



Boxwood Blight Research: What's the BBIG Deal

Chuan Hong
Virginia Tech

BOXWOOD BLIGHT INSIGHT GROUP



Boxwood Blight Insight Group (BBIG) is a team of scientists working together on an USDA National Institute of Food and Agriculture – Specialty Crop Research Initiative (SCRI) project, in partnership with stakeholders and international collaborators. This transdisciplinary team and its partners aim to safeguard boxwood—the nation’s #1 evergreen ornamental shrub crop—from blight disease, thus saving an iconic plant featured in American landscapes since 1653.

Boxwood blight was first reported from the United Kingdom and New Zealand in the 1990s. The disease has since devastated boxwood production and gardens in Europe, western Asian, and North America. The first epidemics of this destructive disease in the United States were reported from North Carolina and Connecticut, followed by Maryland, Massachusetts, New York, Oregon, Rhode Island and Virginia in 2011. As of September 1, 2020, this disease has spread via contaminated nursery stocks to twenty-two other states plus the District of

Margery Daughtrey (Cornell)



Douglas Luster (USDA ARS)



Charles Hall (TAMU)



Jerry Weiland (USDA ARS)



Fulya Baysal-Gurel (TSU)



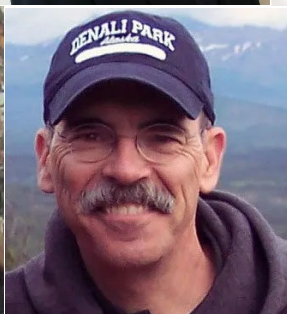
Fred Gouker (USDA ARS)



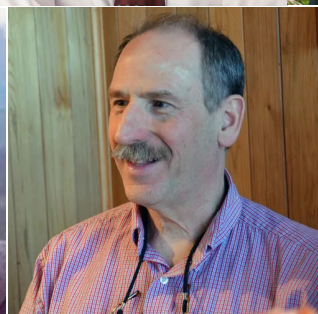
Ping Kong (VT)



Jo Anne Crouch (USDA ARS)



James LaMondia (CAES)



Jay Pscheidt (OSU)



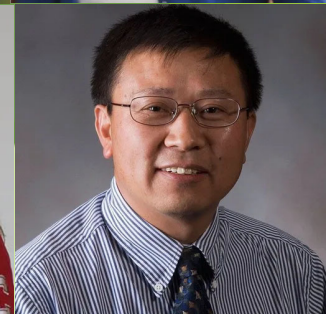
Luisa Santamaria (OSU)



Nina Shishkoff (USDA ARS)



Karen Snover-Clift (Cornell)



Chuan Hong (VT)



Urmila Adhikari



Vanina Castroagudin



Xiaoping Li



Mana Ohkura



Olanike Omolehin



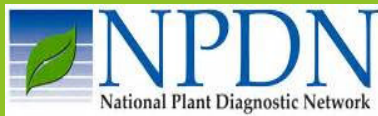
Srikanth Kodati



Xiao Yang

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Major Partners & Collaborators





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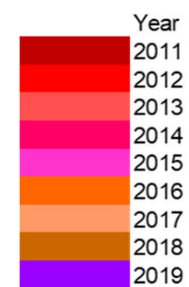


