

**Does Glyphosate Influence Management of Rhizoctonia Crown and Root Rot in Glyphosate-Resistant Sugarbeet?** Kelly A. Barnett , Christy L. Sprague, William W. Kirk, and Linda E. Hanson, Michigan State University, East Lansing; USDA-ARS, East Lansing, MI. [\(1\)](#)

**Response of Dry Bean to Preemergence and Postemergence Applications of Cloransulam-Methyl.** Nader Soltani , Christy Shropshire, and Peter H. Sikkema, University of Guelph, Ridgetown Campus, Ontario. [\(2\)](#)

**Impact of Tillage System and Application Timing of Postemergence Herbicides on Italian Ryegrass Control in Wheat.** James R. Martin , Charles R. Tutt, and Dorothy L. Call, University of Kentucky, Princeton. [\(3\)](#)

**Fallow Weed Control with Saflufenacil.** Brian M. Jenks , Gary P. Willoughby, and Jordan L. Hoefing, North Dakota State University, Minot. [\(4\)](#)

**Grass Control with Nicosulfuron and Metsulfuron Methyl in Bermudagrass.** Douglas E. Shoup , Kansas State University, Chanute. [\(28\)](#)

**Pulse Crop Tolerance to Pyroxasulfone.** Ryan L. Hunt and Richard K. Zollinger, North Dakota State University, Fargo. [\(72\)](#)

**Integrated Management Strategies to Reduce Weed Populations in Pastures** . Josh A. Tolson , J.D. Green, and William W. Witt, University of Kentucky, Lexington. [\(79\)](#)

**Response of Spiny Amaranth to Timing of Herbicide Applications in Pastures.** Meghan E. Edwards , J.D. Green, and William W. Witt, University of Kentucky, Lexington. [\(80\)](#)

**Tolerance of Miscanthus to Pre- and Post-emergence Herbicides.** Alexander J. Lindsey , Wesley J. Everman, Calvin F. Glaspie, Michigan State University, East Lansing. [\(81\)](#)

**Effect of Growth Media on Common Lambsquarters and Giant Ragweed Biotypes Response to Glyphosate.** Jessica R. Schafer , Andrew M. Westhoven, Greg R. Kruger, Vince M. Davis, Steven G. Hallett, and William G. Johnson, Purdue University, West Lafayette, IN. [\(102\)](#)

**Eradication Studies in Miscanthus x giganteus.** Eric K. Anderson , Aaron G. Hager, Thomas B. Voigt, German A. Bollero, University of Illinois, Urbana. [\(103\)](#)

**Field Performance of Flaming Hood vs Open Torch.** Chris A. Bruening , George Gogos, Robert Leskovsek, Santiago M. Ulloa, and Stevan Z. Knezevic, University of Nebraska, Lincoln and Concord; Agricultural Institute of Slovenia, Ljubljana. [\(105\)](#)

**Effect of Adjuvant, Spray Volume, and Rate on Dry Bean Desiccation with Saflufenacil.** Jordan L. Hoefing , Brian M. Jenks, Gary P. Willoughby,

Richard K. Zollinger, Jerry L. Ries, and Robert G. Wilson, North Dakota State University, Minot and Fargo; University of Nebraska, Scottsbluff. [\(107\)](#)

**Interaction Between Soil Nitrogen and Imazamox on Palmer Amaranth Control in Sunflower.** Amar S. Godar , Phillip W. Stahlman, and J. Anita Dille, Kansas State University, Manhattan and Hays. [\(108\)](#)

**Management of Glyphosate-Resistant Giant Ragweed.** Jason M. Fisher , Jeff M. Stachler, and John L. Luecke, North Dakota State University and University of Minnesota, Fargo. [\(109\)](#)

**Establishment of Switchgrass for Biofuel Production in Wisconsin.** Mark Renz , University of Wisconsin, Madison. [\(159\)](#)

**Tolerance of Switchgrass to Pre- and Postemergence Herbicides.** Wesley J. Everman , Calvin F. Glaspie, Demitria Gavit, Jan Michael, and Donald Penner. Michigan State University, East Lansing. [\(160\)](#)

**Management of Glyphosate-Resistant Common Ragweed.** Jeff M. Stachler , John L. Luecke, and Jason M. Fisher, North Dakota State University and University of Minnesota, Fargo. [\(178\)](#)

**Effect of Planting Date on Weed Control in Glyphosate-Resistant Sugarbeet.** Andrew R. Kniss , University of Wyoming, Laramie. [\(179\)](#)

**Influence and Control of Volunteer Corn in Sugarbeet.** Robert G. Wilson , Gustavo M. Sbatella, and Andrew R. Kniss, University of Nebraska, Scottsbluff; University of Wyoming, Laramie. [\(180\)](#)

**Interaction of Ethofumesate and Glyphosate for Weed Control in Glyphosate-Resistant Sugarbeet.** Dennis C. Odero and Andrew R. Kniss, University of Wyoming, Laramie. [\(181\)](#)

**Influence of Herbicide Application Timing on Winter Annual Grass Control in Winter Wheat.** Dallas E. Peterson , Mark M. Claassen, Patrick W. Geier, and Phillip W. Stahlman, Kansas State University, Manhattan. [\(182\)](#)

**Management of Difficult to Control Grass Species with Mesosulfuron-methyl plus Propoxycarbazone in Wheat Grown in the Northern Plains.** Steven King , Mary Paulsgrove, Kevin Thorsness, Dean Maruska, Brad Ruden, and Charlie Hicks, Bayer CropScience, Billings, MT; Research Triangle Park, NC; Fargo, ND; Warren, MN; Bruce, SD; and Livermore, CO. [\(183\)](#)

**Performance of Pulsar Herbicide on Broadleaf Weeds in Wheat and Barley.** Kathrin Schirmacher , Scott B. Clewis, Peter C. Forster, Donald J. Porter, and Stephen M. Schraer, Syngenta Crop Protection, Greensboro, NC. [\(184\)](#)

**Pyrasulfotole and Bromoxynil for Efficacy and Crop Response in Winter Wheat.** Patrick W. Geier , Phillip W. Stahlman, and Dallas E. Peterson, Kansas State University, Hays and Manhattan. [\(185\)](#)

