IFAS DISEASE ALERT UPDATE: BOXWOOD BLIGHT DETECTED IN LEON COUNTY, FLORIDA: FEB 2016

- Boxwood blight pathogen has been confirmed by the University of Florida NFREC Plant Diagnostic Clinic and the Division of Plant Industry, FDACS in a residential landscape in Tallahassee (early February 2016). In this case, a pyramid boxwood showing symptoms (picture to the right) had been purchased from a nursery in Georgia; in turn, the Georgia nursery had purchased the plant from Oregon. The plant was asymptomatic at the time of purchase and transport to Tallahassee. The pathogen started causing symptoms of disease early January when environmental conditions were conducive for disease development (cool and wet).

- A second finding of the disease was confirmed by Division of Plant Industry at a local nursery in Leon county (late February 2016). In this case, the plant/s came from Mississippi.

- DPI, the property owner in the first case, and the nursery personnel in the second case are currently implementing strategies to eradicate the disease from the locations to avoid any further spread.

Close up of Boxwood Blight symptoms from the pyramid boxwood to the right. Note the dark discoloration of the leaves. Stems presented same dark discoloration. Also note leaf drop on the soil inside the pot.

Also see similar leaf spot symptoms from [UGA extension publication.]

IFAS DISEASE ALERT: BOXWOOD BLIGHT

Causal organism: *Cylindrocladium pseudonaviculatum* (Synonym-*C. buxicola*)
(Teleomorph: *Calonectria pseudonaviculata*)

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Basics

- Boxwoods (*Buxus* spp.) are commercially important evergreen ornamental plants with an annual market value of over $103 million in the United States.

- The first confirmed reports of Boxwood blight in the U.S were from Connecticut and North Carolina in November 2011, followed by confirmation in numerous states since then.

- In Florida, Boxwood blight was discovered in April 2015 in a commercial nursery in North Florida by the University of Florida, NFREC Plant Diagnostic Clinic and the Division of Plant Industry, FDACS. The disease was on liners of Common boxwood (*B. sempervirens*) and 'Green Velvet ' (*B. sinica var. insularis* x *B. sempervirens* 'Suffruticosa') cultivars shipped from Oregon.

- Spread outside the Florida nursery has not been reported as of May 18th, 2015. Shipment trace-forwards by DPI are underway. DPI and the nursery implemented strategies to eradicate the pathogen from the location.

- Nursery personnel should be aware of the symptoms of boxwood blight and monitor plants in the nursery and landscape routinely.

Symptom in general: Leaf spot

The fungal pathogen infects leaves and branches of boxwoods, causing light or dark brown leaf spots with a dark or diffuse border.

Symptom: Black, constricted stem and leaf blight

M. Paret

UF IFAS NFREC

Infected branches develop long blackish-brown streaks on stems. The fungus does not infect roots; thus, plants may re-grow even after a severe infection. However, repeated defoliation and dieback can predispose plants to other diseases, such as **Volutella blight,** resulting in decline and eventual death.

Advanced stage of the disease on a *B. sempervirens* cultivar.

Symptom: Leaf drop

Blighted leaves that remain attached to the plant after death are NOT a symptom of Boxwood blight

