

Cottony Leak in Cucurbits



Cottony leak, sometimes called *Pythium* fruit rot or *Pythium* cottony leak, is a common disease of cucurbits. Cucumber is the most susceptible cucurbit crop, though others may also be affected. The disease is most severe in soil that is wet for part of the growing season.

Signs and Symptoms

In most cucurbits, symptoms begin as brown, water-soaked lesions that quickly develop into soft, rotted areas on the part of the fruit that is in direct contact with the soil (**Figure 1**). In watermelons, symptoms may begin at the blossom end of the fruit. During humid conditions, white, cottony pathogen growth may be produced and cover the rotted area of the fruit (**Figures 1 and 2**). The mycelial growth produced by the cottony leak pathogens may be confused with that produced by species of *Phytophthora*. However, the mycelium produced on rotting fruits infected by *Phytophthora* spp. is felt-like rather than cottony (**Figure 3**). In cucumbers, a dark green to brown blister may develop before the previously mentioned symptoms.

Pathogen and Disease Spread

Cottony leak is caused by a number of species of *Pythium*. These pathogens are members of a group of pathogens commonly called water molds. Other species of *Pythium* are known to cause damping-off and root rots in cucurbit seedlings. The *Pythium* species that cause cottony leak commonly occur as part of the natural microbial population in the soil. Infection occurs through wounds or where the fruit is in direct contact with wet soil. Pathogen growth is optimal at approximately 82°F. The pathogen can survive in the soil from season to season in the form of oospores and can be spread in running water and on infested equipment.

Management

Preventing and managing cottony leak in cucurbits is difficult.

Cultural Management

Plant cucurbits in well-drained soils with adequate ditching. Soils should be able to drain rapidly after a heavy rainfall.



Figure 1. Brown lesion with white cottony pathogen growth, characteristic of *Pythium* spp., on an area of watermelon fruit in contact with the soil. Photos: Rebecca A. Melanson, MSU Extension, Bugwood.org.



Figure 2. White cottony pathogen growth, characteristic of *Pythium* spp., on cucumber fruit. Photo: Rebecca A. Melanson, MSU Extension, Bugwood.org.



Figure 3. White felt-like pathogen growth, characteristic of *Phytophthora* spp., on a squash fruit. Photo: Gerald Holmes, Cal Poly – San Luis Obispo, Bugwood.org.

Use sufficient plant spacing. Proper plant spacing can help prevent dense vine-matting. Plants should be spaced at the widest recommended in-row interval for each crop. In fields with a previous history of cottony leak, consider increasing the in-row spacing interval beyond the widest recommended interval. See the *Southeastern U.S. Vegetable Crop Handbook* for spacing recommendations for various cucurbit crops.

Use practices that create a barrier between fruits and soil. This practice may only be practical for small growers. Fruits can be placed on artificial barriers, such as wire or wood, or on top of vines. Plastic mulch can help in dry areas when used with drip irrigation, but it can promote fruit decay in areas with frequent rainfall because depressions in the plastic may hold water.

Choose a site that was planted with a non-host the previous season. Grasses and grains are not hosts for the *Pythium* species that cause cottony leak. Plantings with a non-host crop help to reduce the amount of inoculum present in soils.

Chemical Management

Apply fungicides that are effective against cottony leak. The fungicides Thrive 4M and Ultra Flourish (active ingredient: mefenoxam) and MetaStar 2E (active ingredient: metalaxyl) are labeled for use against cottony leak on cucurbits and are registered for use in commercial cucurbit production in Mississippi. Both active ingredients are FRAC Group 4 fungicides. These products should be applied before planting (preplant incorporated) or at planting as a soil surface spray; some labels may allow for application by injection into irrigation water. Effectiveness of soil surface applications depends on fungicide movement into the top inch or so of soil by irrigation or rainfall.

Check with your local county Extension office and/or the latest edition of the *Southeastern U.S. Vegetable Crop Handbook*, as other products labeled for use against cottony leak on cucurbits may become available in the future. Pathogen resistance to products containing mefenoxam has been reported; however, it is not known if resistant pathogen populations are present in Mississippi.

When using fungicides, remember: **the label is the law.** Read and understand product labels before use, and follow all label instructions.

Reference

Keinath, A., Wintermantel, W. M., and Zitter, T. A. (eds). 2017. *Compendium of Cucurbit Diseases and Pests*. American Phytopathological Society Press, St. Paul, MN. 220 pages.

Additional Resources

How to Collect and Package Plant Disease Specimens for Diagnosis (M1562), <http://extension.msstate.edu/publications/miscellaneous/how-collect-and-package-plant-disease-specimens-for-diagnosis>
Pesticide Label Databases (P3155), <http://extension.msstate.edu/publications/publications/pesticide-label-databases>
Southeastern U.S. Vegetable Crop Handbook, available at www.vegcrophandbook.com or by contacting your local county Extension office.

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