

Results from a Listening Session on Community Management of Herbicide Resistant Weeds

Based on research demonstrating the importance of community-based herbicide resistance management (Dentzman 2018, Ervin et al. 2019) and pilot projects experimenting with community approaches ([Arkansas Zero Tolerance Program](#), [Iowa Harrison County Project](#)), a special session on community herbicide resistance management was organized at the 2019 Tri-State Grain Growers Convention. The Convention took place November 13-16 in Spokane, WA and was co-hosted by the Idaho Grain Producers Association, Oregon Wheat Growers League, and Washington Association of Wheat Growers.

The breakout session on community management of herbicide resistant weeds, held on November 15, included two parts. The first featured presentations from Dr. Katherine Dentzman and Doug Finklenburg both from University of Idaho, and Drew Lyon and Ian Burke, both from Washington State University. Topics included background on herbicide resistance (HR) in the Pacific Northwest, why community management is necessary to control herbicide resistance, and best methods for managing common pool resources. Dr. Dentzman also shared results from a recent survey of wheat growers from the Pacific Northwest (PNW).

According to the survey (n=100), 80% of PNW wheat growers are concerned about herbicide resistant weeds spreading from neighbors and 60% discuss herbicide resistant weed problems with their neighbors. Furthermore 67% agree that herbicide resistance must be managed cooperatively. These results can be used to help understand the PNW's preparedness to implement community-based weed management based on farmers' *awareness* of the effects others' actions have on ones' own welfare, level of *communication* between resources users, and *recognition* of the need for cooperation. As survey results suggest, there is agreement from PNW farmers that HR must be managed cooperatively. Still, 40% of respondents talk to their neighbors 'never' or 'infrequently' and 33% don't think cooperative management is necessary.

In order to further understand the PNW's preparedness for community-based management of herbicide resistant weeds, the second part of the breakout session focused on listening to stakeholder attendees' perspectives. Stakeholders including agricultural producers, researchers, industry representatives, farm supply dealers, and others were split into groups of between 8 and 10 participants. Dr. Dentzman introduced an analysis approach called 'SWOT' in which participants define a common problem or goal and identify strengths, weaknesses, opportunities, and threats related to achieving a desirable outcome. This approach promotes discussion of regional strategic issues, pools stakeholder knowledge, and begins discussion for future activity coordination.

Participants were specifically asked to respond to the following questions, with approximately 10 minutes of in-group discussion and 5 minutes of out-sharing for each of the four main questions.

1. Is herbicide resistance a problem in your community?
 - a. Why? If not, will it be in the future?
2. List strengths and opportunities within and outside of your communities for managing HR.
3. List weaknesses and threats within or outside of your communities for managing HR.
4. Looking towards the future, how would you want to connect as a community?
 - a. What ways could our University team support a community initiative?
 - b. What would you like to see happen in the next year? The next 5 years?

Individuals were asked to focus on their own communities but also to compare and contrast strengths and weaknesses for other communities represented in their group.

Results show that listening session participants are highly aware of herbicide resistance as a challenge in their communities. However, they also acknowledged that some stakeholders may be either unaware or in denial of the problem. It is clear that while this is a challenge facing many communities, there may be a range in severity for different types of weeds across the region, as well as differences in individual farmers' and other stakeholders' levels of awareness and ability, or inclination, to act.

The predominant strengths and associated opportunities that participants identified included; collaboration and cost-sharing between universities, farmers, state agencies and industry; reliance on small, tight-knit communities as a means to share information; and grower commitment to the land. Participants also shared weaknesses and threats that exist within their communities. These included economic challenges like commodity prices and chemical costs, low-profit margins, a lack of available resources like time and labor, and problems associated with a lack of public awareness and education. Other challenges included lack of available information and the difficulty of securing awareness and involvement from every individual farmer. Participants also discussed potential activities and resources that could help them move forward to build a community-based herbicide resistance management initiative. These included electronic or web-based resources; badges, certifications, or credits to act as an incentive; and increased research on the short- and long-term costs and benefits of herbicide resistance weed management.