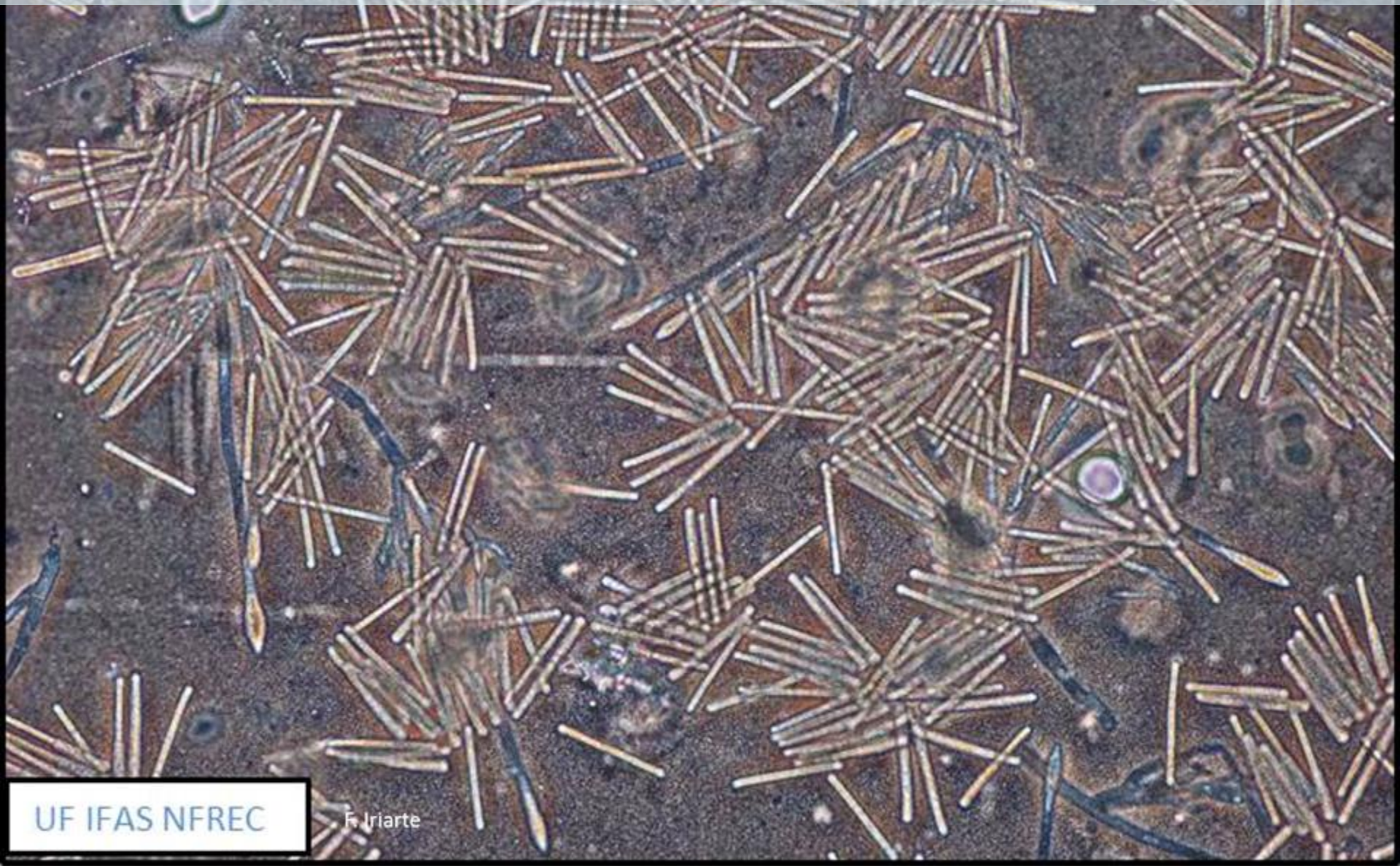
M. Paret

Diagnostic

In warm humid conditions, the fungus produces clusters of white spores on the underside of the leaves and on infected stems.

F. Iriarte

C. pseudonaviculata spores as seen under the microscope (40X). Each one of these fungal spores is capable of starting new infections if environmental conditions are favorable for disease development.



Look-alikes

Volutella blight (*Volutella buxi*)

Opportunistic pathogen that is common on boxwood stems and foliage. *Volutella* may follow *Cylindrocladium* infection. Note the salmon colored spore masses.

Look-alikes

Fusarium blight
(*Fusarium* spp.)
Fungal spores are easily distinguishable from those of *Cylindrocladium* using a microscope


