



# Disease and Insect Resistant Ornamental Plants

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## HYDRANGEA

### Hydrangea

*Hydrangea* is a genus of about 23 species native to Asia and the Americas. Hydrangeas are widely grown in both home and commercial landscapes and are one of the most economically important nursery crops in the US (10).

With its display of showy pink or blue flowers and bold foliage, *H. macrophylla* (bigleaf hydrangea), is the most popular. Other ornamental species include *H. arborescens* (smooth hydrangea), *H. quercifolia* (oakleaf hydrangea), *H. serrata* (serrated hydrangea), and *H. paniculata* (panicle hydrangea).

Hydrangeas are generally trouble free, but powdery mildew can be common in some species later in the growing season.



## DISEASES

**Powdery Mildew** on hydrangea is caused by the fungus *Golovinomyces orontii*, formerly *Erysiphe polygoni* (11). Symptoms first appear as fuzzy gray patches on the upper surface of the leaf. Growth is favored by warm days and cool nights, and the disease is easily spread by spores moving in air currents (2). Severe infections can inhibit growth and leaf expansion causing distortion and affecting plant quality, particularly in greenhouse production where the pathogen may be active all year (2, 4, 12). Most commercially available cultivars of *H. macrophylla* are susceptible to powdery mildew (4).

POWDERY MILDEW				
Species/Hybrids	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
<i>H. anomala</i> subsp. <i>petiolaris</i>				12
<i>H. arborescens</i>				3, 4, 12
<i>H. arborescens</i>	Eco Pink Puff	3		
	Wesser Falls	3		
<i>H. macrophylla</i>				2, 3, 4, 12
<i>H. macrophylla</i>	All Summer Beauty	3		
	Alpenglühén	3		

POWDERY MILDEW				
Species/Hybrids	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
<i>H. macrophylla</i>	Ami Pasquier	3		
	Ayesha	3		
	Blauer Prinz	13		
	Blaumeise	13		1
	Blushing Pink	3		
	Decatur Blue		1	
	Dooley			3
	Endless Blue		1	
	Endless Summer	13		
	Fasan	13		
	Firelight		3	
	Forever Pink		3, 7	
	Freudenstein		3	
	Frilibet	3		
	Fuji Waterfall	13		
	Geisha Girl	3		
	Général Vicomtesse de Vibraye			3
	Goliath		3	
	Hillier Blue			3
	Holstein		7	3
	Kardinal			1
	Lemon Wave	13		
	Lilacina	3	7	
	Madame Emile Mouillère		7	
	Mariesii Variegata		3	
	Mousmée		3	
	Nigra		3	
	Nikko Blue			3, 7, 8
	Oakhill			1
	Pia	3		
	Soeur Thérèse	3		
	Souvenir du President Paul Doumer	3		1
	Taube	13		1
Todi	13			
Tricolor	13			
Veitchii	3, 7, 8, 13, 14, 15		1	

POWDERY MILDEW				
Species/Hybrids	Cultivar	Reference		
		Resistant	Intermediate	Susceptible
<i>H. macrophylla</i>	Westfalen			3
	White Wave	3		
<i>H. paniculata</i>				3, 4, 12
<i>H. paniculata</i>	Chantilly Lace	3		
<i>H. quercifolia</i>		2, 4		
<i>H. scandens</i>		3		
<i>H. serrata</i>				3, 4
<i>H. serrata</i>	Amagi Amacha	13, 14		
	Blue Billow	13		
	Diadem	13	14	
	Hokaido	13		
	Kiyosumisawa (Pulchra)	3		
	Komachi	13	14	
	Miranda	3		
	Miyama-yaе- Murasaki (Purple Tiers)	3, 13		
	Omacha	13	14	
	Preziosa			3
	Shichidanka (Pretty Maiden)	3, 13		
	Shirofujі	13, 14		
	Tіara	3		
	Tokyo Delight	3		
Woodlander	3			
<i>Hydrangea x</i>	NA83990		1	
	NA83991*	1		
	NA83992		1	
	NA83991*	1		

\*These experimental hybrids appeared completely resistant to powdery mildew in greenhouse experiments.

