

Why are (x) species of trees damaged or defoliated? Is it a disease?

Without inspecting the affected plant and a tissue sample, we cannot diagnose a disease. However, we have been receiving questions from growers, landscapers, and arborists around the state about certain species "looking terrible" this summer. The combination of record low temperatures, wind, low humidity, and sun over the winter of 2014-2015 has resulted in widespread winter injury to numerous species which are only marginally hardy in our climate, which had survived previous milder winters.

Examples include:

- Japanese aucuba (*Aucuba japonica*)
- Boxwood (*Buxus* spp.)
- Chinese holly, Burford holly (*Ilex cornuta*)
- Meserve hollies (*Ilex x meserveae* 'China Girl' and other cultivars)
- Monkey grass (*Mondo japonica*)
- Southern magnolia (*Magnolia grandifolia*)
- Laurel cherries, schip laurels (*Prunus laurocerasus*)
- Leyland cypress (x *Cupressocyparis leylandii*)

Sunscald is another form of winter injury which is almost always limited to young, recently installed landscape trees. It is more common on species with thin bark than trees with thick or exfoliating bark. Problematic species include:

- Maple (*Acer* spp.)
- Linden (*Tilia* spp.)
- Pear (*Pyrus* spp.)
- Crabapple (*Malus* spp.)
- Cherry, plum (*Prunus* spp.)
- Willow (*Salix* spp.)

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rose — Photo: Peter J. Bryant

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Two-spotted Spider Mite on wild

Powdery mildew of Dogwood

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Dogwood is a popular landscape tree throughout Kentucky. However, once infected with powdery mildew, trees can develop an unattractive appearance. The disease is most prevalent during periods of high humidity and in landscapes with reduced air circulation. Some cultivars are more susceptible than others.

Dogwood Powdery Mildew Facts:

- White powdery fungal growth is the distinguishing feature of this disease (Figure 1).
- Symptoms on leaves include reddish-brown or purplish irregular blotches, yellowing, development of brown patches, scorching of tips and edges, cupping, curling, drooping (Figure 2) and premature leaf fall.
- Infection typically begins in early June and continues through September.
- Humidity favors disease development.
- Young, succulent plant growth is most susceptible.
- Caused by the fungi *Erysiphe pulchra* and/or *Phyllactinia guttata*.
- Unlikely to kill the tree but may result in decreased flower production the following year and an increase in susceptibility to insects and other diseases.



Management Options:

- Select trees with resistance to the disease such as cultivars 'Jean's Appalachian Snow', 'Kay's Appalachian Mist', Oriental dogwood, or Cornelian cherry dogwood, which is immune to the disease.
- Maintain plant health by mulching to the drip line, removing dead branches, and selectively pruning to increase air movement within the tree canopy.
- Avoid excessive nitrogen fertilizer, heavy pruning, and excessive irrigation during the growing season
- Apply fungicides containing myclobutanil or propiconazole. Ideal spray programs begin in May or when the disease is first detected. Always follow label directions when utilizing fungicides.



Additional Information

- Dogwood Powdery Mildew (PPFS-PR-W-13)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-13.pdf
- Homeowner's Guide to Fungicides (PPFS-GEN-07)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-GEN-07.pdf
- Fungicides for Management of Landscape Woody Ornamental Diseases (PPFS-OR-W-14)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-14.pdf

Bacterial Leaf Scorch Can Torch Landscape Trees

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Kentucky's landscapes are populated by many trees that are susceptible to bacterial leaf scorch. This disease may not kill trees instantly, but over time, it can have devastating effects. Pruning and reducing stress can prolong the life of infected trees; however, there are currently no methods to prevent or cure bacterial leaf scorch.

Bacterial Leaf Scorch Facts:

- Infected trees exhibit premature leaf browning (Figure 1), marginal necrosis, and defoliation. In subsequent years additional branches will present the same symptoms until the entire tree becomes prematurely brown (Figure 2).
- Symptom development typically occurs in mid- to late summer
- Symptoms of bacterial leaf scorch can resemble abiotic/stress, so confirmation by a diagnostic lab is advised.
- Trees such as sycamore, maple, and oaks are susceptible. Pin oak and red oak are the most commonly reported hosts in KY.
- Caused by the bacterium *Xylella fastidiosa*
- Spread by leafhopper and treehopper insects.

Management Options:

There is no cure for bacterial leaf scorch, and trees will eventually die once infected. The following suggestions may help preserve the appearance and life of diseased trees:

- Prune newly infected trees to preserve appearance.
- Water trees in the heat of summer to reduce stress
- Tree-injections can be costly and do not cure the disease; however, they may prolong the life of the tree.

Replace infected trees with species that have shown resistance to the disease. Suggestions include:

- European beech
- Kentucky coffeetree
- Shagbark hickory
- Common sassafras
- Tuliptree



Figure 1 — Premature leaf browning of a pin oak tree branch infected with bacterial leaf scorch

Photo: John Hartman, University of Kentucky

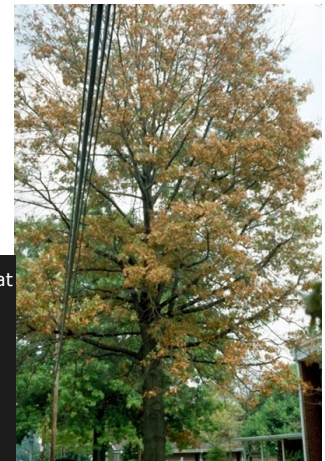


Figure 2 — Pin oak tree that has turned entirely brown prematurely from many years of bacterial leaf scorch infection

Photo: John Hartman, University of Kentucky

Additional Information

Bacterial Leaf Scorch (PPFS-OR-W-12)

http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-12.pdf



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Boxwood Blight Threatens Kentucky Shrubs

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Boxwood blight has been detected in Kentucky again this year. The disease can be devastating to American boxwood cultivars, which are common in the Kentucky landscape. Complete defoliation can occur within a week and plants can die within a single growing season. Use of tolerant cultivars, cultural practices, and fungicides can reduce incidence and spread of boxwood blight.

