

GROWING KNOWLEDGE

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Fig. 1. Typical leaf spots and linear- to diamond-shaped stem lesions of boxwood blight. Dark brown leaf spots with bright orange halos on Winter Gem (far left), dark bruising on Newport Blue (center left), and spots with tan centers on Common boxwood (center right). Stem lesions of boxwood blight (far right). PHOTOS COURTESY OF OREGON STATE UNIVERSITY

Scouting for boxwood blight

These tips make it easier to spot and mitigate this highly infectious disease

BY JERRY E. WEILAND AND JAY W. PSCHIEDT

THE 2019 GROWING SEASON was a big year for boxwood blight in Oregon. The disease, caused by the pathogen *Calonectria (Cylindrocladium) pseudonaviculata*, has caused substantial damage to boxwood shrubs in U.S. nurseries and gardens since it was first discovered in 2011.

Only two Oregon nurseries found boxwood blight in 2011. That number expanded to 12 by 2019.

So, how do you know if you have this highly infectious disease and what are the best ways of scouting for it? Here are some tips to help.

Scouting dos and don'ts. The best time to scout for signs of the disease is on cloudy days or in the early morning (after any dew has dried) and late afternoon. Scouting when there is bright sunlight directly overhead can make it more difficult to see boxwood blight symptoms, because of the amount of contrast between the highlights and shadows on boxwood plants.

Scout more often after plants start growing during the rainy spring weather and again in the fall when rains return. Scout less often during the summer drought periods. However, frequent irrigation in summer can increase your risk and make the disease more likely to develop.

The disease can be explosive, appearing within a week of warm weather, abundant moisture, and the pathogen being present. The risk for an outbreak event is decreased when plants are kept drier or temperatures are lower.

Use the Boxwood Blight mobile app or USPest.org webpage to help you with disease forecasting. Be careful when scouting wet plants, as this may increase your risk for spreading spores.

Know your boxwood blight symptoms. Leaf spots are circular, oval, or v-shaped at the leaf tip (Fig. 1). Spots appear as brownish-black bruises or as distinct black spots, often with tan centers. A yellow-to-orange halo may also appear.

Blighted leaves that died rapidly may also be completely gray, brown, or black without distinct spots. Diagnostic, black linear-to-diamond-shaped lesions are common on the stems (Fig. 1).

In addition, look for signs of defoliation. This includes bare branches and fallen leaves on the soil or in the pot. In severe cases, entire sections of the plant or the entire plant can be defoliated and killed. Some of the most severely affected cultivars include straight *Buxus sempervirens* (Common or American boxwood) and the cultivars *Suffruticosa* and Justin Brouwers. However, other cultivars may also be severely affected depending on susceptibility and environment.

Mild, but not meek! Be on the lookout for mild or subtle symptoms. Not every plant will necessarily be devastated by boxwood blight, and symptoms can be inconspicuous. For example, there may be one or two bare branches down near the base of the plant. There may also be a few leaves with leaf spots deep inside the boxwood canopy.

These mild symptoms are likely to explode into a severe



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Fig. 2. Look alike issues. Left to right. Winter damaged leaves with black spots and bruising look very similar to boxwood blight symptoms (left). Leaf spots from chemical damage often have window-like white to tan centers and may have an orange to red halo (center right and right).

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outbreak when the plants are moved into a conducive environment with warm temperatures and ample moisture. The sooner infected plants are found, the more likely the problem can be contained and stopped from

spreading to other areas of the nursery.

Look-alikes. Phytophthora root rot, caused by several *Phytophthora* species, can cause branches or entire plants to turn reddish-orange, then die. Leaves due to root rot don't develop leaf spots, dry to a light tan color, and may be retained for a long time.

Volutella blight, caused by *Pseudonectria buxi*, is a common disease that is often found on the same plants with *Phytophthora* root rot or boxwood blight. Leaves are generally dry, light tan in color, and become covered with salmon-colored spores underneath. Dark blotches may occur towards the center of the leaf or v-shaped lesions may develop at the leaf tip. Leaves are often retained for a long period of time, but may fall off easily.

