

# VEGETABLE CROPS HOTLINE

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

Dan Egel, Editor  
4369 N. Purdue Road  
Vincennes, IN 47591  
(812) 886-0198  
egel@purdue.edu



No. 529  
September 3, 2010

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

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**DOWNY MILDEW UPDATE** - (Dan Egel) - *The following article was written as a Vegetable Crops Hotline - BULLETIN, August 25, 2010. No downy mildew of pumpkin has been found in Indiana as of this writing.* This disease has been observed on pumpkins in north central Illinois (Tazewell County). Since prevailing winds blow from this direction, pumpkin growers should be aware. Growers with crops that will be harvested in mid-September should have little to worry about. Growers with young fruit that will take a month or more to mature may want to consider protective fungicide applications. It is likely that the strain of the fungus observed in Illinois might affect all cucurbits. Recommended fungicides are listed in the Midwest Vegetable Production Guide for Commercial Growers 2010. Call Dan Egel with questions.



**UGLY PUMPKIN UPDATE** - (Dan Egel, Liz Maynard, Rick Foster) - Most pumpkins are sold for their ornamental value as either Jack-o-Lanterns or fall decorations. Therefore, the appearance of pumpkin fruit is critical to the wholesale or retail buyer. The photos accompanying this article are of pumpkins with three different disorders. The purpose of this information is to help pumpkin growers tell the difference between insect damage, edema and bacterial spot.

The scars on the face of the pumpkin in Figure 1 are raised, white to off white lesions. These symptoms will likely make the pumpkin unsalable. The lesions are known as edema. Edema is caused by soil that has been

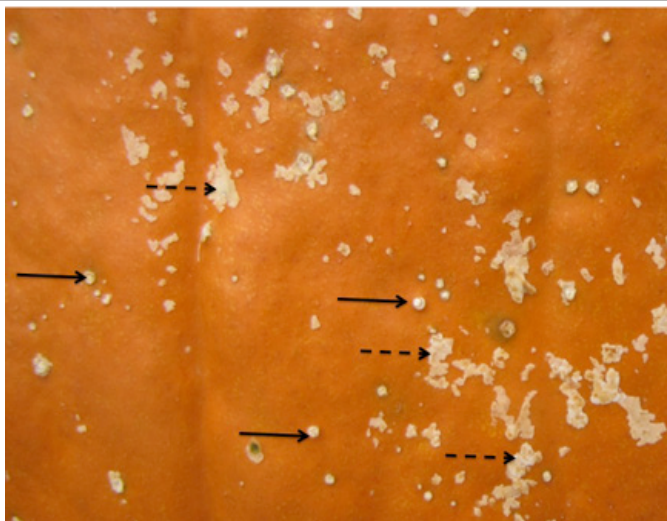


**Figure 1:** The raised bumps on this pumpkin are edema, a swelling caused by the retention of too much water. This problem is not the result of a microorganism or insect. (Photo by Dan Egel)

too wet for pumpkin production throughout much of the season. Under such conditions the pumpkin fruit may retain too much water that results in lesions such as shown here. High humidity can also be a factor in the production of edema in pumpkin fruit. The wet, humid weather experienced over much of Indiana this summer may be responsible for edema in several pumpkin fields.

Edema is not the result of any microorganism or insect feeding. There are few management options for this problem. Any practice that helps drainage, like raised beds, may help to reduce the portion of pumpkins with edema. Some varieties may show more edema than others, however, the timing of rains and fruit maturity also influence edema. It is important to recognize the symptoms of edema and realize that additional pesticide applications will not help the situation. The good news is that edema does not progress to cause internal or external decay of the fruit.

Figure 2 has two types of symptoms on the same pumpkin fruit. The dashed arrow shows a light colored irregular scab that is likely caused by cucumber or rootworm beetle feeding. Although this feeding damage cannot be fixed by any amount of insecticide, if beetles are still found eating on pumpkin rinds, insecticide applications are warranted to prevent further feeding.



**Figure 2:** There are two types of lesion on this pumpkin: the irregular, raised scabs are caused by insect feeding (dashed arrows); the round blister-like lesions are caused by bacterial spot (solid arrows). (Photo by Dan Egel)

The identification of such damage also indicates that an earlier insecticide application may have prevented or reduced the amount of beetle damage. Increased scouting may be warranted in the future.

