

VEGETABLE CROPS HOTLINE

A newsletter for commercial vegetable growers prepared by the Purdue University Cooperative Extension Service.

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From the Editor's Desk

(Petrus Langenhoven, plangenh@purdue.edu, (765) 496-7955)

Welcome to the [Vegetable Crops Hotline](#) (VCH), Purdue Extension's exclusive newsletter for people in the business of growing vegetables.

The past two weeks were packed with field days. The Purdue Fruit and Vegetable and the Purdue Small Farm Education field days were well attended, 90 and 73, respectively.

This issue includes our insect and weed spotlight articles. We also examine *Bacterial Fruit Blotch of Cucurbits* and investigate *Food Safety Considerations for Postharvest Handling of Produce*. Additionally, we focus on fruiting vegetable crop recovery from waterlogging and present an insect trapping update.

Details about the upcoming September 4 Irrigation Workshop for Small-Scale Vegetable Producers are now available. The Mechanical Weed Control Field Day is the following week, September 11, at Meigs. Read more about these events in this newsletter. Reserve your spot now!

Website Links

Frequently, we include links to websites or publications available online. If you can't access these resources, don't hesitate to contact your local Extension office or us to request a hard copy of the information.

Midwest Vegetable Production Guide

This annually revised guide summarizes currently suggested fertility, cultural, and pest management techniques and tools for

commercial vegetable growers. It is a collaboration of land-grant universities from eight states. It provides information on vegetable production that is valid for the current year in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, and Ohio. The audience for the *Midwest Vegetable Production Guide* is commercial growers.

The searchable [online guide](#) is available at mwveguide.org. There is no charge for accessing the guide, and any updates will be available immediately. Therefore, access the online guide to get the most up-to-date version of the Midwest Vegetable Production Guide mwveguide.org/guide. You can also download a free copy of the guide from your computer or purchase a hard copy for \$12 from Stephen Meyers, slmeyers@purdue.edu.

Do not hesitate to contact me at plangenh@purdue.edu if you have any questions or suggestions for improving the newsletter. Let me know if there are specific topics you would like to see more of in the newsletter. Also, let us know if things are not working for you. We want to improve the newsletter, and your input is valuable.

We hope you enjoy the newsletter. Happy reading!

Food Safety Considerations for Postharvest Handling of Produce

(Scott Monroe, jmonroe@purdue.edu, (812) 888-7401), (Tari Gary, tstrazis@purdue.edu) & (Amanda J Deering, adeering@purdue.edu)

Harvest season is easily one of the busiest and craziest times of the year. Crops are being harvested, packed, shipped, and sold against a backdrop of perishability, weather, and ever-changing markets. Harvest and postharvest handling are also critical times for food safety. Handling of the crop by workers, transporting of produce, and aggregating the crop in packing houses and packages can all introduce risk and the potential for widespread product contamination. Below are a few tips to help reduce risk as produce is harvested and prepared for market.

Make food safety "cultural" throughout the growing season

The most successful food safety programs are those that are "baked into" the farm. Those farms that make GAPs a normal part of growing, as opposed to something that has to be done when the inspector or auditor is coming, are in the best position to

continue their food safety practices into harvest and postharvest handling.



Figure 1. Farms that make food safety part of their culture are in the best position to consistently reduce contamination risk during harvest and postharvest handling. (Photo by Purdue Student Farm).



Figure 2. All workers should receive food safety training prior to beginning work. Training should be documented (Photo by A. Freeman).

Worker training

All workers should receive food safety training. At a minimum, workers should be trained to recognize food safety risks and how to mitigate those risks. They should also know who to contact if they can't manage a food safety risk on their own. Training doesn't have to be burdensome or time-consuming, but **must be documented**. A typical worker training for food safety should include:

1. General Information, such as how pathogens can be transported on produce and why it is the responsibility of all workers to reduce risk.
2. Basic health policies for the farm. These can be as simple as informing workers that sick people should not handle produce and the farm's procedure for reporting illness.
3. Basic sanitation policies. This includes handwashing procedures and policies, restroom procedures, and management of injuries.
4. Farm-specific procedures such as the location of facilities or the farm's discipline policies.

