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Loren J. Giesler

University of Nebraska--Lincoln, lgiesler1@unl.edu

Jay B. Fitzgerald

University of Nebraska--Lincoln, jfitzgerald2@unl.edu

Stephen V. Johnson

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Daylily Rust: A New Disease in the United States

By Loren J. Giesler, *Extension Plant Pathologist, Department of Plant Pathology*, Jay B. Fitzgerald, *Extension Horticulturist, Department of Agronomy and Horticulture*, Stephen V. Johnson, *State Entomologist, Nebraska Department of Agriculture*

- [Symptoms](#)
- [Life Cycle of Daylily Rust Fungus](#)
- [Consumer Awareness](#)
- [What Should You Do?](#)

In 2000 a rust fungus, *Puccinia hemerocallidis*, was identified on daylilies for the first time in the United States. It has now been confirmed in nurseries in Alabama, Florida, Georgia, and South Carolina. This particular rust is very aggressive and destroys daylily foliage. So far all infections have been on the foliage; it is not known whether tuber infections occur.

Daylilies (*Hemerocallis* sp.) are native to central Europe, China and Japan. Prior to 2000, rust on daylily was not found out of the host's native distribution. Daylily rust distribution in Asia ranges from tropical to temperate climates so it is conceivable that it could also survive in a wide range of climates in the United States. Different daylily varieties have different levels of susceptibility to the fungus. Varieties which have been reported to be affected include: Attribution, Colonel Scarborough, Crystal Tide, Double Buttercup, Gertrude Condon, Imperial Guard, Joan Senior, Pardon Me, Starstruck, and Stella de Oro. The variety 'Pardon Me' appears to be very susceptible to the disease. Other varieties do not appear to be as severely affected. In addition to daylilies, the rust fungus is also considered to be a serious disease problem on its alternate host, Golden Valerian (*Patrinia* sp.). There is also a suggestion in the literature that this fungus could infect *Hosta* spp., but inoculations of hosta have not indicated this so far.

Symptoms

Symptoms of daylily rust are localized spots on the leaves. Individual spots will expand and be raised in the center forming a pustule. The pustule is a fungal fruiting structure which erupts through the leaf

tissue to release spores. While different cultivars will respond differently, often the infected leaf first turns yellow and then the entire leaf becomes necrotic and dries up. The most obvious sign is the orange-brown dust-like fungal spores that appear on your fingers if you rub across leaves with pustules.

Life Cycle of Daylily Rust Fungus

So far, all infections of daylily rust have been observed on the leaves. Like other rust pathogens, daylily rust is an airborne pathogen that is spread by wind over potentially long distances. The daylily rust fungus is a heteroecious rust requiring two distinct host plants to complete its life cycle, similar to cedar-apple rust. The same fungus also will infect Golden Valerian (*Patrinia* sp.) as an alternate host, but at this time it is not known how important *Patrinia* is in the survival of the fungus. Six species of *Patrinia* are sold in the United States as ornamentals. On daylily this rust produces urediospores which are commonly polycyclic or repeating stage spores in rust life cycles. The daylily rust fungus produces viable and infective spores on daylily and does not require *Patrinia* for infection of daylily. This means that once a daylily plant is infected, the disease can spread rapidly to other plants in the area.

Consumer Awareness

Buy daylilies and Golden Valerian only from inspected and licensed growers and dealers. If you have questions about a grower, contact the Nebraska Department of Agriculture. Currently, Florida has issued a stop sale to the infected nursery. Other states have sent out alerts in an effort to identify and track any shipments from infected nurseries. In many production nurseries dead and dry foliage has made it impossible for inspections in the winter months; however, inspections will be initiated once foliage begins to emerge in the spring.

Nursery producers and retail garden centers should not underestimate the importance of this problem. This disease will be devastating to the daylily industry. The USDA-sponsored New Pest Advisory Group (NPAG) warns that the disease is a serious pest of daylilies and may threaten the alternate host, *Patrinia* spp. Characteristics that make this fungal disease a serious pest include a short incubation period with rapid spread and the ubiquitous character which daylilies have in U.S. nurseries and garden centers.

What Should You Do?

This pathogen has been determined to be a quarantine-significant pest in all aspects except distribution. Researchers do not know how the pathogen is being distributed in the United States. This disease will be handled under emergency status until its spread in the United States is determined. This means that a “stop sell” will probably be issued to nurseries when the rust is found. Nebraska Department of Agriculture inspectors will be looking for this disease during regular nursery dealer and grower inspections.

Confirmation of daylily rust is essential. If you suspect a daylily of having this rust, contact your local state plant disease diagnostic laboratory. In Nebraska, contact the Plant and Pest Diagnostic Clinic, 448 Plant Sciences, P.O. Box 830722, Lincoln, NE 68583-0722; phone: (402) 472-2559 or the Nebraska Department of Agriculture, P.O. Box 94756, Lincoln, NE 68509; phone: (402) 471-2394. Do not ship suspect samples without taking precautions to limit spread of this disease. Suspect leaf samples should be dried between paper towels and placed in a plastic bag before packaging for mailing. Fungicides are being evaluated as to the role they will play in containing or eradicating this disease.

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