VEGETABLE CROPS HOTLINE

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

Chris Gunter, Editor
(812) 886-0198
gunter@hort.purdue.edu

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DOWNY MILDEW ON PUMPKIN - *(Dan Egel)* – ***The following article was written as a Vegetable Crops Hotline-BULLETIN, August 18, 2006.*** Downy mildew of pumpkin was confirmed at the Southwest Purdue Ag Center on Friday, 18 August on an experimental planting. The severity of the disease was light. All cucurbits are susceptible to the race of downy mildew that affects pumpkins. Those growers who expect to harvest cucurbits through September and beyond should refer to *Vegetable Crops Hotline* no. 466 <www.entm.purdue.edu/entomology/ext/targets/vegcrop/VCH2006/VCH466.pdf> and no. 468 <www.entm.purdue.edu/entomology/ext/targets/vegcrop/VCH2006/VCH468.pdf> for control strategies.

ROOT KNOT-NEMATODES - *(Andreas Westphal)* - Root knot nematodes, belonging to the species *Meloidogyne* spp., are microscopic round worms. These microscopic animals live below ground and feed on the roots of their host plants. During most of the year, plant-parasitic nematodes can only be detected following specialized extraction procedures. Root knot nematodes are fairly easy detectable. While there are several different kinds of root knot nematodes known, they all have a particular life cycle in which they become sedentary (immobile) in the host plant roots and trigger the roots to swell. Such nematode-induced deformations, called galls or knots, can be seen with the naked eye (Figs. 1 and 2) Late summer, is a good time to check for nematode problems in watermelon or muskmelon fields. When searching fields with unknown history concerning root knot nematodes, one should focus on areas of reduced growth and overall reduced plant vigor. Nematode attack can occur in various soil layers. Accordingly, it is necessary to dig the root systems from the soil with a shovel or spade at least to the depth of regular soil tillage (or at least 30-cm deep). Roots can then be examined for the galls. In the progressing season, a general root rot sometimes masks galling of watermelon roots infected with the root knot nematode. Thus live plants should be chosen for examination for infection with root knot nematodes. While the presence of root knot nematodes is not always associated with economic yield loss, it is important to

Fig. 1. Healthy watermelon roots. *(Photo by Andreas Westphal)*

Fig. 2. Roots with root knot nematode-induced galling. Note the severe deformation of the root system. *(Photo by Andreas Westphal)*

know if fields are infested. Cropping sequences and variety selection can be improved avoiding susceptible host plants in infested fields and that way reduce plant damage due to the nematode. Also, chemical control options can be considered and tested in a limited area in fields with root knot nematode infestations. Management of root knot nematodes is difficult. Root knot nematodes expected in Indiana can infect a number of plants, including beans, canola, cereals, corn, potato, soybean and tomato. Root knot nematodes can increase in number under some crops and cause no visible damage. However, sensitive crops that follow in that same field may be damaged. Caution must be exercised to prevent moving soil from fields with known nematode infestations to non-infested sites.

Virus Diseases in Pumpkins - *(Dan Egel & Frankie Lam)* - This year, there has been a tremendous increase in the amount and severity of virus infected pumpkin vines over previous years. The reason is not clear, however one possibility is that much of the growing season has been dry. Wet weather promotes diseases of the aphids that transmit viral diseases. Although there is not much that can be done about the problem now, it might be worthwhile to review this annual problem.

The first question that usually comes to mind is how much yield will be lost as a result of pumpkin viruses? The answer depends on when the pumpkins were infected. Virus symptoms that occurred before or at early flowering can cause poor fruit set and/or mottled, disfigured fruit. Although these small fruit are interesting, they can be difficult to market.

Infections that occur after fruit set is well along may have little affect other than to cause disfigured leaves. Regardless of planting date, virus diseases will likely show up in all pumpkin patches. Since virus infection usually only causes problems in late-planted pumpkins, planting early can be one solution to virus diseases. In southern Indiana, growers have avoided virus damage by planting seed by June 20. Growers in other parts of the state should vary their planting dates accordingly. Another option is to use reflective mulch that appears to confuse aphids in the critical early season.

