton Rouge, LA. (12)

Saflufenacil + Trifludimoxazin in Canada and the USA: Next Generation Burn Down. Dallas Taylor*¹, Brendan Metzger², Misha Rose Manuchehri Byrd¹. ¹BASF Corporation, Raleigh, NC; ²BASF-Canada, Winkler, MB. (13)

► **Long-Term Implications of Targeted Herbicides in Soybean with See & Spray™.** Tristen Avent*¹, Jason Norsworthy¹, Michael Dodde¹, Lane Pierce¹, Lauren Lazaro². ¹University of Arkansas, Fayetteville, AR; ²Blue River Technology, Sunnyvale, CA. (14)

Kochia (*Bassia scoparia*) Management with Dichlorprop-p Based Herbicide Mixtures in Fallow and Small Grains. Daniel Beran* and Joe Vassios. Nufarm, Morrisville, NC. (15)

► **Weed Management in a Reduced Tillage Organic Cotton System.** Megan Singletary*¹, Peter Dotray¹, Katie Lewis¹, Joseph Burke², Muthu Bagavathiannan², Matthew Woolard¹, Bobby Rodriguez². ¹Texas Tech University, Lubbock, TX; ²Texas A&M University, College Station, TX. (16)

Extending Weed Suppression in Soybeans with Cover Crops and Preemergent Herbicides. Forrest Davis* and David Russell. Auburn University, Auburn, AL. (17)

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³Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, QC. (77)

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(CÉROM), Saint-Mathieu-de-Beloeil, QC; ²Laboratoire d'expertise et de diagnostic en phytoprotection (LEDP-MAPAQ), Québec, QC; ³University of Laval, Québec, QC. (108)

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► Rooted Potential: Exploring Weed Suppression Abilities in *Sorghum bicolor* with High Sorgoleone Production. Megan Schill*, Nithya Rajan, William Rooney, Sakiko Okumoto, Muthukumar Bagavathiannan. Texas A&M University, College Station, TX. (116)

Utilizing Cover Crops as a Weed Management Tool for Combatting *Amaranthus* spp. Resistance. Debra Smitherman*, David Russell, Eros Francisco, Scott McElroy. Auburn University, Auburn, AL. (117)

A Water Soluble β -Triketone Enriched Extract of Manuka Oil: Increased Weed Control Efficacy Compared to Two Organic Non-Selective Herbicides. T. Casey Barickman*, Charles Cantrell, Amber Reichley. USDA-Natural Products Utilization Research Unit (NPURU), University, MS. (118)

Evaluating the Efficacy of Organic Acids Wiping Applications for Controlling Major Weeds in Organic Cranberry Production. Yosra Menchari*¹, Marie-Josée Duval², Gabriel Ayotte Breton², Alice De Donder², Didier Labarre². ¹Laval University, Québec City, QC; ²CETAQ, Notre-Dame du-Lourdes, QC. (119)

POSTER – 11 Physiology

***PRESENTING AUTHOR**

► WSSA STUDENT CONTEST

🍁 CWSS COMPETITION

► Machine Learning of Plant Image Data to Diagnose Herbicide Modes of Action. Tae-Kyeong Noh* and Do-Soon Kim. Seoul National University, Seoul, South Korea. (120)

🍁 Transgressive Segregation and the Inheritance of Paraquat Resistance in Canada Fleabane (*Conyza canadensis*). Hayley Hickmott¹, François Tardif², Martin Laforest³, Istvan Rajcan², Sydney Meloche⁴, Alyssa Thibodeau⁴, Emma Beda⁴, Eric Page^{*4}. ¹Health Canada, Pest Management Regulatory Agency, Ottawa, ON; ²University of Guelph, Guelph, ON; ³Agriculture and Agri-Food Canada, Saint-Jean-sur Richelieu, ON; ⁴Agriculture and Agri-Food Canada, Harrow, ON. (121)

► **Investigating the Role of Catalase in Herbicide Activity.** Catherine Traxler*, Todd Gaines, Franck Dayan. Colorado State University, Fort Collins, CO. (122)

Safening Potential of Melatonin in Conventional Cotton Exposed to Sublethal Rates of 2,4-D. Josiane Argenta¹, Antonio Rodrigues da Cunha Neto², Sandipan Sil¹, Te Ming Tseng*¹. ¹Mississippi State University, Mississippi State, MS; ²Universidade Federal de Alfenas, Alfenas, Brazil. (123)

► **Investigating Resistance in Johnsongrass (*Sorghum halepense*) Across the United States: Target and Non-target Site Mechanisms.** Connor Purvis* and Erin Burns. Michigan State University, East Lansing, MI. (124)

Herbicidal Activity of Hydroxychalcones. Raphael Mota Garrido*¹, Patrick Rômbola Ozanique², Luis Octávio Regasini², Rosana Marta Kolb¹. ¹São Paulo State University, Assis, Brazil; ²São Paulo State University, São José do Rio Preto, Brazil. (125)

► **In Silico Molecular Docking and Dynamic Simulation Study to Evaluate the Inhibitory Potential of Phytochemicals from *Ganoderma lucidum* Against NS5B of HCV to Treat Hepatitis C Virus.** Shilpi R. Sindhu*. CCS Haryana Agricultural University, Hisar, India. (126)

POSTER - 12. Soil and Environmental Aspects

***PRESENTING AUTHOR**

► **WSSA STUDENT CONTEST**

Influence of Environmental Factors on the Efficacy of Phosphite for Weed Control. Kapil Chobhe*, Shilpa Singh, Keerti Rathore, Gaylon Morgan, Muthukumar Bagavathiannan. Texas A&M University, College Station, TX. (127)

Understanding the Biochar-Herbicide Interactions Governing Weed Control Efficiency in the Light Textured Soil of Alabama. Rakesh Ghosh*¹, Aniruddha Maity¹, Andrew Price², Nisith Nishank Purohit¹. ¹Auburn University, Auburn, AL; ²USDA-ARS-NSDL, Auburn, AL. (128)

► **Soil Moisture and Texture Effects on Herbicide Resistance Expression in Italian Ryegrass (*Lolium perenne* ssp. *multiflorum*).** Andrew Ahlersmeyer*¹, Andrew Price², Aniruddha Maity¹. ¹Auburn University, Auburn, AL; ²USDA-ARS-NSDL, Auburn, AL. (129)

Are Vegetative Vigor Endpoints Predictive of Plant Injury Due to Herbicides in Runoff? Sandra Ethridge*,

Daniel Edwards, Matthew Jeffries. BASF Corporation, Research Triangle Park, NC. (130)

POSTER - 13. Integrated Weed Management

***PRESENTING AUTHOR**

► WSSA STUDENT CONTEST

CWSS COMPETITION

Integrated Weed Management Affects the Critical Period for Weed Control. Andrew Price*¹, Gourav Chahal², Carter Bonnell¹. ¹USDA-ARS-NSDL, Auburn, AL; ²Auburn University, Auburn, AL. (131)

► Impact of Cover Crop Termination Strategies and Roller Crimper Speeds on Cereal Rye and Weed Suppression. Akashdeep Singh*¹, David Russell¹, Andrew Price², Ted Kornecki², Aniruddha Maity¹. Auburn University, Auburn, AL; ²USDA-ARS-NSDL, Auburn, AL. (132)

NeutraWeed: An International Integrated Weed Management Project Merging Functional Ecology with AI and Robotics. Antonio DiTommaso*¹, Stefano Carlesi², Anna Camilla Moonen², Paolo Barberi², Marco Esposito². ¹Cornell University, Ithaca, NY; Agroecology of the Institute of Plant Sciences, ²Sant'Anna School of Advanced Studies, Pisa, Italy. (133)

Fate of Weed Seeds in the Combine with Seed Impact Mills During Wheat and Soybean Harvest. Eli Russell*¹, Kevin Bamber¹, Michael Flessner¹, Sarah Chu², Muthukumar Bagavathiannan², Steven Mirsky³, Kreshnik Bejleri³, Eugene Law⁴, Walker Crane³, Mark VanGessel⁵. ¹Virginia Tech, Blacksburg, VA; ²Texas A&M University, College Station, TX; ³USDA-ARS, Beltsville, MD; ⁴Ohio State University, Columbus, OH; ⁵University of Delaware, Georgetown, DE. (134)

► Weed Control in Cotton with Pyroxasulfone + Carfentrazone Coated Fertilizer Applications. Caroline Wayhs Backes*, Zachary Howard, Scott Nolte. Texas A&M University, College Station, TX. (135)


Weed Suppression and Regrowth Potential of Mown Cereal Cover Crops. Gustavo Camargo Silva* and Muthukumar Bagavathiannan. Texas A&M University, College Station, TX. (136)

► Planting Green and Residual Herbicide Interactions in No-Till Soybeans. Grant Hoffer*¹, John Wallace¹, Mark VanGessel², Nicholas Basinger³, Aaron Hager⁴, Erin Haramoto⁵, Wesley Everman⁶, Eugene Law⁷, Karla Gage⁸, Eric Miller⁸. ¹Pennsylvania State University, University


Park, PA; ²University of Delaware, Georgetown, DE; ³University of Georgia, Athens, GA; ⁴University of Illinois, Urbana, IL; ⁵University of Kentucky, Lexington, KY; ⁶Iowa State University, Ames, IA; ⁷Ohio State University, Columbus, OH; ⁸Southern Illinois University, Carbondale, IL. (137)

Integrated Management of Key Pests in Corn-Potato Systems. Hannah Johnson* and Erin Burns. Michigan State University, East Lansing, MI. (138)

On-Farm Insights: Farmer Perspectives on Harvest Weed Seed Control in Minnesota Corn and Soybeans Production. Isidor Ceperkovic, Debalin Sarangi*, David Nicolai, Seth Naeve. University of Minnesota, St. Paul, MN. (139)

 **Evaluating Pulse Companions for Camelina Intercropping.** Shaun Sharpe*¹, Christina Eynck¹, Michelle Hubbard², Leonard Chester¹, Kyle Rosvold¹, Shaelyn St. Jacques¹, Lana Shaw³. ¹Agriculture and Agri-Food Canada, Saskatoon, SK; ²Agriculture and Agri-Food Canada, Swift River, SK; ³South East Research Farm, Redvers, SK. (140)

Intermediate Crops: A New Tool for Integrated Weed Management. James Anderson*, Jinita Sthapit Kandel, David Horvath. USDA-ARS-ETSARC, Fargo, ND. (141)

 **Impact of Allelopathic Cover Crops and its Termination Method in Cash Crops Grown Subsequent Season.** Maria Angelica Ouellette*. Lakeland Agricultural Research Association, Fort Kent, AB. (142)

► **Weed Species Detection and Classification Using Seed Images and Machine Learning Algorithms.** Akhilesh Sharma*, Vipin Kumar, Antonio DiTommaso, Magdalena Julkowska. Cornell University, Ithaca, NY. (143)

The Interactions between Drought Tolerant Corn Hybrids and Plant Water Stress on Weeds and their Host Capability for Spider Mites. Mercy Odemba*¹, Earl Creech², Corey Ransom², Matt Yost², Ricardo Ramirez³. ¹Ohio State University, Columbus, OH; ²Utah State University, Logan, UT; ³New Mexico State University, Las Cruces, NM. (144)

Electric Weed Management in Wild Lowbush Blueberries in Québec. Paulina Cholango Martinez*¹, Pierre-Olivier Martel², Charles-A Déry-Bouchard³, Gérard Bouchard⁴, Élise Smedbol¹. ¹Institut de Recherche et de Développement en Agroenvironnement (IRDA), Saint-Bruno-de-Montarville, QC; ²Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ), Alma, QC; ³Club Conseil Bleuét, Dolbeau-Mistassini, QC; ⁴Ferme des Chutes Inc., St-Félicien, QC. (145)

► **Short Corn: A Cultural Tool for Weed Seedbank Management?** Noelle Connors*, Heather Karsten, John Wallace. Pennsylvania State University, University Park, PA. (146)

Influence of Weed Management on Spring Maize Growth, Yield and Profitability in Mid-Hills of Nepal. Salina Raila*¹, Sarah Lancaster¹, Suman Dhakal², Manita Thapa³, Suraj Laudari², Puja Joshi². ¹Kansas State University, Manhattan, KS; ²Agriculture and Forestry University, Chitwan, Nepal; ³Ministry of Agriculture and Livestock Development, Parbat, Nepal. (147)

Catching Weed Seeds with Cotton Harvesters. Sarah Chu*¹, Michael Walsh², Robert Hardin¹, Peter Dotray³, Gaylon Morgan⁴, Muthukumar Bagavathiannan¹. ¹Texas A&M University, College Station, TX; ²Charles Sturt University, Wagga Wagga, NSW, Australia; ³Texas Tech University, Lubbock, TX; ⁴Cotton Incorporated, Cary, NC. (148)

► **Confirmation of Herbicide Resistance and its Association with Seed Morpho-Physiological Traits in Alabama Italian Ryegrass (*Lolium perenne* L. ssp. *multiflorum*) Populations.** Ankit Yadav*¹, David Russell², Zahoor Ganie³, Jinesh Patel², Andrew Price⁴, Aniruddha Maity². ¹University of Nebraska, Lincoln, NE; ²Auburn University, Auburn, AL; ³FMC Corporation, Newark, DE; ⁴USDA-ARS-NSDL, Auburn, AL. (149)

Using Organic Herbicides and Steam for Weed Control in Vineyards. Tian Tian and Mandeep Riar*. University of California Agriculture and Natural Resources, Bakersfield, CA. (150)

Integrated Weed Management using Cover Crop and Herbicide in Alabama Cotton Production Systems. Wilfried Ouedraogo* and Aniruddha Maity. Auburn University, Auburn, AL. (151)

► **Integration of Cereal Rye, Herbicides, and Seed Impact Mill for Weed Control in Soybean.** Preetaman Bajwa*¹, Vipin Kumar¹, Henrique Scatena¹, Prashant Jha², Jason Norsworthy³. ¹Cornell University, Ithaca, NY; ²Louisiana State University AgCenter, Baton Rouge, LA; ³University of Arkansas, Fayetteville, AR. (152)