**Anthracnose** pathogens have a wide host range, occurring on many genera of commonly grown woody ornamental plants. Anthracnose on hydrangea is caused by the fungus *Colletotrichum gloeosporioides* and is prevalent on *H. macrophylla* (3). Symptoms first appear as brown spots on leaves which can spread across entire leaves and flower petals (2). Disease development is favored by hot, wet conditions and heavily fertilized plants are more susceptible (4).

ANTHRACNOSE		
Species/Hybrids	Cultivar	Reference
		Resistant
<i>H. macrophylla</i>	Ami Pasquier	15
	Ayesha	15

ANTHRACNOSE		
Species/Hybrids	Cultivar	Reference
		Resistant
<i>H. macrophylla</i>	Domotoi	15
	Enziandom	15
	Hadsburg	15
	Harlequin	15
	Jogaski	15
	Lady in Red	15
	Merritt's Supreme	15
	Nachtigall	15
	Oregon Pride	15
	Parzival	15
	Seafoam	15
	Sir Joseph Banks	15
	Sister Therese	15
	Taube	15
	Todi	15
	Tovelit	15
Trophy	15	
Veitchii	15	
<i>H. serrata</i>	Bluebird	15
	Hokkaido	15
	Intermedia	15
	Komacha	15
	Miyama Yae Murasaki	15
	Omacha	15
	Preziosa	15

**Cercospora Leaf Spot** caused by the fungus *Cercospora hydrangea* affects *H. arborescens*, *H. macrophylla*, *H. paniculata*, and *H. quercifolia* (3). It occurs most often on *H. macrophylla* in landscape plantings but can also damage container-grown plants in nursery production (5). While the disease rarely kills plants, their ornamental value may be significantly reduced (4).

Researchers at the University of Tennessee investigated the effect of shading densities on disease severity in six *H. macrophylla* cultivars: 'Blue Deckle', 'Fasan', 'Lilacina', 'Miranda', 'Pretty Maiden', and 'Sister Theresa'. Under 60-90% shade conditions, all six cultivars had low disease levels. Under 30% shade 'Miranda', 'Pretty Maiden', and 'Sister Theresa' had low disease levels, and when grown in full sun only 'Miranda' and 'Pretty Maiden' were resistant. In general, increasing shade densities decreased disease severity suggesting that planting *H. macrophylla* under shade could be an effective management strategy (6). The authors suggest that screening of bigleaf cultivars for leaf spot resistance should be done in the more stressful full-sun conditions to accurately assess resistance to *Cercospora*.

In a full-sun study also at the University of Tennessee, *H. macrophylla* cultivars 'Fuji Waterfall', 'Trophy', and 'Veitchii' were found to be resistant to *Cercospora* leaf spot (15).

**Hemlock-Hydrangea Rust**, caused by the fungus *Pucciniastrum hydrangeae* (syn. *Thekopsora hydrangeae*), requires two hosts to complete its life cycle. It occurs on hemlock species *Tsuga canadensis* and *T. caroliniana* and hydrangea species *H. arborescens* and *H. paniculata* (11). On hydrangea, signs first appear as brown to orange pustules on the underside of leaves and yellow spots on the upper side (2). Resistance is reported for *H. arborescens* 'Frosty' (9).

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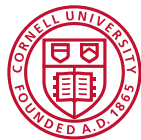
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Produced by the New York State Integrated Pest Management Program, which is funded through Cornell University, Cornell Cooperative Extension, the New York State Department of Agriculture and Markets, the New York State Department of Environmental Conservation, and USDA-NIFA. Design by Karen English, New York State IPM Program. Cornell Cooperative Extension provides equal program and employment opportunities. © 2019 Cornell University and the New York State IPM Program. Posted 4/2019. Search for this title at the NYSIPM Publications collection: [ecommons.cornell.edu/handle/1813/41246](https://ecommons.cornell.edu/handle/1813/41246)

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