

# VEGETABLE CROPS HOTLINE

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

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## IN THIS ISSUE

- GUMMY STEM BLIGHT UPDATE
- SPIDERMITES ON MUSKMELON AND WATERMELON
- TWO PEPPER DISEASES
- DOWNY MILDEW OF CUCURBIT UPDATE

**GUMMY STEM BLIGHT UPDATE - (Dan Egel)** - Many muskmelon and watermelon growers have expressed concern about the fungal disease gummy stem blight. This article describes the symptoms of the disease, management options including the latest efforts to register additional fungicides for disease management and my observations of the disease to date.

In most years, gummy stem blight is the most important foliar disease of muskmelon and watermelon in Indiana. Gummy stem blight also affects pumpkins where it is called black rot. Initial lesions on leaves may appear dark brown and often occur in the palm of the leaf (Figure 1). The symptom on stems will appear dark, brown and rotten. In later stages of the disease, the stem will turn a light brown and the fungal structures (pyc-



**Figure 1:** Gummy stem blight lesions are often dark, irregular in shape and occur in the palm of the leaf. (Photo by Dan Egel)



**Figure 2:** Infections of gummy stem blight on stems often cause the tissue to turn a light brown color; dark fungal structures can be observed with a 10X hand lens. (Photo by Dan Egel)

nidia) diagnostic for the disease will be apparent (Figure 2), especially to those with a 10X hand-lens. The stem may ooze a dark red substance, but other diseases and any injury may also cause such ooze. A Purdue University extension bulletin that describes this disease in more detail can be found here, BP-142-W, <[www.btny.purdue.edu/Pubs/#vegetables](http://www.btny.purdue.edu/Pubs/#vegetables)>.

Crop rotations of at least 3 years and fall tillage are critical to managing gummy stem blight. It is important to use healthy transplants that do not have symptoms of this disease. However, most growers who follow these guidelines still find it necessary to apply fungicides as described in the *Midwest Vegetable Production Guide for Commercial Growers 2008* <[www.btny.purdue.edu/Pubs/ID/ID-56/](http://www.btny.purdue.edu/Pubs/ID/ID-56/)>. These fungicides can be applied according to the Purdue University MELCAST system, BP-64-W, <[www.btny.purdue.edu/Pubs/#vegetables](http://www.btny.purdue.edu/Pubs/#vegetables)>.

The fungicide Pristine® has been an important tool for the management of gummy stem blight. Earlier this year, it came to my attention that some muskmelon and watermelon growers may be having trouble controlling gummy stem blight using Pristine®. In the southwest US, the fungus that causes gummy stem blight has been shown to be insensitive, that is resistant, to one of the active ingredients in Pristine®. It is possible that this situation exists in Indiana; however I have not shown that we

have any resistance to the gummy stem blight fungus in the field. I have isolated a strain of the gummy stem blight fungus from a greenhouse watermelon transplant that was resistant to one of the active ingredients of Pristine®. These seedlings were discarded and did not reach the field.

Because of the very real possibility that we either do or could soon have resistance to Pristine® here in Indiana, I applied for a section 18 emergency exemption for new fungicides that might help us better manage gummy stem blight. In this effort I had the full cooperation of Ed White in the Indiana State Chemists office.

Recently, the US EPA indicated that our request falls short of what is needed for a section 18 emergency exemption to be granted. It is my understanding that in order to document that an emergency state exists, Indiana needs to 1) demonstrate the existence of strains resistant to Pristine® in commercial fields and 2) demonstrate crop loss due to this resistance. EPA personnel, although willing to help, must follow specific guidelines.

Perhaps the good news is that I have seen very little gummy stem blight in commercial fields to date. The dry spell that currently covers most of Indiana makes it likely that disease pressure will remain light. Since harvest of muskmelon and watermelon has started it is unlikely that gummy stem blight will limit yields this year.

Next year, however, gummy stem blight could become a problem. Growers may help Indiana obtain a section 18 for alternative fungicides by letting me know where this disease is causing problems and by helping me document losses due to gummy stem blight.

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**SPIDERMITES ON MUSKMELON AND WATERMELON** - (*Rick Foster*) – Spidermite damage has been observed on many watermelon fields and some muskmelon fields. Two-spotted spider mites sometimes will affect muskmelons or cucumbers, but are most commonly a problem on watermelons. Mites cause damage by sucking sap from the underside of leaves (Figure 1). In hot, dry weather (sound familiar?), mites can rapidly increase in numbers,



**Figure 1:** Mite damage on watermelon leaf. (*Photo by Jerry Brust*)

as much as 70X in a week. In addition, hot, dry weather causes the mites to eat more and dry soil conditions provides the mites with more concentrated food, resulting in more rapid reproduction. Watermelon plants that are not irrigated are particularly susceptible to mites, because the mites increase faster and eat more and the plants may already be drought stressed.