Enhancing Weed Control Post-Planting through Modified Stale Seedbeds with Dormancy-Breaking Chemicals. Nisith Nishank Purohit* and Aniruddha Maity. Auburn University, Auburn, AL. (153)

Comparison of Cover Crop Biomass Predictions to Summer Annual Weed Escapes Using Spatial Analysis Techniques. Avi Goldsmith*¹, April Dobbs², Ramon Leon¹. ¹North Carolina State University, Raleigh, NC; ²BASF Corporation, Durham, NC. (154)

Complementary Activity of Trifludimoxazin and its Saflufenacil Combination for Postemergence and Residual Weed Control. Lilian Parra Rapado^{*1}, Aimone Porri¹, Douglass Findley², Hernan Ghiglione². ¹BASF Corporation SE, Limburgerhof, Germany; ²BASF Corporation, Research Triangle Park, NC. (155)

POSTER - 14. Targeted and Autonomous Weed Control Strategies

***PRESENTING AUTHOR**

► WSSA STUDENT CONTEST

🍁 CWSS COMPETITION

► Enhancing Weed Control Using Light-Activated Sensors and Mapping in Chem-fallow. Devanshi Het Desai^{*1}, Paul Nugent¹, Tim Seipel¹, Lovreet Shergill². ¹Montana State University, Bozeman, MT; ²Colorado State University, Fort Collins, CO. (156)

Analysis of Herbicide Spray Patterns from Different Application Methods using Machine Learning. Arunkarthik Muthukumar^{*1}, Christina Ward², Navjot Singh², Zach Howard², Scott Nolte². ¹College Station High School, College Station, TX; ²Texas A&M University, College Station, TX. (157)

► Energy Thresholds for Weed Seed Death Using Mid-Infrared Radiation. Ryan Hamberg^{*}, Sarah Chu, Muthukumar Bagavathiannan. Texas A&M University, College Station, TX. (158)

Identification of *Orobanche minor* Parasitism Using Hyperspectral Remote Sensing in Red Clover Seed Production in the Willamette Valley, OR. Iram Mujahid Iqbal^{*}, Jing Zhou, Carol Mallory-Smith, Pete Berry. Oregon State University, Corvallis, OR. (159)

A Learning-Based Approach to Estimate Leaf Area Index in Weed-Crop Mixes Using Multi-View 3D Reconstruction. Joe Johnson^{*}, Purushottam Gyawali, Muthu Bagavathiannan. Texas A&M University, College Station, TX. (160)

► Development and Evaluation of a Micro-Jet Sprayer for Precision Weed Control Using Ground Robots. Bholuram Gurjar^{*1}, Joe Johnson¹, Søren Kelstrup Skovsen², Robert Hardin¹, Steven Mirsky³, Muthu Bagavathiannan¹. ¹Texas A&M University, College Station, TX; ²Aarhus University, Aarhus centrum, Denmark; ³USDA-ARS, Beltsville, MD. (161)

Performance of Optically Guided Spray Technology for Weed and Sucker Control in Grapes. Lynn


Sosnoskie*¹ and Thierry Besançon². ¹Cornell University, Geneva, NY; ²Rutgers University, Marucci Center, Chatsworth, NJ. (162)

Recognition of Italian Ryegrass (*Lolium perenne* ssp. *multiflorum*) in Wheat (*Triticum aestivum*) using Machine Learning. Navjot Singh*. Texas A&M University. College Station, TX. (163)

► **Investigation on Multiple Herbicide Resistance to Photosystem II and HPPD inhibitors in Redroot Pigweed (*Amaranthus retroflexus* L.).** Isabelle Aicklen, Malavika Nair*, François Tardif. University of Guelph, Guelph, ON. (164)

Predicting Saline-Weed Hotspots: A Methodology Using an EM-38 Ground Conductivity Meter. Racquelle Peters*, Shaun Campbell, Thuan Ha, Kwabena Nketia, Japjyot Sandhu, Steve Shirliffe. University of Saskatchewan, Saskatoon, SK. (165)

Weed Size Impacts on Postemergent Application Coverage using See & Spray™ in Soybean. Wyatt Stutzman*¹, Tristen Avent², Jared Buck³, Diego Contreras⁴, Wesley Everman⁵, Jason Norsworthy², Octavio Ransenberg³, Lawrence Steckel³, Bryan Young⁶, Marcelo Zimmer⁶, Michael Houston⁷, Lauren Lazaro⁷, William Patzoldt⁸, Michael Flessner¹. ¹Virginia Tech, Blacksburg, VA; ²University of Arkansas, Fayetteville, AR; ³University of Tennessee, Knoxville, TN; ⁴North Carolina State University, Raleigh, NC; ⁵Iowa State University, Ames, IA; ⁶Purdue University, West Lafayette, IN; ⁷Blue River Technology, Sunnyvale, CA; ⁸BRT, Santa Clara, CA. (166)

 **Estimating Soybean Yield Loss to Weed Interference using Remote-Sensing Tools.** Robert Gulden*, Christopher Henry, Nasem Badreldin, Dilshan Benaragama. University of Manitoba, Winnipeg, MB. (167)

Evaluating See & Spray™ Technology for Improving Crop Health and Yield in Soybean Production. William Patzoldt*¹, Michael Houston², Lauren Lazaro², Chad Lammers³, Jess Spotanski³, Tristen Avent⁴, Jason Norsworthy⁴, Marcelo Zimmer⁵, Bryan Young⁵, Diego Contreras⁶, Wesley Everman⁷, Wyatt Stutzman⁸, Michael Flessner⁸, Jared Buck⁹, Lawrence Steckel⁹. ¹Blue River Technology, Santa Clara, CA; ²BRT, Sunnyvale, CA; ³Midwest Research, York, NE; ⁴University of Arkansas, Fayetteville, AR; ⁵Purdue University, West Lafayette, IN; ⁶North Carolina State University, Raleigh, NC; ⁷Iowa State University, Ames, IA; ⁸Virginia Tech, Blacksburg, VA; ⁹University of Tennessee, Knoxville, TN. (168)

Developing Novel Herbicides for Sustainable Agriculture: An AI-Driven Approach. Dibyajyoti Das*,

Sarveswara Rao Vangala, Arijit Roy. Tata Consultancy Services (TCS), Hyderabad, India. (169)

A Deep Learning Approach for Weed Classification, Detection, and Localization in Turfgrass. Xiaojun Jin* and Jialin Yu. Peking University-IAAS, Weifang, China. (170)

POSTER - 15. Genomics

***PRESENTING AUTHOR**

► WSSA STUDENT CONTEST

Comparative Analysis of Cytochrome P450 Genes in *Amaranthus* species. Isabel Schlegel Werle*¹, Fatemeh Abdollahi², Damilola Raiyemo¹, Alexander Lopez¹, David R. Nelson³, Todd Gaines², Patrick Tranel¹. ¹University of Illinois, Urbana, IL; ²Colorado State University, Fort Collins, CO; ³University of Tennessee, Memphis, TN. (171)

► The Ser197 Mutation in the ALS gene is the Predominant Cause of Resistance to ALS Inhibitors in Sumatran (*Conyza sumatrensis*) and Hairy Fleabane (*Conyza bonariensis*) in Brazil. Paula Angonese*¹, Guilherme Turra², Eduardo Rudell¹, Estéfani Sulzbach², Vinicius Tasca², Filipi Mesquita Machado², Othon dos Santos², Luiz Zobiole³, Gabriel Pereira³, Catarine Markus², Todd Gaines¹, Aldo Merotto². ¹Colorado State University, Fort Collins, CO; ²UFRGS, Porto Alegre, Brazil; ³Corteva Agriscience, Mogi Miram, Brazil. (172)

Expression Variability of Genes Related to Rapid Necrosis Induced by 2,4-D in Sumatran Fleabane (*Conyza sumatrensis*) Triggered by Different Auxinic Herbicides. Paula Angonese*¹, Guilherme Turra², Fernando Cappellari², Fernanda Marques², Gabriel Dias², Leonardo Kroth², William Kroth², Luiz Zobiole³, Gabriel Pereira³, Todd Gaines¹, Aldo Merotto². ¹Colorado State University, Fort Collins, CO; ²UFRGS, Porto Alegre, Brazil; ³Corteva Agriscience, Mogi Miram, Brazil. (173)

Applications of Next Generation Protein Folding and Docking Simulations to Study Herbicide Mode-of-Action. Sara Álvarez Rodríguez*, Mohit Mahey, Eric Patterson. Michigan State University, East Lansing, MI. (174)

Transcriptomics analyses of host defense responses to parasitism by Egyptian broomrape (*Phelipanche aegyptiaca*). Sukhmanpreet Kaur¹, Soyoon Park², James Westwood*¹. ¹Virginia Tech, Blacksburg, VA; ²University of Missouri, Columbia, MO. (175)

TUESDAY MORNING FEBRUARY 25

ORAL - WSSA - SST Student Contest

LOCATION: Pavillion Ballroom AB
TIME: 9:00-11:15 AM Pacific
MODERATOR: Darrin Dodds
Mississippi State University
Mississippi State, MS

***SPEAKER**

- 9:00 AM Overcast Weather in Relation to Quizalofop Applications in the Provisia Rice System.** Wesley Carr*, Connor Webster, Gavin Sparks, Ben Stoker, Maranda Hains, Eve Williams, Ronnie Levy. Louisiana State University AgCenter, Baton Rouge, LA. (176)
- 9:04 AM Targeted Weed Management of Palmer Amaranth Using Robotics and Deep Learning.** Amlan Balabantaray*, Shaswati Behera, Chee Town Liew, Nipuna Chamara, Mandeep Singh, Amit Jhala, Santosh Pitla. University of Nebraska, Lincoln, NE. (177)
- 9:08 AM Volunteer Winter Wheat as a Cover Crop for Weed Suppression in Sugar Beet.** Adam Kennedy* and Albert Adjesiwor. University of Idaho, Kimberly, ID. (178)
- 9:12 AM Planting Green into Cereal Rye Reduces Weed Density but Increases Soil Moisture During the Soybean Growing Season.** Aleksandar Grujic*¹, Erin Haramoto¹, Matthew Allen¹, John Wallace². ¹University of Kentucky, Lexington, KY; ²Penn State University, University Park, PA. (179)
- 9:16 AM Genetic Overlap in *Amaranthus tuberculatus* Resistance to Dicamba and 2,4-D: What's the Connection?** Isabel Schlegel Werle*¹, Lucas Bobadilla², Damilola Raiyemo¹, Alexander Lopez¹, Filipi Mesquita Machado¹, Patrick Tranel¹. ¹University of Illinois, Urbana-Champaign, IL; ²Corteva Agriscience, Indianapolis, IN. (180)
- 9:20 AM Climate Change and Weed Adaptation: A Case Study on the Range Expansion of Giant Ragweed (*Ambrosia trifida* L.).** Datta Chiruvelli*¹, Ryan Runquist¹, Dave

Moeller¹, Roger Becker¹, Amit Jhala², Debalin Sarangi¹. ¹University of Minnesota, St. Paul, MN; ²University of Nebraska, Lincoln, NE. (181)

9:24 AM Cover Crops Effect on Weed Demography in Organic Tomatoes and Broccoli. Charles E. Smith III*, Zachary M. Hirsch-Santagata, Hannah C. Lindell, Michael Bocz, Himani Ahlawat, Kate Cassity-Duffey, Nicholas Basinger. University of Georgia, Athens, GA. (182)

9:28 AM Developing a Weed Segmentation Pipeline with Comparative Analysis of Machine Learning Techniques. Navjot Singh*¹, Matthew Kutugata¹, Chris Reberg-Horton², Steven Mirsky³, Muthukumar Bagavathiannan¹. ¹Texas A&M University, College Station, TX; ²University of North Carolina, Raleigh, NC; ³USDA-ARS, Beltsville, MD. (183)

9:32 AM Underground Warfare: Cereal Rye Cover Crop Suppresses Johnsongrass Rhizomes. Gustavo Camargo Silva* and Muthukumar Bagavathiannan. Texas A&M University, College Station, TX. (184)

9:36 AM Evaluation of Drop Nozzles as a Drift Reduction Technology in Cotton and Soybeans. Christina Ward*¹, Scott Nolte¹, Gaylon Morgan², Brad Fritz³, Justin Calhoun⁴, Peter Dotray⁵, Todd Baughman⁶, Maxwell Smith⁷. ¹Texas A&M University, College Station, TX; ²Cotton Incorporated, Cary, NC; ³USDA-ARS, College Station, TX; ⁴University of Missouri, Portageville, MO; ⁵Texas Tech University/Texas A&M Extension, Lubbock, TX; ⁶Oklahoma State University, Ardmore, OK; ⁷Oklahoma State University, Atul, OK. (185)

9:40 AM A Natural Occurring Glutathione S-transferase Inhibitor for Improved Glufosinate Performance. Pamela Carvalho-Moore*¹, Jason Norsworthy¹, Jeong-In Hwang¹, Arthur Yochim², Lon Barber³, Tristen Avent¹, Maria Carolina Souza⁴. ¹University of Arkansas, Fayetteville, AR; ²UPL-Ltd., Durham, NC; ³University of Arkansas Division of Agriculture, Lonoke, AR; ⁴University of Arkansas Division of Agriculture, Fayetteville, AR. (186)

