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THE PURDUE LANDSCAPE REPORT

In This Issue

Anthracnose on Creeping Phlox

(Tom Creswell, creswell@purdue.edu)

Creeping phlox (*Phlox subulata*) has been a reliable mainstay in home landscapes for generations. This spring-blooming perennial is also known by a string of other common names, including flowering moss, moss phlox, moss pink, rock phlox, and thrift (not to be confused with sea thrift which is *Armeria maritma*).

Creeping phlox is native to a region extending from the Southeastern US into Canada, so it's well adapted to many climates and tolerates drought and air pollution. Disease problems on this plant are rare, but we occasionally see dieback due to an anthracnose disease, caused by a fungus in the genus Colletotrichum (figures 1 and 2).

Figure 1: Dieback (anthracnose) of creeping phlox caused by Colletotrichum

Figure 2: Dieback (anthracnose) of creeping phlox caused by Colletotrichum

The symptoms show up as small areas of the planting become pale green, then change to tan or straw colored as stems eventually die. On closer examination of the base of the plant you'll find gray to black leaves lower on the stems (figure 3). In nursery production entire plants may become blighted if leaves frequently stay wet (figure 4).

Figure 3: Anthracnose damaged lower stems and leaves turn gray or black

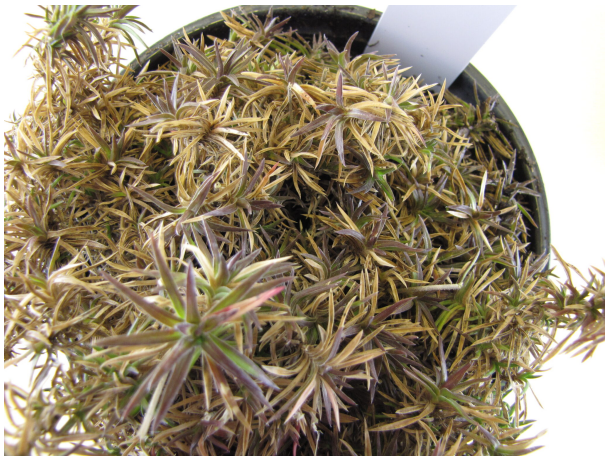


Figure 4: Nursery plants may be more severely affected due to frequent irrigation

A microscope view of leaves and stems shows the presence of fruiting bodies containing black needle-like structures, known as setae, which are characteristic of many Colletotrichum species (figure 5). The surface of lower stems are colonized by dark gray to black fungal hyphae (figure 6), which contributes to the gray or black color of infected tissues.

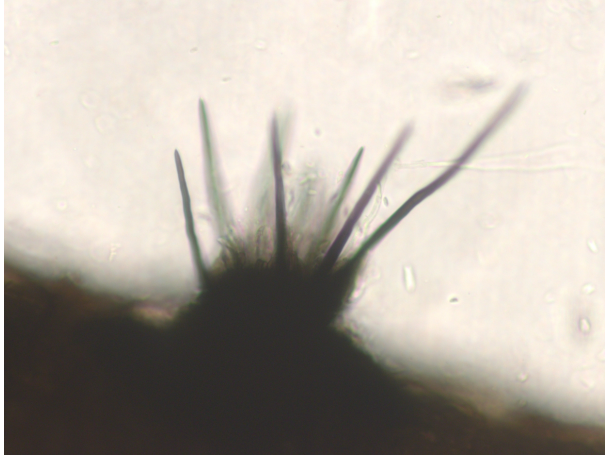


Figure 5: Anthracnose fungi in the genus Colletotrichum are characterized by the presence of black needle-like structures called setae

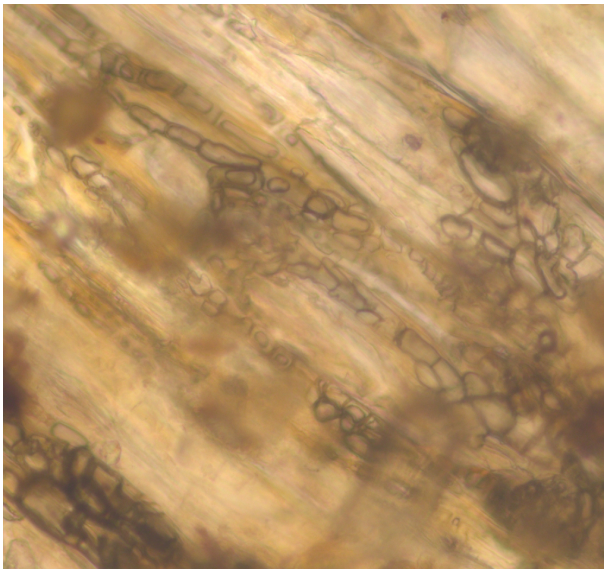


Figure 6: Hyphae of Colletotrichum colonizing lower stems

Anthracnose can appear rapidly in creeping phlox but damage in landscape plantings is usually limited unless plants are getting frequent rain or irrigation. Since creeping phlox is drought tolerant it should only very rarely need irrigation after establishment in the landscape which means that simply avoiding sprinkler irrigation will usually prevent the problem in most years. The plants shown in figure 1 were getting wet when the flower bed behind was irrigated. When foliage is dry, pull or clip out dead and dying branches as they appear and remove them from the planting to reduce the amount of fungus present next year. In nursery production good sanitation and reducing leaf wetness can help reduce spread, and several fungicides are labeled for control of Colletotrichum where needed.

