

# **67th Annual Meeting of the North Central Weed Science Society 2012**

**(NCWSS 2012)**

**St. Louis, Missouri, USA  
10-13 December 2012**

**ISBN: 978-1-62276-802-8**

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# *67<sup>th</sup> Annual Meeting of the North Central Weed Science Society*

**December 10-13, 2012  
Hyatt Regency at the Arch  
St. Louis, MO**

This document contains the program and abstracts of the papers and posters presented at the annual meeting of the North Central Weed Science Society. Titles are arranged in the program by subject matter sections with the abstract number in parenthesis, abstracts are found in numerical order. Author and keyword indices are also included.

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U.S. UNIVERSITY HERBICIDE EFFICACY STUDIES ANALYSIS: CORN AND SORGHUM YIELD WITH ATRAZINE VERSUS ATRAZINE ALTERNATIVES: 2006-2010. Richard S. Fawcett, Fawcett Consulting, Huxley, IA 50124. [187]

## General Session

### **Cahokia Mounds: An Ancient City Made Possible by Grasses and Weeds.**

Bill Iseminger\*; Cahokia Mounds State Historic Site, Collinsville, IL (000P IC

### **Where Has Weed Science Been and Where is it Going? Perspective of a "Mature"**

**Weed Scientist.** Dale Shaner\*; USDA, Fort Collins, CO (87)(000Ri 074

**Washington Report.** Lee Van Wychen\*; WSSA, Washington, DC(000P IC

**CAST Report.** Duane Rathmann\*; BASF Corp., Waseca, MN (89)(000Ri 074

**NCWSS Presidential Address.** Bryan G. Young\*; Southern Illinois University, Carbondale, IL(000P IC

**Necrology Report.** Aaron G. Hager\*; University of Illinois, Urbana, IL(000P IC

## Cereals/Sugar Beet/Dry Bean

### **Wheat Impacts Control of Horseweed (*Conyza canadensis*) and Giant Ragweed (*Ambrosia trifida*).**

James R. Martin\*, Jesse L. Gray, Dorothy L. Call; University of Kentucky, Princeton, KY (1)(000Ri 038

**Spring Wheat Yield after Glyphosate Exposure at Emergence.** Mike J. Moechnig\*, Darrell L. Deneke, David A. Vos, Jill K. Alms; South Dakota State University, Brookings, SD (2)(000Ri 038

†**Wheat Response to Glyphosate Drift or Contamination.** Andrew N. Fillmore\*, Kirk A. Howatt; NDSU, Fargo, ND (3)(000Ri 039

†**Volunteer Corn Reduces Yield in Sugarbeet.** Christy Sprague, Amanda C. Harden\*; Michigan State University, East Lansing, MI (127)(000Ri 092

## Corn/Sorghum

**Control of HPPD-Resistant Waterhemp in Corn and Soybean.** Neha Rana\*<sup>1</sup>, Jon E. Scott<sup>1</sup>, Aaron S. Franssen<sup>2</sup>, Stevan Z. Knezevic<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Concord, NE, <sup>2</sup>Syngenta Crop Protection, Seward, NE (4)(000Ri 039

**Control of HPPD-Resistant Waterhemp with Mesotrione and Tankmixes Applied Preemergence.** Neha Rana\*<sup>1</sup>, Jon E. Scott<sup>1</sup>, Aaron S. Franssen<sup>2</sup>, Stevan Z. Knezevic<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Concord, NE, <sup>2</sup>Syngenta Crop Protection, Seward, NE (5)(000Ri 039

**Enlist™ Ahead.** Joe Armstrong\*<sup>1</sup>, Tami Jones-Jefferson<sup>2</sup>, Mark A. Peterson<sup>2</sup>, David E. Hillger<sup>2</sup>, Jonathan A. Huff<sup>3</sup>; <sup>1</sup>Dow AgroSciences, Davenport, IA, <sup>2</sup>Dow AgroSciences, Indianapolis, IN, <sup>3</sup>Dow AgroSciences, Herrin, IL (6)(000Ri 03:

**Agronomic Performance of Enlist™ Corn.** David M. Simpson\*<sup>1</sup>, Jim W. Bing<sup>1</sup>, Scott C. Ditmarsen<sup>2</sup>, Doug J. Spaunhorst<sup>3</sup>, Neil A. Spomer<sup>4</sup>; <sup>1</sup>Dow AgroSciences, Indianapolis, IN, <sup>2</sup>Dow AgroSciences, Madison, WI, <sup>3</sup>University of Missouri-Columbia, Columbia, MO, <sup>4</sup>Dow AgroSciences, Brookings, SD (7)(000Ri 03:

†**The Influence of 2,4-D and Drift Reduction Technologies on the Efficacy of Glyphosate or Glufosinate on Fall Panicum.** Lucas A. Harre\*, Bryan G. Young, Joesph L. Matthews, Julie M. Young; Southern Illinois University, Carbondale, IL (8)(000Ri 03;

**Volunteer Soybean Competition and Control in Corn.** Jill K. Alms\*, David A. Vos, Mike J. Moechnig, Darrell L. Deneke; South Dakota State University, Brookings, SD (9)(000Ri 03;

**Dandelion Competition in Corn.** David A. Vos\*, Jill K. Alms, Mike J. Moechnig, Darrell L. Deneke; South Dakota State University, Brookings, SD (10)(000Ri 03;

†**Tolerance of Seed Corn Inbreds to Postemergence Applications of Rimsulfuron + Mesotrione + Isoxadifen-ethyl or Nicosulfuron + Isoxadifen-ethyl.** Nicholas R. Steppig\*<sup>1</sup>, Larry H. Hageman<sup>2</sup>, Helen A. Flanigan<sup>3</sup>, Patrick M. McMullan<sup>4</sup>; <sup>1</sup>DuPont Crop Protection, Rochelle, IL, <sup>2</sup>DuPont Crop Protection, ROCHELLE, IL, <sup>3</sup>DuPont, Greenwood, IN, <sup>4</sup>DuPont Pioneer, Johnston, IA (11)000Ri 042

†**Controlling Glyphosate-Resistant Palmer amaranth Using Atrazine Tank Mixes in Corn.** Matthew S. Wiggins\*, Kelly A. Barnett, Lawrence E. Steckel; University of Tennessee, Jackson, TN (135)000Ri 095

**Corn Tolerance to Single and Multiple Flaming.** Stevan Z. Knezevic\*<sup>1</sup>, Avishek Datta<sup>2</sup>, Strahinja V. Stepanovic<sup>3</sup>, Dejan Nedeljkovic<sup>4</sup>, Neha Rana<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Concord, NE, <sup>2</sup>Asian Institute of Technology, Bangkok, Thailand, <sup>3</sup>University of Nebraska - Lincoln, Lincoln, NE, <sup>4</sup>University of Belgrade, Belgrade, Serbia (136)000Ri 095

†**Investigations of Early-Season Herbicide and Fungicide Co-Applications in Corn.** Craig B. Solomon\*, Jimmy D. Wait, Kevin W. Bradley; University of Missouri, Columbia, MO (137)000Ri 096

†**The Effect of Volunteer Corn Growing in Corn on Grain Quality and Mycotoxin Contamination.** Vanessa L. Garner\*, William G. Johnson, Paul T. Marquardt, Kiersten A. Wise; Purdue University, West Lafayette, IN (138)000Ri 096

**Two-Pass Weed Control in Glyphosate-Resistant Corn - Efficacy, Environmental Impact, Yield and Profitability.** Peter Sikkema\*<sup>1</sup>, Robert E. Nurse<sup>2</sup>, Chris Gillard<sup>3</sup>, Nader Soltani<sup>3</sup>; <sup>1</sup>University of Guelph - Ridgetown Campus, Ridgetown, ON, <sup>2</sup>Agriculture and Agri-Food Canada, Harrow, ON, <sup>3</sup>University of Guelph Ridgetown Campus, Ridgetown, ON (139)000Ri 097

**Clethodim Dose Response Curves for Volunteer Corn Control and Corn Injury After an Immediate Replant.** Randall S. Currie\*; Kansas State Univ., Garden City, KS (140)000Ri 097

**Effects of Flaming and Cultivation on Weed Control and Yield in Organic Corn as Influenced by Manure Application.** Strahinja V. Stepanovic\*<sup>1</sup>, Avishek Datta<sup>2</sup>, Neha Rana<sup>3</sup>, Brian D. Neilson<sup>4</sup>, Chris Bruening<sup>1</sup>, George Gogos<sup>1</sup>, Stevan Z. Knezevic<sup>3</sup>; <sup>1</sup>University of Nebraska - Lincoln, Lincoln, NE, <sup>2</sup>Asian Institute of Technology, Bangkok, Thailand, <sup>3</sup>University of Nebraska-Lincoln, Concord, NE, <sup>4</sup>University of Nebraska-Lincoln, Lincoln, NE (145)000Ri 099

**HPPD Resistance Testing in the Midwest-Preliminary Field Bioassay Results.** Brent Philbrook\*<sup>1</sup>, Thomas Wilde<sup>2</sup>, Roland Beffa<sup>2</sup>, Thomas Kleven<sup>3</sup>, Harry J. Streck<sup>2</sup>; Bayer CropScience, White Heath, IL, <sup>2</sup>Bayer CropScience, Frankfurt, Germany, <sup>3</sup>Bayer CropScience, Sabin, MN (186)000Ri 0; 6

**U.S. University Herbicide Efficacy Studies Analysis: Corn and Sorghum Yield with Atrazine Versus Atrazine Alternatives: 2006-2010.** Richard S. Fawcett\*; Fawcett Consulting, Huxley, IA (187)000Ri 0; 6

**Burndown and Preemergence Weed Control with Rimsulfuron and mesotrione.** Helen A. Flanigan\*<sup>1</sup>, Kevin L. Hahn<sup>2</sup>; <sup>1</sup>DuPont, Greenwood, IN, <sup>2</sup>DuPont, Bloomington, IL (188)000Ri 0; 7