- 9:44 AM An Epidemiological Study Identifies the Predominant Mechanisms of Resistance to ALS-Inhibitors in *Echinochloa crus-galli* in Southern Brazil.** Eduardo Rudell^{*1}, Guilherme Turra², Paula Angonese², Vinicius Tasca², Leonardo Kroth², Matheus Scherer³, Catarine Markus², Eric Patterson¹, Aldo Merotto². ¹Michigan State University, East Lansing, MI; ²Federal University of Rio Grande do Sul (UFRGS), Porto Alegre, Brazil; ³BASF Corporation, Porto Alegre, Brazil. (187)
- 9:48 AM Can Electricity Tackle Perennial Weeds? Insights from Canada Thistle and Yellow Nutsedge Control.** Luisa Baccin^{*} and Marcelo Moretti. Oregon State University, Corvallis, OR. (188)
- 9:52 AM A New Hope of Weed Management: Dissecting Palmer Amaranth's Demographic Trends with Cover Crops.** Hannah Lindell^{*1}, Gaylon Morgan², Michael Bocz¹, Charles Smith III¹, Nicholas Basinger¹. University of Georgia, Athens, GA; ²Cotton Incorporated, Cary, NC. (189)
- 9:56 AM Developing IPM Strategies for Key Pests in Corn-Potato Systems.** Hannah Johnson^{*} and Erin Burns. Michigan State University, East Lansing, MI. (190)
- 10:00 AM BREAK**
- 10:15 AM Rapid Honeybee Deterrence in Herbicide-Treated White Clover: Exploring Causal Mechanisms.** Suzannah Hale^{*}, Navdeep Godara, Shawn Askew. Virginia Tech, Blacksburg, VA. (191)
- 10:19 AM Effects of Gathering Chain Modifications to Capture Weed Seeds During Corn Harvest.** Wyatt Stutzman^{*1}, Michael Flessner¹, Michael Walsh². ¹Virginia Tech, Blacksburg, VA; ²Charles Sturt University, Wagga Wagga, NSW, Australia. (192)
- 10:23 AM Influence of Biochar-Herbicide Interactions on Weed Control Efficacy in Sandy Soils in Alabama.** Nisith Nishank Purohit^{*}, Rakesh Ghosh, Yucheng Feng, Aniruddha Maity. Auburn University, Auburn, AL. (193)
- 10:27 AM Detecting *Bassia scoparia* (Kochia) at Field Scale Using Multi-temporal UAV Imagery.** Japjyot Sandhu^{*}, Thuan Ha, Steve Shirtliffe, Kwabena Nketia. University of Saskatchewan, Saskatoon, SK. (194)

- 10:31 AM Effectiveness of an Impact Mill for Weed Seed Destruction in Cotton Debris.** Sarah Chu*¹, Eli Russell², Gaylon Morgan³, Benjamin McKnight¹, Robert Hardin¹, Peter Dotray⁴, Michael Flessner², Muthukumar Bagavathiannan¹. ¹Texas A&M University, College Station, TX; ²Virginia Tech, Blacksburg, VA; ³Cotton Incorporated, Cary, NC; ⁴Texas Tech University/Texas A&M Extension, Lubbock, TX. (195)
- 10:35 AM No Seeds, No Weeds: Making the Decisions at Right Time for Waterhemp (*Amaranthus tuberculatus*) Seedbank Management.** Navjot Singh* and Debalin Sarangi. University of Minnesota, St. Paul, MN. (196)
- 10:39 AM Kentucky Bluegrass (*Poa pratensis*) as a Perennial Cover Crop: Establishment and Weed Management in Corn.** Kiera Searcy*¹, Erin Haramoto¹, Matthew Allen¹, Travis Legleiter¹, Brandon Schlautman². ¹University of Kentucky, Lexington, KY; ²The Land Institute, Salina, KS. (197)
- 10:43 AM Measuring Honeybee Exposure to Fluorescent Pigment on Weedy Flowers Following Deterrent Treatments.** Navdeep Godara*, Shawn Askew, Juan Romero. Virginia Tech, Blacksburg, VA. (198)
- 10:47 AM Harnessing the Power of the Crop Canopy for Weed Control.** Sithin Mathew*, Henry Nelson, Aaron Lorenz, Debalin Sarangi. University of Minnesota, St. Paul, MN. (199)
- 10:51 AM Weed Control Using Tetflupyrolimet and Clomazone Mixtures in Rice.** Maranda Hains*, Connor Webster, Wesley Carr, Gavin Sparks, Eve Williams, Ben Stoker, Ronnie Levy. Louisiana State University AgCenter, Baton Rouge, LA. (200)
- 10:55 AM Integrating Limiting Similarity Theory with a Trait-Based Approach to Analyze Crop-Weed Competition.** Het Samir Desai*¹, Fabian Menalled¹, Lovreet Shergill². ¹Montana State University, Bozeman, MT; ²Colorado State University, Fort Collins, CO. (201)
- 10:59 AM Combining Early Flooding with a Pre-Emergence Herbicide for Weedy Rice Management in Wet-Direct Seeded Rice.** Vikas Tyagi*¹, Virender Kumar², Vijayakumar Shanmugam³, Nithya Subramanian¹,

Muthukumar Bagavathiannan¹. ¹Texas A&M University, College Station, TX; ²International Rice Research Institute (IRRI), Los Banos, Laguna, Philippines; ³IRRI, Hyderabad, India. (202)

- 11:03 AM Evaluating Integrated Weed Management Strategies for Soybean with Different Planting Dates.** Salina Raila*, Sarah Lancaster, Kriag Roozeboom, Gregory Ibendahl. Kansas State University, Manhattan, KS. (203)
- 11:07 AM No Pain with No Rye Grain. Evaluating Hairy Vetch Performance After Early, Selective Cereal Rye Termination.** Jenna Beville* and Michael Flessner. Virginia Tech, Blacksburg, VA. (204)
- 11:11 AM Herbicide Tolerance of Container-Grown Sweetpotato (*Ipomoea batatas*).** Samuel Crawford*¹, Katie Jennings¹, David Monks¹, David Jordan¹, Adrienne Gorny¹, Jonathan Schultheis¹, Levi Moore², Stephen Ippolito¹. ¹North Carolina State University, Raleigh, NC; ²Southeast Ag Research Inc., Chula, GA. (205)

TUESDAY MORNING FEBRUARY 25

ORAL – CWSS 15-Minute Student Contest

LOCATION: Port McNeil
TIME: 9:00 AM-2:30 PM Pacific
MODERATOR: Breanne Tidemann
Agriculture and Food Canada
Lacombe, AB

***SPEAKER**

- 9:00 AM Assessing Factors Driving Vegetation Trajectories and Plant Invasion Dynamics of Post-Wildfire Landscapes in the Interior of British Columbia, Canada.** Virginia Oeggerli* and Jennifer Grenz. University of British Columbia, Vancouver, BC. (206)

- 9:15 AM Documentation of Herbicide Resistance Evolution in Alabama *Amaranthus* spp.** Debra Smitherman*, David Russell, Eros Francisco, Claudia Ann Rutland, Jinesh Patel, Scott McElroy. Auburn University, Auburn, AL. (207)
- 9:30 AM Drone-based Inter-seeding of Cover Crop for Late Season and Post-harvest Weed Suppression in Southern Alabama Cotton Production Systems.** Wilfried Ouedraogo* and Aniruddha Maity. Auburn University, Auburn, AL. (208)
- 9:45 AM Revisiting the Critical Weed Free Period in Canola and Understanding how Agronomic Practices affect it.** Daniel Pouteau* and Robert Gulden. University of Manitoba, Winnipeg, MB. (209)
- 10:00 AM BREAK**
- 10:15 AM The Relationship Between Soybean Rooting Depth and Competitiveness with Weeds.** Joseph Zvomuya* and Robert Gulden. University of Manitoba, Winnipeg, MB. (210)
- 10:30 AM Evaluation of Cover Crops for Weed Control in Peanut.** Gourav Chahal*¹, Carter Bonnell², Andrew Price², Steve Li¹, Audrey Gamble¹. ¹Auburn University, Auburn, AL; ²USDA-ARS-NSDL, Auburn, AL. (211)
- 10:45 PM Enhancing Herbicide Metabolism in Winter Wheat with Cloquintocet-mexyl.** William Kramer*; Todd Gaines, Franck Dayan. Colorado State University, Fort Collins, CO. (212)
- 11:00 PM Impact of Sulfentrazone and Chlorimuron On Soybean Development In Soils with Different Textures and pH.** Joana Schroeder de Souza* and Anita Dille. Kansas State University, Manhattan, KS. (213)
- 11:15 PM Determining the Value of Common Turf Forbs as a Pollinator Resource in the Southeastern United States.** Sara Kirby*, JoVonn Hill, Jeff Harris, Jay McCurdy. Mississippi State University, Mississippi State, MS. (214)
- 11:30 PM LiDAR in Precision Agriculture: An Emerging Tool for Weed and Crop Growth Monitoring?** MD Pantha Azad Sabbyashachi*, Kristen MacMillan, Claudia

Quilesfogel-Esparza, Brodie Erb, Dilshan Benaragama. University of Manitoba, Winnipeg, MB. (215)

11:45 PM Parallel Evolution of the Metabolism-based Broad-spectrum Herbicide Resistance in Late Watergrass (*Echinochloa oryzicola*).

Tomomi Kubo*¹ Kentaro Yasuda², Kazusa Nishimura³, Yuichiro Nakayama⁴, Kaoru Mori⁵, Kenta Shirasawa⁶, Shunji Kurokawa¹, Akira Uchino⁷, Sumie Tanaka⁸, Masaya Ino⁹ Satoshi Iwakami¹⁰. ¹University of Kyoto, Kyoto, Japan; ²Akita Prefectural University, Minamiakita-Gun, Japan; ³Okayama University, Okayama, Japan; ⁴Osaka Metropolitan University, Sakai, Japan; ⁵Osaka Prefecture University, Sakai, Japan; ⁶Kazusa DNA Research Institute, Kisarazu, Japan; ⁷NARO, Tsu City, Japan; ⁸Ishikawa Ag and Forestry Research Center, Kanazawa, Japan; ⁹Ishikawa Minamikaga General Ag and Forestry Office, Komatsu, Japan; ¹⁰Tokyo University of Agriculture and Technology, Tokyo, Japan. (216)

12:00 PM LUNCH BREAK

1:00 PM Cover Crop Effects on Palmer Amaranth Weed Dynamics in Corn-Based Production Systems. Himani Ahlawat*, Hannah C. Lindell, Charles Smith III, Michael Bocz, Matthew Levi, Nandita Gaur, Nicholas Basinger. University of Georgia, Athens, GA. (217)

1:15 PM Differentiation of Male and Female Plants of Palmer Amaranth (*Amaranthus palmeri*) Using an RGB Sensor and Machine Learning Models: Detection and Classification. Bismark Anokye*, Ubaldo Torres, Bholuram Gurjar, Navjot Singh, Muthu Bagavathiannan. Texas A&M University, College Station, TX. (218)

1:30 PM Assessing Crop and Weed Management Impacts in Wheat Crop Through Drone-Based Remote Sensing. Shirmith Nirmal Kuruppu Arachchige Don*¹, Robert Gulden¹, Steve Shirliff², Dilshan Benaragama¹, Christian Willenborg². ¹University of Manitoba, Winnipeg, MB; ²University of Saskatchewan, Saskatoon, SK. (219)

1:45 PM Evaluation of *Brassica carinata* A. Braun Crop Safety to Potential Herbicide Programs. Avi Goldsmith*¹, Edmilson Almeida², April Dobbs³, Ramon Leon¹. ¹North

Carolina State University, Raleigh, NC;
²Federal University of Maranhao –
Chapadinha, Brazil; ³BASF Corporation,
Durham, NC. (220)

- 2:00 PM The Effect of Integrated Crop Management on Weed Growth, Phenology, and Weed Seed Persistence in Spring Wheat (*Triticum aestivum* L.).** Uthpala Ekanayake^{*1}, Robert Gulden¹, Chris Willenborg² Jonathan Rosset¹, Dilshan Benaragama¹. ¹University of Manitoba, Winnipeg, MB; ²University of Saskatchewan, Saskatoon, SK. (221)
- 2:15 PM Characterizing and Comparing the Soil Microbiomes of Invasive and Native plant Species to Inform Ecological Restoration.** Vanessa Jones* and Jennifer Grenz. University of British Columbia, Vancouver, BC. (222)
- 2:30 PM CWSS Annual General Meeting.** See more details on p. 62.

TUESDAY MORNING FEBRUARY 25

ORAL - 01. Agronomic Crops

LOCATION: Pavillion Ballroom D
TIME: 9:00 AM-5:00 PM Pacific
MODERATORS: Scott Nolte
 Texas A&M
 College Station, TX
 Laura Smith
 Corteva Agriscience
 West Lorne, ON

***SPEAKER**

- 9:00 AM Elucidating Competitive Interactions in a Multispecies Weed-Crop Mix.** Purushottam Gyawali*, Christoph von Redwitz, Muthukumar Bagavathiannan. Texas A&M University, College Station, TX. (223)
- 9:15 AM Effect of Planting Green on Weed Suppression and Ecosystem Services in**

Row Crop Production Systems. Humberto Blanco-Canqui and Amit Jhala*. University of Nebraska, Lincoln, NE. (224)

9:30 AM Weed Infestation in a Winter Wheat-Spring Pea Rotation: Insights from a Three-Year Study of Tillage Regimes in the Pacific Northwest. Vhuthu Ndou*¹, Fernando Oreja², Jennifer Gourlie¹, Stephen Machado¹, Larry Pritchett¹, Francisco Calderon¹, Judit Barroso¹. ¹Oregon State University, Adams, OR; ²Clemson University, Clemson, SC. (225)

9:45 AM Agricultural Practices and Social Perceptions Associated with the Presence of Wild Oat (*Avena fatua*) in the Bas-Saint-Laurent Region. Sandra Flores-Mejia*¹, Firmo Sousa¹, Gabriel Verret¹, Ayitre Akpakouma², Jalinets Navarro³, Marc Tétrault⁴, Yan Gosselin⁴, Eric Page⁵, Annie Marcoux⁶, Michel Dupuis⁷, Samuel Comtois⁸, Mario Handfield⁹. ¹CÉROM, Saint-Mathieu-de-Beloeil, QC; ²Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ), Rivière-du-Loup, Canada; ³MAPAQ, Amqui, Canada; ⁴Fédération de l'Union de producteurs agricoles du Bas-Saint-Laurent (FUPABSL), Rimouski, Canada; ⁵Agriculture and Agri-Food Canada, Harrow, ON; ⁶Laboratoire d'Expertise et de Diagnostic en Phytoprotection (LEDP-MAPAQ), Québec, Canada; ⁷Coordination services-conseils (CSC), Longueuil, Canada; ⁸Groupe Pleine-Terre, Napierville, Canada; ⁹Université du Québec à Rimouski (UQAR), Rimouski, Canada. (226)