**WolverineM Herbicide Overview of Performance in Northern Plains Cereals.** Kevin B. Thorsness , Steven R. King, Dean W. Maruska, Mary D. Paulsgrove, Bradley E. Ruden, Michael C. Smith, George S. Simkins, and Mark A. Wrucke, Bayer CropScience, Research Triangle Park, NC. [\(186\)](#)

**Soybean Double Crop Response to Spring Applied Pyroxsulam in Winter Wheat.** Gary A. Finn , D. Chad Cummings, Monte R. Weimer, Jeffrey M. Ellis, Roger E. Gast, Steve P. Nolting, Patrick W. Geier, Douglas E. Shoup, Thomas F. Peeper, and Phil Westra, Dow AgroSciences, Indianapolis, IN; Kansas State University, Hays and Chanute; Oklahoma State University, Stillwater; Colorado State University, Ft. Collins. [\(187\)](#)

**Crop Tolerance and Broadleaf Weed Efficacy for Combinations of Thiencazabazone Methyl and Tembotrione Applied at Three Corn Growth Stages.** Daniel K. Tiedemann , Bryan G. Young, Ronald F. Krausz and Joseph L. Matthews, Southern Illinois University, Carbondale. [\(5\)](#)

**Effects of Nitrogen Rate and Weed Removal Timing on Corn Yield.** Laura E. Bast , Wesley J. Everman, and Darryl D. Warncke, Michigan State University, East Lansing. [\(6\)](#)

**Effect of Postemergence Herbicides on Field and Silage Corn Biomass Accumulation and Bio-energy Quality.** Wesley J. Everman , Bradley J. Love, Jacob Gebhardt, and Andrew J. Chomas, Michigan State University, East Lansing. [\(7\)](#)

**Comparison of Postemergence Herbicides in Corn with Resistance to Glyphosate and Glufosinate.** Mark M. Loux , Anthony F. Dobbels, William G. Johnson, Bryan G. Young, Chris Boerboom, Kevin Bradley, and Aaron Hager, The Ohio State University, Columbus; Purdue University, West Lafayette, IN; Southern Illinois University, Carbondale; University of Wisconsin, Madison; University of Missouri, Columbia; University of Illinois, Urbana. [\(8\)](#)

**Interactions between Saflufenacil and Glyphosate on Selected Broadleaf Weeds.** Stevan Z. Knezevic, Avishek Datta, Jon Scott , and Leo D. Charvat, University of Nebraska, Lincoln; BASF Corporation, Lincoln, NE. [\(9\)](#)

**Utilization of Flumioxazin in Midwestern Minimum and No-till Corn.** Eric J. Ott , Dawn E. Refsell, Trevor M. Dale, and John A. Pawlak, Valent USA Corporation, Walnut Creek, CA. [\(10\)](#)

**Performance of Dow AgroSciences Herbicide Tolerance Trait in Corn.** Mark A. Peterson , David M. Simpson, Cory Cui, Eric F. Scherder, David C. Ruen, John S. Richburg, Sam M. Ferguson, Patricia L. Prasifka and Terry R. Wright, Dow AgroSciences, Indianapolis, IN. [\(11\)](#)

**Evaluation of the Potential for an Organophosphate Interaction in Optimum® GAT® versus Conventional Field Corn.** Kevin R. Schabacker , Larry H. Hageman, Charles E. Snipes and David W. Saunders. Dupont Crop Protection, Rochelle, IL. [\(12\)](#)

**Optimum GAT Corn in Kentucky.** Sara K. Carter , Charles H. Slack, and Helen A. Flanigan, University of Kentucky, Lexington; E.I. DuPont de Nemours & Co. Inc., Wilmington, DE. [\(13\)](#)

**Cocklebur Control in Corn.** Peter H. Sikkema, Christy Shropshire, and Nader Soltani , University of Guelph, Ridgetown Campus, Ontario. [\(14\)](#)

**Herbicide Efficacy on Field Horsetail in No-till Corn.** Bryan M. Jensen, Chris M. Boerboom , and Tim L. Trower, University of Wisconsin, Madison. [\(15\)](#)

**Field Corn Tolerance to Broadcast Flaming.** Santiago M. Ulloa , Avishek Datta, Stevan Z. Knezevic, Chris Bruening, George Gogos, Goran Malidza, and Robert Leskovsek, University of Nebraska, Concord and Lincoln; Institute of Field and Vegetable Crops, Novi Sad, Serbia. [\(112\)](#)

**Control of Glyphosate-Resistant Corn in a Corn Replant Situation.** Ryan M. Terry , Paul T. Marquardt, William G. Johnson and Mark Loux, Purdue University, West Lafayette, IN; The Ohio State University, Columbus. [\(113\)](#)

**Grass Efficacy with Thiencarbazone Methyl and Combinations with Tembotrione as Influenced by Application Timing.** Dan K. Tiedemann , Bryan G. Young, Ronald F. Krausz, and Joseph L. Matthews, Southern Illinois University, Carbondale. [\(114\)](#)

**University Research in Optimum GAT Corn.** David Carruth , Richard Zollinger, Chris Boerboom, Michael Moechnig, and Tom Hoverstad, North Dakota State University, Fargo; University of Wisconsin, Madison; South Dakota State University, Brookings; University of Minnesota, Waseca. [\(115\)](#)

**Quizalofop Efficacy on Acetyl-Coenzyme A Carboxylase Resistant Grain Sorghum as Affected by Application Rate and Timing.** M. Joy M. Abit , Kassim Al-Khatib, Phillip W. Stahlman, and Patrick W. Geier, Kansas State University, Manhattan and Hays. [\(116\)](#)

**Benchmark Study: Seedbank Emergence Patterns in Best Management Practices Fields Versus Grower Practices.** Robert G. Wilson , Stephen C. Weller, Bryan G. Young, David L. Jordan, Micheal D.K. Owen, Philip Dixon, David R. Shaw, University of Nebraska, Scottsbluff; Purdue University, West Lafayette; Southern Illinois University, Carbondale; North Carolina State University, Raleigh; Iowa State University, Ames; Mississippi State University, Mississippi State. [\(117\)](#)

**Callisto Xtra Herbicide for Postemergence Broadleaf Weed Control in Corn.** Ryan D. Lins , Gordon D. Vail, and Carroll M. Moseley, Syngenta Crop Protection, Greensboro, NC. ([118](#))