**Enlist™ Corn Tolerance to Enlist™ Duo Applied from V3 Through V7 Growth Stages.** Neil A. Spomer<sup>1</sup>, David C. Ruen\*<sup>2</sup>, Bradley W. Hopkins<sup>3</sup>, Kevin D. Johnson<sup>4</sup>, Brian D. Olson<sup>5</sup>; <sup>1</sup>Dow AgroSciences, Brookings, SD, <sup>2</sup>Dow AgroSciences, Lanesboro, MN, <sup>3</sup>Dow AgroSciences, Westerville, OH, <sup>4</sup>Dow AgroSciences, Danville, IL, <sup>5</sup>Dow AgroSciences, Geneva, NY (189)000Ri 0; 7

**Weed Control Programs in Enlist™ Corn.** Joe Armstrong\*<sup>1</sup>, Scott C. Ditmarsen<sup>2</sup>, Fikru F. Haile<sup>3</sup>, Jeff M. Ellis<sup>4</sup>, Jonathan A. Huff<sup>5</sup>, Eric F. Scherder<sup>6</sup>; <sup>1</sup>Dow AgroSciences, Davenport, IA, <sup>2</sup>Dow AgroSciences, Madison, WI, <sup>3</sup>Dow AgroSciences, Indianapolis, IN, <sup>4</sup>Dow AgroSciences, Smithville, MO, <sup>5</sup>Dow AgroSciences, Herrin, IL, <sup>6</sup>Dow AgroSciences, Huxley, IA (190)000Ri 0; 8

## Soybeans/Legumes

†**Survey of Giant Ragweed Infestation Levels in Ohio Soybean Fields.** JD Bethel\*, Mark M. Loux, Jason T. Parrish; The Ohio State University, Columbus, OH (12)0000Ri 042

**Residual Control of Waterhemp with Dicamba.** Seth T. Logan\*<sup>1</sup>, Bryan G. Young<sup>2</sup>, Sara M. Allen<sup>3</sup>; <sup>1</sup>Monsanto Company, Pinckneyville, IL, <sup>2</sup>Southern Illinois University, Carbondale, IL, <sup>3</sup>Monsanto Company, St. Louis, MO (13)0000Ri 042

**Perceived Likelihood for Weeds to Evolve Resistance to Dicamba.** Roberto J. Crespo<sup>1</sup>, Mark L. Bernards\*<sup>2</sup>, Robert Peterson<sup>3</sup>; <sup>1</sup>University of Nebraska - Lincoln, Lincoln, NE, <sup>2</sup>Western Illinois University, Macomb, IL, <sup>3</sup>Montana State University, Bozeman, MT (14)0000Ri 043

**Integration of Dicamba into Soybean (*Glycine max*) Production Systems for Control of Glyphosate-Resistant Palmer Amaranth (*Amaranthus palmeri*).** Reid J. Smeda\*<sup>1</sup>, Lawrence E. Steckel<sup>2</sup>, Simone Siefert-Higgins<sup>3</sup>; <sup>1</sup>University of Missouri, Columbia, MO, <sup>2</sup>University of Tennessee, Jackson, TN, <sup>3</sup>Monsanto, St. Louis, MO (15)0000Ri 044

**Dicamba Contributes Residual Weed Control to Roundup Ready<sup>®</sup> 2 Xtend Soybean Systems.** John B. Willis\*<sup>1</sup>, Christopher D. Kamienski<sup>2</sup>, Mayank S. Malik<sup>3</sup>, Simone Siefert-Higgins<sup>4</sup>; <sup>1</sup>Monsanto, Hanson, KY, <sup>2</sup>Monsanto Company, Washington, IL, <sup>3</sup>Monsanto, Lincoln, NE, <sup>4</sup>Monsanto, St. Louis, MO (16)0000Ri 044

**Weed Control with BAS18322H in Corn and Dicamba-Tolerant Soybean.** Jon E. Scott\*<sup>1</sup>, Leo D. Charvat<sup>2</sup>, Neha Rana<sup>1</sup>, Stevan Z. Knezevic<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Concord, NE, <sup>2</sup>BASF Corporation, Lincoln, NE (17)0000Ri 045

**Integrated Management of Difficult to Control Weeds in Dicamba Tolerant Soybeans in Nebraska.** Jeffrey Golus\*<sup>1</sup>, Ryan S. Henry<sup>2</sup>, Lowel Sandell<sup>3</sup>, Mayank S. Malik<sup>4</sup>, Simone Siefert-Higgins<sup>5</sup>, Greg R. Kruger<sup>2</sup>; <sup>1</sup>University of Nebraska, Lincoln, North Platte, NE, <sup>2</sup>University of Nebraska-Lincoln, North Platte, NE, <sup>3</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>4</sup>Monsanto, Lincoln, NE, <sup>5</sup>Monsanto, St. Louis, MO (18)0000Ri 045

**Performance of Commercial Track Glyphosate and Dicamba Tolerant Soybean Varieties.** Cindy L. Arnevik\*<sup>1</sup>, Mindy Devries<sup>2</sup>, Mark Lubbers<sup>3</sup>, Joe Cordes<sup>4</sup>; <sup>1</sup>Monsanto Company, St. Louis, MO, <sup>2</sup>Monsanto Company, Huxley, IA, <sup>3</sup>Monsanto Company, Wichita, KS, <sup>4</sup>Monsanto Company, Jerseyville, IL (19)0000Ri 046

†**Weed Control in Soybean as Influenced by Residual Herbicide Use and Glyphosate Application Timing Following Different Planting Dates.** Ryan P. DeWerff\*, Shawn P. Conley, Vince M. Davis; University of Wisconsin-Madison, Madison, WI (20)0000Ri 046

†**Glufosinate with Tank Mixtures and Application Timing.** Richard A. Weisz\*<sup>1</sup>, Rich Zollinger<sup>1</sup>, Angela J. Kazmierczak<sup>1</sup>, Devin A. Wirth<sup>2</sup>; <sup>1</sup>North Dakota State University, Fargo, ND, <sup>2</sup>NDSU, Fargo, ND 0000P IC

†**Effectiveness of Combinations of Glyphosate and Glufosinate on Glyphosate-Resistant Horseweed.** Tyler Johnson\*, Mark M. Loux, Anthony Dobbels; The Ohio State University, Columbus, OH (22)0000Ri 046

†**Effect of Early-season Weed Control on Nutrient Competition and Yield in Soybean.** Nick T. Harre\*<sup>1</sup>, Bryan G. Young<sup>1</sup>, Scott Cully<sup>2</sup>, Brett R. Miller<sup>3</sup>, Mark Kitt<sup>4</sup>; <sup>1</sup>Southern Illinois University, Carbondale, IL, <sup>2</sup>Syngenta Crop Protection, Marion, IL, <sup>3</sup>Syngenta, Minnetonka, MN, <sup>4</sup>Syngenta Crop Protection, Minnetonka, MN (23)0000Ri 047

†**Efficacy of Preemergence Versus Postemergence Herbicides on Glyphosate-Resistant Horseweed (*Conyza canadensis*) in Soybean (*Glycine max*).** Cody D. Cornelius\*, Reid J. Smeda, Carey F. Page; University of Missouri, Columbia, MO (24)0000Ri 047

†**A Rapid, High-Throughput Molecular Assay for the Robust Genotypic Determination of Waterhemp Resistant to Protoporphyrinogen Oxidase (PPO)-Inhibiting Herbicides.** R. Joseph Wuerffel\*<sup>1</sup>, Bryan G. Young<sup>1</sup>, David A. Lightfoot<sup>1</sup>, Patrick Tranel<sup>2</sup>, Ahmad M. Fakhoury<sup>1</sup>; <sup>1</sup>Southern Illinois University, Carbondale, IL, <sup>2</sup>University of Illinois, Urbana, IL (25)0000Ri 048

†**Effects of Flaming and Cultivation on Weed Control and Yield in Organic Soybean as Influenced by Manure Application.** Strahinja V. Stepanovic\*<sup>1</sup>, Avishek Datta<sup>2</sup>, Neha Rana<sup>3</sup>, Brian D. Neilson<sup>4</sup>, Chris Bruening<sup>1</sup>, George Gogos<sup>1</sup>, Stevan Z. Knezevic<sup>3</sup>; <sup>1</sup>University of Nebraska - Lincoln, Lincoln, NE, <sup>2</sup>Asian Institute of Technology, Bangkok, Thailand, <sup>3</sup>University of Nebraska-Lincoln, Concord, NE, <sup>4</sup>University of Nebraska-Lincoln, Lincoln, NE (26)000Ri 048

**Glyphosate-Resistant Giant Ragweed in Ontario.** Nader Soltani\*<sup>1</sup>, Joanna Follings<sup>2</sup>, Mark Lawton<sup>3</sup>, François Tardif<sup>2</sup>, Darren E. Robinson<sup>4</sup>, Peter Sikkema<sup>5</sup>; <sup>1</sup>University of Guelph Ridgetown Campus, Ridgetown, ON, <sup>2</sup>University of Guelph, Guelph, ON, <sup>3</sup>Monsanto Canada, Guelph, ON, <sup>4</sup>University of Guelph, Ridgetown, ON, <sup>5</sup>University of Guelph - Ridgetown Campus, Ridgetown, ON (27)000Ri 049

**Selectivity of an HPPD-Tolerant Soybean Event.** Jayla Allen<sup>1</sup>, John Hinz\*<sup>2</sup>, Michael L. Weber<sup>3</sup>; <sup>1</sup>Bayer CropScience, Research Triangle Park, NC, <sup>2</sup>Bayer CropScience, Story City, IA, <sup>3</sup>Bayer CropScience, Indianola, IA (28)000Ri 049

†**Efficacy of PRE and POST Herbicides for Controlling Multiple-Resistant Palmer Amaranth in Michigan.** David Powell\*, Christy Sprague; Michigan State University, East Lansing, MI (29)000Ri 049