Generally, these topics can be covered in less than an hour. If you're not comfortable presenting to a group, there are resources available. Cornell University has an excellent worker training video available in [English](#), [Spanish](#), [Creole](#), or [Hmong](#).

Packinghouse sanitation

Produce packinghouses come in all shapes and sizes. Whether big, small, open, or closed, the principles of sanitation are the same. Packinghouses, and specifically packing equipment, should be cleaned and sanitized as needed at the beginning of, and throughout, the season. Use a 4-step process to clean equipment:

1. Remove any obvious dirt and debris.
2. Apply an appropriate detergent and scrub surfaces.
3. Rinse the surface with clean water, removing all of the detergent and soil.
4. Apply an approved sanitizer following label directions.

Prioritize food contact surfaces where the produce contacts the packing equipment. Remember to document all cleaning and sanitizing activities.

To wash or not to wash?

Water can be easily contaminated. When contaminated, water has the potential to spread human pathogens to the entire crop. The Produce Safety Rule (21 CFR 121) does not require washing of produce. Also, most third-party audit schemes do not require washing of produce for GAPs certification. Because of the potential risk and additional considerations added by washing, growers should only wash produce if they have a reason. In many cases, buyer or consumer expectations constitute a reason to wash produce. If you choose to wash produce, keep the following in mind:

1. Use potable water. Any water used for washing produce should contain 0 detectable generic *coli* per 100 ml sample. Municipal water generally meets this standard. If groundwater is used, it should be tested prior to use. Untreated surface water must not be used.
2. Consider using a sanitizer. Sanitizers are useful for reducing microbial populations on surfaces and preventing cross contamination. There is no legal requirement to use sanitizers. However, if one chooses to do so, the sanitizer should be labeled for use on produce. As with other

pesticides, the label is the law. Growers who choose to use a sanitizer should also be prepared to monitor sanitizer levels, as well as other parameters such as turbidity, water pH, and temperature.

3. Try to minimize the temperature difference between produce and wash water. Cold wash water used to wash hot produce creates the potential for infiltration, where water can enter the produce through stem scars or other openings. In general, the temperature difference between wash water and produce should not be more than 10°F. This may mean allowing wash water to warm or produce to cool prior to washing.



Figure 3. Washing is not a requirement of the Produce Safety Rule or most third-party audit schemes but may be done to fulfill buyer requirements or expectations (Photo by Purdue Student Farm).

Product flow

As produce is brought into the packinghouse, movement of products should be configured in such a way that the potential for cross contamination is minimized. Ideally, produce should come in on one side of the facility from the field and out the other side as “finished” produce that is ready for market. Moving produce in a straight line through the facility or a “U” shaped product flow works very well. Growers should avoid product movement that causes cleaned produce to be in proximity to produce that is just coming in from the field.

Cooling and Storage

As with other areas of postharvest handling, managing cooling and storage of produce with food safety in mind is a critical step in reducing contamination risk. All storage and cooling areas should be cleaned and sanitized before the beginning of harvest season and as needed throughout the season, and documented. As with washing, no rule or regulation requires growers to cool produce. However, should one choose to cool their produce, the following should be considered:

1. Check cooler temperatures at least daily. Document these temperature checks. This can be as simple as keeping a clipboard with a log sheet next to the cooler so that temperatures can be recorded immediately when checked.
2. Avoid condensation. Chilled water pipes, condensers, and heat exchangers are areas where condensation can form

and drip onto produce. Once condensation drips onto produce, it is considered to be adulterated and cannot be sold. If condensation cannot be avoided, then drip pans or other devices to catch and divert the condensation should be used.



Figure 4. Cooling and storage areas should be cleaned and sanitized as needed and temperatures should be checked at least daily (Photo by Purdue Student Farm).