10:00 AM BREAK

10:15 AM Weed Biology and Management in Changing Times: A Stakeholders Perspective from the Australian Grain Production Systems. Ali Bajwa*¹, Aakansha Chadha², Bill Grant². ¹La Trobe University, Blundora, Australia; ²Federation University, Ballarat, Victoria, Australia. (227)

10:30 AM Novel Weed Control Technologies for Australian Grain Production Systems. Michael Walsh*. Charles Sturt University, Wagga Wagga, NSW, Australia. (228)

10:45 AM Can Cotton Cover Crops be Integrated with Targeted Applications from See & Spray™? Tristen Avent*¹, Jason Norsworthy¹, Lane Pierce¹, Michael Dodde¹, Lauren

Lazaro². ¹University of Arkansas, Fayetteville, AR; ²Blue River Technologies, Sunnyvale, CA. (229)

- 11:00 AM Dose-response Analysis Using Multispectral UAV Imagery to Phenotype Herbicide Tolerance in Lentil.** Brianna Zoerb^{*1}, Hema Duddu², Steve Shirtliffe¹, Eric Johnson¹, Anjika Attanayake³. ¹University of Saskatchewan, Saskatoon, SK; ²Agriculture and Agri-Food Canada, Saskatoon, SK; ³BASF Corporation, Saskatoon, SK. (230)
- 11:15 AM Soybean (*Glycine max*) Canopy Response to Dicamba Using Remote Sensing.** Dylan R. Kerr^{*}, Juan D. Arbelaez, Nicolas F. Martin, Aaron Hager, Martin Williams. University of Illinois, Urbana, IL. (231)
- 11:30 AM HWSC as a Tool for Management of Herbicide-Resistant Weeds in Israel.** Baruch Rubin^{*1}, Idan S. Roth¹, Yossi Kashti², Moshe Sibony¹, Ohaliav Keisar², Eitan Goldshtein², Meitav Maor³. ¹RH Smith Institute, Rehovot, Israel; ²Institute of Agricultural and Biosystem Engineering, Volcani Center, Rishon L'eziyon, Israel; ³Extenson Service, Ministry of Agriculture and Food Security, Bayit Dagan, Israel. (232)
- 11:45 AM Variable Response of Canadian Kochia (*Bassia scoparia*) Accessions to Dichlorprop-P.** Charles Geddes^{*} and Austin Jaster. Agriculture and Agri-Food Canada, Lethbridge, AB. (233)
- 12:00 PM LUNCH BREAK**
- 1:00 PM Golden Pennycress (*Thlaspi arvense*) Tolerance to Herbicides Applied Preemergence.** Mark Bernards^{*}. USDA-ARS, Morris, MN. (234)
- 1:15 PM Evolutionary Origins and Spread of Herbicide Resistance in Downy Brome (*Bromus tectorum*) in Oregon.** Victor Ribeiro^{*1}, Joseph Gallagher², Carol Mallory-Smith¹, Judit Barroso³, Caio Brunharo⁴. ¹Oregon State University, Corvallis, OR; ²USDA-ARS, Corvallis, OR; ³OSU Columbia Basin Research Center, Adams, OR; ⁴Pennsylvania State University, University Park, PA. (235)
- 1:30 PM Palmer Amaranth and Waterhemp in the Pacific Northwest: Current Distribution and Herbicide Resistance Status.** Albert

Adjesiwor^{*1}, Joel Felix², Clarke Alder³, Olivia Landau⁴, Rui Liu⁵, Pamela Hutchinson⁶.

¹University of Idaho, Kimberly, ID; ²Oregon State University, Ontario, OR; ³Amalgamated Sugar, Boise, ID; ⁴USDA Wheat Health, Genetics Quality Research Unit, Pullman, WA;

⁵Washington State University, Prosser, WA;

⁶University of Idaho, Aberdeen, ID. (236)

1:45 PM Combining Residual Herbicides with Cover Crop for Palmer Amaranth Control. Ednaldo A. Borgato^{*1}, Eduardo Rudell², Sarah Lancaster³, Mithila Jugulam³, Anita Dille³.

¹University of Florida, Jay, FL; ²Michigan State University, East Lansing; ³Kansas State University, Manhattan, KS. (237)

2:00 PM Can Preemergence Applications of Dicamba Improve Weed Control in Soybean? Debalin Sarangi^{*1}, Sachin Dhanda¹, Navjot Singh¹,

Joseph Ikley², Ryan DeWerff³, Rodrigo Werle³.

¹University of Minnesota, St. Paul, MN; ²North Dakota State University, Fargo, ND; ³University of Wisconsin, Madison, WI. (238)

2:15 PM Optimizing ACCase-Inhibiting Herbicides and 2,4-D Tank Mixes for Volunteer Corn Control in Enlist® Soybean. Sachin Dhanda^{*1}, Ryan

Miller², Lisa Behnken¹, Thomas Hoverstad¹, Debalin Sarangi¹. ¹University of Minnesota, St. Paul, MN; ²UMN, Rochester, MN. (239)

2:30 PM Introducing INTERLINE® MEGA Powered by L-tek™ for Optimized L-glufosinate Applications to Glufosinate-tolerant Row and Specialty Crops. Ryan Bryant-Schlobohm^{*1},

Ryan Henry², Cody Gray³, Carlos Antonio Koury d'Arce Junior⁴. ¹UPL-Ltd, Amarillo TX; ²UPL-Ltd, Fort Wayne, IN; ³UPL-Ltd., Peyton, CO; ⁴UPL-Ltd., Raleigh, NC. (240)

2:45 PM Surtain™ Herbicide: Introduction of a New Residual Premix for Corn in Canada and USA. Chris Budd^{*1} and Sanjeev Bangarwa².

¹BASF Canada, London, ON; ²BASF Corporation, Research Triangle Park, NC. (241)

3:00 PM BREAK

3:15 PM Impact of Corn Residual Herbicides Containing Clopyralid on Alfalfa Establishment and Productivity in the Upper

Midwest. Arthur Franco Duarte, Mark Renz^{*}, Marta Kohmann. University of Wisconsin, Madison, WI. (242)

- 3:30 PM Additive and Synergistic Interactions of Tolpyralate and Bromoxynil on Some Key Weeds in Cereals.** Seshadri Reddy*. Corteva Agriscience, Indianapolis, IN. (243)
- 3:45 PM Introducing CAZADO: A Novel Gr 1 + 2 Herbicide for the Canadian Grower.** Melissa Ostash*. ADAMA Agricultural Solutions Canada, Onanole, MB. (244)
- 4:00 PM Twenty-Two Years Later: The Development of Herbicide Resistance in Herbicide-Tolerant Rice.** Bob Scott*¹, Jason Norsworthy¹, Lon Barber². ¹University of Arkansas, Fayetteville, AR; ²Division of Agriculture, Lonoke, AR. (245)
- 4:15 PM Tetflupyrolimet-Coated Fertilizer at Planting in Rice.** Gavin Sparks*, Connor Webster, Ronnie Levy, Maranda Hains, Ben Stoker, Wesley Carr, Eve Williams. Louisiana State University AgCenter, Baton Rouge, LA. (246)
- 4:30 PM Determining Rates of Activated Charcoal and Mixed-Conifer Biochar for Carbon Banding Applications in Grass Seed Production Systems.** Clint Mattox*. USDA-ARS, Corvallis, OR. (247)
- 4:45 PM Business Meeting**

TUESDAY MORNING FEBRUARY 25

ORAL - 09. Weed Biology and Ecology

LOCATION: Pavillion Ballroom C

TIME: 9:00 AM-2:30 PM Pacific

MODERATORS: Sarah Kezar
Cornell University, Ithaca, NY
Marie-Josée Simard
Agriculture and Food Canada
Saint-Jean-sur-Richelieu, QC

***SPEAKER**

- 9:00 AM An Invasive Species or a Weed? Managing *Gazania* (*Gazania* spp.) in Southern Australia.** Ali Bajwa*, Mohammed Adnan, Babar Shahzad. La Trobe University, Melbourne, Australia. (248)
- 9:15 AM Phenotypic Differentiation of the Global Invader *Parthenium hysterophorus*: Insights from a Multi-State Common Garden Experiment.** Sarah Kezar¹, Matthew Cutulle², Liberty Galvin³, Jenny Kao-Kniffin¹, Muthu Bagavathiannan⁴, Megan Schill⁴, Purushottam Gyawali¹, Tyler Campbell², Ty Shreve³, Antonio DiTommaso¹. ¹Cornell University, Ithaca, NY; ²Clemson University, ²Clemson, SC; ³Oklahoma State University, Stillwater, OK; ⁴Texas A&M University, College Station, TX. (249)
- 9:30 AM Climate Change and the Spread of Knotweed (*Reynoutria* spp.) by Flooding.** Sarah Demian*, Aidan Anderson, David Clements, Jaylene Braithwaite, Lauren Mckenna, Hannah Munnall. Trinity Western University, Langley, BC. (250)
- 9:45 AM *Ambrosia grayi* as a New Alien Causal Species in Israel: Plant Biology and Chemical Management.** Danielle Neta¹*, Jackline Abu-Nassar², Nadav Ezra³, Daniella Cafri³, Izhak David³, Ilana Shtein⁴, Hanan Eizenberg², Maor Matzrafi². ¹The Faculty of Sciences, Tel-Hai College, Upper Galilee, Israel; ²Newe Ya'ar Research Center, Agricultural Research Organization-Volcani Institute, Ramat Yishai, Israel; ³Ministry of Agriculture and Rural Development, Rison Lezion, Israel; ⁴Eastern R&D Center, Milken Campus, Ariel, Israel. (251)
- 10:00 AM BREAK**
- 10:15 AM Biological Nitrification Inhibition Potential in Johnsongrass: Insights into Rhizosphere Dynamics.** Megan Schill*, Nithya Subramanian, Nithya Rajan, Muthukumar Bagavathiannan. Texas A&M University, College Station, TX. (252)
- 10:30 AM Germination Moisture and Temperature Requirements of Italian Ryegrass (*Lolium multiflorum*).** Chandra Montgomery*, Traci Rauch, Albert Adjesiwor, Joan Campbell. University of Idaho, Moscow, ID. (253)

- 10:45 AM Can We Leverage Seed Microbiomes to Accelerate Weed Seed Mortality in the Soil Seedbank?** Kara Eckert, Sharifa Crandall, Eric Larson, Estelle Couradeau, Carolyn Lowry*. Pennsylvania State University, University Park, PA. (254)
- 11:00 AM Are Endophytes Associated with Development and Expression of Herbicide Resistance in Italian Ryegrass?** Aniruddha Maity*¹, Rakesh Ghosh¹, Nisith Nishank Purohit¹, Anthony Adesemoye². ¹Auburn University, Auburn, AL; ²USDA-ARS NSDL, Auburn, AL. (255)
- 11:15 AM Indaziflam Resistance in *Poa annua*: Recent Findings and Next Steps.** Joshua Miranda* and Marcelo Moretti. Oregon State University, Corvallis, OR. (256)
- 11:30 AM Hybrids and BC Progeny Between Waterhemp (*Amaranthus tuberculatus*) and Green Pigweed (*A. powellii*) Often Look Like Waterhemp.** Marie-Josée Simard*¹, Martin Laforest¹, Sara Martin², Amélie Picard³, David Miville³. ¹Agriculture and Agri-Food Canada, St-Jean-Sur-Richelieu, QC; ²Agriculture and Agri-Food Canada, Ottawa, ON; ³Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec, Québec, QC. (257)
- 11:45 AM Altering the Critical Time of Weed Removal in Soybean Using Residual Herbicides.** Ben Stoker*, Daniel Stephenson, Connor Webster, James Villegas, Ronnie Levy, Maranda Hains, Gavin Sparks, Wesley Carr, Eve Williams. Louisiana State University AgCenter, Baton Rouge, LA. (258)
- 12:00 PM LUNCH BREAK**
- 1:00 PM Managing Weed and Crop Competition to Optimize Production in the Perennial Grain Kernza (*Thinopyrum intermedium*).** Natasha Djuric*¹, Antonio DiTommaso¹, Jake Jungers², José Franco³, Laura van der Pol⁴, Timothy Crews⁴, Leonardo Deiss⁵, Steve Culman⁶, Matthew R. Ryan¹. ¹Cornell University, Ithaca, NY; ²University of Minnesota, St. Paul, MN; ³Savannah Institute, Spring Green, WI; ⁴The Land Institute, Salina, KS; ⁵Colorado State University, Fort Collins, CO; ⁶Oregon State University, Corvallis, OR. (259)
- 1:15 PM Kochia Ecology: Light and Density Considerations.** Shaun Sharpe*, Kyle

Rosvold, Leonard Chester, Shaelyn St. Jacques. Agriculture and Agri-Food Canada, Saskatoon, SK. (260)

- 1:30 PM Elucidating the Influence of Root Traits on Sorgoleone Production in Johnsongrass (*Sorghum halepense*).** Ainsley Graham*, Megan Schill, Nithya Rajan, Sakiko Okumoto, Muthukumar Bagavathiannan. Texas A&M University, College Station, TX. (261)
- 1:45 PM Increasing Cropland Biodiversity Using a Novel Multi-Seed Pelleting System.** Linnea Smith, Antonio DiTommaso*, John Losey, Alan Taylor, Michael Loos, Todd Ugone. Cornell University, Ithaca, NY. (262)
- 2:00 PM Establishing Flower Strips near Agricultural Fields with Minimal Weed Management.** Sophie Westbrook*¹, Rebecca Stup², Scott Morris², Todd Ugone², Antonio DiTommaso².
¹Kansas State University, Manhattan, KS;
²Cornell University, Ithaca, NY. (263)
- 2:15 PM Business Meeting**

TUESDAY AFTERNOON FEBRUARY 25

ORAL – 06. Regulatory Aspects

LOCATION: Parksville
TIME: 2:30-3:00 PM Pacific
MODERATORS: Bianca Assis Barbosa Martins
Bayer Crop Science
Frankfurt, Germany
Leonardo Galindo-Gonzalez
Canadian Food Inspection
Agency, Ottawa, ON

