

# VEGETABLE CROPS HOTLINE

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

## In This Issue

- [From The Editor's Desk](#)
- [Summer Field Tour - Fruits and Vegetables - July 9](#)
- [Indiana Horticulture and Small Farm Conference](#)
- [The Land Connections is Looking for Your Input](#)
- [Rely® 280 Herbicide - Going, Going, Gone](#)
- [Invitation to Exhibit at the Summer Field Tour - Fruits and Vegetables](#)
- [Participants needed! Focus group](#)
- [Updates to Entomology Extension Services](#)
- [2027 IHSFC program: What Would You Like to Learn About at Our Next Conference?](#)
- [Considerations of Using Plugs or Bare-Root Plants to Start a Plasticulture Strawberry Patch](#)
- [Considerations of Growing Strawberry Plugs by Harvesting Runner Tips](#)
- [Spring Planted Cool-Season Cut Flower Update — Dianthus and Centaurea](#)
- [Are Cooler, Drier Conditions in Our Future?](#)

## From The Editor's Desk

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

Dear Valued Vegetable Crops Hotline Readers,

Welcome to issue 772 of the Vegetable Crops Hotline newsletter! Our mission remains steadfast: to deliver crucial updates on pest management, production practices, food safety, and marketing opportunities that directly impact your farming operations.

Growers and Purdue Extension Educators, your input and expertise make this newsletter a truly useful resource. If you have hot topics you'd like us to cover, success stories to share, or questions for our Extension specialists, please email [Petrus langenhoven](mailto:Petrus.langenhoven) or reach out to the [specialist](#) directly. We also welcome high-quality photos of pest issues, unusual symptoms, or innovative production practices you've implemented on your farm.

## What's Inside This Issue

With the season in full swing, this issue is packed with timely news and practical guidance.

Mark your calendars for the Summer Field Tour - Fruits and

Vegetables on July 9 at Garwood Orchards in LaPorte. This sixth-generation family operation farms over 600 acres of intensively managed fruits and vegetables, and the tour, free and open to all, offers a rare look at one of the Midwest's premier operations. Vendors are also invited to exhibit; details inside. Looking further ahead, planning is underway for the 2027 Indiana Horticulture and Small Farm Conference (January 26-28 in Danville), and the planning committee wants your input on topics and speakers—surveys close at the end of June.

On the regulatory front, Stephen Meyers untangles the status of Rely® 280 herbicide, which is no longer in production. He explains what growers can do with existing stocks and what alternatives may be coming for cucurbits and fruiting vegetables.

Strawberry growers will find two in-depth articles from Wenjing Guan: one weighing plugs versus bare-root plants for establishing plasticulture plantings, and another on the practical considerations of harvesting runner tips to produce plugs on-farm. The cut flower team also shares mid-season observations on Dianthus and Centaurea from demonstration sites across the state.

Elsewhere in this issue, you'll find an invitation to participate in focus groups on food traceability practices, important updates on Entomology Extension services for the summer, a survey from The Land Connection on a new food safety decision-making tool, and Beth Hall's look at whether cooler, drier conditions lie ahead after a very wet stretch.

## Subscription Information

### Hard Copy Subscribers

If you need a hard-copy subscription form and don't have internet access, please contact your nearest [Purdue Extension office](#). Extension Educators, [please download the hard-copy subscription form](#).

### Digital Subscribers

If you receive the newsletter via email, you do not need to take any action. You will continue to receive the newsletter on the issue date.

New digital subscribers [can now register their email address](#)

In addition, digital subscribers receive emails with information about articles or announcements that need your immediate

attention. These articles will be posted under Hot Topics on the VCH webpage and will be included in the next issue. All previous articles published in the VCH newsletter are available on the [Vegetable Crops Hotline website](#).

## Website Links in Newsletter Articles

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

## Midwest Vegetable Production Guide

The [2026 Midwest Vegetable Production Guide](#) is now available for growers, or you can [download and print a guide from your computer](#). The guide is also available for \$20 per copy. Contact your Extension Office or [Stephen Meyers](#) directly to buy a copy.

## Midwest Vegetable Trial Reports

Are you still considering purchasing vegetable seeds? The [Midwest Vegetable Trial Report](#) features many articles to help you make an informed decision. The resource also hosts production-related research results.

As always, thank you for reading, and happy growing!

Petrus Langenhoven, Editor  
Clinical Assistant Professor and Vegetable Extension Specialist  
Department of Horticulture and Landscape Architecture  
Purdue University

---

## Summer Field Tour – Fruits and Vegetables – July 9

(Peter Hirst, [hirst@purdue.edu](mailto:hirst@purdue.edu))

Plan to join us for a full day of touring fruit and vegetable production at Garwood Orchards in LaPorte, IN on July 9. Garwoods is among the very best fruit and vegetable production operations in the Midwest, so you will not want to miss the opportunity to learn a few of their tricks of the trade.

**FREE TO ALL! STUDENTS WELCOME!**



The Garwoods currently farm about 350 acres of vegetables and 250 acres of fruit. Despite the large scale of their operations, the crops are very intensively managed with a high level of attention to detail.