Transport vehicles

Transport vehicles should be clean and free from debris. They should be washed and sanitized prior to use. All cleaning and sanitizing activities should be documented. Growers who use third-party carriers to ship produce should inspect carrier vehicles before loading produce. Note any “off” odors. Try to find out what has been previously hauled. If trucks are equipped with coolers, make sure they are working prior to loading produce. If there are any concerns, do not load your produce onto a third-party carrier until the concerns have been resolved. This may mean asking drivers to clean and sanitize their trailers or asking for a different trailer altogether.

By following these guidelines, growers can reduce the risk of contamination to their crops as they prepare and deliver wholesome, nutritious produce to consumers. As always, feel free to contact the Safe Produce Indiana team whenever you have food safety questions or concerns.

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Bacterial Fruit Blotch On Cucurbits

(Cesar Escalante, escalac@purdue.edu)

Bacterial fruit blotch (BFB) is a disease caused by the pathogen *Acidovorax avenae* subsp. *citrulli*. Most cucurbit crops are affected by this disease, although watermelon cultivars are commonly more susceptible. However, this summer, I received cantaloupe samples (Figures 1 and 2) that tested positive for BFB using serological tests.



Figure 1. Immature cantaloupe fruit showing circular water-soaked and sunken lesions (Photo by Cesar Escalante).



Figure 2. Mature cantaloupe affected by bacterial fruit blotch. Note flesh rot caused by bacterial infection (Photo by Cesar Escalante).

When environmental conditions are conducive, BFB can be a serious problem during the seedling stage, causing collapse of the foliage after development of water-soaked spots on lower surface of cotyledons and leaves. However, symptoms caused by BFB are more distinctive in the fruits, where they initiate as small water-

soaked spots. When the disease is more advanced, symptoms in watermelon are usually different from those in cantaloupes. In watermelon, the water-soaked lesions are bigger, with irregular shapes, enlarged, and occasionally accompanied by cracking (Figure 3), whereas in cantaloupe, small and circular water-soaked lesions and sunken spots persist (Figure 1). Fruits affected by this bacterium are unmarketable due to flesh rot (Figure 2).



Figure 3. Watermelon fruit with enlarged and irregular water-soaked lesions and cracking (Courtesy of Dan Egel; originally published in the Southwest Purdue Ag Program website, Vegetable Disease Photos).

The causal agent of BFB is transmitted through seed; therefore, planting certified and clean seed is crucial. Use sanitized equipment during greenhouse handling activities. Inspect seedling lots for BFB symptoms before transplanting them in the field. The pathogen causing BFB can survive in the soil for a long period. Therefore, allow a 3- to 5-year rotation with non-cucurbit crops. Bactericides such as copper-based products and Actigard – 0.5WDG (acibenzolar-s-methyl) can be applied in the field. Consult the [2024 Midwest Vegetable Production Guide](#) to learn more about product application recommendations.

Insect Spotlight: The Minute Pirate Bug – A Key Predator

(Scarleth Chinchilla, schinch@purdue.edu) & (Laura Ingwell, lingwell@purdue.edu, (765) 494-6167)

Orius insidiosus, also known as the *minute pirate bug*, is native to North America and a beneficial insect (Figure 1). They are generalist omnivores, feeding on other insects and pollen. Minute pirate bugs belong to the Order of true bugs — Hemiptera — in the family Anthoridae. *Orius insidiosus* can be found in a wide range of crops, pastureland, trees, shrubs, weeds, and on many

wild plants. They inhabit the stems, foliage, and flowers of plants and spread fast when prey are available. This bug is an important contributor to the suppression of various agricultural pests in greenhouses, high tunnels, and open-field environments.

