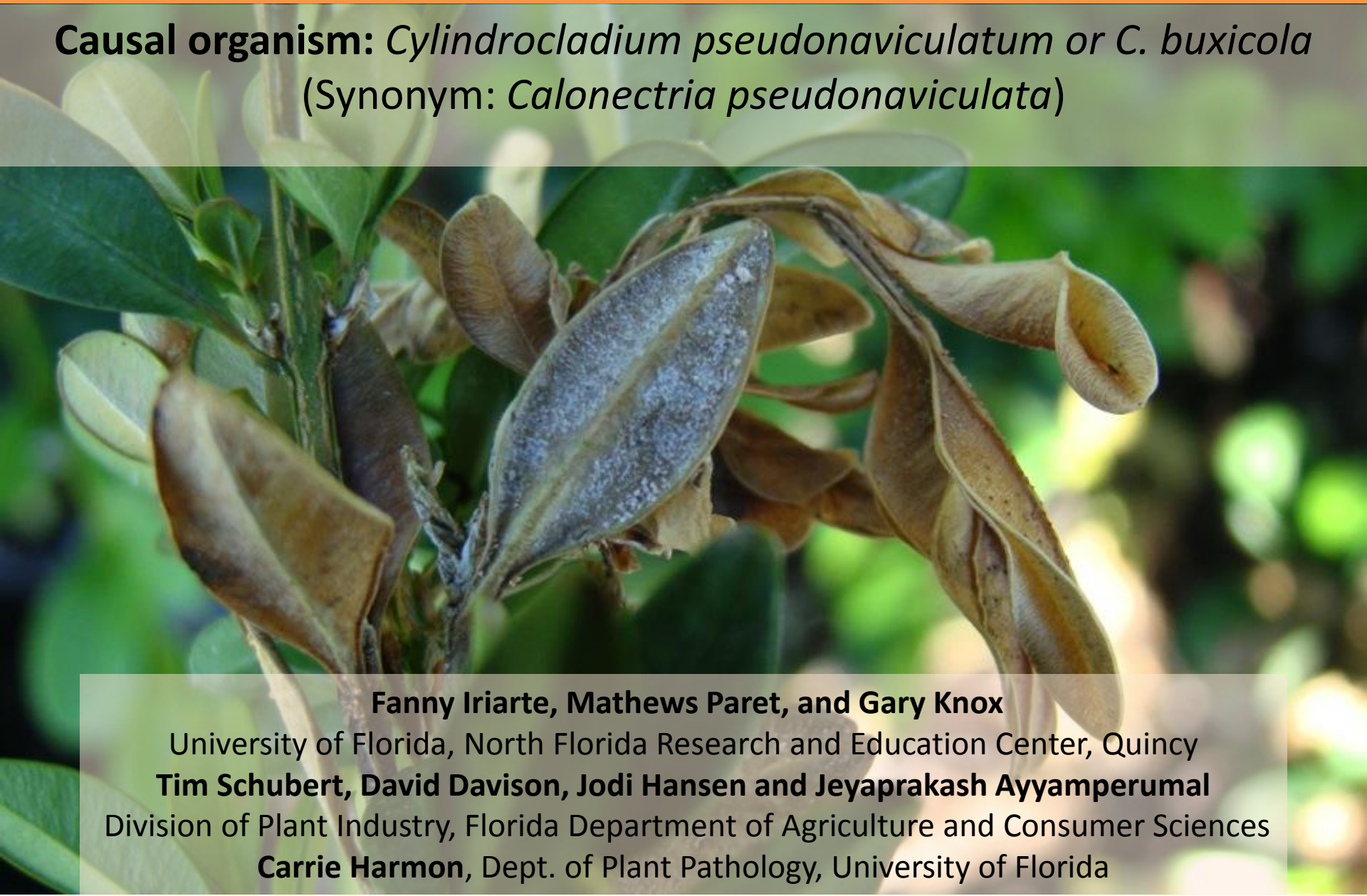
IFAS DISEASE ALERT: BOXWOOD BLIGHT

Causal organism: *Cylindrocladium pseudonaviculatum or C. buxicola* (Synonym: *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. No other occurrences have been detected/reported in the area as of May 18th, 2015. Shipment trace-forwards by DPI are underway. DPI and the nursery are currently implementing 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: 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

