

VEGETABLE CROPS HOTLINE

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

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From The Editor's Desk

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

Dear Valued Vegetable Crops Hotline Readers,

Welcome to issue 778 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.

What's Inside This Issue

Late summer has brought its share of challenges to Indiana vegetable growers, and this issue reflects that. Following historic mid-August rainfall in east-central Indiana, we share observations from pumpkin fields across the region, where the extent of water damage varied widely from farm to farm, underscoring just how much site selection matters. On the weed control front, our weed science specialist invites you to look back on the 2026 season and ask what worked and what didn't, beginning with how rainfall and soil moisture shaped this year's weed management outcomes. Growers can also learn more at the Mechanical Weed Control Field Day on September 16, which features a tradeshow, tool discussions, and in-field demonstrations, with registration discounts for organic and organic-curious growers from Indiana, Michigan, and Illinois.

For those establishing plasticulture strawberries this fall, we offer a reminder that planting depth is critical for both plug and bare-root plants, with examples of what can go wrong drawn from recent farm visits. Finally, Safe Produce Indiana has released a four-part video series that walks through the USDA Harmonized GAP Third-Party Audit, using the Purdue Student Farm as a case

study to help growers understand the audit scope, documentation, and preparation.

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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 purchase a copy.

Midwest Vegetable Trial Reports

Are you 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.

Contact Us If You Have a Story to Share

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@purdue.edu) 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.

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

Petrus Langenhoven, Editor

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Pumpkin Field Updates

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

It has been a wet summer across much of Indiana, and conditions became more challenging after historic rainfall hit east-central Indiana in mid-August. I recently had a chance to visit several pumpkin fields in the region. The amount of damage directly associated with the heavy rainfall varied considerably from field to field, clearly demonstrating how site selection can set the first bar for success.

Phytophthora Blight

In the most severe cases, fields or portions of the fields were submerged for an extended period. I saw dead vines and rotting fruit, with samples confirmed to have *Phytophthora* blight. In these fields, the immediate priority should be to prevent the pathogen from spreading to unaffected areas within the field or to other fields.

Roguing—removing infected plants and fruit—is one practice that may help slow the spread of disease. However, its success depends on several factors, including how early the disease is detected and how extensively the pathogen has already spread. Read [Roguing as a Tool to Manage Phytophthora Blight of Pumpkin](#) to learn more about when and why this practice may or may not be effective.

There is no single practice that can manage *Phytophthora* blight. As Dr. Dan Egel wrote in [Phytophthora Blight of Cucurbits](#):

Management of Phytophthora blight with fungicides is not possible unless cultural methods are also implemented. Even the best management schemes, chemical and cultural, may fail to control Phytophthora blight completely when weather conditions are conducive to the disease.

Although managing *Phytophthora* is particularly challenging in wet years, understanding the disease's biology and taking timely preventive measures can make a difference. The articles

suggested above provide additional management recommendations.

Vines Decline

I also visited pumpkin fields where the fruit remained intact, but became exposed as vines wilted or declined. One farmer described vines that had been knee-high before rapidly wilting shortly after the heavy rain. In this situation, the decline was likely due to root injury from saturated soil and lack of oxygen in the root zone. Plants can be particularly vulnerable to these stresses when they are carrying a heavy fruit load.

Although many pumpkins in these fields had developed good color, their rinds had not fully hardened. This raises a practical question: Should these pumpkins be harvested now or left in the field?

There are several factors to consider, and there is likely a trade-off. Growers may hesitate to harvest because the pumpkins have not fully matured and market prices may not be at their best in August. However, once most of the functional foliage has been lost, the benefit of leaving fruit in the field to continue maturing and hardening diminishes significantly. At the same time, loss of the canopy exposes fruit to greater risks of sunscald, disease, and insect injury. These problems can quickly reduce marketability and fruit value.

Partially mature pumpkins can continue to develop and harden after harvest under appropriate curing conditions. Curing is generally favored by warm temperatures (around 80 to 85°F), good ventilation, and protection from direct sun. However, pumpkins harvested before full maturity may not store as well as fruit that fully mature on healthy vines. Another potential benefit of harvesting fruit that are close to maturity is reducing the fruit load on stressed plants. This may help the vines recover, which is essential to support the continued development of younger fruit.

