

# 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](mailto: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.

Once again, we have a bumper issue. It seems that by Memorial weekend, we can look forward to even warmer days. If you have not done it yet, now is the time to get those heat-loving vegetables into the ground. Remember, the [Midwestern Regional Climate Center](#) has some great interactive tools like [Mesonet](#). The Mesonet is a collection of observation stations that gather information about the environment, such as atmospheric, soil, and moisture conditions.

In this issue, we are highlighting pest pollinator management. In our cover crop series, the spotlight moves to sorghum-sudangrass as a summer cover crop. There is lots of information about educational opportunities. Registration is now open for three Purdue field days. The Southwest Purdue Ag Center field day (Vincennes), the Purdue Fruit and Vegetable field day (Meigs,

Lafayette), and the Purdue Small Farm Education field day (Purdue Student Farm, West Lafayette). Register now to reserve your spot. Registration links are available in this issue.

Frequently we include links to websites or publications that are available online. If you can't access these resources or can't see the web address, don't hesitate to contact your [local Extension office](#) or us to request a hard copy of the information.

Remember that all previous articles published in the VCH newsletter are available on the VCH website [vegcropshotline.org](http://vegcropshotline.org).

## We would like to hear from you

**ANR Educators and Growers**, reach out to us if you are experiencing a vegetable production-related issue you think other growers need to know of. Remember, we have a great Horticulture Team that can assist you. A complete list is available [HERE](#).

Send us pictures of success stories, activities, or issues in your county or on your farm. Please include a description and provide the name of the person that needs to get credit for the picture. These pictures could be used in future *Vegetable Crops Hotline Newsletter* articles. Submit your stories [HERE](#).

## Enjoy reading this issue

Do not hesitate to contact me, Petrus Langenhoven, at [plangenh@purdue.edu](mailto:plangenh@purdue.edu) if you have any questions or suggestions to improve the newsletter.

## Enhancing Insect Pest and Pollinator Management with Flowering Cover Crops

(Zeus Mateos, [zmateosf@purdue.edu](mailto:zmateosf@purdue.edu)) & (Ian Kaplan, [ikaplan@purdue.edu](mailto:ikaplan@purdue.edu))

In watermelon systems in Indiana, cover crops are extensively used with the primary function of acting as a wind-break to protect the seedlings when they are planted in May. Due to the nature of the landscape and the soil type (e.g., open areas with sandy soils), seedlings are exposed to physical damage caused by sandblasting. Therefore, cereal rye or wheat is seeded in the fall, which protects vulnerable transplants in the spring. These cover crops are interspersed with rows of watermelons, generally at a ratio of three rows of watermelons for a row of cover crop (Figure

1).



Figure 1. Commercial watermelon field with 3 rows of watermelon interspersed with 1 row of rye (June 2022). (Photo by Zeus Mateos.)

However, rye and wheat cover crops have been reported to act as alternative host plants (i.e., acting as a “green bridge”) for pests, particularly spider mites, which can move into the crop and cause economic damage. Many growers time miticide applications to coincide with rye or wheat senescence in mid-summer.

Additionally, grass cover crops do not provide resources to support beneficial insects (i.e., natural enemies and pollinators). As a result, we have begun testing alternative cover crop options, focusing on flowering plants that minimize spillover of pests like mites and provide supplemental pollen and nectar for bees used to pollinate seedless watermelon.

We have started a trial at three Purdue Agricultural Centers across Indiana (TPAC, SWPAC, and SEPAC) to explore the benefits of non-rye cover crops. Our project aims to enhance populations of natural enemies and wild bees to improve ecosystem services: pest regulation and pollination. We are using economically available flowering cover crops, which can be used in combination with or replace the typically used cereal rye. At each location, we established eight treatment plots with five replicates. Treatments include i) cereal rye, ii) crimson clover (Figure 2), iii) hairy vetch, iv) cereal rye + crimson clover, v) cereal rye + hairy vetch, vi) buckwheat, vii) mustard, and viii) bare ground. We established rye, crimson clover, and vetch in Fall 2022, while buckwheat ([spotlighted](#) in VCH issue 718) and mustard were established in Spring 2023. We chose cover crops with different bloom times to test whether they distract from crop pollination, which is a major concern of growers. For instance, crimson clover blooms before watermelon, mustard (sowed in spring) and buckwheat bloom at the same (but for a short period) time as watermelon, and hairy vetch blooms during the whole season, as does watermelon.



Figure 2. Crimson clover plot at SEPAC (May 2023), surrounding beds awaiting watermelon transplants (Photo by Joel Wahlman).



Figure 3. Canola plot at SWPAC (April 2023) (Photo by Zeus Mateos).

We have begun investigating which bees are attracted to these plots, including canola (mustard), which was widely blooming around the state last month (Figure 3). A total of 3,872 bees (Figure 4) were recorded from the surveys we conducted in these plots over three days! Honey bees were the most abundant visitors, with ~58% of all records, indicating that canola is an excellent forage plant for these managed pollinators. Wild bees were also abundant in these plots (42% of visitors), which were dominated by mining bees (Figure 5a), plasterer bees (Figure 5b), and queen bumble bees (Figure 5c). We also documented sweat bees, carpenter bees, green-metallic sweat bees, and mason bees.

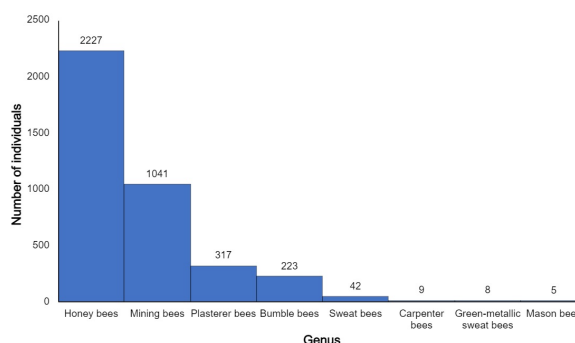


Figure 4. Total number of bees visiting canola flowers at SPWAC in April 2023 in 630 min surveying time.





