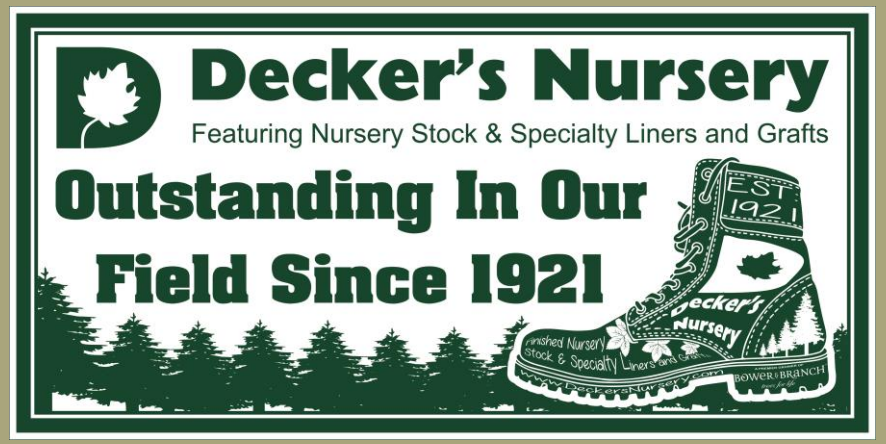


Boxwood Blight Protocol 2020

"Protecting your Business – and Industry"

2020 KNLA Winter Educational Outing & Expo

Wednesday, January 22, 2020 8:00 – 9:15 a.m. CDT

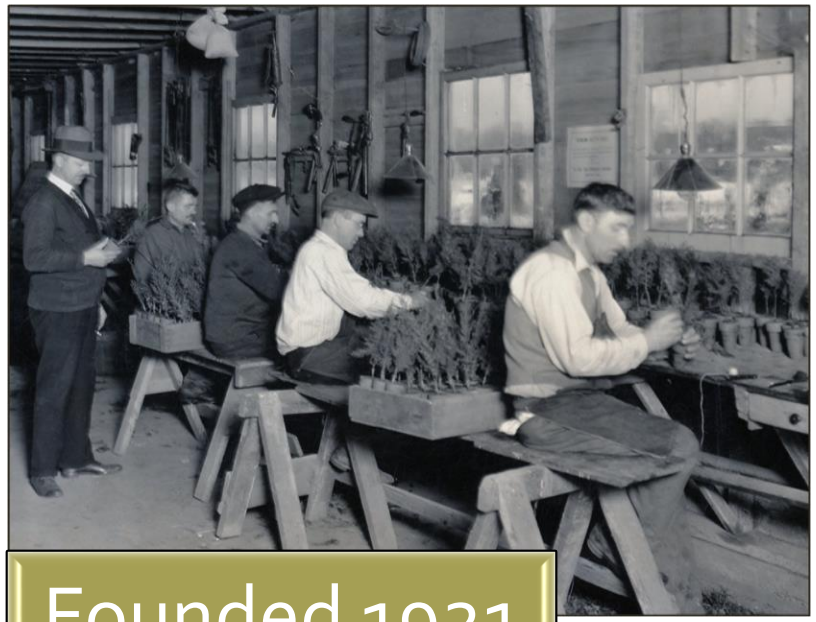
Presented By: Brian Decker

2020

Decker's Nursery, Inc.
Our History

What we are protecting – the livelihood of the industry and you!

Almost 100 years in the making!



Founded 1921

Paul Offenberg

Brian Decker

My History

Started at the age of 8

Education –
It never stops

Degree in Agriculture
Minor in Business

Industry Participation

Columbus Landscape Assoc
ONLA IPPS
Eastern Region
3-time Guest PRC
The Horticultural Research Institute

Decker's Nursery, Inc.

70 Acres Production
Field
Container
Liner
Bare Root

Shipping to 40 States and Canada

Decker's Nursery, Inc.

