

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 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

This week's Vegetable Crops Hotline covers a mix of leadership news, pest management, farm business, and production updates.

Welcoming Dr. Anjali Iyer-Pascuzzi

The big news this issue: Dr. Anjali Iyer-Pascuzzi officially began her role as Head of the Department of Horticulture and Landscape Architecture on July 1, 2026. A botany and plant pathology professor who has been part of the Purdue faculty for 13 years, she brings a strong research and teaching record, including the Foundation for Food and Agriculture New Innovator Award and the College of Agriculture's Outstanding Graduate Mentor and

Teaching Award. Please join us in welcoming Dr. Iyer-Pascuzzi to this new role — we're excited for her vision and leadership and wish her great success as she leads HLA forward.

Also in this issue:

- **Two-Spotted Spider Mites in High Tunnel Tomatoes** — A field report on a severe mite outbreak in a high tunnel tomato crop, with guidance on scouting, sanitation, and treatment to help growers avoid similar infestations.
- **Farm Success and Creating a Culture of Collaboration** — A look at how a culture of collaboration — built on fairness, shared goals, functionality, managing tension, and openness — contributes to family farm success.
- **Cut Flower Production Field Tours** — Purdue Extension's Cut Flower Team is hosting field tours on July 15 and August 25, offering growers a chance to see demonstration plantings and connect with other cut flower enthusiasts.
- **Dual Magnum® Herbicide Now Labeled Over-The-Top in Indiana Pumpkins** — OISC has approved expanded labeling for over-the-top application of Dual Magnum® on Indiana pumpkins, based on multi-state crop tolerance research; the article walks through what growers need to know.
- **Warm Temperatures and More Rain on the Way** — A weather outlook noting continued above-normal temperatures through mid-July, with a slight chance of another extreme heat event around July 16-20.

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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!

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Anjali Iyer-Pascuzzi Appointed Head of Purdue Horticulture and Landscape Architecture

(Maureen Manier, mmanier@purdue.edu)

WEST LAFAYETTE, Ind. — Anjali Iyer-Pascuzzi, a botany and plant pathology professor, has been named head of Purdue University's Department of Horticulture and Landscape Architecture by Bernie Engel, the Glenn W. Sample Dean of the College of Agriculture.

Iyer-Pascuzzi joined Purdue's faculty 13 years ago after earning an undergraduate degree in molecular environmental biology from the University of California, Berkeley, and a doctorate in plant genetics from Cornell University. She also completed a postdoctoral research fellowship in plant biology at Duke University.

"Dr. Iyer-Pascuzzi has an amazing career as a highly respected researcher and professor," Engel said. "I know she will inspire faculty, staff and students with her vision, determination and leadership."

Iyer-Pascuzzi has received numerous awards for research and

teaching, including the Foundation for Food and Agriculture New Innovator Award, Faculty Scholar, and the Purdue College of Agriculture Outstanding Graduate Mentor and Teaching Award.



Since coming to Purdue, Iyer-Pascuzzi has developed an internationally recognized research program focused on molecular plant pathology in tomato plants. Her laboratory team focuses on understanding how plants and microbes communicate with each other over multiple scales and in different environments — from cells to whole organs and from Earth to space.

Iyer-Pascuzzi describes her administrative philosophy as being rooted in service over authority, listening and communication over dictating, and empowerment through trust and delegation.

"I am committed to fostering a culture of innovation and collaboration that enables our faculty, staff and students to translate discovery into impact, deliver transformative teaching and push disciplinary boundaries," she said. "I am honored to lead a department that embodies the land grant mission and am energized by the opportunity to support our faculty, staff and students deliver solutions with lasting impact at the state, national and global levels."

This article was originally published on April 2, 2026, by the [College of Agriculture, Purdue University](#)

Two-spotted Spider Mites in High Tunnel Tomatoes: Know Your Pest

(Sarah Brackney, sbrackne@purdue.edu)



Figure 1. Egg, larva, and adult two-spotted spider mite (Photo by J. Obermeyer).

