Home, Yard, and Garden Pest Newsletter

Issue 10 • August 26, 2021

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Yellow Foxtail – A Warm-Season Weed in Cool-Season Turfgrass

Warm-season annual grassy weeds can be problematic in cool-season turfgrass. Common offenders include crabgrass, goosegrass, barnyardgrass, fall panicum, and foxtail. As a reminder, these plants live for only one year and their growth and development will be ending soon. A killing frost will control these weeds effectively. However, they are likely producing seeds now for next year's weeds that will germinate in late spring or summer. Plan accordingly with your control tactics if this sounds like your situation. These weeds are particularly a problem in newly seeded areas in the spring as there is little competition, good growing conditions, and often an abundance of seed from these warm-season grassy weeds. Often too the presence of these weeds will indicate difficult growing conditions for the turfgrass.

Yellow foxtail (*Setaria pumila* or *S. glauca*) is a common invader of turfgrass, while perhaps lesser known than crabgrass is. Like crabgrass, yellow foxtail is a prolific seed producer. Seeds germinate at temperatures between 68° and 95°F so germination occurs a little after that of crabgrass and can occur throughout the growing season. Yellow foxtail forms a coarse, upright or prostrate, bunch-type grass. It usually branches at the base and may root at the lower nodes. Growing up to 4 feet tall, yellow foxtail emerges from a shallow, fibrous root system and normally has flattened stems that are reddish near the base. The ligule is hairy, unlike that of crabgrass which is membranous. The leaves of yellow foxtail are flat, smooth, and with a prominent midvein. They grow 2 to 12 inches long and up to ½ inch wide. A key identifying characteristic of yellow foxtail is the long, wispy hairs that usually appear near the base on the upper surface. These are not found on similar but different species: green foxtail and giant foxtail. Giant foxtail has several very short hairs on the upper leaf surface while green foxtail lacks hair. The sheath is flattened and smooth. The flowers are yellow, cylindrical, dense, bristly, erect, and foxtail-like, growing 2 to 5 inches long. They appear from June through September. Yellow foxtail occurs in moist, fertile soil during the mid- to-late grow-

Serious yellow foxtail infestation in a lawn. Michelle Wiesbrook. University of Illinois.

ing season and is often found in new seedings, open turf, or bare spots.

Yellow foxtail seedhead and long hairs at the leaf base. Michelle Wiesbrook. University of Illinois.

For control of foxtail species, be sure to maintain turf density and health through proper culture. Truly, this is the best form of weed control. Avoid close mowing and summer fertilization. Water deeply and infrequently to allow the soil surface to dry in between waterings. Core-cultivating, dethatching, and power raking should be conducted during the fall when cooler temperatures are conducive for good turf growth and weed seed germination is less likely to occur. With small populations, foxtail can be hand-pulled or mechanically removed. For large populations, a herbicide may be necessary. Apply preemergence herbicides 1 to 2 weeks prior to germination in the late spring or summer. Monitor soil temperature so that the herbicide is in place in time. A second application may be needed at a later date. Follow label directions for rates and timing. If overseeding or reseeding is in the plan for spring, a herbicide application for yellow foxtail could be detrimental to those efforts. Most preemergence herbicides have waiting periods between applications and seeding, but there are a few that can be applied at the time of seeding or soon after. Postemergent herbicides may be used but weeds should be small in order for control to be effective. This late in the season, I would advise you to scout now and if foxtail is found, focus your control tactics on preventing plants next year. When using any pesticide, read, understand, and follow the label directions for the safest, most efficient pest control.

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Late Summer Leaf Diseases

Keep an eye out for the following shade tree diseases. They become evident in the waning days of summer.

Guignardia Leaf Blotch

Guignardia leaf blotch is a fungal disease that affects the common horsechestnut (*Aesculus hippocastanum*) and other *Aesculus* species. The disease is an annual occurrence on many host trees, with symptoms intensifying throughout the summer.

Symptoms initially appear as rapidly enlarging, irregularly shaped, water-soaked areas. Affected areas eventually turn red-brown with a yellow halo that merges with the surrounding healthy green tissue. Tiny black fruiting bodies appear within lesions, which help to distinguish from environmental scorch. Severely infected trees often defoliate prematurely.

