

Don't Be Bewildered by Brown Boxwood Leaves

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Brown and yellow boxwood leaves are common after a long cold winter. Papery brown leaf parts can be caused by de-icing salt and drying winds. Circular bumps can be caused by boxwood leafminers (Figure 1) and fine scrapes by boxwood spider mites (Figure 2).



Figure 1. Circular leaf blisters on top surface of boxwood leaf caused by boxwood leafminer.



Figure 2. Typical leaf scraping caused by boxwood spider mite injury. They winter as eggs on leaves and stems.



Figure 3. Boxwood leaf mine with yellow maggot inside.



Figure 4. Clear windows on leaf undersides chewed by boxwood leafminer maggots.

What are boxwood leafminers?

Boxwood leafminers, *Monoarthropalpus flavus*, are the worm like maggots of small orange gnats that feed inside boxwood leaves (Figure 3). Just prior to pupation in (May this year in Lafayette, IN), leaf miners chew clear windows on the leaf undersides when boxwoods are in full flower (Figure 4). Adult boxwood leafminers are small bright orange gnats (Figure 5). Adults emerge from the leaves in late spring after boxwoods have completed flowering when weigela shrubs are in bloom in late May or June. Adults fly for about a month and lay eggs on leaves that hatch into orange maggots that feed all summer inside bumpy orange mines. Mines are somewhat blister like and can be revealed by splitting the leaf and peeling back the leaf tissue.



Figure 5. Adult boxwood leafminer.

Do all boxwoods get leafminers?

Although most little leaf and common boxwoods (*Buxus sempervirens*, and *B. microphylla*) are susceptible to this insect, some varieties are resistant to this pest including "Handsworthiensis", and "Vardar Valley". Planting resistant varieties can avoid the need for using pesticides and the potential for spider mite outbreaks that may result from their application. A complete listing of resistant varieties is available at the end of this post.

How to manage my boxwood leafminer problem?

Boxwood leafminers can be controlled by pesticide applications that either kill adults before they lay eggs, and or kill the early stage larvae soon after they begin feeding inside the leaf.

Systemic applied insecticides tend to be more effective than contact insecticides because they kill leafminers that hatch from eggs laid in the leaf tissue. Soil applied systemic insecticides including dinotefuran, and imidacloprid can be applied to the soil soon after boxwoods have stopped flowering. This will allow enough time for the product to be taken up into the leaves, while reducing exposure to pollinators. Although these products are effective against both the boxwood leafminers they can increase problems with boxwood spider mites. Many products containing spinosad (Fertilome Borer and Bagworm Killer, or Captain Jack's Deadbug) are labeled to reduce leafminer problems and do not cause mite outbreaks. I could find no reference in the literature that shows they are effective against this boxwood leafminer.

What are boxwood spider mites and can I manage them and boxwood leafminer?

Boxwood spider mites (*Eurytetranychus buxi*) are small spider like animals that winter as eggs on boxwoods and are active during the early part of summer. Adults and immature stages feed on the underside of leaves by piercing leaf tissue and producing small scrapes of discolor. Boxwood spider mites and boxwood leafminer can be controlled when adult leafminers are flying by applying a product labeled for this use that contains bifenthrin, (eg Bug B Gone, Eight, Home Defense). Landscape professionals, can apply a foliar systemic called avermectin (Avid) that will kill adult flies, maggots in the leaves, and spider mites. These applications will have minimal impact on pollinators because adult flight occurs after boxwoods flower.

Useful Links.

Resistant Boxwoods (Thanks to Joe Boggs OSU)

http://www.boxwoodsociety.org/uploads/54_1_2014_Summer.pdf#page=9

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