Margery Daughtrey -Cornell Univ. LIHREC

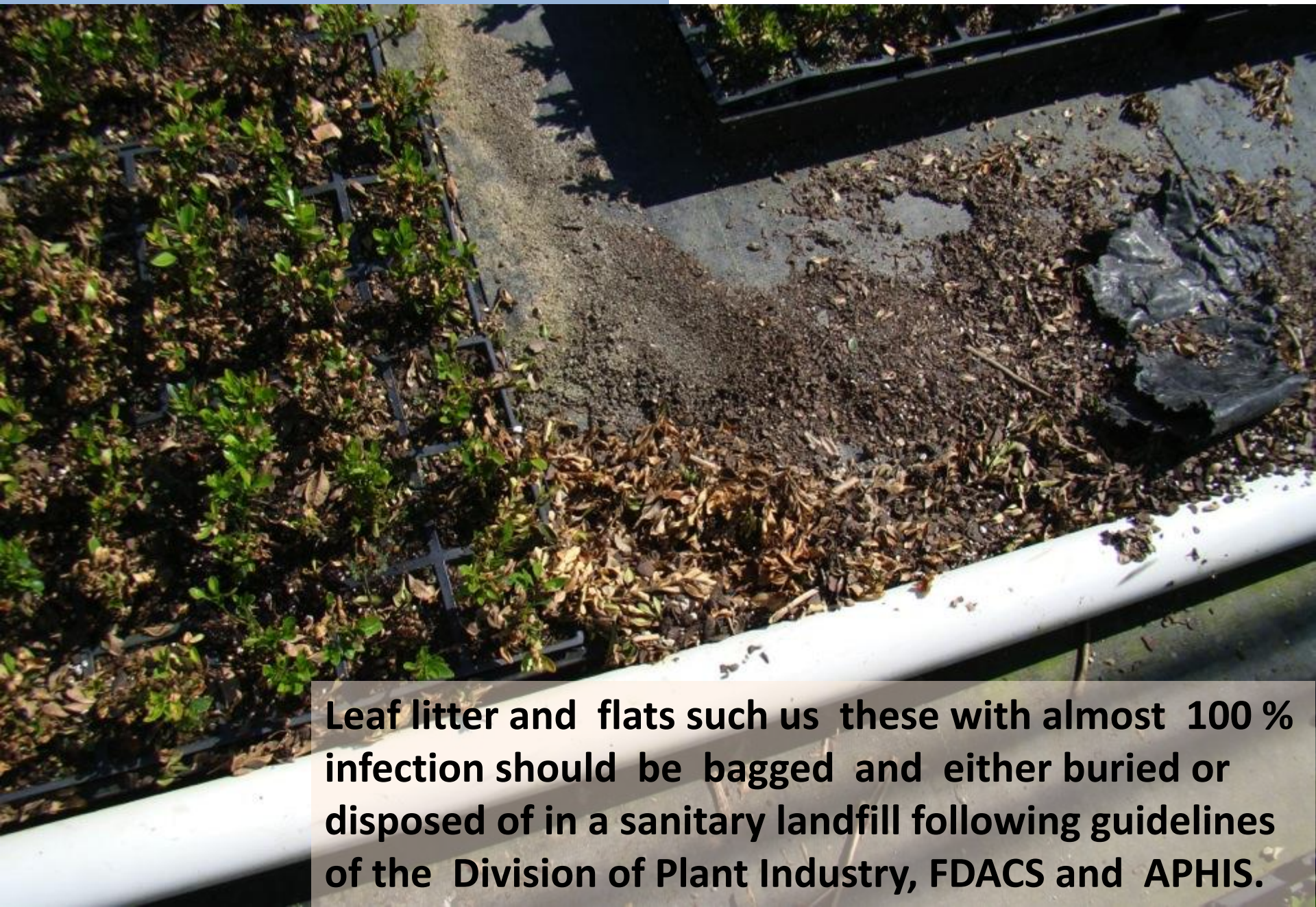

Margery Daughtrey -Cornell Univ. LIHREC

Macrophoma leaf spot and leaf blight
(*Macrophoma candollei*)
Leaf spots have distinctive black fungal structures.

Epidemiology

- The pathogen spreads by wind-driven rain or splashing water over short distances and is most infective during conditions of high humidity.
- The range of spore dispersal by wind or air currents is not known. It is believed to be short distances.
- Long-distance spread of this disease occurs via movement of infected plants, infected plant debris, soil or equipment.
- Spores also may be spread by insects.
- The pathogen has been found to survive in leaf debris placed either on the soil surface or buried in the soil for up to 5 years. (Virginia Department of Agriculture)
- *C. pseudonaviculata* is primarily a foliar pathogen that causes only above-ground symptoms. However research has shown that fungal structures (fungal spores and microsclerotia) can remain viable in soil for up to 3 and at least 40 weeks, respectively. (Virginia Department of Agriculture)