Figure 5a. Mining bee (*Andrena* sp.). (Photo by Zeus Mateos.)



Figure 5b. Plasterer bee (*Colletes* sp.). (Photo by Zeus Mateos.)



Figure 5c. Queen bumblebee (*Bombus griseocollis*). (Photo by Zeus Mateos.)

These data show how important it is to establish cover crops at the right time. Given how early in the season that canola blooms, it would not interfere with watermelon pollination, which comes much later in June. However, early flowering cover crops may also not benefit watermelon pollination since many of the spring-

active pollinators, such as mining bees, that forage on canola are no longer active by mid-summer when watermelon is in bloom.

Establishing cover crops in the field can be challenging due to unpredictable weather conditions. Among the cover crops we seeded in the fall, rye established best. Crimson clover and hairy vetch also established very well at all locations, except for crimson clover at TPAC (located in Northern Indiana), perhaps due to the colder winter temperatures. We seeded mustard in the fall as well, but due to a late sowing, it didn't survive frost over the winter, and we had to re-seed in the spring at all three locations, which is now delaying its spring bloom period. Buckwheat, although it was seeded in April, also suffered severe frost damage due to the unexpected low temperatures late in the month.

Throughout the remainder of the growing season, we will be sampling all plots for wind damage, pests, pollinators, natural enemies active in biocontrol, and watermelon yields. We want to thank Dennis Nowaskie (SWPAC), Chloe Richard (Meigs/TPAC), Joel Wahlman (SEPAC) and their crews for establishing and managing the plots and Kenneth Eck for allowing us to survey his canola plots at SWPAC.

If you are interested in participating in cover crop research on your vegetable farm, please get in touch with Zeus Mateos ([zmateosf@purdue.edu](mailto:zmateosf@purdue.edu))!

## Foliar Diseases of Tomato in Greenhouses

(Dan Egel, [egel@purdue.edu](mailto:egel@purdue.edu), (812) 886-0198)

This article is a brief review of symptoms of foliar diseases of tomato in greenhouses or high tunnels. Remember that foliar diseases of tomato that are observed in greenhouses or high tunnels are different than those found in the field. This is because fungal diseases commonly found in the field require leaf moisture from rain or overhead irrigation. Below I list three common foliar diseases of tomato often found in greenhouses and discuss symptoms. For more information on this subject, see [this link](#). Additional information and photos can be found [here](#). For information about tomato spotted wilt virus of tomatoes see [this link](#).

**Gray Mold** (*Botrytis cinerea*) Lesions are often a light brown or gray color (Figure 1). One can easily observe the growth of the causal fungus with a 10x hand lens. Gray mold may also cause lesions on stems and fruit. A fruit lesion is shown here (Figure 2).



Figure 1. Gray mold causes light brown or gray necrotic lesions on tomato leaves. The growth of the fungus may be visible on the leaf.



Figure 2. Gray mold may infect tomato fruit causing the fruit to become soft.

**Leaf Mold** (*Passalora fulva*) Tomato leaves affected by leaf mold will often have light yellow lesions with diffuse edges (Figure 3). On the undersides of leaves, the fungus that causes leaf mold can clearly be seen as an olive-green “fuzz” (Figure 4). Under severe conditions, the fungus can be seen growing on the top of the leaf as well. Lesions do not appear on stems or fruit.



Figure 3. Leaf mold of tomato causes a light yellow lesion with diffuse edges.



Figure 4. Leaf mold lesions on tomato can be recognized by the gray-green mold on the bottom of leaves

**White Mold** (*Sclerotinia sclerotiorum*) The first symptom is often the wilting of scattered tomato plants. Upon closer inspection, the lower stem of an affected plant may have a light brown lesion that girdles the plant, causing it to wilt and possibly die. The lesions appear woody, which is how this disease got its alternate name: timber rot. The lesions are often accompanied by the white growth of the causal fungus as well as dark, irregularly shaped fungal structures (sclerotia) (see Figure 5). Sclerotia are found on the outside or inside of the stem and allow the fungus to overwinter several years in the soil without a host. White mold may also cause rot of tomato fruit.



Figure 5. White mold causes stems to appear woody. Note dark fungal bodies.

If you have questions about how to manage any one of these diseases, contact me. This article addresses possible confusion about the symptoms of these three diseases. It is always a good idea to submit plant samples that you are unsure about to the [Plant and Pest Diagnostic laboratory](#).



# Cover Crop Species Spotlight – Sorghum Sudangrass

(Ashley Adair, holmes9@purdue.edu)

What can a relative of broom corn do for you on a vegetable farm? Build biomass while beating the heat! Sorghum-sudangrass (*Sorghum x drummondii*) (Figure 1) is a summer-loving hybrid cover crop species. Its parents are wild sorghum, native to sub-Saharan Africa, and domesticated sorghum, known as broom corn or milo in our part of the world. Sorghum-sudangrass is sometimes referred to as sudex. Because of its parentage, sorghum-sudangrass is well-adapted to warm weather and can withstand drought.



Figure 1. Sorghum-sudangrass seeded in mixture with buckwheat (Photo by Ashley Adair).

Sorghum has been grown around the world for food for thousands of years. Peoples of Asia, India, and Africa cultivated sorghum for fermentation, distillation, flours, and syrups. We continue to use sorghum as a food grain today. It can be particularly useful for people whose diets must restrict or eliminate gluten from wheat. Sorghum also has utility as a tool – after the grain is stripped from its panicles, stems can be lashed to a handle to make a broom.

