Boxwood Blight, Rose Rosette, and Reducing Landscape Disease Risks

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Boxwood blight

- Found in GA in 2014
- Now in numerous landscapes
- Introduction is often with new plants
- BUT, movement has been attributed to landscape maintenance (pruning, pine straw mulching) and animal (pet) activity

Boxwood Blight Symptoms

- Leaf spots
- Dark stem lesions
- Foliage browning
- Rapid defoliation

Boxwood Blight infected boxwood

- Symptoms may not be easily seen
- Do not ignore suspicious symptoms

Boxwood blight infected garden in GA by Jan 2016

Image from Jamie Arrington, GDA

Fall 2015 – “Perfect” for an epidemic (WET and cool)

Image from Jamie Arrington, GDA

Symptoms may vary

- Leaves darken, and may not show obvious round, tan leaf spots
- Leaves drop while still green
- Disease inhibited by hot temperatures, so may not be obvious in mid-summer

Spread

- Sticky spores are too heavy to blow in the wind
  - Water splash movement
  - Blowing of leaf debris
  - Carried on tools, clothing
  - Carried on animal fur

Sporulation

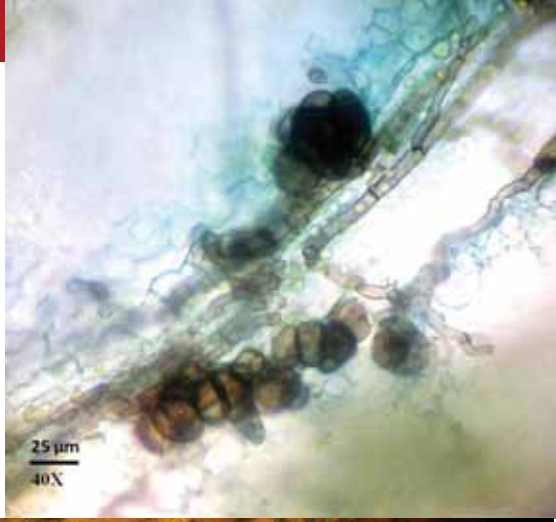
- White sporulation on leaf lesions and black stem cankers
- Produced with 48 hrs under warm, humid conditions
  - Could take longer if leaves treated with fungicides or temperature is very high

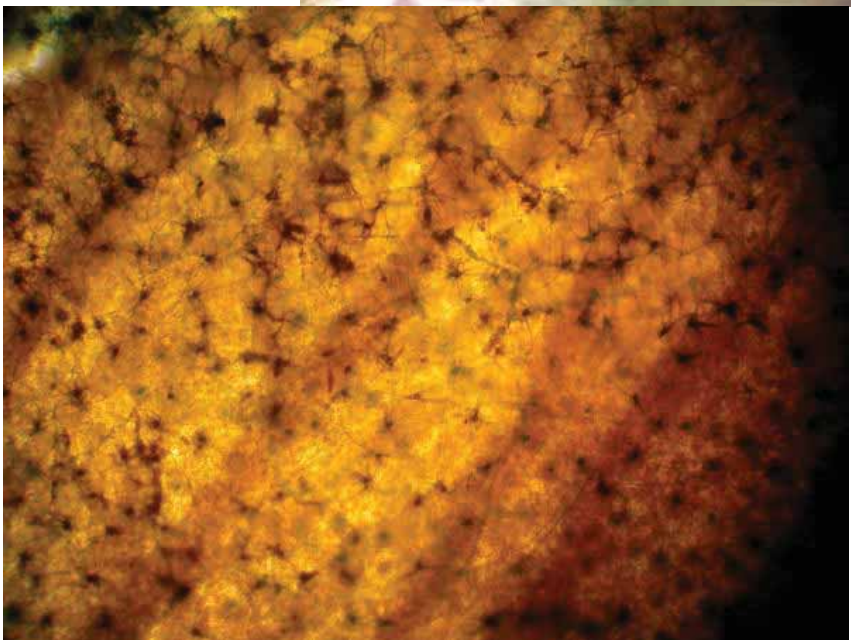
Conidia

- Elongated, rod-shaped spores (conidia) produced in a cluster (sporodochium)
- Very sticky

Microsclerotia

- Cluster of chlamydospores (survival spores) and hyphae
- Found abundantly in leaf tissue
- Could survive for at least 5 years, possibly 15 years





Management – Very Difficult!

