# GRAPEVINE LEAF RUST

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## Disease Overview

Grapevine leaf rust is caused by the fungus *Phakopsora euvitis*. The disease is favored by hot and humid weather and commonly occurs in parts of eastern Asia, South America and Central America. Although the disease has occasionally been detected in the southeastern United States, including in North Carolina, South Carolina, Georgia and Florida, it has historically been of minor importance.

## Occurrence of Grapevine Leaf Rust in Tennessee

Grapevine leaf rust was observed for the first time in Tennessee on grape seedlings for sale at large box stores in Bradley, Davidson, Knox, McMinn, Rutherford and Williamson counties in September 2018. Growers should be aware of its presence and be able to recognize symptoms associated with the disease. If you detect grapevine leaf rust, you should alert your county Extension agent to develop a management strategy and to help track the disease.

## Symptoms

Symptoms initially appear on the upper leaf surface as small, angular, yellow or brown lesions (Figure 1). Small yellow-orange pustules containing spores, called uredinia, are visible to the naked eye on the lower

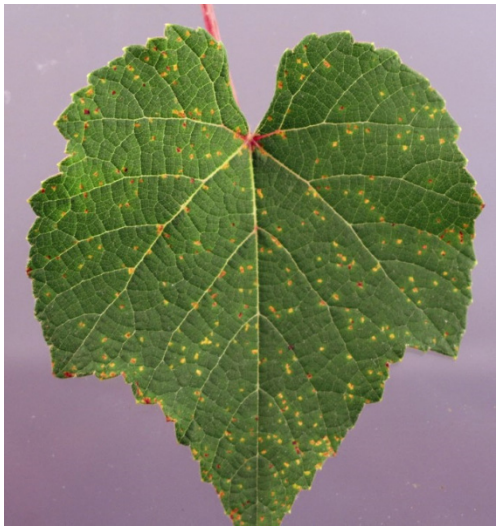

*Figure 1. Grapevine leaf rust symptoms on the upper surface of a grape leaf, which initially appear as small, angular, yellow-brown spots.*

*Figure 2. Characteristic grapevine leaf rust symptoms on the underside of a grape leaf. Yellow-orange pustules containing rust spores (uredinia) are visible to the naked eye.*

leaf surface (Figures 2 and 3). As the disease progresses, yellow lesions become necrotic (dead), turn black, and may expand to cover the entire leaf surface (Figure 4). Severe infections can result in leaf drop, which can reduce fruit yield and quality.

*Figure 4. Advanced symptoms of grapevine leaf rust showing large necrotic areas and premature senescence.*

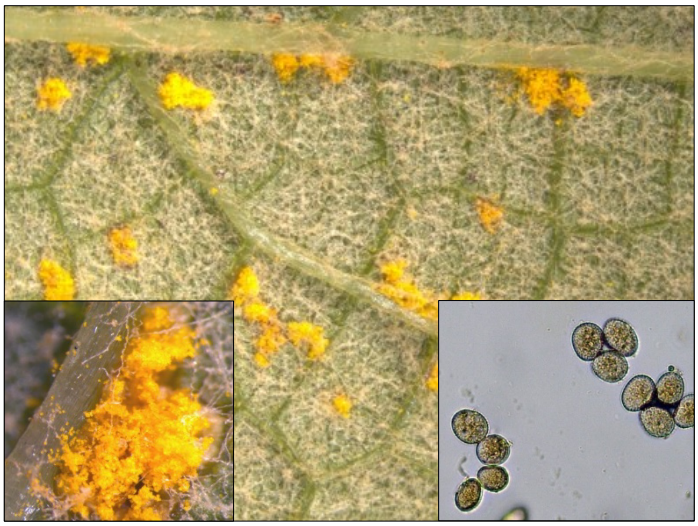

*Figure 3 Close-up images of grapevine leaf rust pustules (uredinia) on the underside of a grape leaf. Each individual pustule (lower left) contains spores, called urediniospores (lower right), which allow the fungus to spread via wind.*

## Disease Cycle and Spread

Grapevine leaf rust requires two separate host species to complete its life cycle, similar to the common disease of cedar and apple trees known as cedar apple rust. Spores of grapevine leaf rust are spread by wind and rain. The two hosts of grapevine leaf rust are grape (*Vitis* spp.) and *Meliosma myriantha*, a tree native to Japan. Urediniospores are produced on grape, which repeatedly infect healthy grape tissue. This phase of the disease is responsible for epidemic spread on grape. These spores require living green host tissue to survive, and do not survive long without susceptible host tissue. Other spore types are also produced, which allow the pathogen to move between grape and *Meliosma myriantha* to complete its life cycle. In the United States, where *Meliosma myriantha* is absent, urediniospores are the only infectious spores produced. This likely limits the overwintering ability of the fungus to tropical and subtropical climates where green tissue is not killed by frost, although research is needed to understand the pathogen's ability to overwinter in the United States.

## Management

Avoid introducing leaf rust on infected plant material. Seedlings should be inspected for symptoms and signs of leaf rust prior to planting. Most commercial bunch grape varieties, including those belonging to the species *Vitis vinifera* and *Vitis labrusca*, are susceptible to leaf rust. *Vitis rotundifolia*, or muscadine, may be more resistant to leaf rust. Fungicide programs aimed at managing other common fungal diseases in grape, which may include DMIs, captan and mancozeb, will likely help suppress leaf rust.

**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.

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