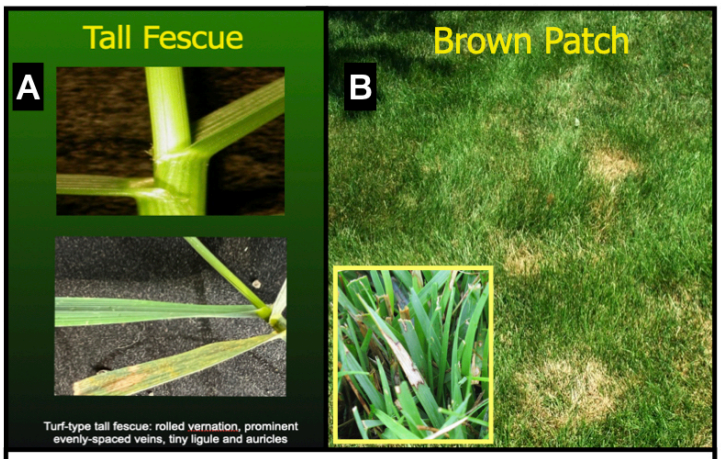
Know thy Host, Know thy Disease

(Lee Miller, turfpath@purdue.edu)

As we get into the throngs of summer, disease activity takes hold on the cool season turfgrass species we commonly use on lawns. This spring/early summer 2023 much of the state has been in a considerable drought, missing approximately two inches of normal precipitation in both April and May, and three inches below normal so far this June (see Midwest drought map here). Disease activity has been minimal to non-existent on unirrigated, brown and crunchy lawns, with most damage most likely occurring from unnecessary mowing traffic on non-growing grass. For irrigated lawns, the supplemental water avoids drought dormancy and potential thinning, but also provides the necessary leaf wetness and humidity for diseases to attack.

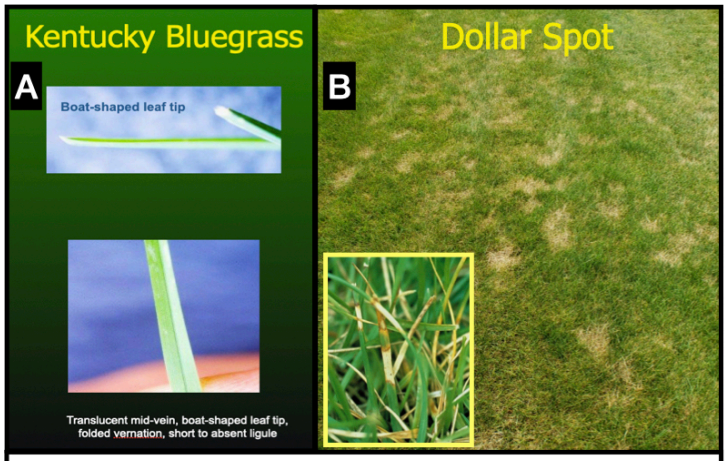
The two most common diseases on cool season lawns are dollar spot and brown patch. Dollar spot occurs most frequently on Kentucky bluegrass lawns, while brown patch is one of the few diseases that affect tall fescue. Therefore, knowing and being able to identify the grass species that makes up your lawn is an important aspect in caring for it. The first step in any of our lab diagnosis is identifying the plant host, or at least confirming the

host listed on the diagnostic form is correct.



Brown patch - Common Disease of Tall Fescue
A. Tall fescue is a bunch grass, with fairly thick leaf blades and prominent, evenly spaced veins.
B. Brown patch is the most common disease on tall fescue, but rarely affects Kentucky bluegrass in lawns.
*Inset yellow - characteristic leaf lesion of brown patch.

The two most common turfgrass species used on lawns in Indiana and much of the region are tall fescue and Kentucky bluegrass. Tall fescue is a bunch type grass, meaning a single plant does not spread and make daughter plants from "runners" (aka stems called rhizomes (underground) or stolons (above ground)). Tall fescue is characterized by relatively thicker leaf blades with prominent, evenly spaced, rough feeling veins running down the leaves. Conversely, Kentucky bluegrass spreads by rhizomes and the leaf is smoother with a single translucent mid-vein that runs down the leaf center. Held up to the sunlight, the translucent mid-vein on Kentucky bluegrass is conspicuous. Kentucky bluegrass also has an infamous boat-shaped leaf tip, whereas tall fescue comes to an abrupt point.



Dollar spot - Common Disease of Kentucky Bluegrass
A. Kentucky bluegrass is known for its boat shaped leaf tip and translucent mid-vein which is obvious when held up to the light.
B. Dollar spot is a common disease on Kentucky bluegrass, but doesn't affect tall fescue.
*Inset yellow - characteristic leaf lesion of dollar spot.

