

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 776 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

August continues to deliver on its promise as the month of plenty! Here at the Meigs Horticulture Facility in Lafayette, we're harvesting abundant crops from an eggplant (Figure 1) and napa cabbage (Figure 2) demonstration, alongside a high tunnel sweet pepper variety trial (Figure 3) at the Purdue Student Farm, a perfect reminder of why late summer is such an exciting time for vegetable growers across Indiana.

As harvest ramps up, this issue looks at food safety considerations for postharvest handling, particularly amid Salmonella and Cyclospora concerns in the national news, and explores the causes of cracking in tomatoes and melons. We'll also see you in Vincennes: the Southwest Purdue Agriculture Center Vegetable Field Day is coming up on August 13, offering PARP credits and a full day of research updates, Extension programming, and grower networking.



Figure 1. Yellow fruit of sweet bell pepper variety, Flavorburst (Photo by Petrus Langenhoven).



Figure 2. Bins with napa cabbage, variety China Gold (Photo by Petrus Langenhoven).



Figure 3. Eggplant varieties (a) Turkish Orange, (b) Fairy Tail, (c) Summer Emerald, and (d) Calliope (Photo by Petrus Langenhoven).

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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](#) 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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What Caused the Cracking of Tomatoes and Melons?

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

Originally published on: [July 25, 2025](#)

Fruit cracking is one of the most commonly observed disorders affecting many fruit crops. Cracking can occur in different forms, such as radial splits extending from the stem end, splits at the blossom end, or concentric rings around the fruit.

Research has shown that multiple factors influence fruit cracking. Some cultivars are more susceptible to cracking than others, suggesting a genetic component of the disorder. With the same variety, the severity of cracking can vary from season to season, highlighting the role of environmental conditions.

Environmental factors commonly associated with fruit cracking include irregular water availability, extreme temperatures, high solar radiation, large fluctuations between day and night temperatures, and elevated humidity levels. Additionally, certain nutrient deficiencies—particularly in boron, potassium, calcium, and zinc—have also been linked to increased fruit cracking.

In this article, I will share a few field observations of tomato and melon cracking and explore the potential contributing factors in each case.

Tomato Cracking

Stem-end cracking (Figure 1) was observed in a high tunnel tomato experiment evaluating eight slicer varieties. The symptoms were minor during mid-season but became more pronounced toward the end of summer. Upon reviewing soil moisture data at the end of the season, we identified over-irrigation as the primary cause of fruit cracking. Soil moisture sensors installed at a 12-inch depth indicated that the soil remained nearly saturated in the latter part of the season.



Figure 1. Stem-end cracking of tomato fruit (Photo by Wenjing Guan).

Irrigation in this high tunnel was managed using a preset automatic system programmed to run three times per day. Early in the season, we gradually increased irrigation to match plant growth and fruit development. However, we did not reduce irrigation as the plants matured and growth slowed. As a result, water continued to be applied at high rates even when the plants required less, likely contributing to excessive fruit cracking during the late season. Among the varieties tested, 'Celebrity Plus' exhibited the most severe fruit cracking, while 'STM2255' and yellow tomato 'Carolina Gold' showed the least.

More information about this high tunnel tomato experiment can be found in this experimental report: [Evaluation of High Tunnel Tomato Cultivars for Yield and Quality](#).

Additional information on tomato cracking can be found in a previous newsletter article, [Cracking Tomatoes](#).

Watermelon and Melon Cracking

In our watermelon evaluations, we have occasionally observed fruit splitting after heavy rainfall during the ripening stage in certain cultivars. These split fruits are unmarketable, leading to significant losses. While such issues still occur from time to time, most modern watermelon cultivars exhibit good tolerance to these environmental conditions. Field observations and photos of affected fruit are featured in a previous newsletter article [Physiological Disorders after Heavy Rains](#).

Melon cracking and splitting are commonly observed under our climate conditions (Figure 2). While heavy rainfall and excessive irrigation increase the risk of cracking, we have found that certain cultivars are particularly susceptible to this issue, regardless of the weather conditions. This suggests they may not be well suited for open-field production in our region. Some of the melon types are mentioned in this experimental report: [Cantaloupe and Specialty Melon Variety Evaluation in Indiana](#).



Figure 2. Different forms of melon fruit cracking (Photo by Wenjing Guan).

Most melon cracking we have observed typically occurs when the fruit is nearing ripeness. However, we recently encountered a case where a high percentage of fruit from a widely grown cantaloupe cultivar began cracking at an early developmental stage. Although heavy rainfall at the site may have contributed to the issue, plant tissue tests revealed deficiencies in potassium and boron—two nutrients essential for fruit development and known to be associated with cracking. Because most of the fruit had already set, correcting these deficiencies mid-season was unlikely to resolve the problem. This case highlights the importance of a well-balanced fertility plan in supporting the growth of high-quality melons.

