

# **Boxwood Blight**

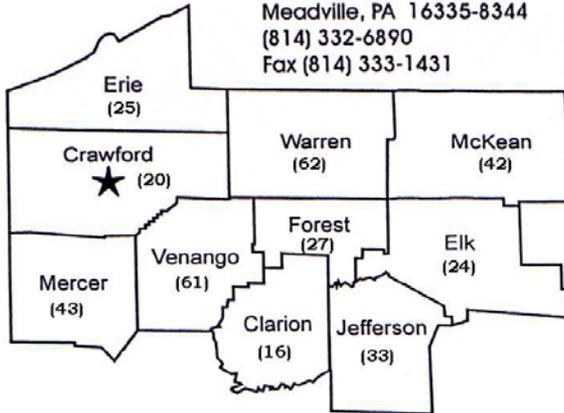
**June 24, 2016**

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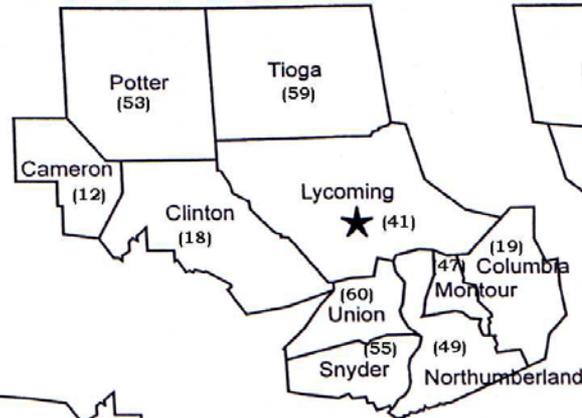
# PENNSYLVANIA DEPARTMENT OF AGRICULTURE

## REGIONAL OFFICES

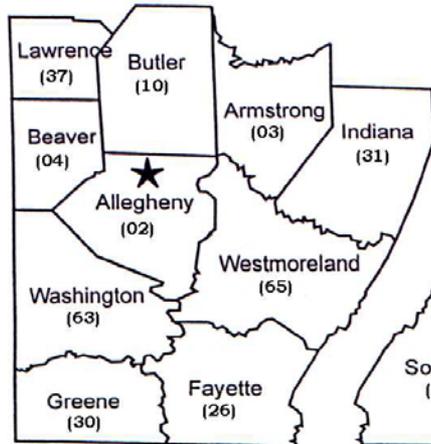
**Region I Office**  
 13410 Dunham Road  
 Meadville, PA 16335-8344  
 (814) 332-6890  
 Fax (814) 333-1431



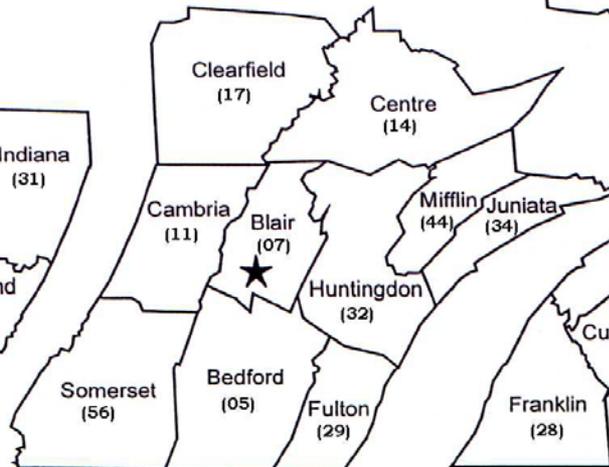
**Region II Office**  
 542 County Farm Road, Suite #102  
 Montoursville, PA 17754-9209  
 (570) 433-2640  
 Fax (570) 433-4770



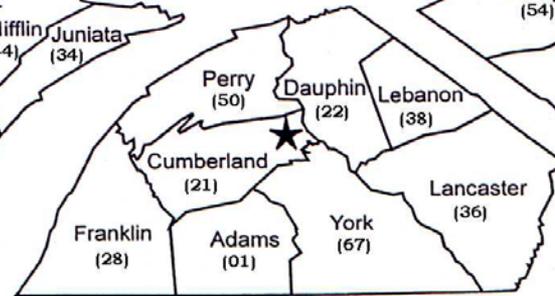
**Region III Office**  
 Rt. 92 South, P.O. Box C  
 Tunkhannock, PA 18657-0318  
 (570) 836-2181  
 Fax (570) 836-6266



