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THE PURDUE LANDSCAPE REPORT

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Pseudomonas syringae pv. syringae on lilac and other woody ornamentals.

(Janna Beckerman, jbeckerm@purdue.edu)

Pseudomonas syringae pv. syringae is an opportunistic bacterial pathogen that attacks a diversity of woody ornamental plants. The bacteria cause flower blights, cankers, shoot blights, and diebacks.

Symptoms

Symptoms often begin as expanding leaf spots. On lilac and viburnum, small spots expand to irregularly shaped brown lesions with yellow halos (Fig. 1). For most other hosts (cherry, pear, basswood, dogwood, hydrangea, high bush-cranberry, mountainash), infected leaves turn reddish brown or black and usually remain on the branch after they die (Fig. 2). As the bacteria spread into woody tissue, dark, sunken sections of the stem (cankers) expand, working their way back toward the trunk from infected leaves and flowers. Leaves attached to a cankered branch will wilt while the tip of the affected branch curls and droops like a shepherd's crook (Fig. 3). Cloudy droplets of sticky fluid (ooze) may accumulate on leaf tips, leaf surfaces, stems, and even infected fruit.



Figure 1. Bacterial leaf spots are often angular with chlorotic halos, as seen on this high bush-cranberry. Photo by Janna Beckerman.



Figure 2. Infected flowers result in blossom blast. The continued growth of the bacteria can result in cankering and blight. Photo by George Sundin.



Figure 3. Bacterial blight is a common scourge to common lilac. Using resistant varieties is the best way to protect against the disease. Photo by Janna Beckerman.

Life Cycle

The bacteria overwinter and persist in cankers, along with asymptomatic bud and twig tissue. In presence of water and warming temperatures, bacteria multiply and may ooze from infected tissue. Wind-driven rain, insect, or mechanical pruning spread *Pseudomonas*. Bacteria enter the plant through flowers or injury.

Management

All bacterial pathogens, including *Pseudomonas,* invade flowers or wounded tissue. To prevent or minimize the risk of infection:



Figure 4. Freeze damage from a combination of late frost and over-fertilized plants predisposes lilac to bacterial blight.

- $\circ~$ Use disease-free plants and budwood.
- Prune in the late winter/early spring.
- When pruning, do not mix pruning to shape woody ornamentals with pruning to manage disease.
- When pruning to remove infected shoots, be sure to disinfect shears between plants.
- Minimize overhead irrigation when possible to minimize splashing and pathogen spread.
- Avoid over-fertilization practices that drive excess succulent growth.
- Avoid late season fertilization practices that prevent plants from achieving timely dormancy and promote freeze damage and/or winter injury (Fig. 4).
- $\circ~$ Choose zone appropriate plants to avoid freeze damage

and/or winter injury.

 Choose disease resistant plants, when available. The following lilac varieties were found to be resistant over a four-year trial: Donald Wyman, Royalty, Superba, Miss Kim, Edmund Boisier, Victor Lemoine, Dwarf Korean, Mme. Antoine Buchner Isabella, Sensation, Anna Amhof, Krasavitska Moskvy, Michael Buchner, and Alphonse Lavallée.

Foliar sprays of some copper-based bactericides (e.g., Camelot, Kocide, and Nu-Cop) were found to reduce disease incidence in trials on lilac (Vey and Palmer, 2018). Avoid using copper under cool, humid conditions to reduce the risk of phytotoxicity and damaging plants. Copper resistant populations of *Pseudomonas syringae* have been reported in other crops (vegetables, stone fruit). Products containing acibenzolar have provided inconsistent control in multiple trials but is labeled for use. Use of quaternaryammonium disinfestants (KleenGrow) have been found to reduce bacterial populations and disease incidence and should be considered as part of any rotation with copper products. Due to the diversity of copper products, be sure to test for phytotoxicity issues prior to large scale treatment of crops.

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Re-mulch Your Trees

(Ben McCallister, bmccalli@purdue.edu)

It's that wonderful time of year again where temps are rising, life is coming back into the landscape, and people are thinking about how to improve the urban canopy around them. Well, maybe not that specifically, but we have the urge to plant trees. Whether it's for Earth Day or Arbor Day or you just enjoy the act of planting, one of the hot topics is getting trees into the ground. That's not what I'm here to talk about today, though.

As much as I love assisting communities with their greening efforts, getting the right tree in the right place, planting is not the only way to help grow the canopy around you. One of the topics that can be neglected is maintaining trees from previous plantings. Often, trees get placed in the ground, they are mulched, watered, and staked, then left on their own to make it in the world. New trees can take about 2-5 years to become established in their new homes and they could require assistance from us for much longer to thrive. Luckily, there is a simple activity to do assist trees, young and old.