Whether you are primarily interested in vegetable, tree fruit, or berry production, or in farm marketing, there will be plenty to see and learn.

The field day is free and open to all who are interested. While we encourage membership in the

For the Indiana Horticultural Society, the Indiana Vegetable Growers' Association, and the Indiana Farm Market Association, membership is not required to attend.



Garwood Orchards is one of the largest and best-managed orchards in the state. It may seem puzzling that they can manage such a large operation so well. That's why we're visiting – not only to be inspired but also to learn a few of their tricks and see how they do it. They have aggressively planted new cultivars and crops and have been at the forefront of adopting new technologies. They are major producers of fruits and vegetables and have a sizeable farm market. U-pick has become an important part of their business.

It may seem like quite a drive to the meeting this year, especially for those in the southern parts of the state, but I'm confident you'll pick up some good ideas to implement on your farm and leave feeling the trip was worthwhile.

## Farm History

The main orchard land has been in the Garwood family since 1831, and the Garwoods have been fruit farmers since the 1920's. Brothers Carl and Jim Garwood were instrumental in growing the business from the mid-50s to the mid-90s. These days, the farm is run by Brian Garwood along with his brothers Dave and Mike and his cousin Tom. While Carl is no longer involved in running the farm, he still finds plenty of mowing and other odd jobs to keep him busy. Brian, Dave, Mike, and Tom represent the 6<sup>th</sup> generation to run the farm. Despite the long history of Garwood Orchards, this is still very much a family business



Figure 1. High density apple orchard (Photo by Peter Hirst).

The Garwoods currently farm over 600 acres, which includes approximately 350 acres of vegetables and 250 acres of fruit. Since 2015, all new apple trees have been trained to tall spindles (approx. 13 x 3 feet spacing) and predominantly on B.9, B.10, G.11 and G.41 rootstocks. While a few of the older varieties still

remain, the main apples grown now are 'Gala', 'Honeycrisp' and 'EverCrisp'. Altogether, about 25 apple cultivars are grown, including several of the newer MAIA selections ('Sweet MAIA', 'Ludacrisp', 'Rosalie', 'Scruffy'). About 14 acres of peaches are grown along with smaller acreages of other tree fruits such as Japanese plums, Asian pears and sweet cherries. These are sold primarily by U-pick.

Strawberries are a major crop at Garwoods with 23 acres in the ground, all planted on plastic. A range of cultivars is grown, resulting in a 7-week harvest season. Blackberries are grown on swing-arm trellises and sold via U-pick in July and August and then later in the season for the fall crop. Red raspberries are also popular with U-pickers.



Figure 2. Strawberries planted in plasticulture with straw in row middles (Photo by Peter Hirst).

Most of the vegetables are planted into plastic – black plastic in the early season to get them off to a fast start and then white plastic for plantings made after June 1 to avoid heat damage. Peppers are a major crop with 12 different kinds being produced, although bell peppers and jalapeños are the main ones. Cucumbers, eggplants, tomatoes, and several other vegetable crops are also produced on the farm. Recently, a third vegetable packing line was added along with an automated bagger for peppers.



Figure 3. Peppers planted on raised beds covered with black plastic mulch (Photo by Peter Hirst).

If you talk to the Garwoods, they will tell you up-front that one of the secrets of their success is having great employees. They hire about 150 workers during the season, with about half of them through the H-2A program. In the off-season, this number drops to less than 20.

Over recent years, three things stand out as being key drivers to the business:

1. Marketing fruits and vegetables through Piazza Produce
2. Marketing fruits and vegetables to Walmart
3. A reliable supply of high-quality H-2A labor

U-pick is becoming an increasingly important part of the business, along with school tours. The market at the farm includes a bakery, and fresh donuts are offered. Cider has become an important product for Garwoods, with over 20,000 gal/week produced during the summer and fall. Cider, apples, and vegetables are supplied to many farm markets across the state and beyond.

For more information, visit [Garwood's website](#)

## Program Schedule

**NOTE:** Garwood's are on Central Daylight (Chicago) Time. Times listed are local time.

### Thursday July 9

- 8:30 am Registration. Coffee and donuts.
- 9:00 am Welcome and Introductions. Orchard tour – tree fruit and small fruit.
- 11:30 am Introduction of Indiana Horticultural Society, the Indiana Vegetable Growers' Association and the Indiana Farm Market Association
- 11:45 am Introduction of exhibitors
- 12:00 pm Lunch provided – cookout at the farm.
- 1:00 pm Field tour – vegetables
- 3:00 pm Farm marketing and tour of facilities
- 5:00 pm Conclude tour and depart

## Indiana Horticulture and Small Farm Conference

(Lori Jolly-Brown, [ljollybr@purdue.edu](mailto:ljollybr@purdue.edu))

We're pleased to announce that Purdue Extension will host the Indiana Horticulture and Small Farm Conference in January 2027. Please mark your calendars for January 26–28 in Danville, Indiana. Our planning committee has already begun organizing the

conference, and we would greatly appreciate your input. We welcome your suggestions for speakers, topics, panels, and more. Our goal is to ensure this conference meets the needs of Indiana's growers, so please take a moment to complete the survey and share what would be most helpful to you. Do you enjoy speaking? Have you conducted on-farm research or implemented an innovative practice that has made a positive impact? If so, we encourage you to nominate yourself as a speaker. Complete the survey [here](#). The Survey will remain open through the end of June. Registration opens in July 2026. For up-to-date information, visit the [Indiana Horticulture and Small Farms Conference website](#).