Sorghum-sudangrass (SSDG) is a close cousin of corn (*Zea mays*). Both species share many characteristics. Not only do they look similar, but they are adapted to similar growing conditions. Both require warm weather, can withstand drought, and have a similar growing season in Indiana. Unlike corn, SSDG can be cut for hay more than once per season. SSDG has a tendency to tiller and regrows at a rapid rate, making it a good choice for livestock producers who want to cut hay or graze quality forage during the summer months. On the flip side, SSDG produces a compound called dhurrin, which will lead to prussic acid formation and livestock poisoning if animals graze the plant after a frost. More information about prussic acid poisoning in the sorghum family can be found here:

<https://www.agry.purdue.edu/ext/forages/publications/ay263.htm>

Sorghum-sudangrass is a tall cover crop, soaring to a height of up to 10 feet at maturity. SSDG prefers mildly acidic soil (pH 6.0-6.5)

and good fertility but will tolerate many conditions other than flooding and ponding. It generally reaches maturity between 80-100 days after planting. On the vegetable farm, SSDG provides several benefits:

- Weed suppression
- Straw mulch (after termination)
- Nutrient scavenging
- Lots of biomass production (which increases soil organic matter)

Drilling and broadcasting are both appropriate seeding methods for SSDG. Plan to seed when soil temperatures are in the 60s, usually by late May or early June. Use a 40 lb/acre rate when drilling and adjust upward toward 50 lb/acre when broadcasting. Broadcasting works best when there is a little extra soil moisture available.

On a vegetable farm, SSDG makes for a good straw mulch material for vining crops. Growing for mulch might require you to green fallow the vining crop bed with SSDG the year before you plan to plant pumpkins, squash, or watermelon. SSDG is also a good candidate to suppress root knot nematodes that can affect vegetable crops. However, SSDG should not precede alliums in the crop rotation – the incidence of onion thrips could increase with any grass crop that comes before onions, leeks, garlic, etc., in the crop rotation. See [Crop Rotation on Organic Farms](#) for more information on sequencing SSDG with other crops.

Challenges with termination are the biggest drawback to using SSDG on the vegetable farm. Mowing, particularly with a flail mower or sickle bar mower, is an effective means of terminating the crop and simultaneously mulching the residue. However, incorporation or tarping might be required if the crop continues to grow and tiller after a mowing pass. Unlike cereal rye, sorghum-sudangrass is not easily terminated with basic lawn and garden tools like weedeaters and rotary mowers. Heavier tools, like PTO-equipped two-wheel and four-wheel tractors, make for less hassle and more efficient management. SSDG does not respond to roller crimping as well as small grain cover crops species like cereal rye and triticale. After termination, more aggressive fertilizer application and sidedressing will be needed to make up for the nutrient tie-up that occurs with thick, carbon-heavy residue. This residue is best suited to transplanting a succeeding crop rather than direct-seeding, so careful crop rotation planning is needed to make sure that you don't accidentally limit your planting options by using SSDG as a cover crop.



Figure 2. Sorghum-sudangrass and buckwheat residue after a pass with a Berta flail mower. Approximately 6 weeks after planting. Standing SSDG and buckwheat remain on the left (Photo by Ashley Adair).

In July 2020, Purdue Student Farm Manager, Chris Adair, managed one crop rotation block on the farm for a summer cover crop management demonstration. A mixture of SSDG and buckwheat were planted to achieve a thick stand for weed suppression in preparation for a fall crop planting. Part of the demonstration was to show how much residue SSDG and buckwheat produce when terminated with a flail mower. Chris used a BCS-mounted Berta flail mower (Figure 3), walking at a slow pace to terminate.



Figure 3. Berta flail mower (34") mounted to BCS 749 two-wheel tractor (Photo by Ashley Adair).

*This article is the first in a new series of articles for the Vegetable Crops Hotline called "Cover Crop Species Spotlight." Make sure to look for more species spotlights in past (Issue 718) and future editions of the VCH!*

For more information on cover crops and their use on vegetable farms, please consult the following:

- [Crop Rotation on Organic Farms: A Planning Manual](#) – available as a free PDF download from [SARE.org](#)
- [Managing Cover Crops Profitably \(3<sup>rd</sup>\)](#) – available as a free PDF download from [SARE.org](#)

## Urban Soil Health Program: What and why?

(Marian Rodriguezsoto, [Marian.Rodriguezsoto@in.nacdn.net](mailto:Marian.Rodriguezsoto@in.nacdn.net))

Growing vegetable crops often involves utilizing our natural resources, which include the soil. Thus, maintaining the health of this asset on our farms and growing spaces is essential. There is an initiative in the state of Indiana whose mission is to improve soil health, but its focus is on Indiana's urban and community small-scale agricultural land. This initiative is called the [Urban Soil Health Program](#) (USH) and is housed under the Indiana Association of Soil and Water Conservation Districts (IASWCD). The USH Program receives funding support from various sources, including the USDA Natural Resource Conservation Service (NRCS), some of the local Soil and Water Conservation Districts (SWCDs), and Clean Water Indiana (CWI).

This initiative offers free site visits with soil testing, workshops, farm tours, field days, technical assistance on soil health practices, and connects growers with agencies. If you think you are not part of the program's audience, think twice because the USH Program believes that soil health is for everyone. Also, the program's audience involves small acreage farms in urban and rural areas, diverse vegetable crop production, mixed perennial (blueberries, nuts, fruit trees)/annual crop production, and mixed vegetable/livestock production.

Examples of our primary audience:

- Market farms/gardens
- Community farms/gardens
- Church farms/gardens
- School farms/gardens
- Non-profit farms/gardens
- Institutional/commercial business farms/gardens (hospital, university, prison)
- Demo or research farms/gardens (Master Gardeners, Extension, SWCDs)
- Backyard/home gardens

The four soil health principles are at the core of the program's work 1) minimize disturbance, 2) maximize biodiversity, 3) maximize soil cover, and 4) maximize continuous living roots (Figure 1). The program staff is trained in the practices associated with improving soil health which includes nutrient management, cover cropping, mulching, crop rotation, no-till/low-till, and native and beneficial plants and insects. You can find resources on these conservation practices in the program's resource packet [https://bit.ly/USH\\_Resources](https://bit.ly/USH_Resources).



