

THE PURDUE LANDSCAPE REPORT

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A chill is in the air – online tools for monitoring and climatology

(Beth Hall, hall556@purdue.edu)

While our daytime highs across the state were in the upper 70s, our nighttime lows have been in the 30s (even into the upper 20s) in some places. This could get us thinking about the timing of the first frost and freeze events of the season, when the 7-day average 4-inch soil temperature falls before 50°F, and the viability of our home's furnace. The [Midwestern Regional Climate Center](#) (MRCC) can help provide historical climatologies of the first two of those three. It keeps a positive thought for the third item!

The typical date of the first freeze event in your area can be explored using the [MRCC's Freeze Date Tool](#) (Figure 1). This tool uses county data to illustrate the earliest, average, latest, and other climatological timing of the first fall and last spring dates of when temperature fell below or above certain temperature thresholds, respectively. Users can choose temperature values ranging from 20°F to 40°F and then mouse over their county of interest to see historically when those temperature thresholds were crossed. Clicking on a county will take the user to a new screen that will show the historical dates from 1950-2023 for all temperature threshold options. Since the date of the last spring freeze and first fall freeze can often be used to define the length of the growing season, users can select the "Growing Season Length" tab of the tool to see how the growing season length has varied for their location over the years using user-defined temperature thresholds.

Another online tool users may find interesting is the [MRCC's Soil Temperature Climatology Tool](#). (Figure 2). Using gridded data from 1991-2020, users can identify dates when the 7-day average 4-inch soil temperature either cools below (e.g., late fall) or warms above (e.g., spring) particular temperature thresholds. Knowing the climatology of these dates can provide decision support for agricultural activities such as planting and nutrient

applications as well as other soil temperature-dependent events. Users can also leverage this tool to explore the typical 4-inch soil temperature values on a particular date. Temperature thresholds that users can select range from 30°F to 60°F.

Indiana seems to be back in a relatively dry pattern and unfortunately things look like they'll stay that way for a while. This has led to the majority of Indiana being classified as at least Abnormally Dry (D0) to some areas in northwest Indiana in Severe Drought (D2) according to the U.S. Drought Monitor (Figure 3). The 7-day precipitation forecast (through October 24th) is predicting little-to-no rain whereas the 8-to-14-day climate outlooks (October 24th-30th) are slightly favoring above-normal precipitation — which is more likely to occur near the end of that period (e.g., end of October) rather than earlier. Temperatures are expected to warm up soon and stay above-normal for the next few weeks.

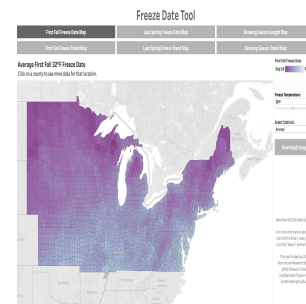


Figure 1. Screenshot of MRCC's Freeze Date Tool main page.

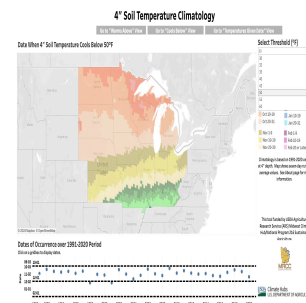


Figure 2. Screenshot of MRCC's 4-inch Soil Temperature Climatology Tool main page.

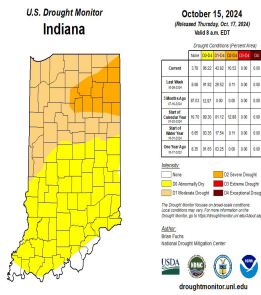


Figure 3. U.S. Drought Monitor conditions through October 15, 2024.

Non-native armored scales

(Alicia Kelley, ajkelley@purdue.edu)

Recently, white prunicola scales (*Pseudaulacaspis prunicola*) were detected on *Prunus* during a [DNR nursery inspection](#). This is a significant scale pest of woody ornamentals and fruit trees in eastern states, but it is currently not established in Indiana. It is primarily a pest of cherry, lilac, and privet species. Its total reported host range spans 19 families and 28 genera, including common landscape species such as boxwood, holly, crabapple, and magnolia ([ScaleNet](#)). This would be a detrimental pest if it became widespread in Indiana, so it is worth familiarizing yourself with how to identify it.