---

## The Land Connection is Looking for Your Input

(Crystal Siltman, [crystal@thelandconnection.org](mailto:crystal@thelandconnection.org))



The Land Connection received a grant to create a free, interactive tool that helps specialty crop farmers determine which food safety regulations and certifications apply to their farm and goals. It's important that we build something that actually works for you, not just what we think you might need. That means hearing from real farmers before we build anything.

### If you have 5-7 minutes, please take our survey to tell us:

- Where you get confused or stuck with food safety rules
- What you'd want a decision-making tool to do (and not do)
- How we can make it useful for your farm

Access the [Food Safety Decision-Making Tool Survey](#)

Your responses will directly shape the final tool. Thank you for helping us get this right.

### For more information, contact:

Crystal Siltman

Farmer Training Program Manager

[The Land Connection](#)

Telephone number: 217.840.2128 x730

---

## Rely® 280 Herbicide – Going, Going, Gone

(Stephen Meyers, [slmeyers@purdue.edu](mailto:slmeyers@purdue.edu), (765) 496-6540)

In 2023, BASF registered Rely® 280 for use in cantaloupe, cucumber, summer squash, watermelon, tomato, and pepper. The registration occurred as two separate supplemental labels- one for cucurbits and one for fruiting vegetables. Both supplemental labels were set to expire in December of 2025. These

supplemental labels allowed for the use of Rely® 280 as a preplant burndown or in-season row-middle application. Prior to these supplemental labels, the extreme 180-day plant-back restriction made the use of glufosinate-containing products impractical for these crops. Since 2023, many Indiana farmers have adopted these expanded uses into their weed management programs. In 2024, BASF added cucurbit and flowering-vegetable uses to its Rely® 280 container label. The future of Rely® 280 and other glufosinate-containing herbicides has led to many questions in recent weeks.

## Is Rely® 280 still being made?

No. Shortly after these supplemental labels became available, BASF stopped making Rely® 280. In early 2025, BASF stopped making Liberty® 280 (the row-crop equivalent of Rely® 280). Instead, BASF has shifted production to Liberty® ULTRA. Unfortunately for specialty crop farmers, Liberty® ULTRA is currently only registered for LibertyLink® and glufosinate-resistant crops. This does, however, include glufosinate-resistant varieties of sweet corn.

## Can I use Liberty® 280?

No, not yet. This is a good question. Rely® 280 and Liberty® 280 are the exact same product- the only difference is the label on the front of the jug. However, **the label is the law**. Some states have supplemental Liberty® 280 labels, allowing their growers the flexibility to use existing Liberty® 280 stocks the same way they would have used Rely® 280 on cucurbits and fruiting vegetables. The Purdue Horticulture Crops Weed Science Lab and the Office of the Indiana State Chemist (OISC) are working with our colleagues at BASF to request a supplemental label for Liberty® 280 as a short-term measure. However, it has not been approved yet.

## What about “generics”?

Numerous companies carry a “280” formulation of glufosinate. One of those companies, Loveland Products Incorporated, has labeled their glufosinate product (Forfeit® 280) in Georgia with a 24 C Special Local Need registration for cucurbits and fruiting vegetables. There are currently no generic formulations of glufosinate registered for use on cucurbits and fruiting vegetables in Indiana. However, we are working with OISC, chemical companies, and Indiana vegetable farmers to pursue “generic” glufosinate registrations for cucurbits and fruiting vegetables.

## If I have Rely® 280, can I use it?

Yes, existing stocks of Rely® 280 can continue to be used according to label directions. The current Rely® 280 jug label, which includes the expanded uses for cucurbits and fruiting vegetables, can be downloaded from the [CDMS website](#)

## Where can I get updates?

Updates on this topic will be shared in future issues of the Vegetable Crop Hotline.

For more information on how to use Rely® 280 in cucurbits and fruiting vegetables, you can visit this archived VCH article: [Rely® 280 Added to Row Middle Weed Control Arsenal in Select Crops | Purdue University Vegetable Crops Hotline](#)

---

## Invitation to Exhibit at the Summer Field Tour – Fruits and Vegetables

(Peter Hirst, [hirst@purdue.edu](mailto:hirst@purdue.edu))

**Thursday, July 9, 2026**  
**Garwood Orchards**  
5911 W 50 South  
LaPorte, IN 46350

We are pleased to extend an invitation to commercial and non-profit vendors to attend and exhibit at the fruit and vegetable field day at Garwood Orchards. This is open to all who offer products and services relevant to the fruit, vegetable, and farm market industries, and provides a good opportunity to network with your current and potentially future customers. An outdoor space will be available to set up a display and/or equipment. An opportunity for exhibitors to introduce themselves will be provided prior to lunch. There is no cost to attend, but we ask you to contact Lori Jolly-Brown to reserve your space. You can [email](#) or call her at 765-494-1296.