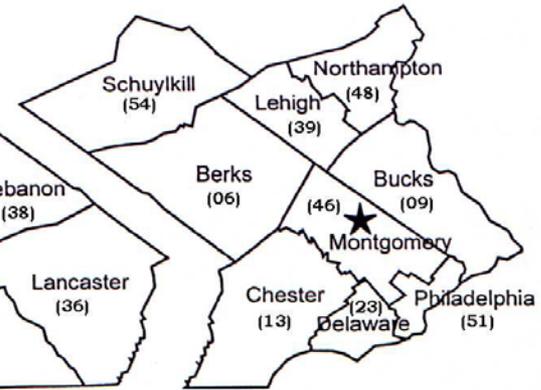
**Region IV Office**  
 5349 Wm. Flynn Highway  
 Gibsonia, PA 15044-9644  
 (724) 443-1585  
 Fax (724) 443-8150



**Region V Office**  
 1307 7<sup>th</sup> Street  
 Cricket Field Plaza  
 Altoona, PA 16601-4701  
 (814) 946-7315  
 Fax (814) 946-7354



**PA Agriculture building**  
 Harrisburg, PA 17110  
 (717) 346-3223



**Region VII Office**  
 Route 113, P.O. Box 300  
 Creamery, PA 19430-0300  
 (610) 489-1003  
 Fax (610) 489-6119

# Plant Pest Diagnostic Labs



- Provide diagnostic laboratory support
  - Plant inspection program (avg. 2,400 samples/yr)
    - Routine Inspections
    - Traceforwards and tracebacks
    - Fed/State phytosanitary certification
  - Clean-plant certification programs
    - Fruit tree improvement
    - SANC
  - Vegetable Transplant Inspection program
- Pest surveys (exotics)
- Management/eradication efforts
- Cooperative efforts with USDA, State Agencies, PSU and other Universities.

# Disease Control Principles

- Exclusion
- Eradication
- Protection
- Immunization (resistance)

# Boxwood Blight

(*Calonectria pseudonaviculata*)



S.M. Douglas, Connecticut Exp. Station

# Boxwood Blight (BWB)

- Caused by the fungus *Calonectria pseudonaviculata*.
  - = *Cylindrocladium buxicola*.
  - = *Cylindrocladium pseudonaviculatum*.
- Also called:
  - Box blight.
  - Boxwood leaf drop.
  - Blight disease of Boxwood.



S.M. Douglas, Connecticut Exp. Station

# Historical Background

- 1994 – Boxwood Blight first detected in United Kingdom.
- 2002 – BWB found in New Zealand, reported as *Cylindrocladium pseudonaviculatum* .
- Now widespread throughout UK (reported as *C. buxicola*) and European Countries. (not regulated, but “disease of concern”).
- **October, 2011 – First detected in U.S. in NC and CT.**
- **January 2012 - PA**
- **Detections in North America (2011 – present)**
  - **U.S. – AL, CT, DE, GA, KY, MA, MD, NC, NJ, NY, OH, OR, PA, TN, RI, and VA.**
  - **Canada – BC, ON, QC.**