Significant Boxwood Production

500,000 \ Year
Container
Liner
Bare Root

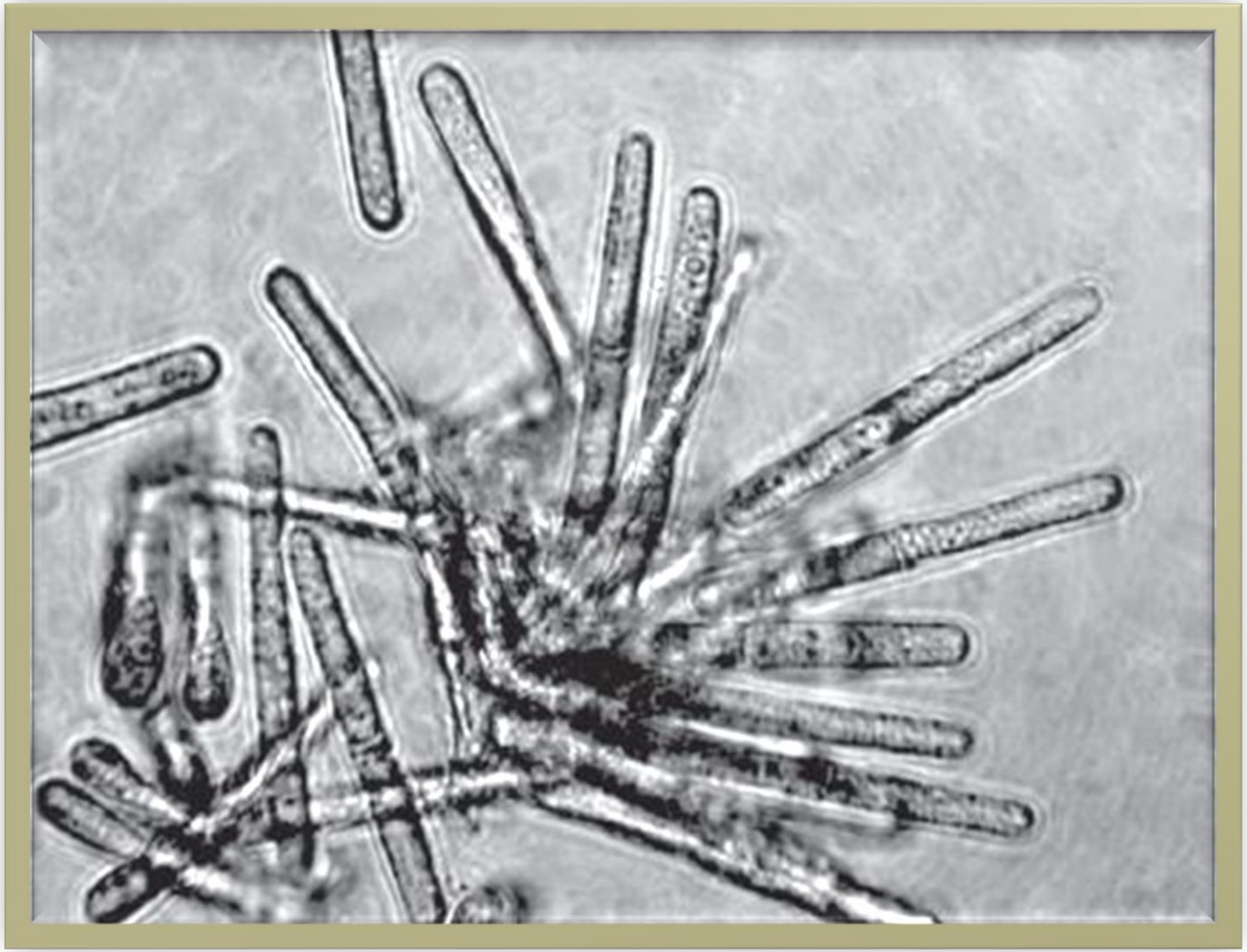
Decker's Nursery, Inc.