Management: Sanitation



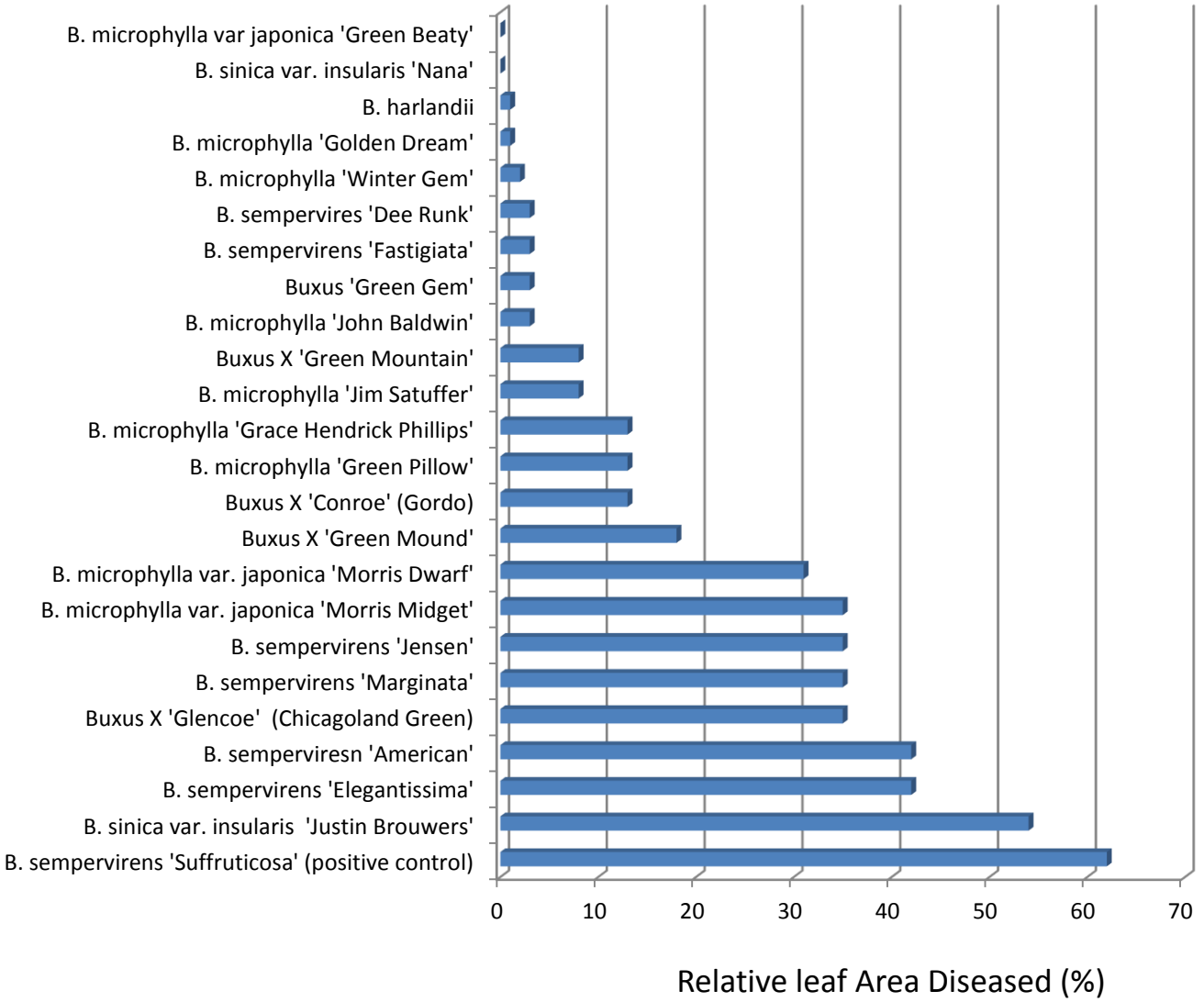
Leaf litter and flats such us these with almost 100 % infection should be bagged and either buried or disposed of in a sanitary landfill following guidelines of the Division of Plant Industry, FDACS and APHIS.

Management: Prevention

- Use only reliable sources of liners/plant material.
- Inspect plants for black leaf spots, black cankers or leaf drop before purchase.
- Disinfest pruning between groups of plants.
- Do not bring in mulch that might contain diseased boxwood material.
- Consider using less-susceptible boxwood varieties and planting them in full sunlight with good ventilation.

