A Horticulture Information article from the Wisconsin Master Gardener website, posted Aug 15 2001

Pest Alert: Daylily Rust

Daylily infected with daylily rust. Photo from Florida Department of Agriculture and Consumer Services, Division of Plant Industry.

Backyard gardeners and nursery growers in Wisconsin should be on the lookout for daylily rust (*Puccinia hemerocallidis*), a fungal disease that causes leaf damage in many varieties of daylilies. State agriculture officials in July 2001 confirmed the presence of daylily rust on plants at a nursery in Iowa County and at a private garden in Waukesha County. In the Iowa County case, the nursery purchased daylilies over the internet from growers in Florida where the fungus is widespread. The diseased varieties found include 'Enchanting Esmerelda', 'Mauna Loa', and 'Russian Easter'. The infected varieties in the Waukesha County garden are Little Red Dragon and Raspberry Winter. People who suspect their plants are infected with daylily rust should contact Bob Dahl, chief nursery inspector with the Wisconsin Department of Agriculture, Trade and Consumer Protection, at (608) 224-4571, or their local UW county extension agent.

Daylily rust was found in the U.S. for the first time in the summer of 2000, in nurseries in the southeast. Infections were confirmed in Georgia, Florida, Alabama and South Carolina. The disease appears to be spreading rapidly (probably from plants moved in interstate commerce, in addition to natural, wind-assisted spread) with the first case in Indiana confirmed in early August from a 'Lord of the Storm' daylily in Floyd Co. Other states reporting daylily rust this year are California, Kansas, Kentucky, Louisiana, Minnesota and Mississippi. According to the USDA, 15 states have now reported finding it either in nurseries or in private gardens.

Daylily rust on 'Lord of the Storm' daylily (penny shows relative size), from Indiana's Plant & Pest Diagnostic Laboratory.

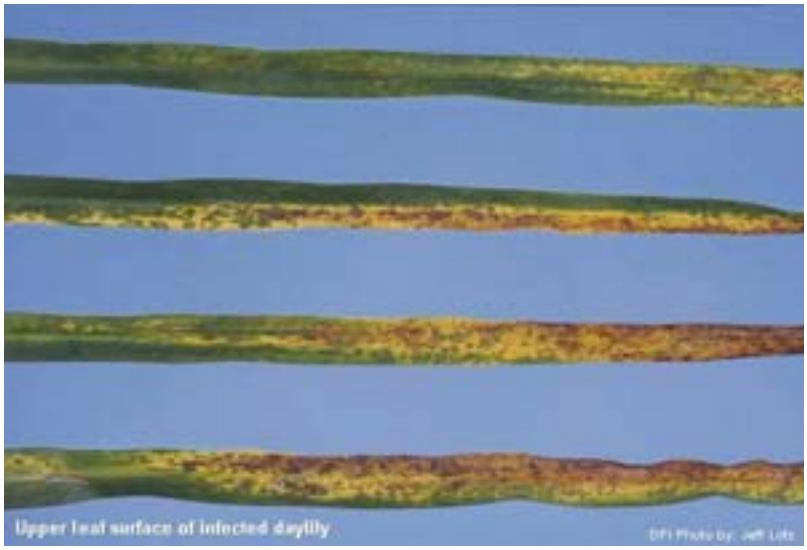
Rust pustules and urediospores. Photo from Florida Department of Agriculture and Consumer Services, Division of Plant Industry.

How large a concern is daylily rust for Wisconsin's home gardeners and nursery growers? It's more a matter of aesthetics because the fungus doesn't kill most varieties of daylilies. The disease causes spots on the foliage of some varieties, but has little effect on

others. The USDA has determined that daylily rust is a quality issue rather than a quarantine concern and they've left it up to individual states to control. The USDA recommends nurseries with infected plants stop selling them, remove and burn the affected foliage, and treat the plant with fungicides.