- Discard infected plants immediately
  - Bag and dispose
  - Don't transport infected plants in open truck beds
  - Don't place in compost or cull piles
- Remove all fallen leaf litter and dispose
  - Vacuum leaf litter
  - Burn with area with propane torch
- Disinfest tools, shoes, clothing
    - Lysol concentrate (2.5 -5.0 Tbsp/gal water) best for spores
    - 70% ethanol or Lysol Disinfectant Spray Brand III with 58% ethanol and 0.1% dimethyl benzyl ammonium saccharinate)
    - 10% bleach (1:14 ratio of 8.25% sodium hypochlorite)
- Preventive fungicide treatments to protect plants from infection
    - chlorothalonil, fludioxonil, thiophanate methyl, tebuconazole
- Fungicides <u>after infection</u> are ineffective

- Boxwoods are not equally susceptible

Cultivar Susceptibility

B. sempervirens 'Suffruticosa'	Highly Susceptible
B. sinica var. *insularis* 'Justin Brouwers'	Highly Susceptible
B. sempervirens 'American'	Susceptible
Buxus 'Green Gem'	Moderately Tolerant
B. microphylla 'Winter Gem'	Moderately Tolerant
B. microphylla 'Golden Dream'	Tolerant
B. harlandii	Tolerant
B. sinica var. *insularis* 'Nana'	Tolerant
B. microphylla var. *japonica* 'Green Beauty'	Tolerant

K. Ivors (NCSU): NCSU_boxblight_tolerance_pdf

- Tolerant cultivars can still be infected and could spread the disease to more susceptible cultivars


Image from P. Mawhinney

Other Susceptible Plants

- Pachysandra

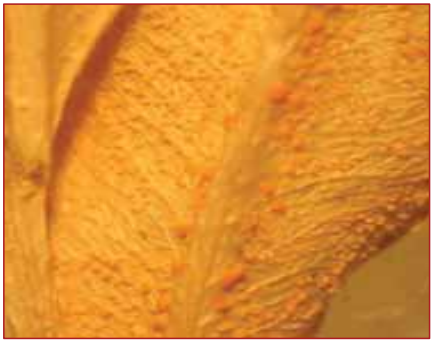
- Sweet Box (*Sarcococca* spp.)

Recommendations

- Inspect boxwoods on all properties. Look for symptomatic plants
- As weather patterns become conducive (wet, humid, moderately warm), disease symptoms may be noticeable and spread rapidly
- Train employees and clients on how to identify boxwood blight. Educate them on how easily the disease spreads.
- Only purchase plants from nurseries that have a Boxwood Blight Compliance Agreement through their State Department of Agriculture.
- Always visit non-infected landscape or nursery sites first. Move from healthy to suspect diseased areas.
- Never install or prune or work in boxwoods when plants are wet.

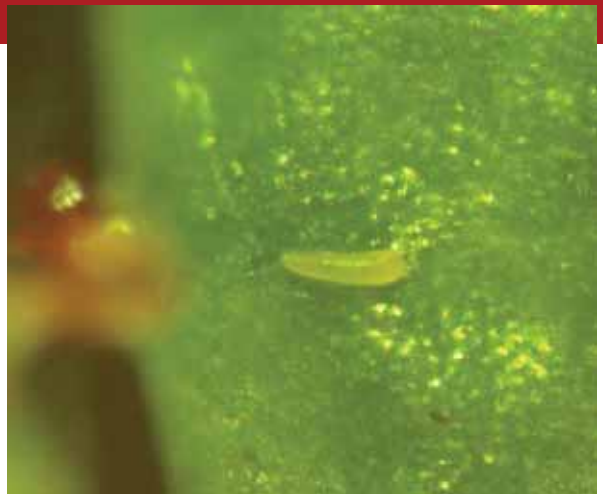
Boxwood Blight Look-a-like: Volutella Blight

- Volutella Blight (*Volutella buxi*)
  - Often associated with weakened plants



Rose Rosette Disease

- Virus disease spread by eriophyid mite, grafting, and propagation of infected plants
- Causes proliferation of shoots
- Reddening of shoots
- Excessive thorniness



