



# Ornamental Horticulture Program Research Project Sheet

<http://ir4.rutgers.edu/Ornamental/ornamentalProjectInformationSheets.cfm>

**Project Name:** Powdery Mildew Efficacy

<b>New</b>	<input checked="" type="checkbox"/>	<b>Ongoing</b>	<input type="checkbox"/>	<b>Completed</b>	<input type="checkbox"/>	<b>Duration if ongoing or completed:</b>	
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**Project Description:**  
 Powdery mildew has routinely surfaced in the biennial survey of grower needs. While 15 classes and subclasses for fungal mode of action are currently available, growers continue to have difficulty managing powdery mildew diseases.

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

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

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

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

<b>Product Registration and Research Status</b>			
	<b>Fully Screened (also includes standards)</b>	<b>Partially Screened through IR-4 <sup>1</sup></b>	<b>Need Data Across Species ?</b>
Labeled Generally & Commercialized	See Table of Registered and Experimental Products for Powdery Mildew Management		
Labeled Generally But NOT Commercialized			
Labeled for Specific Diseases & Commercialized			
Labeled for Specific Diseases but NOT Commercialized			
Not yet registered or Labeled			BAS 703 06F
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			

<b>Project Pros</b>	<b>Project Cons</b>
1 Powdery mildew diseases can be prone to resistance development and new classes of chemistry are a critical component 2 A couple new active ingredients are available in current and new MOA classes 3 Several different genera cause powdery mildew diseases and performance may not be similar 4 Major pest for growers 5 Future need - maybe	1 Many classes are currently available for growers 2 Several different genera cause powdery mildew diseases and performance may not be similar 3 Better things to do in IR-4

Fungicides (active ingredients)	FRAC Class	Registered Use Site(s)	REI	Powdery Mildew Efficacy			
				<i>Erysiphe</i> spp.	<i>Microsphaera</i> spp.	<i>Oidium</i> spp.	<i>Podosphaera/Sphaerotheca</i> spp.
3336, OHP 6672, etc. (thiophanate methyl)	1	G, I, L, N, S	12 h	E	G	E	G-E
Actinovate ( <i>Streptomyces lydicus</i> )	NC	G, I, L, N, S	1 h	G,F	G,F	G,F,P	G,F,P
Affirm, Veranda (polyoxin D zinc salt)	19	G, L, N, S	4 h	?	?	?	?
Alibi Flora (azoxystrobin + difenoconazole)	11 + 3	G, L, N, S	12 h	?	?	?	?
Armicarb, Milstop, etc. (potassium bicarbonate)	NC	G, I, L, N, S	4, 1 h	F-E	F-G	G	P-G
Badge (copper hydroxide+copper oxychloride)	M1	G, N, S	48 h	?	?	?	?
Banner Maxx, ProPensity (propiconazole)	3	N	12 h	E	G-E	G-E	F-G
Basicop, Cuprofix (copper sulfate)	M1	G, N, S	48 h	?	?	?	?
Bayleton, Strike (triadimefon) <sup>a</sup>	3	G, N	12 h	?	F-G	E	P
Camelot, etc. (copper octanoate)	M1	G, I, N, S	4 h	E	E	P	G
Cease, Serenade Optimum, etc. ( <i>Bacillus subtilis</i> )	44	G, I, N, S	4 h	G-	?	F	P-E
Champ, Champion, Kentan, Kocide, etc.(copper hydroxide)	M1	G, I, N, S	48 h	E	?	?	?
Cinnacure (cinnamaldehyde)	-	G, N	4 h	?	?	?	?
Clevis (mancozeb+myclobutanol)	M3+3	G, N	24 h	?	?	?	?
Compass (trifloxystrobin) <sup>b</sup>	11	G, I, L, N, S	12 h	E	E	E	E
Concorde, Daconil, etc. (chlorothalonil)	M5	G, L, N, S	12 h	G-E	E	?	E
Concert (chlorothalonil+propiconazole)	M5+3	N	12 h	E	?	?	G-E
Consyst, Spectro (chlorothalonil+thiophanate methyl)	M5+1	G, I, N	12 h	?	?	P	?
Copper Count-N, etc. (copper ammonium complex)	M1	G, I, N, S	12 h	E	?	?	?
Cygnus (kresoxym-methyl) <sup>*</sup>	11	G, L, N, S	12 h	P	?	E	?
Disarm, Fame (fluoxastrobin) <sup>c</sup>	11	G, I, N, S	12 h	?	?	?	?
Eagle, etc. (myclobutanol)	3	G, N	24 h	E	E	E	E
Fosphite, Rampart, etc. (phosphorus acid salts)	33	G, N	4 h	G	?	?	P
Heritage (azoxystrobin)	11	G, L, N, S	4 h	G-E	E	P-E	P-E
Insignia, Empress Intrinsic (pyraclostrobin) <sup>c</sup>	11	***	12 h	G-E	?	E	F-E
JMS Stylet Oil, SuffOil-X, etc. (mineral oil)	NC	G, N	4 h	G-E	G-E	?	E
Junction (copper hydroxide+mancozeb)	M1	G, N	24 h	P-E	?	?	?
Kleengrow (Didecyl dimethyl ammonium chloride)	-	G	48 h	?	?	?	?
M-Pede (potassium salts of fatty acids)	-	G	12 h	?	?	?	?
Microthiol Disperss etc. (sulfur)	M2	G, N	24 h	E	G-E	?	E
Mural, A18126B (benzovindiflupyr + azoxystrobin)	- +11	TBD	-	?	G	?	?
Nordox (cuprous oxide)	M1	G, I, N, S	24 h	?	?	?	?
Pageant Intrinsic (pyraclostrobin+boscalid)	11+7	G, I, L, N,S	12 h	E	G-E	G-E	E
Palladium (cyprodinil+fludioxonil)	9+12	G, L, N, S	12 h	F-E	?	?	E
Phyton (copper sulfate pentahydrate)	M1	G, I, N	24 h	G-E	G	P-E	E
Pipron (piperalin)	5	G	12 h	E	?	?	E
PlantShield, RootShield ( <i>Trichoderma harzianum</i> )	NC	G, N, S	0 h	P-G	?	?	?
Regalia (extract of <i>Reynoutria sachalinensis</i> )	P5	G, I, L, N, S	4 h	P-G	P	P-E	P
Rubigan (fenarimol)	3	G,N	12 h	F	?	F	E
Sil-Matrix (potassium silicate)	NC	G,N	4 h	?	?	?	?

