

Plant Pathology Fact Sheet

Gummy Stem Blight and Black Rot of Cucurbits

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IMPORTANCE

Gummy stem blight is an important disease of cucurbits in many parts of Kentucky. Under conditions favorable to disease development, commercial growers and home gardeners may experience heavy losses (FIGURE 1). This disease can occur at any point in plant growth, from seedling stage to fruit in storage. Gummy stem blight is the name given to the disease when leaves and stems are infected. Muskmelon (cantaloupe), cucumber, and watermelon are most commonly affected by this phase of the disease. Black rot refers to the same disease on fruit; it is seen less often than the foliar phase.

SYMPTOMS AND SIGNS

Gummy stem blight

Symptoms of gummy stem blight can vary somewhat depending upon the host. When emerging seedlings are infected, darkened, water-soaked spots appear on cotyledons and stems; later developing into dry, tan-to-brown lesions (FIGURE 2). If the stems



FIGURE 1 GUMMY STEM BLIGHT AND BLACK ROT IN A COMMERCIAL FIELD OF WATERMELON.

become girdled, damping-off results and seedlings die.

On older plants, rapidly expanding circular, tan-to-brown lesions (FIGURE 3) develop on leaves, often beginning at leaf edges (FIGURE 4). These necrotic areas may progress over the entire leaf, but they primarily occur along the veins. Lesions on leaf veins, stems, and vines will initially



FIGURE 2



FIGURE 3



FIGURE 4



FIGURE 5

FIGURE 2 GUMMY STEM BLIGHT LESIONS ON WATERMELON TRANSPLANT COTYLEDONS. **FIGURE 3** WATERMELON LEAVES WITH TYPICAL MARGINAL LESIONS. **FIGURE 4** FOLIAR LESIONS ON MUSKMELON FOLIAGE. **FIGURE 5** CHARACTERISTIC GUMMY EXUDATE PRESENT ON AN INFECTED MUSKMELON VINE. ALSO NOTE THE FUNGAL FRUITING BODIES APPEARING AS TINY BLACK SPECKS ON THE VINE.

appear water-soaked and orange-brown in color. A gummy, amber to reddish-brown exudate is usually associated with stem and vine lesions (FIGURE 5). Later these lesions become dry, cracked, and tan. Tiny black fungal fruiting bodies (pycnidia), visible with a hand lens (FIGURE 5), develop in the dead

tissue of older stem lesions and leaf spots. Large lesions will girdle vines, resulting in wilt. Under favorable conditions, large-scale defoliation and death of vines is common and will result in significant losses.

Black rot

Symptoms can develop on fruit in the field (FIGURE 6) or in storage. Lesions begin as small, water-soaked spots that later expand and may exude a gummy ooze. As they enlarge, the spots become sunken, discolored, and irregularly-shaped. Black fruiting bodies (pycnidia) appear as numerous, tiny specks within infected tissues.



FIGURE 6

FIGURE 6 BLACK ROT ON WATERMELON FRUIT.

CAUSE AND DISEASE DEVELOPMENT

The causal fungus (*Didymella bryoniae*) survives from season to season on infected crop debris and weeds. The causal agent is

also seed- and transplant-borne. Infections occur when spores are carried by wind (ascospores) or splashing water (conidia) to susceptible tissues during moist weather. The ideal temperature range for disease development is between 61°F and 75°F. However, moisture is the most important factor for infection by the pathogen and subsequent spread. Leaf wetness is required for germination of spores, infection, and expansion of lesions. Frequent rains favor spore production and also short-distance spread of spores.

Wounds, such as those resulting from picking, pruning, or insects, can be important portals of pathogen entry in older stems, leaves, and fruit. The feeding of striped cucumber beetles can increase the plant's susceptibility to infection. Powdery mildew and melon aphids may also predispose cucurbit leaves to infection. Wounding of fruit during harvest will increase the risk to black rot during storage.

DISEASE MANAGEMENT

There are no cucurbit varieties available currently with resistance to gummy stem blight / black rot. Successful management of these diseases involves the use of pesticides in conjunction with good cultural practices.

- Plant only certified, disease free seeds and transplants.
- Rotate out of cucurbits for 2 to 4 years. Control cucurbit weeds and volunteer cucurbit plants during these "off" years.
- Plow under plant debris soon after harvest so it can completely decompose to limit overwintering of the pathogen.

- Apply fungicides routinely. Refer to ID-36 or contact your county Cooperative Extension office for the currently recommended chemicals.
- Control insects and powdery mildew, which can predispose plants to gummy stem blight infections.

ADDITIONAL RESOURCES

Disease management and crop production advice can be found in the following University of Kentucky publications available at County Extension offices, as well as on the Internet.

- Cucumber Beetles, ENTFACT-311
<http://www.ca.uky.edu/entomology/entfacts/ef311.asp>
- Home Vegetable Gardening in Kentucky, ID-128
<http://www.ca.uky.edu/agc/pubs/id/id128/id128.pdf>
- IPM Scouting Guide for Common Problems of Cucurbit Crops in Kentucky, ID-91 (2009)
<http://www.ca.uky.edu/agc/pubs/id/id91/id91.pdf>
- Management Tips for Disease Control in Commercial Vegetables in Kentucky, PPFS-VG-05 (1994)
http://www.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-VG-5.pdf
- Vegetable Production Guide for Commercial Growers, ID-36
<http://www.ca.uky.edu/agc/pubs/id/id36/id36.htm>

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