***SPEAKER**

- 2:30 PM Summary of the Final Report of EPA's Pesticide Program Dialogue Committee (PPDC) Resistance Management Workgroup 2.0.** Cameron Douglass¹, Nikhil Mallampalli², Derek Berwald³, David Shaw⁴, Amy Asmus⁵, Jill Schroeder*⁶, Elyssa Arnold¹, Elizabeth 'Libby' Karn², George Frisvold⁷. ¹USDA-OPMP,

Washington, DC; ²EPA-OPP, Washington, DC; ³EPA, Washington, DC; ⁴Mississippi State University, Mississippi State, MS; ⁵Asmus Farm Supply, Inc., Rake, IA; ⁶New Mexico State University, Las Cruces, NM; ⁷University of Arizona, Tucson, AZ. (264)

2:45 PM The Relative Importance of Herbicide Use for Conservation Tillage Adoption by U.S. Corn and Soybean Producers. Cameron Douglass*¹, Fengxia Dong², Ryan Olver³, Rebecca Nemec⁴, Michelle Ranville¹. ¹USDA-OPMP, Washington, DC; ²USDA-ERS, Kansas City, MO; ³Tokyo International University, Tokyo, Japan; USDA, ⁴Office of the Chief Economist, Washington, DC. (265)

TUESDAY AFTERNOON FEBRUARY 25

ORAL – 08. Formulation, Adjuvants, and Application Technologies

LOCATION: Parksville
TIME: 3:15-4:30 PM Pacific
MODERATORS: Peter Berry
Oregon State University
Corvallis, OR
Cody Chytk
Corteva Agriscience
Saskatoon, SK

***SPEAKER**

3:15 PM Can We Enhance Glufosinate Efficacy in Low-Humidity Environments? Het Samir Desai¹, Franck Dayan², Fabian Menalled¹, Lovreet Shergill*². ¹Montana State University, Bozeman, MT; ²Colorado State University, Fort Collins, CO. (266)

267-Withdrawn

3:30 PM Does Tank Mixing Palisade with Axial Bold Reduce Wild Oat and Control Lodging in Wheat? Hafiz Haider Ali*, Jared Spackman, Macy Rankin, Tom Jacobsen, Pamela

Hutchinson. University of Idaho, Moscow, ID.
(268)

3:45 PM Rotational Crop Response of OnDeck™ Herbicide (tolpyralate/bromoxynil) to Sugar Beet (*Beta vulgaris*) in Canada and Northern United States. Cody Chytk*¹, Kevin Falk², Rory Degenhardt³, Kris Guenette³, Joe Yenish⁴. ¹Corteva Agriscience, Saskatoon, SK; ²Corteva, Winnipeg, MB; ³Corteva, Edmonton, AB; ⁴Corteva, Bozeman, MT. (269)

4:00 PM Harnessing Machine Learning and Satellite Imagery to Combat Sub-Field Kochia Weed in Canada's Prairies. Thuan Ha*, Japjyot Sandhu Singh, Kwabena Nketia, Sarah van Steenberg, Hansanee Fernando, Steve Shirliffe. University of Saskatchewan, Saskatoon, SK. (270)

4:15 Business Meeting

TUESDAY AFTERNOON FEBRUARY 25

SYMPOSIUM - 01. Contribution of Genomics to Nontarget Site Resistance Knowledge and Management

LOCATION: Pavillion Ballroom AB
TIME: 1:00-5:00 PM Pacific
MODERATORS: Roland Beffa
Independent Scientist
Frankfurt, Germany
Caio Brunharo
Penn State University
University Park, PA

***SPEAKER**

1:00 PM Symposium Welcome. Caio Brunharo and Roland Beffa. (271)

1:15 PM Identification and Naming of Cytochrome P450 Genes in Weed Genomes. Todd Gaines*¹, Fatemeh Abdollahi¹, Eric Patterson², David R. Nelson³. ¹Colorado State University, Fort Collins, CO; ²Michigan State University,

East Lansing, MI; ³University of Tennessee, Memphis, TN. (272)

- 1:30 PM Breaking the Weed Cycle: The Potential of Using AI and Genomics to Predict Metabolic Resistance.** Lucas Bobadilla*. Corteva Agriscience, Indianapolis, IN. (273)
- 1:45 PM Cytochrome P450s In Herbicide Detoxification: Functional Validation Strategies and Examples.** Satoshi Iwakami*. Tokyo University of Agriculture and Technology, Fuchu, Japan. (274)
- 2:00 PM Non-Target Site Resistance in Palmer Amaranth (*Amaranthus palmeri*) and P450 Reductase Functional Validation.** Carlos Rigon*. Corteva Agriscience, Indianapolis, IN. (275)
- 2:15 PM A Combined Transcriptomic and Metabolomic Approach to Understanding the Impact of Drought Stress on Glyphosate Resistance in Horseweed (*Erigeron canadensis* L.).** Michael Ozolins*¹, Eric Patterson¹, Sara Álvarez Rodríguez¹, Mohit Mahey¹, Ahmed Tansel Serim². ¹Michigan State University, East Lansing, MI; ²Bilecik Şeyh Edebali Üniversitesi, Bilecik Merkez, Turkey. (276)
- 2:30 PM Role of GSTome (Gluthatione-S-Transferases) in Herbicide Detoxification. Example of Resistance to Group 15 in Grasses.** Roland Beffa*. Frankfurt, Germany. (277)
- 2:45 PM Target Site and Non-Target Site Resistance Epidemiology: The Example of Black-Grass.** David Comont*. Rothamsted Research, Harpenden, United Kingdom. (278)
- 3:00 PM BREAK**
- 3:15 PM The Importance of Polygenic Contributions to Herbicide Resistance Across the Landscape in *Amaranthus tuberculatus*.** Julia Kreiner*. University of Chicago, Chicago, IL. (279)
- 3:30 PM How to Mitigate Non-Target Site Resistance Evolution Compared to Target Site Resistance.** Sarah Lancaster*. Kansas State University, Manhattan, KS. (280)
- 3:45 PM Set Up of Genetic Marker Tests to Detect and Manage Herbicide Resistant Weeds.** Martin

Laforest*. Agriculture and Agri-Food Canada,
Saint-Jean-sur-Richelieu, QC. (281)

**4:00 PM Herbicide Multiple and Cross Resistance:
How to Define and How Do They Occur?**
Patrick Tranel*. University of Illinois, Urbana, IL.
(282)

4:15 PM Symposium Discussion. Caio Brunharo and
Roland Beffa. (283)

TUESDAY AFTERNOON FEBRUARY 25

**Canadian Weed Science Society
Annual General Meeting**

LOCATION: Port McNeil
TIME: 2:30-3:00 PM Pacific
MODERATOR: Robert Nurse
Agriculture and Agri-Food
Canada, Harrow, ON

TUESDAY AFTERNOON FEBRUARY 25

**Graduate Student Workshop: Protein Modeling of
Herbicide Resistance: From Mutation to
Resistance**

LOCATION: Pavillion Ballroom C
TIME: 4:45-6:15 PM Pacific
MODERATOR: William Kramer
Colorado State University
Fort Collins, CO
Isabel Schlegel Werle
University of Illinois
Urbana-Champaign, IL

Featured Speakers: Crystal Sparks, Enko Chem and
Jacob Montgomery, University of Chicago.

TUESDAY AFTERNOON FEBRUARY 25

IWGC Membership Meeting

LOCATION: Parksville
TIME: 5:00-6:00 PM Pacific
MODERATOR: Todd Gaines
Colorado State University
Fort Collins, CO

Saskatchewan Pulse Growers

LOCATION: Port Alberni
TIME: 5:00-6:00 PM Pacific
MODERATOR: Racquelle Peters
University of Saskatchewan
Saskatoon, SK

TUESDAY EVENING FEBRUARY 25

**Dine-Around Events: Sign-up sheets by
Registration**

LOCATION: Meet in Lobby
TIME: 7:00 PM Pacific
MODERATOR: Jichul Bae
Agriculture and Agri-Food
Canada, Agassiz, BC

WEDNESDAY MORNING FEBRUARY 26

Presidents' Breakfast

LOCATION: Constellation
TIME: 6:30-8:00 AM Pacific
MODERATOR: Greg Dahl
Retired, Winfield United
Eagan, MN

WEDNESDAY MORNING FEBRUARY 26

Judges Work Room

LOCATION: Constellation
TIME: 9:00 AM-5:00 PM Pacific

WEDNESDAY MORNING FEBRUARY 26

Poster Session - Even Numbers

LOCATION: Junior Ballroom
ABCD/Foyer
TIME: 7:00-9:00 AM Pacific
MODERATORS: Darrin Dodds
Mississippi State University
Mississippi State, MS
Marty Schraer
Syngenta Crop Protection,
Meridian, ID
Lovreet Shergill
Colorado State University
Fort Collins, CO
Vanessa Jones
University of British Columbia
Vancouver, BC

Virginia Oeggerli
University of British Columbia
Vancouver, BC

All Competition Posters will be judged on Tuesday.

Authors with odd-numbered posters will be present on Tuesday. Authors with even-numbered posters will be present on Wednesday.

WEDNESDAY MORNING FEBRUARY 26

SST - SST PhD - Finals

LOCATION: Pavillion Ballroom AB
TIME: 9:00-9:30 AM Pacific
MODERATOR: Darrin Dodds
Mississippi State University
Mississippi State, MS

WEDNESDAY MORNING FEBRUARY 26

SYMPOSIUM - 02. Not your Old Professor's Journals: Rapid Change in Academic Publishing

LOCATION: Pavillion Ballroom D
TIME: 9:30 AM-12:00 PM Pacific
MODERATORS: Sarah Ward
Montana State University
Bozeman, MT
Christian Willenborg
University of Saskatchewan
Saskatoon, SK

***SPEAKER**

- 9:30 AM** **Welcome.** Christian Willenborg*. (284)
- 9:35 AM** **The Evolving Publishing Landscape.** Catherine Hill*. Cambridge University Press, Cambridge, England. (285)
- 10:15 AM** **Publishing Your Research: How Not to Get Scammed.** Sarah Ward*. (286)
- 11:00 AM** **From Manuscript to Submission to Final Publication: What Happens?** Christian Willenborg*. (287)
- 11:15 AM** **The Role of the Editor-In-Chief.** William Vencill*. University of Georgia, Athens, GA. (288)
- 11:25 AM** **Vital Gatekeepers: Associate Editors and Reviewers.** Sarah Ward*. (289)
- 11:40 AM** **Ask the Experts-Panel.** Sarah Ward, Christian Willenborg, William Vencill, Jason Norsworthy¹, Antonio DiTommaso², Tracy Candelaria³, Catherine Hill. ¹University of Arkansas, Fayetteville, AR; ²Cornell University, Ithaca, NY; ³WSSA Journal Managing Editor, Denver, CO. (290)

WEDNESDAY MORNING FEBRUARY 26

Oral 13. Integrated Weed Management

LOCATION: Pavillion Ballroom C

TIME: 9:00 AM-3:00 PM Pacific

MODERATORS: Ian Burke
 Washington State University
 Pullman, WA
 Dilshan Benaragama
 University of Manitoba
 Winnipeg, MB

***SPEAKER**

- 9:00 AM** **Species and Growth Stage Influence the Efficacy of Thermal Weed Control with Mid-Infrared Radiation.** Ryan Hamberg* and Muthukumar Bagavathiannan. Texas A&M University, College Station, TX. (291)

- 9:15 AM Exploring Machine Learning Applications for Herbicide Effectiveness and Resistance Studies.** Akhilesh Sharma*, Sarah Kezar, Vipin Kumar, Antonio DiTommaso, Magdalena Julkowska. Cornell University, Ithaca, NY. (292)
- 9:30 AM Harnessing Remote Sensing and Machine Learning Tools for Oat Cultivar Selection: Optimizing Yields Under Weed Competition.** Dilshan Benaragama*¹, Breanna Senetza², Steve Shirtliffe², Christian Willenborg².
¹University of Manitoba, Winnipeg, MB; ²University of Saskatchewan, Saskatoon, SK. (293)
- 9:45 AM Impact of Interrow Mower, Electric Weeder, and Seed Impact Mill on Weed Seedbank Management in Soybean.** Preetaman Bajwa*, Vipin Kumar, Henrique Scatena, Christopher Pelzer, Matthew R. Ryan. Cornell University, Ithaca, NY. (294)
- 10:00 AM BREAK**
- 10:15 AM Weed and Soil Biological Responses to Zasso Electrical Weeding.** Aleah Butler-Jones*¹, Elizabeth Maloney¹, John Owens², Gregory Peck², Kyle Wickings¹, Bradley Hanson³, Marcelo Moretti⁴, Lynn Sosnoskie¹.
¹Cornell University, Geneva, NY; ²Cornell University, Ithaca, NY; ³University of California, Davis, CA; ⁴Oregon State University, Corvallis, OR. (295)
- 10:30 AM Weed Between the Lines: Inter-row Mowing for Weed Control in Organic Reduced-tillage Corn and Soybean.** Matthew R. Ryan*¹, Erin Silva², Ben Brockmueller², Antonio DiTommaso¹, Emily G. McFadden¹, Uriel D. Menalled¹, Christopher J. Pelzer¹, Annika V. Rowland¹, Nazir Adam Sharifi¹, Lynn Sosnoskie³, Sam Wallace¹, Eric Youngerman¹.
¹Cornell University, Ithaca, NY; ²University of Wisconsin, Madison, WI; ³Cornell University, Geneva, NY. (296)
- 10:45 AM Ecological Impact of Weed Management Programs Using a Targeted Sprayer in Corn and Soybean in Kansas.** Anita Dille*¹, Joaquin Enrria¹, Maxwell Oliveira². ¹Kansas State University, Manhattan, KS; ²BASF Digital Farming GmbH, Koeln, Germany. (297)
- 11:00 AM Suitability of Chaff Lining in Western Canada.** Breanne Tidemann*¹, Charles

Geddes², Brett Mollison³, Jeff Schoenau⁴, Joy Agnew⁵, Michael Walsh⁶. ¹Agriculture and Agri-Food Canada, Lacombe, AB; ²Agriculture and Agri-Food Canada, Lethbridge, AB; ³Agriculture and Agri-Food Canada, Melfort, SK; ⁴University of Saskatchewan, Saskatoon, SK; ⁵Red Deer Polytechnic, Red Deer, AB; ⁶Charles Sturt University, Wagga Wagga, Australia. (298)