## Program schedule

**NOTE:** Garwood's are on Central Daylight (Chicago) Time. Times listed are local time.

### Thursday July 9

8:30 am Registration. Coffee and donuts.  
9:00 am Welcome and Introductions. Orchard tour – tree fruit and small fruit  
11:30 am Introduction of Indiana Horticultural Society, the Indiana Vegetable Growers' Association and the Indiana Farm Market Association  
11:45 am Introduction of exhibitors  
12:00 pm Lunch provided – cookout at the farm.  
1:00 pm Field tour – vegetables  
3:00 pm Farm marketing and tour of facilities  
5:00 pm Conclude tour and depart

---

## Participants needed! Focus group

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

## Food Traceability Practices and Training Needs Among the Produce Supply Chain Stakeholders

Hema Lingireddy recently received IRB approval for her Purdue University dissertation study, which focuses on food traceability practices, challenges, and training needs among stakeholders in Indiana's produce supply chain.

As part of the first phase of the study, she is currently recruiting participants for virtual focus group discussions (45–60 minutes) with produce growers, packers, processors, distributors, food hubs, and other stakeholders involved in produce supply chains. The insights gathered will inform the development of future educational and training resources on food traceability.

Interested individuals can learn more and indicate their interest via the [SURVEY](#) link.

**Participants who complete a focus group session will receive a \$20 digital gift card as a token of appreciation for their time.**

If you have any questions, contact Hema via [email](#) at [hlingire@purdue.edu](mailto:hlingire@purdue.edu)

Hema Lingireddy

PhD Candidate, Agricultural Sciences Education & Communication College of Agriculture, Purdue University

---

## Updates to Entomology Extension Services

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

Purdue Extension is currently undergoing a broader transformation process that includes adjustments to priorities and resource allocation. As a result of these changes, I was recently informed that summer salary support for my Extension activities will not be available this year.

Given this shift, there will be some temporary changes to the services I can provide during the summer months. Specifically, I will not be able to offer regular insect monitoring updates for corn earworm, tomato pinworm, or squash vine borer. My availability for diagnostic inquiries and on-farm visits will also be limited during this critical period, and my contributions to newsletters will be reduced.

I will continue to participate in field day events, supported by externally funded research projects that are ongoing. I look forward to sharing insights and results from that work with you at both the [Purdue Fruit and Vegetable Field Day](#) at Meigs Horticulture Farm and the [Small Farm Education Field Day](#) at the Purdue Student Farm.

As the Extension transformation progresses, I will continue exploring opportunities to secure support that will allow me to

---

maintain and expand service to stakeholders in the future. Thank you for your understanding and continued engagement. Stay tuned for a needs assessment that will be distributed in August to help me refocus and prioritize my Extension program to best support your needs.

Happy Growing.

---

## 2027 IHSFC program: What Would You Like to Learn About at Our Next Conference?

(*Laura Ingwell, [lingwell@purdue.edu](mailto:lingwell@purdue.edu), (765) 494-6167*) & (*Amy Thompson, [afthompson@purdue.edu](mailto:afthompson@purdue.edu)*)

### We want to know!

Help determine the content at this year's Indiana Horticulture and Small Farm Conference. Use this link to submit suggestions for content and speakers. [IHSFC Survey](#)

### The survey will be open until July 1, 2026.

Thank you! Laura Ingwell and Amy Thompson (conference co-chairs)

---

## Considerations of Using Plugs or Bare-Root Plants to Start a Plasticulture Strawberry Patch

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

As the strawberry harvest winds down, growers are preparing for next year's planting. A question among plasticulture strawberry growers is whether to establish a new strawberry patch using plug plants or bare-root plants.

Plug plants are actively growing transplants produced from runner tips and typically sold in 50-cell trays filled with soilless growing media. In contrast, bare-root plants are dormant, dug from nursery fields, and consist of a crown with an exposed root system. Both plug and bare-root plants can be successfully used to establish plasticulture strawberry plantings.

A major advantage of using plug plants in a plasticulture system is their ease of planting and their rapid, reliable establishment. In contrast, planting bare-root plants on plastic-covered beds can be labor-intensive, requiring experienced workers and taking a long time to plant large areas. Depending on weather conditions during planting, overhead irrigation may be needed to ensure successful establishment of bare-root plants in the summer. Despite the advantages of using plug plants, bare-root plants offer benefits of their own. First, bare-root plants are less expensive, often costing about half as much as plug plants. Considering that a standard plasticulture system may require up to 15,000 plants per acre, the cost savings can be substantial. Second, growers often have access to a wider selection of

cultivars when purchasing bare-root plants compared with purchasing plugs. Third, the planting window for plug plants is relatively narrow in the Midwest, whereas bare-root plants generally provide greater flexibility in planting date.

Because both plug and bare-root plants have their own strengths and weaknesses, fruit growers may choose to use both planting materials as a form of insurance. This strategy can help address challenges such as limited plant availability, variable establishment success, and concerns about crown diseases. If growers decide to use one or both types of planting material, it is important to understand the factors to consider when planting each type.

