Issue: 20-12
July 21, 2020

THE PURDUE LANDSCAPE REPORT

In This Issue

Purdue Landscape Report Team Begins New Virtual Series

(Kyle Daniel, daniel38@purdue.edu)

The Purdue Landscape Report Team will begin a new, free online series that will start tomorrow (July 22) and follow the day after the newsletter every two weeks at noon Eastern time zone. The topics and speakers will vary each session, so check out the newsletter every two weeks to find out what follows the next day. You'll have three ways to attend each session, which you can find below. During each session you'll be able to ask questions to the speakers on Zoom and Facebook Live.

We look forward to starting this series and hope you will join us tomorrow at noon!

Tomorrow we'll be talking about the following:

Cliff Sadof will be discussing the control of caterpillars.

Tom Creswell will be covering problems with weeping cherries that have been sent to the diagnostic lab this year.

Kyle Daniel will be presenting split and full applications of preemergence herbicides and efficacy of applying after the spring germination window.

To join the chat on Zoom:

https://purdueextension.zoom.us/j/98937266342

To join the chat via telephone:

US: +1 312 626 6799

To join the chat on Facebook:

https://www.facebook.com/PurdueLandscapeReport

What's a tiny "pot" doing on that plant?

(Elizabeth Barnes, barne175@purdue.edu)

Now that we've reach midsummer, many people tending to small plants and bushes may notice small odd round grey objects attached to their plants that are made by potter wasps. Do you need to do anything about them? Do these nests help or harm your plants? And are they dangerous to people?

What do they look like?

You are more likely to notice the nests of potter wasps than the adults. Potter wasp nests often look, like the name suggests, like a small grey pot (figure 1). They are rounded with a small opening that looks like the neck of a vase and are about the size of a cherry tomato. These wasps will attach their nests to many different surfaces but tend to prefer plant and bush stems. Potter wasp nests are often found hidden behind foliage in bushes.

Potter wasp adults come in a variety of colors but all of them look like small hornets. The most common species found in Indiana are mostly black with pale yellow bands around their abdomen (figure 2).

Figure 1. Close up of a potter wasp nest attached to the stem of a house plant. Photo by Elizabeth Barnes, Department of Entomology, Purdue University.

Figure 2. An adult potter wasp resting. This is just one of many different species of potter wasps. Photo by Fyn Kynd on flickr

How do they help plants?

Each “pot” that the wasps build is a tiny nursery for a single wasp. Adult potter wasps lay a single egg in each “pot” and then fill it with paralyzed caterpillars and small beetle larvae. When the wasp egg hatches it has all the food it needs to develop into an adult contained in the pot. Each wasp does a small part to keep down the number of caterpillars in the landscape which can reduce the amount of leaf damage on nearby plants.

Will they hurt me?

Probably not! Potter wasps don’t defend their nests and are generally not aggressive. Unless you actively try to bother them they will probably not bother you. If you need to remove one of their nests, you can simply pull it off the plant or object that it’s attached to. However, since they help with pest control, you may want to either leave the nest be or relocate it to a different section of the landscape.

Does anything else look like the “pots”?

Although the “pots” have a very distinct shape there are a few other things that could be confused with them at first glance. Mantis egg masses (ootheca) and some types of galls are both about the same size as potter wasp nests and also often grey. However, they both lack the vase neck-like opening that potter wasp nests have.

What should I do if I see one?

Let it be! Since these wasps rarely sting and help keep caterpillar populations down leave them alone so that they can continue to act as biocontrol agents. If you think you’ve seen a potter wasp or one of their nests and would like help identifying it, take a picture and either upload it to a community science project like iNaturalist or send a picture to the author of this article.

Black Canker of Willow

(John Bonkowski, jbonkows@purdue.edu)

Figure 1: Leaf spotting and stem lesions on willow suspected to be caused by black canker. Image Credit: PPDL

Willows (*Salix spp*.) can be beautiful additions to the landscape. These iconic trees can be found growing naturally in river bottoms, along ponds, rivers, and streams; all areas with consistently moist soil. In the landscape, where soil moisture is much more variable, willows can be stressed by drought, increasing damage from a number of canker diseases to which they are already very susceptible, including *Botryosphaeria*, *Cytospora*, and *Phomopsis*. In addition to these common fungal diseases, we’ve recently seen more cases of black canker disease, caused by the fungus *Glomerella miyabeana*.

Black canker is found on willows throughout the US and Europe. Symptoms often begin in early spring as leaf spotting (Figure 1) which expands to cover the leaf and petiole, causing the leaves to droop and wilt. Once reaching the petiole, the fungus will spread into the twig where it creates a black canker on the stem. Cankers may be limited or expand to create large black patches on the stems, depending on tree resistance and whether it is stressed (Figure 2, 3). In resistant plants, cankers may be restricted to smaller stems and twigs, but in species that are more susceptible, cankers can be found on larger stems and lead to stem girdling and branch dieback (Figure 4, 5). As the tree grows, the cankered tissue will not expand with the rest of the branches and a crack will form around the edge of the canker.