Boxwood Blight

What is it?
Fungus

Calonectra
Pseudonaviculata CPS

Mycelium
(Vegetative Structure)



Calonectra Pseudonaviculata CPS

Photos courtesy of *Margery Daughtrey, Cornell University.*

Boxwood Blight

What is it?
Fungus

Calonectra Pseudonaviculata CPS

Mycelium (Vegetative Structure)

Conidia (Dispersal method – "Sticky Spores"

C. Pseudonaviculata white sporulation

Photos courtesy of *Margery Daughtrey, Cornell University.*

Boxwood Blight

What is it?
Fungus

Calonectra Pseudonaviculata CPS

Mycelium (Vegetative Structure)

Conidia (Dispersal method – "Sticky Spores"

Microsclerotia "long term survival spores"

Blighted Leaves and distinct black stem cankers caused by Boxwood Blight

Photos courtesy of Margery Daughtrey, Cornell University.

Boxwood Blight

What is it?

Devastation

Photo courtesy of *Margery Daughtrey, Cornell University.*

Boxwood Blight Devastation can really add up!

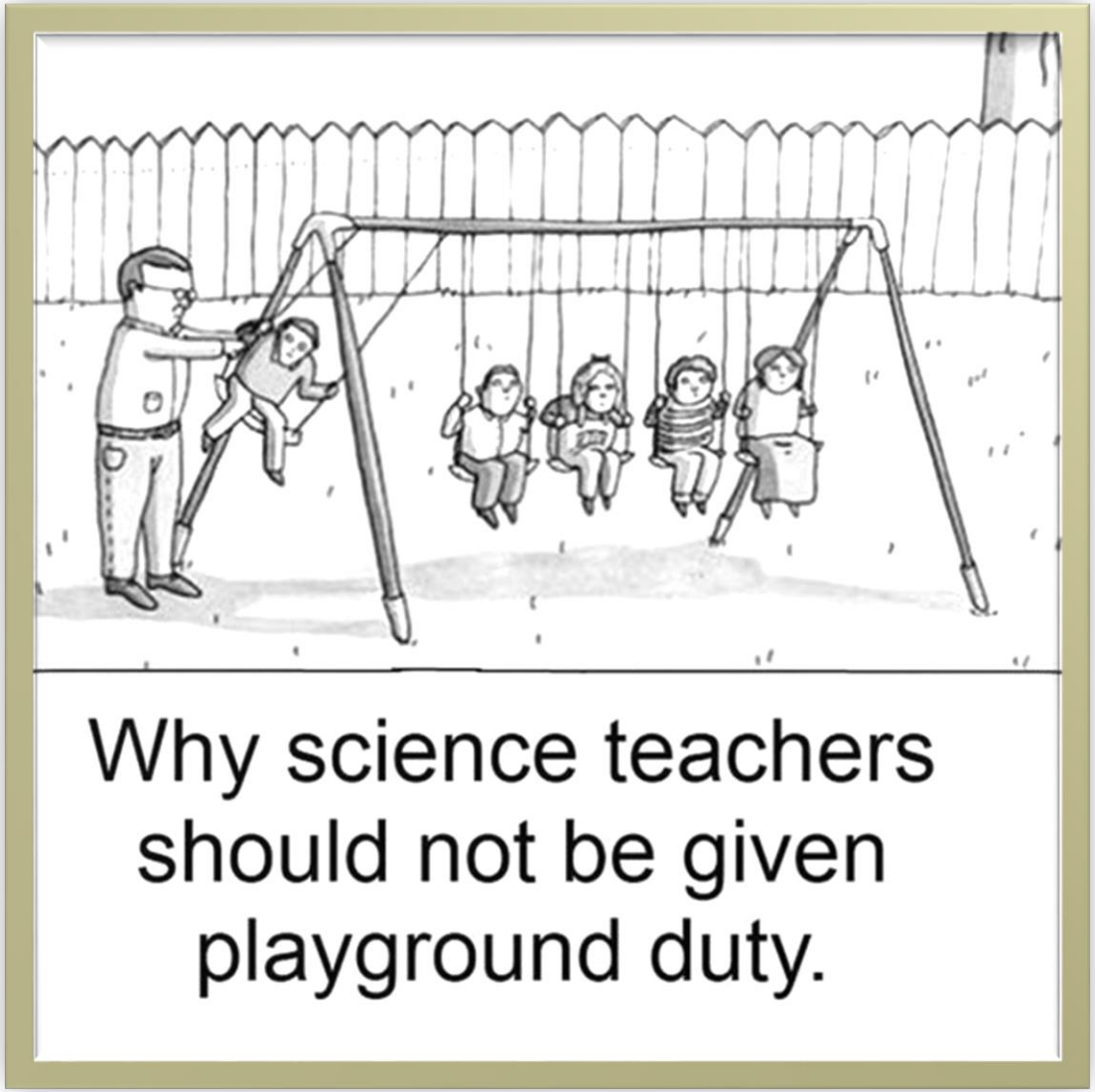
Photo courtesy Margery Daughtrey, Cornell University.