During a recent farm visit, I encountered one of the worst two-spotted spider mite infestations I've seen in a high tunnel tomato crop. Photos sent by the producer prior to the visit indicated that

spider mites were undoubtedly the issue, but the extent to which the mite population had exploded was shocking. Nearly all plants in three tunnels showed bronzing foliage, webbing, and premature leaf death. Fortunately, with a bit of education on the pest life cycle and tunnel sanitation, scouting guidance, and treatment recommendations, the producer is on their way to avoiding such a large outbreak in the future.



Figure 2. In advanced infestations, two-spotted spider mites may clump together in a yellow-red mass. Viewed through a hand lens (Photo by Sarah Brackney).

Life Cycle and Overwintering

Outside the high tunnel, *Tetranychus urticae* females overwinter on roadsides, in pastures, and other non-crop areas. Having a broad host range, these pests find plenty to eat as temperatures warm in the spring. Inside hot, dry high tunnels, mites find ideal conditions to develop and reproduce rapidly.

Mated females can lay both male and female eggs, whereas unmated females lay only male eggs. During warm conditions, eggs can hatch in about 3-5 days. Newly hatched 6-legged larva transition through protonymph and deutonymph stages before becoming adults and laying their own eggs. In the absence of washing rain, entire generations can be completed in 7-10 days,

with each female laying dozens to over 100 eggs, allowing populations to increase exponentially.



Figure 3. Notice the increased advancement of spider mite damage near tunnel edges (Photo by tomato producer).

Management Begins with Sanitation

Although winter mortality outdoors can be substantial, high tunnels that remain covered throughout the winter *may* provide a more favorable environment by moderating temperature extremes and reducing exposure to snow and rain. However, this has received relatively little study in Midwestern vegetable systems.

Thoroughly removing plant debris and weeds will certainly reduce overwintering populations, and partially opening tunnels to the elements *may* assist in this effort.

Early Detection is Key

Spider mite management is highly dependent upon scouting. Once these piercing, sucking pests reach high populations and their eventual extensive webbing, stippling, and leaf bronzing symptoms are evident, complete control becomes much more difficult.

Begin scouting shortly after transplanting and continue at least weekly, increasing frequency during hot, dry weather. The presence of mites is initially indicated by yellowing of lower leaves. If suspected, shake a few leaves over white paper, which causes mites to dislodge from leaves and become easier to see against the white background. Take a close look at leaf undersides with a 10-20x hand lens to check for:

- white or yellow stippling
- tiny white, yellow, or red mites
- clear spherical eggs
- cast skins
- fine webbing
- bronzing

Infestations often start in isolated “hotspots” like doorways and

tunnel ends, so early detection may allow for spot treatment before they spread throughout your tunnel.

No economic threshold is universally accepted for two-spotted spider mite in high tunnel tomatoes, so once mites are found on multiple plants and populations are increasing, intervention is justified. Don't wait for widespread webbing and bronzing.

Integrated Approaches for Control

Successful mite management can be achieved by using multiple tactics rather than miticides alone.

Keeping plants happy and healthy with adequate irrigation can slow population growth, and avoiding unnecessary broad-spectrum pesticide applications helps conserve natural predators such as predatory mites and insects. Remember that mites are not insects, so making insecticide applications will have very little, if any, effect on mites, other than potentially killing their natural enemies.

Mechanical suppression can also be helpful when infestations are detected early. For early, localized infestations, thoroughly spraying the undersides of leaves with directed water can physically remove mites and webbing.

Commercial biological control agents, particularly predatory mites such as *Phytoseiulus persimilis* can provide excellent suppression in high tunnels when released before spider mite populations become excessive. Once heavy webbing develops, however, biological control becomes much less practical. While effective, biological controls take longer to show improvement and pest population reduction. If you choose biological control, be patient. Applying miticides *after* introducing predatory mites may eliminate your control, as well.

Chemical Control

When miticides become necessary, timing and coverage are critical. Most products work best against actively feeding mites, and many provide only limited control of eggs, necessitating follow-up applications. Thorough coverage of the underside of leaves is essential, as this is where most mites reside.