## Starting with plug plants

Plugs should be planted no later than mid-September in southern Indiana or early September in northern Indiana, with mid- to late-August being the preferred planting window. However, planting in August is not always possible because plant availability can be limited.

The timing of plug availability depends on how the plants are produced. Plug plants are grown from runner tips, which are harvested either from mother plants grown in nursery fields in cooler climates or from hanging mother plants maintained in greenhouses. Growers may purchase finished plug plants from regional plug producers that receive runner tips from northern nurseries, or they may purchase runner tips and produce their own plugs on-site. The timing of plug plants availability is largely determined by when runner tips are harvested and shipped from northern nursery fields, which makes plug plants available only for a short window from later summer to fall. Plugs produced from greenhouse-grown mother plants are often available over a longer period. However, growers may need to place orders with greenhouse plant suppliers well in advance to ensure plant availability.

Planting plugs is similar to transplanting vegetables. A water-wheel transplanter is well suited for this purpose. Under adequate soil moisture, plug plants establish quickly, even during hot summer conditions and regardless of whether they are planted on black or white plastic mulch.

## Starting with bare-root plants

Bare-roots are typically available from spring through summer. They should be planted a few weeks earlier than plug plants. However, planting too early can promote excessive runner production, which is undesirable in plasticulture systems. We have not conducted research to determine the optimal planting date for bare-roots in plasticulture system in Indiana. Based on growers' experience, planting from July to early August could provide satisfactory results. Because bare-root plants are available in early spring, fruit growers who wait until summer to place orders may find some cultivars are already sold out.

Establishing a strawberry planting with bare-root plants is labor-intensive. Bare-root plants must be planted at the proper depth. If

planted too deeply, the crowns are fully buried and may rot; if planted too shallowly, crowns may not make contact with soil and the roots may dry out. Some growers plant bare-root strawberries by hand, using specialized strawberry-planting tools. This approach requires experienced workers and is time-consuming. Other growers have experimented with trimming roots to 2-3 inches and using a water-wheel transplanter. In our preliminary observations, this method appears to be more successful with vigorous plants. Bare-root plant quality and cultivar characteristics may influence establishment success. Planting depth and other establishment practices may need to be adjusted, as optimal settings can vary depending on soil conditions and plant characteristics. In addition, newly planted bare-root plants should be monitored carefully, particularly after heavy rainfall, to ensure that crowns are not exposed when soil is washed out of the planting holes. We have observed that some bare-root plants established using the method described above developed branch crowns positioned above the soil surface (Figure 1). These exposed branch crowns may not survive freezing temperatures in the winter. Intensive labor requirements with bare-root plants also come from removing flowers. Because bare-root plants often contain pre-formed flower clusters in the crown, plants begin flowering shortly after planting. These flowers should be removed to encourage plant vegetative growth, the same practice used in spring-planted matted-row system.



Figure 1. Newly developed branch crowns were above soil surface. Those exposed branch crowns may not survive in the winter. The photo was taken in November on a strawberry plant established from bare-root plants (Photo

Maintaining adequate soil moisture is critical for successful establishment of bare-root strawberry plants. Because bare-root plants can be stored temporarily in a refrigerator at 32-40°F, growers often schedule planting during cooler weather or when rainfall is forecast. Planting under cool and cloudy conditions can greatly improve establishment success. When hot and dry conditions cannot be avoided, frequent irrigation through drip tapes is essential, and sometimes supplemental overhead irrigation may be needed. Because summer heat poses a risk of establishment failure, white plastic mulch is preferred over black plastic mulch when establishing strawberry plantings with bare-root plants. The high labor demand associated with planting and managing bare-root strawberry plants during the summer can present a challenge for produce growers, as this period typically coincides with the peak of the production season.

A modified approach to using bare-root plants is to establish them in large-cell trays and then transplant them to the field after they have developed root systems, similar to using plug plants. Although this method requires additional labor and materials to establish the bare-root plants in trays, it can significantly improve establishment success in the field. An additional advantage is that flowers can be removed while the plants are still in trays, where they are easier to access and manage, eliminating the need for post-transplant flower removal and potentially reducing labor requirements during field establishment.

---

## Considerations of Growing Strawberry Plugs by Harvesting Runner Tips

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

We have seen increasing interest in harvesting strawberry runner tips and producing plug plants on-farm for the next year's planting. This practice is allowed for cultivars that don't have a patent or the patent has expired. Several excellent Extension publications describe this process, including [Strawberry Plug Plant Production](#) published by Utah State University, and [Propagating Strawberry Plants Through Runners](#) published by Cornell Cooperative Extension. While the technical process of harvesting runner tips and producing plugs is relatively straightforward, this approach may not be practical or economically viable for all growers. In addition to facilities required, such as greenhouse space and a mixing irrigation system, several other factors should be considered before deciding whether on-farm runner tip harvest and plug production is a suitable option. In this article, we discuss some of the key considerations growers should take into account.