11:15 AM Integrated Pest Management Practice Adoption on Cropland in the Conservation Effects Assessment Project (CEAP). Brianna Henry*. USDA-NRCS, Richmond, VA. (299)

11:30 AM Advancing Sustainable Weed Management in Oklahoma Wheat Production: Current Strategies and Future Directions. Swati Shrestha*, Amna Dar, Itunuoluwa Adegbite, Liberty Galvin, Connor Cox. Oklahoma State University, Stillwater, OK. (300)

11:45 AM Integrated Giant Ragweed (*Ambrosia trifida* L.) Management with Cover Crop, Tillage, and Herbicide Programs. Datta Chiruvelli^{*1}, Roger Becker¹, Amit Jhala², Gregg Johnson¹, Thomas Peters³, Dave Moeller¹, Debalin Sarangi¹. ¹University of Minnesota, St. Paul, MN; ²University of Nebraska, Lincoln, NE; ³North Dakota State University, Fargo, ND. (301)

12:00 PM LUNCH BREAK

1:00 PM Implications of Cover Crop Management Decisions on *Amaranthus* Species Density and Biomass in Temperate Cropping Systems: A Meta-analysis. Vipin Kumar¹, Mandeep Singh¹, Resham Thapa², Ankit Yadav^{*1}, Humberto Blanco-Canqui¹, Samuel Wortman¹, Saleh Taghvaeian¹, Amit Jhala¹. ¹University of Nebraska, Lincoln, NE; ²Tennessee State University, Nashville, TN. (302)

1:15 PM Palmer Amaranth (*Amaranthus palmeri*) Flowering Timing Adaptation May be a Threat to Harvest Weed Seed Control. Eli Russell*, Michael Flessner, James Westwood, David Haak. Virginia Tech, Blacksburg, VA. (303)

1:30 PM Palmer Amaranth Emergence After 5 Years of Integrated Weed Management in Cotton. Cory Ketchum^{*1}, Jason Norsworthy¹, Lon Barber², Amar Godar¹, Rodger Farr³, Ty Smith¹, Tristen Avent¹. ¹University of Arkansas,

Fayetteville, AR; ²University of Arkansas
Division of Agriculture, Lonoke, AR; ³Bayer
Crop Science, Wellfleet, NE. (304)

- 1:45 PM Evaluating Reduced Herbicide Inputs in Corn Following Hairy Vetch, Hairy Vetch + Cereal Rye, or Winter Fallow.** Jenna Beville* and Michael Flessner. Virginia Tech, Blacksburg, VA. (305)
- 2:00 PM Straight Coulters Improve Seed Placement and Lower Weed Populations in Organic No-Till Soybeans.** Erin Silva*, Ben Brockmueller, Brian Luck. University of Wisconsin, Madison, WI. (306)
- 2:15 PM Soybean Growth and Yield as Impacted by Row Spacing and Layered Residual Herbicide Program.** Sithin Mathew*, Aaron Lorenz, Seth Naeve, Vasudha Sharma, Debalin Sarangi. University of Minnesota, St. Paul, MN. (307)
- 2:30 PM Why Should We Rotate Crops? A Case Study of Maize and Winter Wheat.** Milan Brankov*¹, Milena Simić¹, Milos Zaric². ¹Maize Research Institute, Zemun Polje, Belgrade, Serbia; ²University of Nebraska, North Platte, NB. (308)
- 2:45 PM Business Meeting**

WEDNESDAY MORNING FEBRUARY 26

ORAL - 11. Physiology

LOCATION: Port McNeil
TIME: 9:00-11:15 AM Pacific
MODERATORS: Carlos Rigon
Corteva Agriscience
Indianapolis, IN
Eric Page
Agriculture and Agri-Food
Canada, Harrow, ON

***SPEAKER**

- 9:00 AM Effects of Mevalocidin, an Herbicidal Fungal Metabolite, on the Plant Mevalonic Acid Pathway.** Stephen Duke*¹, Joanna Bajsa-Hirsch², Hemant Lata¹, Mei Wang², Joseph Lee¹, Amar Chittiboyina², Pankaj Pandey¹, Cedric Pearce³. ¹National Center for Natural Products Research, Oxford, MS; ²USDA-ARS, Oxford, MS; ³Mycosynthetix, Inc., Hillsborough, NC. (309)
- 9:15 AM Does Size Matter? Deletions in IAA2 in Brassicaceae Weed Species in Australia Result in Resistance to 2,4-D.** Christopher Preston*, Yuanlin Qi, Jenna Malone, Matthew Tucker, Mahima Krishnan. Adelaide University, Adelaide, Australia. (310)
- 9:30 AM Dissecting Target and Non-Target Site Mechanisms of Glyphosate Resistance in *Conyza canadensis*.** Eric Page*¹, Sara Martin², Sydney Meloche¹, Martin Laforest³. ¹Agriculture and Agri-Food Canada, Harrow, ON; ²Agriculture and Agri-Food Canada, Ottawa, ON; ³Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Canada, Québec. (311)
- 9:45 AM Discovery and Optimization of Novel Graminicide Inhibitors with Residual Control of Multiple Herbicide Resistant Grasses.** Karthik Putta*, David Lauffer, Paolo Castiglioni, Crystal Sparks, Heather Coffey, Johnson Jutson, Brendan Noons, Brittany Baisch, Kumar Ashtekar, Balaji Aravindhnan Pandian. ENKO, Mystic, CT. (312)
- 10:00 AM BREAK**
- 10:15 AM Metabolism of S-Metolachlor in Multiple Herbicide-Resistant Palmer Amaranth (*Amaranthus palmeri*) Populations.** Jeanafior Concepcion¹, Shiv Kaundun², James Morris², Michael La Frano³, Alexander Ulanov¹, Dean Riechers*¹. ¹University of Illinois, Urbana, IL; ²Syngenta Ltd., Bracknell, UK; ³Salk Institute for Biological Studies, La Jolla, CA. (313)
- 10:30 AM KYMINASHI Crop Plant Booster - A Myth or Reality on Weeds, Input Saving and Higher Crop Yields.** Samunder Singh*. Micro Irrigation and Command Area Development Authority, Haryana, India. (314)
- 11:00 AM Harnessing Plant Images to Diagnose Herbicide Modes of Action.** Tae-Kyeong Noh* and Do-Soon Kim. College of Agriculture and

WEDNESDAY MORNING FEBRUARY 26

ORAL – 10. Biocontrol

LOCATION: Port McNeil
TIME: 11:15 AM-12:00 PM Pacific
MODERATORS: Marcelo Moretti
Oregon State University
Corvallis, OR
Alida Janmaat
University of the Fraser Valley
Abbotsford, BC

***SPEAKER**

11:15 AM Rapid and Accurate Characterization of Target Genes for Genetic Biocontrol of Invasive Aquatic Plant Species. Ping Gong* and Seung Ho Chung. US Army Engineer Research and Development Center, Vicksburg, MS. (316)

11:30 AM Innovative MOA for Controlling Resistant Weed Seed Bank. Ido Shwartz*, Amit Koch, Efrat Lidor Nili, Orly Noivirt-Brik. WeedOUT, Nes Ziona, Israel. (317)

11:45 AM Business Meeting

WEDNESDAY AFTERNOON FEBRUARY 26

**SYMPOSIUM-03. Description of the EPA's
Herbicide Strategy, Communication Resources,
and Scientific Information Useful to Regulators**

LOCATION: Pavillion Ballroom D
TIME: 1:00-5:00 PM Pacific
MODERATORS: Bill Chism
Retired, EPA
Point of Rocks, MD

***SPEAKER**

- 1:00 PM Welcome.** Bill Chism*. (318)
- 1:10 PM Herbicide Strategy Implementation: Labels, Bulletins, and Websites.** Melanie Briscoe*, U.S. Environmental Protection Agency. (319)
- 1:35 PM Bulletins Live! Two (BLT): An Introduction to Pesticide Use Limitation Areas.** Annie Krueger*. Compliance Services International, Albuquerque, NM. (320)
- 2:00 PM The Role of National Marine Fisheries Service in ESA Pesticide Consultations.** Ryan Dewitt*. National Marine Fisheries, Seattle, WA. (321)
- 2:25 PM The Role of the U.S. Fish and Wildlife Service in the Pesticide Consultation Process and Incorporation of EPA's Herbicide Strategy.** Kathryn Bissell*. U.S. Fish and Wildlife Service, Falls Church, VA. (322)
- 2:50 PM Communication, Education and Outreach.** Bill Chism*. (323)
- 3:05 PM BREAK**
- 3:20 PM Pesticide Use Limitation Areas (PULAs) – Implications and Collaborations to Improve the Mapping Process.** Taylor Randell-Singleton*. University of Georgia, Tifton, GA. (324)
- 3:40 PM Runoff Mitigation Menu and Calculator and Spray Drift Mitigation.** Frank Farruggia*, U.S. EPA. (325)
- 4:10 PM Washington State Department of Agriculture's Response to ESA Pesticide**

Label Changes. Abigail Nickelson*.
Washington State Department of Agriculture,
Tieton, WA. (326)

4:30 PM Summary. Bill Chism*. (327)

WEDNESDAY AFTERNOON FEBRUARY 26

**ORAL - 14. Targeted and Autonomous Weed
Control Technologies**

LOCATION: Pavillion Ballroom AB
TIME: 1:00-4:45 PM Pacific
MODERATORS: Lauren Lazaro
Blue River Technologies
Sunnyvale, CA
Shaun Sharpe
Agriculture and Agri-Food
Canada, Saskatoon, SK

***SPEAKER**

**1:00 PM Spectral Discrimination of Weed Species in
Grass Seed Production in the Willamette
Valley, OR.** Iram Mujahid Iqbal*, Jing Zhou,
Carol Mallory-Smith, Pete Berry. Oregon State
University, Corvallis, OR. (328)

1:15 PM AI-Driven Weed Managing Mobile Robot. Woo
Soo Kim*. School of Mechatronic Systems
Engineering, Global Institute for AgriTech, Simon
Fraser University, Surrey, BC. (329)

**1:30 PM Precision Weed Control: Mitigating Atrazine
Use with See and Spray™ Technology.**
Michael Dodde*¹, Jason Norsworthy¹, Ryan
Henry², Lawrence Steckel³, Wesley Everman⁴,
Bryan Young⁵, Diego Contreras⁶, Marcelo
Zimmer⁵, Jared Buck³, Tristen Avent¹, Lane
Pierce¹. ¹University of Arkansas, Fayetteville,
AR; ²UPL-Ltd., Fort Wayne, IN; ³University of
Tennessee, Jackson, TN; ⁴Iowa State
University, Ames, IA; ⁵Purdue University, West
Lafayette, IN; ⁶North Carolina State University,
Raleigh, NC. (330)

**1:45 PM Spatial and Temporal Patterns of Weed
Distribution in Strawberry Fields:**

Opportunities for Variable-Rate Application of Preemergence Herbicides. Alex

Rodriguez*¹, Renato Herrig Furlanetto¹, Arnold W. Schumann², Amr Abd-Elrahman³, Nathan Boyd¹. ¹Gulf Coast Research and Education Center, University of Florida, Wimauma, FL; ²Citrus Research and Education Center, Lake Alfred, FL; ³Gulf Coast REC, Plant City, FL. (331)

2:00 PM Revolutionizing Weed Management in Vegetable Crops: Efficacy and Crop Response with Laser Weeding in New Jersey Succulent Pea and Spinach. Thierry Besançon* and Lynn Sosnoskie. Rutgers University, Chatsworth, NJ; Cornell University, Geneva, NY. (332)

2:15 PM Midwest Weeds in Focus: Assessing the Performance of Yolov10 and Yolov11 for Weed Detection on a New Regional Dataset. Mandeep Singh*, Yeyin Shi, Amit Jhala. University of Nebraska, Lincoln, NE. (333)

2:30 PM Robots with Freaking Laser Beams: Evaluating the Performance of Laser Weeding in NY Beet, Pea, and Spinach. Lynn Sosnoskie* and Thierry Besançon. Cornell University, Geneva, NY; Rutgers University, Chatsworth, NJ. (334)

2:45 PM Identifying Weed Species in Mint Using Aerial Imagery and Artificial Intelligence. Pete Berry* and Jing Zhou. Oregon State University, Corvallis, OR. (335)

3:00 PM BREAK

3:15 PM 3D Reconstruction and Modelling of Weeds: An Integration Across Computer Graphics, Artificial Intelligence, and Plant Phenotyping. Joe Johnson* and Muthu Bagavathiannan. Texas A&M University, College Station, TX. (336)

3:30 PM Targeted Step-Rates: A Case Study Using Glufosinate and See & Spray™ Technology to Deliver a Step Change in Weed Management. William Patzoldt*¹, Michael Houston¹, Jesaelen Moraes¹, Lauren Lazaro², Chad Lammers³, Jess Spotanski³, Tristen Avent⁴, Jason Norsworthy⁴, Marcelo Zimmer⁵, Bryan Young⁵, Diego Contreras⁶, Wesley Everman⁷, Jared Buck⁸, Lawrence Steckel⁸. ¹Blue River Technology, Santa Clara, CA; ²BRT, Sunnyvale, CA; ³Midwest Research, York, NE;

⁴University of Arkansas, Fayetteville, AR; ⁵Purdue University, West Lafayette, IN; ⁶North Carolina State University, Raleigh, NC; ⁷Iowa State University, Ames, IA; ⁸University of Tennessee, Jackson, TN. (337)

3:45 PM Targeted Broadleaf Weed Control in Florida Strawberry. Nathan Boyd*¹, Arnold W. Schumann², Renato Furlanetto¹, Ana Claudia Buzanini¹. ¹Gulf Coast Research and Education Center, University of Florida, Wimauma, FL; ²Citrus Research and Education Center, Lake Alfred, FL. (338)

4:00 PM Drone-Delivered Herbicides: Comparing Clopyralid Efficacy Across Application Techniques and Water Volumes. Kevin Falk*¹, Rory Degenhardt², Angela Fawcett³. ¹Corteva Agriscience, Carman, MB; ²Corteva, Edmonton, AB; ³Corteva, Mississauga, ON. (339)