Photo 1 Guignardia leaf blotch on common horsechestnut (Aesculus hippocastanum). Inset Image: Fungal fruiting bodies help to distinguish this disease from environmental scorch. Travis Cleveland, University of Illinois

Guignardia leaf blotch is mostly an aesthetic disease. Severe symptoms occur late in the season and won't affect the tree's overall health. Disease management should start with adjusting cultural practices. Prune trees to promote airflow through the canopy. Rake, destroy, or dispose of fallen diseased leaves at the end of the season. Fungicide sprays can also be applied beginning at bud-break. They will help maintain the appearance of the tree but are unnecessary to maintain tree health. Additionally, chemi-

cal controls may be cost-prohibitive due to the size of affected trees.

Photo 2. Guignardia leaf blotch on common horsechestnut. Travis Cleveland, University of Illinois

Tubakia Leaf Spot

Tubakia leaf spot symptoms are often confused with those of anthracnose. Oak anthracnose symptoms usually appear in late spring to early summer, May - June. In contrast, tubakia leaf spot symptoms appear in late summer, July - September. Tubakia leaf spot lesions will vary with host susceptibility and environmental conditions. The lesions start as small water-soaked areas. They become evident as they enlarge and transition to a reddish-brown color (Photo 3). Severe infections may cause premature leaf drop. Symptoms tend to be most severe on the lower branches, where moisture accumulates and remains for more extended periods (Photo 4).

Tubakia leaf spot is more prevalent in years with abundant rainy weather and moderate temperatures. These conditions help spread the pathogen and promote new infections. The disease is much less common growing seasons with predominately dry weather.

While the symptoms may appear alarming, the disease develops late enough in the season that there are no long-term adverse effects on tree health. As a result, treatment with fungicides is not usually recommended. Raking and removing fallen leaves may reduce inoculum in the surrounding area, thus limiting disease occurrence the following growing season. Promoting tree vigor and alleviating any potential stresses to the tree is also recommended.

Photo 3. Northern red oak leaf with numerous Tubakia Leaf Spot lesions. Travis Cleveland, University of Illinois

Photo 4. Lower branches of an oak infected with Tubakia leaf spot (Urbana, IL. Sept. 2016) Travis Cleveland, University of Illinois

Bur Oak Blight

Bur Oak Blight (BOB) is a close relative of tubakia leaf spot. BOB is caused by the fungal pathogen *Tubakia* iownesis, and has the potential to contribute to tree mortality. As the name indicates, this disease pathogen primarily infects bur oak, particularly *Quercus macrocarpa* var. *oliviformis*. Dr. Tom Harrington of Iowa State University was the first to identify the BOB pathogen. Results from his research suggest that the pathogen is likely native to the region and has only recently become problematic due to a significant environmental change. Wet springs, with significantly more precipitation, have likely created a favorable environment for disease development.

The most notable BOB symptoms appear in August and September. As the BOB pathogen kills leaf veins, a characteristic wedge-shaped necrotic area forms near the apex of the leaf blade (Photo 5). Coalescing lesions and expanding vein necrosis may cause the leaf to die. Severely affected trees may have significant leaf mortality and/or leaves with scorched appearance (Photo 6). Extensive premature defoliation is common, but many diseased leaves remain attached to the tree into the winter, well after healthy Bur oaks have dropped their leaves.

Photo 5. Wedge-shape lesion characteristic of Bur Oak Blight. Travis Cleveland, University of Illinois

The retention of diseased leaves favors the pathogen and its spread because overwintering fungal fruiting bodies remain attached to the tree and never lose contact with the host. In late April and May, released from these fruiting bodies about the same time as

Photo 6. Bur oak with lower canopy affected by Bur Oak Blight. Travis Cleveland, University of Illinois

new leaves are emerging and expanding. Wet conditions promote spore dispersal to newly expanding leaves. Infection occurs before the leaves are fully developed. However, there is a latent period between infection and when the first symptoms.

Initially, infections may be limited to the lower branches. Symptoms intensify from year to year and progress from the lower limbs throughout the canopy.