Following the listening session, Dr. Dentzman and University of Idaho graduate student Avery LaVoie mapped results onto a toolkit outlining eight principles of community management (Table 2). For each principle, relevant information from the listening session was summarized and key actions to improve community capacity identified. Due to the structure of the listening sessions, not all of these principles were clearly identified or discussed. However, several key areas for improvement and relevant actions in the PNW stand out. These include;

- identifying smaller and more clearly defined communities where pilot projects can be implemented, as well as connecting these pilot communities to form a regional weed management group
- assembling community leaders dedicated to community-based herbicide resistance management, particularly representing farmers, universities, state agencies, and industry
- forming a team of key players and decide on a regular time and place to meet and discuss progress
- identifying low-awareness individuals and groups, and brainstorming ideas for how to get them involved

The PNW-based research team has begun work on several of these key actions; specifically, a team of key players has been formed and regular meetings scheduled to discuss next steps. Choosing communities for pilot projects is underway, as are additional initiatives such as creating a weed management contest for wheat growers, establishing online clearing houses for information and events related to herbicide resistance management in the PNW, and developing an IPM checklist. Additional listening sessions are also of interest for expanding our knowledge base, particularly as conditions are likely to vary across regions and groups of stakeholders. Several have already been conducted, for instance with the Idaho Direct Seeders Association and Washington State Noxious Weed Board Coordinators, with planning for further sessions ongoing.

Table 1. Summary of Findings

Grp	Strengths and opportunities	Weaknesses and Threats	Next Steps:
1	<ul style="list-style-type: none"> -Communication successes: CCA and fellow farmers: finding out what works -University and company research -Education: Fairs, events, farm shows, reps and companies 	<ul style="list-style-type: none"> -Uninformed: lack of education -Economics: low commodity prices, and chemical costs) -Short-term planning 	<ul style="list-style-type: none"> -Small grains research/website to be well informed: chemical options and management tools -Weed management groups (counties, groups, regions) -Timely management/early detection -Strengthen farming communities
2	<ul style="list-style-type: none"> -Grower commitment to the land -Company field-men aware of the issue -Farmer and state agency collaborations: conservation districts, collaboration with grain industry and union 	<ul style="list-style-type: none"> -Lack of profitable rotations options -Program restrictions and feasibility -Time and priorities -Apathy-unengaged growers 	<ul style="list-style-type: none"> -Farm internship for college students -Build on conservation district model -Coordinate with university and conservation districts to provide education and programming: Economic analysis - Badge of certification program for participation—e.g. “Weed Warriors”
3	<ul style="list-style-type: none"> -Experts- Weed scientists and agronomists -Diverse crop rotations -Knowledge of regional history 	<ul style="list-style-type: none"> -Short term economic survival -Farmers’ movement: land turnover, farm consolidation -Negative psychology of repeated problems: Lack of networks-listening experts, changes from year to year 	<ul style="list-style-type: none"> -Resistance management as a certification -Financial incentives -Network groups -Better visibility/explanation of the issue
4	<ul style="list-style-type: none"> -University assistance -Tight knit community, close with neighbors, sharing with peers -Conservation district and NRCS = asset 	<ul style="list-style-type: none"> -Time: bad time management skills, lack of manpower -Money -Involvement: Public perception and education, bureaucracy and restrictions (federal regulation?), Human nature (mindset), lack of resources (equipment, time, labor), ignorance 	<ul style="list-style-type: none"> -Pesticide license credits (received for attending meetings) -Online/electronic forum (app?) -Cost and benefit analysis (short and long-term)
5	<ul style="list-style-type: none"> -Engaged growers (sharing ideas, methods, successes, failures) -Competent agronomists (private and public) -Cost-sharing (local and federal agencies) 	<ul style="list-style-type: none"> -Public distrust in pesticides: Social media -Shrinking agricultural communities: fewer land managers, larger farms, less labor resources to spot treat, some large (corporate) farms disconnected from community - Hostile state government; less ag-representation in government (due to shrinking ag. communities) 	<ul style="list-style-type: none"> - Community leader- point of focus - Topic addressed at major growers’ meetings and recertification events - Strong support from federal sources - Access to ag-tech (Drones, precision spray, cost support) - Economically driven producer buy-in

Table 2. Eight Community-Based Management Principles

1. Set clear boundaries
2. Be aware of farmer and community differences and needs
3. Allow the community to lead and govern itself
4. Establish shared goals and values through active communication
5. Raise awareness of the need for community-based management
6. Recognize individual contributions and struggles
7. Engage diverse actors

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References

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