Producing plug plants from runner tips is a relatively fast process, typically taking about four weeks from sticking the runner tips to producing field-ready transplants. Therefore, careful planning is essential. Growers should first determine their target field planting date and then schedule runner tip harvest and rooting accordingly. It is equally important to ensure that planting beds are prepared and ready when the plug plants reach the

appropriate stage for transplanting. Runner tips are ideally rooted immediately after harvest. While this may be feasible on a small scale, temporary storage may be necessary when a large amount of plugs are being produced. In these situations, growers should consider how storage may affect labor scheduling, plant quality, and rooting success.

The following questions are: how long can runner tips be stored, and under what conditions? In the publication *Recent Advances in Strawberry Plug Transplant Technology* (2002), the authors recommend cooling runner tips to 32°F immediately after harvest and maintaining temperatures below 37°F. They note that well-handled runner tips can be safely stored for up to one week, although every effort should be made to root them as soon as possible after harvest. More recent studies suggest that storage periods can be extended to as long as one month under dark, above 95% relative humidity and cold storage conditions. However, prolonged cold storage generally reduces the percentage of runner tips that successfully develop roots compared with freshly harvested tips.

Both harvesting runner tips and rooting them into plugs are labor-intensive processes. Growers should carefully plan these activities to fit within the often demanding summer production schedules. In addition to labor requirements, harvesting a large number of runner tips within a short period may not be feasible, depending on the availability of healthy mother plants and the cultivar's capacity to produce runners. An ideal runner tip for plug production should have visible root nodules, not dried roots, at least two trifoliate leaves, and a crown diameter of about 3-4 inches (Figure 1).



Figure 1. Runner tips at different developmental stages. The second runner tip from the right is at the ideal stage for plug plant production (Photo by Wenjing Guan).

Smaller runner tips have a lower likelihood of successful rooting and may produce less vigorous plug plants. Sorting runner tips by size before rooting is an important step to improve uniformity among the resulting plugs. If a sufficient number of acceptable runner tips cannot be harvested at one time, the tips collected earlier may need to be stored temporarily until enough are available to complete a rooting batch.

Some growers may prefer to postpone runner tip harvest until a sufficient number of runners are available. Although this strategy may minimize storage requirements, it can also increase disease risk. Following fruit harvest, fungicide applications are often reduced or discontinued, allowing foliar diseases to develop in the field. As runner tips continue to develop from mother plants, their exposure to pathogens may increase. The high-humidity conditions required for rooting are highly favorable for disease development. Commercial plug producers commonly rely on fungicide programs during this stage to prevent disease outbreaks. If fungicides are unavailable or their use is limited, growers who plan to produce their own plugs should make every effort to minimize the introduction of pathogens into the rooting environment to reduce risk. Another consideration is that, depending on field conditions and whether weed barriers are used between rows, some runner tips may have already rooted in the soil. These rooted daughter plants should not be used for plug production because they carry soil particles and can be more difficult to handle and establish uniformly in plug trays.

In summary, while harvesting runner tips and producing plug plants on-site is possible, growers should carefully weigh the associated labor, logistics, and disease-management challenges in the context of their own operations.

---

## Spring Planted Cool-Season Cut Flower Update — Dianthus and Centaurea

(Wenjing Guan, [guan40@purdue.edu](mailto:guan40@purdue.edu), (812) 886-0198), (Jayde Grisham, [jmgrish@purdue.edu](mailto:jmgrish@purdue.edu)) & (Laura Ingwell, [lingwell@purdue.edu](mailto:lingwell@purdue.edu), (765) 494-6167)

The Purdue cut flower team is currently conducting cut flower demonstrations at three locations in Indiana. In this article, we provide updates and observations on cool-season flowers from three sites: open-field and high-tunnel plantings in Vincennes; an open-field site in Indianapolis; and an open-field site in West Lafayette, representing southern, central, and northern Indiana. The cool-season cut flowers evaluated in the project were started from seed in February and transplanted in March.

At the Vincennes and West Lafayette locations, plants were grown on raised beds covered with plastic mulch, while at the Indianapolis location they were grown on flat beds covered with a fabric weed barrier. Snapdragon, stock, and ornamental cabbage were discussed in a [previous article](#). Since then, snapdragon and stock have begun flowering at the West Lafayette location. In contrast, plant establishment and flowering in Indianapolis were substantially delayed due to waterlogging stress during May. This article focuses on the performance of Dianthus and Centaurea, primarily at the southern Indiana location.

### Dianthus

Dianthus 'Amazon™ Neon Purple' and 'Sweet™ White', as well as a carnation-type dianthus 'Chabaud Benigna,' were included in the trial. Plants were transplanted on March 19 in both the high tunnel and open field at the Vincennes location.

'Sweet™ White' began blooming approximately 7 weeks after transplanting in the high tunnel and 8 weeks after transplanting in the open field. In the high tunnel, the first stems harvested in May barely reached 12 inches long. But the stem length in general appeared to increase in June, likely due to continued plant growth and increasing day length. Plants grown in the open field were smaller, and harvested stems were less than 12 inches long.

'Amazon™ Neon Purple' began flowering in the high tunnel toward the end of May. Compared with 'Sweet™ White', 'Amazon™ Neon Purple' flowered approximately two weeks later but produced longer, stronger stems (Figure 1). In the open field, however, plant performance was highly variable. Some plants flowered shortly after transplanting, before sufficient vegetative growth had occurred, while others developed normally and had not yet flowered at the time this article was written (Figure 2).