- Red, multi-stemmed shoots are an early symptom
- Plants die within 2-3 years after infection due to carbohydrate depletion

- Systemic disease – <u>cannot</u> prune it out
- <u>Remove infected plants</u>

RRV in Nurseries

- Rose rosette virus-infected plants have been found within nurseries
- Plants showing symptoms are rogued and destroyed
- Symptomless (but infected) plants may still be in industry, sold and planted

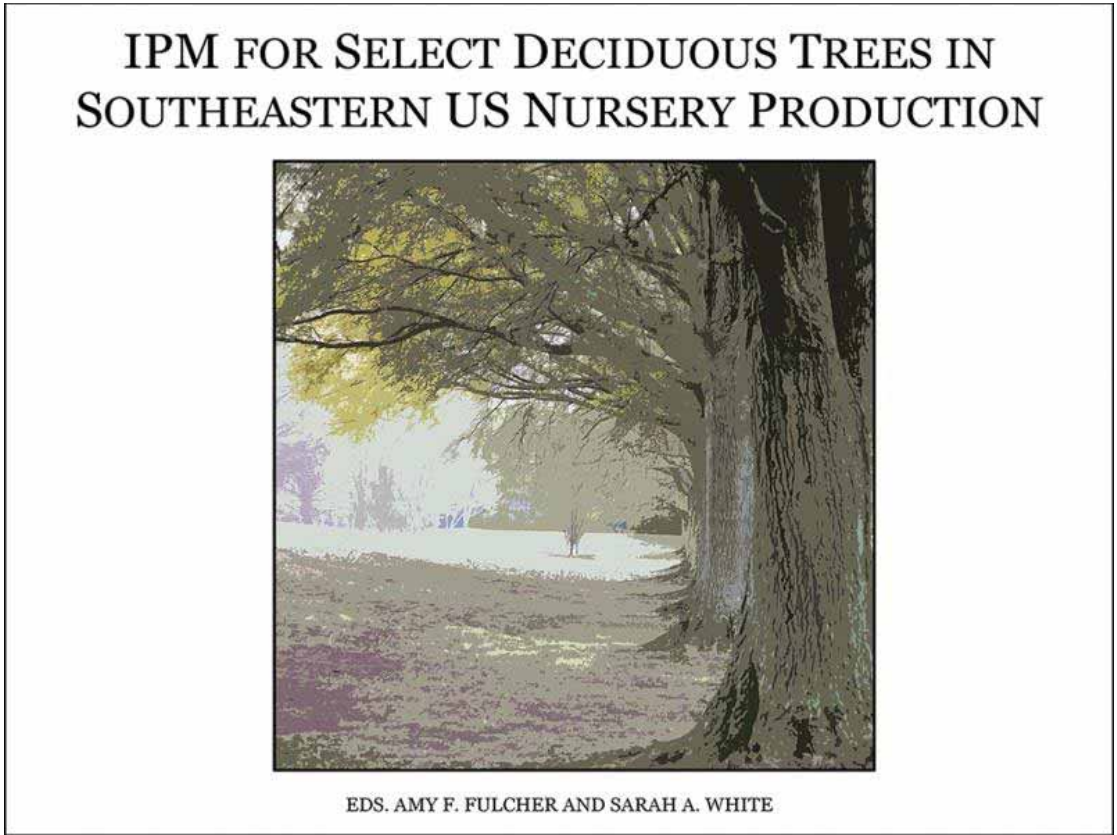
Rose Susceptibility

- RRV affects all rose species and cultivars
- Laboratory (graft-inoculation) studies show transmission of the virus and symptom development in the bud above graft 3 weeks to 7 months after grafting
- Drift, Flower Carpet, Knock-Out series very susceptible
- Lady Banks rose showed symptoms 7 months after grafting
- Screening for RRV-resistance roses
- Some species are less susceptible, but “wild”-looking roses

