

*Communication Plan on
Resistance Management*
Briefing for PPDC

OPP's Biological and Economic Analysis Division

Bill Chism

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Outline

- Background on herbicide resistance
- Overview of OPP's herbicide resistance communication plan
- Feedback from PPDC on communication plan



Glyphosate resistant Kochia

Background on Herbicide Resistance

1. Weed resistance can be defined as a “wicked” problem, i.e., it does not have clear causes or solutions and therefore is extremely difficult to solve.
2. Resistance results from a variety of biological, technological, and economic factors and it is driven by the “vagaries of human decision-making.” (Shaw, 2016)
3. Impacts in the U.S.
 - ~70 million acres infested with resistant weeds (USDA)
 - Affects all major crops
 - Present across all agricultural regions
 - Resistance is more prevalent now than ever before (slide 5)
 - Cost to U.S. farmers is estimated to be ~\$2 billion/year (Vince Davis, University of Wisconsin)
4. No new herbicide Modes of Action have been registered in > 30 years.
5. In 2017 OPP published two Pesticide Registration Notices (PRNs) on resistance management and is implementing them during registration and registration review.
6. OPP/BEAD has been communicating with outside groups for years and has now developed a communications strategy designed to reach a variety of stakeholders.

RESISTANT PESTS

Palmer amaranth, *Amaranthus palmeri*

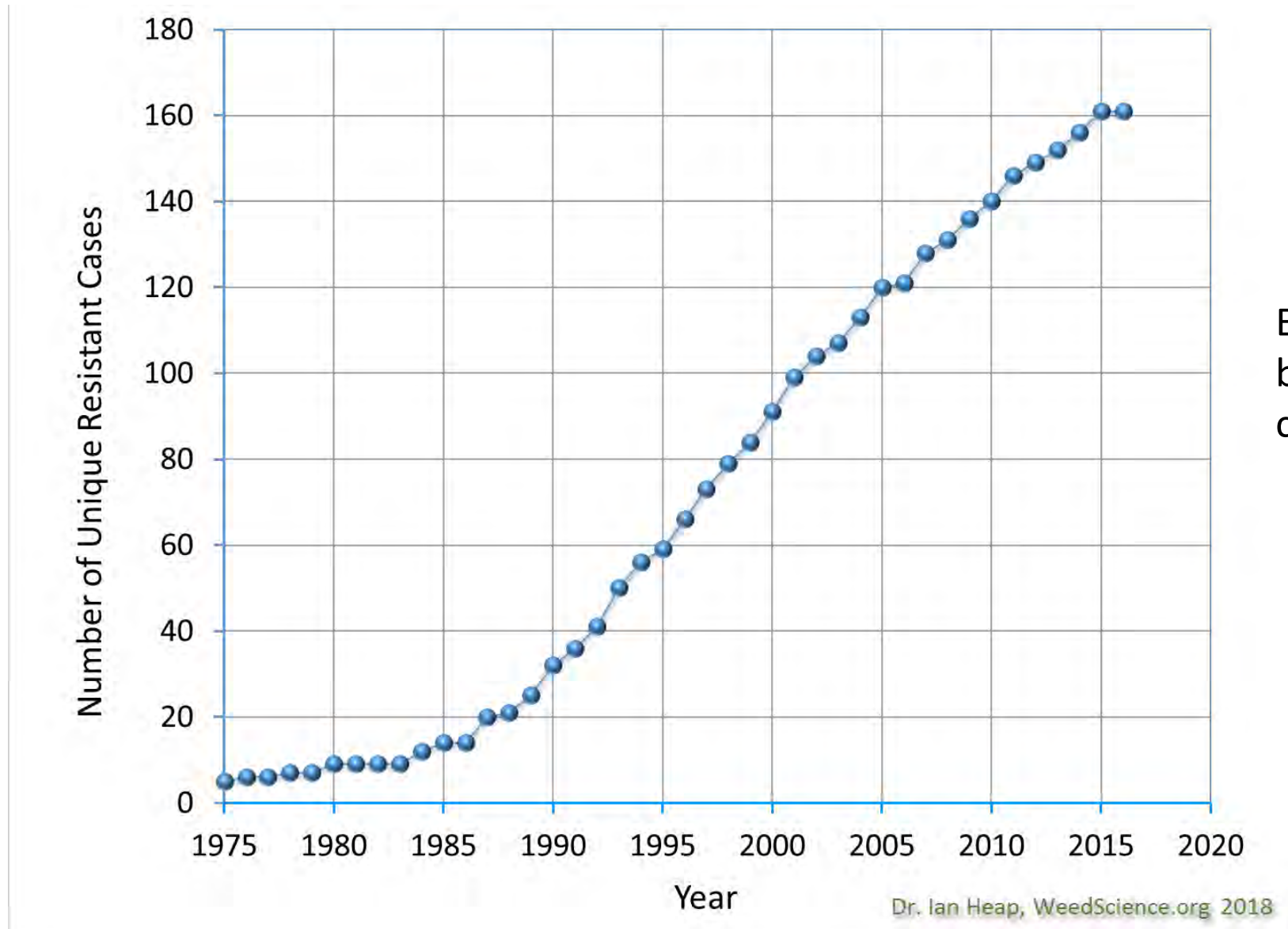


Diamondback moth, *Plutella xylostella*

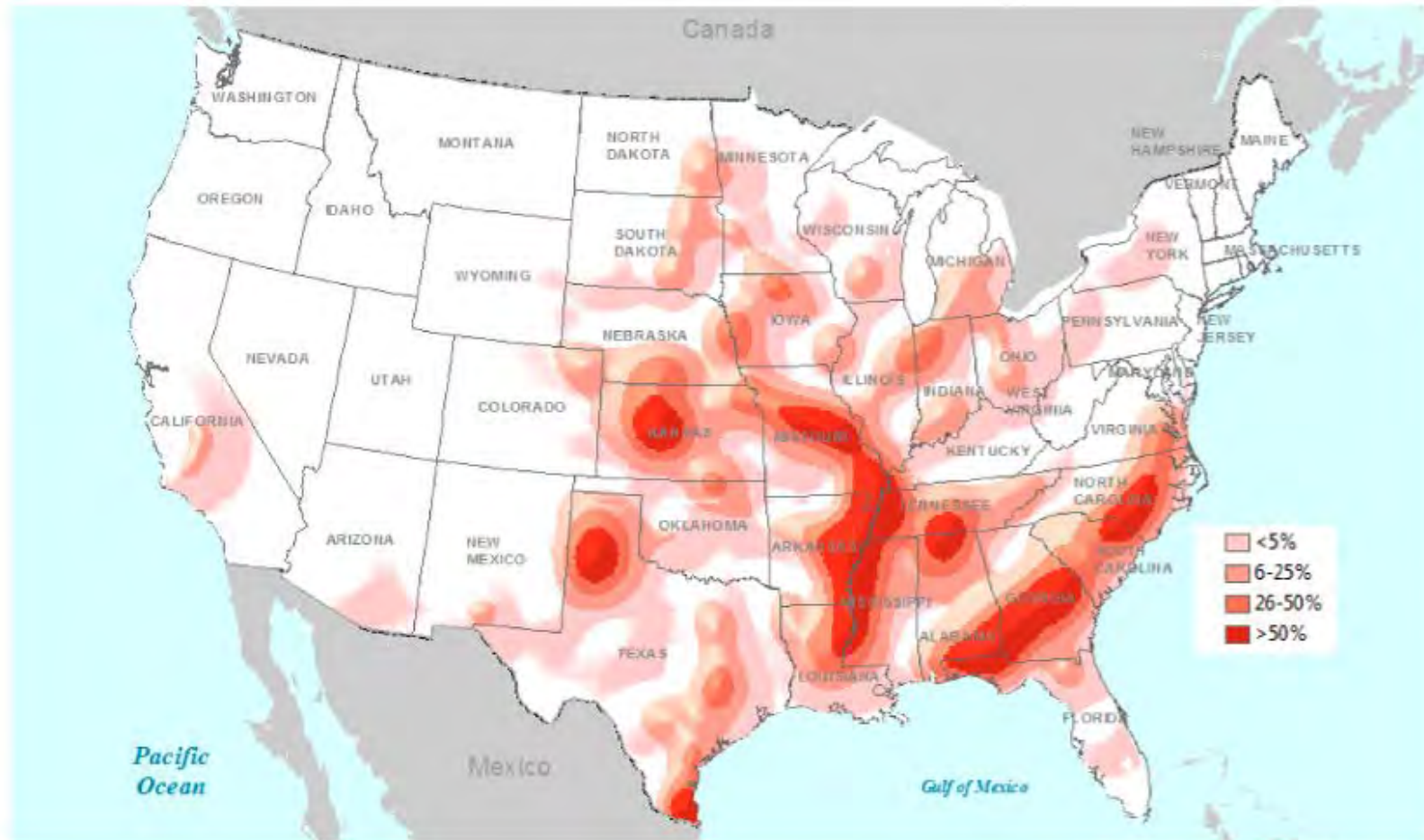


Powdery Mildew *Sphaerotheca pannosa*
Host: *Prunus persica* var. *nucipersica*- Nectarine
APS Publication number F100127 Sam Livingston,
UC Davis, Dept. of Plant Sciences

Increase in unique resistant weed cases for the U.S.



Percent of crop acres infested with glyphosate Resistant Palmer amaranth (Worst Case Scenario by 2020)



PALMER AMARANTH SPREAD - WORST-CASE BY 2020

Bagavathiannan
and Norsworthy

Why is OPP involved?

- Stakeholders asked OPP to take a more active role in resistance management.
- Extend the useful life of herbicide products.
- Help reduce economic losses due to resistance.
- Potentially reduce pesticide usage and thus unnecessary pesticide loading in the environment.
- This issue requires cooperation across all stakeholders.
- OPP should help provide a consistent message with information on how manage resistant weeds.