The premature flowering may have been associated with temperature fluctuations following transplanting. A few days after transplanting, plants experienced several nights of light frost, followed by a period of unusually warm weather, with daytime temperatures reaching 80°F at the end of March. Approximately 25% of 'Amazon™ Neon Purple' subsequently exhibited premature flowering. In our evaluation of multiple cool-season cut flowers grown under the same environmental conditions at the Vincennes location, 'Amazon™ Neon Purple' was the only cultivar that exhibited premature flowering. No premature flowering was observed on 'Amazon™ Neon Purple' grown at the other two locations. During transplant production, we also observed that 'Amazon™ Neon Purple' was prone to premature flowering. We suspect nutrient deficiency and root restriction during the seedling stage may have contributed to floral induction.

'Amazon™ Neon Purple' seedlings that had already initiated flowering prior to transplanting were planted in the open field at the Vincennes location. Those plants never returned to vegetative growth and instead continued producing unmarketable flowers.



Figure 1. 'Sweet™ White' (front) and 'Amazon™ Neon Purple' (back) grown in a high tunnel at the Vincennes location. Photo was taken on May 28 (Photo by Wenjing Guan).



Figure 2. 'Amazon™ Neon Purple' grown in open-field at the Vincennes location. Note some plants flowered before sufficient vegetative growth had occurred. Photo was taken on June 4 (Photo by Wenjing Guan).

'Chabaud Benigna' grown in high tunnel and open field at the Vincennes location began flowering at approximately the same time, about 11 weeks after transplanting in early June. Although flowering occurred simultaneously, plants grown in high tunnel developed greater vegetative growth and produced longer stems on the initial flowers compared with those grown in the open field. The performance of this cultivar will continue to be monitored and reported in future articles.

## Centaurea

Two *Centaurea* cultivars, 'Florist Blue Boy' and 'Classic Magic,' were included in the evaluation. They were planted in a high tunnel and open field on March 19 at the Vincennes site. Plants grew rapidly, particularly in the high tunnel, where they reached approximately 3 feet in height by mid-May. Without support in the high tunnel, some stems lodged and fell to the ground (Figure 3). Cultivar 'Classic Magic' began blooming about 8 weeks after transplanting in the high tunnel and 9 weeks in the open field, slightly earlier than 'Florist Blue Boy'.



Figure 3. Some stems lodged and fell to the ground of *Centaurea* 'Classic Magic'. Photo was taken on May 11 (Photo by Wenjing Guan).

*Centaurea* was extremely productive in our trials. By late May, we estimated that each plant grown in the high tunnel had approximately 20 open blooms along with numerous developing buds. Despite its high productivity, *Centaurea* may not be the most suitable cut flower for high-tunnel production. One reason is its relatively low stem value, due to its small flower size and short vase life of about 4-7 days. We also observed that *Centaurea* was highly attractive to two-spotted spider mites. At the Vincennes location, most high-tunnel-grown *Centaurea* became unmarketable because of severe two-spotted spider mite infestations. In contrast, plants grown in the open field began flowering only slightly later, but plant size was more manageable, and the flowers were healthier (Figure 4). At the West Lafayette location, where *Centaurea* was transplanted at approximately the same time, plants developed slower than those in southern Indiana and began flowering around the end of May.

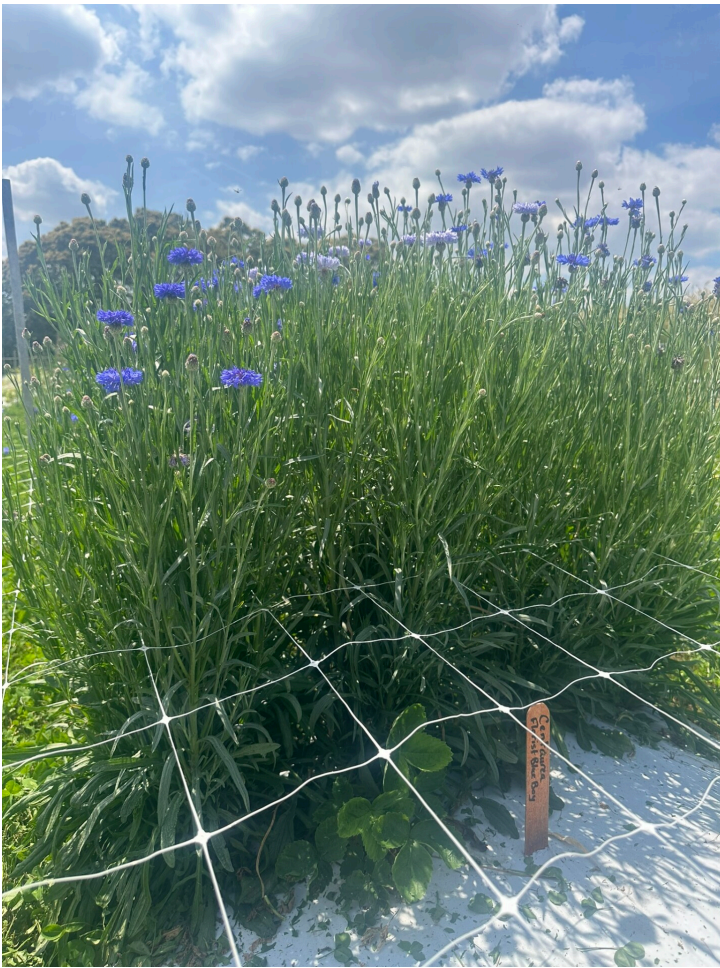


Figure 4. Centaurea 'Florist Blue Boy' grown in an open field at the Vincennes location. Photo was taken on June 4 (Photo by Wenjing Guan).