Resistance

Susceptibility of some Commercial Varieties to Boxwood Blight in North Carolina (based on final disease assessment 2012)



Source

Susceptibility of Commercial Boxwood Varieties to *Cylindrocladium buxicola* . Miranda Ganci, D. M. Benson and K. L. Ivors.Department of Plant Pathology. **NC State University**

For more detailed and most recent information refer to: NC STATE UNIVERSITY

Boxwood in Florida

- Any *Buxus* species may be produced by Florida nurseries but most are sold north of Florida.
- Boxwood cultivars derived from *Buxus microphylla* may be suitable for landscape use in north and central Florida (USDA Cold Hardiness Zones 8 and 9) when planted in partial sun and if avoiding sandy soils.
- Most cultivars derived from *Buxus sempervirens* and *Buxus sinica* are not expected to thrive in Florida landscapes.
- Florida boxwood (*Shaefferia frutescens*) is not in the genus, Buxus, and is unaffected by Boxwood blight. It is adapted to south Florida.

Chemical control

The products listed below were the most effective chemistries for preventing boxwood blight during 2012-2013 field trials conducted at **NC State University**, MHCREC in Mills River, NC. It is provided here for reference only . **These products have not been evaluated for control of Boxwood Blight in Florida.**

Trade name	Company	Active Ingredient	FRAC [1]	SITES [2]
Daconil Weatherstik	Syngenta	Chlorothalonil	M5	G, N, L
Spectro 90WDG	Nonfarm	Chlorothalonil + Thiophanate methyl	M5+1	G, N, L
Concert II	Syngenta	Chlorothalonil + Propiconazole	M5+3	N, L
Torque	Nonfarm	Tebuconazole	3	N, L
Tourney 50WDG	Valent	Metconazole	3	N, L
Medallion WDG	Syngenta	Fludioxanil	12	G, N, L

[1] Key to fungicide groups.
[2] Product labeled to use in G=greenhouse; N=nursery; L=landscape

Source

The Most Effective Products for Preventing Boxwood Blight, caused by *Cylindrocladium buxicola (=Calonectria pseudonaviculata)*. Kelly Ivors, Extension Plant Pathologist, and Miranda Ganci, Graduate Student. Dept. of Plant Pathology, **NC State University**

For more detailed and most recent information refer to: NC STATE UNIVERSITY

Management: Cultural Control

- Routinely inspect all incoming boxwood material for symptoms and closely monitor them for symptom development. Isolate new plant material from other nursery stock for at least three weeks.
- Keep in mind that asymptomatic boxwood plants or cuttings can harbor the pathogen.
- Asymptomatic cultivars with less susceptibility can become "Trojan Horses", introducing the pathogen to other valuable cultivars.
- If you detect symptoms of boxwood blight, immediately have your plants tested. Remove and discard (burn) infected plant material to avoid spread of the pathogen to healthy plants.

For general information see: Boxwood Blight Update

Recommendations for landscapers

- ❑ Inspect boxwoods on your property for leaf spots and blight symptoms.
- ❑ Keep in mind that besides infected plant material and plant debris, fungal spores can also be moved by water, wind, shoes, tires, clothing or animal fur. Disease can be also spread by pruning tools, shovels, hoses or any other landscape equipments from infected to healthy plants in the same property or to other properties.
- ❑ Train employees and clients on how to identify Boxwood blight and how to avoid disease spread.
- ❑ Whenever possible, purchase plants from nurseries that have Boxwood Blight Compliance Agreement through their State Department of Agriculture (e.g.: Georgia Department of Agriculture).
- ❑ Disinfect pruners, other tools, or shoes within and between different blocks of plants within the same landscape and specially when moving to other landscapes. Good products are Lysol Concentrate Disinfectant (2.5 Tbsp/gallon of water) or 10 % bleach solution.

ANLA - HRI - NPB ONLINE RESOURCES

Nursery Industry Voluntary Best Management Practices

For *Cylindrocladium pseudonaviculatum* (Boxwood Blight)

To prevent the introduction of the disease and what to do if it is detected in nursery operations

Version 1.1

HRI

ANLA American Nursery & Landscape Association

Endorsements:

American Nursery & Landscape Association
Boxwood Blight Working Group
Horticultural Research Institute
National Plant Board

NPB national plant board

http://nationalplantboard.org

Testing locations

Submit samples for disease identification to:

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NFREC, University of Florida
155 Research Road, Quincy, FL 32351
850-875-7140/7154, fbiriarte@ufl.edu, paret@ufl.edu
http://programs.ifas.ufl.edu/u-scout/Lab_Profile.html

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