**Isoxaflutole + Cyprosulfamide, Thien carbazon e + Isoxaflutole + Cyrosulfamide: Performance in University Corn Trials.** Kevin K. Watteyne , Tate Castillo, John R. Hinz, Brent Philbrook, and James R. Bloomberg, Bayer CropScience, Research Triangle Park, NC. ([119](#))

**Control of Glyphosate-Resistant and Susceptible Weeds with 2,4-D Alone or in Tank Mixes with Glyphosate.** Eric F. Scherder , Marvin E. Schultz, Mark A. Peterson, Jeffrey M. Ellis, Scott C. Ditmarsen, Kevin W. Bradley, Reid J. Smeda, and William G. Johnson, Dow AgroSciences, Indianapolis, IN; University of Missouri, Columbia, Purdue University, West Lafayette, IN. ([120](#))

**Effect of Weed Size on Control of Weeds with 2,4-D and Glyphosate Tank Mixes in Corn.** David E. Hillger , Marvin E. Schultz, Dave C. Ruen, Bruce E. Maddy, A. Stanley Culpepper, Mark M. Loux, and Bryan G. Young; Dow AgroSciences, Indianapolis, IN; University of Georgia, Tifton; The Ohio State University, Columbus; Southern Illinois University, Carbondale. ([121](#))

**Thien carbazon e-Methyl + Tembotrione + Isoxadifen-Ethyl: A New Herbicide for Grass and Broadleaf Weed Control in Corn.** George S. Simkins , David Lamore, Jerry Hora, Brent Philbrook and James R. Bloomberg, Bayer CropScience, Research Triangle Park, NC. ([122](#))

**Evaluation of Herbicides in Optimum GAT Corn.** Dean M. Grossnickle , Micheal D.K. Owen, James F. Lux, and Damian D. Franzenburg, Iowa State University, Ames. ([123](#))

**Optimum ® GAT ® Corn Herbicide Programs for the North Central States.** Kevin L. Hahn , Keith D. Johnson, Larry H. Hageman and David W. Saunders. DuPont Crop Protection, Johnston, IA. ([124](#))

**Pyrasulfotole and Bromoxynil, Potentially a New Herbicide for Weed Control in Grain Sorghum.** Curtis R. Thompson , Brian L.S. Olson, Randal S. Currie, Pat W. Geier, Phil W. Stahlman, Nathan G. Lally and Alan Schlegel, Kansas State University, Manhattan and Hays. ([125](#))

**Sulfonylurea and Quizalofop Tolerance Traits in Sorghum - New Weed Management Tool for Sorghum Production.** Robert N. Rupp , Douglas J. Meadows. David W. Saunders, Wayne J. Schumacher, DuPont Crop Protection, Johnston, IA. ([126](#))

**Tolerance of Three Millet Types to Saflufenacil.** Phillip W. Stahlman , Patrick W. Geier, and Leo D. Charvat, Kansas State University, Hays; BASF Corporation, Lincoln, NE. ([127](#))

**Kochia Control with Selected Herbicides in Soybeans.** Brandon M. Hulse , Kassim Al-Khatib, Phillip W. Stahlman, Dallas E. Peterson, and Patrick W. Geier, Kansas State University, Manhattan. ([16](#))

**Impact of Late Herbicide Applications in Soybean.** Nader Soltani , Robert E. Nurse, and Peter H. Sikkema, University of Guelph, Ridgetown Campus, Ontario. ([17](#))

**Evaluation of Herbicide Programs for the Control of Volunteer Glyphosate-Resistant and Glufosinate-Resistant Corn in Glufosinate-Resistant Soybean.** Travis R. Legleiter , Eric B. Riley, Jimmy D. Wait, Kristin K. Payne, and Kevin W. Bradley, University of Missouri, Columbia. ([18](#))

**Efficacy of Glufosinate Plus Fomesafen Mixtures on Giant Ragweed, Common Lambsquarters and F1 Volunteer Corn.** Chad B. Brabham and William G. Johnson, Purdue University, West Lafayette, IN. ([19](#))

**Optimal Activator Adjuvants for Glyphosate Tank-Mixtures in Soybean.** David K. Powell , Bryan G. Young, Doug J. Maxwell, and Gordon K. Roskamp, Southern Illinois University, Carbondale. ([20](#))

**Performance of Dow AgroSciences Herbicide Tolerance Trait in Soybean.** David M. Simpson , Cory C. Cui, Sam M. Ferguson, Brian D. Olson, Patricia L. Prasifka, John R. Richburg, David C. Ruen and Eric F. Scherder, Dow AgroSciences, Indianapolis, IN. ([21](#))

**Effect of Nozzle Type and Application Volume for Annual Weed Control in Liberty-Link Soybean with Glufosinate.** David A. Nicolai , University of Minnesota, St. Paul. ([22](#))

**Simulated Dicamba Drift on a Low Soybean Plant Population.** Matthew J. Hardebeck , Andrew P. Robinson, and William G. Johnson, Purdue University, West Lafayette, IN. ([23](#))

**Simulated Dicamba Drift on Roundup-Ready Soybean.** Andrew P. Robinson and William G. Johnson, Purdue University, West Lafayette, IN. ([24](#))

**Soybean Response to Simulated Status Drift.** Damian Franzenburg , Micheal D.K. Owen, Jim Lux, and Dean Grossnickle, Iowa State University, Ames. ([25](#))

**Effectiveness and Consistency of Tank-mix Partners with Glyphosate for Postemergence Applications in Soybean.** David K. Powell , Bryan G. Young, Doug J. Maxwell, and Gordon K. Roskamp, Southern Illinois University, Carbondale. ([73](#))

**Optimum GAT Soybean: Herbicide Combinations for Pre-plant Burndown and Residual Weed Control.** Nicholas V. Hustedde , Bryan G.