Although somewhat simplistic, knowing if your lawn is predominantly Kentucky bluegrass or tall fescue provides good evidence as to what disease may be affecting it. Leaf symptoms provide additional confirmation of identification and activity of these two diseases. Along the edges of a patch or spot, drive by sweep a handful of leaves. Using a hand lens, look closely at the lesions on the leaf blade. Brown patch is characterized by a dark, irregularly shaped margin with a beige to straw interior. Dollar spot will have a slightly less dark margin, and the lesions often characteristically drive straight across the leaf blade causing an hour-glass shaped lesion.

Control practices for these two diseases are both similar and quite different. For both, leaf wetness is a key driver of the disease epidemic, so reducing early morning shade and limiting irrigation in the early morning hours rather than at dusk can help decrease disease severity. Dollar spot is a low nitrogen disease, so when occurring on Kentucky bluegrass it is an indicator that nitrogen is deficient in the plant and fertilizer should be applied. Brown patch occurrence on tall fescue doesn't necessarily indicate a nitrogen excessive or deficient state. If a fungicide is warranted, which is rare in most cases, the active ingredients azoxystrobin or pyraclostrobin are most effective against brown patch but have little to no effect on dollar spot. Along with fertility, dollar spot can be suppressed by several other different fungicide chemistries. Last but not least, fall overseeding can often be used to simply fill in the gaps left by these diseases, perhaps with better new improved cultivars. More on this topic in August.

Several other diseases and abiotic disorders can affect the health of lawns, but being familiar with these two common disease criminals can aid in getting the jump on control early. As always, the expertise of the Purdue Plant, Pest and Diagnostic Lab is willing to assist and hopefully reduce the inputs necessary by correctly identifying the problem and appropriate management tactics. For more information, see the many resources available at https://turf.purdue.edu/homeowner-publications/.

What is an Inch of Water?

(Karen Mitchell, mitcheka@purdue.edu)

The unpredictable Midwest weather has gardeners checking their rain gauge daily, because one rule gardeners learn early on is that landscapes need about an inch of water each week. Of course, there are many factors that will impact the accuracy of this very general rule such as soil type, average temperature, sun exposure, plant type, and wind. The crud method to determine whether you need to water would be poking your finger in the soil and if it feels dry, you water. But what is an inch of water really?

To determine this, we have to go back to the basics of geometry to measure area and volume. However, a few measurements will always remain the same.

One square foot = 144 square inches

One gallon = 231 cubic inches

Therefore, an "inch of water" is 0.62 gallons per square foot of garden area. Unless you use a gallon jug to water a square foot garden, this number may still leave you wondering how to obtain that inch of water or 0.62 gallons per square foot. Of course, this will vary depending on the type of irrigation used, but the total amount of water needed for an area will remain constant. First,

determine the garden area in square feet and then multiply the total area by 0.62 gallons.

Example 1: The garden is 10 feet wide and 20 feet long, so 20 ft × 10 ft = 200 square feet.

Then, 200 ft^2 × 0.62 gallons = 124 gallons needed for a 200 ft^2 garden area.

There are a few ways to measure irrigation water and some will include acronyms like ac.in, psi, or GPM. Before trying to convert an acre-inch (ac.in) or determining pounds per square inch (psi), grab a one-gallon bucket and a stop watch. Time how long it takes to fill the bucket using your preferred spray nozzle. Then, divide 60 by the number of seconds that it took to fill the one-gallon bucket. This equals the gallons per minute (GPM).

Example 2: The one-gallon bucket fills in 20 seconds, so 60 ÷ 20 = 3 gallons per minute.

Next, to determine how long to water using this spray nozzle, divide the total amount of water needed for the whole garden area (from Example 1) by the gallons per minute calculated (from Example 2).

Example 3: 124 gallons needed ÷ 3 gallons per minute = 41.3 minutes of watering.

In the above scenario, the garden area would need to be watered for approximately 40 to 45 minutes each week. Ideally, this would be broken into two watering sessions per week, so about 20 minutes every few days. If watering with a spray nozzle for that length of time isn't possible, gardeners may decide to switch to a sprinkler or a soaker hose. This will require a new calculation and a few tuna cans.

Figure 1

When irrigation with a sprinkler is necessary, it is important to measure the water output to avoid over or under-watering areas. This is another simple measurement using a few tuna cans, a ruler, and a stop watch. Tuna cans are convenient, but any short container with a wide mouth and straight sides can be used. Place the empty containers randomly throughout the area that is being irrigated and turn the sprinkler on for 10 minutes (Fig. 1). Using the ruler, measure how much water is in each container and calculate the average.

Example: Three cans were placed in the garden and collected the following amounts of water in 10 minutes: 0.5", 0.75", and 0.75". The average is the sum divided by the number of cans. So, (0.5+0.75+0.75) ÷ 3 = 0.67 inches of water every 10 minutes.

Once these calculations are complete, you can confidently water your garden with approximately an inch of water each week. Keep in mind that numerous other factors can impact whether you need more or less water, so watch the thermometer and wind speeds. High temperatures and high winds can dry out soils very quickly, even a well-watered garden.

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