According to Wenjing Guan, Clinical/Engagement Professor of Horticulture & Landscape Architecture at the Southwest Purdue Ag Center, growers should rotate products among different IRAC modes of action rather than repeatedly applying the same chemistry to reduce the likelihood of resistance development. Because labels and registrations change regularly, growers should consult current recommendations before making treatment decisions.

The [Midwest Vegetable Production Guide for Commercial Growers](#) is a comprehensive resource for selecting labeled pest control products for use on tomatoes and other crops. The online guide allows users to filter recommendations by crop and pest and includes efficacy information, rates, preharvest intervals, restricted-entry intervals, and resistance-management guidance. Keeping the online guide bookmarked makes it easy to access the

most up-to-date recommendations throughout the growing season.

Spider mites rarely become serious overnight—they simply go unnoticed until their populations have already exploded. Regular scouting, good sanitation, minimizing plant stress, conserving beneficial organisms, and intervening early remain the most effective strategies for preventing small infestations from becoming season-ending problems.

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Burst, G. (Oct 2024). Two spotted spider mites on high tunnel vegetables. *University of Maryland Extension*. Retrieved from: [UMD Extension](#)

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Farm Success and Creating a Culture of Collaboration

(Maria Marshall, mimarsha@purdue.edu)

How does culture play into the success of the family farm? Family farms can measure success and value in a number of ways, whether objective (for example, income) or subjective (for example, the perceived success of business owners; working with family members). We believe that when family businesses practice a *culture of collaboration*, they will operate more efficiently. The *culture of collaboration* is driven by five main forces: (1) fairness, (2) goals, (3) family business functionality, (4) tension, and (5) creating an environment of openness to differences.

Collaboration. Collaboration allows the concerns of both individuals and groups in a conflict to be considered. The goal of collaboration is to find a solution that satisfies both individuals' concerns. Collaboration not only allows for a unifying solution to be found, but it also creates opportunities for growth from conflict. Merging insights from different individuals or groups is another benefit of collaboration.

(1) Fairness. Researchers have found a relationship between how family businesses practice fairness in both the workplace and the household and how successfully a family business operates. They found that when fairness is practiced in the family business, it may yield positive business reputation, increased profitability, and sustainability over time.

(2) Goals. We have found that goal orientation in family

businesses influences the business's financial performance. Family farms can pursue economic and non-economic goals that are family-oriented or non-family-oriented. The goals that we studied in regard to a *culture of collaboration* were profit, positive reputation with customers, and family-related goals.

(3) Family business functionality. We created a unique scale to measure family business functionality, the *FB-BRAG*. The scale measures how often the respondent is satisfied with the following: that they can turn to people at home and work for help when something is troubling, that other in the family and business accept and support their ideas, the way others in the family and business share time together, and the outcome when a decision has to be made in favor of what is best for the family versus the family business. By responding to the following four categories, a score is calculated that falls into one of the following categories: dysfunctional, moderately dysfunctional, or highly functional.

(4) Tension. Tension and conflict in family businesses can stem from the family, the business, or a combination of both. The competition for resources between the family and the farm that exists uniquely in family business can lead to conflict. We used tension stemming from the following aspects of the family business: confusion over authority, unequal family ownership of the business, compensation levels, failure to resolve business conflicts in family members, workload distribution among family members, and competition over the scarce resources that are shared between the family and the business.

(5) Creating an environment of openness to differences. Culture can be highly influential in how family businesses operate and succeed. We believe that creating a culture that is open to differences will allow for a freer flow of ideas and innovation. One would hope that openness to new ideas and innovation would lead to positive returns, both financial and otherwise.

We found that various factors affect the two ways family businesses can measure success. Income and perceived success are both positively affected by defining fairness according to contribution, having higher levels of family functionality (measured by the *FB-BRAG*), fostering a culture that values differences of opinion, having a business that has lasted for generations, and having more employees. For family businesses that want to focus on perceived success (as a subjective measure of success), defining fairness by treating everyone the same leads to higher perceived success. A positive reputation with customers also significantly increases perceived success in the family business. For family business income (an objective measure of success), higher family business tension was associated with higher income.