Young, and Joseph L. Matthews, Southern Illinois University, Carbondale. ([74](#))

**Yield of Herbicide-Resistant Soybean Under Various Weed Control Systems.** Molly M. Buckham and Christy L. Sprague, Michigan State University, East Lansing. ([75](#))

**Effect of Glyphosate and Fungicides on Soybean Yield Under Weed-Free Conditions.** Ryan S. Henry, Kiersten A. Wise, and William G. Johnson, Purdue University, West Lafayette, IN. ([76](#))

**Competition of Transgenic Volunteer Corn with Soybean and the Implications for Weed and Insect Resistance Management.** Paul T. Marquardt, Christian H. Krupke, and William G. Johnson, Purdue University, West Lafayette, IN. ([77](#))

**Simulated 2,4-D Drift on Roundup-Ready Soybean.** Andrew P. Robinson, William G. Johnson, Jerry W. Keaton, and David M. Simpson. Purdue University, West Lafayette, IN; Dow AgroSciences, Indianapolis, IN. ([78](#))

**V-10233 Performance in Midwest Soybean Fields.** Dawn E. Refsell, Eric J. Ott, Trevor M. Dale, and John A. Pawlak, Valent USA Corporation, Walnut Creek, CA. ([82](#))

**Enhancing Saflufenacil with Adjuvants and Tank-mix Partners.** Angela J. Kazmierczak, Richard K. Zollinger, and Jerry L. Ries, North Dakota State University, Fargo. ([83](#))

**Evaluating the Utility of Glufosinate for Weed Management in Burndown Applications.** Mark A. Waddington, Jayla R. Allen, Michael Weber, Bayer CropScience, Research Triangle Park, NC 27709 ([153](#))

**Evaluation of Programs for the Management of Palmer Amaranth and Common Waterhemp in Conventional, Glyphosate-Resistant, and Glufosinate-Resistant Soybeans.** Kristin K. Payne, Eric B. Riley, Travis R. Legleiter, Jim D. Wait, and Kevin W. Bradley, University of Missouri, Columbia. ([154](#))

**Optimum® GAT® Crops Herbicide Programs with Burndown plus Residual Activity for No-till Cropping Systems.** David W. Saunders, Susan K. Rick, Marsha J. Martin, and Richard M. Edmund, DuPont Crop Protection, Dallas Center, IA. ([155](#))

**Optimum® GAT® Soybeans Herbicide Programs for the North Central States.** Mick F. Holm, James D. Harbour, Helen A. Flanigan, and David W. Saunders. DuPont Crop Protection, Johnston, IA. ([156](#))

**Regional Summary of Optimum GAT Soybean Research.** Angela J. Kazmierczak, Richard K. Zollinger, Chris M. Boerboom, Michael Moechnig, and Jeff Gunsolus, North Dakota State University, Fargo; University of

Wisconsin, Madison; South Dakota State University, Brookings; University of Minnesota, St. Paul. ([157](#))

**Herbicide Combinations for Weed Control in Glyphosate Resistant Alfalfa.** Alexander J. Lindsey , Andrew J. Chomas, Wesley J. Everman, and Steven A. Gower, Michigan State University, East Lansing; The Monsanto Company, St. Louis, MO. ([26](#))

**Long-Term Effect of Weed Control and Cutting System on Roundup Ready Alfalfa.** Andrew J. Chomas , Timothy S. Dietz, James J. Kells, and Wesley J. Everman, Michigan State University, East Lansing. ([27](#))

**Preemergence Weed Control in Onion with Pendimethalin, Flumioxazin, Ethofumesate, Dimethenamid-p, S-metolachlor, Acetochlor, and Propachlor.** Chad M. Herrmann and Bernard H. Zandstra, Michigan State University, East Lansing. ([48](#))

**Use of Fomesafen in Irrigated Potato.** Collin P. Auwarter and Harlene M. Hatterman-Valenti, North Dakota State University, Fargo. ([49](#))

**Glyphosate Drift to Dryland Red Potatoes.** Harlene M. Hatterman-Valenti and Collin P. Auwarter, North Dakota State University, Fargo. ([50](#))

**Tolerance of Sweet Corn to Broadcast Flaming at Different Growth Stages.** Santiago M. Ulloa, Avishek Datta , Stevan Z. Knezevic, Goran Malidza, and Robert Leskovsek, University of Nebraska, Concord; Institute of Field and Vegetable Crops, Novi Sad, Serbia; Agricultural Institute of Slovenia, Ljubljana. ([51](#))

**Tolerance of Popcorn Hybrids to Mesotrione, Tembotrione and Topramezone.** Thomas T. Bauman and Michael D. White, Purdue University, West Lafayette, IN. ([52](#))

**Christmas Tree and Weed Response to Herbicide Applications in First and Second Year Fraser Fir.** Ling Long Wei and Bernard H. Zandstra, Michigan State University, East Lansing. ([106](#))

**A Comparison of Full-, Split- and Micro-Rate Herbicide Treatments for Weed Management in Red Beet.** Darren E. Robinson , University of Guelph, Ridgetown, ON. ([161](#))

**Effect of Glyphosate Drift Droplet Concentration to Irrigated Potatoes.** Harlene M. Hatterman-Valenti and Collin P. Auwarter, North Dakota State University, Fargo. ([162](#))

**Season-Long Weed Control in Tree Fruit with Preemergence and Postemergence Herbicides.** Rodney V. Tocco and Bernard H. Zandstra, Michigan State University, East Lansing. ([163](#))



**Introduction of Indaziflam for Weed Control in Fruit, Nut, and Grape Crops.** Mark D. Parrish , R. Darren Unland, and William J. Bertges, Bayer CropScience, Research Triangle Park, NC. [\(164\)](#)

**A Computer-Guided Flamer for Postemergence Weed Control in Carrot and Snap Bean.** Chad M. Herrmann and Bernard H. Zandstra, Michigan State University, East Lansing. [\(110\)](#)

**Tolerance of Potato Mini-Tubers to Pre and Post Herbicide Applications.** Calvin F. Glaspie , Wesley. J. Everman, Christopher M. Long, and Andrew. J. Chomas, Michigan State University, East Lansing. [\(111\)](#)

**Performance Advantages of Flaming Hood.** Chris A. Bruening , George Gogos, Santiago M. Ulloa, and Stevan Z. Knezevic, University of Nebraska, Lincoln and Concord. [\(30\)](#)

**Response of Selected Crop and Weed Species to Propane Flaming as Influenced by Leaf Water Content.** Santiago M. Ulloa , Avishek Datta, Stevan Z. Knezevic, Chris Bruening, George Gogos, and Timothy J. Arkebauer, University of Nebraska, Concord and Lincoln. [\(31\)](#)