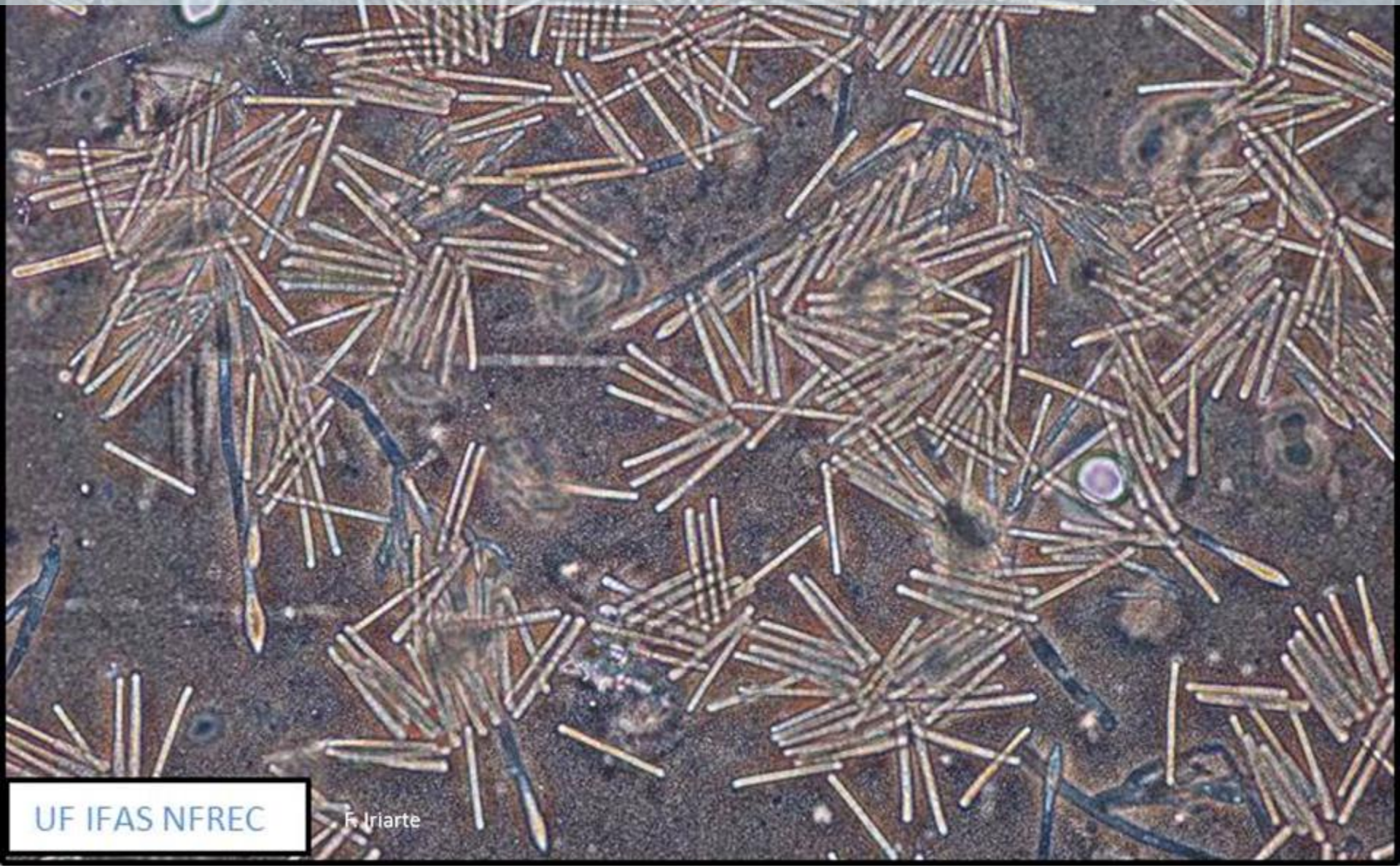
M. Paret

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. pseudonaviculatum 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 *C. pseudonaviculatum* infection. Note the salmon colored spore masses.

F. Iriarte

M. Paret

Look-alikes

Fusarium blight
(*Fusarium* spp.)
Fungal spores are easily distinguishable from those of *C. pseudonaviculatum* 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. (Henricot, B. 2006)
- *C. pseudonaviculatum* is primarily a foliar pathogen that causes only above-ground symptoms. However, research has shown that spores can remain viable in soil for up to 3 weeks, and microsclerotia for at least 40 weeks. (Norman L. Dart. et. al.- Virginia Department of Agriculture).

