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THE PURDUE LANDSCAPE REPORT

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Purdue Turf and Landscape Field Day

(Kyle Daniel, daniel38@purdue.edu)

Join us at the Purdue Turf and Landscape Field Day on July 26th!

The Purdue Turf and Landscape Field Day is an annual one-day event with the objective of providing professional turf and landscape managers exposure and educational opportunities with the latest research and technical resources. The Field Day features research tours, talks on current topics, and a tradeshow with over 40 exhibitors displaying equipment and turf and landscape products.

Pre-Registration ends July 18th! Be sure to register before then to take advantage of the discounted price and guarantee your lunch.

Click here to register:
https://web.cvent.com/event/e8625a61-54b1-4a2e-b586-0f63efbc362b/regPage:4f99cb55-8d74-4b86-95d5-6d6e41c01132?RefId=email_attend&rp=ffd7262d-d617-4b45-ad4b-1b1d339ac8bb

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Why are the Japanese beetles running late this year?

(Cliff Sadof, csadof@purdue.edu)

Nothing heralds summer like the hum of Japanese beetles ravenously descending on a flower garden. Cool weather this spring has slowed emergence of adults from the soil. Heavy spring rains early followed by relatively drier weather in late June, may have trapped adult Japanese beetles under a crusty layer of hardened soil. Due to their large numbers in many parts of Indiana last year, they are very likely just waiting for a good rain to soften the surface, so they can dig themselves into the light of day and on to your flowers. So, if we get a little more rain by the time this article comes out, we are likely to be awash in adult beetles.

Early in the year, isolated Japanese beetles are often found on plants. This beetle is stretching its finger-like antenna after landing on a dahlia leaf as it tries to figure out if it is tasty enough to eat. CLICK IMAGE FOR MOVIE CLIP OF BEETLE

Weather is only part of what makes Japanese beetles predictably unpredictable. Beneficial organisms including fungi, microsporidia, and parasitic wasps also act different life stages of Japanese beetles. Japanese beetles have been the target of several national programs to release these beneficial organisms to reduce beetle populations. Favorable conditions for these beneficials can help reduce the local abundance of grubs and beetles.

Figure 1. Adult Japanese beetles feeding on leaves and flowers of oak leaf hydrangea.

Figure 2. Canna leaves and flowers are readily attacked and consumed by adult Japanese beetles.

Although killing grubs will reduce the number of beetles, the small size of lawns and the long flight range of makes it unlikely for your grub control program to reduce defoliation. In experiments conducted in my lab over 20 years ago, we found adult beetles can easily fly a kilometer (0.66 miles) in a single day. With adults living for several weeks, it is easy to image beetles traveling long distances from untreated lawns to plants on your property.

Life cycle of Japanese beetles: As the weather warms in the spring larvae (aka white grubs) move closer to the surface and begin feeding on turf roots. In May they enter a pupal stage and stop feeding. In June they typically emerge from the soil as adults. Adults fly in summer when they feed on flowers and leaves. In late July and early August adults lay eggs into the turfgrass. White grubs hatch from eggs and feed on the roots until frost when the larvae begin dig deeper into the soil to avoid killing temperatures.

What to do about Japanese beetles? There are quite a few insecticides that can be used to protect plants against Japanese beetle adults. It can be difficult to kill the beetles without harming pollinators that visit flowers because most insecticides that kill beetles will also kill pollinators. One of the best ways to protect pollinators and your flowers is reduce the number of times you spray your flowers. Rather than apply an insecticide when you see the first beetle, wait until you see some beetles starting to feed. Then wait until more enough beetles arrive before you apply your second spray. This should reduce the number sprays during the spray period.

For a list of products available to control Japanese beetles see:

Japanese Beetles in the Urban Landscape
https://extension.entm.purdue.edu/publications/E-75/E-75.html

For tips on controlling white grubs and a nice illustration of Japanese beetle biology please see: Managing Whitegrubs in Turfgrass
https://extension.entm.purdue.edu/publications/E-271/E-271.html

The Annual Drought Article

(Kyle Daniel, daniel38@purdue.edu)

About ten years ago I was listening to a talk by a climatologist. She indicated that data is trending towards more floods and more droughts in the Midwest. At first listen this made absolutely no sense. How can a place simultaneously have more flooding and more drought? Well, if you've paid attention over the last several years, this is exactly what we've experienced. In fact, the Purdue Landscape Report has an article from earlier in the year addressing the flooding conditions that most of the state experienced in the spring. Those days seem long ago right now as much of the state is in abnormally dry or moderate drought conditions (Fig. 1). As of July 7th, 94% of Indiana was in either abnormally dry or moderate drought, with 40% of the western counties in moderate drought.

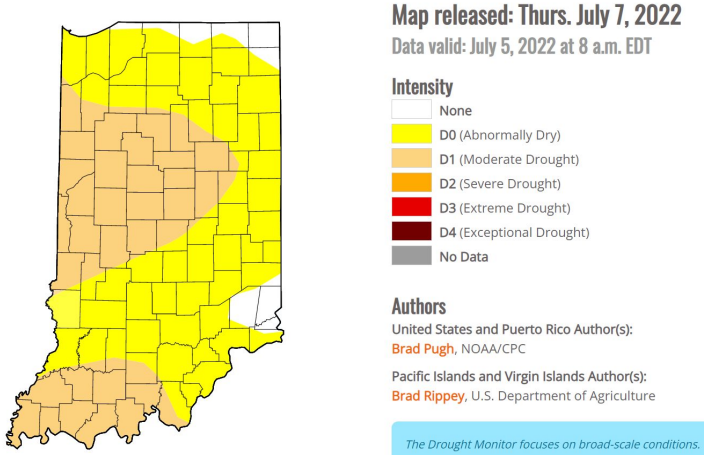

Figure 1. The July 7th, 2022 drought monitor update. Map courtesy of the National Drought Mitigation Center. https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?IN

Some parts of the state have received much needed rainfall since the last drought update, but other locations haven't received much or any. Being in a water deficit right now is interesting due to the amount of rainfall that occurred in the early part of the growing season.