Diseased leaf retention is currently one of the best ways to identify this disease in the field. Look for leaves and petioles attached from the previous growing season. Infected petioles will have black pustules or scars from previously attached pustules (Image 7). The other species of *Tubakia* that infect Bur oak are not known to produce these overwintering pustules.

Photo 7. Branch with diseased petiole still attached from the previous growing season. Note the small black pustules. Travis Cleveland, University of Illinois

Several successive years of severe infection and defoliation may severely weaken the host tree. Tree mortality has been attributed to secondary invaders such as the two-lined chestnut borer. Trees infected with BOB appear to have increased susceptibility to these secondary invaders.

Management Strategies

- Fortunately, not all bur oaks will be affected by this disease. Many bur oak trees have a resistance to this pathogen. It's not uncommon to observe a healthy, unaffected tree growing near a severely infected tree.
- If you suspect a BOB infection, have the disease diagnosis confirmed by a laboratory. Suspect BOB samples can be submitted to the University of Illinois Plant Clinic. Collect branches and twigs with symptomatic and healthy leaves. Be sure to include branches with petioles from the previous growing season still attached (See Photo 7 for an example)
- Boosting tree vigor may help the tree to limit and prevent secondary invaders. Pruning and removing branch dieback has been suggested to help reduce borer populations
- For high-value trees, Iowa State University found trunk injections of propiconazole to be effective at controlling the disease. Applications require specialized equipment and will need to be made by a certified professional.
    - Injections should be made in late May or early June, just after the leaves have fully expanded.
    - The recommended application rate is 8-10 mls per 1" DBH. Higher applications rates reportedly resulted in phytotoxicity to leaves. The rate will also need to be adjusted if the tree has significant branch dieback in the canopy.
    - One application should last several years. Iowa State currently recommends repeat application only after a severe outbreak re-occurs.

Bacterial Leaf Scorch

Bacterial Leaf Scorch (BLS) is a serious infectious disease with a wide host range of trees and shrubs. The disease causes the slow decline of the host, resulting in host death. It is caused by the bacterium *Xylella fastidiosa*.

Scorch symptoms appear on leaves in early to mid-summer and gradually intensify as the season progresses. Affected leaves may turn a yellow/green color and then turn brown, usually from the margin of the leaf inwards (see picture). Older leaves are often affected first, and an individual branch or section of branches usually becomes discolored at the same time. Symptoms are generally not scattered throughout the crown. Branches will leaf out the following spring, but symptoms will re-appear and slowly spread through the crown of the tree over the course of subsequent seasons.

Photo 8. Red oak leaves from a tree infected with BLS. Travis Cleveland, University of Illinois

Photo 9. Northern red oak infected with bacterial leaf scorch. Travis Cleveland, University of Illinois

The symptoms are easily confused with drought stress, cultural problems, cankers, and, in oak trees, oak wilt. It can also be confused with Verticillium wilt in other host tree species. Submitting a sample to a plant diagnostic laboratory is the only way to diagnose BLS definitively. The University of Illinois Plant Clinic conducts BLS testing in late August or early September because the population of bacteria within the affected tissue increases as the season progresses. The higher pathogen populations in late summer allow for a more accurate test.

Management for trees affected with BLS consists of increasing tree vitality by mulching the base of the tree to retain moisture, watering during periods of dryness lasting more than two weeks, pruning out dead branches, and fertilizing when appropriate. While trunk injections with antibiotics have been shown to be effective at delaying symptom development, they do not cure the tree, and the injection sites open new paths of entry for organisms that decay wood. Over time, repeated treatments can severely weaken the tree. Choosing non-susceptible hosts to plant near affected trees is also recommended to prevent the spread of disease.

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University of Illinois Plant Clinic Notice

The University of Illinois Plant Clinic will be closed from August 27 through September 8. We recommend not shipping or dropping off samples during this time. Samples that are delivered will be put into cold storage until we reopen.

Additionally, the Plant Clinic is currently operating with minimal staff. We continue to process samples and reply to phone messages and emails as best we can. However, we prioritize diagnostic samples and may not be able to return messages in a timely manner.

We appreciate everyone's patience. We're hoping to be back up to normal speed soon!

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