



ALTERNARIA LEAF SPOT OR BLIGHT OF CUCURBITS

Alternaria leaf spot or blight of cucurbits or vine crops is caused by the fungus *Alternaria cucumerina*. The disease is widespread and often damaging in Illinois after wet weather with temperatures between 68° and 90°F (20° to 32°C). Alternaria leaf spot is most severe on muskmelon and cantaloupe on sandy soils. The causal fungus also attacks summer and winter squashes, cucumber, pumpkin, vegetable-marrows, watermelon, citron, and bur gherkin.

Alternaria blight causes damage by defoliating the vines and reducing fruit yield, size, and quality. Even with only partial defoliation, the fruit may sunscald and ripen prematurely. This disease is usually first observed about the time of early fruit development.



Figure 1. *Alternaria* leaf blight attacking the older crown leaves in a muskmelon hill.

SYMPTOMS

Plants usually develop circular spots or lesions on the oldest or crown leaves near the center of the hill (Figure 1). The number of spots increases rapidly in warm, humid weather, later spreading to the younger leaves toward the tips of the vines. At first the lesions are small, circular, and somewhat water-soaked or transparent. They enlarge rapidly until they are 1/2 inch or more in diameter, turning light brown on muskmelons (Figure 2), cucumber, and squash, and dark brown or black on watermelon when mature. Definite concentric rings may often be seen in the older, round to irregular spots, giving them a target like appearance (Figure 3). Spots may merge, blighting large areas of the leaf. Muskmelons and cantaloupes are more susceptible than other vine crops. The leaves commonly curl, wither, and fall prematurely. Vines may be partly or completely defoliated by harvest time.



Figure 2. *Alternaria* leaf spot; closeup of muskmelon leaf (Purdue University photograph).

More or less circular sunken spots develop on muskmelon, summer squash, watermelon, and cucumber fruits. Often the spots later become

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covered with a dark olive green to black mold, the mycelium and spores (conidia) of the *Alternaria* fungus (Figure 4). On summer squash, rot starts at the blossom end. Fruit turn brown and shrink, later becoming black and mummified. The rot on muskmelon and cucumber fruit is often associated with sunscald injury or over-ripeness.

DISEASE CYCLE

The mycelium of *Alternaria cucumerina* is dark. In older diseased tissue it produces large numbers of short, simple, erect conidiophores usually with several prominent conidial scars (Figure 5). The large, multicellular conidia with 6 to 9 transverse cross walls, several longitudinal cross walls, and a long beak are usually borne singly on the conidiophores (Figure 5). The conidia are easily detached and can be found in the air and dust everywhere around cucurbit fields.

The *Alternaria* fungus overwinters as dormant mycelium in diseased and partly decayed crop refuse, in weeds of the cucurbit family and possibly in the soil. Fungus conidia can survive under warm, dry conditions for several months. Conidia produced on diseased plants or crop refuse may be blown by the wind for long distances. Clothing, tools and other equipment, running and splashing water are other means of spread. The germinating spores penetrate susceptible tissue directly or through wounds and soon produce a new crop of conidia that are further spread by wind, splashing rain, tools, or workers.

At least 18 hours of high relative humidity, producing leaf wetness, is required before infection can occur. The period between infection and the appearance of symptoms varies from 3 to 12 days. Young plants less than a month old and plants that are bearing fruit and 70 to 75 days old appear to be more susceptible than plants 45 to 60 days of age.

The *Alternaria* fungus is normally a vigorous pathogen only on cucurbit plants weakened by malnutrition, drought, insects, other diseases, a heavy fruit set, or other kinds of stress.

CONTROL

1. Grow cucurbit crops under the best possible conditions of soil preparation, texture, fertility, moisture, and pH. Keep plants growing vigorously throughout the season.

Follow recommendations outlined by University of Illinois Vegetable Specialists and your nearest Extension adviser. Maintain ample but not excessive nitrogen fertility based on a soil test. Fertilizer recommendations are given in Midwest Vegetable Production Guide for Commercial Growers.



Figure 3. Close-up of *Alternaria* leafspot or blight showing older, target-like spots (Purdue University photograph).



Figure 4. *Alternaria* rot spots on two cucumber fruits. The black lesions are covered with the *Alternaria* fungus (courtesy Dr. B.J. Jacobsen).

2. Plant cucurbits in the same field or garden area only once in 3 or 4 years. Rotate with other vegetables, flowers, or small fruits.
3. Where feasible, cleanly plow under or burn crop debris after harvest, and control weeds. Follow suggestions outlined in the above mentioned publication
4. Plant certified, disease-free seed grown in a semiarid area of the Pacific Northwest.

Proper seed treatment also controls seedborne infections of other cucurbit diseases, including anthracnose scab, foot rot of squash, angular leaf spot, Fusarium wilt, black rot, seed decay, and damping-off.

5. Follow a weekly protective fungicide program as outlined in Illinois Homeowners' Guide to Pest Management. Begin the spray program when the disease is first seen or the plants vine ("start to run"). Follow the manufacturer's directions regarding amounts to use and the interval between the last spray and harvest.
6. Muskmelon, cantaloupe, and watermelon varieties are available with resistance to *Alternaria* leaf spot. Consult current seed catalogs and trade publications.
7. Control cucurbit insects by spraying regularly with an insecticide.

Check manufacturer's label instructions or a pesticide compatibility chart before mixing fungicides with insecticides.

For more information on where to obtain any of the publications mentioned above, contact your nearest Extension adviser or ITCS, University of Illinois, P345 1917 S. Wright St., Champaign, IL .

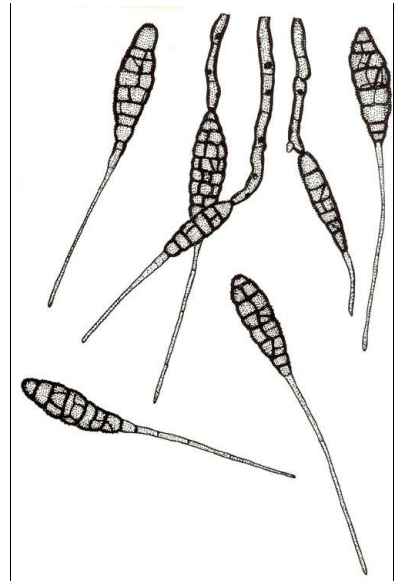


Figure 5. *Alternaria cucumerina*, the *Alternaria* leaf spot or blight fungus, as it would appear under a high-power laboratory microscope. Note the erect, cylindrical, septate conidiophores, with their black conidial scars, which arise singly or in small groups. The multicellular conidia with their long beaks are usually borne singly or occasionally in chains of two (drawing K.A. Golasyn-Wright).