Decker's Nursery, Inc.

Boxwood Blight

Where is the science?

Improving methods to rapidly test for CPS



Boxwood Blight

Where is the science Continued:

lets speed this up Brian . .

Disease Requirements:

- Optimum 75f – 82f
- Humid or Wet conditions

Biocontrol Under Study:

- Trichoderma Koningiopsis Mb2
- Pseudomonas protegens

Non-Buxus Host Plants

- Pachysandra
- Other suspected Host Species

Boxwood Blight

Where is the science Continued:

Biocontrol Under Study:

- Trichoderma Koningiopsis Mb2
- Pseudomonas protegens

Biocontrol - *Trichoderma koningiopsis* (Mb2)

Kong & Hong (2017) Crop Protection 98:124-127

Boxwood Blight

Where is the science?

Mobil App Disease Model

helps predict optimum times for spray prevention

Google App – Boxwood Blight Risk

http://uspest.org/risk/models?mdl=bxwd_s

Online UPEST.Org

Boxwood Blight

Fungicide Applications

Photos courtesy of *Dr. Keith Yoder*

Decker's Nursery, Inc.

Boxwood Blight

Fungicide Control

Pros & Cons

Pro – Increased Prevention of Infection

Con – Disguised Symptoms, disease resurges after treatment wears off

Photos courtesy Univ Maryland Ext, Chicago Botanical Garden, Michigan State Univ

Boxwood Blight

Fungicide Control

Fungicides for Boxwood Blight Management and Ratings

Fungicides for boxwood blight management, professional use, Table 2. (PPWS-30NP)

Active ingredient	Efficacy[1]	FRAC group[2]	Trade name (examples)
Chlorothalonil	E	M5	Daconil Weather Stik Fl
Mancozeb	G	M3	Fore 80 WP Rainshield
Propiconazole	F-G	3	Banner MAXX, Procon-Z
Tebuconazole	G	3	Torque
Myclobutanil	F-G	3	Myclobutanil 20EW T&O
Azoxystrobin	F	11	Heritage
Pyraclostrobin	G	11	Insignia
Trifloxystrobin	G	11	Compass
Thiophanate methyl	F	1	Cleary 3336 F, Fungo Flo
Fludioxonil	G-E	12	Medallion
Chlorothalonil + Propiconazole	E	M5+3	Concert, Concert II
Chlorothalonil + thiophanate methyl	E	M5+1	Spectro 90WDG
Trifloxystrobin + triadimefon	G-E	11+3	Strike Plus 50 WDG
Pyraclostrobin + Boscalid	G	11+7	Pageant
Fludioxonil + Cyprodinil	F-E	12+9	Palladium

[1] F=Fair, G=Good, E=Excellent. Effectiveness ratings are based on limited research. Results can vary depending on environmental conditions, fungicide formulation, and application method and timing. These ratings are intended as general guides only.

[2] FRAC Group: classification based on fungicide mode of action (www.frac.info). Rotate any fungicide at risk of resistance development with products with a different mode of action.