Mite feeding can cause plants to be defoliated within a couple of weeks or can cause fruit to be of such poor quality that they are unmarketable (Figure 2). In some cases, mites will also feed on the rind, giving it a sandpaper-like texture.



**Figure 2:** Severe mite damage to watermelons. (*Photo by Jerry Brust*)

Most of you have reduced your insecticide sprays for control of striped cucumber beetles because numbers have been so low. This has helped to delay problems with mites because the predators were able to continue to eat the mites without being killed by the insecticides. However, the continued hot, dry weather created conditions in which the predators alone are not sufficient to keep mites under control in many cases.

To monitor for mites, you can either use a 10X hand lens and look for the mites on the underside of leaves or shake leaves over a white sheet of paper and watch the mites crawl on the paper. Look first on the edges of fields. If there is a gravel road next to the field that produces dust that lands on the plants, look there first since dust increases mite populations. Be aware that mite populations are frequently localized, so you may not need to treat the entire field. If you don't treat the whole field, be sure to spray at least 100 feet beyond the existing infestation to make sure that you contain the mites. We don't have a specific threshold for spraying mites on watermelons. Stressed plants on non-irrigated land will be able to tolerate far fewer mites than healthy plants on irrigated land.

There are several miticide choices listed in the *Midwest Vegetable Production Guide for Commercial Growers 2008* (ID-56) <[www.btny.purdue.edu/Pubs/ID/ID-56/](http://www.btny.purdue.edu/Pubs/ID/ID-56/)>. I believe that the best choice if you have a serious infestation is Agri-Mek®. It has consistently given good to excellent control. I realize that Agri-Mek® is rather



expensive, possibly more expensive than most melon growers are used to. The high price may be alleviated somewhat by carefully scouting your fields and only treating those fields or even parts of fields where mites are present. Also, many growers have reported good results with Oberon® (this pesticide is relatively new and didn't make it into the current edition of the ID-56). Also, be sure to monitor your fields 5-7 days after treatment to make sure that you got the level of control you were looking for and to determine if a second treatment is needed.

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**TWO PEPPER DISEASES - (Dan Egel)** - This article is about two of the most common pepper diseases I observe in Indiana. Bacterial spot is a foliar disease and Phytophthora blight is a soil-borne disease.

**Bacterial spot** - Symptoms of bacterial spot include irregularly shaped water-soaked spots on leaves (Figure 1). These spots may eventually turn brown. Large numbers of spots may coalesce and cause large brown areas on leaves. In severe cases, defoliation may occur. Similar lesions may be observed on fruit, making the fruit unmarketable.



**Figure 1:** Lesions of bacterial spot are small and necrotic with a yellow halo. (Photo by Dan Egel)

This disease is caused by a bacterium that is spread from plant to plant by rains or overhead irrigation. Bacterial spot is favored by warm weather. The bacterium may survive in plant debris or in infested seed.

Growers should scout fields and transplants for symptoms of bacterial spot of pepper. Symptoms will more severe in fields that have not had at least a 3-4 year crop rotation. Applications of a fixed copper product will help to slow spread of the disease. Finally, several pepper varieties have resistance to one or more races of the bacterial spot pathogen. See the *Midwest Vegetable Production Guide for Commercial Growers 2008* (ID-56) <[www.btny.purdue.edu/Pubs/ID/ID-56/](http://www.btny.purdue.edu/Pubs/ID/ID-56/)> for information on varieties and pesticides.

**Phytophthora blight** - This disease often shows up in areas of fields that are low or collect water (Figure 2). Growers should look for wilting plants or shriveled / discolored stems (Figure 3). If plants do not die, they may be stunted and have reduced yields.