The reason that virus diseases don't usually appear on pumpkins until later in the season is that the aphids that carry the disease travel to Indiana from southern states where virus diseases exist year round. **Although aphids can transmit virus diseases, applying insecticides has not been effective.** Aphids can transmit viruses within a matter of seconds. Therefore, the aphid is relatively unaffected by the insecticide.

It is important to note that the virus problems that are affecting us this year will not necessarily be severe next year. The virus will not overwinter in the soil. Although some researchers believe that some viruses may overwinter in weeds, it is likely that most of the virus results from aphids that fly or blow in from year to year.

Some seed companies are beginning to breed virus resistance into some of their lines. There are at least 4 different viruses that may cause problems from year to year. It might be worthwhile to check with your seed representative to see if resistance to one or more virus disease is available in a pumpkin variety that suites your needs.

Harlequin Bug in Southwestern Indiana - (*Frankie Lam*) - Relatively high populations of harlequin bugs were observed on cabbage and kale in southwestern Indiana during mid-August. An average of five bugs per plant was found in a kale field (Fig. 1). Harlequin bug,

Fig. 1. Harlequin bugs feeding on kale. (*Photo by Frankie Lam*)

which is a native species in Central America and Mexico, belongs to the family of stink bug (Family Pentatomide). This bug is also known as "fire bug" or "calicoback bug" is an economically important pest of cabbage and related crops in the southern half of the United States. However, it rarely causes economic damage north of latitude 40 N. The insect is distributed from the Atlantic to the Pacific and from southern states to the Great Lakes.

Adult. The adult harlequin bug is a red-and-black, flat and shield-shaped insect about 3/8-inch long (Fig. 2). At rest the front wings overlap and the bug appears to be marked with a distinct "X" at the back. The bug mainly attacks broccoli, cabbage, cauliflower, collards, horseradish, kale, mustard, radish, and turnip; however, it will also feed on asparagus, bean, corn, eggplant, okra, squash, and tomato. One to two generations occur in the Midwest and the adults hibernate in plant debris during winter.

Egg. The eggs are usually laid in double row with six in each row on the underside of leaves. Each egg is about 1/8-inch long and marked with two black bands and a black spot on top of the lower band (Fig. 3). Eggs hatch in about three weeks, depending on temperature.

Nymph. The oval nymph is similar to the adult in coloration, but smaller and without wings (Figs. 4 and 5). The nymphs feed for 1-2 months and pass through five nymphal stages then become adults. The nymphs feed on the same kind of hosts as the adults and cause the same type of damage on crops.

Injury on Crops. Both nymphs and adults of harlequin bug feed by piercing the plant and sucking the plant sap. They feed on the surface and on the underside of leaves. The symptom of harlequin bug damage appears as white or yellow, irregular cloudy spots on leaves (Figs. 1, 2, and 5). In the southern states, it is reported that heavy infestations of harlequin bugs can cause young plants to wilt, turn brown, and eventually die. However, economically important populations do not commonly occur in the central and upper Midwest.

Fig. 2. The adult harlequin bug is a red-and-black, flat and shield-shaped insect about 3/8-inch long. (*Photo by Frankie Lam*)

Fig. 3. The harlequin bug eggs are laid in double row with six in each row on the underside of leaves. (*Photo by Frankie Lam*)

Fig. 4. Newly hatched nymphs of harlequin bug. (*Photo by Frankie Lam*)

Management. Not much research has been done on the economic threshold of harlequin bug in the Midwest. This is because small populations can be found occasionally on crops and have no great impact on production. Since both the nymphs and adults of harlequin bug are not very active insects, especially for home gardeners handpicking is recommended for the management of the pest. For commercial growers, Endosulfan, Thiodan, and Sevin are labeled for the control of the harlequin bug. Please read the label carefully before applying insecticides.