Figure 2: Suspected black canker infection on twigs of a willow tree. Image Credit: PPDL

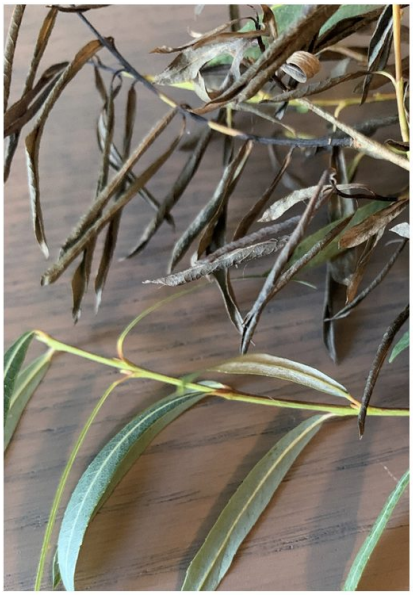

Figure 3: Close up image of stems infected by Glomerella miyabeana. Bottom limb is healthy, while the upper limb shows blighted leaves and the canker spreading into the stem. Image Credit: PPDL

Figure 4: Willow with dieback in the lower canopy caused by black canker. Image Credit: PPDL

Figure 5: View of stems infected by Glomerella miyabeana. Image Credit: PPDL

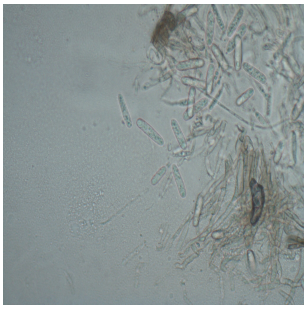

Figure 6: Microscopic image of conidia (asexual spores) of Glomerella miyabeana, pulled from an infected will stem.
Image Credit: PPDL

The infection begins during warm and humid weather in the early spring. The fungus produces asexual and sexual spores from last year's cankers (Figure 6), which serve as the primary inoculum for the season. In mid-to-late summer the fungus sporulates on newly infected wood, producing pink clusters of asexual spores that are spread from within the tree or to other nearby trees by rain splash and driving wind, creating secondary infections and increasing disease severity.

Most canker diseases, including black canker, are more severe on stressed willow trees. This summer has produced periods of drought and high temperatures as discussed in Rosie Lerner's article in the last issue: https://www.purduelandscapereport.org/article/dog-days-of-summer-barking-early-this-year/). Willows, in particular, are going to suffer more than other plants in these dry conditions and can increase the likelihood of developing a canker disease. We have been seeing more instances of black canker at the PPDL in the last two years than we have previously, possibly as a result of more frequent environmental stress. It is important to keep the plant as happy as possible to stave off infection by doing the following:

– Irrigate during drought periods and high heat

– Moderate fertilization to improve plant vigor (avoid applications

during drought or after approximately July 1)

– Avoid the use of susceptible varieties and species (Table 1)

– Use of recommended pruning techniques

– Avoid unnecessary wounding

Management of black canker using fungicides has not been well researched, but pruning out affected dead and infected wood will remove the source of primary inoculum for the following year. Like other canker diseases, it is best to prune 6-8 or more inches below visible discoloration caused by the canker and remove or burn the affected tissue.

For more information concerning other canker causing fungi and their management, please see Janna Beckerman's article: https://www.purduelandscapereport.org/article/opportunistic-canker-pathogens/)

Table 1: List of willow species and their relative susceptibility and tolerance to black canker. Adapted from Sinclair and Lyon, 2005, Diseases of Trees and Shrubs

Scientific Name	Common Name	Susceptibility
Salix amygdaloides	peachleaf willow	Susceptible
Salix alba (and subspecies)	white willow	Susceptible
Salix aurita	eared willow	Susceptible
Salix bebbiana	Bebb willow	Susceptible
Salix capraea	goat willow	Susceptible
Salix cordata	heartleaf willow	Susceptible
Salix discolor	pussy willow	Susceptible
Salix fragilis	crack willow	Susceptible
Salix lucida	shining willow	Susceptible
Salix x mollissima	sharp stipule willow	Susceptible
Salix myrsinifolia	dark-leaf willow	Susceptible
Salix nigra	black willow	Susceptible
Salix x pendulina	Niobe willow	Susceptible
Salix sericea	silky willow	Susceptible
Salix alba var. *tristis*	white willow	Resistant or Tolerant
Salix alba var. *caerulea*	cricket-bat willow	Resistant or Tolerant
Salix babylonica	weeping willow	Resistant or Tolerant
Salix pentandra	bay-leaved willow	Resistant or Tolerant
Salix purpurea	purple willow	Resistant or Tolerant
Salix triandra	almond-leaf willow	Resistant or Tolerant
Salix viminals	basket willow	Resistant or Tolerant