Slide compliments of Keith S. Yoder, Plant Pathologist

Boxwood Blight

Testing

Natural Environment

Controlled Environment

Testing in Nature – **Testing by Saunders Brothers Nursery**

Testing in a Controlled Environment – **Testing by HRI**

Decker's Nursery, Inc.

Testing in Nature

Sauders Brothers Piney River VA

Boxwood Blight

Natural cultivar tolerance

Tolerant vs Resistant

New Gen™ Cultivars

We have options:

- New Gen™ from Saunders Brothers Nursery
- Tolerant Cultivars currently exist
- Boxwood Look-Alikes - with great shape and attributes of Boxwoods

Boxwood Blight

Natural cultivar tolerance
Tolerant vs Resistant
New Gen Cultivars

Freedom

Buxus x New Gen™
Freedom® Boxwood
'SB 300' PPAF

Photos courtesy of Saunders Brothers Nursery

Boxwood Blight

Natural cultivar tolerance
Tolerant vs Resistant
New Gen™ Cultivars

Independence

Buxus x New Gen™ Independence® Boxwood
'SB 300' PPAF

Photos courtesy of Saunders Brothers Nursery

Decker's Nursery, Inc.

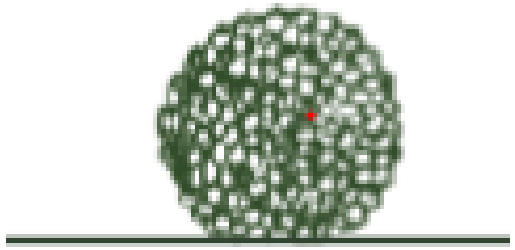
Boxwood Blight

Other tolerant Cultivars

Little Missy

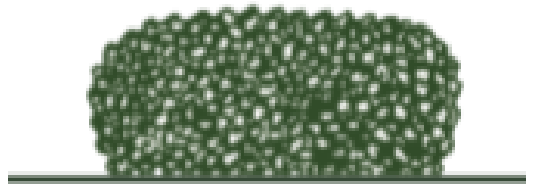
Winter Gem

Franklin's Gem



Little Missy

Winter Gem



Franklin's Gem

Images courtesy of Saunders Brothers Nursery

Boxwood Blight

Other tolerant Cultivars

Boxwood Look A-likes

Boxwood Blight

Other tolerant Cultivars

Boxwood Look-Alikes

A dense, ball-shaped plant, Gem Box® ilex has small, dainty, dark green leaves with attractive red tips during the spring flush.

Photo Permission \ Proven Winners™

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

Fungus Moves by:

1. Water Splash

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

Fungus Moves by:

1. Water Splash
2. Plant to Plant contact

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

Fungus Moves by:

1. Water Splash
2. Plant to Plant contact
3. Debris (has long life)

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

Fungus Moves by:

1. Water Splash
2. Plant to Plant contact
3. Debris (has long life)
4. Human and equipment

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

Fungus Moves by:

1. Water Splash
2. Plant to Plant contact
3. Debris (has long life)
4. Human and equipment
5. Leaf blower

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

Fungus Moves by:

1. Water Splash
2. Plant to Plant contact
3. Debris (has long life)
4. Human and equipment
5. Leaf blower
6. Landscaper – Site to Site

Boxwood Blight

Nursery Industry
Necessary Actions

Landscape Industry
Necessary Actions

Implementing "Best Management Practices"

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

- Train Staff

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

- Train Staff
- Inspect Regularly

Decker's Nursery, Inc.

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

- Train Staff
- Inspect Regularly
- Avoid Overhead Irrigation on Boxwood

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

- Train Staff
- Inspect Regularly
- Avoid Overhead Irrigation on Boxwood
- Need good air circulation

Decker's Nursery, Inc.