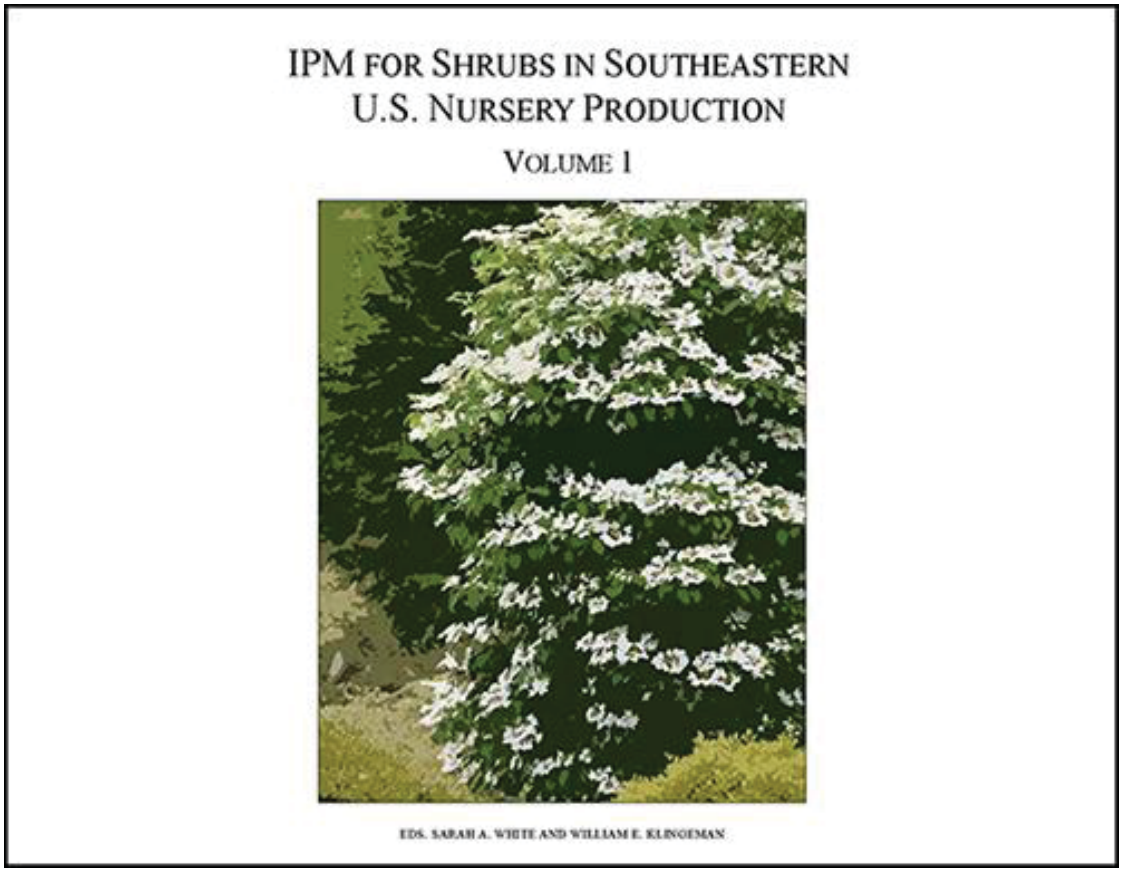
Rose rosette management

- Remove and discard infected plants
- Pruning symptomatic stems may remove some mites, but it does not remove the virus
- Miticide applications may help reduce spread
  - Avid (or other abamectin generics)
  - Floramite
  - Magus
  - Forbid
- Infected plants die within 1-2 yrs due to carbohydrate depletion