4:15 PM Leveraging Temporal Spectral Indices from UAV Imagery for Accurate Detection of Broomrape in Sunflower. Ran Nisim Lati*¹, Guy Atsmon¹, Hanan Eizenberg¹, Anna Brook², Fadi Kizel³. ¹Newe Ya'ar Research Center, Agricultural Research Organization, Ramat Yishay, Israel; ²Center for Spatial Analysis Research (UHCSISR), University of Haifa, Mount Carmel, Israel; ³Technion-Israel Institute of Technology, Haifa, Israel. (340)

4:30 PM Business Meeting

WEDNESDAY AFTERNOON FEBRUARY 26

ORAL – 15. Genomics

LOCATION: Port McNeil
TIME: 1:00-4:45 PM Pacific
MODERATORS: Jake Montgomery
University of Chicago
Chicago, IL
Martin Laforest, Agriculture
and Agri-Food Canada, Saint-
Jean-sur-Richelieu, QC

***SPEAKER**

- 1:00 PM No Gene Flow Between Domesticated and Weedy Proso Millet (*Panicum miliaceum*), Despite Range Overlap.** Acer VanWallendael*. North Carolina State University, Raleigh, NC. (341)
- 1:15 PM WeedID: A DNA-based Model for Efficient and Precise Weed Species Detection using PacBio Sequencing Data.** Lucas Bobadilla* and Ellen Doss. Corteva Agriscience, Indianapolis, IN. (342)
- 1:30 PM Using Genomics to Develop DNA Fingerprints and CRISPR-Cas12 Assays for Identification of *Amaranthus* Species.** Leonardo Galindo Gonzalez*¹, Andrée Ann Dupras¹, Lubaina Kothari². ¹Canadian Food Inspection Agency, Ottawa, ON; ²University of Guelph, Guelph, ON. (343)
- 1:45 PM The *Alopecurus aequalis* Genome is a Resource for Understanding Resistance and Weediness.** Jonathan Wright¹, David Swarbreck¹, Karim Gharbi¹, Seanna McTaggart¹, Anthony Hall¹, Dana MacGregor*². ¹Earlham Institute, Norwich, United Kingdom; ²Rothamsted Research, Harpenden, United Kingdom. (344)
- 2:00 PM Sex Determination in *Cirsium arvense*: A Genomic Perspective from the First Reference Genome.** Sofia Marques-Hill*¹, Victor Llaca², Kevin Fengler², Eric Patterson³, Luan Cutti³, Jacob Montgomery¹, Sarah Morran¹, Todd Gaines¹. ¹Colorado State University, Fort Collins, CO; ²Corteva Agriscience, Johnston, IA; ³Michigan State University, East Lansing, MI. (345)
- 2:15 PM Reference Genome Assembly Allows Genetic Mapping of Hypersensitive Response to 2,4-D in *Conyza sumatrensis*.** Jake Montgomery*¹, Anthony Côté Gomez¹, Sofia Marques-Hill¹, Luan Cutti², Victor Llaca³, Kevin Fengler³, Camila Ferreira de Pinho⁴, Franck Dayan¹, Eric Patterson², Todd Gaines¹. ¹Colorado State University, Fort Collins, CO; ²Michigan State University, East Lansing, MI; ³Corteva Agriscience, Johnston, IA; ⁴UFRRJ - Federal Rural University of Rio de Janeiro, Seropédica, Brazil. (346)
- 2:30 PM Genetic Mechanisms of Re-evolved Seed Shattering in Weedy Rice (*Oryza* spp.).** Ana Caicedo*¹ and Xiang Li². ¹University of

Massachusetts, Amherst, MA; ²University of Georgia, Athens, GA. (347)

2:45 PM Mining Herbicide and Heat Stress Adaptation Genes from *Echinochloa colona* (Junglerice) and *Amaranthus palmeri* (Palmer Amaranth) Transcriptomes. Juan C. Velasquez, Rich Adams, Gulab Rangani, Nilda Roma-Burgos*. University of Arkansas, Fayetteville, AR. (348)

3:00 PM BREAK

3:15 PM Genomic Rearrangement in Palmer Amaranth Extrachromosomal Circular DNA Containing Glutamine Synthetase 2 and 5-enolpyruvylshikimate-3-phosphate Synthase Provides Dual Herbicide Resistance Pamela Carvalho-Moore^{*1}, Ednaldo Borgato², Luan Cutti², Aimone Porri³, Ingo Meiners⁴, Jens Lerchl³, Jason Norsworthy¹, Eric Patterson². ¹University of Arkansas, Fayetteville, AR; ²Michigan State University, East Lansing, MI; ³BASF SE, Limburgerhof, Germany; ⁴BASF Corporation, Research Triangle Park, NC. (349)

3:30 PM GWAS and Poly(A) RNA-Seq Methods Uncover Mechanisms Underpinning Differing Tolerances of Soybean Varieties to Postemergence Metribuzin Applications. Samuel Revolinski* and Lichun Zhou. University of Kentucky, Lexington, KY. (350)

3:45 PM A High-Throughput Pipeline for Measuring Selection Pressure during Comparative Genomic Analysis. Nick Johnson^{*1}, Luan Cutti¹, Todd Gaines², Eric Patterson¹. Michigan State University, East Lansing, MI; ²Colorado State University, Fort Collins, CO. (351)

4:00 PM International Weed Genomics Consortium Benefits to Colorado Weed Science. Philip Westra*. Colorado State University, Fort Collins, CO. (352)

4:15 PM RNAseq Analysis of the Below-ground Interactions Between Canola and Kochia (*Kochia scoparia*). Tanvir Farhan¹, James Anderson^{*2}, Eric Patterson³, Mukhlesur Rahman¹, David Horvath². ¹North Dakota State University, Fargo, ND; ²USDA-ARS, ETSARC, Fargo, ND; ³Michigan State University, East Lansing, MI. (353)

4:30 PM Business Meeting

WEDNESDAY AFTERNOON FEBRUARY 26

Travel Enrichment Experience and Science Policy Fellows

LOCATION: Pavillion Ballroom C
TIME: 3:15-5:00 PM Pacific
MODERATOR: Cara McCauley
Corteva Agriscience
Indianapolis, IN

***SPEAKER**

- 3:15 PM The Weed Science Policy Fellowship Experience.** Sarah Chu^{*1}, Joshua Miranda², Lee Van Wychen³. ¹Texas A&M University, College Station, TX; ²Oregon State University, Corvallis, OR; ³WSSA, Alexandria, VA. (354)
- 3:30 PM Advocating for Weed Science: My Experience as a WSSA Science Policy Fellow.** Joshua Miranda*. Oregon State University, Corvallis, OR. (355)
- 3:45 PM Travel Enrichment Experience: BASF - Dyersburg, TN.** Hannah Johnson*. Michigan State University, East Lansing, MI. (356)
- 4:00 PM Travel Enrichment Experience with Syngenta North America Crop Protection Headquarters in Greensboro, North Carolina.** Cristiana Bernardi Rankrape*. Southern Illinois University, Carbondale, IL. (357)
- 4:15 PM WSSA Travel Enrichment Experience.** Aleah Butler-Jones*. Cornell University, Geneva, NY. (358)
- 4:30 PM WSSA Travel Enrichment Experience at Corteva Agriscience Headquarters, Indianapolis, IN.** Navdeep Godara*. Virginia Tech, Blacksburg, VA. (359)
- 4:45 PM Travel Enrichment Experience Award: Blue River Technology.** Luisa Baccin*. Oregon State University, Corvallis, OR. (360)

WEDNESDAY AFTERNOON FEBRUARY 26

Joint CWSS/Student/Photo Awards

LOCATION: Pavillion Ballroom D
TIME: 5:15-7:00 PM Pacific
MODERATORS: Darrin Dodds
Mississippi State University
Mississippi State, MS

Marty Schraer
Syngenta Crop Protection
Meridian, ID

Leonardo Galinda-Gonzalez
Canadian Food Inspection
Agency, Ottawa ON

WEDNESDAY EVENING FEBRUARY 26

Joint Society Social

LOCATION: Pavillion Foyer
TIME: 7:00-9:00 PM Pacific

Sponsored by BASF Corporation

THURSDAY MORNING FEBRUARY 27

WSSA Business Meeting/Breakfast

LOCATION: Pavillion Ballroom D
TIME: 6:30-8:00 AM Pacific
MODERATOR: Greg Dahl
Retired, Winfield United
Eagan, MN

CO-MODERATOR: Hilary A. Sandler
UMass Cranberry Station
East Wareham, MA

THURSDAY MORNING FEBRUARY 27

Registration

LOCATION: Junior Ballroom Foyer
TIME: 8:00 AM-12:00 PM Pacific
MODERATOR: Eric Gustafson
IMI Group

THURSDAY MORNING FEBRUARY 27

**SYMPOSIUM-04. Experiences and Insights from
Recently Funded Weed Scientists in NIFA's
Competitive Grants Program**

LOCATION: Pavillion Ballroom C
TIME: 8:00-10:00 AM Pacific
MODERATORS: James Kells
Michigan State University
East Lansing, MI
Vijay Nandula
NIFA
Kansas City, MO

***SPEAKER**

**8:00 AM Welcome, Symposium Objectives, National
Institute of Food and Agriculture Update.**
James J. Kells*. (361)

**8:10 AM Overview of NIFA Grant Programs Relevant
to Weed Science.** Vijay Nandula*. (362)

- 8:25 AM NIFA Competitive Grant Review Process.** Jane Stewart*. Colorado State University, Fort Collins, CO. (363)
- 8:40 AM Experiences and Insights from Recently Funded Weed Scientists: CPPM-ARDP.** Marcelo Moretti*. Oregon State University, Corvallis, OR. (364)
- 8:50 AM Experiences and Insights from Recently Funded Weed Scientists: AFRI Pests and Beneficial Species - Research.** Nathan Boyd*. Gulf Coast Research and Education Center, University of Florida, Wimauma, FL. (365)
- 9:00 AM Experiences and Insights from Recently Funded Weed Scientists: OREI.** Greta Gramig. North Dakota State University, Fargo, ND. (366)
- 9:10 AM Experiences and Insights from Recently Funded Weed Scientists: SCRI.** Lynn Sosnoskie*. Cornell University, Geneva, NY. (367)
- 9:20 AM Experiences and Insights from Recently Funded Weed Scientists: AFRI Pests and Beneficial Species - Conference.** Eric Patterson*. Michigan State University, East Lansing, MI. (368)
- 9:30 AM Q and A with Speaker Panel.** James J. Kells (moderator), Vijay Nandula, Nathan Boyd, Greta Gramig, Marcelo Moretti, Eric Patterson, Lynn Sosnoskie. (369)

THURSDAY MORNING FEBRUARY 27

ORAL – 02. Horticultural Crops

LOCATION: Pavillion AB

TIME: 8:00-11:45 AM Pacific

MODERATORS: Thierry Besançon
Rutgers University
Chatsworth, NJ
Jichul Bae
Agriculture and Agri-Food
Canada, Agassiz, BC

***SPEAKER**

- 8:00 AM IR-4 Weed Science Update - Food Crops.** Roger Batts*. North Carolina State University, Raleigh, NC. (370)
- 8:15 AM Season-long Weed Control in Onion (*Allium cepa*) - Which Sequence is Best?** Harlene Hatterman-Valenti* and Collin Auwarter. North Dakota State University, Fargo, ND. (371)
- 8:30 AM Reducing Herbicide Rotation Studies: Not Glamorous but Important.** Mark VanGessel*¹, Barbara Scott¹, Kurt Vollmer², Roger Batts³.
¹University of Delaware, Georgetown, DE;
²University of Maryland, Queenstown, MD;
³North Carolina State University, Raleigh, NC. (372)
- 8:45 AM Weed Suppression in Tomato Fields: The Role of Cover Crop Varieties and Soil Types.** Akashdeep Singh¹, David Russell¹, Andrew Price², Ted Kornecki², Aniruddha Maity¹. ¹Auburn University, Auburn, AL; ²USDA-ARS, Auburn, AL. (373)
- 9:00 AM Evaluating Spring-Seeded Cover Crop Termination Timing and Residual Herbicide Application for Weed Control in Watermelon.** Kurt Vollmer*¹, Thierry Besançon², Wesley Bouchelle². ¹University of Maryland, Queenstown, MD; ²Rutgers University, Chatsworth, NJ. (374)
- 9:15 AM Ecological Processes Determining Weed Species Distribution across Nova Scotian Wild Blueberry Fields.** Andrew McKenzie-Gopsill*¹ and Scott White². ¹Agriculture and Agri-Food Canada, Charlottetown, PEI; ²Dalhousie University, Truro, NS. (375)
- 9:30 AM Anaerobic Disinfestation in Specialty Crops: Strategies to Maximize Weed Control.** Matthew Cutulle*. Clemson University, Clemson, SC. (376)
- 9:45 AM Laser Weeder Versus a Conventional Herbicide Program for Controlling Weeds in Seeded and Transplant Vidalia Onions.** Stanley Culpepper*, Jenna Vance, Chris Tyson. University of Georgia, Tifton, GA. (377)
- 10:00 AM BREAK**
- 10:15 AM Electric Mulch for Weed Management in High-Value Crops.** Erik Lehnhoff*¹, Marcelo Moretti², Leslie Beck¹. ¹New Mexico State

University, Las Cruces, NM; ²Oregon State University, Corvallis, OR. (378)

10:30 AM Exploring Pulse Electric Field for Weed Control in Nurseries. Tatiana Benedetti, Pamela Medeiros dos Santos, Marcelo Moretti*. Oregon State University, Corvallis, OR. (379)

10:45 AM Can Laserweeding Replace Herbicides in Onions? Jed Colquhoun*, Daniel Heider, Emma Schmidt. University of Wisconsin, Madison, WI. (380)