Single or Split Application of Preemergence Herbicides: Controlling while extending control

(Kyle Daniel, daniel38@purdue.edu)

Preemergence herbicides should be the primary tool for a landscape weed control program. The primary reasons to develop a strong preemergence herbicide program are 1) Decreased phytotoxicity (plant damage) to landscape plants and 2) Reducing the amount of times required to visit a property. With the difficulty of attracting quality labor in our industry, time could be spent on other projects instead of repeatedly visiting a property to apply postemergence herbicides. Preemergence herbicides won't eliminate the need for postemergence applications, but they will greatly reduce the number of weeds present for an extended period of time during the busy season.

A question I receive multiple times per year covers multiple iterations of the efficacy (how well the product works) of a preemergence that is applied after the spring germination window. Many landscape installations will occur throughout the season, so there are multiple occasions where the landscape beds won't even be created during the spring germination period. My answer to whether this will work is typically, 'Probably'. That's not a great answer, but the knowledge is limited in how much of a difference an application after the germination window will make in a landscape.

A trial that addresses these issues began earlier this year. This trial address both the efficacy of a split application and determining the *correct* answer as to the efficacy of applying a preemergence herbicide after the spring germination window.

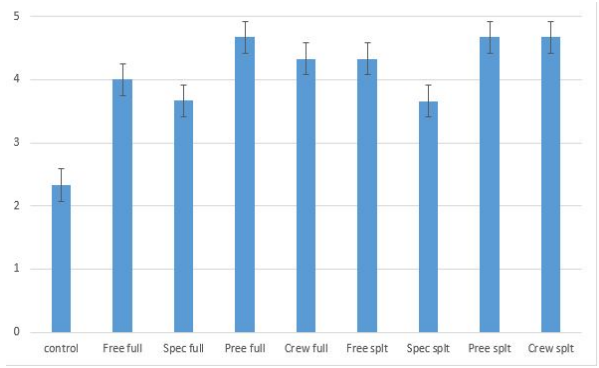

Figure 1. Effects of four herbicides (Freehand, Specticle G, Preen, and Crew) on efficacy of late application and full vs. split applications.

This study contains five treatments: Control (no herbicide), Freehand (dimethenamid-P and pendimethalin), Specticle G (indaziflam), Preen (trifluarlin), and Crew (isoxaben and dithiopyr). Each of these had a full rate and a half rate, which represents the efficacy of the full and split applications. Plots were cultivated the week of May 25th, with herbicide treatments applied June 5nd. The split applications were reapplied on June 26th. Data were taken at June 26th (no significant differences) and on July 7th (differences between all herbicides vs. control and no differences between split and full applications). This trial will be repeated in 2021 to evaluate the validity of these data.

Results of this trial suggests two major recommendations that landscapers can apply to their properties.

- A split application (half rate followed by half rate three weeks later) controls weeds as effectively as the full rate, while providing extended control over the full rate.
- If you miss the spring germination window of summer annuals or install a landscape after the spring window, applying preemergence herbicides will still provide significant control.

Pictures from all the plots from the trial are below to give you an idea of the amount of control from each treatment.

If you would like to discuss your weed management plan or if you have general landscape questions, don't hesitate to reach out to me at daniel38@purdue.edu

All of the articles related to weeds can be found on our site here: https://www.purduelandscapereport.org/?s=weed

Control-June 26 (3 weeks after treatments)

Figure 2. Control (no herbicide) three weeks after treatments.

Control-July 7th (32 days after treatment)

Figure 3. Control (no herbicide) 32 days after treatment.

Freehand-Full, July 7th (32 days after treatment)

Figure 4. Freehand, full rate, 32 days after treatment.

Freehand-Split, July 7th (32 days after treatment)

Figure 5. Freehand, split rate, 32 days after treatment.

Preen-Full (32 days after treatment)

Figure 6. Preen, full rate, 32 days after treatment.

Preen-Split (32 days after treatment)

Figure 7. Preen, split rate, 32 days after treatment.

Specticle G-Full (32 days after treatment)

Figure 8. Specticle G, full rate, 32 days after treatment.

Specticle G-Split (32 days after treatment)

Figure 9. Specticle G, split rate, 32 days after treatment.

Crew-Full, (32 days after treatment)

Figure 10. Crew, full rate, 32 days after treatment.

Crew-Split, (32 days after treatment)

Figure 11. Crew, split rate, 32 days after treatment.

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