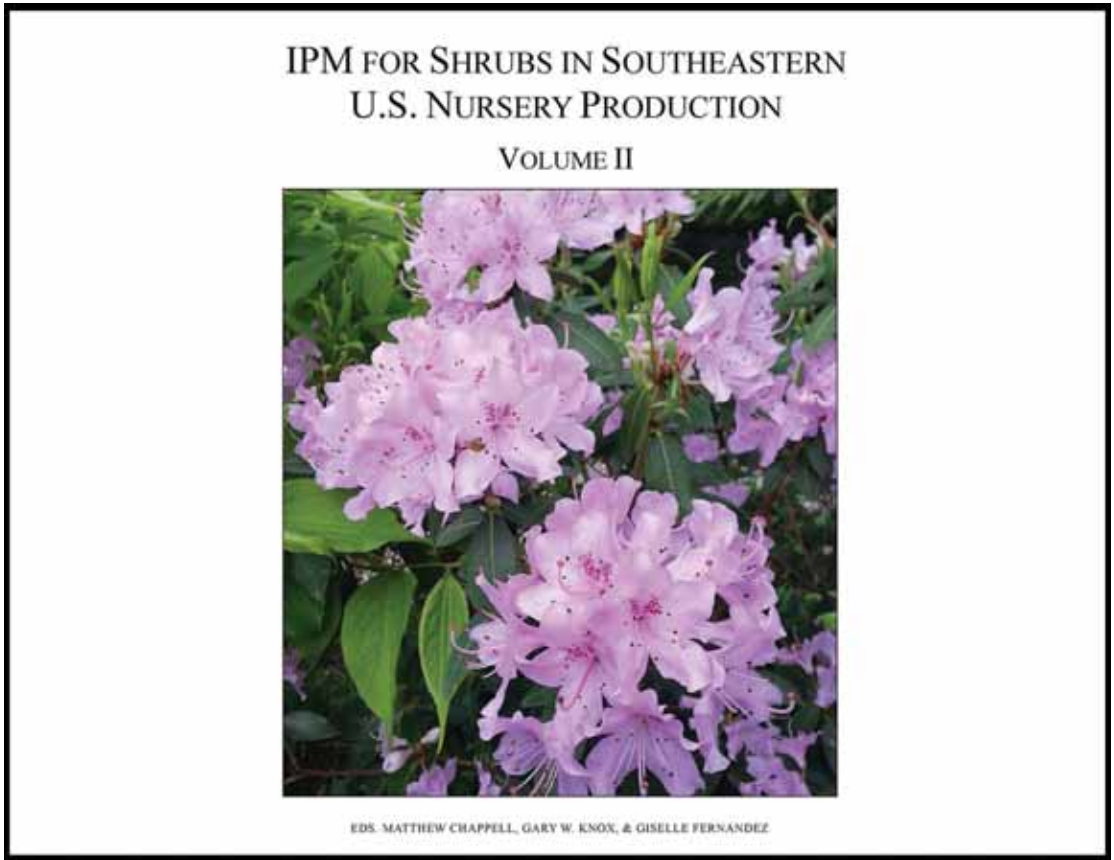
- https://wiki.bugwood.org/IPM_book
- 9 tree species (maple, Chinese elm, oak, dogwood, cherry, crapemyrtle, redbud, birch, magnolia)



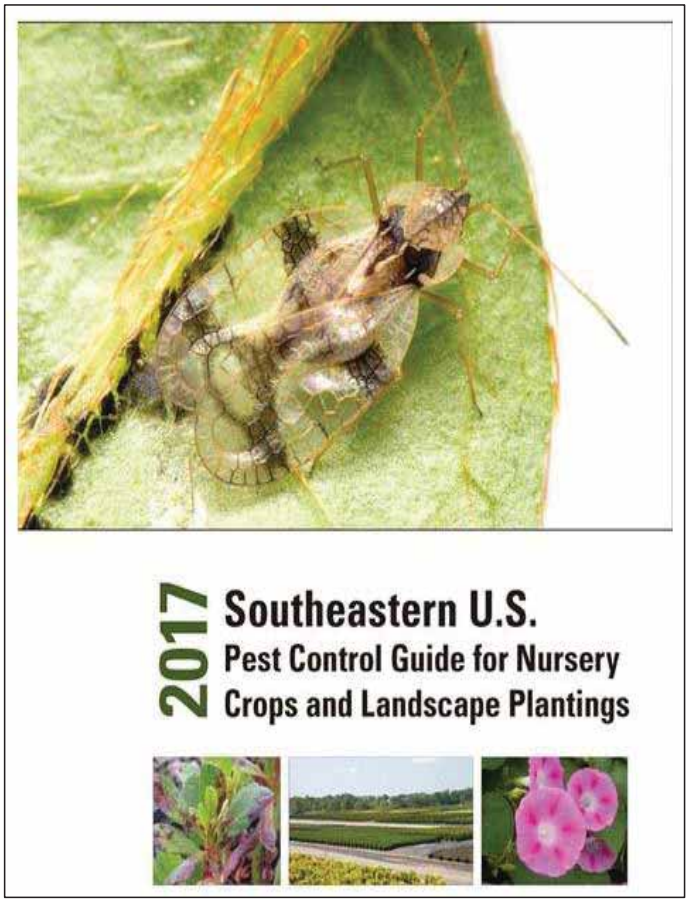
- https://wiki.bugwood.org/IPM_Shrub_Book
- Abelia, Camellia, Rose, Blueberry, Viburnum



