

# VEGETABLE CROPS HOTLINE

A newsletter for commercial vegetable growers prepared by the Purdue University Cooperative Extension Service

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**ANTHRACNOSE OF CUCUMBER AND WATERMELON** - (Dan Egel) - Perhaps most cucurbit growers have encountered this disease at least once. But as a vegetable specialist with Purdue University, I have observed this disease more frequently in recent years. I do not know the reason for the apparent rise in anthracnose sightings. In any case, it makes sense to review this disease before the season gets too far along.

Anthracnose is most often observed on watermelon, however cucumber, muskmelon and even pumpkin have been reported with this disease. There are two primary races of the fungus-race one affects cucumber and race two affects watermelon. Muskmelon appears to be affected more by the cucumber race than the watermelon race, but it is not often observed with anthracnose in Indiana.

Unfortunately, I have already observed anthracnose in watermelon transplants this season. The lesions are chocolate brown, jagged and may occur on true leaves and seed leaves (Figure 1). The stem (technically the hypocotyl) at and just above the soil line may appear water soaked (Figure 2). Stems of mature plants have light brown spindle shaped lesions. On watermelon fruit, lesions are sunken and may appear salmon in color. Such lesions may be difficult to detect at harvest and may rot fruit in transit.

The fungus that causes anthracnose survives in crop residue. Therefore, fall tillage and crop rotation are an important aspect of disease management. In addition, it is possible that the fungus may be seed borne. Transplants should be inspected regularly or upon receipt.

Fungicides effective against anthracnose include contact fungicides chlorothalonil (e.g., Bravo®, Equus®, Echo®) and mancozeb (e.g., Dithane®, Manzate® or Penncozeb®). Systemic fungicides labeled for anthracnose include Cabrio® (group 11) and Topsin®. However, growers should remember that fungicide resistance to group 11 fungicides have been found in Indiana to gummy stem

blight. Tanos® also is labeled for anthracnose, however it is not labeled for gummy stem blight.

Anthracnose appears to be a disease that is becoming more important. Cucurbit growers should become familiar with this important disease.



**Figure 1:** Lesions of anthracnose on watermelon transplants are chocolate brown and jagged at the margins. (Photo by Dan Egel)



**Figure 2:** Anthracnose may cause lesions on the lower stem (hypocotyl) of watermelon transplants. (Photo by Dan Egel)

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**WHEN TO APPLY FUNGICIDES - (Dan Egel)** - Although many vegetable growers are still struggling to get seeds or transplants in the ground, it won't be long before growers will start wondering about diseases and fungicides. One common question about fungicides is when they should be applied. Some answers to this question can be found in *Vegetable Crops Hotline* issue 518, 10 rules for fungicide applications. One of the rules stated in that article was "Use shorter spray intervals during weather conducive to plant disease." As promised in that article, I will now go into more detail about weather and plant disease.

Most microorganisms that cause plant disease need water in order to infect the host plant and to splash from plant to plant. Moisture on the surface of the plant allows bacteria to enter a plant through openings in the surface of the plant and fungi to push into the plant via a specialized fungal structure. Once infection has taken place, bacteria and fungal spores travel from plant to plant by splashing rain or overhead irrigation.

The diseases that do not need moisture include powdery mildew and many soilborne diseases such as *Fusarium* wilt diseases. Powdery mildew requires only high humidity and wind. In addition, soil borne diseases are caused by soil microorganisms via the roots and are spread through movement of soil and are not subject to foliar moisture. Viral diseases also lack moisture requirements.

Since water is important for most plant diseases, the frequency of rainstorms is related to disease severity. That is, during periods of rainy weather, one can expect that disease pressure is likely to be high. In contrast, during dry weather little disease can be expected.

Overhead irrigations and dews can also increase the severity of plant disease. For this reason, overhead irrigation should be conducted at a time of day when the leaves will have a chance to dry before the evening dew starts. Irrigations that are conducted immediately before the dew period starts may prolong the leaf wetness period making it more likely a disease will have a chance to start.

The microorganisms that cause disease also vary in their temperature requirements. For example, bacterial speck of tomato is favored by cool temperatures whereas gummy stem blight of watermelon is favored by warm temperatures. Table 1 lists temperature requirements of several diseases.

Muskmelon and watermelon growers have the guesswork taken out of wondering how weather affects spray intervals. A program developed by Rick Latin of Purdue University known as **MELCAST** allows growers to apply fungicides when they are most needed and save 2-3 unneeded fungicide applications.

Under the **MELCAST** system, muskmelon and watermelon growers apply fungicides for anthracnose, *Alternaria* leaf blight and gummy stem blight every 14 days unless the **MELCAST** system calls for a more frequent spray schedule. Details about the **MELCAST** system can be found at <[www.ces.purdue.edu/extmedia/BP/BP-67.pdf](http://www.ces.purdue.edu/extmedia/BP/BP-67.pdf)>. In 2010, growers in Missouri will have access to **MELCAST** as well.

**Table 1: Selected foliar diseases common to Indiana vegetables and the environmental requirements of each.**

Disease	Host	Moisture and temperature requirements
Early blight	Tomato	At 67-77°F, 3-5 hrs of leaf wetness are needed.
Bacterial speck	Tomato	6 hrs of leaf wetness promote severe disease. 64-75°F is optimum for disease.
Powdery mildew	Cucurbits	Relative humidity as low as 50% may be sufficient for dieae formation. 68-81°F is optimum for disease.
Gummy stem blight	Watermelon	24 hrs of leaf wetness at 70°F produces severe symptoms.
Phytophthora blight	Cucumber	At a relative humidity of 60-80%, infection may take place in one hour. Disease favored by standing water. 75-91°F is optimum for disease.
Common rust	Sweet corn	3-6 hrs of leaf wetness are required. Disease optimum is 60-75°F.
Anthracnose	Pepper	24 hrs of leaf weetness are required. 68-75°F is diseae optimum.
Leaf mold	Tomato	Disease can occur at relative humidity from 85% to free water on the leaf. Disease optimum is from 72-75°F.

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**WORKER PROTECTION STANDARD AND GOOD AGRICULTURAL PRACTICES TRAINING OFFERED - (Announcement)** - Daviess County Extension office, through their Latino Learning Center, is offering Worker Protection Standard (WPS) and Good Agricultural Practices (GAPs) training for farm workers.

Growers who are interested in scheduling a WPS/GAPs training session, either at the office of on farm, should call the Davies County Extension office at (812) 254-8668.

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