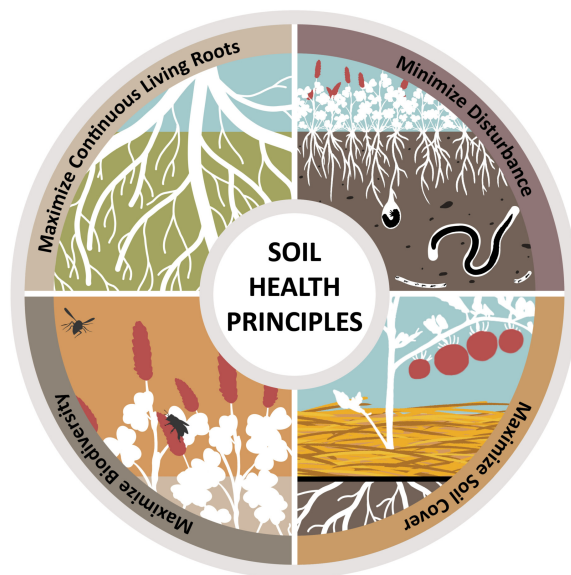


Figure 1. Four soil health principles

The Urban Soil Health team is comprised of five staff members: one program director and four regional Urban Soil Health Specialists (Figure 2). Each regional Soil Health Specialist is in one quadrant of the state and is based out of the NRCS Area Offices (NW-Lafayette, NE-Fort Wayne, SW-Vincennes, SE-North Vernon).



Figure 2. Urban Soil Health Program team and locations.

The program's goals are trifold: 1) to enhance local partnerships to address soil health, 2) to increase the adoption of soil health management systems, and 3) to provide education to diverse farmers and gardeners. The staff provides support directly to urban, small-scale, and diverse vegetable crop producers throughout the state on soil health practices.

USH also works closely with the Indiana Conservation Partnership (ICP) and supports the local SWCDs. Each county in Indiana has an SWCD that takes the lead in outreach and conservation at the county level. The USH program provides seed funding for the districts and other local partners (i.e., growers, non-profits, Purdue Extension, and other primary audience individuals) to form working groups that provide site visits and technical assistance. These working groups also create educational materials and host educational events.

Reach out to the Urban Soil Health team to get involved with the USH Program or to receive a site visit. Soil health is for everyone, and we will work together to grow soil health on small and diverse farms everywhere in Indiana.

Elli Blaine, Program Director, IASWCD  
[ebtaine@urbansoilhealth.org](mailto:ebtaine@urbansoilhealth.org)

Regional Soil Health Specialists:

Marian Rodriguez-Soto (NW) [mrodriguezso@urbansoilhealth.org](mailto:mrodriguezso@urbansoilhealth.org)

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## PARP News – Paper Exam Session for Plain People

(Cheri Janssen, [cjanssen@purdue.edu](mailto:cjanssen@purdue.edu))



To overcome religious-based objections to online exams, the Office of the Indiana State Chemist (OISC) will be offering paper-and-pencil exams at Purdue to 'plain people.' The remaining 2023 exam dates are as follows: **June 13 and November 3 at 1 PM Eastern time.** We will be offering CORE and Category 14 exams at the William H. Daniel Turfgrass Research and Diagnostic Center. It is located at **1340 Cherry Ln, West Lafayette, IN 47907.** There is construction on Cherry Lane. **Attendees can only enter from McCormick Road to the west.**

Preregistration is required at least 2 business days before the exam. There is no fee to take the test. **We are only offering exams for private applicators with religious objections.** To signup, please email Laura Fritz at [lfritz1@purdue.edu](mailto:lfritz1@purdue.edu) or call (765) 494-6271. Training materials can be purchased by emailing [edustore@purdue.edu](mailto:edustore@purdue.edu) or calling (765) 494-6795.

To take the exam, the examinee must meet the following criteria: 18 + years old, religious objection to computer-based testing, pre-registration, and presentation of a valid ID on the exam day. The I.D requirement can be met in three ways:

1-Valid Indiana I.D. card with photo

2-Valid Indiana photo exempt I.D. card

3-Birth certificate, social security card and piece of mail with name that matches the social security card and birth certificate.

If you have any other questions, please let me know. Thank you for your help in communicating this important message.

Beth Carter, [carter14@purdue.edu](mailto:carter14@purdue.edu) Investigator, Office of Indiana State Chemist

Purdue Pesticide Programs

# Recent Localized Rainfall; Warm Temperatures and Below-normal Precipitation Forecasted

(Austin Pearson, [pearsona@purdue.edu](mailto:pearsona@purdue.edu), (765) 675-1177)

Cool mornings and warm afternoons have made conditions pleasant across the state. Through the first 17 days of May, temperatures ran 1.5°F above normal (Figure 1). Indiana Climate Divisions 1 and 7 had the largest departures, which were 2.1°F and 2.0°F above normal, respectively. Since April 1, growing degree days (GDD) have accumulated between 260 and 600 units statewide (Figure 2, left). Accumulations were above normal through the northern extent of the state and slightly below normal in the southern extent (Figure 2, right). However, since April 15, GDD accumulations have run between 10 and 60 units below normal statewide. This is attributed to the cooler conditions that occurred in the last half of April and beginning of May.

Statewide, precipitation ran 0.23 inches below normal through the first 17 days of May (Figure 1). Climate Divisions 1, 2, and 3, all located in northern Indiana, were the only areas with slightly above-normal precipitation. The rest of the state averaged 76 to 91 percent of normal precipitation. Most of the recent rains were a result of convective storms. Northern Indiana had two locations where rain exceeded four inches since April 18 (Figure 3). The Fort Wayne International Airport measured 5.05 inches and North Judson, located in Starke County, measured 8.05 inches total. On May 12-13, a line of storms developed along a frontal boundary and trained over northern Indiana. As a result, North Judson totaled 4.37 inches, triggering flood concerns in the area. The May 16 US Drought Monitor brought some improvement to the abnormally dry conditions in northwestern Indiana (Figure 4). Lingering drought concerns remained in Vermillion and Warren counties, as those locations continued to miss precipitation. Overall, conditions have favored continued agricultural activity. The May 14 Indiana Crop Weather Report indicated that 56 percent of corn and 52 percent of soybeans have been planted, which both are above the 5-year average. Emergence for both crops is also above the 5-year average as a result of the warmer temperatures.

