

WASHINGTON REPORT

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Lee Van Wychen

Dispelling Common Misconceptions About “Superweeds”

The WSSA Public Awareness Committee, along with input and review from several other committees and the Board of Directors developed the following [WSSA Fact Sheet](#) about superweed myths:

Use of the term superweed has exploded in recent years and is frequently featured in news reports about herbicide-resistant weeds choking out crops. A few recent headline examples:

- **Superweeds Choke Farms** (*Des Moines Register*, June 22, 2014)
- **The Rise of the Super Weed Around the World** (*Wall Street Journal*, June 23, 2014)
- **U.S. Midwestern Farmers Fighting Explosion of “Superweeds”** (*Reuters*, July 23, 2014)
- **Superweed Spreading through Wall, Texas** (*KLST-TV*, July 29, 2014)
- **Super Weed Spreads Closer to Quad Cities** (*WQAD TV*, August 4, 2014)

While there is no science-based definition for superweed, the term is often used to describe weeds believed to have special capabilities that are helping them outcompete other plants in ways never experienced before. Many associate superweed with glyphosate-tolerant crops and the suspected transfer of resistance genes from these crops to weeds. [The Oxford Dictionary](#), for example, is one of many online resources to define superweed as “a weed which is extremely resistant to herbicides, especially one created by the transfer of genes from genetically modified crops into wild plants.”

But is that the truth? Are today’s weeds “supercharged” in some way? And if so, why is that the case?

As a nonprofit organization that promotes science-based information about weeds, their impact on the environment and how they can be managed, the Weed Science Society of America (WSSA) has compiled the information below to clarify two common misconceptions about superweeds.

Misconception 1: Rampant gene transfer between genetically modified crops and weeds is creating weeds able to resist treatment by herbicides.

Reality: There is no evidence that gene transfer is a major factor in the development of herbicide resistance. Instead, overreliance on herbicides with a single mechanism of action to control certain weeds has led to the selection of weeds resistant to that mechanism of action.

The transfer of resistance traits from genetically modified crops to weeds growing in the field is rare, and the occurrences observed and reported to date have had minimal impact. The only currently known mechanism for any crop trait to move into weeds (or vice versa) is through cross pollination – a sexual crossing between the crop and the weed. Gene flow is more likely to happen if the crop and weed are sexually compatible, near relatives. Gene flow among more distantly related plant species is rare because they do not cross as readily. There are often physiological barriers, including pollen incompatibility, varying numbers of chromosomes and other factors that serve as impediments.

Even among sexually compatible crops and weeds, the opportunity for crop-weed gene flow depends on proximity of the crop plant to its wild weedy relatives. For example, there have been no reports of gene transfer in the more than 160 million annually planted acres of genetically modified corn, cotton and soybean crops where herbicide resistance weeds are such a significant issue today. Since these crops

don't have sexually compatible, near relatives in the U.S. and Canada, the risk of gene flow to other plants in the region is extremely low. Crops like sunflower, wheat and canola do have compatible weed relatives in their major production areas (e.g. wild sunflower, jointed goatgrass, and wild relatives of canola, respectively). As a result, the risk of gene flow between those crops and wild plants is greater. Where gene flow has occurred, the resulting plants are no more weedy than their parent plants.

Misconception 2: Herbicide use is creating a new breed of herbicide-resistant superweeds unlike anything we've ever seen before.

Reality: The costly issue of herbicide resistance isn't new – and neither are the competitive characteristics of weeds. Although the number of acres affected by resistant weeds has increased over the last decade as more growers have come to rely solely on herbicides with a single mechanism of action for weed control, weeds have exhibited resistance to many types of herbicides over the past 40 years. Many weed populations have even evolved resistance to multiple herbicide mechanisms of action.

Herbicide resistance is an important, costly and escalating issue, especially as growers have come to rely more than ever on a single class of herbicides that targets weeds in the same way. It is more critical than ever for a variety of carefully integrated weed management strategies to be used so weeds resistant to one method can be controlled in other ways before they have an opportunity to spread. This includes nonchemical means of weed control, such as crop rotation, tillage, cultivation, hand hoeing, seed capture, etc. The WSSA has created a variety of free educational materials and recommendations concerning resistance and how to avoid it, available online at <http://wssa.net/weed/resistance>.