In addition to the beetle damage in Figure 2, round blister-like lesions can be observed (solid arrows). These lesions are the result of bacterial spot infection. This disease was discussed in *Hotline* issue no. 528 <<http://www.btny.purdue.edu/pubs/vegcrop/VCH2010/VCH528.pdf>>. Briefly, this disease may be managed by crop rotation, sanitation and fixed copper applications applied early in fruit development.

Although it may be too late to correct some of the pumpkin problems one sees in the field at this date, knowing what caused the damage may lead to prettier pumpkins next year.



### WILL THAT LITTLE PUMPKIN BE READY FOR HALLOWEEN?

- (Liz Maynard) - This time of year pumpkin growers are checking fields to see what the harvest will be like. For some fields, fruit set in August will provide the main yield, due to wet weather that led to late planting, followed by unfavorable conditions for flowering and fruit set. Under good conditions, pumpkins may begin to turn orange 3 to 4 weeks after fruit is set (Figure 1), by 4 to 5 weeks after fruit set they may appear mostly orange (Figure 2), and by 6 to 7 weeks all traces of green can be gone (Figure 3). September and October do not always bring good weather for pumpkins, so fruit set in August does not always make it to market.



**Figure 1:** Pumpkin 3 weeks after fruit set showing beginnings of orange color in background. (Photo by Liz Maynard)



**Figure 2:** Pumpkin 4 to 5 weeks after fruit set is mostly orange, but green 'netting' is still present on portions of fruit less exposed to sun. (Photo by Liz Maynard)



**Figure 3:** Pumpkin 6 to 7 weeks after fruit set is completely orange. (Photo by Liz Maynard)

Percent of pumpkin flowers blooming during various periods in July and August 2003, that produced fully orange or turning pumpkins, or did not produce harvestable pumpkins.

Date Flower Opened	Number of Flowers Tracked	Fate of Tracked Flowers		
		Fully Orange	Turning Orange	Unknown (not harvested)
-----percent of tracked flowers-----				
<i>Pumpkins planted June 5, harvested Sept. 23</i>				
Before July 18	16	69	6	25
July 18 - July 24	76	45	8	47
July 25 - Aug. 1	87	48	16	36
Aug. 2 - Aug. 12	304	16	39	45
<i>Pumpkins planted June 16, harvested Oct. 2</i>				
July 25 - Aug. 9	290	40	30	30
Aug. 10 - Aug. 21	88	13	62	25
<i>Pumpkins planted June 25, harvested Oct. 10</i>				
July 25 - Aug. 9	182	76	19	5
Aug. 10 - Aug. 21	178	24	53	23

Unpublished data. Data are combined for 'Gold Medal' and 'Magic Lantern' pumpkins grown at the Pinney-Purdue Ag Center in Wanatah, Indiana. Open or past-bloom female flowers were tagged on July 17 and 24, Aug. 1, 7-9, 12 and 21.

The table above presents data on the percent of female flowers opening in mid July through mid August that go on to produce harvestable pumpkins. This data was collected in a planting date trial at the Pinney-Purdue Ag Center in Wanatah in 2003. We tagged a number of open or past-bloom flowers/young fruit every 1 to 2 weeks. At harvest the color of all tagged fruit that was at least beginning to turn was noted. In this study, 'fully orange' meant a pumpkin like that in Fig. 3. Pumpkins with some green as shown in Fig. 2, or a lot of green as in Fig. 1, were labeled 'turning orange.' The table includes data for all three planting dates, but the later two dates may be of greater interest this year. For pumpkins planted June 16 or June 25, the data show that at least 70% of the flowers that opened between Aug. 10 and Aug. 21 produced pumpkins that were either turning or fully orange by Oct. 2 and 10, respectively. The remaining 20 to 30% either never set a fruit, or the fruit was still immature at the time of harvest. Not included in the table are 14 flowers that bloomed between Aug. 22 and Sept. 3. Of those, (43%) produced turning fruit by October 10, and none produced fully orange fruit by that date. September 2003 had an average temperature of 61°F, and 2.75 in. of rain, slightly cooler and dryer than the 30-year normal of 63°F and 3.70 in. of rain.

If we have a warm and dry fall and pumpkin vines are kept healthy, pumpkins set in the middle of August should be ready for market by mid October.



**ANTHRACNOSE OF PEPPER** - (*Dan Egel*) - The last issue of the *Vegetable Crops Hotline* discussed anthracnose of tomato. Many of the same species of fungi are also responsible for anthracnose of pepper. The latter disease has also been a factor for vegetable growers in this very wet year.

