

Powdery Mildew of Vegetables¹

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Introduction

Powdery mildew is a serious disease of beans, southern peas, okra, squash, cucumbers, muskmelons, honeydews, and pumpkins in Florida. The disease occurs also on English peas and is found on strawberries and watermelons in the state. Powdery mildew of okra, squash, cucumbers, muskmelons, honeydews, pumpkins, and watermelons is caused by the fungus *Podosphaera xanthii* (= *Sphaerotheca fulginea*) or, occasionally, *Erysiphe cichoracearum*. The fungus *Erysiphe polygoni* causes powdery mildew of beans, southern peas, and English peas. Powdery mildew of strawberries is caused by the fungus *Sphaerotheca macularis*.

The disease is found mainly on the older leaves and stems of plants. Yields of many of the infected vegetables are reduced due to premature foliage loss. In honeydew and muskmelon severe leaf infection usually results in lower fruit sugar content and subsequent reduction of fruit quality. In a few crops direct damage to the marketable produce occurs.

Symptoms and Disease Development

The fungus is usually first noted as subtle, small, round, whitish or yellow spots on leaves (Fig. 1) and sometimes stems. The spots enlarge and coalesce rapidly and a white mass resembling talcum powder becomes evident on the upper surface of older leaves (Fig. 2) or other plant parts (Fig. 3). Young leaves are almost immune. A large part of the talc-like powder on the leaf surface is composed of spores. These spores are easily blown by winds to nearby susceptible plants.

Heavily infected leaves yellow, then become dry and brown (Fig. 4). Extensive premature defoliation of the older leaves can ensue if the disease is not controlled. Yield reduction from defoliation is proportional to the severity and length of time plants are infected. Severe economic losses can occur in beans when pods are infected. The pods develop purplish spots and become distorted. (Fig. 5).

Powdery mildew fungi can reproduce under relatively dry conditions. Increased humidity can increase the severity of the disease, and infection is

1. This document is PP-14, one of a series of the Plant Pathology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date April 1994. Revised May 2005. Reviewed August 2008. Visit the EDIS Web Site at <http://edis.ifas.ufl.edu>.

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enhanced during periods of heavy dew. Unlike downy mildew, powdery mildew can and does become severe during periods of low rainfall in the winter and spring months in Florida.

It is not known for certain how the fungus survives between crop seasons. The fungus is thought to survive on wild cucurbit and other weeds year round

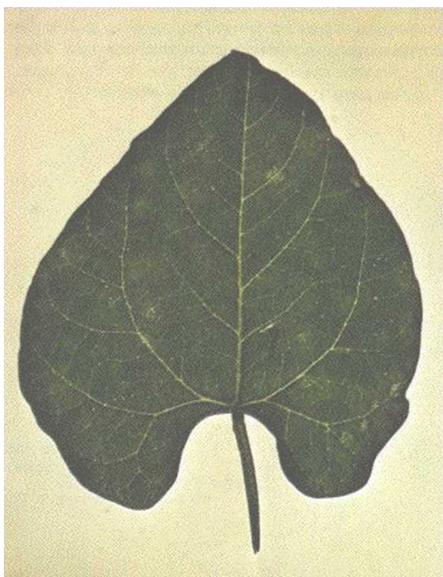


Figure 1.



Figure 2.

Control

Crop rotation and many other cultural practices seem to have little effect on the incidence and development of powdery mildew. However, healthy, vigorous leaves and stems are less prone to infection. Plants under nutritional stress in most cases will



Figure 3.



Figure 4.



Figure 5.

develop powdery mildew much sooner than plants the same age grown under a good nutritional program.

Tolerance or resistance to powdery mildew is available in some vegetable crops. For example, most commercial varieties of slicing and pickling cucumber varieties grown in Florida have acceptable levels of resistance.

Most varieties of cantaloupe used in Florida, have some tolerance to powdery mildew. Tolerance to powdery mildew is available in a few of the most recently introduced summer squash and zucchini varieties. It is expected that most varieties released in 2000 or thereafter will have some level of tolerance to powdery mildew often combined with an array of virus resistance. In decorative pumpkins and acorn squash, the situation is similar to that in summer squash, i.e. there are few resistant varieties to powdery mildew available now but many varieties released in the future should have this desirable trait. Documented tolerance to powdery mildew in butternut squash and watermelon varieties has not been noted. Growers can obtain information on resistance of specific crop varieties from seed industry personnel and the University of Florida Cooperative Extension Service.

In addition to resistance, economic control can be achieved with chemicals. Under low disease pressure, some materials applied for downy mildew control may give satisfactory control of powdery mildew. However, under moderate to heavy mildew disease pressure, specific fungicides are recommended. Check with your county agent for updated registrations, recommendations, and harvest limits.