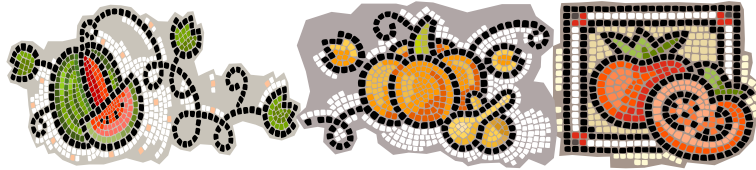


VEGETABLE CROPS HOTLINE

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

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<<http://www.btny.purdue.edu/pubs/vegcrop>>

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FUSARIUM FRUIT ROT OF MELON - (Nathan Kleczewski)

- We have recently observed several cases of Fusarium fruit rot on muskmelon in Knox County. Fusarium fruit rot is considered to be one of the most common preharvest and postharvest diseases of cucurbit fruits, and can be caused by several species of Fusarium (see Table 1). Fusarium fruit rot pathogens infect the fruit directly at the soil-fruit interface (the exception being *F. oxysporum* f.sp. *melonis*). Following infection, fissures or cracks typically develop on the fruit epidermis (see Figure 1). When detected early, cracks are small and surrounded by a green margin. Mature lesions typically are bordered by thick, darkened tissue (see Figure 1). When the fruit is sectioned, there is an obvious border between infected and healthy tissue. White to pink hyphal growth can be observed under appropriate conditions, particularly when humidity levels are high. After harvest, high temperatures and humidity favor development of the fungus in the fruit resulting in unsightly and unmarketable melons.

Wounds caused by insects or mechanical damage may facilitate movement of the pathogen into the fruit. In muskmelon, Fusarium fruit rot is greatly reduced following net development. This is because the callus tissue produced serves as a protective barrier to the fruit. We have observed Fusarium fruit rot most often on green, underdeveloped sutures on melon fruit. We speculate that this tissue may be more susceptible to infection by Fusarium spp. due to reduced callus development.

In order to minimize damage caused by Fusarium fruit rot, care should be taken to minimize wounds when harvesting or working in the field. Post-harvest

sanitizing solutions may help to reduce the incidence of this disease. Proper transit and storage temperatures, as well as quick handling of fruit at the market will help prevent Fusarium-related decay. Preharvest fungicide applications are often ineffective due to ineffective coverage of the fruit wounding. Some cultivars of muskmelon may be more susceptible to Fusarium fruit rot than others. It makes sense to note which cultivars were observed with Fusarium fruit rot in 2011, a year which seemed to favor this disease.

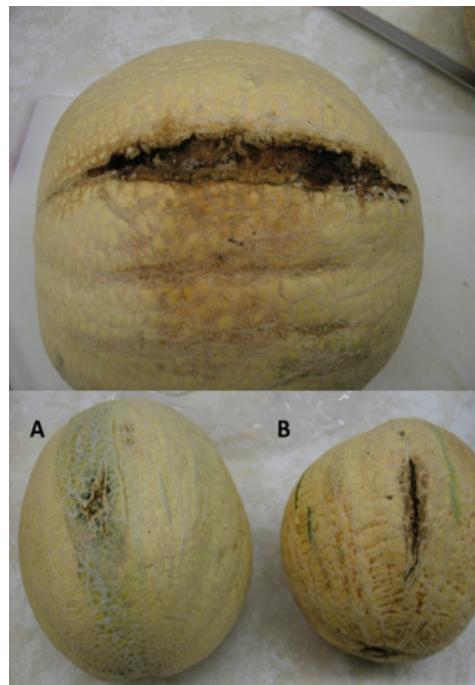


Figure 1: Examples of cracks in muskmelon caused by *Fusarium* spp. (A) Cracks may be surrounded by a green margin in newer infections. (B) Cracks tend to be surrounded by a brown border in mature infections. (Photos by Nathan Kleczewski)