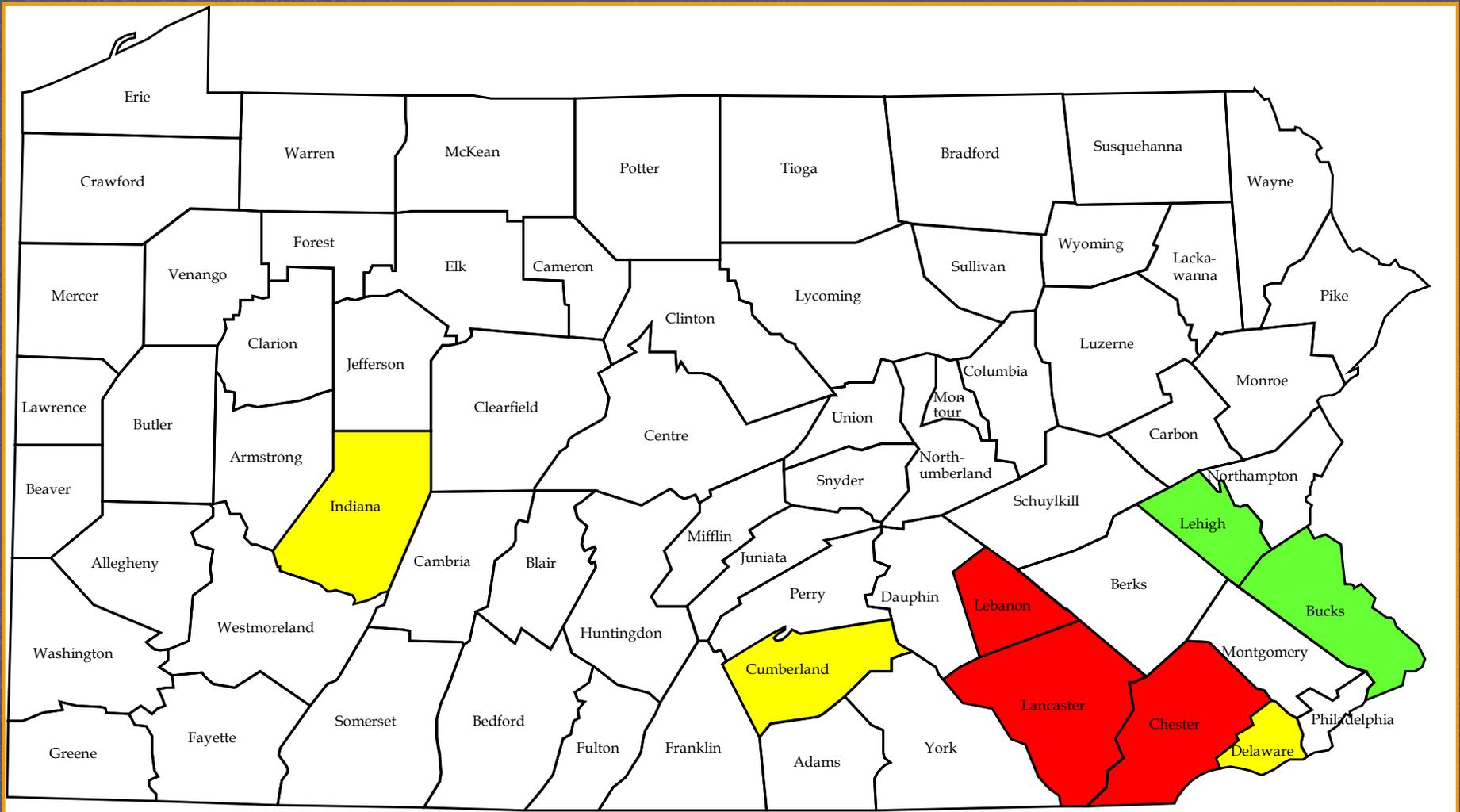


# BWB Detections in PA

2012 – Red

2013 – Yellow

2014 – Green





# Origin of Boxwood Blight Fungus

- Geographic origin is not known.
- Not known how or when the pathogen was introduced into the U.S.

