VEGETABLE CROPS HOTLINE

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

Dan Egel, Editor
(812) 886-0198
egel@purdue.edu

No. 497
August 08, 2008

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

IN THIS ISSUE

POWDERY MILDEW ON PUMPKIN - *(Dan Egel)* - I have received several phone calls about this disease from growers who have either seen this disease or remember it from last year (Figures 1 and 2).

Figure 1: Powdery mildew on pumpkins can be recognized by the white, talc-like appearance of the leaves. *(Photo by Dan Egel)*

Figure 2: The silvery variegated appearance of some pumpkin leaves can be confused with powdery mildew. *(Photo by Dan Egel)*

Growers who fight powdery mildew every year should be aware that there is partial resistance to powdery mildew in several varieties. In the *Midwest Vegetable Production Guide for Commercial Growers 2008 (ID-56)* <**www.btny.purdue.edu/Pubs/ID/ID-56/**>, recommended medium-large and large varieties that have partial resistance to powdery mildew are: 20 Karat Gold, Aladdin, Gladiator, Magic Lantern and Merlin. Most growers will find it necessary to apply systemic fungicides to both susceptible and partially resistant varieties. However, varieties with partial resistance will perform much better in the presence of powdery mildew.

The strategy behind powdery mildew control on midwestern pumpkins is based on protecting vines from infection through mid-September. Initial applications of a systemic fungicide should be made when the pumpkins are in the 'bush' stage (right before the plants begin to vine out). This application usually occurs in mid to late July. Repeat applications at about 2-week intervals through early September. Consult the label for information on application intervals. Please note that powdery mildew, unlike many diseases, does not need leaf wetness to infect. Fungicides are much more effective when applied before powdery mildew is observed. Pristine®, Procure® and Nova® appear to be reasonably effective against powdery mildew on pumpkins. Growers should be sure to alternate systemic fungicides to avoid fungicide resistance in the fungus that causes powdery mildew. See Table 25, ID-56.

Pristine® is labeled for several pumpkin diseases other than powdery mildew. However, Pristine® may not be very effective against downy mildew.

Much of this information can be found in the ID-56. Please read the label carefully for rate, safety and other important information.

****

CORAGEN® SECTION 18 APPROVED FOR SWEETCORN *- (Rick Foster) - (This insecticide has been approved for use. Read on for details.)* After an initial surge in corn earworm pheromone trap catches, counts have been relatively low for about a month. However, even as I am writing this article, I am getting reports of counts going up all around the state. Counts over the last couple of nights have ranged from 2 to 37 moths per night, with most counts being in the 10-20 range. You can find the

latest reported trap catches at <**http://extension.entm.purdue.edu/cornearworm/index.php/**>. Remember that the generally accepted action threshold is 10 moths per trap per night. If you have sweet corn that has green silks present and 10 or more moths per night are being caught in your trap or one near you, then you need to protect your sweet corn with insecticides. In hot weather like we are having now, corn earworm eggs will hatch in about 2 days. You must keep your silks protected with insecticide to prevent larvae from establishing in the ear tip. At 10 moths per night, a spray interval of 5 days is recommended. The interval should be decreased as counts go up. It is never worthwhile to spray more often than every 2 days. Once the silks have turned brown, you can stop spraying.

In most cases the pyrethroid insecticides (Capture®/Brigade®, Warrior®, Mustang Max®) are still the best choice for controlling earworms, as well as the other caterpillars and beetles that attack sweet corn. I have received one report of an apparent control failure with pyrethroids. As a result, I have petitioned the EPA for a Section 18 Emergency Use for the new DuPont product, Coragen®, on sweet corn, which has been very effective in trials around the Midwest. The Section 18 label for Coragen® has been approved for two applications per crop per season. The best timing for those applications will be the first two sprays after silking.

****

Is This the End for Furadan®? - *(Rick Foster)* – The United States Environmental Protection Agency (EPA) is proposing to revoke all tolerances for carbofuran, the active ingredient in the insecticide Furadan®. Furadan® has been used by melon growers for many years for control of striped cucumber beetles and other pests. This action will take place 60 days after the final rule is published in the Federal Register. The EPA has determined that the use of Furadan® poses unacceptable risks, especially to children, when used according to current labels both from food and drinking water. The EPA calculated that 60% of all dietary exposure to Furadan® in infants comes from use on cucurbit crops (cantaloupe, squash, cucumber, and watermelon), along with 79% of all dietary exposure to children 1-2 years of age, and 91% of all dietary exposure to children 3-5 years of age. Given that the cucurbits are implicated in EPA's models as being the primary source of dietary exposure in children, my guess would be that there is little or no chance of changing this decision. Two years ago, I testified to EPA about the benefits of Furadan® to melon growers and Indiana melon growers have also appeared before the EPA. It appears that the EPA has determined that the risks outweigh the benefits of use on cucurbits.