Symptoms of anthracnose of pepper often start as depressed areas on the surface of pepper fruit. Under moist conditions, the pink spores of the causal fungus may be observed on the lesion. Lesions may also turn tan and then a dark necrotic area may develop on the lesion. These dark areas may have a concentric ring-like structure. Fruit become more susceptible to the anthracnose fungus with increased fruit maturity.

In contrast with the symptoms described above, blossom-end rot usually occurs only on the blossom-end of the fruit, does not have concentric rings and never has a pink cast due the presence of spores. Blossom-end rot is caused by a calcium deficiency and was discussed in *Hotline* issue 498 <<http://www.btny.purdue.edu/pubs/vegcrop/VCH2008/VCH498.pdf>>.

The number and size of lesions increases with the number of hours of wetness on the fruit surface. The optimum temperature for anthracnose infection is between 68 and 75 degrees F. Infection can occur up to temperatures of 86 F. The fungus may survive in crop debris. Diseased fruit can be a source of new infections if not disposed of properly.

Crop rotation and sanitation can help reduce the survival and spread of pepper anthracnose. Any practice such as mulching or trellising, which keeps the pepper

fruit off the soil may help in management. Several fungicides are labeled for anthracnose and are listed in the *Midwest Vegetable Production Guide for Commercial Growers* (ID-56) <<http://www.btny.purdue.edu/Pubs/ID/ID-56/>>.



**PLECTOSPORIUM BLIGHT ON PUMPKIN** - (Dan Egel) - I have observed a pumpkin field with this disease recently. Although the occurrence of Plectosporium blight is sporadic, when it occurs, it can cause yield loss due to the symptoms that can be observed on the pumpkin fruit. Older literature may list this disease as *Microdochium* blight.

Plectosporium blight can be recognized from the light tan lesions on stems, leaf petioles and pumpkin fruit (Figure 1). These lesions are often spindle shaped. The occurrence of these lesions on the pumpkin fruit or handle can reduce the marketability of the produce.

This disease may be managed through a combination of cultural and fungicide treatments. Crop rotations of 3-4 years and fall-tillage will help keep the crop residue to a minimum. A regular fungicide program will also help to keep Plectosporium blight in check.



**Figure 1:** Lesions of Plectosporium blight on pumpkin can cause the fruit to be unmarketable. (Photo by Dan Egel)



**CLARIFICATION OF PEPPER PESTICIDE LABEL** - (Dan Egel) - In issue no. 526 of the *Vegetable Crops Hotline*, it was reported that Actigard® is labeled for peppers for bacterial spot. Actigard® is labeled for chili peppers, not for bell peppers.



**CHICAGO SCHOOLS LOOKING FOR FRUITS AND VEGETABLES FROM MIDWEST FARMS** - (adapted from *FamilyFarmed.org*) FamilyFarmed.org is partnering with Chartwells-Thompson Hospitality, the major food service provider for the Chicago Public Schools (CPS), to ask Midwest farmers to contract for \$2,300,000 of fresh and frozen fruits and vegetables for the 2010-11 school year. Businesses interested in this opportunity should complete a Request for Information (RFI) available at <<http://www.familyfarmed.org/chicagopublicschools/>> and submit it to FamilyFarmed.org by September 10, 2010.

The RFI includes a list of products, specifications, and monthly quantities needed. In order to reduce pesticide residues, the RFI includes a preference for farms that use Integrated Pest Management Techniques and for produce grown without organophosphate pesticides. CTH will pay market prices for produce (FOB Chicago). Requirements for product and/or producers include:

- Ability to provide produce that meets the variety, grade, and packing specifications outlined by CTH (available at web site above)
- Farms must be within 250 miles of Chicago
- Product liability insurance of at least \$1 million
- Food Safety Certification (USDA GAP/GHP certification or third party equivalent)
- HAACCP certification if animals are present on farm or if for processed/frozen product

Specific fresh products requested likely to be of interest to Indiana producers include apples, strawberries, snap beans, cabbage, greens (collard, mustard and turnip), watermelons, tomatoes, summer squash and zucchini, and onions.



**Here is a list of dates for some upcoming winter programs:**

January 4, 2011 Illiana Vegetable Growers' School, Schererville, Indiana contact: Liz Maynard, 219-531-4200, [emaynard@purdue.edu](mailto:emaynard@purdue.edu)

January 18-20, 2011 Indiana Horticultural Congress, Indianapolis, Indiana contact: Tammy Goodale, 765-494-1296, [tgoodale@purdue.edu](mailto:tgoodale@purdue.edu)