## Are Cooler, Drier Conditions in Our Future?

(Beth Hall, hall556@purdue.edu)

Since last Friday, many parts of Indiana have seen a significant amount of rain (Figure 1). However, the spatial variability illustrates how there can never be enough ground observations and measurements to tell the entire story. In a 24-hour period over the weekend, an observer in Lafayette, Indiana, recorded 3.58", and yet 3 miles to the northeast, other CoCoRaHS observers measured less than 2.00". Less than 10 miles to the northwest, those CoCoRaHS observers measured less than 1.25" (Figure 2)! These differences play a huge role in knowing where flooding might occur, where drought may still be a problem, and where National Weather Service precipitation radar algorithms may need improvement. If you're not already a volunteer CoCoRaHS observer, please consider [signing up](#). With a manual 4" rain gauge, you can help provide data to the scientific knowledge of rainfall, rainfall impacts, and infrastructure development for your area!

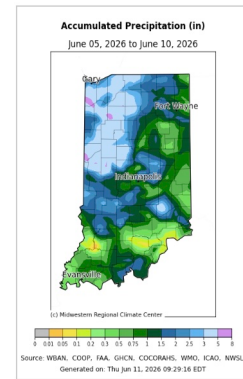


Figure 1. Precipitation totals reported since the morning of June 5 through June 10, 2026.

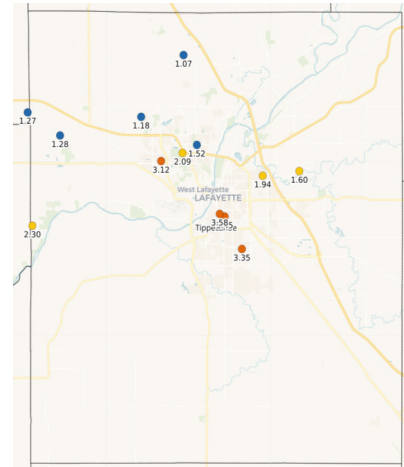


Figure 2. 24-hour precipitation totals reported the morning of June 7, 2026 from volunteer CoCoRaHS observers in Tippecanoe County, Indiana.

All the rain is due to both increasing temperatures (added energy and therefore rising air) and increasing moisture flowing northward from the Gulf. Now that the ground has become well saturated in most areas and vegetation is thriving (if it is not drowning), evapotranspiration has been adding even more humidity to the air. Say hello to hot and muggy conditions! Dew point temperatures - the temperature the air would need to cool to for it to become saturated and condensation to occur - were around 70°F by the middle of this past week. Yikes! That will make nighttime air feel so damp and sticky. Cooler temperatures start moving into our area by Friday with dew point temperatures dropping into the upper 50s and lower 60s. That is still considered quite humid, but many will find this welcoming.

Indiana will remain in this rainy pattern for at least another week, with the forecasted 7-day totals ranging from 0.5" (eastern / southeastern Indiana) to almost 2.0" (northwestern Indiana) (Figure 3). Beyond that, climate outlooks are slightly favoring cooler than normal temperatures with the possibility of above-normal precipitation. There is a slight risk for a heavy precipitation event sometime around June 18-20.

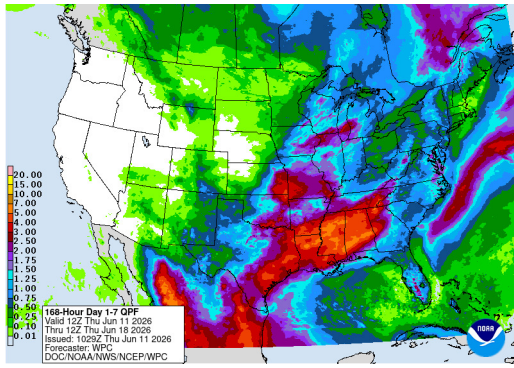


Figure 3. 7-day precipitation totals forecasted for the evening of Wednesday, June 10th through the evening of June 17, 2026.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. This material may be available in alternative formats. 1-888-EXT-INFO Disclaimer: Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer.

Vegetable Crops Hotline © Purdue University - [vegcropshotline.org](http://vegcropshotline.org)

Editor: Petrus Langenhoven | Department of Horticulture and Landscape Architecture, 625 Agriculture Mall Dr., West Lafayette, IN 47907 | (765) 496-7955 | [plangenh@purdue.edu](mailto:plangenh@purdue.edu)