**Glyphosate-Resistant Canada Fleabane in Ontario.** Nader Soltani\*<sup>1</sup>, Holly P. Byker<sup>2</sup>, Mark Lawton<sup>3</sup>, Darren E. Robinson<sup>4</sup>, François Tardif<sup>5</sup>, Peter Sikkema<sup>6</sup>; <sup>1</sup>University of Guelph Ridgetown Campus, Ridgetown, ON, <sup>2</sup>University of Guelph, Ridgetown Campus, Ridgetown, ON, <sup>3</sup>Monsanto Canada, Guelph, ON, <sup>4</sup>University of Guelph, Ridgetown, ON, <sup>5</sup>University of Guelph, Guelph, ON, <sup>6</sup>University of Guelph - Ridgetown Campus, Ridgetown, ON (30)000Ri 04:

†**Soybean Response and Yield Implications of Postemergence Tank-mixtures in Glyphosate-Resistant Soybean.** Theresa A. Reinhardt\*<sup>1</sup>, Bryan G. Young<sup>1</sup>, Joesph L. Matthews<sup>1</sup>, Julie M. Young<sup>1</sup>, Douglas J. Maxwell<sup>2</sup>, Aaron G. Hager<sup>2</sup>, Mark L. Bernards<sup>3</sup>; <sup>1</sup>Southern Illinois University, Carbondale, IL, <sup>2</sup>University of Illinois, Urbana, IL, <sup>3</sup>Western Illinois University, Macomb, IL (31)000Ri 04:

**Preemergence Palmer Amaranth Control with Fierce™ Herbicide in US Soybean Production.** Eric J. Ott\*<sup>1</sup>, Dawn Refsell<sup>2</sup>, Trevor M. Dale<sup>3</sup>, Gary W. Kirfman<sup>4</sup>, John A. Pawlak<sup>5</sup>; <sup>1</sup>Valent USA Corporation, Greenfield, IN, <sup>2</sup>Valent USA, Lathrop, MO, <sup>3</sup>Valent USA Corporation, Plymouth, MN, <sup>4</sup>Valent USA Corporation, Ada, MI, <sup>5</sup>Valent USA Corporation, Lansing, MI (32)000Ri 04;

†**Programs for the Management of Glyphosate-Resistant Waterhemp and Giant Ragweed in Dicamba-Resistant Soybean.** Doug J. Spaunhorst\*<sup>1</sup>, Simone Seifert-Higgins<sup>2</sup>, Christopher M. Mayo<sup>3</sup>, Eric B. Riley<sup>4</sup>, Kevin W. Bradley<sup>4</sup>; <sup>1</sup>University of Missouri-Columbia, Columbia, MO, <sup>2</sup>Monsanto Company, St. Louis, MO, <sup>3</sup>Monsanto Company, Gardner, KS, <sup>4</sup>University of Missouri, Columbia, MO (106)000Ri 07;

†**Impact of Plant Height on *Amaranthus* spp. Response to Dicamba.** Ashley A. Schlichenmayer\*<sup>1</sup>, Reid J. Smeda<sup>2</sup>; <sup>1</sup>University of Missouri, Columbia, MO, <sup>2</sup>University of Missouri, Columbia, MO (107)000Ri 082

**Soybean Tolerance to Single and Multiple Flaming.** Stevan Z. Knezevic\*<sup>1</sup>, Avishek Datta<sup>2</sup>, Strahinja V. Stepanovic<sup>3</sup>, Dejan Nedeljkovic<sup>4</sup>, Nihat Tursun<sup>5</sup>, Neha Rana<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Concord, NE, <sup>2</sup>Asian Institute of Technology, Bangkok, Thailand, <sup>3</sup>University of Nebraska - Lincoln, Lincoln, NE, <sup>4</sup>University of Belgrade, Belgrade, Serbia, <sup>5</sup>Kahramanmaras Sutcu Imam University, Kahramanmaras, Turkmenistan (108)000Ri 082

†**Investigations of Weed Management Programs for Use in Soybeans with Resistance to HPPD-Inhibiting Herbicides.** John Schultz\*<sup>1</sup>, Michael L. Weber<sup>2</sup>, Jayla Allen<sup>3</sup>, Kevin W. Bradley<sup>1</sup>; <sup>1</sup>University of Missouri, Columbia, MO, <sup>2</sup>Bayer CropScience, Indianola, IA, <sup>3</sup>Bayer CropScience, Research Triangle Park, NC (109)000Ri 083

†**Control and Distribution of Glyphosate Resistant Giant Ragweed in Ontario.** Joanna Follings\*<sup>1</sup>, Peter Sikkema<sup>2</sup>, François Tardif<sup>1</sup>, Darren E. Robinson<sup>3</sup>, Mark Lawton<sup>4</sup>; <sup>1</sup>University of Guelph, Guelph, ON, <sup>2</sup>University of Guelph - Ridgetown Campus, Ridgetown, ON, <sup>3</sup>University of Guelph, Ridgetown, ON, <sup>4</sup>Monsanto Canada, Guelph, ON (110)000Ri 083

**Comparison of Herbicide Programs in Glyphosate- and Glufosinate-Resistant Soybean.** Jeff M. Stachler\*; NDSU and U. of MN, Fargo, ND (111)000Ri 084

†**Systems for Management of Glyphosate-Resistant Horseweed in Soybeans.** Bryan Reeb\*, Mark M. Loux, Anthony Dobbels; The Ohio State University, Columbus, OH (112)000Ri 085

†**Glyphosate Resistant Canada Fleabane (*Conyza canadensis*) in Ontario: Distribution and Control in Soybean (*Glycine max L.*).** Holly P. Byker\*<sup>1</sup>, Peter Sikkema<sup>2</sup>, François Tardif<sup>3</sup>, Darren E. Robinson<sup>4</sup>, Mark Lawton<sup>5</sup>;  
<sup>1</sup>University of Guelph, Ridgetown Campus, Ridgetown, ON, <sup>2</sup>University of Guelph - Ridgetown Campus, Ridgetown, ON, <sup>3</sup>University of Guelph, Guelph, ON, <sup>4</sup>University of Guelph, Ridgetown, ON, <sup>5</sup>Monsanto Canada, Guelph, ON (113)000Ri 085

†**Comparing Farmer and University Practices for Controlling Giant Ragweed.** JD Bethel\*<sup>1</sup>, Mark M. Loux<sup>1</sup>, Steve Prochaska<sup>2</sup>; <sup>1</sup>The Ohio State University, Columbus, OH, <sup>2</sup>The Ohio State University, Marion, OH (114)000Ri 086

**Costs and Benefits of Establishing Alfalfa with Glyphosate Across Seven Production Fields in Wisconsin.** Mark J. Renz\*; University of Wisconsin Madison, Madison, WI (115)000Ri 086

†**Fall Weed Management to Limit SCN Population Build-up.** Rodrigo Werle\*<sup>1</sup>, Mark L. Bernards<sup>2</sup>, Loren J. Giesler<sup>1</sup>, John L. Lindquist<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>Western Illinois University, Macomb, IL (116)000Ri 087

†**Can Soil-Residual Protoporphyrinogen Oxidase (PPO)-Inhibiting Herbicides Influence the Frequency of PPO-Resistant Waterhemp?** R. Joseph Wuerffel\*, Bryan G. Young, Julie M. Young, Joseph L. Matthews; Southern Illinois University, Carbondale, IL (117)000Ri 087

**New Preemergence Residual Weed Management Systems for Glyphosate Tolerant Soybeans to Address Resistance Management.** James Whitehead\*<sup>1</sup>, Dave Feist<sup>2</sup>, Gerald Wiley<sup>3</sup>, Keith Miller<sup>4</sup>, Dave Downing<sup>5</sup>, Brian Ahrens<sup>6</sup>; <sup>1</sup>MANA, Oxford, MS, <sup>2</sup>MANA, Fort Collins, CO, <sup>3</sup>Wiley Ag Consulting, Columbus, IN, <sup>4</sup>MANA, Troy, IL, <sup>5</sup>MANA, Raleigh, NC, <sup>6</sup>MANA, Coralville, IA 000P IC

**Preemergence and Postemergence Control of Amaranthus Species with Lactofen Alone and in Combination with V-10206.** Trevor M. Dale\*<sup>1</sup>, Eric J. Ott<sup>2</sup>, John A. Pawlak<sup>3</sup>, Dawn Refsell<sup>4</sup>; <sup>1</sup>Valent USA Corporation, Plymouth, MN, <sup>2</sup>Valent USA Corporation, Greenfield, IN, <sup>3</sup>Valent USA Corporation, Lansing, MI, <sup>4</sup>Valent USA, Lathrop, MO (119)000Ri 088

†**Carrier Volume Influence on the Efficacy of Four Soybean Herbicides.** Cody F. Creech\*<sup>1</sup>, Lowell Sandell<sup>2</sup>, Greg R. Kruger<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, North Platte, NE, <sup>2</sup>University of Nebraska-Lincoln, Lincoln, NE (141)000Ri 098

**Weed Control in Dicamba Tolerant Soybean.** Pratap Devkota\*<sup>1</sup>, William G. Johnson<sup>1</sup>, John B. Willis<sup>2</sup>;  
<sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Monsanto, Hanson, KY (153)000Ri 09;

**Weed Management with Roundup Ready® 2 Xtend soybean in Iowa.** Dean M. Grossnickle\*<sup>1</sup>, Micheal D. Owen<sup>2</sup>, Damian D. Franzenburg<sup>3</sup>, James F. Lux<sup>3</sup>, Justin M. Pollard<sup>4</sup>; <sup>1</sup>Iowa State University, Gilbert, IA, <sup>2</sup>ISU, Ames, IA, <sup>3</sup>Iowa State University, Ames, IA, <sup>4</sup>The Monsanto Company, St. Louis, MO (154)000Ri 09;