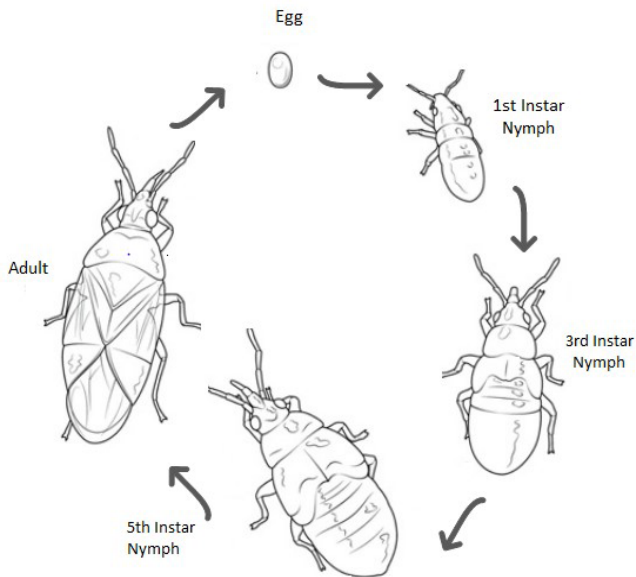


Figure 2. The various life stages of *Orius insidiosus*: egg, nymphal stages, and adult. For brevity, we did not picture the 2nd and 4th instar (illustration created by Skarleth Chinchilla and Inspired by Morgan Mahana - Sound Horticulture 2024).

Life cycle

There are numerous generations of *Orius insidiosus* each year. Like all hemipterans, they undergo incomplete metamorphosis. An adult female can lay up to 100 eggs in her lifetime. *Orius insidiosus* can complete its life cycle in approximately 23-25 days at 70°F (21°C). Its growth and development can be affected by cooler temperatures or lack of prey. Adult females deposit their eggs within plant tissue. Eggs are typically laid 3-5 days after mating occurs. Upon hatching, they develop through five nymphal stages, looking similar as they grow but increasing in size (Figure 2). The nymphs are bright orange in color, and you can begin to see the wing pads develop as they grow. The fifth instar develops into an adult with fully developed wings. Adults live for approximately 21-28 days.

Habitat

Orius insidiosus can be found in a wide range of crops, natural habitats, and is also commercially available to be used in augmentative biological control. They are attracted to flowers and plants that are infested with small soft-bodied insects. *Orius insidiosus* also feeds on pollen (Figure 3) and plant sap. Feeding damage in plants is minor and this omnivorous feeding behavior is essential to preserve a healthy population when prey is not available.

Natural biological control from *Orius insidiosus*

Orius insidiosus is one of the most used *Orius* species in biological

control programs. They are effective predators and can decrease pest populations in various agricultural systems. They feed on any small soft-bodied insect, including thrips, mites, aphids (Figure 4), whiteflies, leafhoppers, various insect eggs, and tiny newly hatched caterpillars. Both immature and adult forms can feed on numerous prey items daily. *Orius insidiosus* have been shown to effectively suppress populations of spider mites on bean plants and attacks and kills all stages of thrips.



Figure 3. *Orius insidiosus* feeding on pollen (Photo by John Obermeyer).



Figure 4. *Orius insidiosus* preying on aphids (Photo by John Obermeyer).

Conservation of Minute Pirate Bugs

Some practices can be implemented in agricultural production systems to promote and conserve natural enemies like *Orius*. One practice is to avoid the use of broad-spectrum insecticides. It is also helpful to maintain flowering annuals and perennials, shrubs, and trees near crop fields that provide protection and alternative food sources for these insects. *Orius insidiosus* is attracted to small white and yellow flowers and there is some evidence to suggest that they respond positively to the commercially available herbivore-induced plant volatile lure, Preda-lure. Take caution if you plan to implement them in tomato, they get stuck in the sticky hairs (glandular trichomes) that the plant produces.

Insect Trapping Updates Jul-23, 2024

(Laura Ingwell, lingwell@purdue.edu, (765) 494-6167)

Squash Vine Borer

While we have disseminated several Delta traps throughout the state, we are getting few reports back from collaborators. Those who have reported recently (Allen, Marion, and Knox Counties) are all still reporting adult moths being active and caught in traps.

Corn Earworm

Be sure that you are monitoring your dent corn in the area, as thresholds change for the need to spray. If dent corn is silking, the average nightly count that would trigger a spray is 10, while that number drops to 1 moth per night, if your sweetcorn is also in the silk stage. If you have late plantings that are not yet silking, they do not need to be sprayed. The only area of the state that is reporting catches close to 10 per night is Jennings Co. So, if dent corn is still silking in your area, your silking sweetcorn is safe. If dent corn is done silking, threshold have been exceeded in most locations that are reporting and therefore you may need to spray your silking sweetcorn.