Fungicides (active ingredients)	FRAC Class	Registered Use Site(s)	REI	Powdery Mildew Efficacy			
				<i>Erysiphe</i> spp.	<i>Microsphaera</i> spp.	<i>Oidium</i> spp.	<i>Podosphaera/Sphaerotheca</i> spp.
Strike Plus (trifloxystrobin + triadimefon)	11 + 3	G, N	12 h	?	?	?	?
Terraguard (triflumizole)	3	G, I, N, S	12 h	E	?	E	E
Torque, Tebuconazole SC T&O Fungicide (tebuconazole)	3	N	12 h	E	?	?	?
Tourney (metconazole)	3	N	0 h	E	E	G-E	E
Triact 70, Trilogy, etc. (neem oil extract)	18B	G, I, L, N, S	4 h	F-E	F-G	E	G
Trinity (triticonazole)	3	G, I, L, N,S	12 h	G	-	G	-
ZeroTol (hydrogen dioxide)	NC	G, I, N	0 h	G	P	P	
Ziram (ziram)	M3	G,N	48 h	?	?	?	?
Zyban (Mancozeb+thiophanate methyl)	M3 + 1	G, N	24 h	E	?	P	E
<b>Experimentals</b>							
BAS703 (fluxapyroxad + pyraclostrobin)	7 + 11	TBD	-	?	?	?	?
F9110 (F9110)	-	TBD	-	?	P	?	?
F9944 (F9944)	-	TBD	-	?	?	?	?
Fluopyram 500 SC <sup>d</sup>	7	TBD	-	?	?	?	?
Fluopyram + Trifloxystrobin mixture <sup>d</sup>	7 + 11	TBD	-	?	?	?	?
MBI-110 (Bacillus amyloliquifaciens strain 727)	44	TBD	-	?	?	?	?
Mettle (tetraconazole)	3	TBD	12 h	?	P	G	P
NF-149 (cyflufenamid)	U6	N	4h	E	G-E	G-E	G-E
SP2770 (SP2770)*	-	TBD	-	?	?	?	?

Registered Use Sites: G = Greenhouse; L = Lath House; I = Indoors; N = Nursery; S = Shade House; TBD = To Be Determined

Application Method: D = Drench; S = Spray

Efficacy: E = clearly statistically equivalent or better than untreated non-inoculated and/or clearly statistically different than untreated inoculated; G = statistically different from untreated inoculated and untreated non-inoculated; F = statistically equivalent to both untreated inoculated and untreated non-inoculated; P = statistically equivalent to untreated inoculated. For trials without non-inoculated check, efficacy determined on author's conclusions, % control or comparisons to standard product(s).

Efficacy ratings taken from 85 PDMR efficacy reports – 33 Erysiphe, 9 Microsphaera, 19 Oidium. 24 Podosphaera/Sphaerotheca and 1 IR-4 report (Microsphaera).

\* Not for development in ornamental horticulture

<sup>a</sup> Will be replaced with Armada 50WDG/Strike Plus (triadimefon + trifloxystrobin).

<sup>b</sup> Bayer comments: Discontinue testing and focus effort/attention on ARMADA 50 WDG/Strike plus effects on PM diseases.

<sup>c</sup> Insignia is labeled for use in landscape and turf use only. Empress Intrinsic has replaced Insignia for use in production ornamentals applied as drench to control soil-borne diseases caused by *Fusarium*, *Phytophthora*, *Pythium* and *Rhizoctonia* spp.

<sup>d</sup> Bayer supports testing

<sup>e</sup>Fame will be replacing DisArm