- https://wiki.bugwood.org/IPM_Shrub_Book_II
- Hydrangea, Loropetalum, Holly, Rhododendron/Azalea, Indian Hawthorn



Regional Pest Control Guide for Ornamentals



- https://content.ces.ncsu.edu/southeastern-us-pest-control-guide-for-nursery-crops-and-landscape-plantings

- SNIPM website
  - https://wiki.bugwood.org/SNIPM

Ornamental Fungicide Efficacy Table

- https://bugwoodcloud.org/bugwoodwiki/Orn_efficacy_table2017.pdf

Relative Effectiveness of Various Chemicals for Disease Control of Ornamental Plants

Jean Williams-Woodward, *University of Georgia*
Kelly Ivors, *Cal Poly*
Alan Windham, *University of Tennessee*
Nicole Ward Gauthier, *University of Kentucky*

Relative control rating: G= good (100-80%); F= fair (79-50%); P= poor (49-0%)

FRAC[1]	Trade name	Active ingredient(s)	REI[2]	Sites[3]	Bacterial leaf spots/blights	Black root rot	Botrytis	Cedar rusts	Conifer tip blights	Downy mildew	Fire blight	Fungal stem cankers	Fungal leaf spots	Fusarium stem rot	Leaf rusts	Passalora needle blight	Phytophthora root rot	Pythium root rot	Powdery mildew	Rhizoctonia blight/root rot	Notes
1	3336, OHP 6672, Allban, Fungo Flo, Transom, T-Bird, T-Methyl	Thiophanate methyl	12	G, N, L		G [Dr]	P-G [S,R]	F-G [S]			P-F [S]	F [S]	F-G [Dr]		F [S]			F [S]	G [Dr]		Do not mix with copper-containing materials or with highly alkaline pesticides such as lime or sulfur.
1 + 2	26/36 Fungicide	Thiophanate methyl + Iprodione	12	G, N, L		G [Dr]	P-G [S,R]					G [S]	F-G [Dr]								Do not apply to Spathiphyllum or New Guinea impatiens. Not effective on *Cylindrocladium spathiphylli*
1 + 14	Banrot	Thiophanate methyl + Etridiazole	12	G, N, L		F [Dr]							P-F [Dr]			P [Dr]	G [Dr]		F-G [Dr]		
1 + M3	Zyban	Thiophanate methyl + Mancozeb	24	G, N, L																	
1 + M5	Spectro 90	Thiophanate methyl + Chlorothalonil	12	G, N, L		F-G [Dr]		F-G [S]				G [S]	G [Dr]		G [S]			F-G [S]	G [Dr]		Do not apply to green or variegated pittosporium or schefflera more than once.
2	Chipco 26019, Iprodione	Iprodione	12	G, N, L			P-G [S,R]					F-G [S]	F-G [Dr]						F [Dr]		Do not apply as a soil drench on Impatiens and Pathos. Do not apply on Spathiphyllum.
3	Banner Maxx, Strider, Fathom [i]	Propiconazole	12-24	N, L				F [S]	F [S]			G [S]						G [S]	G [Dr]		May cause some growth regulator effects or phytotoxicity, in particular on rose.
3	Bayleton 50	Triadimefon	12	L																	
3	Eagle 20EW	Myclobutanil	24	G, N, L				F [S]				G [S]			F [S]			G [S]			Special use instructions for chrysanthemums. May prevent rooting on some Prunus spp. (e.g. sand cherry)
3	Fungaflor TR [i]	Imazalil	24	G			F-G [V]											G [V]			
3	Terraguard [i]	Triflumizole	12	G, N, L		G [Dr]												G [S]			Do not apply on impatiens plugs; phytotoxic to some cultivars of impatiens.
3	Torque	Tebuconazole	12	N, L				F [S]				G [S]	F-G [Dr]					G [S]	G [Dr]		Not for homeowner use. Do not apply to bearing fruit trees or vegetables.

Questions?