As to those super powers that many individuals ascribe to herbicide-resistant weeds? Under herbicide-free conditions, resistant weeds are no more competitive or ecologically fit than their susceptible partners. Both can crowd out crops and other desirable plants by outcompeting them for water, nutrients, sunlight and space. They grow incessantly and can be prolific seed producers. A single Palmer amaranth plant, for example, can produce hundreds of thousands of seeds, regardless of whether it is herbicide resistant or not.

Weeds can be economically devastating if allowed to grow unchecked. As a result, we need to monitor vigilantly and use a variety of herbicide and non-herbicide strategies to control weed populations before they get out of hand.

Note:

The WSSA thanks the following scientists for their special contributions to this document:

- **Brad Hanson**, Ph.D., Cooperative Extension Weed Specialist in the Department of Plant Sciences at the University of California - Davis.
- **Andrew Kniss**, Ph.D., Associate Professor in the Department of Plant Sciences at the University of Wyoming and a WSSA board member.

FY 2015 Appropriations On Hold Until After Elections

Congress is out campaigning for the November 4 elections. Before they left town, they passed a continuing resolution (CR) funding the government at FY 2014 levels through Dec. 11. The House vote was 319-108. The Senate vote was 78-22. Depending on the election results, another CR may be needed to fund the government into the new year until after the members of the 1st session of the 114th U.S. Congress are sworn into office. Of the 12 appropriations bills for FY 2015, the House passed 8, but the Senate passed none.

Herbicide Resistance Summit II – A Call To Action

The 2nd National Summit on Strategies to Manage Herbicide-Resistant Weeds was held September 10, 2014 in Washington DC. The Summit was very well organized and attended by over 300 people online and in person. The Summit planning committee, chaired by David Shaw, volunteered an incredible amount of their time and effort in planning and orchestrating this very successful event. Members of the Herbicide Resistance Summit Planning were:

David Shaw, Vice President for Research and Economic Development, Mississippi State University

Amy Asmus, Certified Crop Advisor, Asmus Farm Supply, Rake, Iowa

Mike Barrett, Professor of Weed Science, University of Kentucky, WSSA-EPA Liaison

Harold Coble, USDA Office of Pest Management Policy – retired, Weed Scientist, and Farmer

David Ervin, Professor of Environmental Management and Economics, Portland State University

George Frisvold, Professor of Agriculture and Resource Economics, University of Arizona

Les Glasgow, Syngenta, Herbicide Resistance Action Committee

Terry Hurley, Professor, Dept. of Applied Economics, University of Minnesota

Ray Jussaume, Professor and Chair, Dept. of Sociology, Michigan State University

Kara Laney, Board on Agriculture and Natural Resources, National Academy of Sciences

Mike Owen, Professor and Extension Weed Specialist, Iowa State University

Jill Schroeder, USDA Office of Pest Management Policy Weed Scientist

John Soteres (retired)/**Michael Horak**, Monsanto, Herbicide Resistance Action Committee

Blaine Viator, Weed Scientist, Independent Crop Consultant, Labadieville, Louisiana

All the presentations throughout the day were excellent! Both the slides and the webcasts of each of the presentations plus questions and answers are on the WSSA website at: <http://wssa.net/weed/resistance-summit-ii/>. In addition to the planning committee members listed above, we also heard from USDA's Chief Scientist and Under Secretary for Research, Education, and Economics, Dr. Cathy Wotecki, EPA's Director of Pesticide Programs, Jack Housenger, and the Director of the Australian Herbicide Resistance Initiative, Dr. Stephen Powles. There were so many great messages throughout the day, something for everyone. I really do encourage you to peruse the archived information if you have not had a chance yet. Dr. Harold Coble served as Master of Ceremonies and kept everyone on track. Harold humbly refers to himself as "an old broken down weed scientist from North Carolina", but don't be fooled! He delivered the concluding "Call to Action" remarks to all the various stakeholders and really did an excellent job tying it all together with his 60 plus years of weed management experiences.