The seven-day forecast precipitation blankets the state with less than 0.5 inches of rain, which should allow time to continue field work (Figure 5). That's the good news. This also means that areas with below-normal precipitation will continue seeing subpar precipitation, which enhances drought concerns. Both the Climate Prediction Center's 6-10-day (Figure 6) and 8-14-day (Figure 7) outlooks show elevated chances for above-normal temperatures and below-normal precipitation. Temperatures are forecasted to be in the upper 70s and low 80s, which should amplify drying conditions. Stay tuned to the [US Drought Monitor](#) over the next month, as conditions may worsen.

Climate Division Data by State between Two Dates  
From Midwestern Regional Climate Center

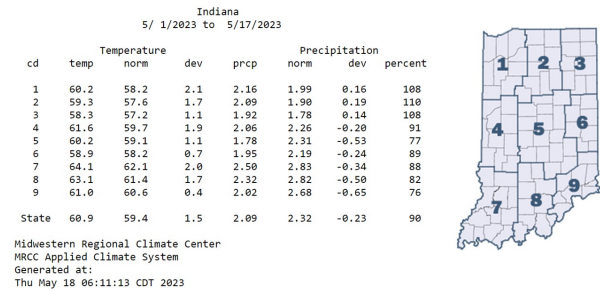


Figure 1. Indiana climate division and state temperature, normal temperature, temperature departure from normal, precipitation, normal precipitation, precipitation departure from normal, and percent of mean precipitation for May 1-17, 2023.

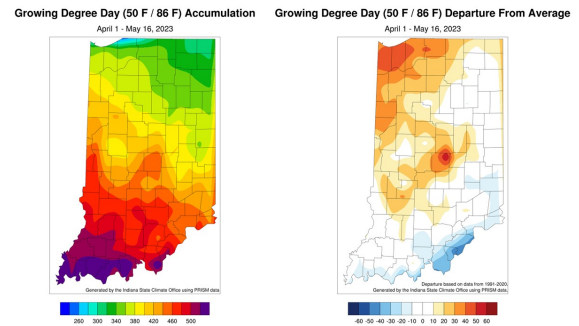


Figure 2. Total Accumulated Indiana Modified Growing Degree Days (MGDDs) April 1-May 16, 2023 (left) and Total Accumulated MGDDs represented as the departure from the 1991-2020 climatological normal (right).

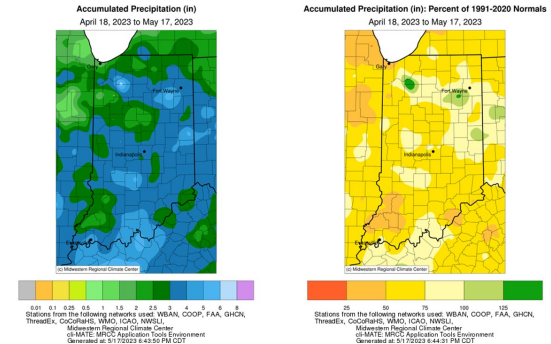


Figure 3. Interpolated map displaying accumulated precipitation for April 18-May 17, 2023 (left). Interpolated map displaying accumulated precipitation as a percent of the 1991-2020 climatological normal (right).

## U.S. Drought Monitor Indiana



May 16, 2023  
(Released Thursday, May 18, 2023)  
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

|   | D0     | D1    | D2    | D3   | D4   |
|---|--------|-------|-------|------|------|
| Current                                   | 98.64  | 1.36  | 0.00  | 0.00 | 0.00 |
| Last Week<br>(05-09-2023)                 | 94.62  | 5.38  | 0.00  | 0.00 | 0.00 |
| 3 Months Ago<br>(02-14-2023)              | 77.27  | 22.73 | 0.00  | 0.00 | 0.00 |
| Start of<br>Calendar Year<br>(01-01-2023) | 5.94   | 80.16 | 58.37 | 1.34 | 0.00 |
| Start of<br>Water Year<br>(09-01-2022)    | 80.92  | 19.08 | 0.00  | 0.00 | 0.00 |
| One Year Ago<br>(05-16-2022)              | 100.00 | 0.00  | 0.00  | 0.00 | 0.00 |

Intensity:  
None D0 Abnormally Dry D1 Moderate Drought D2 Severe Drought D3 Extreme Drought D4 Exceptional Drought

The Drought Monitor focuses on broad scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:  
Brad Rippey  
U.S. Department of Agriculture





Figure 4. May 16, 2023, US Drought Monitor. The US Drought Monitor is released every Thursday morning by 8:30 AM.

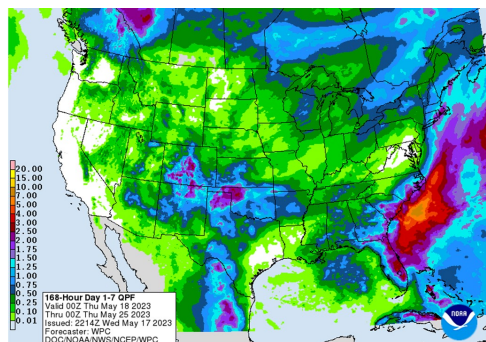


Figure 5. NWS Weather Prediction Center 7-day quantitative precipitation forecast for the continental United States, valid May 18-May 25, 2023.