**A Novel Water Conditioner for Use with Glyphosate.** Mark L. Bernards , Richard K. Zollinger, Bryan G. Young, R. Scott Tann, Howard Stridde, University of Nebraska, Lincoln; North Dakota State University, Fargo; Southern Illinois University, Carbondale; Huntsman, The Woodlands, TX. [\(32\)](#)

**Evaluation of New Venturi Nozzle Designs for Improving Herbicide Efficacy.** Robert E. Wolf and Dallas E. Peterson, Kansas State University, Manhattan. [\(140\)](#)

**Factors Affecting Spray Distribution and Coverage.** Gregory K. Dahl , Joe V. Gednalske, Eric Spandl, Winfield Solutions LLC, St. Paul, MN. [\(141\)](#)

**High Surfactant Oil Concentrate Adjuvants - The Rest of the Story.** Richard K. Zollinger , North Dakota State University, Fargo. [\(142\)](#)

**Using Clickers to Teach Calibration of Sprayers.** Robert N. Klein , University of Nebraska, North Platte, NE. [\(143\)](#)

**Waterhemp Genomics for Herbicide Resistance Research.** Chance W. Riggins , Patrick J. Tranel, Yanhui Peng, and C. Neal Stewart Jr., University of Illinois, Urbana; University of Tennessee, Knoxville. [\(39\)](#)

**Introducing Quad-Stack Waterhemp: Populations Containing Individuals Resistant to Four Herbicide Modes of Action.** Michael S. Bell , Patrick J. Tranel, and Aaron G. Hager. University of Illinois, Urbana. [\(40\)](#)

**Absorption and Translocation of Glyphosate and Chlorimuron in a Tank Mix.** Rachel K. Bethke , Wesley J. Everman, and Donald Penner, Michigan State University, East Lansing. [\(41\)](#)

**Chlorophyll Fluorescence to Assess Glyphosate Response in Herbicide Resistant Giant Ragweed.** Renae R. Robertson , Burkhard Schulz, Stephen C. Weller, Purdue University, West Lafayette, IN. [\(43\)](#)

**In Vitro Assay for Assessment of Glyphosate Response Using a Leaf Disk System.** Renae R. Robertson, Burkhard Schulz, Stephen C. Weller , Purdue University, West Lafayette, IN. [\(44\)](#)

**Response of a Horseweed Population to Four Different Growth Regulator Herbicides.** Ryan S. Henry , Greg R. Kruger, Vince M. Davis, Stephen C. Weller, and William G. Johnson, Purdue University, West Lafayette, IN. [\(45\)](#)

**Persistence and Efficacy of Flumioxazin as Affected by Soil Organic Matter, Clay Content and Soil pH.** Calvin F. Glaspie , Wesley. J. Everman, and Andrew. J. Chomas, Michigan State University, East Lansing. [\(46\)](#)

**Common Lambsquarters Response to Glyphosate Across Environments.** Evan C. Sivesind , Chris M. Boerboom, David E. Stoltenberg, and John M. Gaska, University of Wisconsin, Madison. [\(47\)](#)

**Preponderance of the Protoporphyrinogen Oxidase Glycine Deletion in Waterhemp Resistant to PPO-Inhibitors.** Kate A. Thinglum , Chance W. Riggins, Patrick J. Tranel, Kevin W. Bradley, and Kassim Al-Khatib, University of Illinois, Urbana; University of Missouri, Columbia; Kansas State University, Manhattan. [\(96\)](#)

**Molecular Modeling and Biochemical Effects of a Glycine Deletion in Waterhemp Protoporphyrinogen Oxidase.** Patrick J. Tranel , Franck E. Dayan, Pankaj R. Daga, Stephen O. Duke, Ryan M. Lee, and Robert J. Doerksen, University of Illinois, Urbana; USDA-ARS, University, MS; University of Mississippi, University. [\(97\)](#)

**An Alternative to the Glycine Deletion: Why R98L was Selected in Common Ragweed Protoporphyrinogen Oxidase.** Stephanie L. Rousonelos , Ryan M. Lee, and Patrick J. Tranel, University of Illinois, Urbana. [\(98\)](#)

**Analysis of Herbicide Interactions Using Fluorescence Measurements.** Rachel K. Bethke , Donald Penner, William T. Molin, Michigan State University, East Lansing; USDA-ARS, Stoneville, MS. [\(99\)](#)

**Glyphosate Resistance in Waterhemp: Inheritance and EPSPS Copy Number.** Michael S. Bell , Patrick J. Tranel, and Chance W. Riggins, University of Illinois, Urbana. [\(100\)](#)

**Managing Glyphosate-Resistant Horseweed with Postemergence Applications of Glyphosate and 2,4-D.** Greg R. Kruger , Vince M. Davis, Stephen C. Weller, and William G. Johnson, Purdue University, West Lafayette, IN; University of Illinois, Urbana. [\(101\)](#)

**Water Conditioners, pH, and Water Hardness.** Fred Whitford and Bill Johnson, Purdue University, West Lafayette, IN. [\(173\)](#)

**Adjuvants for Weakly Acidic Herbicides.** Don Penner , Michigan State University, East Lansing. [\(174\)](#)

**Methylated and Ethylated Seed Oils.** Richard Zollinger , North Dakota State University, Fargo. [\(175\)](#)

**“When the Game Slows Down” – Using High Speed Video to Understand Application Technology** . Gregory K. Dahl , Joe V. Gednalske, Eric Spandl, Winfield Solutions LLC, St. Paul, MN. [\(176\)](#)

**Saflufenacil: Discovery and Mode of Action of a New Broadleaf Herbicide.** Rex Liebl , Dan Westberg, and Steve Bowe, BASF, Research Triangle Park, NC. [\(177\)](#)

**It’s a Sure Thing . . . Probably: The Influence of Variability on Trial Planning, Design and Analysis.** Leslie Fuquay , Syngenta, Research Triangle Park, NC. [\(144\)](#)

**Traditions and Conventions in the Use of Repeated Measures Analysis, Contrasts, and Pairwise Comparisons.** Chris Reburg-Horton , North Carolina State University, Raleigh. [\(145\)](#)

**Squeezing More Information Out of Your Data.** Adam Davis , USDA-ARS, Champaign, IL. [\(146\)](#)

**“Hands-on” Workshop - Statistical Cross-Training: Trial Design, Blocking and Sampling** . Leslie Fuquay , Syngenta, Research Triangle Park, NC. [\(147\)](#)