Glyphosate resistant & susceptible horseweed,
UC Davis, Hanson

Review by Office of Inspector General

- Conducted review to assess EPA's management/oversight of resistance issues related to herbicide-resistant genetically engineered crops.
- Looked at EPA processes/practices, steps taken to consider the risk from herbicide resistance, and how the agency collects herbicide resistance data.
- Review completed June 2017.
- Recommended that OPP establish a process to increase communication & collaboration regarding herbicide resistance with stakeholders.

Increase Communication Regarding Herbicide Resistance

Topics in Herbicide Resistance Communication Strategy

1. Background and Current Situation
2. Overall Objectives
3. Communications Objectives
4. Target Audience
5. Key Message for Target Audience
6. Methods of Communication and Promoting the Message
7. Performance Metrics

1. BACKGROUND AND CURRENT SITUATION

- **BACKGROUND**

- Weed resistance to herbicides is a major economic, biological and technological problem that affects millions of acres of U.S. farm land.
- It affects many important crops and is present across all agricultural regions of the United States.
- The problem is especially challenging because its causes and potential solutions depend on the collective behavior of many individuals.
- Managing weed resistance to herbicides may have an economic cost.
- Although there is a history of educational efforts to address the problem, the problem persists and is worse than ever before.
- The wide geographical scope of the problem and the diversity of U.S. agriculture limit effective national communications.

- **CURRENT SITUATION**

- Pesticide registration notices (PRNs) for resistance management have been published
 - PRN 2017-1 updated a PRN 2001-5. It provides general guidance for pesticide labeling to promote resistance management practices.
 - PRN 2017-2 provides specific guidance for herbicide resistance management.
- Ongoing discussions with USDA, WSSA, academics, crop consultants.

2. OVERALL OBJECTIVES

- Leverage the combined resources and outreach capabilities of government agencies, commodity groups, cooperative extension services, and industry to focus on the problem of weed resistance to herbicides.
- Develop an effective strategy for communicating to U.S. farmers the importance of practicing diversified weed control practices that significantly delay the onset of weed resistance to herbicides.

3. COMMUNICATIONS OBJECTIVES

- Develop a consistent message across stakeholders.
- Build awareness of the problem and its potential solutions among a wide range of stakeholders. Key stakeholders include growers and herbicide users (including custom applicators), commodity groups, retailers, researchers, extension personnel, and state and federal government agencies.
- Secure the commitment of these stakeholders to understand the problem and its severity and to work together to address the problem by delivering a consistent message to target audiences.
- Through the collaborative efforts of stakeholders, advocate for resources and policies to address the problem of weed resistance to herbicides.
- Identify ways to encourage participation among entities with the ability to positively affect outcomes.
- Stress the importance of early identification and reporting of suspected resistance.
- Facilitate communication regionally to spread awareness of specific instances of suspected resistance.

4. TARGET AUDIENCE

- Crop consultants
- Growers
- Custom pesticide applicators
- Regional soil conservation agencies
- Pesticide registrants
- Academic researchers
- Agricultural extension agents
- Other state and federal government agencies
- Commodity groups (i.e., representatives of major crops such as corn, soybeans, etc.)

5. KEY MESSAGE FOR TARGET AUDIENCE

- Each member of the target audience will receive a message tailored to their specific needs. This will be developed in consultation with EPA/OPP's partners in this effort

6. METHODS OF COMMUNICATION AND PROMOTING THE MESSAGE

- Presentations at national and regional scientific societies (e.g., Weed Science Society of America [WSSA], Southern Weed Science Society, national meetings, etc.)
- Work with commodity groups, registrants to develop training materials
- Social media (Facebook, Twitter, etc.)
- Seek assistance of organizations who regularly communicate with key stakeholders, e.g., National Association of County Agricultural Agents (NACAA)
- Use EPA's existing agricultural news bulletin (Ag News from EPA's Ag Center, published by EPA Region 7)

7. PERFORMANCE METRICS

- OPP's new chemical decisions will conform to the resistance management guidance contained in PRNs 2017-1 and 2017-2.
- All exclusive use extension determination that involve resistance management utility will conform with PRNs 2017-1 and 2017-2
- OPP will receive updates from WSSA on the status of resistance management and make an annual request for policy advice on herbicide resistance management.

Questions for Discussion with PPDC

- What is an appropriate way to communicate with stakeholders?
- How long should our message be?
- What time of year is best to communicate with growers?
- General feedback on the approach?
- Do you have recommendations for how EPA can participate given its relatively limited authority?
- Do you have recommendations for other stakeholders that should be included?
- Are there other resources to tap that we have not considered?



Glyphosate resistant Italian ryegrass

REFERENCES

- U.S. EPA, Office of Inspector General. 2017. EPA Can Strengthen Its Oversight of Herbicide Resistance With Better Management Controls. June 21, 2017. Accessed online at https://www.epa.gov/sites/production/files/2017-06/documents/epa_oig_20170621-17-p-0278.pdf
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