Southwest Purdue Agriculture Center Vegetable Field Day – August 13

(Cesar Escalante, escalac@purdue.edu)



You are **invited to attend the SWPAC Vegetable Field Day** on August 13, 2026, at the Southwest Purdue Agricultural Center (SWPAC) in Vincennes, Indiana. **PARP credits will be offered at this event.**

This free educational event will provide an opportunity to learn about the latest research and Extension programs that support Indiana's vegetable industry. Participants will have the opportunity to interact with Purdue specialists, Extension educators, researchers, industry representatives, and fellow growers.

Whether you are a commercial vegetable producer, beginning farmer, crop consultant, or industry professional, we encourage you to join us for a day of learning, networking, and discussion of current challenges and opportunities in vegetable production.

Registration

Please register using this [link](#)

Event Agenda

8:00 AM – 8:30 AM – **Registration and coffee**

8:30 AM – 8:45 AM – **Welcome and introductions** (Dennis Nowaskie & Cesar Escalante)

8:45 AM – 9:30 AM – **Pumpkin research trial demonstration** (Cesar Escalante)

- Overview of current pumpkin research trials
- Diseases and preliminary observations

9:30 AM – 10:15 AM – **Watermelon fungicide efficacy trial** (Anyi Reyes)

- Evaluation of fungicide programs
- Disease management strategies and trial results

10:15 AM – 11:00 AM – **Tomato nematode management trial in high tunnels** (Wenjing Guan)

- Biological nematicide treatments
- Discussion of efficacy and best management practices

11:00 AM – 11:45 AM – **Broccoli variety trial** (Wenjing Guan)

- Variety performance and evaluation
- Production considerations for growers

11:45 AM – 1:00 PM – **Lunch & Technical Talks** (Cesar Escalante, Anyi Reyes, & Wenjing Guan)

Tomato and melon diseases and management

- Foliar diseases: bacterial spot, gummy stem blight, anthracnose
- Soilborne diseases
- Other important diseases

1:00 PM – 1:30 PM – **PARP Credits Talk** (Valerie Clingerman)

This field day is designed to connect with Purdue Extension specialists, growers, and industry professionals, providing an excellent opportunity to explore the latest research and demonstrations in vegetable production. Topics will include crop management, pest and disease updates, and innovative production practices.

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Food Safety Considerations for Postharvest Handling of Produce

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

[Originally published on July 24, 2024](#)

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

Make food safety “cultural” throughout the growing season

The most successful food safety programs are those that are “baked into” the farm. Those farms that make GAPs a normal part of growing, rather than something to be done only when the inspector or auditor is coming, are in the best position to continue their food safety practices into harvest and postharvest handling.



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

Worker training

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

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

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



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

Packinghouse sanitation

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

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

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

To wash or not to wash?

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

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

should be labeled for use on produce. As with other pesticides, the label is the law. Growers who choose to use a sanitizer should also monitor sanitizer levels and other parameters such as turbidity, water pH, and temperature.

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



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

Product flow

As produce is brought into the packinghouse, product movement should be configured to minimize the potential for cross-contamination. Ideally, produce should enter the facility from one side (from the field) and exit the other side as “finished” produce ready for market. Moving produce in a straight line through the facility or a “U” shaped product flow works very well. Growers should avoid product movement that places cleaned produce in proximity to produce just coming in from the field.

Cooling and Storage

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

1. Check cooler temperatures at least daily. Document these temperature checks. This can be as simple as keeping a clipboard with a log sheet next to the cooler, so temperatures can be recorded immediately upon checking.
2. Avoid condensation. Chilled water pipes, condensers, and

heat exchangers are areas where condensation can form and drip onto produce. Once condensation drips onto produce, it is considered to be adulterated and cannot be sold. If condensation cannot be avoided, drip pans or other devices to catch and divert it should be used.



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

Transport vehicles

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

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

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Spotty Rain Keeps Drought Away

(Beth Hall, hall556@purdue.edu)

Abnormally Dry (“D0” in the U.S. Drought Monitor [USDM]) conditions were starting to develop in several areas across northern Indiana by the end of July. However, intermittent, spotty rain events as July transitioned to August seemed to occur in many of those places, suggesting conditions were returning to normal. Therefore, the only area of the state still considered Abnormally Dry is the northeastern counties (Figure 1). Periods of dryness are not uncommon, particularly over the summer when warmer temperatures can accelerate evapotranspiration. The challenge becomes assessing whether the drier periods are normal or abnormal. For now, most of Indiana seems to be more normal. Will this last?