Remember some key steps concerning your landscape during extreme dry periods:

- Don't wait until leaves begin dropping to start watering.
- Trees should receive the 5+5 rule.
    - 5 gallons, plus 5 gallons per caliper inch.
- Ideally watering should occur in the early morning to prevent foliar diseases.
- Mulching to 3" can conserve moisture and reduce temperature in the upper root zone.
- Watering during dry conditions will help prevent future insect, disease, and other stress issues going into the fall and the following year. In fact, plants going into the winter that are stressed due to water deficiency will reduce the cold hardiness and therefore will be more likely to suffer cold injury and/or death.
- If a plant isn't receiving enough water, the amount of nutrient uptake will not be sufficient and will experience deficiency from nutrients the following year.

The Purdue Landscape Report has many articles that address drought and watering issues. Some of those links are provided below.

Is it Time for Drought Proof Plants in the Midwest?:
https://www.purduelandscapereport.org/article/4727/

Drought Resources:
https://www.purduelandscapereport.org/resource/drought/

Trees in Peril:
https://www.purduelandscapereport.org/article/trees-in-peril-2/

How Do Trees Use Water:
https://www.purduelandscapereport.org/article/how-do-trees-use-water/

Summer Tree Care:
https://www.purduelandscapereport.org/article/summer-tree-care/

Landscape Plants are Struggling Due to Precipitation Extremes:
https://www.purduelandscapereport.org/article/feast-or-famine-landscape-plants-are-struggling-due-to-precipitation-extremes/

Urban Trees and Climate Change:
https://www.purduelandscapereport.org/article/urban-trees-and-climate-change/

Dog Days of Summer:
https://www.purduelandscapereport.org/article/dog-days-of-summer-barking-early-this-year/

What is happening to the Weeping Willows?

(John Bonkowski, jbonkows@purdue.edu)

While recent temperatures have been moderate in many parts of the state, rainfall has been lacking. (Figure 1). There are chasms in the clay of my backyard that will swallow my kids and dogs whole. While I am not truly worried about the safety of my smaller family members, a lot of the plants that are not in shade are stressed. At the Purdue Plant and Pest Diagnostic Laboratory, we have received quite a few calls, emails, and samples about trees in decline. Trees that are already stressed, infected by a pathogen, or are infested by wood-boring insects will be showing their true colors in these drought conditions: chlorosis, leaf loss, and limb dieback.

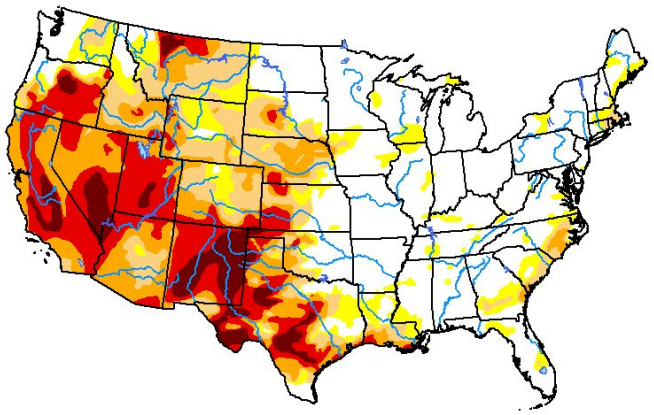

Figure 1: US Drought Monitor Map for May 31 to July 5, 2022
Credit: National Drought Mitigation Center, University of Nebraska-Lincoln
https://droughtmonitor.unl.edu/CurrentMap.aspx

Figure 2: Willow showing yellowing of older leaves on lower branches. Credit: PPDL

This month, one group of trees limps along to the top of our list of

plants under stress due to lack of water: Willows (Figure 2). *Salix* spp. are not great landscape trees in general unless planted in locations that retain water. While they grow quickly and can appear beautiful for a number of years, when the soil becomes dry, these trees can very quickly develop limb dieback or cankers (Figure 3 and 4). In many cases, cankers become more obvious during these periods of stress because they were already present before the drought stress occurs (Figure 5). Damaged limbs die faster and multiple species of canker-causing fungi have been found to move faster in drought stressed wood of some tree species. We have found the fungi *Cytospora*, *Botryosphaeria*, and *Colletotrichum* associated with cankers on recent branch submissions to the lab.

Figure 3: Willow tree showing decline symptoms. Credit: PPDL

Figure 4: Limb dieback and tree decline of willow in the landscape. Credit: Lindsey Purcell

Figure 5: Branch dieback developing on stressed willow trees. Credit: PPDL

Thinning of the branches, cracks/splits in the bark, and black lesions on green stems can indicate the presence of a canker which should be pruned out and destroyed, if at all possible. Supplemental irrigation may be required during dry spells for trees that are water loving or, at least, drought intolerant. Fungicides are not effective for these fungal pathogens that live inside the wood, where fungicides can’t penetrate. In most cases larger willow trees will not die because of these problems but they may suffer significant branch loss and may become disfigured. In some cases very young trees or shrub type willows may be killed.