Table 1: Species of *Fusarium* that may cause Fusarium Fruit Rot in muskmelon

1. *F. graminum*
2. *F. graminearum*
3. *F. acuminatum*
4. *F. avenaceum*
5. *F. culmorum*
6. *F. moniliforme*
7. *F. semitectum*
8. *F. equiseti*
9. *F. scirpi*
10. *F. solani*
11. *F. oxysporum*



SPIDER MITE DAMAGE - (*Dan Egel, Shubin K. Saha, Rick Foster*) - Recent warm weather has increased the damage caused by spider mites on many vegetables. Shown here are photos of spider mite damage on eggplants and tomatoes (see Figures 2 & 3). Spider mites were discussed in issue number 540 of the *Vegetable Crops Hotline* <http://www.btny.purdue.edu/pubs/vegcrop/VCH2011/VCH540.pdf>.



Figure 2: Spider mite damage on tomato plants can be recognized by a bleaching between the veins and a webbing visible here on the margin of the leaf. (*Photo by Dan Egel*)



Figure 3: These eggplants have leaves that have turned necrotic and sometimes dropped. The inset shows the chlorotic area surrounding the vein area. (*Photo by Dan Egel*)



NEW FUNGICIDE ON PUMPKIN - (*Dan Egel*) - The fungicide Gavel 75 DF[®] has been labeled on vegetable crops for sometime. Recently, Gavel[®] has received an updated label for use on pumpkin.

Gavel 75 DF[®] has two active ingredients: mancozeb at 66.7% and zoxamide at 8.3% (The rest of the product is made up of inert ingredients). The active ingredient mancozeb is a contact fungicide labeled on a variety of crops for many different diseases. Other products that contain mancozeb include Dithane[®], Manzate[®] and Penncozeb[®] (Dithane[®] and Manzate[®] have labels that include pumpkins; a supplemental label may be required.). The mancozeb portion of Gavel 75 DF[®] is primarily for management of *Alternaria* leaf spot and *Cercospora* leaf spot - neither of which are big problems on pumpkins in Indiana. The zoxamide active ingredient is primarily for management of the so-called water molds - downy mildew and *Phytophthora* blight. See below for ideas on how Gavel 75 DF[®] might be used for these two disease.

Phytophthora blight: This disease can be an important one in Indiana. The *Vegetable Crops Hotline* number 538 <http://www.btny.purdue.edu/pubs/vegcrop/VCH2011/VCH538.pdf> discusses this disease in more detail. Briefly, *Phytophthora* blight is soil borne and is favored by heavy rainfall and standing water. I have not observed this disease in the 2011 season. However, pumpkin growers who are concerned about this disease may choose to use Gavel 75 DF[®] since it has been effective against *Phytophthora* blight and the mancozeb portion of the product may have some activity against other diseases.

Downy mildew of cucurbits: The fungus that causes downy mildew does not overwinter in Indiana - it must be brought in to Indiana each season. If downy mildew does show up in Indiana it is usually blown in on winds. Normally, the fungus that causes downy mildew survives in the Gulf States where cucurbit crops are grown year round.

Downy mildew has not been reported in Indiana in 2011. The disease has been reported on cucumbers in Wisconsin and Michigan. For most growers, I recommend scouting fields closely for symptoms of downy mildew. I do not generally recommend applications of specialized systemic fungicides unless downy mildew has been observed in the field or in the area. However, growers who have valuable crops - especially those in northern Indiana that are relatively close to sources of infection - may want to consider specialized fungicides for downy mildew. Gavel 75DF[®] has good efficacy against downy mildew due to the zoxamide portion of the product and the mancozeb product should help to protect against diseases other than downy mildew and *Phytophthora* blight.

If you have questions about Gavel 75 DF[®], need a label for this fungicide or have questions about the diseases discussed above please call Dan Egel.



BACTERIAL SPOT OF PUMPKIN - (*Dan Egel*) - This disease has been observed in several pumpkin fields in Indiana in 2011. Bacterial spot of pumpkins is one of the most important diseases of pumpkins in Indiana. This disease was discussed in detail in the *Vegetable Crops Hotline* issue number 533 <http://www.btny.purdue.edu/pubs/vegcrop/VCH2011/VCH533.pdf>.