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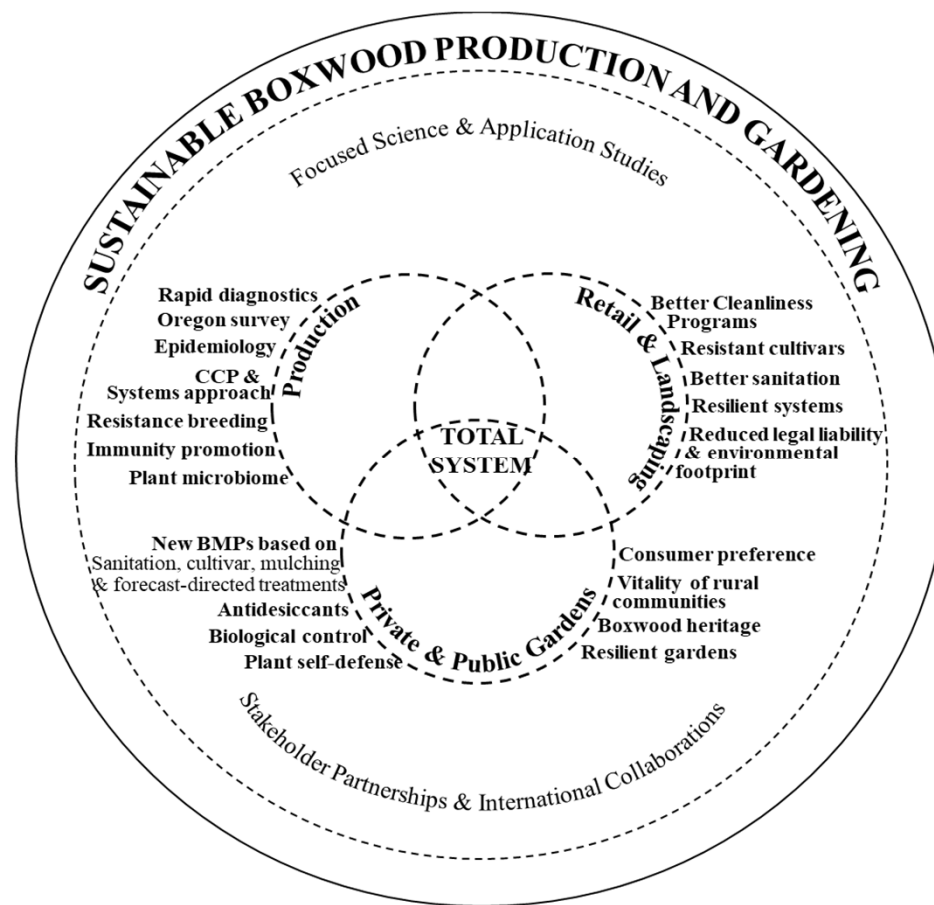
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This map illustrates the distribution of marriage rates among the adult population across the United States. The color gradient indicates that states in the Northeast, such as New York and Massachusetts, have the highest percentages of married adults, while states in the Mountain West region, such as Nevada and Idaho, have the lowest percentages. The Great Plains and parts of the South show intermediate rates.

