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In This Issue

Botrytis Blight

(Janna Beckerman, jbeckerm@purdue.edu)

Botrytis blight (also called grey mold) is caused by fungi in the genus *Botrytis.* The best known of these fungi, *Botrytis cinerea,* can infect many different hosts, including soft fruit, vegetables, annuals, perennials, shrubs and young tree seedlings (Fig. 1). Other common species of *Botrytis* are more host specific, including *Botrytis elliptica* (infecting only lilies and gladiolas), *Botrytis paeoniae* (infecting only peony) (Fig. 2), and *Botrytis tulipae* (infecting tulips).

Figure 1. Impatiens, geranium, and begonia are all highly susceptible to botrytis. Photo by Janna Beckerman.

Figure 2. Botrytis paeoniae, a common pathogen of peonies. Photo by Janna Beckerman.

Figure 3. Botrytis cinerea that infected fallen flower, spreading to leaves and sporulating. Photo by Janna Beckerman.

Botrytis blight often begins as a leaf or flower spot that continues to grow, expanding into a shoot blight or even crown rot. Signs of *Botrytis* infection include fuzzy grey mold on buds and flowers that can continue to spread to leaves and shoots (Fig. 3). This fuzzy growth consists of hyphae, fungal threads *Botrytis* uses to feed off the plant. At the same time, the fungus is producing hundreds of thousands of spores from a single lesion. Spores are spread by wind and rain to nearby plants to repeat the process. Leaf wetness is necessary for spores to germinate and infect. When weather conditions change (hot, dry summers or snowy winters) the fungus produces sclerotia, a fungus ball of hyphae that allow it to survive changing environmental conditions. In the spring, the cycle begins when sclerotia germinate, producing hyphae that can directly infect crowns or produce more spores to

spread and infect flowers and foliage. In production, we often see outbreaks in the spring corresponding to overcast, cool weather and high humidity in greenhouses, shadehouses and nurseries.

Cultural management of botrytis blight include reducing leaf wetness by adequately spacing plants and avoiding overhead irrigation; removal of decaying or damaged flowers and leaves and disposing of spent plant material at the end of the growing season. Not surprisingly, some plants have been identified as being less susceptible to botrytis blight. In general, single flowered peonies (like Krinkled Red and Krinkled White) are more resistant to Botrytis than 'bomb' type of flowers. Keep in mind that disease-resistant doesn't mean immune, and that infection can still occur under persistently cool, wet conditions, particularly if plants receive excess nitrogen fertilizer or get damaged by heavy rain, hail, or pests (animal, insect and human!). For a comprehensive list of resistant annuals and perennials see Disease Resistant Annuals and Perennials in the Landscape.

Trying to control botrytis blight on susceptible plants in the landscape is a challenge and will require repeated application of fungicides every 7-14 days. Sprays should focus before bloom, to aid in the protection of blooms, in the case of cut-flower peony.

Fungicide (active ingredient)	FRAC Code	Sites*	REI
Affirm, Endorse, Veranda (polyoxin D)	19	G, L, N, S	4 h
Broadform (trifloxystrobin+fluopyram)	7+11	G, I, L, N, S	12 h
Chipco 26019 (iprodione)	2	G, L, N*	12 h
Cleary's 3336; OHP 6672 (thiophanate-methyl)	1	G, L, N, S	12h
Compass (trifloxystrobin)	11	I, L, N, S	12 h
Daconil (chlorothalonil)	M5	G, I, L, N, S	12 h
Heritage (azoxystrobin)	11	G, L, N, S	4 h
Medallion, Emblem (fludioxanil)	12	G, N, S, I,L	12 h
Mural (azoxystrobin+benzovindiflupyr)	7 + 11	G, N,S, L	12 h
Orkestra (fluxapyroxad + pyraclostrobin)	7 + 11	G, I, L, N,S	12 h
Pageant Intrinsic (pyraclostrobin+boscalid)	11+7	G, I, L, N, S	12 h
Palladium (cyprodinil + fludioxanil)	9+12	G, N, L*	12 h
Prostar	7	G, N, S	12 h
Biologicals			
Serenade (Bacillus subtilis)	44	G, I, L, N, S	4 h
Triathlon BA (*Bacillus amyloliquefaciens*)	44	G, I, L, N, S	4 h

G = Greenhouse; N = Nursery; I = Interiorscape; L = Landscape; S = Shadehouse

All fungicides perform best when applied before symptoms appear (e.g., as flower buds develop or to protect new growth), and their use needs to be continued when conditions are favorable for disease.

Several Clients Submitting Samples of Fowl Bluegrass (Poa palustris) to Diagnostic Lab

(Aaron Patton)

Over the past week I have identified three different fowl bluegrass (*Poa palustris*) samples sent in to the Purdue Plant & Pest Diagnostic Lab (https://ag.purdue.edu/department/btny/ppdl/). This is not concerning, just unusual. This is not a grass species that I see that often, but I have seen several samples this year, including a sample from my own lawn. By the way, my lawn has lots of weeds.

Fowl bluegrass is a common bluegrass species native to a large portion of the US. It is classified as a perennial, but acts like a weak perennial, much similar to *Poa trivialis*. This plant is more common in wet areas and taller meadows than in lawns and its larger stature (Judziewicz et al., 2014) and longer ligule distinguishes itself from other bluegrasses commonly found in Indiana lawns [Kentucky bluegrass (*Poa pratensis*), annual bluegrass (*Poa annua*), and rough bluegrass (*Poa trivialis*)].