Bacterial Spot

In addition to damage directly associated with heavy rainfall, [bacterial spot of pumpkin](#), caused by *Xanthomonas cucurbitae*, was observed in several fields I visited, even though growers reported that copper products had been applied.

It is important to remember that copper products are protective rather than curative. Many factors can reduce their effectiveness, including repeated infection events, rainfall washing residues from plant surfaces, rapid canopy and fruit expansion, incomplete spray coverage, and infections that occurred before the most recent application.

Dr. Mohammad Babadoost at the University of Illinois has conducted extensive research on bacterial spot of pumpkin. He emphasized the importance of copper applications during early crop stages, noting that copper sprays become ineffective once an epidemic is underway (*Illinois Fruit and Vegetable News*, [Vol. 17, 2011](#)). It is worth noting that bacterial spot usually affects leaves first, then spreads to fruit. So early management is critical to slowing the spread of the disease.

Another disease, *Plectosporium* blight, which was also observed in multiple fields, can affect pumpkin fruit as well and may be confused with bacterial spot. Check the article "[Plectosporium Blight of Pumpkin](#)" for a comparison of symptoms between the two diseases.

For bacterial spot, Dr. Babadoost's current program recommends two applications of Actigard after seedling emergence, followed by a spray program beginning at vine spread, alternating Manzate PRO-Stick + Kocide 3000 with Regalia + Kocide 3000. See the University of Illinois [2026 Recommended Pumpkin Spray Schedule](#) for pumpkin spray recommendations.

I observed considerable differences in bacterial spot severity among fields and cultivars. In one field planted with multiple pumpkin and winter squash cultivars, one cultivar clearly had much more severe symptoms than the others. Although no commercial pumpkin and winter squash cultivars are marketed as resistant to bacterial spot, research shows meaningful differences in susceptibility among cultivars. In a [study](#) evaluating 81 commercial cultivars of gourds, pumpkins, and squashes, along with 300 *Cucurbita* accessions, *C. pepo* generally developed greater disease severity than *C. maxima* and *C. moschata*. However, there was also substantial variation among cultivars and accessions within the same species. Because it is difficult to directly compare many cultivars at once, growers can learn a great deal from their own fields by growing multiple cultivars. Take notes on which cultivars develop severe bacterial spot and which remain relatively clean under the same conditions. In a wet, disease-conducive year like this one, these observations can be particularly valuable when selecting cultivars for future seasons.

Yellowing Leaves

Lastly, I want to discuss yellowing foliage. Some leaf yellowing is not unusual as pumpkin plants approach the end of the season, but premature yellowing may be more common this year in wet areas because of root injury, nutrient loss, and disease.

In one field, I noticed premature yellowing associated with powdery mildew, with much of the visible fungal growth occurring on the undersides of leaves. This pattern is worth paying attention to when evaluating spray coverage. If a contact fungicide is deposited primarily on the upper leaf surface, the underside may receive less protection. Thorough canopy coverage is important when contact fungicides are the main component of a disease-management program.

Another disease that can cause pumpkin vines to turn yellow and decline is cucurbit yellow vine disease, a bacterial disease associated with squash bugs. Dr. Cesar Escalante recently confirmed the disease in Indiana. Growers should be particularly alert for this disease in fields where squash bug populations have been high. Read [Pathogen Spotlight: Serratia ureilytica Causing Cucurbit Yellow Vine Disease](#) for more information.

This wet season has created several challenges for pumpkin production, and the problems observed in individual fields often have multiple causes. Carefully examining field drainage, vine

health, fruit maturity, disease symptoms, cultivar differences, and the timing of management practices can help growers make better decisions for the remainder of this season and provide valuable information for planning next year's crop.