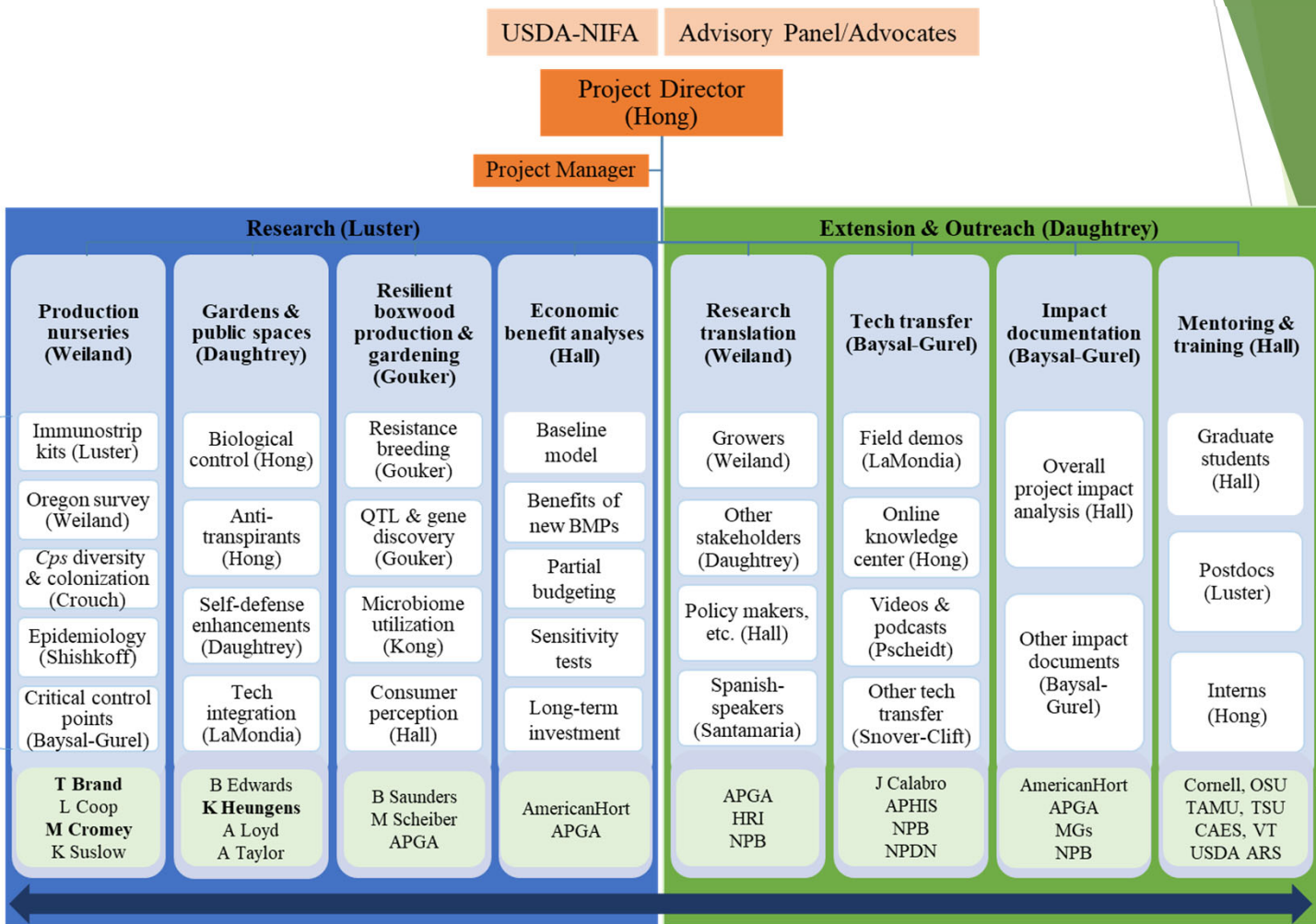
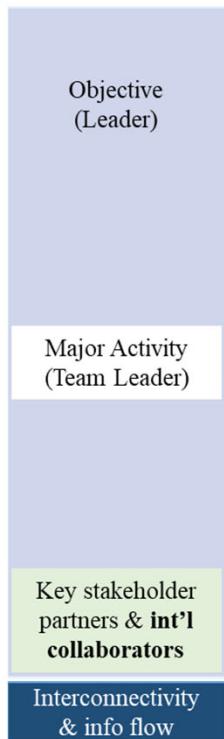


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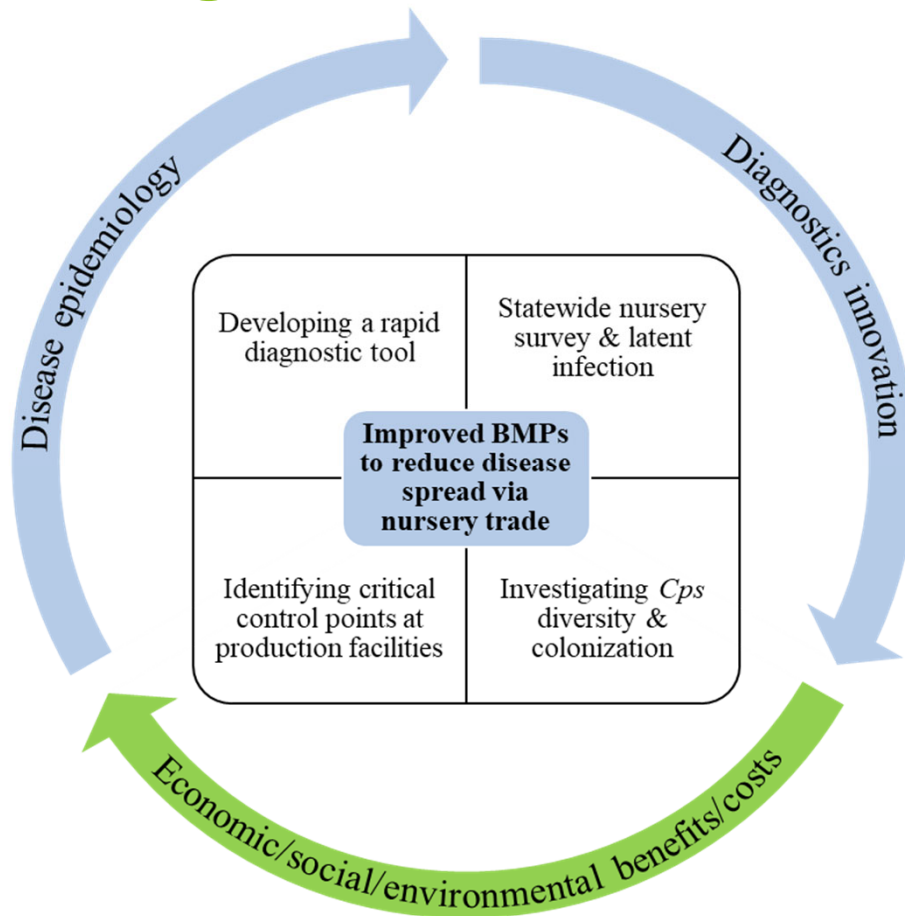
Systems Approach