**Figure 2:** The peppers in the foreground have been planted in low ground where water stands-thus, these plants have died as a result of Phytophthora blight. (Photo by Dan Egel)

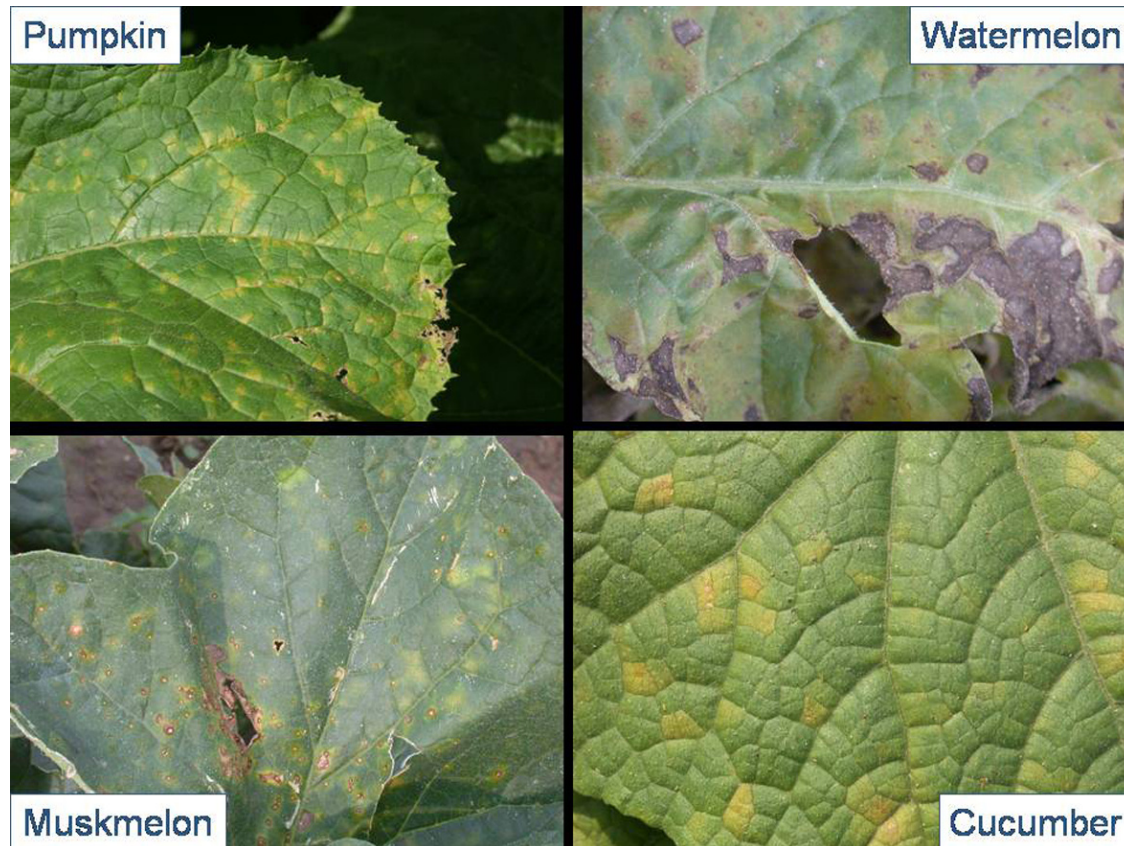


**Figure 3:** The lower portion of this pepper stem is discolored due to infection with Phytophthora blight. (Photo by Dan Egel)

The fungus that causes Phytophthora blight is spread by rain and is favored by standing water. For this reason, peppers planted on well-drained soils or in fields that do not have a history of the problem will have less Phytophthora blight. Raised beds may help to manage this disease. Avoid excess irrigation. Many plantings may benefit from seed treated with fungicides. Some fungicides (see the ID-56) may help slow the spread of the disease, however, mixed results are often obtained with foliar fungicides. Some plant resistance has been reported in bell pepper varieties.

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**DOWNY MILDEW OF CUCURBIT UPDATE** - (Dan Egel) - This disease has not been reported in Indiana. Several areas of the Eastern US have reported the disease (see this link to follow the epidemic <[www.ces.ncsu.edu/depts/pp/cucurbit/](http://www.ces.ncsu.edu/depts/pp/cucurbit/)>). The states that have reported the disease so far are: Florida, Georgia, Mississippi, Louisiana, Texas, South Carolina, North Carolina, Virginia, Delaware, New York, Ohio, Michigan and Ontario, Canada. Since the Michigan outbreaks have been in the extreme southern counties bordering Indiana, cucurbit growers in northern Indiana should be managing downy mildew as described previously in the *Vegetable Crops Hotline*. The photograph below shows symptoms on 4 different cucurbit hosts.



**Figure 1:** Downy mildew on various cucurbits. (Photos by Dan Egel)

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