**Determination of Tank-Mixture Efficacy** . Stott Howard , Syngenta, Des Moines, IA. [\(148\)](#)

Abit, J. M.	<a href="#">116</a>
Al-Khatib, K.	<a href="#">96</a> , <a href="#">64</a> , <a href="#">16</a> , <a href="#">116</a>
Allen, J. R.	<a href="#">153</a>
Alms, J. K.	<a href="#">172</a> , <a href="#">57</a>
Anderson, E. K.	<a href="#">103</a>
Arkebauer, T. J.	<a href="#">31</a> , <a href="#">89</a>
Auwarter, C. P.	<a href="#">49</a> , <a href="#">162</a> , <a href="#">50</a>
Barnett, K. A.	<a href="#">1</a>
Bast, L. E.	<a href="#">90</a> , <a href="#">6</a>
Bauman, T. T.	<a href="#">52</a>
Behnken, L. M.	<a href="#">35</a> , <a href="#">36</a>
Bell, M. S.	<a href="#">40</a> , <a href="#">100</a>
Bernards, M. L.	<a href="#">67</a> , <a href="#">136</a> , <a href="#">89</a> , <a href="#">61</a> , <a href="#">33</a>
Bertges, W. J.	<a href="#">164</a>
Bethke, R. K.	<a href="#">99</a> , <a href="#">41</a>
Bloomberg, J. R.	<a href="#">122</a> , <a href="#">119</a>
Boerboom, C. M.	<a href="#">93</a> , <a href="#">171</a> , <a href="#">15</a> , <a href="#">47</a> , <a href="#">8</a> , <a href="#">37</a> , <a href="#">115</a> , <a href="#">157</a>
Bollero, G. A.	<a href="#">103</a>
Brabham, C. B.	<a href="#">87</a> , <a href="#">19</a>
Bradbury, K. R.	<a href="#">171</a>
Bradley, K. W.	<a href="#">154</a> , <a href="#">168</a> , <a href="#">120</a> , <a href="#">96</a> , <a href="#">18</a> , <a href="#">8</a>
Bravo, M. A.	<a href="#">132</a>
Breitenbach, F. R.	<a href="#">35</a> , <a href="#">36</a>
Bruening, C. A.	<a href="#">30</a> , <a href="#">105</a> , <a href="#">31</a> , <a href="#">112</a>
Buckham, M. M.	<a href="#">75</a>
Burch, P. L.	<a href="#">133</a> , <a href="#">131</a>
Buschman, L. L.	<a href="#">94</a>
Call, D. L.	<a href="#">3</a>
Carter, S. K.	<a href="#">13</a>
Castillo, T.	<a href="#">119</a>
Charvat, L. D.	<a href="#">58</a> , <a href="#">59</a> , <a href="#">127</a>
Chee-Stanford, J.	<a href="#">95</a>
Chomas, A. J.	<a href="#">111</a> , <a href="#">26</a> , <a href="#">27</a> , <a href="#">7</a>
Christian, K. H.	<a href="#">77</a>
Claassen, M. M.	<a href="#">182</a>

Claus, J. C.	<a href="#">130</a> , <a href="#">129</a>
Claus, J. S.	<a href="#">128</a>
Clewis, S. B.	<a href="#">184</a>
Cui, C. C.	<a href="#">11</a> , <a href="#">21</a>
Culpepper, A. S.	<a href="#">121</a>
Cummings, D. C.	<a href="#">187</a> , <a href="#">133</a> , <a href="#">131</a>
Currie, R. S.	<a href="#">125</a> , <a href="#">94</a>
D.K., Powell	<a href="#">20</a> , <a href="#">73</a>
Daga, P. R.	<a href="#">97</a>
Dahl, G. K.	<a href="#">141</a>
Dale, T. M.	<a href="#">10</a> , <a href="#">82</a>
Datta, A	<a href="#">9</a> , <a href="#">54</a> , <a href="#">58</a> , <a href="#">59</a> , <a href="#">31</a> , <a href="#">112</a> , <a href="#">51</a>
Davis, A. S.	<a href="#">66</a> , <a href="#">95</a> , <a href="#">62</a>
Davis, H. N.	<a href="#">94</a>
Davis, V. M	<a href="#">101</a> , <a href="#">102</a> , <a href="#">63</a> , <a href="#">45</a>
Dayan, F. E.	<a href="#">97</a>
Deneke, D. L.	<a href="#">57</a>
Dietz, T. S.	<a href="#">27</a>
Dille, J. A.	<a href="#">108</a>
Ditmarsen, S. C.	<a href="#">120</a>
Dixon, P.	<a href="#">38</a> , <a href="#">117</a> , <a href="#">166</a>
Dobbels, A. F.	<a href="#">8</a>
Doerksen, R. J.	<a href="#">97</a>
Drijber, R. A.	<a href="#">67</a>
Duke, S. O.	<a href="#">97</a>
Duncan, C. A.	<a href="#">152</a>
Edmund, R. M.	<a href="#">155</a>
Edwards, M. E.	<a href="#">80</a>
Ellis, J. M.	<a href="#">187</a> , <a href="#">120</a>
Everman, W. J.	<a href="#">160</a> , <a href="#">111</a> , <a href="#">81</a> , <a href="#">26</a> , <a href="#">27</a> , <a href="#">90</a> , <a href="#">6</a> , <a href="#">7</a> , <a href="#">41</a>
Ferguson, S. M.	<a href="#">11</a> , <a href="#">21</a>
Fick, W. H.	<a href="#">151</a> , <a href="#">56</a>
Fickett, N. D.	<a href="#">93</a>
Fields, E.	<a href="#">137</a>
Finn, G. A.	<a href="#">187</a>
Fisher, J. M.	<a href="#">109</a> , <a href="#">178</a>
Flanigan, H. A.	<a href="#">156</a> , <a href="#">13</a>
Forster, P. C.	<a href="#">184</a>
Francis, C. A.	<a href="#">67</a>
Francois, T. J.	<a href="#">167</a>
Franzenburg, D. D.	<a href="#">25</a> , <a href="#">123</a>
Frasure, E. E.	<a href="#">136</a>
Fu, X.	<a href="#">95</a>
Ganske, D. D.	<a href="#">130</a>
Gaska, J. M.	<a href="#">47</a>