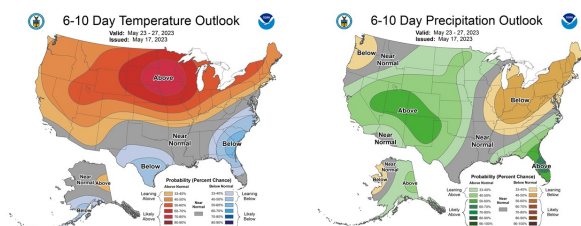


Figure 6. The CPC's 6-10-day temperature and precipitation outlooks, valid for May 23-27, 2023.

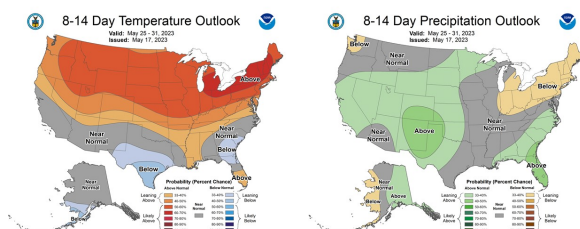


Figure 7. The CPC's 8-14-day temperature and precipitation outlooks, valid for May 25-31, 2023.

## Why do the East Side of My Strawberry Rows Have Way More Ripe Ones than the West Side?

(Wenjing Guan, [guan40@purdue.edu](mailto:guan40@purdue.edu), (812) 886-0198)

Plasticulture strawberry harvest has kicked off in southern Indiana. These plants went through a winter of temperature ups and downs and survived the unexpected frosts in April. Finally, it is harvest time!

This article's title is a question from a grower. The straightforward explanation is that plants received more sunlight and warmed up faster on the east side, so the berries ripen earlier.

This question reminded me to review the considerations for row orientations. Although row orientation is not something we can change now, it helps us develop careful thought in planning for the next season.

1. One should consider slope first in deciding row orientation. If the field has a slope, orient the rows across the slope, not along the slope. This will reduce soil erosion.
2. If it is level ground, rows in a north-to-south orientation receive sunlight more evenly than east-to-west rows. More even sunlight means the fruit ripens more evenly.
3. Another consideration for row orientation is the prevailing wind. From a disease management standpoint, the rows that run with the wind dry faster, reducing disease pressure than rows that block the wind.

In reality, there may not be a perfect solution. But understanding these considerations might help us make the best possible decision.

Happy Harvesting!



A plasticulture strawberry field in southern Indiana.

## eOrganic Webinars on Predatory Mites and Whitefly

(Laura Ingwell, [lingwell@purdue.edu](mailto:lingwell@purdue.edu), (765) 494-6167)

Join eOrganic for 4 webinars on the findings of the biocontrol project in April and May 2023! Register at the links below for the May 18 and May 24 webinars! Recordings will be posted here and on the [eOrganic YouTube channel](#)!

## eOrganic Webinars

| Date           | Webinar   | Presenters   |
|----------------|---|--|
| April 26, 2023 | Marketing Value-added Grains for Local and Regional Food Systems  | Jane Russell, Glynwood Center for Food and Farming Systems and others TBA        |
| May 11, 2023   | Effects of the predatory mite, <i>Amblyseius swirskii</i> and its byproducts on whitefly <i>Bemisia tabaci</i> population | Oscar Lilburd, University of Florida   |
| May 18, 2023   | Predatory mite as a biocontrol agent for the management of insect-transmitted viruses in vegetable production             | Rajagopalbabu Srinivasan, University of Georgia                                  |
| May 24, 2023   | How to manage spider mites in tomatoes with predatory mites   | Tom Bilbo, Clemson University; James Walgenbach, North Carolina State University |

The recording of the first webinar in the series is available here: <https://youtu.be/g40oRr7u7Nc>

# Sustainable Agriculture Research and Education (SARE) News

(Petrus Langenhoven, [plangenh@purdue.edu](mailto:plangenh@purdue.edu), (765) 496-7955) & (Lais McCartney, [lmccarth@purdue.edu](mailto:lmccarth@purdue.edu))

Extract from a news release by SARE (5/15/2023).

Sustainable farming emphasizes the need to consider the environmental, economic and social impacts of agriculture. For decades, sustainable agriculture research has focused more on environmental stewardship and profitability than on personal and social issues. SARE's newest bulletin, *Resilient Farmers, Ranchers and Communities: Social Sustainability in Agriculture*, describes how an increasing number of farmers and ranchers are realizing that addressing social issues is crucial to making farming systems more prosperous, resilient and sustainable.



Figure 1. New SARE bulletin 'Resilient Farmers, Ranchers and Communities: Social Sustainability in Agriculture'.

The purpose of this bulletin is to draw special attention to social sustainability in agriculture. It describes how we can think of social sustainability, outlines some of the most pressing personal and social challenges facing all of us who are engaged in agriculture, and offers some suggestions for how we can begin to make ourselves, our employees, our families and our communities more prosperous, resilient and sustainable.

## Hydroponic GAPs – Good Agricultural Practices for Food Safety of Hydroponic Crops

(Petrus Langenhoven, [plangenh@purdue.edu](mailto:plangenh@purdue.edu), (765) 496-7955)



Figure 1. Hydroponic lettuce (Photo by Petrus Langenhoven).

This is an extract from a news release by The Ohio State University.

The goal of this online course is to provide hydroponic growers with the knowledge and tools needed to implement best management practices specific to controlled environments (greenhouses, indoor farms, high tunnels, etc.) to reduce microbial food safety hazards in hydroponic vegetable and fruit production systems.

Participants will learn how to:

- assess food safety risks and conduct risk assessments for their operation,
- develop a food safety plan specific to their production practices,
- understand the requirements surrounding the quality of nutrient solutions to ensure a safe crop,
- implement best post-harvest handling practices for hydroponics,
- design appropriate sanitation and cleaning protocols for hydroponic operations,
- manage pests and animal intrusions in controlled environments,
- develop best personnel health and hygiene policies, and
- implement best storage practices and traceability.

Participants will receive a certificate of participation after completing this course.

Register [HERE](#).