Fig. 5. The symptom of harlequin bug damage appears as white or yellow, irregular cloudy spots on leaves. (*Photo by Frankie Lam*)

Tour Brings Light to Pumpkin and Sweet Corn Production - *(Announcement)* - The Pinney Purdue Ag Center will host the annual Pumpkin and Sweet Corn Twilight Meeting on Tuesday, Sept. 12, 5-7:30 pm (CDT) in Wanatah, IN, for all vegetable growers - from gardeners to large-scale producers.

The meeting, sponsored by Purdue in conjunction with the Northwest Indiana Commercial Horticulture Program, will feature a wagon tour of pumpkin and sweet corn variety plots and will also provide information about tomatoes. The tour will be followed by a catered meal at 7:30.

"This is a great hands-on experience for producers to observe pumpkins, sweet corn, and tomatoes before buying the seeds," said Gen Matzat, Purdue Extension educator.

On hand will also be many Purdue experts to answer participant questions, said Liz Maynard, Extension specialist.

"We want to give people a chance to see many varieties of pumpkins and sweet corn side by side to help them decide which to grow in the future," said Maynard. "We also hope that if people have questions about insects, disease or weed management, they can get answers from our experts."

Purdue experts will also speak about a variety of related topics, including:

- Frankie Lam, pest management specialist - squash beetle and pigweed flea beetles.
- Dan Egel, pest management specialist - pumpkin diseases.

- Rick Foster, entomologist - insect management in sweet corn.
- Chris Gunter, vegetable cropping systems specialist - tips on fertilizing tomatoes.

In addition to the tour, dinner will be served at the end of the evening for those registered. Participants are asked to register by Sept. 8 by calling (219) 785-5673 or emailing emaynard@purdue.edu with name and number attending. A registration fee of $5 per person is payable at the meeting. The fee includes snacks, beverages, dinner, and program materials.

Further information regarding the program is available by contacting Maynard at (219) 785-5673 or emaynard@purdue.edu, or by contacting Matzat at (219) 324-9407 or ematzat@purdue.edu.

Late Autumn and Pre-Christmas Farmers' Market, October 21 - December 16, 2006 - (Announcement) - We are currently in the planning stages of this market, and **we welcome vendor suggestions**. The site is the restored Harold Wheeler Dairy Barn, which has been updated as the Community Wheeler Barn Gathering Place at the Olthof Homes Community of Pentwater Southeast, Crown Point, Indiana, including lighting, electricity, and a patio, no heat. No canopies are needed, just tables. Space is limited to 12 -15 vendors, and we will give preference to unique vendors and vendors who utilize Indiana grown materials in their products. Spaces will be reservable for 3, 6 or 9 week periods.

We are especially seeking:

Late winter vegetable growers - brassicas, and greens
Corn growers, including ornamental and popcorn
Squash and pumpkins
Herb growers - dried, edible or decorative - or fresh. Teas?
Soap maker
Evergreen for Christmas décor
Gourd for décor
Apple or grape grower, dried fruits, vegetables, cider
Baker(y)
Jellies and relishes
Honey

If you don't see your product(s) on this list, please send a short description of what you would like to offer to: farmdirect@sbcglobal.net or phone (219) 743-6274 with questions.

We Need Your Ideas for Winter Meetings - (*Liz Maynard*) - Purdue staff and grower associations are beginning to plan the program for the Indiana Horticultural Congress (Jan. 29 - 31, 2007), the Illiana Vegetable School (Jan. 4, 2007), and other winter meetings. Please help us with your suggestions for topics.

-What issues have come up this season that you'd like to hear more about?
-What new technologies, crops, or marketing strategies have you heard about that you'd like more information on?
-Have you heard an excellent speaker somewhere we should bring to Indiana?
-Is there a vegetable grower you'd like to hear talk about his/her operation?

Call, fax, or e-mail your suggestions. Thanks!

Phone: (219) 785-5673 or (800) 872-1231 ext. 5673;
Fax: (219) 785-5483 attn: Liz;
e-mail: emaynard@purdue.edu.

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