Biology

White prunicola scale is an armored scale, which means the adults produce a flat, waxy outer coating or “shell”. Females remain immobile under their shells for the duration of their lifespan. At maturity, the winged males crawl out of their pupal case and find a female to mate with. Each female lays approximately 30-75 eggs ([Hanks and Denno 1993](#)). When eggs hatch, the nymphs are called “crawlers” because they are very mobile and will move around the plant to find a place to feed. This is the stage that is most vulnerable to pesticide control; it is also when the scales are most likely to spread to new host plants. They typically have between two or three generations in temperate climates.

Identification

Covers of mature females are slightly convex, round, approximately 1.5-2.5 mm in length, and white with a dark yellow to brown spot in the center (Fig. 1). Male covers are elongate, white, and have a yellow spot on one end (Fig. 2).

The closely related species, *P. pentagona*, or the white peach scale, has identical external morphology to the white prunicola scale. Where both of these species occur, they are frequently confused with one another. In general, *P. pentagona* is distributed in tropical and subtropical climates, while *P. prunicola* is common in temperate climates, although there is overlap in their range.

Host damage

White prunicola scales colonize the branches of their host plants.

Infestations resemble a white dusting or snow on the bark, or can even look like a powdery fungal infection (Figs. 3, 4). Infested plants suffer from stunting and leaf drop, and branch dieback or whole tree death can occur in severe cases.



Fig. 1. Adult female cover of *P. prunicola*. Photo: John. A. Davidson, Univ. Md, College Pk, Bugwood.org.



Fig 2. Adult *P. pentagona*. Note the elongate males. Photo: Ján Kollár, ForestPests.eu.



Fig 3. *P. pentagona* infestation. Photo: Milan Zúbrik, ForestPests.eu.



Fig. 4. *P. prunicola* infestation on lilac. Photo: Brian Kunkel, University of Delaware.

Management

Armored scales are challenging to control due to their protective waxy shell, which protects them from pesticides. Targeting the crawler stage with chemical sprays achieves the best control, so monitoring for crawler emergence is essential to

time these sprays correctly. However, many of these materials harm the beneficial insects that are important to keep scale populations in check. There are numerous natural enemies that attack scales, such as ladybeetles and parasitoid wasps, and killing them with conventional pesticides can worsen scale problems. Horticultural oils are recommended because they do not harm natural enemies. In addition, horticultural oils have some efficacy against adult armored scales.

For a more in-depth review of scale biology and management, see Purdue Entomology publication E-29: [Scale Insects on Shade Trees and Shrubs](#) by Cliff Sadof.

Report it!

As mentioned at the beginning, white prunicola scale is not known to be established in Indiana. If you believe you have found this scale, please submit a sample to the [Purdue Plant & Pest Diagnostic Lab](#). You can also submit a report on Eddmaps.org or call 1-866-NO EXOTIC (1-866-663-9684).

Don't Miss the 2024 Purdue Turf and Landscape Seminar

(Kyle Daniel, daniel38@purdue.edu)



The 2024 Purdue Turf and Landscape Seminar will be held November 20 and 21 on campus in West Lafayette.

The [2024 Purdue Turf and Landscape Seminar](#) will be held on November 20th and 21st at the W.H. Daniel Turfgrass Research and Diagnostic Center in West Lafayette, IN. This event is designed for intermediate and advanced turf and landscape professionals, providing them with the latest technology for managing turf and landscape systems, and to maintain their pesticide applicators licenses. Two full days of CCH earning presentations delivered by faculty and staff from Purdue University and the Office of the Indiana State Chemists. Registered attendees will be provided with lunch on day two of the seminar.

Information about the seminar can be found here: <https://www.mrtf.org/event/turf-and-landscape-seminar-2/>

To register for the seminar click here: <https://web.cvent.com/event/ebc7d7d9-040f-4bf6-bbdf-d3fe8cc3306f/regPage:1d25bc46-9bed-4220-94c0-d1e995f49888?RefId=web&rp=ce000c60-1315-4403-8941-583b5c0948e1>

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