**Weed Management Recommendations for Roundup Ready® 2 Xtend soybeans.** Simone Seifert-Higgins\*<sup>1</sup>, John B. Willis<sup>2</sup>; <sup>1</sup>Monsanto Company, St. Louis, MO, <sup>2</sup>Monsanto, Hanson, KY (155)000Ri 09;

**Weed Management in Dicamba Tolerant Crops with Engenia™.** Troy D. Klingaman\*<sup>1</sup>, John Frihauf<sup>2</sup>, Steven J. Bove<sup>3</sup>, Terrance M. Cannan<sup>2</sup>, Luke L. Bozeman<sup>3</sup>; <sup>1</sup>BASF Corporation, Seymour, IL, <sup>2</sup>BASF Corporation, Raleigh, NC, <sup>3</sup>BASF Corporation, Research Triangle Park, NC (156)000Ri 0: 2

**Influence of Nozzle Selection on Drift Potential and Efficacy of Engenia™.** Leo D. Charvat\*<sup>1</sup>, Walter E. Thomas<sup>2</sup>, John Frihauf<sup>3</sup>, Steven J. Bove<sup>2</sup>, Greg R. Kruger<sup>4</sup>; <sup>1</sup>BASF Corporation, Lincoln, NE, <sup>2</sup>BASF Corporation, Research Triangle Park, NC, <sup>3</sup>BASF Corporation, Raleigh, NC, <sup>4</sup>University of Nebraska-Lincoln, North Platte, NE (157)000Ri 0: 2



**Enlist™ Soybean Tolerance to Applications from Emergence to the R2 Growth Stage.** Eric F. Scherder\*<sup>1</sup>, David C. Ruen<sup>2</sup>, Jeff M. Ellis<sup>3</sup>, Ralph B. Lassiter<sup>4</sup>, Hunter Perry<sup>5</sup>; <sup>1</sup>Dow AgroSciences, Huxley, IA, <sup>2</sup>Dow AgroSciences, Lanesboro, MN, <sup>3</sup>Dow AgroSciences, Smithville, MO, <sup>4</sup>Dow AgroSciences, Little Rock, AR, <sup>5</sup>Dow AgroSciences, Greenville, MS (158)000Ri 0: 3

**Weed Control Options in Enlist™ Soybean.** Jeff M. Ellis\*<sup>1</sup>, Ralph B. Lassiter<sup>2</sup>, Bradley W. Hopkins<sup>3</sup>, Fikru F. Haile<sup>4</sup>, Deane K. Zahn<sup>5</sup>; <sup>1</sup>Dow AgroSciences, Smithville, MO, <sup>2</sup>Dow AgroSciences, Little Rock, AR, <sup>3</sup>Dow AgroSciences, Westerville, OH, <sup>4</sup>Dow AgroSciences, Indianapolis, IN, <sup>5</sup>Dow AgroSciences, Lincoln, NE (159)000Ri 0: 3

**A New Mesotrione, Glufosinate and Isoxaflutole Tolerant Trait for Soybean Weed Management.** Brett R. Miller\*<sup>1</sup>, Rakesh Jain<sup>2</sup>, Brian Erdahl<sup>3</sup>, Aron Silverstone<sup>4</sup>, Gordon D. Vail<sup>5</sup>, Jayla Allen<sup>6</sup>, Jon Fischer<sup>7</sup>, Sally Van Wert<sup>8</sup>; <sup>1</sup>Syngenta, Minnetonka, MN, <sup>2</sup>Syngenta, Vero Beach, FL, <sup>3</sup>Syngenta, Clinton, IL, <sup>4</sup>Syngenta, Research Triangle Park, NC, <sup>5</sup>Syngenta, Greensboro, NC, <sup>6</sup>Bayer CropScience, Research Triangle Park, NC, <sup>7</sup>Bayer CropScience, Middleton, WI, <sup>8</sup>Bayer CropScience, Monheim, Germany 000P IC

**Weed Management Programs Utilizing Mesotrione in Herbicide Tolerant Soybeans.** Ryan D. Lins\*<sup>1</sup>, Dain Bruns<sup>2</sup>, Thomas H. Beckett<sup>3</sup>, Gordon D. Vail<sup>3</sup>; <sup>1</sup>Syngenta, Byron, MN, <sup>2</sup>Syngenta, Marysville, OH, <sup>3</sup>Syngenta, Greensboro, NC (161)000Ri 0: 4

**University Evaluation of Isoxaflutole Weed Management Programs in HPPD Tolerant Soybean System.** Michael L. Weber\*<sup>1</sup>, Jayla Allen<sup>2</sup>; <sup>1</sup>Bayer CropScience, Indianola, IA, <sup>2</sup>Bayer CropScience, Research Triangle Park, NC (162)000Ri 0: 4

**Glyphosate-Resistant Giant Ragweed Control with Future Weed Control Technologies.** Kelly A. Barnett\*<sup>1</sup>, Thomas C. Mueller<sup>2</sup>, Lawrence E. Steckel<sup>1</sup>; <sup>1</sup>University of Tennessee, Jackson, TN, <sup>2</sup>University of Tennessee, Knoxville, TN (163)000Ri 0: 4

## **Equipment and Application Methods**

**A New Smartphone App for Quick Reference of Spray Quality for Ground Applications.** Ryan S. Henry\*<sup>1</sup>, William E. Bagley<sup>2</sup>, Lowel Sandell<sup>3</sup>, Greg R. Kruger<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, North Platte, NE, <sup>2</sup>Wilbur-Ellis, San Antonio, TX, <sup>3</sup>University of Nebraska-Lincoln, Lincoln, NE (33)000Ri 04;

**†Influence Of Nozzle Type And Spray Volume On Herbicide Coverage At Various Heights In The Canopy Of Soybean Grown In 15.** Travis Legleiter\*, William G. Johnson; Purdue University, West Lafayette, IN (34)000Ri 052

**Tank Mixture of Hydrophilic and Lipophilic Herbicides with Adjuvants.** Devin A. Wirth\*<sup>1</sup>, Rich Zollinger<sup>2</sup>, Angela J. Kazmierczak<sup>2</sup>; <sup>1</sup>NDSU, Fargo, ND, <sup>2</sup>North Dakota State University, Fargo, ND (35)000Ri 052

**Proposed Dicamba Application Requirements for Roundup Ready® Xtend Cropping System.** Joe Sandbrink\*<sup>1</sup>, Jeff N. Travers<sup>1</sup>, Christopher D. Kamienski<sup>2</sup>, John B. Willis<sup>3</sup>; <sup>1</sup>Monsanto, St. Louis, MO, <sup>2</sup>Monsanto Company, Washington, IL, <sup>3</sup>Monsanto, Hanson, KY (36)000Ri 052

**Spray Quality Effects with Glufosinate and Additives.** Angela J. Kazmierczak\*<sup>1</sup>, Rich Zollinger<sup>1</sup>, William E. Bagley<sup>2</sup>; <sup>1</sup>North Dakota State University, Fargo, ND, <sup>2</sup>Wilbur-Ellis, San Antonio, TX (37)000Ri 053

**Reduction in Drift and Volatility of Enlist™ Duo with Colex-D™ Technology.** David E. Hillger\*<sup>1</sup>, Kuide Qin<sup>2</sup>, David M. Simpson<sup>1</sup>, Patrick Havens<sup>1</sup>; <sup>1</sup>Dow AgroSciences, Indianapolis, IN, <sup>2</sup>Dow AgroSciences, Indianapolis, IN (38)000Ri 053

**†Pre and Postemergence Herbicides on Weed Suppression in a Kentucky Bluegrass (*Poa pratensis*) and Perennial Ryegrass (*Lolium perenne*) Systems with a Conventional Sprayer and an Ultra-Low Volume Sprayer.** J Connor Ferguson\*<sup>1</sup>, Roch E. Gaussoin<sup>1</sup>, John A. Eastin<sup>2</sup>, Matt D. Sousek<sup>3</sup>, Greg R. Kruger<sup>4</sup>; <sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>Kamterter LLC, Waverly, NE, <sup>3</sup>University of Nebraska-Lincoln, Mead, NE, <sup>4</sup>University of Nebraska-Lincoln, North Platte, NE (39)000Ri 054

**Weed Control and Crop Response from Nonselective Herbicides Applied with Spray Hood Technology in Corn, Year Two.** Damian D. Franzenburg\*<sup>1</sup>, Micheal D. Owen<sup>2</sup>, Dean M. Grossnickle<sup>3</sup>, James F. Lux<sup>1</sup>; <sup>1</sup>Iowa State University, Ames, IA, <sup>2</sup>ISU, Ames, IA, <sup>3</sup>Iowa State University, Gilbert, IA (40)000Ri 054

**Flow Rates of New Ground Application Nozzles.** Annah Geyer\*<sup>1</sup>, Ryan S. Henry<sup>2</sup>, Lowel Sandell<sup>3</sup>, William E. Bagley<sup>4</sup>, Greg R. Kruger<sup>2</sup>; <sup>1</sup>University of Nebraska Lincoln, North Platte, NE, <sup>2</sup>University of Nebraska-Lincoln, North Platte, NE, <sup>3</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>4</sup>Wilbur-Ellis, San Antonio, TX (41)000Ri 055

**†Droplet Size Analysis of a Glyphosate Solution as Influenced by Carrier Volume, Nozzle, and Pressure.** Cody F. Creech\*<sup>1</sup>, Annah Geyer<sup>2</sup>, Ryan S. Henry<sup>1</sup>, Lowel Sandell<sup>3</sup>, Greg R. Kruger<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, North Platte, NE, <sup>2</sup>University of Nebraska Lincoln, North Platte, NE, <sup>3</sup>University of Nebraska-Lincoln, Lincoln, NE (42)000Ri 055

**†Tolerance of Selected Weed Species to Broadcast Flaming.** Strahinja V. Stepanovic\*<sup>1</sup>, Avishek Datta<sup>2</sup>, Neha Rana<sup>3</sup>, Stevan Z. Knezevic<sup>3</sup>; <sup>1</sup>University of Nebraska - Lincoln, Lincoln, NE, <sup>2</sup>Asian Institute of Technology, Bangkok, Thailand, <sup>3</sup>University of Nebraska-Lincoln, Concord, NE (134)000Ri 094