Understanding the USDA Harmonized GAP Third-Party Audit: A Farmer's Journey

(Doriane-hans Sossou, dsossou@purdue.edu)

Preparing for a third-party food safety audit can be challenging for produce growers, particularly when navigating audit requirements, understanding the audit scope, and determining which documentation and practices are required. To help growers better understand the process, Safe Produce Indiana, using the Purdue Student Farm as an example, has developed a four-part educational video series focused on the USDA Harmonized GAP Third-Party Audit. The series provides practical guidance on the audit process and highlights key areas that growers should consider when preparing their farms for an audit.



A student is pruning and trellising tomatoes in a high tunnel at the Purdue Student Farm (Photo by Chris Adair).

Video 1

"[Introduction to the Harmonized GAP Third-Party Audit](#)"

introduces growers to the purpose of a third-party audit and provides an overview of the Harmonized GAP program. It helps growers understand why food safety audits are conducted and how they can evaluate the effectiveness of a farm's food safety practices.

Video 2

"[Understanding Audit Scope and Process](#)" focuses on the scope of an audit and the different steps involved in the auditing process. Understanding audit scope is important because it helps growers determine which crops, production areas, activities, and food safety practices will be evaluated.

Video 3

“General Questions, Field Operations, and Post-Harvest Operations” addresses key areas of farm food safety, including questions auditors may ask and practices associated with both field and post-harvest operations.

Video 4

“Harmonized GAP Audit Process” provides additional information about the audit process and reinforces the importance of preparation, documentation, and consistent implementation of food safety practices.

Acknowledgment

This project is part of a Specialty Crops Block Grant (SCBG), funded by the Indiana State Department of Agriculture (ISDA)



Planting Strawberries at the Right Depth

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

Both plug plants and bare-root plants can be used to establish plasticulture strawberries. Regardless of the type of planting material used, however, proper planting depth is critical. Planting too deep or too shallow can result in poor establishment or even plant death. I have observed both problems during recent farm visits.

Planting Strawberry Plugs Too Deep

Unlike many vegetable crops, such as tomatoes and melons, strawberries have their growing point at the crown, near the base of the plant. This makes proper planting depth particularly important.

Water-wheel transplanters, commonly used by vegetable growers, are also used to plant strawberry plugs. However, it is not always easy to judge planting depth when using a water-wheel transplanter. With many vegetable transplants, planting deep is not a concern because the growing point remains well above the soil surface. With strawberries, however, planting too deep can bury the crown and growing point. A buried growing point may prevent new leaves from emerging and can eventually

lead to establishment failure. To ensure proper planting depth, it is helpful to have someone walk behind the transplanter and regularly check newly planted plugs. If plants are set too deep or too shallow, the person can promptly communicate with the planting crew so adjustments can be made before a large portion of the field is planted incorrectly.



Figure 1. Newly planted strawberries on plastic-covered beds (Photo by Wenjing Guan).

Planting Bare-Root Strawberries Too Shallow

The opposite problem can occur. I observed the problem in a situation where bare-roots were planted in the summer. The plants initially established and grew well, but later some began to wilt. In some cases, entire plants died; in others, portions of the branch crowns declined.

Upon closer inspection, I noticed that the main crown, or portions of the branch crowns, were positioned above the soil surface. This can limit the plant's ability to grow new roots from the crown, which may contribute to wilting and plant decline. Even if plants with exposed crowns continue to grow during the fall, these crowns are less likely to survive in the winter.

One factor that may contribute to this problem in plasticulture systems is heavy rainfall after planting. During intense rainfall, water flowing into the hole may wash soil away from the crown. This means that even when bare-root strawberries are initially

planted at the correct depth, their crowns may become exposed later. For this reason, growers should check plants again after heavy rainfall, particularly during the first several weeks after planting. If crowns have become exposed, soil should be carefully moved back around the plants.