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

- Train Staff
- Inspect Regularly
- Avoid Overhead Irrigation on Boxwood
- Need good air circulation
- Limit Access Area

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

- Train Staff
- Inspect Regularly
- Avoid Overhead Irrigation on Boxwood
- Need good air circulation
- Limit Access Area
- Strict Sanitation Protocols
  - Employees
  - Equipment
  - Visitors

Boxwood Blight

Nursery Industry

Necessary Actions

Nursery Best Practices Management

- **Order Pickup Restrictions** – When picking up an order or just coming onto Decker's Nursery property – access is no joke. We go on the offense in several ways:

Boxwood Blight

Nursery Industry

Restrictions

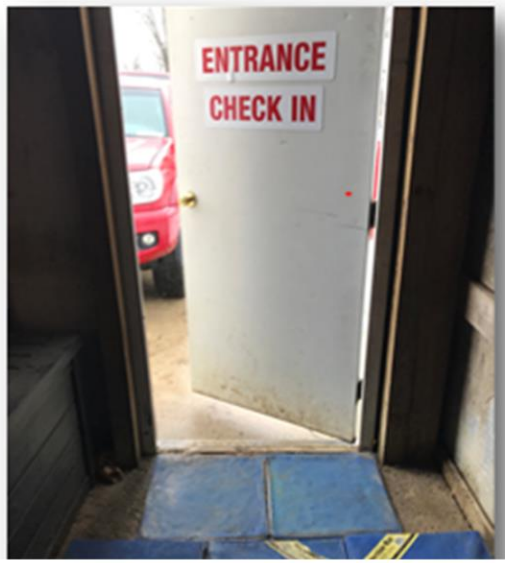
Nursery Best Practices Management

Decker's Nursery, Inc.

Boxwood Blight

Nursery Industry

Restrictions



Decker's Nursery
Featuring Nursery Stock & Specialty Liners and Grafts

We even stop them in their tracks (and on our sanitization mats) if we are not immediately available. Once they step inside they are in a contained area and are directed to call for assistance if no one is out front.

There is no such thing as to much communication or too much customer service and knowledge sharing when dealing with Boxwood Blight Protocols.

E D U C A T I O N

Is Key!

Decker's Nursery, Inc.

Boxwood Blight

Nursery Industry

Restrictions

Dude – this applies to you too!!!!!

Nursery Best Practices Management

Order Pickup Restrictions – talk to EVERYONE, educate!

Decker's Nursery is extraordinarily signed out to protect against contamination – and still get the "*I didn't think that applied to me*"

The livelihood of our industry, business owners and those of us taking home a paycheck to our families rely on this compliance.

Boxwood Blight

Landscape Industry

Knowledge is Power for you and your customer base!

Tips for Landscapers

- **Staff Education/ training**
  - **Disease identification**

Boxwood Blight

Landscape Industry

Knowledge is Power for you and your customer base!

Tips for Landscapers

- Staff Education/ training
  - Disease identification
- Sanitation practices
  - Tool sterilization
    - Liability for intra-customer transmission in neighborhoods.

Boxwood Blight

Landscape Industry

Knowledge is Power for you and your customer base!

Tips for Landscapers

- Staff Education/ training
  - Disease identification
- Sanitation practices
  - Tool sterilization
    - Liability for intra-customer transmission in neighborhoods.
  - Plant debris handling procedures

Boxwood Blight

Landscape Industry

Knowledge is Power for you and your customer base!

Tips for Landscapers

- Staff Education/ training
  - Disease identification
- Sanitation practices
  - Tool sterilization
    - Liability for intra-customer transmission in neighborhoods.
  - Plant debris handling procedures
- Plant Alternatives
- Customer spray maintenance programs.
  - Chemical Rotation
  - Spray based on Web based disease prediction Apps.

Boxwood Blight

Landscape Industry

Knowledge is Power for you and your customer base!

Tips for Landscapers

- Staff Education/ training
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- Customer spray maintenance programs.
  - Chemical Rotation
  - Spray based on Web based disease prediction Apps.
- Proper bed mulching for water splash reduction.
  - Mulch thickness
  - Mulch selection. (loose and fluffy)

Boxwood Blight

Landscape Industry

Knowledge is Power for you and your customer base!