Just like when they were placed in the ground, trees still benefit from mulch. Reapplying mulch benefits trees in multiple ways. It's a natural way to prevent weeds and grass competing in the root zone and adds a protective buffer against mechanical damage from mowers and weed eaters. It will also help to maintain moisture levels in the soil as we transition into the hotter summer months. When applying new mulch, don't worry about removing the old layer. It's working its way into the soil around the tree adding organic matter, improving the quality of the soil.



Figure 1: Volcano mulching around the base of the tree. Photo credit Lindsey Purcell.



Figure 2: Correct application of mulch. Photo Credit John Bonkowski.

Add enough mulch so there is a 2–3-inch layer sloping away from the tree with at least a 3–5-foot radius around the stem (older, larger trees can benefit from larger mulch rings). No volcano mulching (Figure 1), make sure you also have around a 1-2-inch gap between the stem and the start of the mulch ring (Figure 2) to prevent unwanted root growth above ground and rot from excess moisture on the stem. Continuing this practice every year can help maintain soil moisture levels, while enriching the soil around your tree, maintaining a safety zone, and adding a nice aesthetic.

Purdue Professors Featured on National Podcast

(Kyle Daniel, daniel38@purdue.edu)

Purdue Professors and Extension Specialists, Dr. Janna Beckerman and Dr. Cliff Sadof, joined Margaret Roach on the podcast 'A Way to Garden' recently to discuss the brand-new updates to the Purdue Plant Doctor. A transcript of the interview can be found here:

https://awaytogarden.com/diagnosing-plant-troubles-with-the-pur due-plant-doctor/

To listen:

Apple ITunes:

https://itunes.apple.com/us/podcast/a-way-to-garden-with-margar et/id370801678

Spotify: https://open.spotify.com/show/5rThGtiQ03JtKBET8zdOqO

Stitcher:

https://www.stitcher.com/podcast/whdd/a-way-to-garden-with-mar garet-roach

To Weed or Not to Weed? The Perennial Garden: Early Season Plant Identification

(Karen Mitchell, mitcheka@purdue.edu)



Fig. 1 - Left: Hosta emerging with tightly rolled leaves. Right: Rattlesnake master has long, fibrous leaves that begin to open upon emergence.

It's time for spring cleaning the herbaceous perennial garden, but be careful not to pluck out any of your favorite flowers. With all the green quickly sprouting up, it may be difficult to tell friend from foe. Established herbaceous perennials will emerge from the ground in the same location as the previous year and are usually quite obvious. With temperatures rising, Hosta and Rattlesnake Master are making a fast appearance (Fig. 1). However, many of our native perennials will readily propagate from seed, providing the opportunity to expand or fill in the garden, as long as they aren't thrown out with the weeds. A few prolific perennials to look for include Rattlesnake Master (*Eryngium yuccifolium*), Golden Alexanders (*Zizia aurea*), and Bee Balm (*Monarda didyma*) (Fig. 2). These will spread quickly, especially if you are in the mind set of "leaving the leaves and saving the stems" for our wildlife. The leaves, stems, and seedpods provide habitat and food for birds and insects over the winter, as well as creating garden interest for you during the cold, dark days (Fig. 3).



Fig. 2a - In its early stages, Rattlesnake Master may be confused for a typical grass, possibly even corn, but is distinguished by the small spines forming on the leaf margins. Fig. 2b - With its hairless, compound leaves, our native Golden Alexanders at this stage can easily be confused with the invasive and noxious wild parsnip. Fig. 2c - Bee Balm has simple, opposite, and fuzzy leaves

with a square stem. The purplish hue of the leaves may be confused with purple dead nettle at a distance, but the similarities stop there.



Fig. 3 - Snow piled on the seed heads of Purple Coneflower

(Echinacea purpurea).

Since a weed is simply an unwanted plant, everyone has an opinion on many of the plants that are popping up. Dandelion (Taraxacum officinale) and Wild Violet (Viola sororia) are often fiercely debated on whether they are weeds (Fig. 4). Both plants provide food early in the season for wildlife and pollinators, but they will also invade a lawn. So, whether or not dandelions and violets are considered weeds may be a personal question. However, there are some plants that are undoubtedly a weed, especially when found in the garden. There are native species, like Giant Ragweed (Ambrosia trifida) and Poison Ivy (Toxicodendron radicans), that are always unwelcome, but birds will unknowingly bring the seeds in from surrounding areas (Fig. 5). Then there are plants that the government may designate as a noxious weed if it is found to cause significant harm to people. For example, Canada Thistle (Cirsium arvense) is a herbaceous perennial that will quickly colonize an area by root propagation and seed dispersal (Fig. 5). Canada Thistle is classified as a noxious weed in Indiana, along with many other states, and it is illegal to let flower or go to seed.



Fig. 4 - Left: Dandelion. Right: Wild Violet



Fig. 5 – Left: Canada Thistle. Top-right: Poison Ivy. Bottom-right: Giant Ragweed

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