# Hosts in Family *Buxaceae*

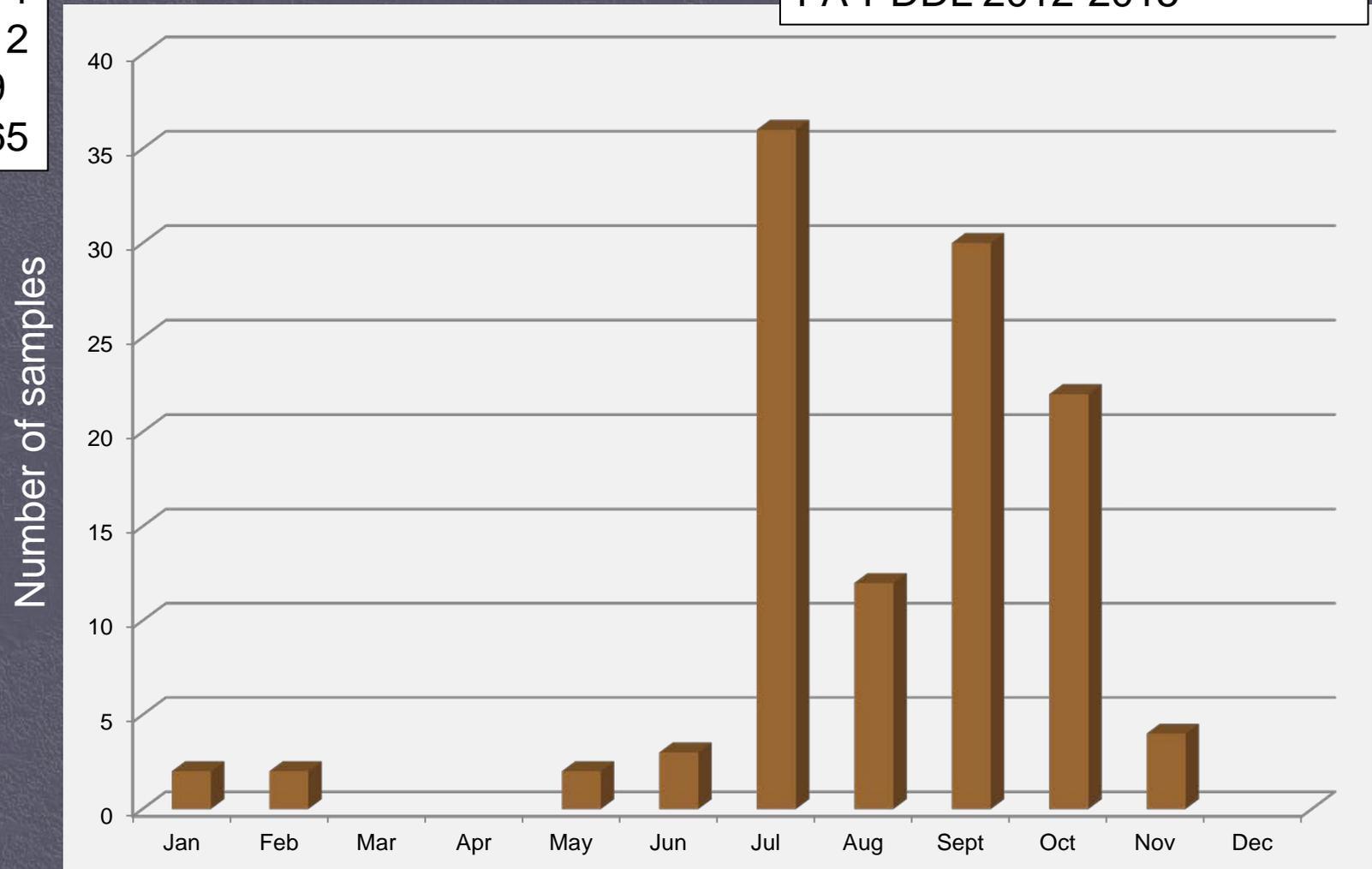
- *Buxus sempervirens* 'suffruticosa'
  - "English Boxwood"
- *Buxus sempervirens*
  - "Common Boxwood"
- *Sarcococca* spp.
  - "Sweet-box"
- *Pachysandra* spp.
  - "Japanese spurge"
  - "Allegheny spurge"



# Best months for detection are July - October

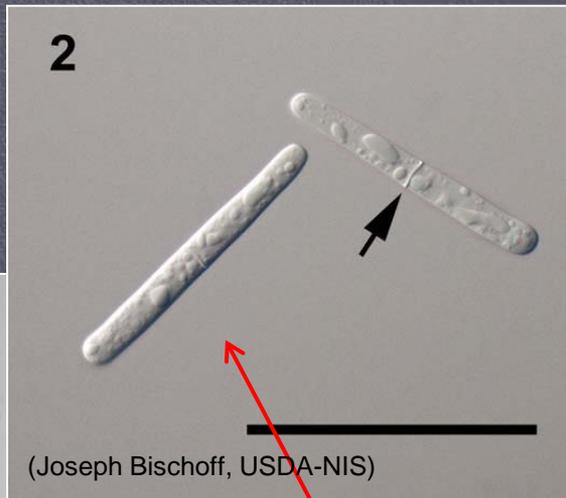
Positives  
2012 – 14  
2013 – 12  
2014 – 9  
2015 – 65

Number of Positive detections  
PA-PDDL 2012-2015



# Terminology

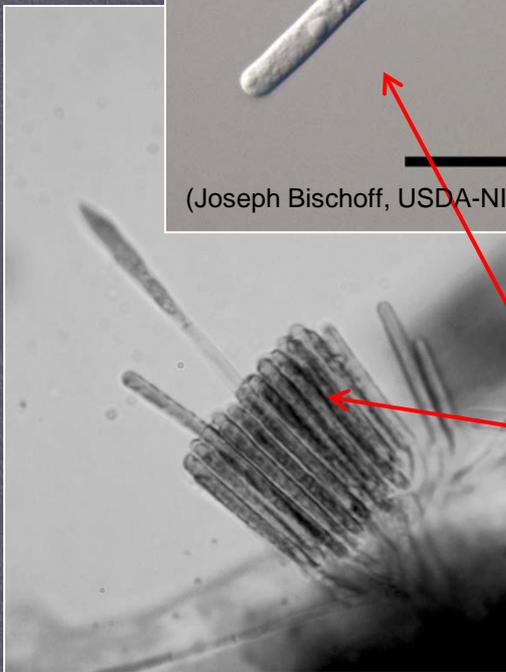
Sporodochium = fruiting structure



Microsclerotia = resting/over-wintering structure



Conidia = infective spore



# BWB symptoms

- **Active infection period starting in July through October.**
- Start as leaf lesions/stem cankers.