Winter damage and chemical spray damage can also be difficult to distinguish from boxwood blight and may need laboratory confirmation (Fig. 2). For winter dam-

age, individual leaves are discolored yellow, orange, or brown-to-black, with dark spots or blotchy bruises that appear water-soaked underneath. These frequently produce volutella spores later. Succulent branch tips and leaves become limp, dry, papery-thin husks that may also be covered in volutella spores. Spots due to spray damage often have a papery, window-like white-to-tan center, either with or without orange to red halos.

Break the pattern! The first thing to look for when scouting for boxwood blight is sick plants that break the pattern in an otherwise healthy block of crops. Look for plants that appear off-color, stunted or otherwise unhealthy. Keep a particular eye out for the symptoms most associated with boxwood blight: leaf spots, stem lesions, bare branches, and defoliation.

Get close! Make sure you get up close and personal with plants by conducting a walkthrough. Plants that appear

Free weather tool

This Boxwood Blight mobile app or this web site (<https://uspest.org/wea/>) will help you determine if and when weather conditions are right for boxwood blight development. Start at the top of the menu by clicking on "Quick Start". Then check the nursery box, insert your zip code and click "GO". You will find boxwood blight among the information presented. Change the display dates to include September 2019 to see how favorable that month was for this disease.

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Fig. 3. Going low and down under. Boxwood blight symptoms of leaf spot and defoliation occurring underneath the plant on the lower branches of this field-grown Wintergreen boxwood. PHOTOS COURTESY OF OREGON STATE UNIVERSITY



healthy from as little as 10 feet away may show symptoms of boxwood blight upon closer inspection. Drive-by scouting does not work as the disease is often hidden on parts of the plant that are not easily visible from a vehicle.

Go low! Boxwood blight symptoms often occur low in the canopy, regularly within six inches of the ground or container media (Fig. 3). This is not to say that symptoms can't occur higher up, but the low canopy stays humid longer, giving spores more time to germinate and infect. Also, the lower part of the plant is often poorly covered during fungicide applications, which may leave the plant vulnerable and unprotected. Keep an eye out for fallen leaves, bare stems, as well as for characteristic leaf spots and stem lesions.

Go down under! While you are looking low in the canopy for boxwood blight symptoms, take a look underneath some of the lower branches on your boxwood plants (Fig. 3). Overlying branches can obscure leaf spots, stem lesions, and defoliation occurring on branches.

Go all in! Don't forget to look into the interior of the boxwood canopy as well. Larger shrubs have a greater volume of leaves that do not dry out quickly. Fungicides may not protect interior leaves if spray pressure is not sufficient to cover the interior leaves. This strategy also applies to pot-to-pot production or other tight spacing where the canopies merge together and prevent scouts from seeing down underneath the canopy (Fig. 4). What appears healthy from the outside where the environment is drier may be very different from the humid, conducive environment of the interior canopy.

Look around! Because boxwood blight is spread by splashing spores, if one plant is infected, other plants




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Fig. 4. Go all in. This block of rooted Green Velvet cuttings appears healthy from the outside, but shows symptoms of severe boxwood blight (leaf spots, stem lesions, defoliation) when the canopy is parted.

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around it are likely to be infected as well. Often, there are hot spots of blight within a block of crops, where the plants in the middle are severely infected. So, if a scout sees a plant with suspicious symptoms but is not confident whether it is actually boxwood blight, look around. There is likely another plant nearby that may have more characteristic symptoms.

Don't get blocked! Lastly, be aware of any situations that might prevent effective plant scouting. Large blocks of crops where you can't easily see into the center of the block or down into the canopy will make it less likely that you will discover an infection before it becomes severe. This advice also applies to plants that are too tightly spaced for easy access.

Other common obstructions that make scouting more difficult include plastic, pipes, or other obstructions in the pathways. Weeds



can also obscure symptoms and trap moisture that provides an ideal environment for infection. Leaving boxwood trimmings on the ground may make it more difficult to determine when defoliation from boxwood blight is occurring.

Summary: Finding subtle infections early will help you manage this explosive disease. Scout early, get close, go low and go all in. Breaking up large blocks, spacing plants and removing obstacles for scouting will also help improve fungicide spray coverage. ©

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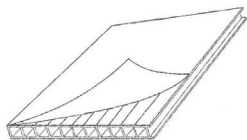
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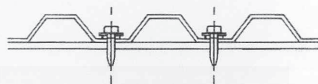
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