



# Environmental Horticulture Program Research Project Sheet

<https://www.ir4project.org/ehc/ehc-registration-support-research/env-hort-extension-resources/>

**Project Name:** Boxwood Diseases: Boxwood Blight, Volutella Blight, Boxwood Dieback

<b>New</b>	X	<b>Ongoing</b>		<b>Completed</b>	X	<b>Duration if ongoing or completed:</b>	
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**Project Description:**

Boxwood is prone to several diseases in production and in landscape plantings: boxwood blight, boxwood dieback and volutella blight. These three diseases have very similar symptoms with foliar blights and twig/stem diebacks. While fungicides are known to be efficacious for these diseases, new modes of action are needed because growers heavily rely on Daconil and two mode of action groups (FRAC 7 and FRAC 11) for management. When boxwood blight first was first diagnosed in the US, IR-4 facilitated a multi-year project to study mitigation, biology, epidemiology, diagnostic tools, and genomics. Data from those efforts are included.

**Research Project Abstract (if available):**

n/a

**Target Species (Phytotoxicity, or common and Latin name of arthropod, pathogen, weed):**

Boxwood Blight (*Calonectria pseudonaviculata*)  
 Boxwood Dieback (*Colletotrichum theobromicola*)  
 Volutella Blight (*Volutella buxi*)

**Target Crops (list tested crops if ongoing or completed project)**

*Buxus sp.*

**Target Product(s)(list tested products or numbered compounds if ongoing or completed project)**

Flutriafol  
 TBD

**Product Registration and Research Status**

	Fully Screened (also includes standards)	Partially Screened through IR-4 <sup>1</sup>	Need Data Across Species ?
Labeled Generally & Commercialized			
Labeled Generally But NOT Commercialized			
Labeled for Specific Diseases & Commercialized			
Labeled for Specific Diseases but NOT Commercialized			
Not yet registered or Labeled			
No longer available for development			

\* IR-4 Data contributed to registration decision – either adding pest to label or not pursuing further research

1 At least one species screened fully

PROS	CONS
Boxwood foliar diseases have become major issue in production and landscapes	Symptoms of the three diseases are similar
Resistance to heavily used fungicides with single mode of action sites is developing, so new tools like flutriafol are needed	
Labels may list none, one or all three diseases	

<b>IR-4 Efficacy Trials to Date</b>
<p>Average rating on a scale of 1 – 5 with 1 = 0 to about 50% efficacy (not effective) and 5 = 95 to 100 efficacy (very effective); minimum to maximum rating; number of trials (See table on next page). For product/insect combinations that are blank, IR-4 has not screened this combination.</p>
<p>‘Labeled’ indicates that this disease species or genera is listed on the label. A rating of 2 or lower is considered unacceptable efficacy (<i>red text</i>). A rating of 3 or higher is considered commercially acceptable (black text). Non-labeled, completed product/disease combinations (3 or more trials) with an average rating of 3 or higher are highlighted with <b>green text</b>. For disease/product combinations that are blank, IR-4 has not screened this combination.</p>

Product (Active Ingredients)	MOA	Boxwood Blight ( <i>Calonectria pseudonaviculata</i> )
3336 F (Thiophanate-methyl)	FRAC 1	<b>4.0 (4 - 4) n2</b>
Affirm (Polyoxin D zinc salt)	FRAC 19	<b>2.5 (1 - 4) n2</b>
Alibi Flora SC (Azoxystrobin + difenoconazole)	FRAC 11 + FRAC 3	3.0 (3 - 3) n1 Labeled
Armada 50WP (Trifloxystrobin + triademefon)	FRAC 11 + FRAC 3	<b>5.0 (5 - 5) n1</b>
Banner MAXX (Propiconazole)	FRAC 3	<b>1.0 (1 - 1) n1</b>
Compass (Trifloxystrobin)	FRAC 11	<b>4.0 (4 - 4) n2</b>
Concert II (Propiconazole + chlorothalonil)	FRAC 3 + FRAC M5	<b>5.0 (5 - 5) n3</b>
Daconil Weather Stik (2787 Flowable Fungicide) (Chlorothalonil)	FRAC M5	<b>5.0 (5 - 5) n3</b>
Disarm 480SC (Fluoxastrobin)	FRAC 11	<b>2.0 (2 - 2) n1</b>
Disarm C (Fluoxastrobin + Chlorothalonil)	FRAC 11 + FRAC M5	<b>5.0 (5 - 5) n3</b>
Heritage (Azoxystrobin)	FRAC 11	<b>3.0 (2 - 4) n2</b>
Insignia 20WDG Intrinsic Brand Fungicide (Pyraclostrobin)	FRAC 11	<b>3.5 (3 - 4) n2</b>
Medallion (Fludioxonil)	FRAC 12	<b>4.3 (3 - 5) n3</b>
OHP Chipco 26019 N/G (Iprodione)	FRAC 2	<b>2.0 (2 - 2) n1</b>
Pageant Intrinsic (Boscalid + pyraclostrobin)	FRAC 7 + FRAC 11	<b>4.0 (4 - 4) n2</b>
Palladium (Cyprodinil + fludioxonil)	FRAC 9 + FRAC 12	<b>4.5 (4 - 5) n2</b>
Prophytex EC (Bacillus subtilis strain B1111)	FRAC BM02	<b>1.0 (1 - 1) n1</b>
Protect T/O (Mancozeb)	FRAC M3	<b>3.0 (3 - 3) n1</b>
S2200 4SC (Mandestrobin)	FRAC 11	<b>3.0 (3 - 3) n1</b>
Spectro 90WDG (Thiophanate-methyl + Chlorothalonil)	FRAC 1 + FRAC M5	<b>5.0 (5 - 5) n3</b>
Strike Plus 50WDG (Triadimefon + trifloxystrobin)	FRAC 3 + FRAC 11	<b>5.0 (5 - 5) n1</b>
Tank Mix: Tourney + S2200 (Metconazole + mandestrobin)	FRAC 3 +	<b>5.0 (5 - 5) n1</b>
Terraguard SC (Triflumizole)	FRAC 3	<b>1.0 (1 - 1) n1</b>
Torque 3.6SC (Tebuconazole)	FRAC 3	<b>4.0 (3 - 5) n3</b>
Tourney 50WDG (Metconazole)	FRAC 3	4.0 (3 - 5) n3 Labeled
Trinity 2SC (Triticonazole)	FRAC 3	<b>1.0 (1 - 1) n1</b>
ZeroTol (Hydrogen dioxide)	FRAC NC	<b>1.0 (1 - 1) n1</b>

\*Cylindrocladium (imperfect stage of *Calonectria sp*) is listed on Compass, Daconil, Heritage, Palladium, Spectro

\*\* Leaf spot listed on Torque