11:00 AM Hydromulches Suppress Weeds and Maintain Crop Yield in Organic Horticultural Production Systems. Greta Gramig*¹, Lisa DeVetter², Waqas Ahmad¹, Suzette Gallinato³, Alice Formiga⁴, Dilpreet Bajwa⁵, Ben Weiss², Sharon Weyers⁶. ¹North Dakota State University, Fargo, ND; ²Washington State University, Mt. Vernon, WA; ³WSU, Pullman, WA; ⁴Oregon State University, Corvallis, OR; ⁵Montana State University, Bozeman, MT; ⁶USDA, Morris, MN. (381)

11:15 AM Electric Weed Control in Blueberries: Effects on Weed Dynamics and Soil Health. Luisa Baccin* and Marcelo Moretti. Oregon State University, Corvallis, OR. (382)

11:30 AM Business Meeting

THURSDAY MORNING FEBRUARY 27

ORAL – 05. Wildland and Aquatic Invasives

LOCATION: Port McNeil
TIME: 8:00-10:00 AM Pacific
MODERATORS: Andrew Howell
North Carolina State University
Raleigh, NC
David Clements
Trinity Western University
Langley, BC

***SPEAKER**

- 8:00 AM Native Forb Cover and Density are Increased by Cut Surface and Foliar Herbicide Applications to Woody Shrubs Invading Restored Midwestern Prairies.** Mark Renz*. University of Wisconsin, Madison, WI. (383)
- 8:15 AM Comparison of Remotely Piloted Systems and Operational Standard Equipment for In-Water Weed Control.** Andrew Howell*¹, Kara Foley¹, Benjamin Sperry², and Rob Richardson¹. ¹North Carolina State University, Raleigh, NC; ²US Army Corps of Engineers, Gainesville, FL. (384)
- 8:30 AM Evaluating the Effect Knotweed (*Reynoutria* spp.) and Black Cottonwood (*Populus trichocarpa*) have on Soil Cohesion.** Jadon Deffenbaugh*, David Clements, Sam Pimentel. Trinity Western University, Langley, BC. (385)
- 8:45 AM Identification of Knotweed Taxa Through cpDNA Analysis: Understanding Dispersal Methods of Invasive Knotweed Species.** Lauren Mckenna*, David Clements, Sarah Demian, Aidan Anderson. Trinity Western University, Langley, BC. (386)
- 9:00 AM Diversity and Abundance of Flying Insects In Invasive Knotweed (*Reynoutria* spp.) and Native Cottonwood (*Populus* spp.) along the Chilliwack River.** Megumi Metcalfe*, Jaylene Braithwaite, David Clements. Trinity Western University, Langley, BC. (387)
- 9:15 AM Comparison of *Microseria wollei* Populations from North Carolina Lakes using SNP Diversity.** Ramon Leon*¹, Saket Chandra², Jessica Baumann¹, Erika Haug¹, Rob Richardson¹. ¹North Carolina State University, Raleigh, NC; ²National Institute of Technology, Calicut, India. (388)
- 9:30 AM Diversity of Microbial Communities from Three North Carolina Lakes.** Ramon Leon*¹, Saket Chandra², Jessica Baumann¹, Erika Haug¹, Rob Richardson¹. ¹North Carolina State University, Raleigh, NC; ²National Institute of Technology, Calicut, India. (389)
- 9:45 AM Business Meeting**

THURSDAY MORNING FEBRUARY 27

ORAL – 03. Turf and Ornamentals

LOCATION: Parksville
TIME: 8:00-9:45 AM Pacific
MODERATOR: Hannah S. Wright
University of Arkansas
Division of Agriculture
Little Rock, AR

***SPEAKER**

- 8:00 AM Foxtail Management for Mixed Grass Forages.** Nicholas Basinger*, Michael Bocz, Hannah Carol Lindell, Charles Smith III. University of Georgia, Athens, GA. (390)
- 8:15 AM Seedling Zoysiagrass Response to Fluazifop-butyl and Trifloxysulfuron-methyl with the Safener Metcamifen.** Hannah Wright-Smith*¹, Michael Richardson², Lane Tredway³, John McCalla², David Nistler¹. ¹University of Arkansas, Division of Agriculture, Little Rock, AR; ²University of Arkansas, Fayetteville, AR; ³Syngenta, Greensboro, NC. (391)
- 8:30 AM Impacts of the Relationship Between Soil-Type and Moisture on Tetflupyrolimet Efficacy.** Benjamin Pritchard*¹, Travis Gannon², David Butler¹, Becky Bowling¹, Jim Brosnan¹. ¹University of Tennessee, Knoxville, TN; ²North Carolina State University, Raleigh, NC. (392)
- 8:45 AM Safener and Herbicide Combinations: Evaluating ACCase Inhibitors and Metcamifen for Optimal Turfgrass Safety and Weed Control.** Sri Mounika Daruvuri*¹, Bert Wagemans², Lukas Dant², Scott McElroy¹. ¹Auburn University, Auburn, AL; ²Syngenta Crop Protection, Greensboro, NC. (393)
- 9:00 AM Spotted Spurge Recognition in Turfgrass: Segmentation and Semi-Supervised Learning Approaches.** Mikerly Mistral Joseph*¹, Katarzyna Gawron¹, Chang Zhao¹, Arnold W. Schumann², Nathan Boyd³, Gregory MacDonald¹, Pawel Petelewicz¹. ¹University of Florida, Gainesville, FL; ²Citrus Research and

Education Center, Lake Alfred, FL; ³Gulf Coast Research and Education Center, University of Florida, Wimauma, FL. (394)

9:15 AM Organic Weed Control in Turfgrass with Lasers, Cryogenic Liquid, and Radiant Heat. Shawn Askew*¹, Juan Romero¹, Clebson Goncalves², Navdeep Godara¹, John Peppers¹. ¹Virginia Tech, Blacksburg, VA; ²University of California, Mendocino, CA. (395)

9:30 AM Business Meeting

THURSDAY MORNING FEBRUARY 27

ORAL – 07. Teaching and Extension

LOCATION: Parksville
TIME: 10:15-11:15 AM Pacific
MODERATOR: Joseph Ikley
North Dakota State University
Fargo, ND

***SPEAKER**

10:15 AM Characterization and Management of Glyphosate-Resistant Waterhemp from New York and Connecticut. Vipin Kumar*¹, Jatinder Aulakh², Mike Stanyard³, Mike Hunter⁴, Bryan Brown⁴, Lynn Sosnoskie⁴, Amit Jhala⁵. ¹Cornell University, Ithaca, NY; ²Connecticut Ag Experiment Station, Windsor, CT; ³Cornell University, Newark, NY; ⁴Cornell University, Geneva, NY; ⁵University of Nebraska, Lincoln, NE. (396)

397-Withdrawn

10:30 AM Be Out Standing in Your Field! The Critical Role of Field Research Scientists in Developing, Launching, and Supporting Crop Protection Products. Byron Sleugh*¹, Rory Degenhardt², David Simpson¹, Craig Alford¹, Norbert Satchivi¹, Kelly Backscheider¹, John Wiles¹, Andrew Leader¹. ¹Corteva Agriscience, Indianapolis, IN; ²Corteva, Edmonton, AB. (398)

10:45 AM Effect of Metribuzin and Sulfentrazone Tank-Mixes on Weed Control and Soybean Across North Dakota. Joseph Ikley*¹, Caleb Dalley, Brian Jenks, Charlemagne Lim, Michael Ostlie, Austin Weippert. North Dakota State University, Fargo, ND. (399)

11:00 AM Business Meeting

THURSDAY MORNING FEBRUARY 27

ORAL – 12. Soil and Environmental Aspects

LOCATION: Port McNeil
TIME: 10:15-11:30 AM Pacific
MODERATOR: Bill Chism
EPA, Retired
Point of Rocks, MD

***SPEAKER**

10:15 AM Does Poultry Litter Application Affect the Weed Control Efficiency of Pre-Emergent Herbicides in Alabama Soils? Rakesh Ghosh*¹, Aniruddha Maity¹, Andrew Price².
¹Auburn University, Auburn, AL; ²USDA-ARS, Auburn, AL. (400)

10:30 AM Quantification of Strigolactone Transport Distance in Soil Using Parasitic Weed Germination Bioassay. Amit Paporisch* and Hammam Ziadne. Agricultural Research Organization, Volcani Institute, Newe-Ya'ar Research Center, Ramat Yishai, Israel. (401)

10:45 AM Planting Green Effects on Surface and Subsurface Atrazine Runoff. Noelle Connors*¹, Caio Brunharo¹, Heather Karsten¹, Louis Saporito², John Wallace¹. ¹Pennsylvania State University, University Park, PA; ²USDA-ARS, Pasture Systems and Watershed Management Research Unit, University Park PA. (402)

11:00 AM Digging into the Role of Edaphic Factors on Herbicide Resistance: A Meta-Analysis. Andrew Ahlersmeyer*¹, Andrew Price²,

11:15 AM Business Meeting

THURSDAY MORNING FEBRUARY 27

ORAL – 04. Pastures, Rangelands, Forests, and Rights of Way

LOCATION: Pavillion Ballroom C
TIME: 10:15-11:45 AM Pacific
MODERATOR: Zachary Howard
Texas A&M University
College Station, TX

***SPEAKER**

10:15 AM Indaziflam for Invasive Annual Grass Control and Biodiversity Restoration in Rangelands. Vicki Maloney*. ENVU, Calgary, AB. (404)

10:30 AM Plant-Soil Microbe Interactions and Ventenata's (*Ventenata dubia*) Ability to Invade Grasslands. Lisa Jones*, Brenda Schroeder, Timothy Prather. University of Idaho, Moscow, ID. (405)

10:45 AM How Does Urban Stream Restoration Impact Native and Invasive Plant Communities? Gabrielle Ripa, Jacob Barney*, J. Leighton Reid, Tess Thompson. Virginia Tech, Blacksburg, VA. (406)

11:00 AM Carbon Losses from Annual Grass Invasion in Rangelands. Harold Quicke*¹, Toby Maxwell², Matthew Germino³. ¹ENVU, Windsor, CO; U.S. Geological Survey, Forest rangeland Ecosystems Service Center, Prineville, OR; ³USGS, Boise, ID. (407)

11:15 AM Impact of Cattle Grazing on Weed Seed Viability and Dispersal. Akashdeep Singh*¹, Brandon Smith¹, David Russell¹, Andrew Price², Aniruddha Maity¹. ¹Auburn University, Auburn, AL; ²USDA-ARS, Auburn, AL. (408)

11:30 AM Business Meeting

THURSDAY AFTERNOON FEBRUARY 27

TOURS – Craft Breweries and Harbor Boat Tour
with Comedy Show

LOCATION: Meet in Lobby
TIME: 12:30-5:00 PM Pacific
MODERATORS: **Craft Beer Tour**
Victoria Brookes
Agriculture and Agri-Food
Canada, Retired, Agassisi, BC

**Boat Tour and
Comedy Show**
Alida Janmaat
University of the Fraser Valley
Abbotsford, BC

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Meeting Conduct Reminder

The WSSA Code of Ethics defines professional conduct binding on all members of the Society. Members should recognize that this code of ethics and conduct signifies a voluntary assumption of the obligation of self-discipline and members should strive to uphold and maintain the honor and dignity of the Society. The following rules and standards of conduct have been developed for the safe and efficient operation of the WSSA and for the benefit and protection of the rights and safety of all. WSSA members are expected to observe the highest standards of professional conduct at all times, while at work or engaged in Society business.

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

- 2. Be honest, truthful, fair and trustworthy in all WSSA activities and relationships.** The WSSA expects each member to treat other members with respect and honesty. This includes providing information that is accurate, complete, objective, timely, relevant, and understandable.
- 3. Respect and protect WSSA assets.** Assets are anything of value owned by the WSSA. All WSSA members are expected to be custodians of those assets. Members are responsible to maintain Society assets in good condition and to protect them from loss. This includes, but is not limited to, real assets and equipment as well as “soft assets” such as intellectual property, member lists, and other confidential information owned by the Society. WSSA assets of any kind should not be used for personal benefit.
- 4. Avoid all conflicts of interest between Society business and personal affairs.** All WSSA members are expected to act with total objectivity regarding WSSA business. Accordingly, it is improper for a WSSA member to be in a position where their personal interests’ conflict, or appears to conflict, with WSSA interests. WSSA members should not use their position within the WSSA to influence WSSA members or others for their personal benefit. If a member believes that a conflict of interest has developed or may develop, it should be promptly reported to the WSSA President and/or Executive Secretary. The Society’s Conflict of Interest Policy is outlined in 5.8.
- 5. Promote a culture of respect for all WSSA members.** The WSSA supports and adheres to laws and regulations dealing with fair member practices. Membership discrimination in our Society based on sex, race, age, religion, national origin, or sexual preference will not be tolerated. Sexual harassment will not be tolerated. Sexual harassment is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature that explicitly or implicitly affects an individual’s membership in the society, unreasonably interferes with an individual’s activities within the society, or creates an intimidating, hostile or offensive society environment. This also includes inappropriate use of nudity and/or sexual images in public spaces (including within visual presentations, Twitter, and other online media); deliberate intimidation, stalking, or unwelcome following; harassing photography or recording; and sustained disruption of talks or other events.
- 6. Use your best efforts to maintain a safe environment and protect the Society.** The WSSA believes in and supports the laws designated to keep our Society safe and designed to protect the environment. If you believe that an unsafe condition exists in our Society, bring it immediately to the attention of the President, a member of the Board, or Executive Secretary. If an accident takes place, report it pursuant to policy and

immediately take action to address the problem. Any incident or situation that violates the law or this policy should be immediately reported to the President and/or Executive Secretary; in person or via this contact information: info@wssa.net or 720-445-4789.

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

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

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

10. Reporting alleged violations. Violation of the WSSA Code of Ethics and Conduct may subject a member to disciplinary action up to and including membership revocation. At the annual conference, when “Safe WSSA” members become aware of a complaint, they will seek out the alleged victim(s) and offender(s) separately and gather facts. Immediate responses at the conference may range from warning a harasser to cease his or her behavior immediately, to ending a speaker’s talk early if the speaker uses inappropriate language or images, to requiring a harasser to leave the conference immediately with no refund, to banning a harasser from future events “either indefinitely or for a certain time period.” Law enforcement may be engaged if circumstances require.

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