Additional Reading

[Considerations of Using Plugs or Bare-root Plants to Start a Plasticulture Strawberry Patch](#)

Take a Moment to Assess Your 2026 Weed Control – Part 1 – Rainfall

(Stephen Meyers, slmeyers@purdue.edu, (765) 496-6540)

About a third of the farmer phone calls and texts I receive as a weed science Extension specialist center around a lack of weed control in vegetable crops. The lines, “What went wrong?” and “What do I do now?” generally follow. As the summer starts to give way to fall, now is a good time to look back on the bulk of the 2026 growing season and ask yourself these same questions: “What worked this year and what didn’t?” Weed management is complicated and ever-changing. Below, I’ll discuss how rainfall and soil moisture can influence weed control tactics. I’ll cover other topics in the coming issues of the [Vegetable Crops Hotline](#) newsletter.

Rainfall (or overhead irrigation) is necessary to move *soil-applied herbicides* into the soil profile where weed seeds are actively germinating. This allows them to be taken up by emerging weed seed roots (radicals) and/or shoots (coleoptiles and hypocotyls). However, when rainfall (or irrigation) is lacking, some weeds can germinate and grow through the herbicide-treated soil before it is “activated”. The longer a soil-applied herbicide remains on the soil surface, the more it can be broken down, meaning less active ingredient moves into the soil when rainfall or overhead irrigation eventually occurs. This is especially true for herbicides that can be degraded by sunlight (photodegradation).

Excessive rainfall can move soil-applied herbicides deeper into the soil profile, diluting their concentration in the upper soil layers where most weeds originate. For herbicides that are moderately or highly leachable, this means fewer days of residual weed control, especially on low organic matter and sandier soils. Of course, if rainfall is heavy enough to cause soil erosion, the herbicide you applied is likely being carried away with the eroded soil, leaving portions of the field effectively without residual herbicide.

Rainfall also plays a role in the effectiveness of postemergence herbicides. Rainfastness, the ability of a herbicide to resist being washed off the leaf surface, varies among herbicides. Herbicides applied to manage emerged weeds must make their way through the waxy leaf surface (cuticle) of the weeds we are targeting. Adjuvants, like crop oil and non-ionic surfactant, help with this process, but it still takes time. One to several hours of rain and overhead irrigation-free time are needed. A heavy rain shortly

after applying a postemergence herbicide can greatly diminish the amount of herbicide taken into the targeted weeds, reducing its effectiveness. So, if you heard distant thunder as you and your spray boom were leaving the field, it’s likely that herbicide uptake was reduced and resulted in decreased weed control.

One more consideration for rainfall and postemergence herbicides: rainfall and soil moisture affect crop and weed vigor. When weeds are stressed due to waterlogged or water-deprived soils, they are less effective at taking up and moving systemic herbicides to their growing points. Systemic herbicides work best on small, actively growing weeds. If weeds are not “actively growing” due to water stress, this may result in decreased control.

Finally, rainfall and its resulting effects on soil moisture also influence mechanical weed control tactics. Under wetter soil conditions, soil may clod and prevent adhering weeds from being uprooted. Some of those weeds that are uprooted may reroot if they are left on top of moist soil or if rainfall follows a cultivation event. Some in-row weeding implements, including tine and finger weeders, will not perform well in dry or crusted soil. Furthermore, rainfall can delay cultivation. When the interval between cultivation events increases, so too does weed size. Larger weeds are often far more difficult to control with cultivation and more likely to reroot.

Mechanical Weed Control Field Day – September 16



Join for a full day tradeshow, weeding tool discussions, and in-field demonstrations for managing weeds in row crops, vegetables, and tree fruit, with steep registration discounts for organic and organic-curious growers from Michigan, Illinois, and Indiana.

Each year, the Midwest Mechanical Weed Control Field Day moves to a different state. This year, in its 9th year, they are partnering with [Michigan State University \(MSU\) Extension](#) and holding the field day at the [MSU Southwest Michigan Research and Extension Center](#) in Benton Harbor, Michigan, on Wednesday, Sept. 16, 2026. This field day is the place to see weeding tools of all scales demonstrated in the field, where farmers can learn from company reps and farmers from around the region.

When: Wednesday, September 16, 2026

Where: Michigan State University’s Southwest Michigan Research and Extension Center, 1791 Hillandale Rd, Benton Harbor, MI 49022

Cost: \$85 (includes lunch)

Registration: [Register online](#) by Sept. 8. Walk-ins are welcome, but you will need to bring your own lunch.

