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 after infection are ineffective
• Boxwoods are not equally susceptible
## Cultivar Susceptibility

<table>
<thead>
<tr>
<th>Buxus spp.</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>B. sempervirens</em> ‘Suffruticosa’</td>
<td>Highly Susceptible</td>
</tr>
<tr>
<td><em>B. sinica</em> var. <em>insularis</em> ‘Justin Brouwers’</td>
<td>Highly Susceptible</td>
</tr>
<tr>
<td><em>B. sempervirens</em> ‘American’</td>
<td>Susceptible</td>
</tr>
<tr>
<td><em>Buxus</em> ‘Green Gem’</td>
<td>Moderately Tolerant</td>
</tr>
<tr>
<td><em>B. microphylla</em> ‘Winter Gem’</td>
<td>Moderately Tolerant</td>
</tr>
<tr>
<td><em>B. microphylla</em> ‘Golden Dream’</td>
<td>Tolerant</td>
</tr>
<tr>
<td><em>B. harlandii</em></td>
<td>Tolerant</td>
</tr>
<tr>
<td><em>B. sinica</em> var. <em>insularis</em> ‘Nana’</td>
<td>Tolerant</td>
</tr>
<tr>
<td><em>B. microphylla</em> var. <em>japonica</em> ‘Green Beauty’</td>
<td>Tolerant</td>
</tr>
</tbody>
</table>

K. Ivors (NCSU): NCSU_boxblight_tolerance_pdf
• Tolerant cultivars can still be infected and could spread the disease to more susceptible cultivars
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 – cannot prune it out
• Remove infected plants
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


- SNIPM website
  - https://wiki.bugwood.org/SNIPM
### Relative Effectiveness of Various Chemicals for Disease Control of Ornamental Plants

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Kelly Ivors  
Cal Poly  
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University of Tennessee  
Nicole Ward Gauthier  
University of Kentucky

**Relative control rating:**  
- **G** = good (100-80%)  
- **F** = fair (75-90%)  
- **P** = poor (49-50%)  

| FRAC | Trade name | Active ingredient(s) | REP | Sites | Black rot | Brown spot | Cercospora | Downy mildew | Fire blight | Fungal leaf spot | Fungal stem rot | Leaf blight | Phyllosticta leaf spot | Powdery mildew | Rhizoctonia blight | Notes |
|------|-------------|----------------------|-----|-------|-----------|------------|------------|-------------|-------------|-------------|---------------|---------------|-------------|-------------------------|---------------|-----------------|-------|
| 1    | 2338, OCTP 8872, Alitin, Fungo Flo, Transor, T-Bird, T-Methyl | Thophanate methyl | 12  | G, N, L | G ✦ | P-G ✦ | F-G ✦ | F-B ✦ | F-B ✦ | F-B ✦ | F-B ✦ | F-B ✦ | Do not mix with copper-containing materials or with highly alkaline pesticides such as lime or sulfur. |
| 1 + 2 | 28/38 Fungicide | Thophanate methyl + Iproclone | 12  | G, N, L | G ✦ | P-G ✦ | F-G ✦ | F-B ✦ | F-B ✦ | F-B ✦ | F-B ✦ | F-B ✦ | Do not apply to Spathiphyllum or New Guinea impatiens. Not effective on Cylindrocladium spathiphyli. |
| 1 + 14 | Banrot | Thophanate methyl + Eindazole | 12  | G, N, L | F ✦ | P-F ✦ | P-F ✦ | F-B ✦ | F-B ✦ | F-B ✦ | F-B ✦ | F-B ✦ | Do not apply to green or variegated Pittosporum or Scheflera more than once. |
| 1 + MS | Zytan | Thophanate methyl + Mancozeb | 24  | G, N, L | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | Do not apply to green or variegated Pittosporum or Scheflera more than once. |
| 1 + MS | Spectro 90 | Thophanate methyl + Chlorothalonil | 12  | G, N, L | F-G ✦ | F-G ✦ | F-G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | Do not apply to green or variegated Pittosporum or Scheflera more than once. |
| 3    | Banner Maxx, Strider, Faithful | Propiconazole | 12.24 | N, L | F ✦ | F ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | May cause some growth regulator effects or phytotoxicity, in particular on rose. |
| 3    | Rayleton 50 | Triazinatozol | 12  | L | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | Special use instructions for dry-affected areas. May prevent rooting on some Prunus spp. (e.g., sand cherry). |
| 3    | Eagle 20EW | Mycobutanol | 24  | G, N, L | F ✦ | G ✦ | F ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | Do not apply to impatiens plugs; phytotoxic to some cultivars of impatiens. |
| 3    | Fungustar T3 | Imazalil | 24  | G | F-G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | Do not apply to impatiens plugs; phytotoxic to some cultivars of impatiens. |
| 3    | Terraguard | Triflumizole | 12  | G, N, L | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | G ✦ | Not for homeowner use. Do not apply to bearing fruit trees or vegetables. |
Questions?