- Lesions progress to leaf blight.
- Sporulation may be visible on undersides of infected leaf during moist conditions.



Cylindrocladium sporulation white color.

Volutella sporulation salmon color.



Tracey Olson, PDA

# Stem lesions



Kelly Ivors, Box blight, NC State University



Kelly Ivors, Box blight, NC State University

S.M. Douglas, Connecticut Exp. Station

**Blight and defoliation  
starting in July - Oct**



# BWB symptoms October through June \*

- Defoliated interior of plant.
- “Healthy” foliage at tips of branches.
- Stem cankers may still be visible.
- \* Samples submitted during this period should include stems with cankers, as well as leaves that have dropped.



# Disease Cycle

- Can be rapid, completed in one week.
- Temperatures between 41-86 °F.
- Optimum temperature 77 °F.
- Infections occur quickly under warm(64-77 °F), humid conditions (**July-October**).
- Spores germinate and penetrate leaves within 5 hours. No wound necessary.
- High humidity or leaf wetness required for infection. (Overhead irrigation)

# Transmission

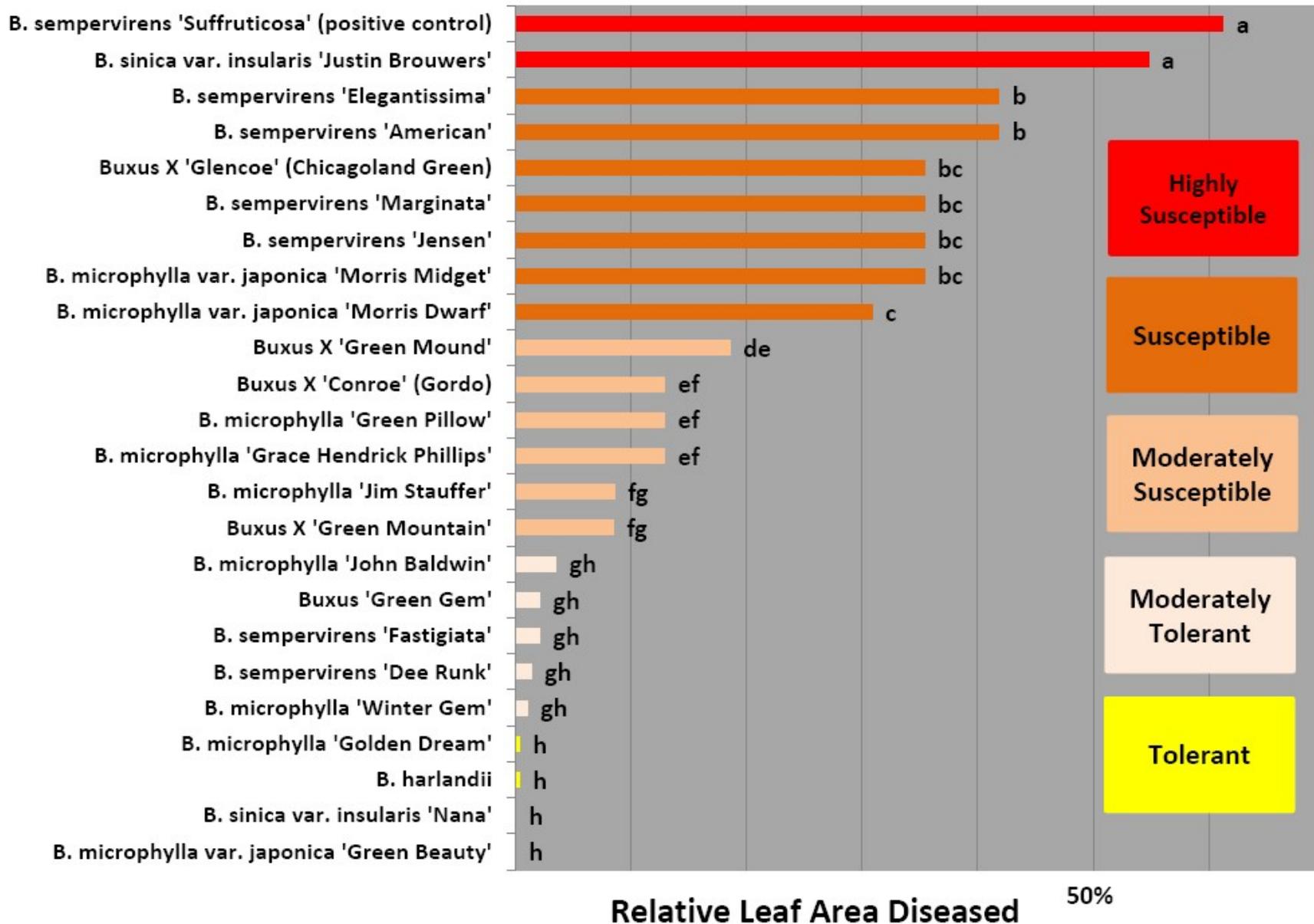
- Short distances, within a nursery or landscape:
  - Splashing conidia from rain and irrigation.
  - Conidia can be wind disseminated.
  - Conidia can be carried on clothing, implements, hands, animals.
  - Diseased plant debris.
  - Microsclerotia in Soil.
- Long distances:
  - Movement of infected plants.