Tomato Pinworm

At this point in the season, we have started to capture adult moths at almost every high tunnel we visit throughout the state, except the upper northwest corner. Be on the lookout for blotchy mines on the leaves. If you see them, the best strategy is likely to remove the leaves and destroy them. Numbers were low in June, so the pressure is likely not too high yet. If you are worried about high infestations or have a large amount of fruit at risk, you can use a Bt foliar spray to target the eggs as they hatch and dig into a mine. The other vulnerable stage is the late instar when the caterpillars leave the mine and pupate. We have seen heavy pruning be efficient to manage this pest.

Weed Spotlight: Ground Ivy

(Helen Angelina Nocito, hnocito@purdue.edu) & (Stephen Meyers, slmeyers@purdue.edu, (765) 496-6540)

Common names: Ground ivy, gill-over-the-ground, creeping Charlie, field balm, haymaids, cat's foot, alehoffs

Latin name: *Glechoma hederacea* L.

Family: Lamiaceae (Mint Family)

General Description and Identification

Ground ivy is a perennial herbaceous plant that creeps along the soil surface and thrives in moist and shady areas (Figure 1). It was introduced to the US from Europe in the 1600s. Although mostly found in turf and landscape settings, ground ivy can be problematic in some vegetable production settings, including along mowed field edges and in and around high tunnels. Ground ivy does not represent much of a threat for large-seeded and

upright crops. However, ground ivy can “crowd out” and shade smaller statured vegetable crops and those that require more time to establish. It spreads vegetatively through its long stems that form roots at their nodes, as well as by stolons and rhizomes.



Figure 1. Ground ivy forms a thick mat of kidney-shaped leaves (Photo by S.L. Meyers).

Ground ivy can be identified by its:

- Square stems.
- 1-inch kidney-shaped leaves with scalloped margins. These leaves appear on long petioles in pairs on either side of the stem (opposite leaf arrangement) and give off a distinctively foul odor when crushed or mowed.
- Lavender flowers with magenta dots (Figure 2). Flowers are tubular, $\frac{1}{2}$ to $\frac{3}{4}$ inch in length, and appear in clusters of 2 or more between March and July.
- Its dark brown fruits (“nutlets”).



© Aaron J. Patton

Figure 2. Ground ivy flowers (Photo by A.J. Patton).

Because it shares the mint family with numerous other weeds, ground ivy can be confused with weeds like henbit ([Weed Spotlight: Henbit | Purdue University Vegetable Crops Hotline \(vegcropshotline.org\)](#)) and purple deadnettle ([Weed Spotlight: Purple Deadnettle | Purdue University Vegetable Crops Hotline \(vegcropshotline.org\)](#)). It can also be confused with creeping Jenny (*Lysimachia nummularia*), which has a similar growth habit and an opposite leaf arrangement. However, creeping Jenny leaves are round and its flowers are bright yellow (Figure 3).



Figure 3. Creeping Jenny grows along a field edge in Indiana (Photo by S.L. Meyers).

Control Methods

- Ensure adequate field drainage to limit the moist environment that favors ground ivy establishment and growth.
- Rotate to crops or cover crops that overtop ground ivy and outcompete it for light, such as sweet corn and pumpkins.
- Herbicide control can be variable. Starane Ultra (fluroxypyr) can be an effective option and 2,4-D and glyphosate may provide some suppression. There is evidence to show that applications made in the fall can be effective. Visit the [Midwest Vegetable Production Guide \(mwvegguide.org\)](#) for herbicides registered for use in the crop you grow.
- Small patches of ground ivy can be pulled by hand or shovel, ensuring that all plant parts are removed from the field.

“Fun Fact”

- Ground ivy is poisonous to horses if eaten in large amounts.