Growers have until September 29, 2008 to comment about this proposed revocation. Submit your comments online at <**www.regulations.gov**> and refer to docket number EPA-HQ-OPP-2005-0162. If growers have stocks of Furadan® that they need to use up, they can petition EPA to extend the expiration date of the tolerance. You can make those comments at the previous website under "Supplementary Information".

****

Root Knot Nematode in Melons - *(Jamal Faghihi, Dan Egel and Virginia Ferris)* - One of the most destructive pests of many crops, including melons, is Root Knot Nematode (RKN). There are several species of RKN causing damage but the species that causes most of the damage on melons in southern Indiana is called Southern Root Knot Nematode, *Meloidogyne incognita*. RKNs are microscopic round worms that attack young melon seedlings soon after planting and continue to feed on plants throughout the season. One of the indicators of possible root knot nematode infection is patches of yellow and stunted plants that wilt in the middle of the day while sufficient moisture is present (Figure 1). These symptoms are more prominent in higher areas of the field

Figure 1: The wilted muskmelon plants in this photograph are exhibiting above ground symptoms of root knot nematode infestation. *(Photo by Dan Egel)*

where plants are under stress. Infected plants have very poor growth and formed fruit are small with a poor quality. The most characteristic symptoms of the RKN are the visible galls on the roots of the infected plants (Figure 2). Often several females are embedded within these galls. Several infections could occur in the same root area, thus clusters of galls on the roots are not unusual. Infected roots fail to absorb and conduct proper amounts of water and nutrients to the plants, which may cause the RKN symptoms to be confused with nutrient deficiencies.

Early in the spring, juvenile nematodes hatch from eggs in the soil and penetrate young roots of a susceptible host. They establish a feeding site and go through several molts, to swell and form the RKN female. In reaction to the RKN female feeding, the surrounding plant

Figure 2: Plants affected by root knot nematode will have galls which prevent the normal functioning of the roots. *(Photo by Dan Egel)*

cells will grow and encapsulate the female to produce the characteristic RKN galls. The females lay their eggs outside of the body in a gelatinous material. The eggs produced early in the season will hatch to continue the next generation of nematodes. The eggs produced in the fall will survive the winter and hatch in the spring. Duration of each life cycle of the RKN is about four weeks at 80°F.

Soil samples taken in early spring at the depth of 6-8 inches can be sent to a Nematology laboratory to extract RKN juveniles (the cost is $10). However, these samples often provide no or low counts of juveniles and might not produce an accurate status of RKN presence in the field. At the Purdue Nematology laboratory a bioassay service is provided to Indiana growers for a more accurate determination of RKN in the soil before planting. We ask growers to submit a quart of a representative soil sample from the suspected field to our laboratory. We plant susceptible tomato seedlings in the soil and in about 45 days we provide the submitter with data on the presence and severity of the infestation, from scale of 0-10. Soil samples intended for use in this test should not be dried or exposed to high heat. The cost for this service is $30/sample.

RKN management options are limited due to the wide host range of this nematode. In addition to melons, corn and soybeans are also good RKN hosts. The typical galling symptoms appear in soybean but they are not as pronounced in corn. Many of the rotational crops used in Indiana such as canola, potato, tomato and peppers are also hosts. However, some crops such as alfalfa and small grains are considered non-hosts and may be used in rotation to reduce the population of RKN in the field. Fields must be kept weed free for any rotation to be successful, as many weeds can be a very good host for this nematode. Resistant cultivars of tomato are available and may be used as part of a management program. Soil fumigation might be the most effective management option available to melon growers.

Melon growers need to keep track of the field history for an effective management strategy. They need to examine the root system towards the end of the growing season looking for galls and noting the severity of root infestations. Deep tillage of highly infested fields can expose RKN to harsh winter weather in Indiana, thus reducing the population. The most important option has to be prevention of spreading the nematodes to uninfested fields.

If you have any questions about Root Knot Nematode or any other kind of plant parasitic nematodes, you can contact Jamal Faghihi at (765) 494-5901 or send an email to **jamal@purdue.edu**. Soil samples for nematode analysis can be sent to: Nematology laboratory, Purdue University, Department of Entomology, Smith Hall, 901 W. State Street, West Lafayette, IN 47907-2089.