Gast, R. E.	<a href="#">187</a>
Gavit, D.	<a href="#">160</a>
Gebhardt, J.	<a href="#">7</a>
Gednalske, J. V.	<a href="#">141</a>
Geier, P. W.	<a href="#">187</a> , <a href="#">185</a> , <a href="#">127</a> , <a href="#">16</a> , <a href="#">116</a> , <a href="#">182</a>
Geyer, W. A.	<a href="#">56</a>
Glaspie, C. F.	<a href="#">160</a> , <a href="#">111</a> , <a href="#">81</a>
Godar, A. S.	<a href="#">108</a>
Gogos, G.	<a href="#">31</a> , <a href="#">112</a> , <a href="#">30</a> , <a href="#">105</a>
Gomez, J. M.	<a href="#">85</a>
Gower, S. A.	<a href="#">26</a>
Graham, R. C.	<a href="#">171</a>
Green, J. D.	<a href="#">80</a> , <a href="#">79</a>
Grossnickle, D.	<a href="#">25</a> , <a href="#">123</a>
Gunsolus, J. L.	<a href="#">35</a> , <a href="#">36</a> , <a href="#">157</a>
Hageman, L. H.	<a href="#">12</a> , <a href="#">124</a>
Hager, A. G.	<a href="#">103</a> , <a href="#">8</a> , <a href="#">40</a>
Hahn, K. L.	<a href="#">124</a>
Halbach, R. B.	<a href="#">92</a>
Haller, W. T.	<a href="#">149</a>
Hallett, S. G.	<a href="#">102</a>
Halstvedt, M. B.	<a href="#">133</a> , <a href="#">131</a>
Hammond, C. M.	<a href="#">93</a>
Hanson, L. E.	<a href="#">1</a>
Harbour, J. D.	<a href="#">156</a>
Hardebeck, M. J.	<a href="#">23</a>
Hartzler, R. G.	<a href="#">169</a> , <a href="#">92</a>
Hatterman-Valenti, H. M.	<a href="#">49</a> , <a href="#">162</a> , <a href="#">50</a>
Hein, G. L.	<a href="#">33</a>
Henry, R. S.	<a href="#">76</a> , <a href="#">45</a>
Herbek, J. H.	<a href="#">170</a>
Herrmann, C. M.	<a href="#">48</a> , <a href="#">110</a>
Hicks, C.	<a href="#">183</a>
Hidalgo, E.	<a href="#">130</a> , <a href="#">129</a>
Hillger, D. E.	<a href="#">132</a> , <a href="#">121</a> , <a href="#">133</a> , <a href="#">131</a>
Hinz, J. R.	<a href="#">119</a>
Hoefing, J. L.	<a href="#">107</a> , <a href="#">4</a>
Holliday, M. J.	<a href="#">128</a>
Holm, M. F.	<a href="#">156</a>
Hora, J.	<a href="#">122</a>
Hoverstad, T.	<a href="#">115</a>
Hulse, B. M.	<a href="#">16</a>
Hunt, R. L.	<a href="#">72</a>
Hustedde, N. V.	<a href="#">74</a>
Jensen, B. M.	<a href="#">15</a>
Johnson, K. D.	<a href="#">124</a>
Johnson, W. G.	<a href="#">8</a> , <a href="#">77</a> , <a href="#">60</a> , <a href="#">101</a> , <a href="#">87</a> , <a href="#">19</a> , <a href="#">113</a> , <a href="#">23</a> , <a href="#">120</a> , <a href="#">102</a> , <a href="#">76</a> , <a href="#">24</a> , <a href="#">78</a> , <a href="#">63</a> , <a href="#">45</a>



Jordan, D. L. [117](#), [166](#), [38](#), [165](#)

Kazmierczak, A. J. [83](#), [157](#)

Keaton, J. W. [78](#)

Kegode, G. O. [55](#)

Kells, J. J. [27](#)

King, S. R. [186](#), [183](#)

Kirk, W. W. [1](#)

Klein, R. N. [143](#)

Kline, W. N. [133](#), [131](#)

Knezevic, S. Z. [150](#), [9](#), [54](#), [58](#), [59](#), [31](#), [112](#), [51](#), [30](#), [105](#), [53](#)

Kniss, A. R. [180](#), [181](#), [179](#)

Krausz, R. F. [114](#), [5](#)

Kruger, G. R. [101](#), [102](#), [63](#), [45](#)

Kruger, M. M. [63](#)

Krupke, C. H. [60](#)

Lally, N. G. [125](#)

Lamore, D. [122](#)

Langston, V. B. [133](#), [131](#)

Lee, R. M. [97](#), [98](#)

Legleiter, J. D. [154](#)

Legleiter, T. R. [168](#), [18](#)

Leskovsek, R. [112](#), [51](#), [105](#)

Lindquist, J. L. [67](#), [89](#), [61](#), [33](#)

Lindsey, A. J. [81](#), [26](#)

Link, M. L. [130](#)

Lins, R. D. [118](#)

Liu, Jianyang [62](#)

Long, C. M. [111](#)

Loux, M. M. [8](#), [113](#), [121](#)

Love, B. J. [7](#)

Luecke, J. L. [109](#), [178](#)

Lux, J. F. [25](#), [123](#)

Maddy, B. E. [121](#)

Mainz, M. [54](#)

Malidza, G. [112](#), [51](#)

Mannam, V. [89](#)

Marquardt, P. T. [77](#), [60](#), [113](#)

Martin, J. R. [3](#), [170](#)

Martin, M. J. [155](#)

Maruska, D. W. [186](#), [183](#)

Matthews, J. L. [74](#), [114](#), [5](#), [165](#)

Maxwell, D. J. [20](#)

Meadows, D. J. [126](#)

Meredith, J. H. [128](#)

Michael, J. [160](#)

Miller, R. P. [35](#), [36](#)

Moechnig, M. [115](#), [172](#), [57](#), [157](#)

Molin, W. T. [99](#)  
Moseley, C. M. [118](#)  
Murdock, L. W. [170](#)

Nicolai, D. A. [22](#)  
Nolting, S. P. [187](#)  
Nurse, R. E. [17](#)  
Olson, B. D. [11](#)  
Olson, B. L. S. [125](#)  
Ott, E. J. [10](#), [82](#)  
Owen, M. D. K. [103](#), [38](#), [85](#), [117](#), [166](#), [86](#), [25](#), [123](#), [165](#)