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Recovering Vegetable Crops from Waterlogging

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

Under waterlogging conditions, oxygen depletion in the soil injures roots, limiting their ability to uptake nutrients and water. In response, plants close their stomata to prevent water loss, leading to a subsequent reduction in photosynthesis. Common symptoms include wilting, stunted growth, and yellowing leaves. If the stress persists for an extended period, plants may eventually die. The severity of damage varies depending on plant types, growth stages, root structures, soil characteristics, water amount, and duration of the stress condition.

When flooding occurs in a field, the top priority is to minimize the duration plants are exposed to stress by removing excess water as quickly as possible. After the water is removed or dried out, the recovery of the injured root system can take days or even weeks.

The loss of chlorophyll content, resulting in yellowing leaves, is attributed to nitrogen deficiency due to reduced root activity and photosynthesis. Additionally, flooding significantly decreases nitrogen levels in the soil. Applying nitrogen fertilizers as a foliar spray can aid plant recovery after flooding. Once the root system is reestablished, additional nitrogen application to the soil may be needed, depending on the plant growth stages. Given the potential damage to the root system during flooding, additional attention must be paid to watering. Until the root system recovers, irrigation should be frequent but in small amounts to avoid the recurrence of waterlogging.

In tomato plants with setting fruit, excessive water may cause fruit splitting, rendering the fruit unmarketable. Timely removal of unmarketable fruit from the plants can reduce plant burden and aid in recovery.

Injured root systems are susceptible to many soil pathogens, such as *Pythium* and some *Fusarium* species. Plants may recover from these pathogens if the damage is moderate and new roots start to grow quickly upon improved environmental conditions. Yellowing leaves are also more susceptible to foliar pathogens, increasing the risk of foliar diseases. When possible, timely removal of senescent leaves can reduce disease pressure to some extent.

The most severe disease challenge associated with excessive water is disease caused by *Phytophthora capsici*, which causes significant economic losses in pepper and cucurbit crops. Water

assists the pathogen in completing its life cycle and spreading over large areas. When *Phytophthora capsici* are present, fungicide application is essential in suppressing the disease after heavy rains. For more information about the pathogen and fungicide options, please refer to “[Phytophthora Blight of Cucurbits](#)” and the “[Midwest Vegetable Guide](#)”

Irrigation Workshop for Small-Scale Vegetable Producers on Sept. 4

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

Microirrigation Workshop

for Small-Scale Farms



Workshop Highlights

- Understanding Irrigation
- NRCS EQIP Programs
- Irrigation Scheduling
- Water and Soil Health
- Estimating Soil Moisture
- Automatic Irrigation Control and other topics!

Speakers Include:

Cara Bergschneider, NRCS State Urban Conservationist

Wenjing Guan, Purdue Extension Specialist

Scott Wagner, NRCS Agricultural Engineer



This program is limited to 50 participants. Use the QR to register. Contact Valerie Clingerman at clingerman@purdue.edu or 812-882-3509 for questions.

Date: September 4, 2024
Time: 3:00-8:00 PM EST
Location: Southwest Purdue Ag Center, 4369 N Purdue Rd., Vincennes, IN 47591
This is a free event and dinner will be provided. You must register.

 United States Department of Agriculture
Natural Resources Conservation Service

This event is a partnership between Purdue Extension, NRCS, and the Indiana Urban Soil Health Program. Funding for this workshop was made possible by the Indiana State Department of Agriculture through grant A337-22-SCBG-21-003. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the ISDA. USDA and its partnering organizations are equal opportunity providers, employers and lenders.

Irrigation workshop September 4, 2024.

Date: September 4, 2024

Time: 3:00 – 8:00 PM EST

Location: Southwest Purdue Ag Center, 4369 N Purdue Rd, Vincennes, IN 47591

Dinner Provided

Join us for an informative workshop designed specifically for small-scale vegetable producers. This event will be held at the Southwest Purdue Ag Center in Vincennes, IN, on September 4th, 2024, from 3:00 to 8:00 PM EST. Dinner will be provided.

