

Root Diseases of Hydrangeas

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Hydrangeas are one of the most popular flowering shrubs in the landscape (Fig 1). Diseases and disorders on hydrangea can cause significant economic and aesthetic losses. This publication focuses on the common root diseases of hydrangea and their management recommendations.



Fig 1. Hydrangea cv. Ruby Slippers

Phytophthora Root Rot

Causal agent: *Phytophthora nicotiana*

Class: Oomycetes

Almost all hydrangeas, especially container-grown oakleaf hydrangeas (*Hydrangea quercifolia*) are more susceptible to *Phytophthora* root rot disease. The pathogen can be introduced into the nursery via *Phytophthora*-contaminated container stock or cuttings. Infected roots, crowns, other crop debris, and contaminated potting media can contain pathogen survival structures (chlamydospores and oospores) and mycelia of this pathogen. Poorly drained potting media and excess watering can increase the level of *Phytophthora* root rot disease in container-grown hydrangea. Symptoms of *Phytophthora* root rot are the sudden wilting and yellowing of the foliage. Infected hydrangea roots may exhibit brown discoloration and this discoloration can be seen on crown at the soil line and stem above the soil line as well.

Phytophthora root rot can be easily prevented with sanitation, cultural practices and chemical treatments. The most important factor is good water management. When growing hydrangeas it's important to prevent waterlogging and also important to group the plants according to container sizes and their irrigation needs. Potting media needs to be stored on a raised cement pad above the bare ground to eliminate the contamination risk. Cuttings should be taken from stock plants that are free of symptoms. If *Phytophthora* has been detected or conditions are favorable for an outbreak, there are a few fungicides and biopesticides available that can help prevent *Phytophthora* infections (Table 1).

Pythium Root Rot of Hydrangea

Causal agent: *Pythium* spp.

Class: Oomycetes

Pythium root rot can be dangerous for both mature and newly planted hydrangeas. If Pythium root rot is not treated properly it can result death of hydrangea plant. Hydrangea plants which grown in wet soils are more susceptible to Pythium root rot. Symptoms of Pythium root rot is at first die back started from terminal branches and followed by the rest of the hydrangea. Keeping the soil moist but not wet will help to reduce Pythium root rot problems in hydrangea.

Rhizoctonia Cutting Rot

Causal agent: *Rhizoctonia solani*

Class: Agaricomycetes

Cuttings that come into contact with soil or potting mix heavily infested with *Rhizoctonia solani* may become infected. Rhizoctonia cutting rot disease starts as a dry, brown basal rot that can develop before or after rooting in propagation beds or trays. All dead and affected plants, and debris needs to be removed from the plantation. Crop rotation has limited effects against Rhizoctonia root rot. However, crop rotation will help to reduce the disease severity.

Armillaria Root Rot (Mushroom root rot)

Causal agents: *Armillaria mellea*, *A. tabescens*

Class: Agaricomycetes

Armillaria root rot can attack oakleaf hydrangea as well as a variety of common shrubs, trees and many oak species. Especially on stressed trees these fungi are considered as dangerous root rot pathogens. The first symptom of Armillaria root rot on healthy hydrangea is the sudden wilting of one or more shoots. The remaining shoots can be affected within a few weeks and ultimately the infected hydrangea will die very soon. *Armillaria* fungi are usually developed mycelia and rhizomorphs inside or outside of damaged roots, and the root collar. As *Armillaria* fungi can live in their hosts with no noticeable damage so it can colonize easily the roots of vital plants. Without wounds *Armillaria* fungi can also enter into the healthy roots and can produce colonization into the cambium and sapwood. As fungicides are not a consideration for controlling Armillaria root rot, growing the hydrangea plants in the disease free location is critical. Also proper watering during summer drought, applying fertilizing according to the soil fertility test, and eradication of infected hydrangea are the good considerations for controlling Armillaria root rot.

Table 1. Selected lists of fungicide and biopesticide groups that may help control root diseases of hydrangeas (Gould, 2012).

Active Ingredient	FRAC code	Phytophthora Root Rot	Pythium Root Rot	Rhizoctonia Cutting Rot
Azoxystrobin	11			+
Boscalid + Pyraclostrobin	7 + 11			+
Copper sulfate	M1			+
Cyazofamid	21	+	+	
Dimethomorph	40	+		
Etridiazole	14	+	+	
Fluopicolide	43	+	+	
Fosetyl Aluminum	33	+	+	
Iprodione	2			+
Iprodione + Thiophanate-methyl	2 + 1			+
Mandipropamid	40	+		
Mefenoxam + Fludioxonil	4 + 12	+	+	+
Mefenoxam/Metalaxyl	4	+	+	
Mono- and di-potassium salts of phosphorous acid	33	+	+	+
Propamocarb hydrochloride	28	+	+	
Pyraclostrobin	11	+	+	+
Thiophanate-methyl	1			+
Thiophanate-methyl + Etridiazole	1 + 14	+	+	+
Trioxystrobin	11	+		+
<i>Bacillus subtilis</i>		+	+	+
<i>B. subtilis</i> var. <i>amyloliquefaciens</i>				+
<i>Trichoderma harzianum</i>			+	+
<i>Trichoderma harzianum</i> + <i>T. virens</i>			+	+

NOTE: Before applying ANY disease management product, be sure to: 1) read the label to be sure that the product is allowed for the crop and the disease you intend to control; 2) read and understand the safety precautions and application restrictions.

Reference

Gould, A. 2012. Disease Control Recommendations for Ornamental Crops
<http://njaes.rutgers.edu/pubs/publication.asp?pid=E036>

For additional information, contact your local nursery specialist office.

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Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication. Use of trade, brand, or active ingredient names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar and suitable composition, nor does it guarantee or warrant the standard of the product. The author(s) and Tennessee State University assume no liability resulting from the use of these recommendations.

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