Evaluating Ecological Weed Management Strategies Using a New Online Decision Support Tool

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1pm – 2pm
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Robyn Wilson, Doug Doohan & Doug Bessette
About the Speakers:

• Robyn Wilson is a Professor in the School of Environment and Natural Resources at The Ohio State University.

• Doug Doohan is a Professor and State Specialist in the Department of Horticulture and Crop Science at The Ohio State University, located at the Ohio Agricultural Research and Development Center in Wooster.

• Doug Bessette is an Assistant Professor in the Department of Community Sustainability at Michigan State University.
Why are we here?

• Weed management is one of the biggest challenges for organic growers.
• It’s also a barrier for conventional growers wanting to transition to organic.
• To help both organic and conventional growers, we’ve invested resources in the study of “Ecological Weed Management” (EWM) practices and strategies.
What’s an EWM practice?

Any practice that works to:

1. reduce weed seed banks and control emerged weeds,
2. increase biodiversity in the agroecosystem, and
3. reduce the time and labor required to control weeds in the long-term.
Some common EWM practices

- To control emerged/emerging weeds:
  - tillage, flaming, weeding by hand, etc., and
  - use of mulches, cover crops, nurse crops.

- To reduce weeds in the seed bank:
  - create stale seedbeds,
  - remove weeds before they go to seed, and
  - prevent introduction of weed seeds in seed or compost and on used equipment.

- To increase biodiversity in the agroecosystem:
  - minimize bare ground time using cover crops, forages, etc.,
  - use crop rotations that result in weeds germinating but not going to seed, e.g. winter wheat following soybean,
  - use practices that improve soil health by building tilth and improving soil aeration, and
  - support beneficial soil organisms by using tillage only when essential.
Some common EWM practices

• To increase a crop’s ability to compete with weeds:
  • establish and maintain dense crop stands,
  • increase seeding rate, and
  • decrease row spacing.

• To reduce time, labor, and resources required to control weeds in the long term:
  • small weeds are easier to control, so weed at the 'white thread' stage,
  • consider using a cover crop between rows, and
  • all of the above will help, but reducing weed seed in the seedbank is most effective.
What’s an EWM “Strategy”? 

• An EWM “Strategy” is:
  • an integrated, purposeful combination of practices,
  • that aims to achieve farmer’s most important on-farm objectives, and
  • incorporates the best-available science.
Building EWM Strategies is Hard.

• And integrating strategies on the farm can be challenging:
  • Designing, combining and evaluating practices is tough.
  • University researchers haven’t always helped. We’ve often focused our outreach on the risks of EWM strategies rather than their benefits.
  • There’s an unclear understanding of how different strategies help farmers meet their on-farm objectives.
That’s where the **Organic Weed Manager** comes in!

We built an easy-to-use, online decision support tool, called the **Organic Weed Manager**, to help organic growers build an EWM strategy.

We integrated the latest in weed, soil and decision science, and input from organic farmers to:

1. help farmers identify their current weed management practices and performance,
2. characterize their most important on-farm objectives, and
3. evaluate EWM strategies and their performance across these objectives.
The tool focuses specifically on:

1. Characterizing the benefits of EWM strategies, rather than only the risks,
2. Engaging both the short- and long-term trade-offs of EWM strategies,
3. Making tradeoffs more explicit and their analysis more meaningful,
4. Connecting EWM strategies to growers’ most important objectives, and
5. Providing an incremental and practical pathway for farmers to pursue an EWM strategy.
Your input was—and remains—critical!

• We’ve been developing the tool and website for over 5 years.

• We relied on 7 soil, weed and decision scientists to make up our Expert Advisory Panel, in addition to the 7 members of the project team.

• We conducted 23 interviews in 2014 with organic growers to identify their most common practices and objectives.

• We conducted an additional 16 expert interviews to help group EWM practices into strategies.

• We conducted 11 interviews in 2016 with organic growers to review the tool and the current website.

• In 2018, we had 45 organic growers from across the country work through the tool and evaluate it.
Evaluations have been very positive!

Organic growers consistently report that working through the tool’s tasks and characterizing their performance helps them to think about weeds and weed management differently!
So, let’s move to the actual tool!

Please follow along at www.OrganicWeedManager.com!

We encourage participants to follow along on their own computer and use the online tool during the webinar.

**Please type questions you have using Zoom’s Chat function.**
OWM pages – walk through the tool...
Questions?
Helpful Links at go.osu.edu/eco-weed-mngt

Steel in the Field, SARE Learning Center
www.sare.org/Learning-Center/Books/Steel-in-the-Field

Twelve Steps Toward Ecological Weed Management in Organic Vegetables, eOrganic fact sheets by Mark Schonbeck
eorganic.org/node/2320

Creating a Weed Management Plan for Your Organic Farm, Penn State Extension Fact Sheet
extension.psu.edu/creating-a-weed-management-plan-for-your-organic-farm
Concluding Thoughts & Next Steps

• Collect data and improve the underlying model.

• Conduct field trials to test the tool’s recommendations.

• Hear from growers like you on how to improve the tool!

• [https://offer.osu.edu/](https://offer.osu.edu/)
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