- PA Department of Agriculture has declared Boxwood Blight to be a “Regulated Pest”.
- Goal is to stop artificial spread by human activities such as:
  - Propagation of infected material.
  - Distribution of infected plant material.

# Susceptibility of Commercial Varieties to Box Blight

(analysis based on final disease assessment)



# Other Boxwood Diseases

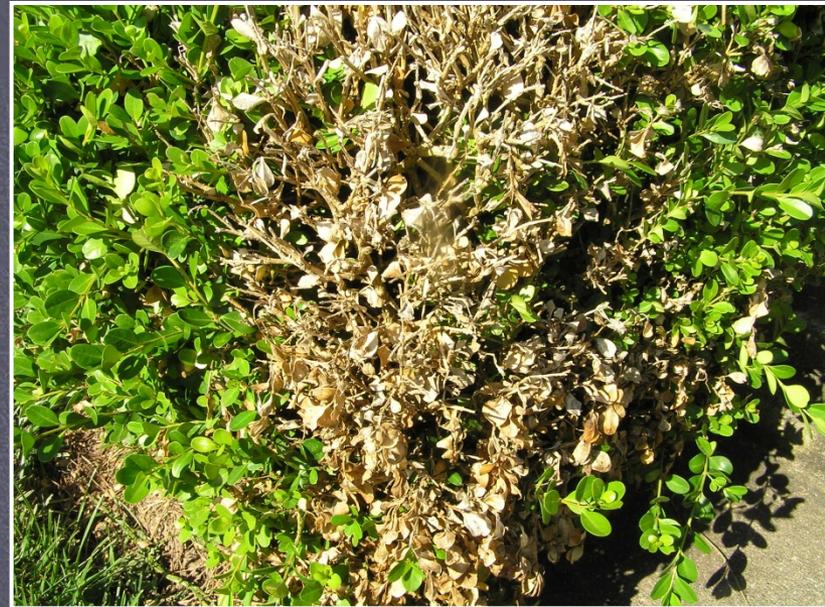
Volutella blight  
(*Volutella pachysandrae*)



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Phytophthora root rot  
(*Phytophthora parasitica*)



Winter burn



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Macrophoma leaf spot  
(*Macrophoma candeolei*)



M. J. Raupp



M. J. Raupp



Tracey Olson, PDA

Boxwood leafminer  
(*Monarthopalpus flavus*)

# Important points

- New disease to the U.S.
  - Landscapes with this disease likely had boxwoods planted in last few years.
- Disease active **July – October**.
  - Rapid progression of blight and stem cankers.
  - May be extended in hoop houses.
- Disease dormant November – June.
  - Look for defoliated plants.
  - Sample must include defoliated leaves.
- Dwarf English boxwood most susceptible.

A close-up photograph of a pine branch. The branch is covered in long, thin, green needles. Several brown, cone-like structures are visible, some in the foreground and some in the background. The background is a soft, out-of-focus green.

Thank You

Are there any  
Questions  
Or  
Comments?