****

Ethylene Contamination Can Reduce Quality of Harvested Vegetables and Melons - (*Liz Maynard)* - Ethylene is a colorless gas with a faint, sweetish odor that can have both good and bad effects on harvested vegetable crops. It is considered a plant hormone (or growth regulator). Ethylene is produced by plants when they are stressed or wounded and by certain fruits and vegetables as they ripen. It is also produced when fossil fuels and other organic matter are burned. Some compounds that release ethylene, such as ethephon, are registered with EPA for particular uses in a specific crops. Harvested vegetables sensitive to ethylene are typically affected at concentrations between 0.1 and a few parts per million.

Ethylene speeds ripening in some commodities once the process has begun. This is true for tomatoes, and is used to advantage in some production systems. Ripening of cantaloupe is also promoted by external ethylene. When it occurs after harvest cantaloupes can become overripe with no improvement in eating quality.

Table 1 lists some undesirable effects of ethylene. If these symptoms are present it may indicate that ethylene levels are too high. Understanding sources of ethylene can aid in planning for transport or storage of mixed

Table 1: Some Undesirable Effects of Ethylene

Effect	Crops Likely to be Negatively Affected
Loss of green color	Leafy greens, herbs, broccoli, cucumber, winter squash, snap bean
Loss of firmness	Cantaloupe, watermelon
Russet spotting	Lettuce
Bitter flavor	Carrots
Sprouting	Potatoes
Toughening	Asparagus

vegetable crops. Commodities that produce significant amounts of ethylene (see Table 2) should not be stored with those that are sensitive to ethylene. If ethylene injury is suspected, check for other possible sources such as internal combustion engines, propane forklifts, heaters, and decomposing produce. Remove the suspected source or increase ventilation with uncontaminated air.

Table 2: Ethylene Production Rates of Selected Fruits and Vegetables

Very Low	Artichoke, asparagus, cauliflower, leafy vegetables, root vegetables, potato, strawberry
Low	Banana, cucumber eggplant, okra, pepper, pumpkin, watermelon
Medium	Tomato
High	Apple, cantaloupe, peach, pear, plum

****

Free SARE Farmer/Rancher Grant Writing Workshop - *(Announcement)* - Producers and agriculture professionals can find out how to write successful grant proposals and learn more about the North Central Region Sustainable Agriculture and Education (NCR SARE) Farmer/Rancher Grant Program at a video workshop that will be held on August 28th, 7:00 - 9:00 PM (EST).

In 2009, producer grants will be awarded in amounts up to $6,000. Group projects (three or more producers) can be funded up to the $18,000 maximum.

Participants can view the program from the following sites: Hancock Co. Ext. Office (317) 462-1113, Knox Co. Ext. Office (812) 882-3509, Monroe Co. Ext. Office (812) 349-2575, Owen Co. Ext. Office (812) 829-5020, Pinney Purdue Ag Center (219) 465-3555, Pulaski Co. Ext. Office (574) 946-3412.

To sign up prior to the workshop, contact the county ANR Educator nearest you.

****

Upcoming Events

Pumpkin and Sweet Corn Twilight Meeting - Tuesday, Sept. 9, 2008, 5:00 to 8:30 p.m. CDT. Pinney-Purdue Ag Center, Wanatah, IN. Pinney-Purdue is 5 ½ miles east of Valparaiso or 1 mile west of Wanatah on US Highway 30 then north ½ mile on Porter/LaPorte County Line Road.

The program will include a tour of sweet corn and pumpkin variety trials and discussion about insect, disease and weed management by Extension Specialists Rick Foster, Dan Egel and Liz Maynard. Approval for Indiana Private Applicator Recertification Credit and Commercial Applicator Continuing Credit Hours is anticipated. A catered meal will follow the field tour, with the opportunity to taste sweet corn varieties (weather permitting).

Registration is $5.00 (or $15.00, with PARP credit), payable at the meeting. Please preregister for the evening meal by **September 2, 2008**, by calling (219) 785-5674 or emailing **emaynard@purdue.edu** with name and number attending.

A flyer will be posted at **<www.hort.purdue.edu/fruitveg/>.**

19th International Pepper Conference - Sept. 7-10, 2008. Sheraton Hotel and Conference Center, Atlantic City, New Jersey, USA; contact Dr. Wesley Kline by phone (856) 451-2800 or email **wkline@aesop.rutgers.edu** or Dr. Andy Wyenandt by phone (856) 455-3100 X4144 or email **wyenandt@aesop.rutgers.edu**.

Vegetable Crops Hotline
c/o Dan Egel
Southwest Purdue Agricultural Program
4369 N Purdue Rd
Vincennes, IN 47591