Overall, a culture of collaboration within a family business leads to higher levels of both objective and subjective success. Family businesses that value fairness according to the contributions of family members, have higher family-business functionality, and foster a culture that values differences in opinion will receive higher returns. As a family business, you should strive to create a culture of collaboration to be more productive and foster a healthy work environment for family members and other

employees.

References

Wiatt, R. and Marshall, M.I. (2017). "Introducing a New Functioning Assessment for Family Businesses: The FB-BRAG". Purdue Extension EC-813-W. Available at: [Purdue Extension](#).

Cut Flower Production Field Tours

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



Purdue Extension is hosting a series of cut flower production events and field tours this summer. Join the Purdue Extension Cut Flower Team to learn about cut flower production, view demonstration plantings, and connect with fellow growers and flower enthusiasts.

Date: July 15, 2026

Time: 5:30 pm – 8:00 pm EDT

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

[Registration Link](#)

During the event, we will share observations and lessons learned from growing a variety of cut flower species and cultivars, followed by a tour of the cut-flower demonstration plots at SWPAC. Pizza and refreshments will be provided.

Date: August 25, 2026

Time: 6:00-8:00 pm EDT

Location: Honey Bird Flower Farm. Participants will meet at the parking lot at 6225 Allisonville Rd, Indianapolis, IN 46220 and walk a short distance to the farm.

[Registration Link](#)

Refreshments will be provided after the farm tour.

Additional cut flower events are held at [Purdue Fruit and Vegetable Field Day](#) on July 16, 2026, and at [Purdue Small Farm Education Field Day](#) on July 23, 2026.

This event series is supported by the Purdue University AgSEED project: [Strengthen Purdue Extension's Ability to Serve Indiana Cut Flower Farmers](#)

Dual Magnum® Herbicide Now Labeled Over-The-Top in Indiana Pumpkins

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

Days ago, the Office of the Indiana State Chemist (OISC) approved expanded label language allowing an over-the-top application of Dual Magnum® herbicide on pumpkins in Indiana. This change follows extensive research conducted in 2021 across 11 sites in 10 states to confirm jack-o'-lantern pumpkin crop tolerance to this application. Full results from that research can be found [here](#). Below, I break down the questions you might have about using Dual Magnum® herbicide over your pumpkins.

What is Dual Magnum® herbicide?

Dual Magnum® is a soil-applied, **preemergence** herbicide that provides residual control of small-seeded broadleaves and grasses as well as suppression of yellow nutsedge. This herbicide will not provide control of emerged weeds. Its active ingredient is S-metolachlor, a WSSA Group 15 herbicide. This herbicide is registered for many agronomic, fruit, and vegetable crops, with additional uses appearing on Indiana's special local need (SLN) label.

What is the new labeled use?

The new use allows for Dual Magnum® to be applied in fields of emerged pumpkins. The use rate is 0.75 to 1.33 pints per acre. Pumpkins must be at least 4 inches tall for direct-seeded crops or at least 10 to 14 days after transplanting pumpkins. As with most soil-applied herbicides, use the lower rate on coarse-textured soils and the higher rate on fine textured soils. This application can be broadcast over the entire field or applied to the row middles only. The preharvest interval remains at 60 days.

However, there are limitations:

No more than 1.33 pints of Dual Magnum® (1.27 pounds of S-metolachlor) can be applied per acre per year. This means that if you applied 1 pint per acre of Dual Magnum® at planting, you only have 0.33 pints per acre left for the over-the-top application. In future pumpkin crops, you could consider removing Dual Magnum® from the at-planting application or splitting the rate between both application timings. For example, you might apply Strategy® and Reflex® at planting and Dual Magnum® over-the-top three weeks later.

Because Dual Magnum® does not control emerged weeds, emerged weeds should be controlled prior to applying this herbicides. The idea behind this over-the-top use is to extend the residual control of your preemergence herbicide program. The goal is to make the Dual Magnum® application before your at-planting herbicide control breaks. This application method is sometimes called a "delayed-PRE", a "stacked residual", or a "layby". We want to keep the weeds controlled until the pumpkins reach their exponential growth phase. By that point in the season, a healthy pumpkin crop can quickly close canopy and outcompete most of the weeds in the field.