Tips for Landscapers

- Staff Education/ training
  - Disease identification
- Sanitation practices
  - Tool sterilization
    - Liability for intra-customer transmission in neighborhoods.
  - Plant debris handling procedures
- Plant Alternatives
- Customer spray maintenance programs.
  - Chemical Rotation
  - Spray based on Web based disease prediction Apps.
- Proper bed mulching for water splash reduction.
  - Mulch thickness
  - Mulch selection. (loose and fluffy)
- Customer education
  - Reduces liability complaints.
  - Limit non-approved planting in the landscape.

Boxwood Blight

Nursery Industry

Great News!

Necessary Actions

Nursery Best Practices Management

AmericanHort

Horticultural Research Institute

NPB national plant board

Look for Nursery\Landscape Best Practices Management guide on these websites!

Target post date for most current information:

2/1/2020

Let's all participate in educating \ protecting our and our customers landscape investment!

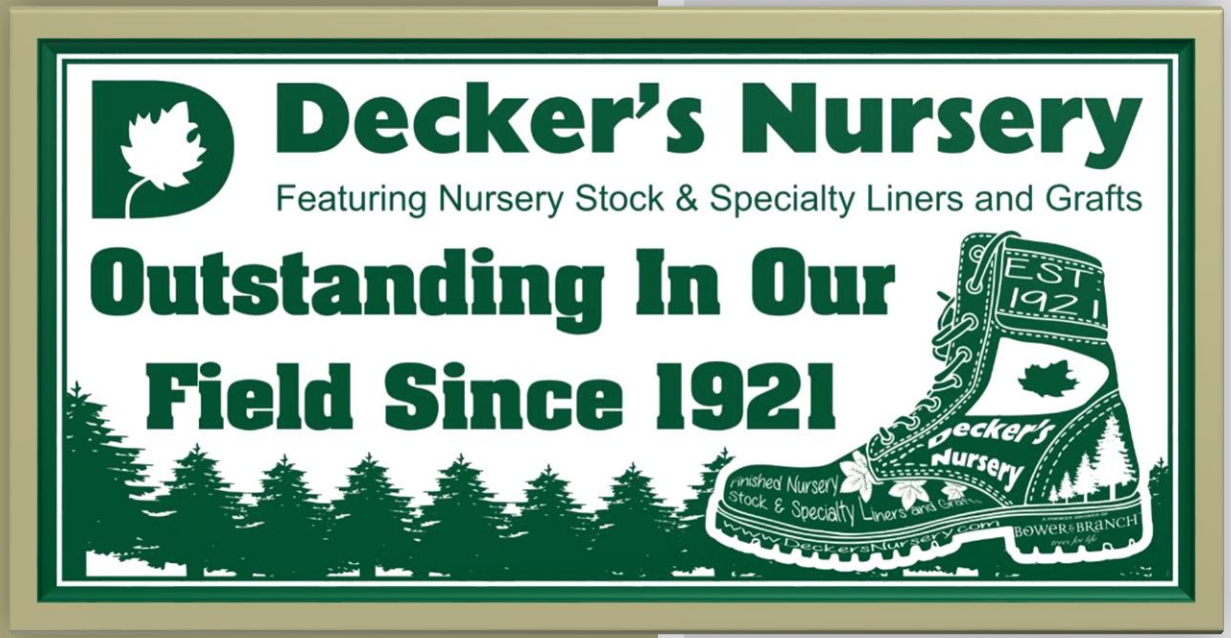
Conclusion . . .

Boxwood can be a long-term viable choice for US landscapes.

- Additional research is required.
  - Disease prevention strategies.
  - Chemical and Biological controls.
  - Cultivar tolerance evaluation.
- Nursery Education and disease prevention.
- Landscape Contractor education and awareness.

Thank you for joining me -

Any Questions?



Presentation Author: Brian Decker, Pam Dukes