Management: Sanitation

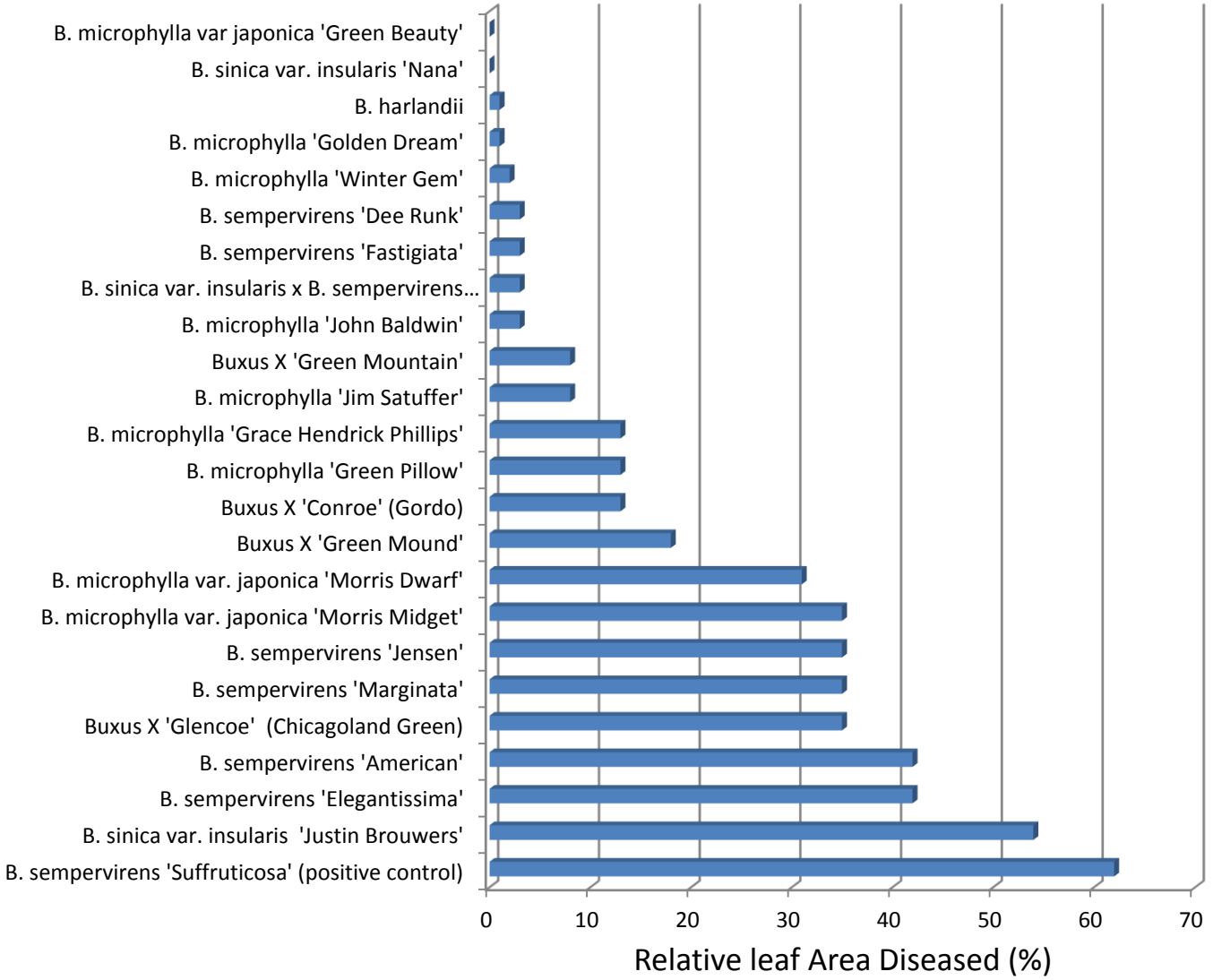
Leaf litter and flats such us these with almost 100 % infection should be bagged and either buried or disposed of in a sanitary landfill following guidelines of the Division of Plant Industry, FDACS and APHIS.

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 tools between groups of plants.
- Do not bring in cuttings, clippings or mulch that might contain diseased boxwood material.
- Consider using less-susceptible boxwood varieties and growing 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 (*Schaefferia 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	Nufarm	Chlorothalonil + Thiophanate methyl	M5+1	G, N, L
Concert II	Syngenta	Chlorothalonil + Propiconazole	M5+3	N, L
Torque	Nufarm	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 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.
- Routinely inspect boxwood in the landscape, on the nursery grounds, and in the surrounding area for boxwood blight.

For general information see: Boxwood Blight Update

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:

Mathews Paret/ Fanny Iriarte
Assistant Professor, Plant Pathology/ Plant Disease Diagnostician
NFREC, University of Florida
155 Research Road, Quincy, FL 32351
850-875-7154, paret@ufl.edu
http://nfrec.ifas.ufl.edu/paret/u-scout/Lab_Profile.html

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http://plantpath.ifas.ufl.edu/Clinic/index.shtml