Parrish, M. D. [164](#)  
Paulsgrove, M. D. [186](#), [183](#)  
Pawlak, J. A. [10](#), [82](#)  
Payne, K. K. [154](#), [168](#), [18](#)  
Pedersen, J. F. [61](#)  
Peeper, T. F. [187](#)  
Peng, Y. [39](#)  
Penner, D. [160](#), [99](#), [41](#)  
Peterson, D. E. [185](#), [140](#), [16](#), [182](#)  
Peterson, M. A. [120](#), [21](#)  
Peterson, V. F. [131](#)  
Philbrook, B. [122](#), [119](#)  
Pitts, J. R. [129](#)  
Porter, D. J. [184](#)  
Prasifka, P. L. [11](#), [21](#)

Rapp, R. E. [58](#), [59](#), [53](#)  
Refsell, D. E. [10](#)  
Renner, K. A. [68](#)  
Richburg, J. R. [11](#)  
Richburg, J. S. [21](#)  
Rick, S. K. [129](#), [155](#)  
Ries, J. L. [107](#)  
Riggins, C. W. [39](#), [96](#), [100](#)  
Riley, E. B. [154](#), [168](#), [18](#)  
Robertson, R. R. [88](#), [44](#)  
Robinson, A. P. [23](#), [24](#), [78](#)  
Robinson, D. E. [161](#)  
Roskamp, G. K. [20](#)  
Rousonelos, S. L. [98](#)  
Ruden, B. E. [186](#), [183](#)  
Ruen, D. C. [11](#), [21](#), [121](#)  
Rupp, R. N. [126](#)

Sandell, L. [33](#)  
Saunders, D. W. [12](#), [126](#), [155](#), [124](#), [156](#)  
Sbatella, G. M. [180](#)  
Schabacker, K. R. [12](#)

Schafer, J. R. [102](#)  
 Scherder, E. F. [11](#), [120](#), [21](#)  
 Schirmacher, K. [184](#)  
 Schlegel, A. [125](#)  
 Schmidt, J. J. [61](#)  
 Schraer, S. M. [184](#)  
 Schultz, M. E. [120](#), [121](#)  
 Schulz, B. [88](#), [44](#)  
 Schumacher, W. J. [126](#)  
 Scott, J. [9](#), [54](#), [58](#), [59](#)  
 Shapiro, C. A. [54](#)  
 Shauck, T. C. [91](#)  
 Shaw, D. R. [117](#), [166](#), [38](#), [165](#)  
 Shoup, D.E. [187](#), [28](#)  
 Shropshire, C. [167](#), [14](#), [2](#)  
 Sikkema, P. H. [167](#), [14](#), [2](#), [17](#)  
 Simkins, G. S. [186](#), [122](#)  
 Simpson, D. M. [11](#), [21](#), [78](#)  
 Singh, S. [84](#)  
 Sivesind, E. C. [47](#)  
 Slack, C. H. [13](#)  
 Sleugh, B. B. [133](#), [131](#)  
 Smeda, R. J. [120](#), [91](#)  
 Smith, M. C. [186](#)  
 Snipes, C. E. [12](#)  
 Soltani, N. [167](#), [14](#), [2](#), [17](#)  
 Spandl, E. [141](#)  
 Sprague, C. L. [75](#), [1](#), [68](#), [37](#)  
 Stachler, J. M. [109](#), [178](#)  
 Stahlman, P. W. [125](#), [185](#), [108](#), [127](#), [16](#), [116](#), [182](#)  
 Stewart, C. N. [39](#)  
 Stoltenberg, D. E. [93](#), [171](#), [47](#)  
 Stridde, H. [32](#)

Tann, R. S. [32](#)  
 Taylor, E. C. [68](#)  
 Terry, R. M. [113](#)  
 Thinglum, K. A. [96](#)  
 Thompson, C. R. [125](#)  
 Thorsness, K. B. [183](#), [186](#)  
 Tiedemann, D. K. [114](#), [5](#)  
 Tocco, R. V. [163](#)  
 Tolson, J. A. [79](#)  
 Tranel, P. J. [97](#), [39](#), [96](#), [84](#), [62](#), [40](#), [100](#), [98](#)  
 Trower, T. L. [171](#), [15](#)  
 Turner, R. G. [130](#), [129](#), [128](#)  
 Tutt, C. R. [3](#)

Ullao, S. M. [31](#), [112](#), [51](#), [30](#), [105](#)  
 Unland, R. D. [164](#)

Vail, G. D. [118](#)  
Vogel, J. W. [139](#)  
Voigt, T. B. [103](#)  
Vos, D. A. [172](#), [57](#)

Waddington, M. A. [153](#)  
Wait, J. D. [154](#), [168](#), [18](#)  
Waite, J. [64](#)  
Walters, R. [138](#)  
Warncke, D. D. [90](#), [6](#)  
Watteyne, K. K. [119](#)  
Weber, M. [153](#)  
Wei, L. L. [106](#)  
Weimer, M. R. [187](#)  
Weller, S. C. [101](#), [117](#), [166](#), [38](#), [43](#), [88](#), [44](#), [63](#), [45](#), [165](#)  
Westhoven, A. M. [102](#)  
Westra, P. [187](#)  
White, M. D. [52](#)  
Williams, C. S. [128](#)  
Williams, M. M. [95](#)  
Willoughby, G. P. [107](#), [4](#)  
Wilson, R. G. [117](#), [180](#), [166](#), [38](#), [133](#), [107](#), [165](#)  
Wise, K. A. [76](#)  
Witt, W. W. [80](#), [79](#)  
Wolf, R. E. [140](#)  
Wortman, S. E. [67](#)  
Wright, T. R. [21](#)  
Wrucke, M. A. [186](#)  
Wu, C. [86](#)

Young, B. G. [8](#), [38](#), [117](#), [121](#), [166](#), [32](#), [20](#), [74](#), [114](#), [5](#), [165](#)

Zandstra, B. H. [48](#), [110](#), [106](#), [163](#)  
Zawierucha, J. [58](#), [59](#)  
Zollinger, R. K. [142](#), [32](#), [72](#), [107](#), [157](#)