

2007 Florida Plant Disease Management Guide: Squash¹

Pam Roberts and Tom Kucharek²

Specific Common Diseases

Angular Leaf Spot (*Pseudomonas syringae* pv. *lachrymans*)

Symptoms: This is not a common disease in squash in Florida. Infections are found in the leaves, stems, and fruit. Spots in the leaves are angular, and water-soaked. Free moisture allows bacteria to ooze from the spots which dry later leaving a white residue. These spots of dead tissue will occasionally drop away from the healthy tissue leaving holes in the leaves. This is a cool weather disease.

The spots on the fruit are generally smaller and nearly circular. The dead spots on the fruit turn white and the tissue may crack open. Wet, cool seasons favor this disease. The bacterium is seedborne and dispersed by rain or irrigation water.

Cultural Controls: Plant disease-free seed. Rotate land away from cucurbit crops. Do not work diseased plants when they are wet.

Chemical Controls: See PPP-6.

Damping-off (*Pythium* spp. and *Rhizoctonia solani*)

Symptoms: Seed fails to germinate due to rapid colonization of seed by soilborne fungi. Excavated seed will be rotted and soft often with evidence of fungal mycelium. Young, newly emerged seedlings often collapse at soil line and crown. The stems may exhibit an obvious discoloration ranging in color from a reddish-brown to black and may be dry or mushy to the touch depending on the soil fungus involved. See Plant Pathology Fact Sheet PP-1.

Cultural Controls: Avoid planting seed when soil moisture, soil preparation, temperature or planting depth do not favor rapid emergence. Plant in well tilled soil where old crop debris had been destroyed 30 days previously.

Chemical Controls: Use a fungicide seed treatment. See PPP-6.

Downy Mildew (*Pseudoperonospora cubensis*)

Symptoms: Symptoms appear on the foliage as pale-green to yellow, angular spots, with gray-tinged

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1. This document is PDMG-V3-49, one of a series of the 2007 Florida Plant Disease Management Guide, Department of Plant Pathology, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Revised December 2005. Reviewed January 2007. Please visit the EDIS Web site at <http://edis.ifas.ufl.edu>.
 2. Pam Roberts, associate professor, Plant Pathology Department, Southwest Florida Research and Education Center, Immokalee, FL; Tom Kucharek, professor emeritus, Plant Pathology Department; Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

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spore masses on the undersides of these spots. Severely infected leaves become chlorotic, turn brown, and shrivel. The fruits are rarely affected directly, but fail to color properly and are usually sunburned and tasteless. Spores are readily wind dispersed. See Plant Pathology Fact Sheet PP-2.

Chemical Controls: Initiate a fungicide spray program in advance of disease occurrence. See PPP-6.

Gummy Stem Blight (*Didymella bryoniae/Phoma cucubitarum*)

Symptoms: This fungus can cause damping-off, crown and stem rot, leaf spots and fruit rot on winter squash. Infection can begin on seed leaves but usually occurs on the older leaves close to the soil line. Lesions are round to irregular, brown and sometimes concentrically zoned. In Florida, this disease is found in fruit as black surface lesions.

Stem or vine lesions are brown, often splitting open and turning light colored with age. The black, speck-like fruiting structures (pycnidia) can often be seen in these stem or vine cankers. Lesion enlargement may girdle the stem or vine causing death.

The pathogen can be seedborne but often survives in previous crop debris. Spread is achieved by rain splashing and strong winds. See Plant Pathology Fact Sheet PP-27.

Chemical Controls: Plant only fungicide-treated seed. Avoid planting in field with residual crop debris still present. Apply fungicides as needed. See PPP-6.

Phytophthora Blight (*Phytophthora capsici*)

Symptoms: The disease can occur on the plant at any stage causing damping-off, seedling blight, foliar blight, and plant death preceded by wilting. Symptoms on mature plants are seen as dark, water-soaked areas in the crown. Leaf spots are rapidly expanding, water-soaked lesions. Infection of the plant, particularly summer squash, leads to rapid death. Sunken, brown water-soaked areas appear in infected fruit. A white growth may cover the lesion and sporangia can be readily recovered. Sporangia are rain-splashed dispersed or by moving infested soil or contaminated equipment. Surface moisture is

required by the swimming zoospores for infections. Standing water in fields is an ideal situation for occurrence of this disease if inoculum is present in the soil.

Cultural Controls: Plant in well-drained soils and avoid waterlogged conditions. Do not move plants or equipment from infected fields to non-infected fields. Avoid fields known to have had this disease because the pathogen can survive for many years in the soil.

Chemical Controls: Use a soil fumigant. See PPP-6.

Powdery Mildew (*Oidium* spp./*Sphaerotheca fuliginea* or *Erysiphe cichoracearum*)

Symptoms: This disease affects the leaves and stems, first appearing as round whitish spots on the upper or lower leaf surfaces. The spots increase in number and size, coalesce, and appear on the upper surface as a white, powdery growth. Severely affected leaves lose their normal dark-green color and become pale yellow-green, then brown and shriveled. Also, the young stems are killed. Fruits on infected vines ripen prematurely, are of poor quality, and often sunburn. Spores are readily wind-dispersed over long distances.

Chemical Controls: Apply fungicides as needed. See PPP-6.

Viruses (*Cucumber mosaic virus*, *Papaya ringspot virus Type W*, *Watermelon mosaic virus 2*, and *Zucchini yellow mosaic virus*)

Symptoms: Young infected plants may exhibit prominent vein clearing, chlorotic spotting and a mosaic on leaves. Older plants may exhibit stunting with varying degrees of mottling, leaf blistering and malformation and vein extension along leaf borders depending on the strain of virus, age of infection and possibly other factors.

Yellow squash varieties will exhibit varying degrees of fruit greening in a striped or mottled pattern, sometimes with raised yellow blisters. Green-fruited squash may lighten or mottle in color as well as blister. Fruit distortion can be severe across squash types.

This virus is spread by aphids from weed hosts within Florida. Common weed hosts include the creeping cucumber or melonette (*Melothria pendula*) in south Florida and alyce clover (*Alysicarpus* sp.) farther north in the State. Dayflower (*Commelina* sp.) is a major host for cucumber mosaic virus. See Plant Pathology Circular 1184.

Cultural Controls: Do not grow squash behind or adjacent to other cucurbit crops since these viral diseases affect all cucurbits. Isolation of squash fields may limit aphid buildup from other crops and use of noncrops (solanaceous crops) as buffer fields should reduce field to field spread. Control weeds prior to cropping. Use of JMS Stylet Oil on a schedule can reduce losses to virus. See PPP-6 for use of JMS Stylet Oil. Certain varieties of yellow summer squash and zucchini squash have resistance to some of these viruses.

Wet Rot (Blossom Rot) (*Choanephora cucurbitarum*)

Symptoms: This disease affects the blossoms and fruit. The infected part rapidly becomes covered with a mass of whisker-like, white-stalked, black-headed fruiting bodies of the causal fungus. The tissue beneath this mass of fungus becomes water-soaked and rotted. During dry periods, fruit may rot back from the blossom-end without the characteristic fungus growth present. See Plant Pathology Fact Sheet PP-11.

Cultural Controls: Occurrence of blossom-end rot may predispose fruits to invasion by this weak pathogen. Use of fungicides in the control of other diseases may aid in the control of wet rot. Minimize crowding of plants and control weeds; these practices enhance air circulation. In gardens, removing the spent corolla (flower) after successful pollination will control this fungal disease on those fruit.