This course is offered through The Ohio State University Fruit and Vegetable Safety Program. If you have questions about the course, contact instructors Melanie Ivey at [ivey.14@osu.edu](mailto:ivey.14@osu.edu) or Sanja Ilic at [ilic.2@osu.edu](mailto:ilic.2@osu.edu).



# Southwest Purdue Agricultural Center Field Day \_Registration Now Open!

(Wenjing Guan, [guan40@purdue.edu](mailto:guan40@purdue.edu), (812) 886-0198)

We are excited to announce that the Southwest Purdue Agricultural Center Field Day is scheduled for June 28, 2023, at the Southwest Purdue Agricultural Center (SWPAC), 4669 N. Purdue Rd. Vincennes, IN.



SOUTHWEST PURDUE AGRICULTURE CENTER

## FIELD DAY

JUNE 28, 2023

Join us at the Southwest Purdue Agriculture Center for the 2023 SWPAC Field Day.

Learn about crop production, farm management and other agriculture topics from Purdue and NRCS specialists.

Private Applicator Recertification Program (PARP) credits are available.

Open to the public!

### Agenda:

Registration - 8:30 ET

Program - 9:00-1:00 ET (lunch included)

To register, visit [purdue.ag/SWPAC\\_register](https://purdue.ag/SWPAC_register)



LEARN MORE:

[purdue.ag/SWPAC\\_register](https://purdue.ag/SWPAC_register)



@SWPACindy



FOR QUESTIONS:

Barb Joyner



[joynerb@purdue.edu](mailto:joynerb@purdue.edu)



(812) 886-0198



Purdue researchers and NRCS representatives will present their current research and demonstration projects in fruit and vegetable production conducted at SWPAC. The topics include a cover crop demonstration, high tunnel tomato cultivar evaluation, high tunnel tomato and cucumber disease and insect management, benefits of companion plants, strawberry production, irrigation management, weed management in organic sweet potato, soil health and pepper production, the effect of cover crops on pest and beneficial insects in watermelon production and more! Don't miss the opportunity to learn from fruit and vegetable production experts.

To register, visit [purdue.ag/SWPAC\\_register](https://purdue.ag/SWPAC_register).

We are currently looking for sponsors for the field day. If you are interested, please contact Barbara Joyner ([joynerb@purdue.edu](mailto:joynerb@purdue.edu)).

## Purdue Fruit and Vegetable Field Day - Register Now!

(Petrus Langenhoven, [plangenh@purdue.edu](mailto:plangenh@purdue.edu), (765) 496-7955)

We are happy to announce that Purdue Extension is presenting its annual Fruit and Vegetable Field Day on July 20, 2023, at the Throckmorton/Meigs Horticulture Farm, Lafayette, IN.

Registration is now open. To register your spot, visit <https://cvent.me/5zevYD>



A complete schedule of demonstrations is now available.

### Purdue Fruit and Vegetable Field Day

THURSDAY, JULY 20, 2023  
Purdue Meigs Ag Center  
9101 S 100 E, Lafayette, IN 47909

REGISTRATION NOW OPEN!

**PURDUE UNIVERSITY** Extension

#### SCHEDULE

Registration  
8:30 - 9:00 am

Field Demonstrations  
9:00 am - 12:30 pm

Lunch  
12:30 - 1:30 pm

Drone Demonstration  
1:00 - 1:30 pm

#### QUESTIONST CONTACT

Petrus Langenhoven:  
(765) 496-7955  
[plangenh@purdue.edu](mailto:plangenh@purdue.edu)

Lori Jolly-Brown:  
(765) 494-1226  
[ljollybr@purdue.edu](mailto:ljollybr@purdue.edu)

#### REGISTRATION

<https://cvent.me/5zevYD>  
or scan QR code

#### Purdue Fruit & Vegetable Field Day 2023

Coordinator: Petrus Langenhoven  
Extension Staff: Lori Jolly-Brown, Jay Young, Chloe Richard, and Paul Howard

##### FIELD DEMONSTRATIONS

- ☐ Sweet Corn Pest Management Updates
- ☐ Silage Tarps for Weed Management in Potatoes
- ☐ Watermelon Weed Management
- ☐ Summer 2023 Collard Insect Management Trial
- ☐ Black Soldier Fly Composting and Specialty Crop Production
- ☐ Two-year Plasticulture Strawberry Research Update
- ☐ High Tunnel Diversification and Biological Control
- ☐ Does Increasing Soil Health Improve Pepper Yield?
- ☐ Unmanned Aerial Vehicle Demonstration

*Demo descriptions on page 2*

#### REGISTRATION

<https://cvent.me/5zevYD>  
or scan QR code

#### Demonstration Descriptions

**Sweet Corn Pest Management Updates** | Laura Ingwell  
Be inspired will provide updates on the corn nematode trapping efforts and research evaluating the efficacy of a reduced spray program for controlling corn rootworm. Make sure to catch up on the latest research to show you how to avoid the coverage of your current spray program.

**Silage Tarps for Weed Management in Potatoes** | Jonna Cernuschi and Steve Meyer  
And here is our update on the silage tarp trials. We will be able to provide you with the latest research on the efficacy of silage tarps for weed management in potatoes. We will also be able to provide you with the latest research on the efficacy of silage tarps for weed management in potatoes.

**Watermelon Weed Management** | Emmanuel Cooper and Steve Meyer  
Managing weed management in watermelon is a challenge. We will be able to provide you with the latest research on the efficacy of watermelon weed management. We will also be able to provide you with the latest research on the efficacy of watermelon weed management.

**Summer 2023 Collard Insect Management Trial** | Elizabeth Long  
This demonstration will highlight the efficacy of organic and synthetic insecticides when used against common cabbage, collards, and other brassica pests on collard plants. We will be able to provide you with the latest research on the efficacy of collard insect management. We will also be able to provide you with the latest research on the efficacy of collard insect management.