Is Dual Magnum® Safe for Pumpkins?

The over-the-top application of Dual Magnum® was tested in 10 states in 2021, including two locations in Indiana: Southwest Purdue Ag Center (Vincennes) and the Meigs Horticulture Research Farm (Lafayette). Applied at 1.33 pints per acre "early" (12 to 15 days after planting) or "late" (25 to 31 days after planting), Dual Magnum® caused minimal crop stunting and no reduction in pumpkin fruit number, size, or quality (Figure 1). We did observe a slight reduction in marketable fruit when we applied a 2x rate of Dual Magnum®. When we applied Dual Magnum® with 0.5 oz per acre of Sandea® and non-ionic surfactant, marketable fruit number decreased 16%. The pumpkin cultivars included in the study were 'Bayhorse Gold', 'Field Trip', 'Gladiator', 'Howden', 'Kratos', and 'Magic Lantern'. We cannot test every cultivar in all possible growing conditions. Before making farm-wide changes, confirm that this application is safe on the pumpkins you grow and in your pumpkin production system.



Figure 1. A non-treated control (left) and a plot of 'Bayhorse Gold' pumpkins receiving 1.33 pints of Dual Magnum® per acre over-the-top of the crop 14 days after planting at the Southwest Purdue Ag Center, Vincennes, IN, in 2021 (Photos by SL Meyers).

Can I Apply it With Other Herbicides?

The label does not prohibit tank-mixing Dual Magnum® with other herbicides registered for over-the-top use in pumpkins. We have only tested the tank-mixture of Dual Magnum® plus Sandea® and non-ionic surfactant, which resulted in increased crop injury (Figure 2). Likely tank-mix partners include the grass-selective herbicides (clethodim, sethoxydim), but crop tolerance has not been tested for this combination. Use extreme caution and trial a small area before adopting untested tank-mixtures on your farm.



Figure 2. Pumpkin plants from a non-treated control (top left), Dual Magnum® at 1.33 pt/a (top right), and Dual Magnum® at 1.33 pt/a plus Sandea® at 0.5 oz/a (bottom left). Herbicides were applied 28 days after planting at the Meigs Horticulture Research Farm in Lafayette, IN. Note the yellow leaves from the inclusion of Sandea® (Photos by SL Meyers).

Where Can I Find the Updated Label?

This and other Special Local Need pesticide registrations can be found on the OISC [website](#).

Is This Use Labeled in Other States?

This use of Dual Magnum® is expected to only appear on individual state 24C Special Local Need labels, which makes it difficult to keep tabs on which states allow this new use. Many states use the [National Pesticide Information Retrieval System](#), which will allow pesticide applicators to search for labels specific to their state.

Warm Temperatures and More Rain on the Way

(Beth Hall, hall556@purdue.edu)

After the brutal heatwave hit us as June transitioned to July, any future above-normal temperatures may seem normal for this time of year. The National Climate Prediction Center is indeed favoring more above-normal temperatures throughout the middle of July, so hopefully you have started acclimating to Indiana summers! The key is to hope humidity stays relatively low so that those warmer temperatures stay tolerable. There is a slight risk of another extreme heat event impacting Indiana around July 16-20, but for now, the higher risks remain to our west.

In the meantime, more precipitation is on its way for this coming weekend (Figure 1). The greatest amounts (> 2") are favored for the southern half of Indiana, but even northern counties should see at least 0.25" up to 1.25" by the end of the weekend. Since these rain events have been occurring every few days, drought has not yet returned to our state. Unfortunately, the area that may need it most to stay drought-free is northeastern Indiana – where little rain is expected. Over the past 30 days, northeastern and eastern Indiana have seen only about 75% of what they would have historically during the same period (Figure 2). To be one of the factors supporting the downgrading of this region to *Abnormally Dry* (i.e., category D0 of the U.S. Drought Monitor), precipitation deficits should be below the 30th percentile of normal across multiple time periods (e.g., the past 30, 60, or 90 days).