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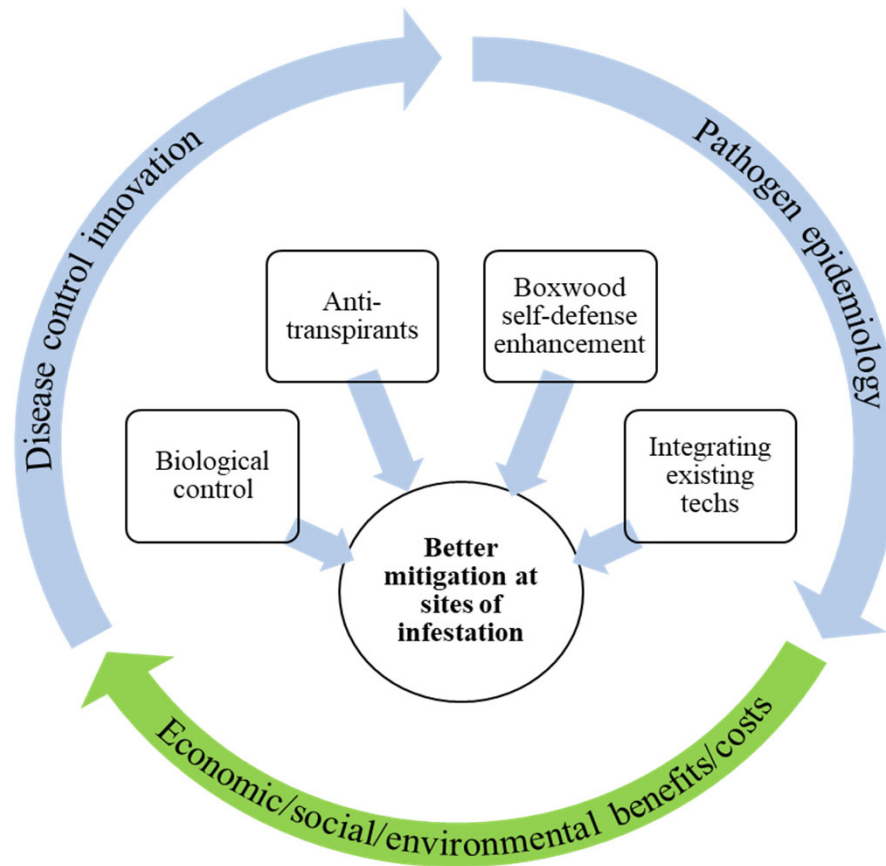


Blight-free Boxwood



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Better Blight Management



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Resilient Boxwood Production & Gardening

