



Gummy Stem Blight & Black Rot of Cucurbits

Kenny Seebold

Former Plant Pathology Extension Specialist

Nicole Gauthier

Plant Pathology Extension Specialist

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, and is seen less often than the foliar phase.



FIGURE 1. GUMMY STEM BLIGHT CAN CAUSE DEVASTATING LOSSES IN COMMERCIAL AND RESIDENTIAL PLANTINGS OF CUCURBITS.

SYMPTOMS & 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 (FIGURE 2) and stems, developing later into dry, tan-to-brown lesions. If the stems become girdled, damping-off results and seedlings die.

On older plants, rapidly expanding circular, tan-to-brown lesions develop on leaves, often beginning at leaf edges (FIGURE 3). 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 appear water-soaked and orange-brown in color. A gummy, amber to reddish-brown exudate is usually associated with stem and vine lesions (FIGURE 4). Later these lesions become dry, cracked, and tan. Tiny black fungal fruiting bodies (pycnidia), visible with a hand lens, 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.



FIGURE 2. GUMMY STEM BLIGHT LESIONS DEVELOPING ON TRANSPLANT COTYLEDONS ARE INITIALLY WATER-SOAKED.

FIGURE 3. LESIONS ON OLDER PLANTS TEND TO DEVELOP ALONG LEAF MARGINS AND VEINS.

FIGURE 4. A GUMMY EXUDATE FORMS ON INFECTED VINES. FUNGAL FRUITING BODIES APPEAR AS TINY BLACK SPECKS ON DISEASED VINES.

Black rot

Symptoms can develop on fruit in the field (FIGURE 5) 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 5. BLACK ROT FRUIT LESIONS TURN BROWN TO BLACK AND BECOME SUNKEN IN THE CENTER.

Cause & Disease Development

The causal fungus (*Didymella bryoniae*) survives from season to season in or 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 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. Feeding by striped cucumber beetles can increase plant susceptibility to infection. Powdery mildew and melon aphids may also predispose cucurbit leaves to infection. Wounding of fruit during harvest will increase the risk of black rot during storage.

DISEASE MANAGEMENT

There are no cucurbit varieties available currently with resistance to gummy stem blight or 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 the “off” years.
- Plow under plant debris soon after harvest so it can completely decompose, and thus, limit overwintering of the pathogen.
- Apply fungicides routinely. Growers can refer to *Vegetable Production Guide for Commercial Growers* (ID-36) or contact their local county Extension office for the currently recommended chemicals.
- Control insects and powdery mildew, which can predispose plants to gummy stem blight infections.

ADDITIONAL RESOURCES

- Cucumber Beetles (EntFACT-31)
<http://entomology.ca.uky.edu/ef311>
- 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)
<http://www.ca.uky.edu/agc/pubs/id/id91/id91.pdf>
- Vegetable Production Guide for Commercial Growers (ID-36)
<http://www2.ca.uky.edu/agcomm/pubs/id/id36/id36.pdf>

May 2021

Editor: Cheryl Kaiser, Extension Plant Pathology Support

Photos: Kenny Seebold, University of Kentucky