Many growers will first observe bacterial spot of pumpkin when the blister like lesions show up on mature or nearly mature pumpkins. However, this time of year, experienced growers may notice the light brown lesions on older leaves of pumpkin plants. Although these lesions do not cause economic damage, the lesions may serve as sources of bacteria for possible fruit infection. Plus the lesions should alert growers that the disease is in the field and corrective measures should be taken. If growers are not familiar with the lesions of bacterial spot of pumpkins, a sample should be sent to the Plant and Pest Diagnostic Laboratory at Purdue University <http://www.ppdl.purdue.edu/PPDL/> or call Dan Egel.

Corrective measures include applications of products with copper as an active ingredient as Copper hydroxide, copper sulfate or some other source of copper. This year, some mancozeb products are labeled for use on pumpkin (see article "*New Fungicide for Pumpkin*", this issue). Mancozeb products may help in the control of bacterial spot of pumpkin when applied with a copper product (see issue number 538 for more details <http://www.btny.purdue.edu/pubs/vegcrop/VCH2011/VCH538.pdf>).

Actigard® is now labeled for bacterial spot of pumpkins. However, I still have concerns about whether this product might negatively affect yield. I encourage growers to experiment with this product on a portion of their acreage.

Crop rotation continues to be an important management option. It has been reported in scientific literature that it is possible for the bacterial spot pathogen to be transmitted on seed.



PREVENT WEED SEED PRODUCTION AND MAKE NOTES FOR NEXT YEAR - (*Liz Maynard*) - A priority in weed management at this time of year is preventing seed production and addition of new weed seeds to the soil. The largest weed plants can make many thousands of seeds. Pulling or chopping the weeds and removing them from the field if they have begun to flower will help to reduce weed pressure in future years. Even a

small patch of weeds going to seed can impact the weed population in a field because the weed seed can be spread by tillage.

Another late summer weed management task is to make note of what weeds are where. This information is useful in planning weed management for future crops. Of particular importance are weeds that have (or will) shed seed, new kinds of weeds in the field, and species that were poorly controlled this year. Don't forget fields that will be rotated into a vegetable crop next year, whether owned or rented.

By the time weeds are large they have already exerted much of their competitive effect on the crop, but there can still be benefits to the crop to removing them. Tall weeds can interfere with pesticide applications to the crop, make harvest more difficult, harbor pests, and shade the crop. Shade can be a particular problem in pumpkins because it can prevent fruit set. In a year like this when earlier fruit set was likely reduced by high temperatures, it is especially important to provide the best conditions possible for fruit set once temperatures moderate. Removing large weeds will help to do that.



HIGH TEMPERATURES AND FRUIT SET - (*Liz Maynard*) - The stretch of high temperatures in July is likely to have interfered with flowering and fruit set in many crops including pumpkins, peppers, snap beans, and tomatoes. When temperatures moderate, flowering and fruit set should resume if the plants are in good condition.

Varieties of a crop differ in their ability to set fruit under high temperatures. Any notes you can make now about varietal differences in fruit set under these conditions may be helpful in the future.

While there is not much that can be done to hurry the crop along, communication with customers about the expected supply and timing makes sense as a key part of building and maintaining a good relationship.

ANNOUNCEMENT

FINAL OPEN HOUSE FOR SWEET CORN TRIAL - Sweet corn growers and others are invited to observe sweet corn variety plots at the Pinney-Purdue Ag Center, 11402 South County Line Road, Wanatah during informal open houses on Friday, Aug. 5, 5:00 to 6:30 p.m. Central Time and Monday, Aug. 8, 5:00 to 6:30 p.m. Central Time. For a list of varieties see the previous issue of this newsletter. For additional information contact Liz Maynard at 219-531-4200, emaynard@purdue.edu.