**Black Soldier Fly Composting and Specialty Crop Production** | Allison Apple, Allison Gabel and Laura Ingwell  
Black soldier flies are a natural pest management tool. We will be able to provide you with the latest research on the efficacy of black soldier fly composting. We will also be able to provide you with the latest research on the efficacy of black soldier fly composting.

**Two-year Plasticulture Strawberry Research Update** | Joannee Davis and Steve Meyer  
Purdue Horticulture Crop Science Lab members will discuss their research and findings from a USDA Specialty Crop Pilot Program and plasticulture strawberry project. Topics include variety selection, back versus white plastic, mulch, and chemical and mechanical weed management methods.

**High Tunnel Diversification and Biological Control** | Leslie Ailes, Sam Wilkins and Joannee Davis  
Diversifying the plant community in high tunnels and biological control are key to the success of high tunnel production. We will be able to provide you with the latest research on the efficacy of high tunnel diversification. We will also be able to provide you with the latest research on the efficacy of high tunnel diversification.

**Does Increasing Soil Health Improve Pepper Yield?** | Petrus Langenhoven, Nathan Shoff and Chandra Satter  
What is the impact of soil management practices on soil health? Does increasing soil health mean reduced input, and does proper water management affect crop yield? We will be able to provide you with the latest research on the efficacy of soil health. We will also be able to provide you with the latest research on the efficacy of soil health.

**Unmanned Aerial Vehicle Demonstration** | Steve Meyer and Jonna Cernuschi  
Agriculture is moving into the future. We will be able to provide you with the latest research on the efficacy of unmanned aerial vehicle demonstration. We will also be able to provide you with the latest research on the efficacy of unmanned aerial vehicle demonstration.

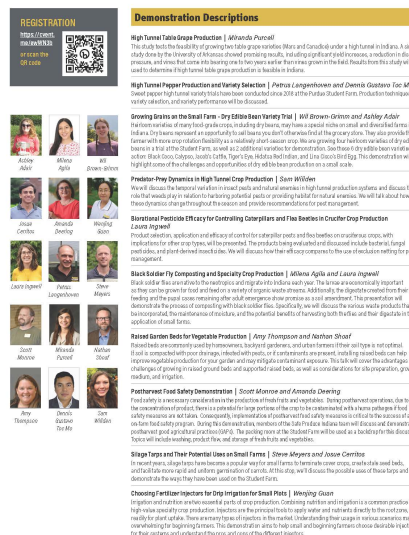
Contact Lori Jolly-Brown at [ljollybr@purdue.edu](mailto:ljollybr@purdue.edu) or Petrus Langenhoven at [plangenh@purdue.edu](mailto:plangenh@purdue.edu) if you have any questions.

## Small Farm Education Field Day - Register Now!

(Petrus Langenhoven, [plangenh@purdue.edu](mailto:plangenh@purdue.edu), (765) 496-7955)

The Purdue Small Farm Education Field Day is presented on July 27, 2023, at the [Purdue Student Farm](https://purdue.edu/student-farm) in West Lafayette, IN.

Students register for free! Please get in touch with Lori Jolly-Brown to receive the discount code for student registration.



Contact Lori Jolly-Brown at [ljollybr@purdue.edu](mailto:ljollybr@purdue.edu) or Petrus Langenhoven at [plangenh@purdue.edu](mailto:plangenh@purdue.edu) if you have any questions.

# Purdue Small Farm Education Field Day 2023

## Thursday, July 27, 2023

In-person at the Purdue Student Farm

PRESENTED BY:  
The Purdue Student Farm  
and  
**PURDUE**  
UNIVERSITY

## 2023 FIELD DAY SCHEDULE

Thursday, July 27, 2023

Registration 8:00 – 9:00 am EST  
Demonstrations 9:00 am – 12:00 pm EST

Coordinator: Petrus Langenhove  
Extension Staff: Lori Jolly-Brown, Lili McCartney, and Patrick Williams

### Demonstrations at the Field Day

Demo descriptions on page 2

- ☐ High Tunnel Table Grape Production  
*Miranda Parcel*
- ☐ High Tunnel Pepper Production and Variety Selection  
*Petrus Langenhove and Dennis Gustave (to be)*
- ☐ Growing Grains on the Small Farm – Dry Edible Bean Variety Trial  
*W. Brown-Green and Ashley Clark*
- ☐ Predator-Prey Dynamics in High Tunnel Crop Production  
*Sam Willdon*
- ☐ Biorational Predicative Efficiency for Controlling Caterpillars and Flea Beetles in a Crucifer Crop Production  
*Laura Ingwell*
- ☐ Black Soldier Fly Composting and Specialty Crop Production  
*Melissa Agius and Laura Ingwell*
- ☐ Raised Garden Beds for Vegetable Production  
*Any Thompson and Nathan Shoaf*
- ☐ Postharvest Food Safety Demonstration  
*Scott Monroe and Amanda Chubb*
- ☐ Slope Taps and Their Potential Uses on Small Farms  
*Steve Moyers and Jesse Carrasco*
- ☐ Choosing Fertilizer Injectors for Drip Irrigation for Small Plots  
*Melroy Glavin*

Please join us for the 2023 Small Farm Education Field Day!

The field track will be on site for those who would like to participate lunch after the educational demonstrations and

The Farm has track with docks on site for a FREE dock warmer that for all attendees, complements of Purdue Extension and Purdue Horticulture and Landscape Architecture

FIELD DAY LOCATION  
Purdue Student Farm  
100 Cherry Lane  
West Lafayette, IN 47906  
visit us at:

Scan QR code for PRESENTATION and directions.

QUESTIONS? Contact:  
Petrus Langenhove  
(765) 495-1055 - [petruslangenhove@purdue.edu](mailto:petruslangenhove@purdue.edu)  
Lori Jolly-Brown  
(765) 494-4258 - [ljb@purdue.edu](mailto:ljb@purdue.edu)

REGISTRATION  
https://event.msu.edu/2023/07/27/2023-small-farm-education-field-day-2023  
to see the full schedule

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