Workshop Highlights

- **Understanding Irrigation:** Learn the importance of proper irrigation management for vegetable production.
- **NRCS EQIP Programs:** Discover available programs and how to apply for them.
- **Expert Speakers:**
 - Cara Bergschneider, NRCS Urban Conservationist
 - Wenjing Guan, Purdue Extension Specialist
 - Scott Wagner, NRCS Agricultural Engineer

Topics Covered

- Plant Response to Water
- Irrigation Scheduling
- Automatic Irrigation Control
- Estimating Soil Moisture and Soil Moisture Sensors
- Irrigation Water Quality
- Water and Soil Health

The workshop includes both indoor presentations and field tours to demonstrate the concepts discussed.

Registration

This program is free but limited to 50 participants. If you are interested, please register using the [link](#). For questions about registration, contact Valerie Clingerman at clingerman@purdue.edu or (812) 882-3509. For sponsorship inquiries, contact Barb Joyner at joynerb@purdue.edu or (812) 886-0198.

Partnership and Funding

This event is a partnership between Purdue Extension, NRCS, and the Indiana Urban Soil Health Program. Funding for this workshop was made possible by the Indiana State Department of Agriculture through grant A337-22-SCBG-21-003. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the ISDA. USDA and its partnering organizations are equal opportunity providers, employers, and lenders.

2024 Midwest Mechanical Weed Control Field Day

(Ashley Adair, holmes9@purdue.edu)

The 7th Annual Midwest Mechanical Weed Control Field Day is heading to Meigs Horticulture Research Farm in Lafayette, IN, in 2024!

This amazing event consistently draws more than 150 farmers from around the Midwest to hear from experts, meet with company representatives, network with other farmers, and experience in-field equipment demonstrations of all manner of weeding tools. Whether you have products to showcase or equipment to demonstrate, this is your opportunity to get dedicated face-to-face time with a captive audience of farmers who are interested in what you have to offer. The field day is promoted to farmers throughout the US (with a focus on the Midwest) in print, digital, and social media.



Wednesday, Sept. 11, 2024
Meigs Horticulture Research Farm
Lafayette, Indiana

Weeding Machines for Vegetables & Row Crops

- Hear from national experts on weeding tools and techniques
- Meet farmers from all over the country
- See weeding tools of all scales: From two-wheel tractors up to 12-row camera-guided cultivators.
- Watch field demos of weeding machines and hear from company reps
- Connect with companies and suppliers at the trade show

For questions, or to collaborate, please contact Sam Oschwald Tilton at (414) 213-5337. Scan the QR code to register or visit <https://www.thelandconnection.org/event/2024-mmwcf/>



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Every element of the event is crafted to maximize contact between the participants and sponsors. The morning features a dedicated Trade Show area for farmers to connect with exhibitors. Additionally, the morning includes educational events such as presentations and roundtable discussions. But, by far, the main draw is the afternoon in-field equipment demonstrations, including tools of all scales of production. The demonstrations feature everything from walk-behind tractors, autonomous weeding machines, belly-mounted vegetable tools, and 6-row camera-guided row crop cultivation tools. The demonstration plots are planted specifically for the field day so that crops are at the optimum stage for cultivation. Each sponsor runs their

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demonstration several times so that all attending farmers can see each demo, giving sponsors quality face-to-face time to show how their machines work in the field and to connect with farmers.

The Midwest Mechanical Weed Control Field Day is a partnership between Sam Oschwald Tilton, Purdue University, and The Land Connection (TLC). The Land Connection is a 501 (c)(3) non-profit based in Champaign, IL. TLC offers training, resources, and support to farmers, food businesses, and eaters so that together, we can realize a more just, equitable, and sustainable food system that we know is possible. All sponsorship funds are used for the organization and execution of the Midwest Mechanical Weed Control Field Day.

Visit the [event registration website](#) to see videos, press coverage, and sponsor testimonials from the previous six years of the field day.

Registration is \$75.

Thank you for being an integral part of sustainable agriculture,

Crystal Siltman and Jesse Schaffer, Farmer Training Coordinators,
The Land Connection

Sam Oschwald Tilton, MMWCFD Event Founder and Organizer,
Glacial Drift Enterprises

Website: <https://www.thelandconnection.org/event/2024-mmwcf/>

[Sponsorship Packet](#)
[Flyer](#)