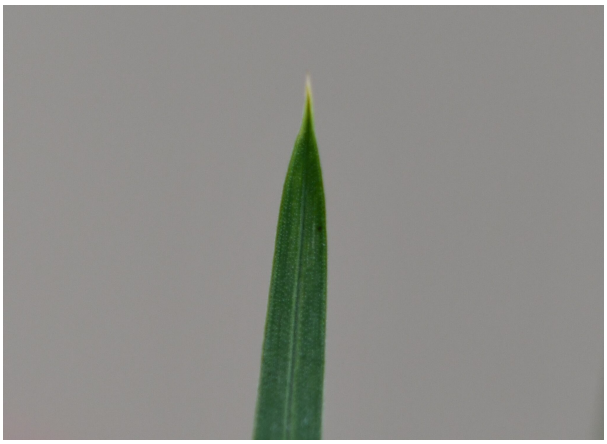
Identification

Fowl bluegrass has the following characteristics (Hitchcock, 1935; NPT; Smith, 2014):

- Mainly bunch-type in growth habit but can have stolons
- Purplish base coloration
- Folded vernation (keeled sheath)
- Long membranous ligule (3 to 6 mm)
- 1 to 8 mm wide leaf blades

Samples I have observed also have:

- The ligule has an acuminate (tapering to a slender point) ligule
- The leaf sheath is open or split
- The leaf tip is boat shaped similar to other bluegrasses although the tip is more tapered than in Kentucky bluegrass or annual bluegrass.



Boat shaped leaf tip.

Long, pointed membranous ligule.

Long, pointed membranous ligule.

Split leaf sheath.

Seedheads before the panicles mature.

Mature panicle with the classic pyramidal-shaped seedhead common of bluegrasses.

Distinguishing it from other bluegrasses

• Fowl bluegrass lacks rhizomes or stolons which distinguish it from Kentucky bluegrass or rough bluegrass, respectively.

• Fowl bluegrass has a long, pointed ligule which distinguishes it from Kentucky bluegrass or rough bluegrass. The ligule on annual bluegrass is long, but not as long as fowl bluegrass.

• Fowl bluegrass plants will grow taller than other bluegrasses in spring.

• They all have a boat-shaped leaf tip and flower (produce seedheads) at a similar time of year so these are not helpful in distinguishing the species.

Where did these samples found in lawns come from?

They could have come from a nearby wooded area, meadow, pasture, or wet area. Further, the seed could have been dormant in the soil, or seed might have come in with straw or hay related to a recent seeding project.

How do I remove it from my lawn?

This plant will have vigorous growth in spring but should die or go dormant in summer due to poor heat and drought tolerance. However, it will produce seed if unmown and that seed will make this weed a problem next year. There are no herbicide recommendations for this weed although it likely has the same susceptibility to herbicides as *Poa trivialis* and *Poa annua*. Fall fertilization and seeding practices that produce a dense lawn should help reduce the invasion of this weed into thin spots.

If this topic is of interest to you, also see a previous turf tip distinguishing annual bluegrass from Kentucky bluegrass. https://turf.purdue.edu/which-is-it-annual-bluegrass-or-kentucky-bluegrass/

Sources:

1. Hitchcock, A. S. (1935). Manual of the grasses of the United States. USDA Misc. Publicat. No. 200.

2. Judziewicz, E. J., Freckmann, R. W., Clark, L. G., & Black, M. R. (2014). Field guide to Wisconsin grasses. University of Wisconsin Press.

3. Native Plant Trust (NPT): https://gobotany.nativeplanttrust.org/species/poa/palustris/

4. Smith, J. P. (2014). Field guide to grasses of California. In Field Guide to Grasses of California. University of California Press.

This article came from Turfgrass Science at Purdue University

Asiatic Garden Beetle

(Cliff Sadof, csadof@purdue.edu)

Key Features

- Round, brown beetle
- Chewed leaves and flowers
- Chewed roots

Symptoms

Leaf margins are chewed by adult beetles. Leaves are stripped and left in a ragged appearance after adult feeding which is much different than the skeletonization caused by Japanese beetle feeding. Adults are about the size of Japanese beetles. Larvae are c-shaped grubs with a distinctive white pocket beneath their jaw.

Asiatic garden beetle and masked chafer beetle. AGB is larger of the two

Asiatic garden beetle; adult, pupa, grub

White pouch under jaw of AGB grub

Biology

Adult beetles emerge from the soil mainly from mid-July to mid-August, but may be found anytime from late June through October. Adults are pests of many ornamentals especially asters, dahlias and chrysanthemum. They feed on foliage at night and return to the soil during the day. Unlike Japanese beetle, adults do not skeletonize leaves, but rather notch the foliage. Larvae feed on organic matter, roots and root hairs within the soil.

Management

When leaf shredding is detected, apply a broad spectrum insecticide, such as liquid carbaryl, to leaves when beetles are seen feeding on trees. Apply these products after mixing with water according to directions on the pesticide label. Most materials will only kill beetles for 4 to 5 days. Pyrethroids like bifenthrin provide longer control up to 10 days. To protect bees do not apply these products when plants are flowering. An alternative approach is to apply azadirachtin or neem oil to repel beetles. This works best before beetles have begun feeding in large numbers on plants. Manually destroy the occasional white grub encountered in the soil during flower planting to reduce damage by this and other grub species. If grubs are found in the pots of purchased plants, destroy the grubs by hand picking them from the pots and dropping into soapy water.

Effective Pesticides

Active Ingredients include: Azadirachtin, Bifenthrin, Carbaryl (Sevin), Cyfluthrin, Lambda- cyhalothrin, Permethrin, Pyrethrin, Resmethrin

Resources

- Not satisfied with ID? Contact the Purdue Plant and Pest Diagnostic Lab
- Sign Up for the Purdue Landscape Report
- New white grubs for Indiana
- Asiatic Garden Beetle Damage Reported in Northern Counties | Purdue University Pest&Crop newsletter

All photos by John Obermeyer. This story came from The Purdue Plant Doctor.

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