Jill Schroeder Takes USDA-OPMP Weed Science Position

On July 27, Dr. Jill Schroeder started in her new position at USDA as a Weed Scientist in the Office of Pest Management Policy (OPMP). Dr. Schroeder was a Distinguished Professor of Weed Science at New Mexico State University and is a Past-President and Fellow of both WSSA and WSWS. She also recently served several years in the role of WSSA-EPA Liaison. Dr. Schroeder fills the position vacated by Dr. Harold Coble who retired in January 2014. Jill's new email is Jill.Schroeder@ars.usda.gov and phone: (202) 720-0066.

The USDA Office of Pest Management Policy (OPMP) was established in September 1997, with the mandate to: 1) Integrate the Department's strategic planning and activities related to pest management; 2) Coordinate the Department's role in the pesticide regulatory process and related interagency affairs, primarily with the Environmental Protection Agency; and 3) Strengthen the Department's support for agriculture by promoting the development of new pest management approaches that meet the needs of an evolving and sustainable U.S. agricultural system. Dr. Sheryl Kunickis currently serves as the Director of USDA-OPMP.

Foundation for Food Agricultural Research (FFAR) Board Selected

USDA Secretary Tom Vilsack announced the creation of FFAR and the appointment of a 15-member board of directors. The new foundation will leverage public and private resources to increase the scientific and technological research, innovation, and partnerships critical to boosting America's agricultural economy. Authorized by Congress as part of the 2014 Farm Bill, the foundation will operate as a non-profit corporation seeking and accepting private donations in order to fund research activities that focus on problems of national and international significance. Congress also provided \$200 million for the foundation which must be matched by non-federal funds as the Foundation identifies and approves projects. FFAR's board of directors was chosen to represent the diverse sectors of agriculture. Seven of these board members were selected by the unanimous vote of the board's five ex-officio members from lists of candidates provided by industry, while eight representatives were unanimously elected from a list of candidates provided by the National Academy of Sciences. The 15 FFAR Board Members are:

- Dr. Kathryn Boor - the Ronald P. Lynch Dean of the College of Agriculture and Life Sciences, Cornell University
- Dr. Douglas Buhler (Weed Scientist) - Director of AgBioResearch and Senior Associate Dean for Research for the College of Agriculture and Natural Resources, Michigan State University
- Dr. Nancy Creamer - Distinguished Professor of Sustainable Agriculture and Community Based Food Systems, North Carolina State University
- Dr. Deborah Delmer - Professor Emeritus of Biology, University of California-Davis
- The Honorable Dan Glickman (CHAIR)- former U.S. Secretary of Agriculture, current Executive Director of the Aspen Institute's Congressional Program
- Dr. Robert Horsch - Deputy Director, Bill & Melinda Gates Foundation
- Pamela Johnson - Chairwoman, National Corn Growers Association
- Dr. Mark E. Keenum (VICE CHAIR)- President, Mississippi State University
- Dr. Michael Ladisch - Director of the Laboratory of Renewable Resources Engineering and Distinguished Professor of Agricultural and Biological Engineering, Purdue University
- Dr. Christopher Mallett - Vice President of Research & Development, Cargill, Inc.
- Dr. Pamela Matson - Chester Naramore Dean of the School of Earth Sciences, the Richard and Rhoda Goldman Professor of Environmental Studies and Senior Fellow at the Woods Institute for the Environment, Stanford University
- Dr. Terry McElwain - Associate Director and Professor, Paul G. Allen School for Global Animal Health, and Executive Director, Washington Animal Disease Diagnostic Laboratory, Washington State University
- Dr. Stanley Prusiner - Director of the Institute for Neurodegenerative Diseases and Professor of Neurology, University of California-San Francisco and 1997 Nobel laureate in physiology or medicine
- Dr. Yehia "Mo" Saif - Professor Emeritus, The Ohio State University
- Dr. Barbara Schaal - Dean of the Faculty of Arts & Sciences and Mary-Dell Chilton Distinguished Professor at Washington University in St. Louis.

More detailed biographical information for the FFAR Board of Directors can be found here:

<http://www.ars.usda.gov/is/FFARBios2014.pdf>

Lee Van Wychen, Ph.D.
Science Policy Director
National and Regional Weed Science Societies
Lee.VanWychen@wssa.net
cell: 202-746-4686
www.wssa.net