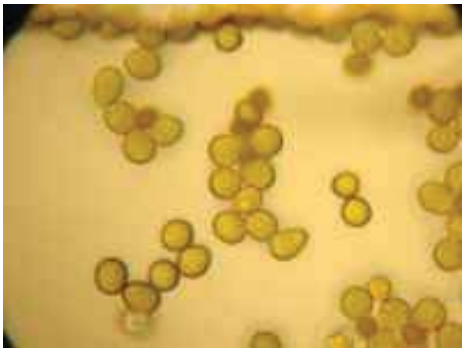
Daylilies are thought of as pest-free plants, but daylily rust may change that perception. Because the rust fungus is found from tropical to temperate climates, it has the potential to become a problem throughout the U.S. There is a considerable range in susceptibility of different daylily varieties. On some varieties it only causes spots on the leaves; on others it kills the foliage or the entire plant. The varieties it has been reported on in the U.S. so far include 'Pardon Me' (which is extremely susceptible), 'Gertrude Condon', 'Starstruck', 'Stella d'Oro', 'Joan Senior', 'Colonel Scarborough', 'Crystal Tide', 'Imperial Guard', 'Double Buttercup', 'Attribution', and 'Floyd'.

Daylily rust is caused by the fungus *Puccinia hemorocallidis*, which is native to Asia – also the native home of daylilies. The original U.S. introductions are believed to be on plants originating from Central America brought into at least one Georgia nursery (daylily plants are commonly shipped into the U.S. from Costa Rica, Guatemala, Honduras, Mexico, Bahamas, South Africa, and the Netherlands).



Upper leaf surface of infected daylily. Photo from Florida Department of Agriculture and Consumer Services, Division of Plant Industry.

Symptoms of the disease begin as tan to light yellow, watersoaked spots on the leaves. Some other diseases and aphid injury cause similar leaf damage that can be confused with the early stages of daylily rust. On some varieties of daylily the symptoms appear as streaks rather than spots. Eventually raised yellow-orange to rust-brown pustules erupt primarily on the underside of leaves, but on some varieties may occur on both leaf surfaces. These pustules contain bright orange asexual spores (urediniospores) that will produce new infections on other daylily tissue under humid conditions. New lesions can form within just a few days of infection, and a new crop of spores can be produced in only a week or two. The spores are spread by the wind, so the disease can spread rapidly if left untreated.



Daylily rust spores (400X magnification), from Indiana's Plant & Pest Diagnostic Laboratory website.

The fungus is a type of rust that requires an alternate host plant to complete its full life cycle (heterecious), but it can continue to re-infect daylilies without the other host. The perennial plant *Patrinia* is a known alternate host. Some Georgia nurseries produce P*. scabiosifolia*, but so far the rust has not been found on any plants in Georgia. *Hosta* has been reported as an alternate host in Japan, but testing at the University of Georgia has not determined conclusively if *Hosta* is truly an alternate host of the rust fungus. This may not be of much consequence, since the fungus appears to be able to reproduce only on daylilies quite well.

The most important thing people can do is inspect their daylilies frequently, and treat with an appropriate fungicide as necessary. Re-

move and destroy any infected foliage and then treat the plants with fungicides to protect new foliage as it emerges. Sterilize tools used to remove the infected foliage. It may be advisable to wear disposable gloves when handling infected material or wash your hands well, and change clothing and shoes before working with other daylilies to prevent disease transmission to other plants.

Fungicides that are effective against daylily rust include propaconizole (Banner Maxx), flutolonil (Contrast), azoxystrobin (Heritage) and myclobutanil (Systhane). If possible, use two different fungicides in alternate applications.

– *Susan Mahr, University of Wisconsin - Madison* (from DATCP Press Releases and other sources)
[Photos from Florida Department of Agriculture and Consumer Services, Division of Plant Industry website at www.doacs.state.fl.us/pi/enpp/pathology/daylily-rust.html or Indiana's Plant & Pest Diagnostic Laboratory website at www.ppdl.purdue.edu/ppdl/hot01/Whats_Hot8-03-01.html.]

Additional Information:

- Cornell University Daylily Rust Fact Sheet – list of susceptible varieties, treatment options, disease biology at plantclinic.cornell.edu/FactSheets/daylily%20rust/daylilyrust.htm
- *Puccinia hemerocallidis* – a Word document on the EPPO site at www.eppo.org/QUARANTINE/Alert_List/deleted%20files/fungi/Puccinia_hemerocallidis.doc
- *Puccinia* sp.: A new species of rust fungus found on nursery daylilies – a publication of the Phytosanitary Alert System, a product of North American Plant Protection Organization at www.pestalert.org/Detail.CFM?recordID=43