Consumer perception
studies to facilitate
adoption of resistant
cultivars

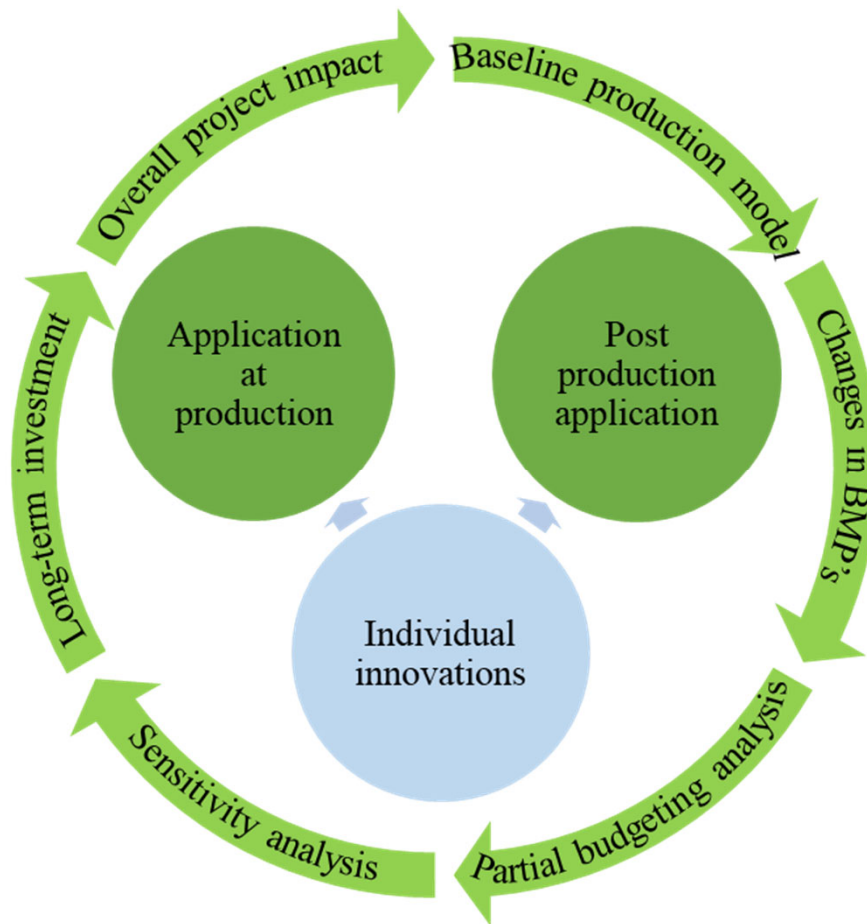
Cataloging & manipulating
boxwood microbiomes

Developing more resistant
boxwood cultivars



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Economic Analysis



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Extension & Outreach



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International Boxwood Seminar



Launched on March 18, 2021



	
Knowing and Growing Boxwood	Boxwood Breeding & Selection for Blight Resistance
June 2, 1:00 p.m. Eastern	August 25, 11:00 a.m. Eastern
Lynn Batdorf, Retired Curator of the National Boxwood Collection, U.S. National Arboretum	Katrijn Van Laere, Senior Researcher @Flanders Research Institute for Agriculture, Fisheries and Food-Plant Sciences Unit (ILVO)
FREE REGISTRATION	FREE REGISTRATION
	
Invasion, impact, and management of box tree moth in Europe	Progress in Boxwood Blight Management in the United Kingdom and New Zealand: 1990s to 2021
December 2, 11:00 a.m. Eastern	March 10, 2022, 3:00 p.m. Eastern
Marc Kenis, Head Risk Analysis and Invasion Ecology @CABI	Matthew Crome, Senior Plant Pathologist @Royal Horticultural Society, UK
FREE REGISTRATION	FREE REGISTRATION



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Newsletter



Volume: 1 Issue: 1 (November 2020)
Specialty Crop Research Initiative Project #: 2020-51181-32135

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FEATURED NEWS

Together We Save Boxwood Crops and Plantings

Boxwood blight caused by *Calomecium pseudosavastolae* is an emerging disease that has decimated many boxwood crops in production and historic plantings on both sides of the Atlantic Ocean. This disease was first reported for England and New Zealand in mid and late 1990s, respectively. In the United States, this disease was first observed and confirmed in North Carolina and Connecticut late 2011. As of November 1, 2020, this disease has spread to 28 other states.

