

PLANT DISEASE CONTROL NOTES

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VEGETABLE DISEASES CUCURBIT DISEASE CONTROL

Control Series 81

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Disease control is one important factor in determining the success or failure of cucurbit production (cucumbers, summer squash, cantaloupe, pumpkin, and watermelon). Cucurbits are subject to many diseases, however, only a few of them cause serious crop losses in Virginia. Areas where disease control is not practiced can expect some losses from foliage and stem diseases every year. Certain diseases are capable of destroying the entire crop prior to harvest when weather conditions are favorable for their development.

1. Anthraco*nose*: Anthracnose is caused by the fungus Colletotrichum lagenarium. The disease may develop throughout the growing season on all above ground parts of the plant, but it is usually most severe during mid- and late-season and during wet weather. In addition to being carried on the seed, the disease is able to overwinter on infected vines left in the field.

The first symptoms appear on the older leaves as dark brown spots with irregular margins. Frequently, the centers of some spots fall out, giving the leaf a shot-hole appearance. The fruits of many cucurbits may be attacked and develop round sunken lesions which often result in severe breakdown during transit to market. The round sunken spots on the fruit first appear as water-soaked areas that turn dark green or brown. Pink spore masses can often be seen on diseased fruits in the morning following heavy dews.

2. Angular Leafspot: Angular leafspot is a bacterial disease caused by a seed-borne bacterium Pseudomonas lachrymans. The disease which attacks the leaves, stem, and fruit is important only on cucumbers. The disease can overwinter on diseased plant debris in the field and on the cucumber seed. During splashing rain the bacteria spread from the soil to the stem, leaves and later to the fruit. The organism is easily spread in the field by cultivation equipment, harvesters, and by wind-blown rain.

On the leaves the disease causes small, angular, water-soaked areas which later turn brown or straw-colored. The affected leaf tissue often dries and drops out leaving irregularly shaped holes in the leaves. The disease which is most severe during relatively cool weather causes small circular spots on the fruit. These spots often crack open and turn white in color.

3. Scab: This disease, caused by the fungus Cladisporium cucumerinum is destructive on cucumber and summer squash. Scab is most destructive in cool weather and is capable of surviving the winter on old cucumber refuse and on the seed. The fungus is readily spread by machinery during cultivation and by harvesters working in the field. Spores of the fungus which causes the disease can travel long distances in moist air.

The most conspicuous symptoms are the small, dark gray to black spots formed on the fruit. Several small spots may coalesce to form large diseased areas which frequently produce a sticky substance. The disease also affects the leaves, deforming them and causing irregular spots with brown centers and

yellow margins. Frequently, these centers fall out leaving ragged holes in the leaves. Scab usually attacks the fruit in the field; however, serious losses due to scab may occur during transit.

4. Downy mildew: Downy mildew, caused by the air-borne fungus Pseudo-peronospora cubensis probably causes more damage to cucurbits than any other disease, particularly during extended periods of cool moist weather. The fungus does not overwinter in Virginia but its spores which cause initial infections are blown in from the southern states along the Atlantic seaboard and other sub-tropical areas where it overwinters on living cucurbit plants. Downy mildew spreads rapidly during moist weather and is destructive over a wide range of temperature. Extended periods of dry, hot weather tend to suppress the spread of the disease.

On cucumber leaves, downy mildew appears as angular yellow spots on the upper leaf surface. During humid weather the underside of these spots produce a grayish moldy growth with countless number of dark spores. When severe, the disease causes the leaves to shrivel up and die rapidly. On watermelon and cantaloupe the affected areas are at first yellow and later somewhat darker than the spots on cucumber. The older leaves nearest the center of the hill are usually infected first. On the older leaves the spots enlarge and a general yellowing of the leaf occurs, followed by a brown discoloration and finally death of the tissue. During rainy or humid weather, lesions enlarge rapidly, causing the entire leaf to wither and die. In some years the disease may destroy entire plantings of susceptible plants.

5. Powdery mildew: Powdery mildew, caused by the fungus Erysiphe cichoracearum, affects all cucurbits but most often damages cantaloupes and squash. Initial infection may occur from old cucurbit debris left in the field or it may be blown in on air currents from infested areas south of Virginia. In contrast to downy mildew, which is more severe during wet weather, powdery mildew is generally more damaging during periods of relatively hot, dry weather.

Powdery mildew appears on leaves, petioles, and young stems as a white powder composed of spore-bearing mycelium and countless numbers of spores. Under favorable conditions the entire top surface of the leaves may be covered with the powdery fungus. Badly infected leaves become yellow and eventually turn brown and shrivel. Occasionally severely diseased plants may die. The cucurbit fruit is not attacked by powdery mildew; however, it may be malformed and is frequently sunburned due to a lack of foliage cover. Under favorable conditions the fungus may reproduce so rapidly that an entire field may appear white with mildew within a few days.

6. Gummy Stem Blight: Gummy stem blight is a seed-borne disease caused by the fungus Mycosphaella melonis which is capable of overwintering on plant refuse in the soil. This disease occurs on all cucurbits; however, it is primarily important on watermelon and cantaloupe. The gummy stem blight fungus produces millions of sticky spores which are easily spread in the field by man and machinery. Generally, the disease only attacks the leaves and stem of cucurbit plants.

On watermelon and cantaloupe leaves, the disease causes irregularly circular light- to dark-brown leafspots. Vine cankers are most common near the crown of the plant, where they produce sunken streaks or cracks accompanied by a gummy ooze. The disease is very apparent when individual runners of apparently healthy plants suddenly die. The disease usually spreads from the crown of the plant outward, as does downy mildew and anthracnose. The gummy stem blight fungus produces many spores on stem lesions. The spore masses appear as tiny black or brown spots.

CONTROL PRACTICES

1. Since most cucurbit diseases are seed-borne, plant only disease-free seed. Western grown seed (from arid regions where cucurbit diseases are not present) should be used in preference to locally produced seed.
2. Rotate with crops other than cucurbits for at least 3 years.
3. Avoid cultivating or handling plants when they are wet.
4. Plow under all plant debris after harvest.
5. Plant disease resistant varieties when possible.
6. Keep weeds and grass under control.
7. Use a protective fungicidal spray program through the growing season according to the 1976 Home Vegetable Disease Control Guide, CS-158.

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KEYS TO PROPER USE OF PESTICIDES

1. Read the label on each pesticide container before each use. Follow instructions to the letter; heed all cautions and warnings, and note precautions about residues.
2. Keep pesticides in the containers in which you bought them. Put them where children or animals cannot get to them, preferably under lock and away from food, feed, seed, or other material that may become harmful if contaminated.
3. Dispose of empty containers in the manner specified on the label.

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