**†Effect of Application Carrier Volume on Herbicide Efficacy with Ten Herbicides Using a Conventional Sprayer and an Ultra-Low Volume Sprayer.** J Connor Ferguson\*<sup>1</sup>, Roch E. Gaussoin<sup>1</sup>, John A. Eastin<sup>2</sup>, Greg R. Kruger<sup>3</sup>; <sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>Kamterter LLC, Waverly, NE, <sup>3</sup>University of Nebraska-Lincoln, North Platte, NE (142)000Ri 098

**Various Formulations and Adjuvants Influence Spray Droplet Spectra.** Lillian C. Magidow\*, Gregory K. Dahl, Stephanie Wedryk, Eric P. Spandl, Joe V. Gednalske; Winfield Solutions, St. Paul, MN (200)000Ri 0; 9

**Nonionic Surfactant Adjuvant with Optimized Physical and Biological Properties for Herbicide Tank Mixtures.** Gregory J. Lindner\*<sup>1</sup>, Kevin Penfield<sup>1</sup>, Bryan G. Young<sup>2</sup>; <sup>1</sup>Croda Inc, New Castle, DE, <sup>2</sup>Southern Illinois University, Carbondale, IL (201)000Ri 0; 9

**Effect of Droplet Size on Weed Control with Dicamba and Glyphosate Tank-Mixtures Applied with Commercial Sprayers.** Christopher D. Kamienski\*<sup>1</sup>, Brian Olson<sup>2</sup>, Joe Sandbrink<sup>3</sup>, Kirk Remund<sup>4</sup>, Jeff N. Travers<sup>3</sup>; <sup>1</sup>Monsanto Company, Washington, IL, <sup>2</sup>Monsanto Company, Colby, IL, <sup>3</sup>Monsanto, St. Louis, MO, <sup>4</sup>Monsanto Company, St. Louis, MO (202)000Ri 0; :

**Drift Reduction Technologies for Applying Glyphosate-Dicamba.** Scott M. Bretthauer\*; University of Illinois, Urbana, IL(000P IC

**Impact of Spray Nozzle Technology on Enlist™ Duo Weed Control and Crop Tolerance.** Jonathan A. Huff\*<sup>1</sup>, David C. Ruen<sup>2</sup>, Larry Walton<sup>3</sup>, John Richburg<sup>4</sup>; <sup>1</sup>Dow AgroSciences, Herrin, IL, <sup>2</sup>Dow AgroSciences, Lanesboro, MN, <sup>3</sup>Dow AgroSciences, Tupelo, MS, <sup>4</sup>Dow AgroSciences, Headland, AL(000P IC

**A Comparison of Droplet Spectra from 10 Types of Ground Nozzles.** Ryan S. Henry\*<sup>1</sup>, Annah Geyer<sup>2</sup>, Lowel Sandell<sup>3</sup>, Wesley C. Hoffmann<sup>4</sup>, Bradley K. Fritz<sup>4</sup>, William E. Bagley<sup>5</sup>, Greg R. Kruger<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, North Platte, NE, <sup>2</sup>University of Nebraska Lincoln, North Platte, NE, <sup>3</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>4</sup>USDA-ARS, College Station, TX, <sup>5</sup>Wilbur-Ellis, San Antonio, TX (205)000Ri 0; :

**Will Dual Outlet Venturi Nozzles Have an Impact on Weed Control?** Robert E. Wolf\*<sup>1</sup>, Scott M. Bretthauer<sup>2</sup>; <sup>1</sup>Wolf Consulting & Research LLC, Mahomet, IL, <sup>2</sup>University of Illinois, Urbana, IL (206)000Ri 0; ;

**Application Technology Update...Equipment, Nozzles, and More.** Robert E. Wolf\*; Wolf Consulting & Research LLC, Mahomet, IL (207)000Ri 0; ;

**Forty Years of Sprayer Evaluations.** Robert N. Klein\*; University of Nebraska, North Platte, NE (208)000Ri 0; ;

**Development and Evaluation of a Cryogenic Spray System for Weed Control.** Matthew A. Cutulle\*<sup>1</sup>, Gregory R. Armel<sup>2</sup>, James Brosnan<sup>1</sup>, Jose J. Vargas<sup>3</sup>, William Hart<sup>1</sup>, Dean A. Kopsell<sup>3</sup>; <sup>1</sup>University of Tennessee, Knoxville, TN, <sup>2</sup>BASF, Research Triangle Park, NC, <sup>3</sup>The University of Tennessee, Knoxville, TN (209)000Ri 0322

## Extension

**Manual for Propane-Fueled Flame Weeding in Corn, Soybean, and Sunflower.** Stevan Z. Knezevic\*<sup>1</sup>, Avishek Datta<sup>2</sup>, Chris Bruening<sup>3</sup>, George Gogos<sup>3</sup>, Jon E. Scott<sup>1</sup>, Neha Rana<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Concord, NE, <sup>2</sup>Asian Institute of Technology, Bangkok, Thailand, <sup>3</sup>University of Nebraska - Lincoln, Lincoln, NE (43)000Ri 056

†**Training on Herbicide Mode of Action and Crop Injury Symptoms.** Jessica L. Rinderer\*<sup>1</sup>, Bryan G. Young<sup>1</sup>, Sara M. Allen<sup>2</sup>, Randy McElroy<sup>2</sup>, Carolina Medina<sup>2</sup>, Jody R. Gander<sup>2</sup>; <sup>1</sup>Southern Illinois University, Carbondale, IL, <sup>2</sup>Monsanto Company, St. Louis, MO (44)000Ri 056

†**Survey: Impact and Management of Glyphosate-resistant Kochia in Kansas.** Amar S. Godar\*<sup>1</sup>, Phillip W. Stahlman<sup>2</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Kansas State University, Hays, KS (45)000Ri 057

**Remotely Piloted Aircraft Systems and High Resolution Color Infrared Imagery for Assessing Herbicide Drift and Crop Conditions.** Dallas Peterson\*, Deon van der Merwe, Kevin Price, David Burchfield, Cathy Minihan; Kansas State University, Manhattan, KS (46)000Ri 057

**BASF's On-Target Application Academy: Educating Growers.** Walter E. Thomas\*, Maarten Staal, Steven J. Bowe, Luke L. Bozeman, Daniel Pepitone; BASF Corporation, Research Triangle Park, NC (47)000Ri 058

**An Unconventional Approach to Herbicide Resistance Management.** John E. Kaufmann\*; Kaufmann AgKnowledge, Okemos, MI (164)000Ri 0: 5

**Herbicide Resistances in Common Waterhemp.** Micheal D. Owen\*; ISU, Ames, IA (165)000Ri 0: 5

**Increasing Concerns Over Distribution Patterns of Glyphosate Resistant Weeds in Kentucky.** James R. Martin\*<sup>1</sup>, JD Green<sup>2</sup>, William W. Witt<sup>1</sup>; <sup>1</sup>University of Kentucky, Princeton, KY, <sup>2</sup>University of Kentucky, Lexington, KY (166)000Ri 0: 6

**Glyphosate-Resistant Kochia Confirmation in North Dakota.** Kirk A. Howatt\*, Andrew N. Fillmore; NDSU, Fargo, ND (167)000Ri 0: 7

**Can Growers Manage Glyphosate Resistant Kochia?** Curtis R. Thompson\*, Dallas Peterson; Kansas State University, Manhattan, KS (168)000Ri 0: 7

**Adjuvants Affect Kochia Control with Glyphosate.** Phillip W. Stahlman\*, Patrick W. Geier; Kansas State University, Hays, KS (169)000Ri 0: 7

**Common Lambsquarters Control: Chapter 3 - Adjuvants.** Rich Zollinger\*; North Dakota State University, Fargo, ND (170)000Ri 0: 8

**Most Common Weeds Identified in Grain Crops, Forages, and Turf through University of Kentucky's Weed Identification Clinic.** JD Green\*<sup>1</sup>, James R. Martin<sup>2</sup>, Aaron Laurent<sup>1</sup>; <sup>1</sup>University of Kentucky, Lexington, KY, <sup>2</sup>University of Kentucky, Princeton, KY (171)000Ri 0: 8

## **Forestry/Industrial/Turf/Aquatics/Forage/Range**

**Wild Violet Control Varies with Herbicide Selection and Triclopyr Rate.** Dan V. Weisenberger\*<sup>1</sup>, Aaron J. Patton<sup>2</sup>; <sup>1</sup>Purdue University, Lafayette, IN, <sup>2</sup>Purdue University, W. Lafayette, IN (48)000Ri 058

**Efficacy of Aminocyclopyrachlor Blends on Pasture Weeds.** Susan K. Rick\*<sup>1</sup>, Jeff H. Meredith<sup>2</sup>; <sup>1</sup>DuPont, Waterloo, IL, <sup>2</sup>DuPont, Memphis, TN (49)000Ri 059

†**Chemical Control Of English Ivy (*Hedera helix*).** Joseph Thomas\*<sup>1</sup>, Gregory R. Armel<sup>2</sup>, James Brosnan<sup>1</sup>, Jose J. Vargas<sup>3</sup>; <sup>1</sup>University of Tennessee, Knoxville, TN, <sup>2</sup>BASF, Research Triangel Park, NC, <sup>3</sup>The University of Tennessee, Knoxville, TN (50)000Ri 059

**Saltcedar Control on the Cimarron National Grasslands.** Walter H. Fick\*<sup>1</sup>, Wayne A. Geyer<sup>2</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>Kansas State University, Manhattan, KS (51)000Ri 05:

†**Effect of Organic Matter on Hybrid Bermudagrass Injury with Preemergence Herbicides in Sand-Based Rootzones.** Patrick A. Jones\*<sup>1</sup>, James Brosnan<sup>2</sup>, Dean A. Kopsell<sup>3</sup>, Gregory K. Breeden<sup>2</sup>; <sup>1</sup>University of Tennessee Knoxville, Knoxville, TN, <sup>2</sup>University of Tennessee, Knoxville, TN, <sup>3</sup>The University of Tennessee, Knoxville, TN (52)000Ri 05:

†**Methods to Safen Mustard Seed Meal Applications on Creeping Bentgrass (*Agrostis stolonifera* L.) Putting Greens.** Joseph G. Schneider\*, John B. Haguewood, Xi Xiong; University of Missouri, Columbia, MO (54)000Ri 05:

†**Control of Crabgrass on Creeping Bentgrass (*Agrostis stolonifera* L.) Putting Greens Using Preemergence Herbicide.** John B. Haguewood\*, Xi Xiong; University of Missouri, Columbia, MO (55)000Ri 05:

†**Mowing Height Effects on Preemergence Herbicide Efficacy for Smooth Crabgrass Control.** Shane M. Breeden\*<sup>1</sup>, Daniel Farnsworth<sup>2</sup>, James Brosnan<sup>2</sup>, Gregory K. Breeden<sup>2</sup>; <sup>1</sup>Maryville College, Maryville, TN, <sup>2</sup>University of Tennessee, Knoxville, TN (56)000Ri 05:

†**Influence of Nitrogen Application Timing on the Activity of Mesotrione Applied for Large Crabgrass Control.** Quincy D. Law\*<sup>1</sup>, Dan V. Weisenberger<sup>2</sup>, Aaron J. Patton<sup>1</sup>; <sup>1</sup>Purdue University, W. Lafayette, IN, <sup>2</sup>Purdue University, Lafayette, IN (123)000Ri 08:

†**Preemergence Herbicides Affect Hybrid Bermudagrass Nutrient Content.** Patrick A. Jones\*<sup>1</sup>, James Brosnan<sup>2</sup>, Dean A. Kopsell<sup>3</sup>, Gregory K. Breeden<sup>2</sup>; <sup>1</sup>University of Tennessee Knoxville, Knoxville, TN, <sup>2</sup>University of Tennessee, Knoxville, TN, <sup>3</sup>The University of Tennessee, Knoxville, TN (124)000Ri 08:

†**Effects of Herbicide Application Timing and Overseeding On Dallisgrass (*Paspalum dilatatum*) Control In Tall Fescue (*Festuca arundinacea*).** Matthew T. Elmore\*, James Brosnan, Gregory K. Breeden; University of Tennessee, Knoxville, TN (126)000Ri 08:

**Soil Type and Rooting Depth Effects on Creeping Bentgrass Tolerance to Amicarbazone and Methiozolin.** James Brosnan\*, Gregory K. Breeden, Sara Calvache, John C. Sorochan; University of Tennessee, Knoxville, TN (178)000Ri 0; 2

**Annual Grassy Weed Control in Cool-Season Turf with Topramezone.** Gregory K. Breeden\*<sup>1</sup>, James Brosnan<sup>1</sup>, Aaron J. Patton<sup>2</sup>, Dan V. Weisenberger<sup>3</sup>; <sup>1</sup>University of Tennessee, Knoxville, TN, <sup>2</sup>Purdue University, W. Lafayette, IN, <sup>3</sup>Purdue University, Lafayette, IN (179)000Ri 0; 2

**Creeping Bentgrass (*Agrostis stolonifera*) Tolerance to Topramezone in Combination With Various Herbicide Safeners.** Matthew T. Elmore\*<sup>1</sup>, James Brosnan<sup>1</sup>, Gregory R. Armel<sup>2</sup>, Michael Barrett<sup>3</sup>, Gregory K. Breeden<sup>1</sup>; <sup>1</sup>University of Tennessee, Knoxville, TN, <sup>2</sup>BASF, Research Triangel Park, NC, <sup>3</sup>University of Kentucky, Lexington, KY (180)000Ri 0; 3

**Zoysiagrass Seedhead Suppression with Imazamox.** James Brosnan\*<sup>1</sup>, Gregory K. Breeden<sup>1</sup>, Aaron J. Patton<sup>2</sup>, Dan V. Weisenberger<sup>3</sup>; <sup>1</sup>University of Tennessee, Knoxville, TN, <sup>2</sup>Purdue University, W. Lafayette, IN, <sup>3</sup>Purdue

University, Lafayette, IN (181)0000Ri 0; 3

**Safety of Labeled Herbicides for Broadleaf Weed Control in Creeping Bentgrass Putting Greens.** Aaron J. Patton\*<sup>1</sup>, Dan V. Weisenberger<sup>2</sup>, Gregory K. Breeden<sup>3</sup>, James Brosnan<sup>3</sup>; <sup>1</sup>Purdue University, W. Lafayette, IN, <sup>2</sup>Purdue University, Lafayette, IN, <sup>3</sup>University of Tennessee, Knoxville, TN (182)0000Ri 0; 4

**Common Honeylocust Control in Kansas.** Walter H. Fick\*; Kansas State University, Manhattan, KS (183)0000Ri 0; 5

**Effect of Canada Thistle Management Strategies on Forage Availability and Utilization in Rotationally Grazed Pastures.** Mark J. Renz\*<sup>1</sup>, Anders Gurda<sup>2</sup>; <sup>1</sup>University of Wisconsin Madison, Madison, WI, <sup>2</sup>University of Wisconsin-Madison, Madison, WI (184)0000Ri 0; 5

## **Herbicide Physiology**

†**Non-Target-Site Resistance to ALS Inhibitors in Waterhemp.** Jiaqi Guo\*<sup>1</sup>, Chance Riggins<sup>2</sup>, Nicholas E. Hausman<sup>1</sup>, Aaron G. Hager<sup>1</sup>, Dean E. Riechers<sup>1</sup>, Patrick Tranel<sup>1</sup>; <sup>1</sup>University of Illinois, Urbana, IL, <sup>2</sup>University of Illinois Urbana Champaign, Urbana, IL (57)0000Ri 062

**Inheritance of Phenoxy Resistance in Wild Radish (*Raphanus sativus*).** MITHILA Jugulam\*<sup>1</sup>, Natalie DiMeo<sup>2</sup>, Michael Walsh<sup>3</sup>, J. Christopher Hall<sup>2</sup>; <sup>1</sup>Kansas State University, MANHATTAN, KS, <sup>2</sup>University of Guelph, Guelph, ON, <sup>3</sup>University of Western Australia, Perth, Australia (58)0000Ri 062

**Increasing Saflufenacil Efficacy by Altering Spray Solution pH.** Jared M. Roskamp\*, William G. Johnson; Purdue University, West Lafayette, IN (59)0000Ri 062

†**Association of EPSPS Gene Amplification with Glyphosate Resistance in Waterhemp** . Laura A. Chatham\*<sup>1</sup>, Chance Riggins<sup>1</sup>, Micheal D. Owen<sup>2</sup>, Patrick Tranel<sup>3</sup>; <sup>1</sup>University of Illinois Urbana Champaign, Urbana, IL, <sup>2</sup>ISU, Ames, IA, <sup>3</sup>University of Illinois, Urbana, IL (60)0000Ri 063

**Investigating the Vacuole Pump in Glyphosate-Resistant Horseweed with <sup>31</sup>P NMR.** Xia Ge\*<sup>1</sup>, Dana A. d'Avignon<sup>1</sup>, Elizabeth Ostrander<sup>2</sup>, Joseph J. Ackerman<sup>1</sup>, Doug Sammons<sup>3</sup>; <sup>1</sup>Washington University in St Louis, St Louis, MO, <sup>2</sup>Monsanto, St Louis, MO, <sup>3</sup>Monsanto, St. Louis, MO (61)0000Ri 063

**Reduced Translocation is Associated with Common Lambsquarters Tolerance to Glyphosate.** Melinda K. Yerka<sup>1</sup>, Andrew Wiersma<sup>2</sup>, Bradley Lindenmayer<sup>3</sup>, Philip Westra<sup>3</sup>, Natalia de Leon<sup>1</sup>, David E. Stoltenberg\*<sup>1</sup>; <sup>1</sup>University of Wisconsin-Madison, Madison, WI, <sup>2</sup>Colorado State University, Ft. Collins, CO, <sup>3</sup>Colorado State University, Fort Collins, CO (62)0000Ri 063

**Applications of Shikimate Coupled Assay for Field and Laboratory.** Keith Kretzmer\*<sup>1</sup>, Doug Sammons<sup>2</sup>, Dale Shaner<sup>3</sup>, David Rumeal<sup>4</sup>, Robert DeJarnette<sup>5</sup>; <sup>1</sup>Monsanto Company, St Louis, MO, <sup>2</sup>Monsanto, St. Louis, MO, <sup>3</sup>USDA, Fort Collins, CO, <sup>4</sup>USDA, St Louis, MO, <sup>5</sup>Monsanto, St Louis, MO (63)0000Ri 064

†**Fitness of Glyphosate Resistant Giant Ragweed (*Ambrosia trifida* L.).** Kabelo Segobye\*, Burkhard Schulz, William G. Johnson, Stephen C. Weller; Purdue University, West Lafayette, IN (64)0000Ri 064

**Comparison of DuPont's Transgenic Herbicide Tolerant Canola and Conventional Herbicide Resistant Canola Out-crossing Rates.** Tim J. Johnson\*; Pioneer, Ankeny, IA (65)0000Ri 064

**Three Years of Testing Illinois Waterhemp Populations for Multiple Resistance to Glyphosate, PPO Inhibitors, and ALS Inhibitors.** Chance Riggins\*<sup>1</sup>, Aaron G. Hager<sup>2</sup>, Patrick Tranel<sup>2</sup>; <sup>1</sup>University of Illinois Urbana Champaign, Urbana, IL, <sup>2</sup>University of Illinois, Urbana, IL (122)0000Ri 089