Boxwood Blight Facts:

- Symptoms on leaves can appear as light or dark brown circular leaf spots with darker borders (Figure 1). These symptoms often go unobserved due to rapid defoliation. Defoliation of the lower plant canopy is often the first obvious symptom of boxwood blight (Figure 2).
- Dark brown or black streak-like lesions appear on infected stems (Figure 3).
- Favored by warm, humid weather.
- Caused by the fungus *Cylindrocladium buxicola*.
- The pathogen can survive on plant debris in the soil for at least 6 years.
- The disease may be spread by splashing water, wind, tools, clothing, and wet hands. Long distance movement is reliant upon the transport of infected plants, infested soil, or contaminated equipment.



Figure 1 — Early symptoms of boxwood blight include the development of circular leaf spots with dark borders.

Photo: Nicole Ward Gauthier, University of Kentucky



Figure 3 — Symptoms of boxwood blight on stems may appear as dark brown or black streak-like lesions

Photo: Nicole Ward Gauthier, University of Kentucky

Boxwood Blight Threatens Kentucky Shrubs continued...

Management Options:

If boxwood blight is suspected, contact the local Extension agent, who may submit a sample to the UK Plant Disease Diagnostic Lab for confirmation.

The following management options are recommended:

- Inspect plants prior to purchase, and do not install any plants with an unhealthy appearance.
- Plant boxwoods with disease tolerance, such as:
 - Buxus microphylla* var. *japonica* 'Green Beauty'
 - Buxus sinica* var. *insularis* 'Nana'.
- Increase plant spacing to allow for air movement.
- Minimize overhead watering.
- Utilize fungicides containing chlorothalonil or tebuconazole to protect plants from infection or suppress disease development. Always follow label directions when utilizing fungicides.
- If plants become infected, remove them from the landscape immediately. If boxwoods grown for commercial sale are infected, they should be destroyed and not sold.



Figure 2 — Defoliation of the lower portions of the plant is often the first noticeable symptom of boxwood blight.

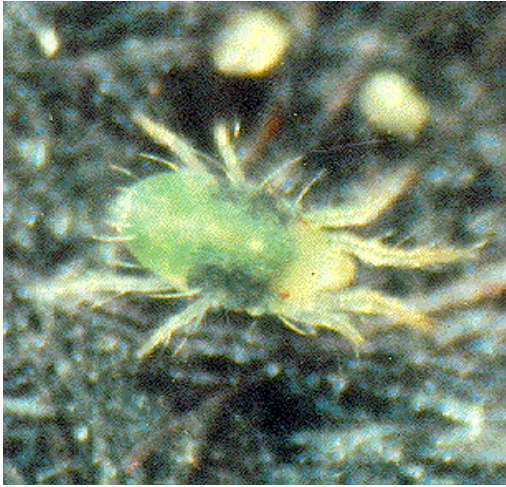
Photo: Nicole Ward Gauthier, University of Kentucky

Additional Information

- Boxwood Blight (PPFS-OR-W-20)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-20.pdf
- Homeowner's Guide to Fungicides (PPFS-GEN-07)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-GEN-07.pdf
- Landscape Sanitation (PPFS-GEN-04)
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-GEN-04.pdf
- Susceptibility of Commercial Boxwood Varieties to *Cylindrocladium buxicola* (North Carolina State University)
http://americanhort.theknowledgecenter.com/library/Americanhort/docs/government%20relations/boxwood%20blight/NCSU_boxblight_tolerance.pdf
- The Most Effective Products for Preventing Boxwood Blight, caused by *Cylindrocladium buxicola* (North Carolina State University)
<http://americanhort.theknowledgecenter.com/Library/Americanhort/docs/government%20relations/boxwood%20blight/7.22.13-BB.pdf>

Spider Mites

Twospotted Spider Mite — *Tetranychus urticae*



Host: Extremely Wide Range

This is the most common and destructive mite on deciduous ornamentals. It will feed on many varieties of trees, shrubs, flowers, weeds, fruits, greenhouse, and field crops. Immatures and adults are yellowish to greenish with two dark spots on either side of the body. Eggs are spherical and translucent. Strands of webbing are spun by the mites on the undersides of infested leaves and between branches. So long as conditions remain favorable for plant growth, these spider mites will feed and reproduce throughout the summer and into the fall, though populations large enough to cause damage are seldom during wet, cool weather. They are especially destructive to winged euonymous (burning bush) in landscapes.

Spruce Spider Mite — *Oligonychus ununguis*

Host: more than 40 species of conifers

Despite the name, this mite feeds on many conifers. Most often attacked are spruce (especially Alberta spruce), pine, juniper, fir, arborvitae, hemlock, taxus, and false cypress. These mites have a similar appearance to the Twospotted spider mite, with coloration varying from deep olive to brownish red. Close inspection of the needles will reveal tiny white flecks and speckles where the mites have fed. Prolonged feeding causes yellowing, browning and premature needle drop, often originating from the canopy interior. Webbing, eggs, and skin casts can also be present. Heavy attacks can cause branch dieback or even kill the plant. This spider mite is a cool season mite and is most active in the early spring and late fall, so expect populations to rebound with the return of cooler weather.



Management

When 24 mites are found on 4 branches / 10 plants, horticultural oil and insecticidal soap applied to foliage 2-3 times, 5 days apart. Horticultural oil should not be used more than once a week. Predatory mites are also available.

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