For more information on the event or to register by phone, contact Crystal at crystal@thelandconnection.org or 217-840-2128.

Lack of Rain May Bring Drought

(Beth Hall, hall556@purdue.edu)

According to the Midwestern Regional Climate Center's "Number of Days since last Precipitation Observation" tool, there is an increasing area of Indiana that has not had at least a tenth of an inch (number of days since precipitation tool provides maps for the Midwest region with precipitation threshold amounts of $\geq 0.01"$, $0.10"$, $0.25"$, $0.50"$, and $1.00"$) of precipitation in at least 8-14 days (Figure 1). In fact, over the 30-day period from August 4 through September 2, 2026, areas in far northeastern Indiana, as well as in southern and southwestern Indiana, have seen only between 50% and 75% of their historical norms (Figure 2). Of course, areas that were hit hard by the intense rainfall events in August – across central and east-central Indiana – are still well ahead of average regarding the 30-day precipitation totals.

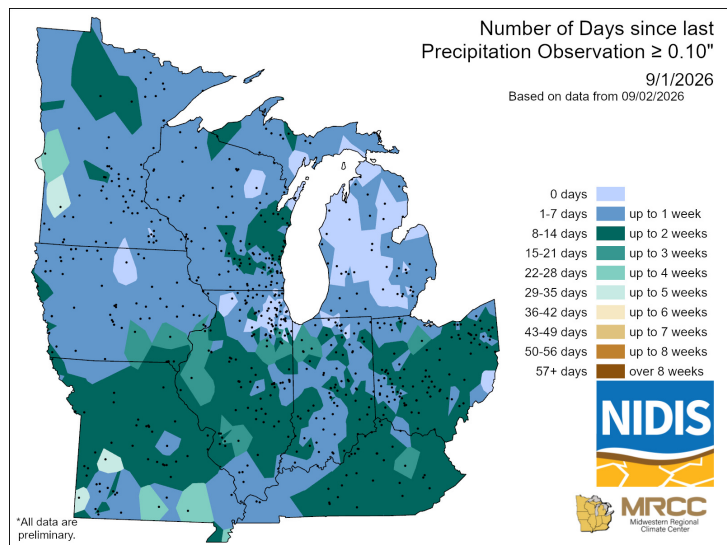
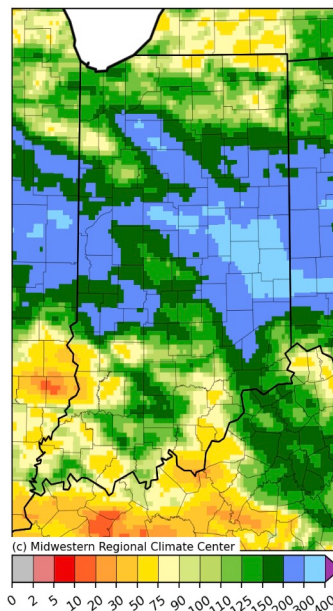


Figure 1. Number of days since the last observed 24-hour precipitation amount of at least 0.10 inches.



6 Figure 2. Total precipitation from August 4 through September 2, 2026, represented as the percentage of the 1991-2020 normal amounts. A value of 100% would indicate an amount equal to the historical average.

Does this mean drought in those drier locations is imminent? Drought is measured across multiple time scales and considering multiple types (e.g., meteorological, hydrological, agricultural). Therefore, it is difficult to say for certain whether drought will develop and, if so, what type. Currently, groundwater levels and soil moisture percentages are near if not above normal in those areas that have not been getting much rain. These factors could impact hydrological and agricultural drought. However, there is clearly a meteorological drought developing not only due to the lack of recent precipitation, but also because forecasts and climate outlooks do not predict much precipitation over the next several weeks, particularly for southern and southwestern Indiana. Couple that with short-term climate models favoring above normal temperatures continuing for the next several weeks, and at least the introduction of the Abnormally Dry (D0) category of the [U.S. Drought Monitor](#) is very likely.

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