†**Investigations into *Ambrosia artemisiifolia* (Common Ragweed) Glyphosate Resistance Mechanisms.** Jason T. Parrish\*<sup>1</sup>, Mark M. Loux<sup>1</sup>, Philip Westra<sup>2</sup>, Andrew Wiersma<sup>3</sup>, Christopher Van Horn<sup>3</sup>, David Mackey<sup>1</sup>, Leah McHale<sup>1</sup>; <sup>1</sup>The Ohio State University, Columbus, OH, <sup>2</sup>Colorado State University, Fort Collins, CO, <sup>3</sup>Colorado State University, Ft. Collins, CO (129)000Ri 092

**Differential Root and Shoot Uptake of Flumioxazin and Puroxasulfone in Three Plant Species.** Dawn Refsell\*<sup>1</sup>, Anita Dille<sup>2</sup>; <sup>1</sup>Valent USA, Lathrop, MO, <sup>2</sup>Kansas State University, Manhattan, KS (130)000Ri 092

**Cellular Uptake and Compartmentalization of Glyphosate: A <sup>31</sup>P NMR Survey of Weedy Species.** Xia Ge<sup>1</sup>, Dana A. d'Avignon\*<sup>1</sup>, Joseph J. Ackerman<sup>1</sup>, Doug Sammons<sup>2</sup>, Elizabeth Ostrander<sup>3</sup>; <sup>1</sup>Washington University in St Louis, St Louis, MO, <sup>2</sup>Monsanto, St. Louis, MO, <sup>3</sup>Monsanto, St Louis, MO (131)000Ri 093

**The Influence of Cations and Foliar Fertilizers on 2,4-D Amine and Dicamba Efficacy.** Jared M. Roskamp\*, Gurinderbir S. Chahal, William G. Johnson; Purdue University, West Lafayette, IN (132)000Ri 093

**Regional Whole Plant and Molecular Response of Kochia to Glyphosate.** Philip Westra\*<sup>1</sup>, Jan Leach<sup>1</sup>, A.S.N. Reddy<sup>1</sup>, Dale Shaner<sup>2</sup>, Andrew Wiersma<sup>3</sup>; <sup>1</sup>Colorado State University, Fort Collins, CO, <sup>2</sup>USDA, Fort Collins, CO, <sup>3</sup>Colorado State University, Ft. Collins, CO (133)000Ri 094

**Real World Exposure and Biomonitoring are not part of the Alarmist Agenda.** Larry E. Hammond\*; 2,4-D Task Force, Carmel, IN (143)000Ri 098

## **Horticulture and Ornamentals**

**Fine Tuning Microrates for Early Season Broadleaf Weed Control in Onion.** Collin Auwarter\*<sup>1</sup>, Harlene M. Hatterman-Valenti<sup>2</sup>; <sup>1</sup>NDSU, Fargo, ND, <sup>2</sup>North Dakota State University, Fargo, ND (66)000Ri 065

**Benefits and Drawbacks of Adding PRE Applications of Fomesafen to Existing Herbicide Treatments for Weed Control in Vine Crops.** Darren E. Robinson\*, Dave Bilyea; University of Guelph, Ridgetown, ON (67)000Ri 065

†**Tolerance of Various Landscape Ornamentals to Postemergence Applications of Amicarbazone and Flucarbazone.** Tyler Campbell\*<sup>1</sup>, James Brosnan<sup>1</sup>, Jose J. Vargas<sup>2</sup>; <sup>1</sup>University of Tennessee, Knoxville, TN, <sup>2</sup>The University of Tennessee, Knoxville, TN (68)000Ri 066

†**Evaluation of Tolerance and Root Quality on Azalea and Hydrangea Treated with Dimethenamid-P and Pendimethalin Alone and in Mixtures.** Jose J. Vargas\*<sup>1</sup>, James Brosnan<sup>2</sup>; <sup>1</sup>The University of Tennessee, Knoxville, TN, <sup>2</sup>University of Tennessee, Knoxville, TN (144)000Ri 099

**Tolerance and Selectivity to Copyralid Herbicide on Red Raspberries var. “Encore”.** Constanza Echaiz\*; The Ohio State University, Wooster, OH (172)000Ri 0: 9

**Pyroxasulfone for Weed Control in Vegetable Crops.** Bernard H. Zandstra\*<sup>1</sup>, Jarrod J. Morrice<sup>2</sup>; <sup>1</sup>Michigan State University, East Lansing, MI, <sup>2</sup>Michigan State University, Lansing, MI (173)000Ri 0: 9

**Weed Control in Apple with Old and New Herbicides.** Jarrod J. Morrice\*<sup>1</sup>, Bernard H. Zandstra<sup>2</sup>; <sup>1</sup>Michigan State University, Lansing, MI, <sup>2</sup>Michigan State University, East Lansing, MI (174)000Ri 0: :

**Impact of Simulated Synthetic Auxin Herbicide drift on Vegetable Crops.** Jed Colquhoun\*, Daniel Heider, Richard Rittmeyer; University of Wisconsin, Madison, WI (175)000Ri 0: :

**Interactions Between Chloracetamide and Protoporphyrinogen Oxidase-Inhibiting Herbicides in Cole Crops.** Darren E. Robinson\*, Kristen E. McNaughton; University of Guelph, Ridgetown, ON (176)000Ri 0: ;

**Effect of Simulated Glyphosate Drift to Four Potato Processing Cultivars.** Harlene M. Hatterman-Valenti\*<sup>1</sup>, Collin Auwarter<sup>2</sup>; <sup>1</sup>North Dakota State University, Fargo, ND, <sup>2</sup>NDSU, Fargo, ND (177)000Ri 0;

## Invasive Plants

**Long-Term Yellow Toadflax Control in Rangeland with Aminocyclopyrachlor.** Brian M. Jenks\*, Tiffany D. Walter; North Dakota State University, Minot, ND (69)000Ri 066

**Evaluating the Wet-Blade Herbicide Application System for the Management of Canada Thistle (*Cirsium arvense*) Along Roadside Right-of-Ways.** Kevyn Juneau, Catherine S. Tarasoff\*; Michigan Technological University, Houghton, MI 000P IC

†**Response of Amur honeysuckle (*Lonicera maackii*) to Postemergence Herbicides.** Spencer A. Riley\*, Reid J. Smeda; University of Missouri, Columbia, MO (120)000Ri 088

## Weed Biology/Ecology/Management

**Reproductive Potential of Summer Annual Weeds Based on Termination Method and Timing.** Erin C. Taylor-Hill\*, Karen A. Renner, Christy Sprague; Michigan State University, East Lansing, MI (71)000Ri 067

†**Fitness of Sorghum, Shattercane and their F2 Hybrid.** Jared J. Schmidt\*<sup>1</sup>, Scott E. Sattler<sup>2</sup>, Aaron J. Lorenz<sup>3</sup>, Jeff F. Pedersen<sup>4</sup>, John L. Lindquist<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>USDA-ARS, University of Nebraska-Lincoln, Lincoln, NE, <sup>3</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>4</sup>USDA-ARS; University of Nebraska-Lincoln, Lincoln, NE (72)000Ri 067

†**Crop Canopy Effects on Kochia Seed Production.** Rutendo P. Nyamusamba\*, Mike J. Moechnig, David A. Vos, Jill K. Alms, Darrell L. Deneke; South Dakota State University, Brookings, SD (73)000Ri 068

†**Crop Canopy Effects on *Kochia scoparia* in Kansas.** Andrew Esser\*; Kansas State University, Manhattan, KS (74)000Ri 068

**DuPont's Perspectives on Managing Weed Resistance in North Central States.** David Saunders\*<sup>1</sup>, Larry H. Hageman<sup>2</sup>, Helen A. Flanigan<sup>3</sup>; <sup>1</sup>DuPont Crop Protection, Johnston, IA, <sup>2</sup>DuPont Crop Protection, ROCHELLE, IL, <sup>3</sup>DuPont, Greenwood, IN (75)000Ri 069

†**Should Atrazine at Reduced Rates be Applied PRE or POST in Tank-mix Combinations to Improve Giant Ragweed Control in Corn?** Ross A. Recker\*<sup>1</sup>, Vince M. Davis<sup>2</sup>; <sup>1</sup>University of Wisconsin-Madison, Madison, WI, <sup>2</sup>University of Wisconsin-Madison, Madison, WI (76)000Ri 069

**Glyphosate-Resistant Giant Ragweed Control with Saflufenacil and Dicamba.** Stevan Z. Knezevic\*<sup>1</sup>, Dejan Nedeljkovic<sup>2</sup>, Jon E. Scott<sup>1</sup>, Avishek Datta<sup>3</sup>, Neha Rana<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Concord, NE, <sup>2</sup>University of Belgrade, Belgrade, Serbia, <sup>3</sup>Asian Institute of Technology, Bangkok, Thailand (77)000Ri 06:

**Giant Ragweed Resistance to Glyphosate in Nebraska.** Stevan Z. Knezevic\*<sup>1</sup>, Dejan Nedeljkovic<sup>2</sup>, Jon E. Scott<sup>1</sup>, Avishek Datta<sup>3</sup>, Neha Rana<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Concord, NE, <sup>2</sup>University of Belgrade, Belgrade, Serbia, <sup>3</sup>Asian Institute of Technology, Bangkok, Thailand (78)000Ri 06:

†**Giant Ragweed Resistance to Glyphosate in Wisconsin.** Courtney E. Glettner\*<sup>1</sup>, Melinda K. Yerka<sup>1</sup>, James K. Stute<sup>2</sup>, Timothy L. Trower<sup>1</sup>, David E. Stoltenberg<sup>1</sup>; <sup>1</sup>University of Wisconsin-Madison, Madison, WI, <sup>2</sup>University of Wisconsin-Madison, Janesville, WI (79)000Ri 06:

**Common Sunflower and Giant Ragweed Emergence Profiles in Kansas.** Anita Dille\*<sup>1</sup>, Analiza H. Ramirez<sup>2</sup>; <sup>1</sup>Kansas State University, Manhattan, KS, <sup>2</sup>University of Florida, Lake Alfred, FL (80)000Ri 06;

**Response of Giant Ragweed Biotypes to Soil Microbial Pathogens.** Jessica R. Schafer\*<sup>1</sup>, Steven G. Hallett<sup>2</sup>, William G. Johnson<sup>2</sup>; <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Purdue University, West Lafayette, IN (81)000Ri 072

**Evaluation of a Putative HPPD-Resistant Palmer Amaranth (*Amaranthus palmeri*) Population in Nebraska.** Lowel Sandell\*<sup>1</sup>, Amit Jhala<sup>1</sup>, Greg R. Kruger<sup>2</sup>; <sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>University of Nebraska-Lincoln, North Platte, NE (82)0000Ri 072

**Glyphosate Applications Using Different Rates of UAN as a Carrier.** Turner J. Dorr\*<sup>1</sup>, Jeffrey Golus<sup>2</sup>, Greg R. Kruger<sup>3</sup>, Lowel Sandell<sup>4</sup>, Mark L. Bernards<sup>5</sup>, Stevan Z. Knezevic<sup>6</sup>; <sup>1</sup>University of Nebraska Lincoln WCREC, North Platte, NE, <sup>2</sup>University of Nebraska, Lincoln, North Platte, NE, <sup>3</sup>University of Nebraska-Lincoln, North Platte, NE, <sup>4</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>5</sup>Western Illinois University, Macomb, IL, <sup>6</sup>University of Nebraska-Lincoln, Concord, NE (83)0000Ri 073

**Nitrogen Rate and the Effect on Western Corn Rootworm Emergence and Damage to Volunteer Corn.** Paul T. Marquardt\*, Christian Krupke, William G. Johnson; Purdue University, West Lafayette, IN (84)0000Ri 073

**Wheat Row Spacing and Seeding Rate Effect on Weed Emergence and Wheat Yield.** Douglas E. Shoup\*; Kansas State University, Chanute, KS (85)0000Ri 074

†**Results from a Two Year Survey of Stem-boring Insects Found in Missouri Waterhemp Populations.** Brock S. Waggoner\*, Kevin W. Bradley, Wayne C. Bailey; University of Missouri, Columbia, MO (93)0000Ri 075

†**When is the Best Time for Emergence: Flowering Phenology, Seed Production and Seed Characteristics of Natural Common Waterhemp (*Amaranthus tuberculatus* (Moq) Sauer) Cohorts.** Chenxi Wu\*<sup>1</sup>, Micheal D. Owen<sup>2</sup>; <sup>1</sup>University of Illinois at Champaign-Urbana, Urbana, IL, <sup>2</sup>ISU, Ames, IA (94)0000Ri 075

**The Effect of Nitrogen Rate on Volunteer Corn Bt Protein Expression.** Paul T. Marquardt\*, Christian Krupke, William G. Johnson; Purdue University, West Lafayette, IN (95)0000Ri 076

†**Environmental Triggers of Winter Annual Weed Emergence.** Rodrigo Werle\*<sup>1</sup>, Andrew J. Tyre<sup>1</sup>, Mark L. Bernards<sup>2</sup>, Timothy J. Arkebauer<sup>1</sup>, John L. Lindquist<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>Western Illinois University, Macomb, IL (96)0000Ri 076

†**Pollen Viability of *Amaranthus* Species In Vitro.** Tye C. Shauck\*, Reid J. Smeda; University of Missouri, Columbia, MO (97)0000Ri 077

**Waterhemp Resistance to Post-Emergent Application of HPPD Herbicides.** Neha Rana\*<sup>1</sup>, Jon E. Scott<sup>1</sup>, Aaron S. Franssen<sup>2</sup>, Vinod K. Shivrain<sup>3</sup>, Stevan Z. Knezevic<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Concord, NE, <sup>2</sup>Syngenta Crop Protection, Seward, NE, <sup>3</sup>Syngenta Crop Protection, Vero Beach, FL (98)0000Ri 077

†**Presence and Characterization of Glyphosate Resistant Common Waterhemp and Palmer Amaranth in Kansas.** Josh A. Putman\*; Kansas State University, Manhattan, KS (99)0000Ri 078

†**Sensitivity of Glyphosate-Resistant *Amaranthus* to Glyphosate is Altered by Soil Applied Nitrogen.** Jon R. Kohrt\*, Bryan G. Young, Joseph L. Matthews, Julie M. Young; Southern Illinois University, Carbondale, IL (100)0000Ri 078

**Interactions Between Glyphosate, *Fusarium* Infection of Waterhemp, and Soil Microorganisms.** Kristin K. Rosenbaum\*, Lee Miller, Robert Kremer, Kevin W. Bradley; University of Missouri, Columbia, MO (101)0000Ri 079

†**Emergence and Control of Putative Herbicide-Resistant Waterhemp.** Lacy J. Valentine\*<sup>1</sup>, Greg R. Kruger<sup>2</sup>, Lowel Sandell<sup>3</sup>, Zac J. Reicher<sup>1</sup>, Patrick Tranel<sup>4</sup>; <sup>1</sup>University of Nebraska - Lincoln, Lincoln, NE, <sup>2</sup>University of Nebraska-Lincoln, North Platte, NE, <sup>3</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>4</sup>University of Illinois, Urbana, IL (102)0000Ri 079

†**Weed Hosts of *Clavibacter michiganensis* subsp. *nebraskensis*, Causal Agent of Goss's Bacterial Wilt and Leaf Blight.** Joseph T. Ikley\*, William G. Johnson, Kiersten A. Wise; Purdue University, West Lafayette, IN (103)0000Ri 07:



**Integrated Weed Management using Row Spacing, Cover Crops, and Soybean Varieties.** Amanda M. Flipp\*<sup>1</sup>, Gregg Johnson<sup>2</sup>, Jeffrey Gunsolus<sup>3</sup>, Donald Wyse<sup>2</sup>; <sup>1</sup>University of Minnesota - Twin Cities, St. Paul, MN, <sup>2</sup>University of Minnesota, St. Paul, MN, <sup>3</sup>University of Minnesota, St. Paul, MN (104)000Ri 07:

†**Allelopathy of Sudangrass Cover Crop on Green Foxtail.** Jared J. Schmidt\*<sup>1</sup>, Sam E. Wortman<sup>2</sup>, John L. Lindquist<sup>1</sup>; <sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>University of Illinois Urbana-Champaign, Urbana, IL (105)000Ri 07;

†**Competitive Effects of an Invasive Amaranthaceae (*Achyranthes japonica*) on Soybean Compared with *Amaranthus palmeri* and *A. rudis*.** Lauren M. Schwartz\*<sup>1</sup>, Bryan G. Young<sup>1</sup>, David J. Gibson<sup>2</sup>; <sup>1</sup>Southern Illinois University, Carbondale, IL, <sup>2</sup>Southern Illinois University, Carbondale, IL (121)000Ri 089

**Root Colonization of Glyphosate-Treated Weed Biotypes by Soil Microbes.** Jessica R. Schafer\*<sup>1</sup>, Steven G. Hallett<sup>2</sup>, William G. Johnson<sup>2</sup>; <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Purdue University, West Lafayette, IN (125)000Ri 08;

## Symposium: Finding a Career in Weed Science

**Symposium Introduction.** J Connor Ferguson\*; University of Nebraska-Lincoln, Lincoln, NE

**Graduate Education in Weed Science – In With The New and Out With the Old?** Philip Westra\*; Colorado State University, Fort Collins, CO (147)000Ri 09:

**Networking or Not Working.** Arlene Taich\*; Washington University-St. Louis, St. Louis, MO000P IC

**Resume/CV and Interview Skills.** Carlos Gomez\*; Monsanto Company, Chesterfield, MO000P IC

**Salary Savvy: Negotiation Tips and Tactics.** Dallas Ford\*; Syngenta, Kansas City, MO000P IC

**Want to be a Weed Scientist with University or Industry?** Amit Jhala\*<sup>1</sup>, Vince M. Davis<sup>2</sup>, Joe Armstrong<sup>3</sup>, Lillian C. Magidow<sup>4</sup>; <sup>1</sup>University of Nebraska-Lincoln, Lincoln, NE, <sup>2</sup>University of Wisconsin-Madison, Madison, WI, <sup>3</sup>Dow AgroSciences, Davenport, IA, <sup>4</sup>Winfield Solutions, St. Paul, MN (151)000Ri 09:

## Symposium: Invasive Potential of Biofuel Crops

**Introductory Comments.** Scott Flynn\*; Dow AgroSciences, Ankeny, IA

**Historical View of Introduced Plants that have Become Invasive.** William W. Witt\*; University of Kentucky, Princeton, KY (194)000Ri 0; 8

**Role of *Miscanthus* spp. in the Biofuel Industry and their Potential Invasiveness.** Emily Heaton\*<sup>1</sup>, Allison Snow<sup>2</sup>, Miriti Maria<sup>2</sup>; <sup>1</sup>Iowa State University, Ames, IA, <sup>2</sup>Ohio State University, Columbus, OH (195)000Ri 0; 9

**The Pros and Cons of Using Native Perennial Grasses for Biofuel Feedstocks.** Rob Mitchell\*; USDA-ARS, Lincoln, NE000P IC

**Invasive Trees as an Energy Crop: What Should We Expect?** Scott Flynn\*<sup>1</sup>, Pat Burch<sup>2</sup>, Vanelle Peterson<sup>3</sup>; <sup>1</sup>Dow AgroSciences, Ankeny, IA, <sup>2</sup>Dow AgroSciences, Christiansburg, VA, <sup>3</sup>Dow AgroSciences, Mulino, OR (197)000P IC

**Importing Plants: Permits and Assessments.** Michael Brown\*; USDA-ARS, Jefferson City, MO000P IC

\*PRESENTER † STUDENT CONTEST