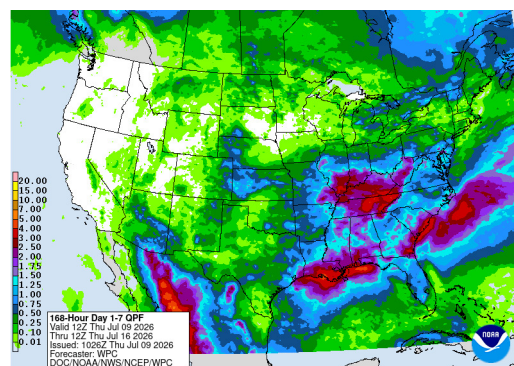


Figure 1. Forecasted 7-day precipitation totals for July 9-16, 2026.

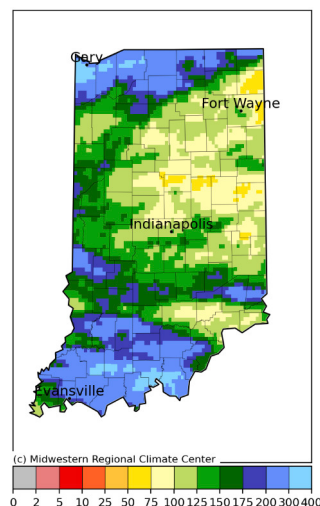


Figure 2. Accumulated precipitation presented as the percent of what normally fell during the period June 9 to July 8 for the years 1991-2020.

Modified growing degree-day accumulations and departures since April 15 are slightly above normal (Figure 3), with most locations 3-4 days ahead of the 1991-2020 average (Figure 4). Southern Indiana is a bit further ahead than that (e.g., 5-6 days). As temperatures remain warmer than normal, accumulations are unlikely to slow, especially if daily high temperatures stay in the mid-80s.

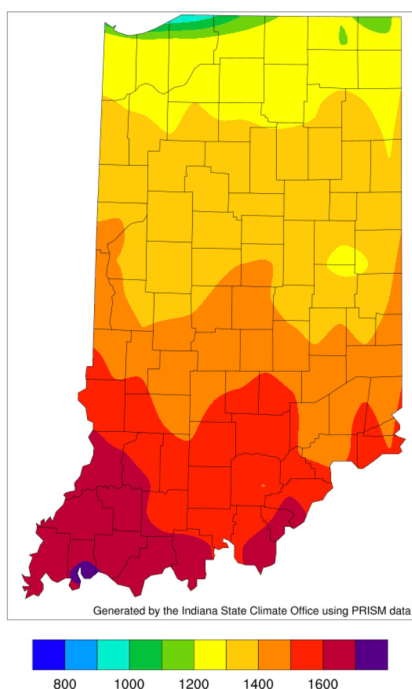


Figure 3. Accumulated modified (50°F/86°F) growing degree days from April 15 through July 7, 2026.

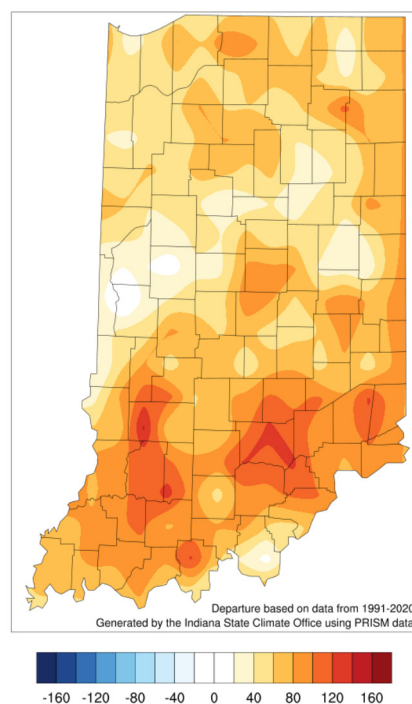


Figure 4. Accumulated modified (50°F/86°F) growing degree days from April 15 through July 7, 2026, presented as the departure from the 1991-2020 average.

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