

Daylily Rust

Puccinia hemerocallidis

EPMS 009

Quick Facts

- Daylily rust is caused by a heteroecious rust fungus (*Puccinia hemerocallidis*). Heteroecious rust fungi do not need an alternate host to complete their lifecycle, but can complete their lifecycle on another host.
- Daylily rust is an exotic pest native to Asia.
- Daylily rust was introduced into the US on nursery stock in 2000.
- Infection incidence of daylily rust has spread to many states since its introduction, mainly on nursery stock.
- Daylily rust spores can germinate rapidly in the presence of free water.

completed on the daylily, but is also able to complete two of its stages on Gold Vateria when this host is present.

Daylily rust is an exotic disease native to Asia and introduced into the United States in 2000. Since its introduction, daylily rust has been positively identified in 21 states that include AL, AR, CA, CN, FL, GA, IN, IA, LA, KS, KY, MO, MN, MS, NC, OH, SC, TN, TX, VA, and WI. Nearly all of the infected nurseries reporting infection can be traced back to infected nursery stock. Although movement of diseased plants accounts for a majority of the infections seen to date, spores from infected plants can be blown great distances and remain viable. This is of great concern since the fungus can overwinter on daylily and gold vateria in warmer climates and produce new inoculum each year.

Symptoms:

Initial symptoms are chlorotic or water-soaked angular lesions bound by veins and as infection progresses, orange to rust colored pustules erupt through upper and lower leaf surfaces (Figure 1 and 2). Infected leaves die quickly leaving copious amounts of dead foliage.

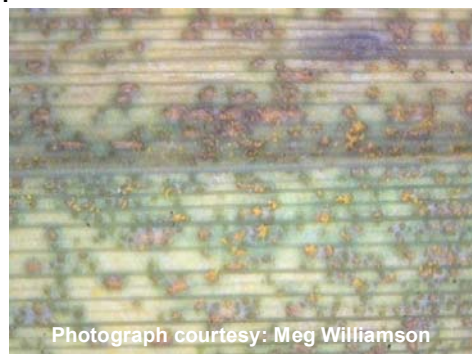


Figure 1. Close-up of infected daylily leaf. Notice water soaked lesions and orange colored pustules.

Daylily rust is caused by the rust fungus, *Puccinia hemerocallidis*. This rust is considered facultative autoecious macrocyclic rust on daylily since it can also infect gold vateria (*Patrinia* spp.) during certain stages of its lifecycle. Macrocyclic rusts have four distinct life stages normally divided between two host plants; these are considered obligate heteroecious macrocyclic rusts. In the case of daylily rust, the four life stages can be



Photograph courtesy: Meg Williamson

Figure 2. Close-up of infected daylily leaf. Notice orange colored pustules.

Causal Agent:

Daylily rust is caused by the fungus, *Puccinia hemerocallidis*. High humidity, moderate temperatures and free water favor growth of this fungus. As daylily rust moves throughout US greenhouse operations, this disease will potentially become an ongoing issue in areas conducive to outside daylily propagation and mild winter conditions. In these areas, *Puccinia hemerocallidis* will overwinter in outdoor daylily plantings and provide inoculum that may contact greenhouse daylilies resulting in plant loss.

Controls:

The most effective way to deal with daylily rust is to prevent introduction into the greenhouse or landscape by purchasing plants from

nurseries that regularly inspect and implement control measures for daylily rust. Greenhouses should grow new daylilies in an isolated location for observation before moving them into regular production and planting areas. Resistant daylily cultivars include: Butterscotch Ruffles, Holy Spirit, Mac the Knife and Yangtze.

In the event infections occur, it is imperative that all infected leaves and leaves from nearby daylilies be cut, collected and destroyed. Removal of all leaf debris on a regular basis is also suggested. Since daylily rust is a newly introduced disease, little information is available concerning efficacy and phytotoxicity on fungicides labeled for general greenhouse use. Below is a list of fungicides that are efficacious against other rust fungi in the *Puccinia* genus.

1. Banner MAXX at 5 to 8 oz/100 gal water. 24-hr REI.
2. Compass at 2 to 4 oz/100 gal water. Do not use organosilicate additives. 12-hr REI.
3. Contrast 70 WSP at 3 to 6 oz/100 gal water. 12-hr REI.
4. Heritage at 1 to 4 oz/100 gal water. Do not mix with silicone-based products. 4-hr REI.
5. Plantvax 75 W at 1.6 to 2.4 oz/10 gal water. Follow label instructions to avoid phytotoxicity. 12-hr REI.
6. Systhane WSP for landscape (outdoor) use at 2 oz/50 gal water. 24-hr REI.

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Information needed for samples of Daylily rust.

Grower Information

Name:

Address:

Farm Location:

Crop Information:

Type of plant material received:

Origin of propagation material/plants:

Plant and Variety:

Source of irrigation water

Irrigation type and frequency:

Soil type: recycled/contaminated/sterilized

If sterilized, method of sterilization:

Have standard sanitation techniques been implemented specifically for daylily rust: yes/no

If yes, which sanitation techniques have been implemented:

Has the incidence of infection changed: yes/no

Crop rotation history (current and previous 4 years):

Miscellaneous:

Pesticides applied:

Fertilizers applied:

Neighboring greenhouses/landscapes with host plants: yes/no

Are neighboring greenhouses experiencing same disease: yes/no