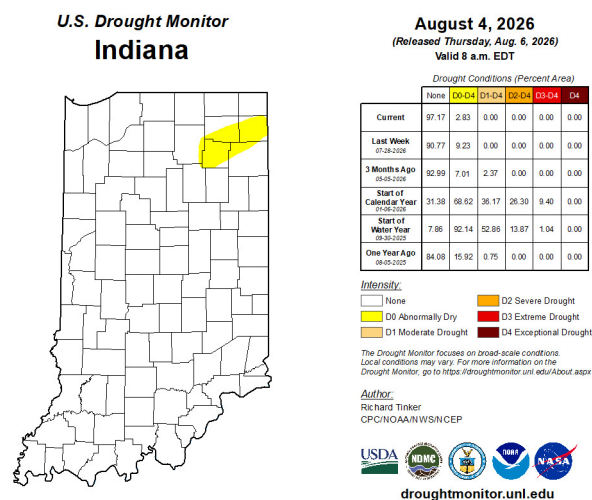


Figure 1. US Drought Monitor status for conditions through August 6, 2026.

The rain forecast over the next 7 days (through August 14th) predicts a chance of rain every day. Those chances may range from 10% to over 80%. This is often tricky to interpret. If it does not rain in your area, was the forecast wrong? Technically, no. If it does rain, then why couldn't the forecast have said a 100% chance? If only things were that easy. Think of those probabilities of precipitation (PoPs) as indicating a measure of risk or a level of confidence that rain may occur. Additionally, those PoPs are applying to a larger area than just where you are standing. Most precipitation forecasts consider areas approximately 4 km by 4 km (~6 square miles). Sure, your favorite app may be telling you it is providing far better accuracy, but that is physically unlikely. Anyhow, 6 square miles is about 576 city blocks (by Midwest standards). If it never rained where you were, but you think it likely rained somewhere in the surrounding 575 city blocks, then the forecast did a good job predicting the rain event. Going back to our 7-day accumulated precipitation forecast (Figure 2), most of Indiana is predicted to receive between 1" and over 4" of rain. However, spread over 7 days with PoPs often ranging from 30% to 70% confidence suggests these events are likely to be very localized, with high variability in precipitation amounts.

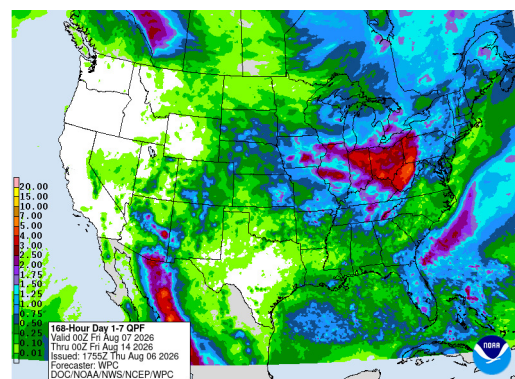


Figure 2. Accumulated precipitation amounts (in inches) for August 7-14, 2026.

Looking beyond next week, temperature outlooks for August 12-20 favor warmer-than-normal conditions in southern Indiana, near-normal temperatures across central Indiana, and below-normal conditions in northern Indiana. Over that same period, precipitation is slightly favored to be above normal.

Modified growing degree day accumulations since April 15th (Figure 3) are generally above normal (Figure 4). These departures are not significantly large, implying that MGDDs are likely only a few days ahead of schedule. If the climate outlooks hold, northern Indiana's MGDD accumulations may return to more normal levels, while southern Indiana may continue to stay several days ahead of average years.

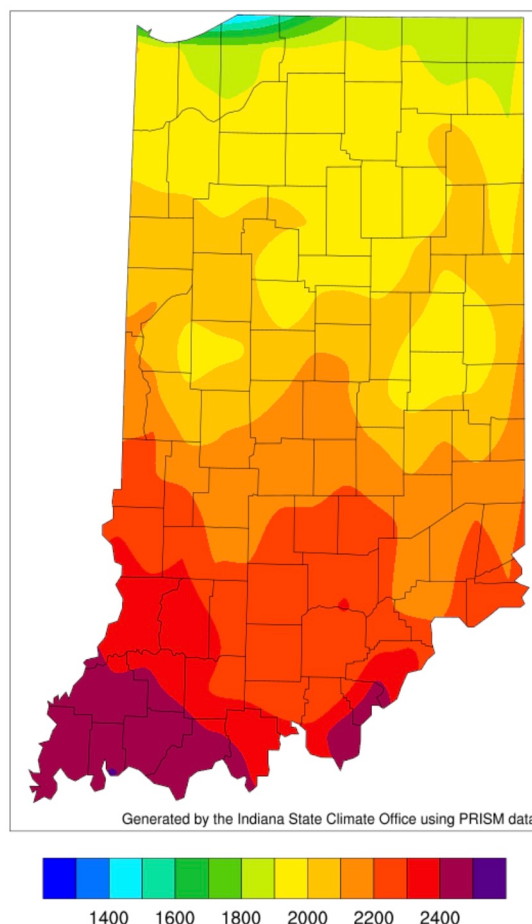


Figure 3. Accumulated modified growing degree days (50°F / 86°F) from April 15 through August 5, 2026.

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