To save the nation's #1 evergreen shrub crop and iconic landscape plant from the blight, fourteen transdisciplinary scientists from thirteen labs of seven institutions have teamed up and formed a Boxwood Blight Insight Group (BBIG) with a shared vision and mission – Improving boxwood blight mitigation through innovation, economic analysis and education. The BBIG is sponsored by the USDA Institute of Food and Agriculture – Specialty Crop Research Initiative (SCRI).

The BBIG includes: 1) five USDA Agricultural Research Service (ARS) labs with **Doug Luster** and **Nina Shishkoff** at the Foreign Disease and Weed Science Research Unit in Ft Detrick, MD, **Jerry Weiland** at the Horticultural Crop Research Unit in Corvallis, OR, plus **Fred Gosker** at the Floral and Nursery Plants Research Unit and **Jo Anne Crouch** at the Mycology and Nematology Genetic Diversity and Biology Laboratory, both in Beltsville, MD; 2) two labs each of Cornell University with **Margery Daughtrey** in Riverhead and **Karen Sauer-Cift** in Ithaca, NY, and 3) Oregon State University with **Jay Pschidt** in Corvallis and **Luisa Santamaría** in Aurora, OR; and 4) one representative of Connecticut Agricultural Experiment Station (**James LaMondia**) in Windsor, CT, 5) Tennessee State University (**Fulya Baysal-Gurell**) in McMinnville, TN, and 6) Texas A&M University (**Charlie Hall**) in College Station, TX—with 7) the Virginia Tech lab (**Chuan Hong** and **Ping Kong**) in Virginia Beach, VA leading.

The Research Team, headed by **Luster**, consists of four groups with each having clear targets. Two groups focus on immediate project impacts – preventing blighted plant materials from entering the nursery trade (Group A) and better managing the disease at sites of contamination (Group B). The A Group develops on-site commercial strip kits for pathogen detection (**Luster**), conducts Oregon nursery surveys (**Weiland**), bridges several major knowledge gaps in the blight epidemiology – latent infection under Oregon climatic conditions (**Weiland**), pathogen colonization, latency and phenotype; diversity (**Crouch**), cultivar and relative humidity impact on pathogen sporulation (**Shishkoff**), and field epidemiology (**Hong**), and identifies critical control points at production nurseries (**Baysal-Gurell**). The B Group evaluates the potential of antisepticants as a physical barrier for blight mitigation (**Hong**), further develops biological control agents already identified into final products (**Hong**), enhances boxwood self-defense through systemic acquired resistance inducers and selective fertilization (**Daughtrey**), silicon treatment and UV radiation (**Gosker**), and integrates several recently developed technologies including more resistant cultivars, tracking and disease forecasting into model-directed fargeside protection (**LaMondia**)—as well as working to prevent less susceptible boxwood cultivars from becoming “Trojan horses”, while encouraging their adoption (**Shishkoff**). Group C aims to build resilience into boxwood production and plantings by developing more resistant boxwood cultivars (**Gosker**), cataloging boxwood microbiome then devising cultural practices to enhance their crop health and production benefits (**Kong**), and by consumer perception analysis to facilitate adoption of more resistant cultivars (**Hall**). Group D makes sure

DELIVERABLES (this quarter)

Research

9 Research articles
2 Seminars

Extension & Outreach

3 Field demonstrations
3 Webinars/virtual meetings
6 Extension presentations
1 Citizen science project
86 Samples diagnosed
215 Email/phone inquiries answered
2786 People reached with research publications

Education

1 Postdoctoral associate
1 Graduate student

Team Featured in Media

7 Newsletters
1 Multimedia



To join the BBIG and stay informed:

- Log into your **Google Groups**
- Click on **All Groups**
- Search for ‘**Boxwood Advocate**’ group
- Click **Join**

Alternatively, send me a note at chhong2@vt.edu, I will add you to the Group manually.



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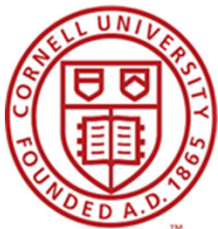


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Together we save boxwood crops and plantings!



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