

Citrus Diseases Exotic to Florida: Citrus Yellow Mosaic¹

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Introduction

Citrus is susceptible to a large number of biotic diseases. Plant diseases that affect citrus can cause severe economic losses, but, fortunately, not all pathogens attacking citrus worldwide are present in Florida. Any exotic disease, if introduced, has the potential to significantly increase production costs and decrease profitability for Florida growers. This series of EDIS fact sheets (available at http://edis.ifas.ufl.edu/topic_series_citrus_diseases_exotic_to_florida) presents background information for each exotic citrus disease in order to provide a basis for evaluating exotic pathogens that may pose potential risks to Florida citrus and to facilitate a decision-making framework for preventing their introduction and spread. This paper discusses the viral disease, citrus yellow mosaic.

Concerns about Citrus Yellow Mosaic

Citrus yellow mosaic is an important viral disease in India, where it causes significant yield reduction. In some groves, infection rate may be as high as 70%. Other countries have not reported the disease. Much of citrus yellow mosaic's spread is caused by propagating infected budwood sources, but the citrus mealybug (*Planococcus citri*) can also transmit the disease. Citrus yellow mosaic is different from another citrus mosaic disease described in Japan in that it is caused by a badnavirus, whereas the Japanese citrus mosaic is caused by a member of the Satsuma dwarf virus group.

Causal Agent of Citrus Yellow Mosaic

The causal virus, *Citrus yellow mosaic virus* (CYMV), is a member of the badnavirus group that affects citrus, banana, sugarcane, cacao, rice, and a number of other agriculturally important crops.

Cultivars Affected by Citrus Yellow Mosaic

Although CYMV infects most citrus cultivars and relatives, citrus yellow mosaic is commonly found in 'Sathgudi' sweet orange in India. Graft transmission tests revealed that oranges, grapefruit, mandarins, pummelo, sour orange, 'Volkamer' lemon, and 'Rangpur' lime are all susceptible to infection. Mexican lime is symptomless.

Typical Symptoms of Citrus Yellow Mosaic

CYMV induces a bright yellow mottling or vein flecking that persists in mature leaves (Figure 1). Yields are sharply reduced in chronically infected 'Sathgudi' sweet orange trees in India, and fruit may also show mosaic symptoms.

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Figure 1. Mosaic symptoms induced by *Citrus yellow mosaic virus* on the leaves of 'Sathgudi' sweet orange.

Credits: V. K. Baranwal

Transmission of Citrus Yellow Mosaic

CYMV can be transmitted by grafting, by mechanical inoculation, and by the citrus mealybug (*Planococcus citri*). The origin of CYMV is unknown, but it is possible that the virus was initially transmitted into citrus by mealybug from another host in India, where badnaviruses are present in a number of crops. Widespread distribution of CYMV in India is primarily attributed to propagation of infected budwood. The degree of spread by mealybug remains undetermined. CYMV spread via the citrus mealybug would likely be localized because of the vector's sedentary nature.

Detection and Control of Citrus Yellow Mosaic in the Field

CYMV symptoms are easily visible in the field in most citrus cultivars. Symptoms persist in mature leaves, while most other citrus viruses that cause foliar symptoms are masked in older leaves. CYMV can be detected serologically using CYMV antisera or antisera to several other badnaviruses. The bacilliform particles of CYMV can also be detected by electron microscopy and tend to occur in relatively large concentrations in infected plants. Because its genome has been sequenced, PCR diagnosis is commonly used to identify CYMV. Mealybug control and the use of virus-free budwood are the basic control measures recommended in India.

What Can Growers Do?

Preventing citrus yellow mosaic from entering Florida is much easier than trying to eradicate or control it. Any citrus-propagating materials must be introduced through the Florida Department of Agricultural and Consumer Services, Division of Plant Industry to ensure healthy plants and an economically viable Florida citrus industry.