

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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(The following was sent, in part, as a Vegetable Crops Hotline – BULLETIN, No. 5, September 5, 2002.)

Downy MILDEW OF PUMPKIN - (Dan Egel) - This disease has been observed in moderate amounts at the research facilities of the Southwest Purdue Ag Center in Vincennes, IN. Downy Mildew of pumpkin is not usually an important disease in Indiana. This is because downy mildew does not overwinter in Indiana and must “blow in” from southern states where the disease is active on plants all year long. Downy mildew of pumpkin seems to be an important disease in Indiana about one year out of five.

Downy mildew is primarily a leaf disease. Often, the first symptoms one observes are yellow, angular or square looking spots on leaves. The underside of the leaves may be covered with a black fuzzy looking growth—this is the fungus that causes the disease. Leaves may eventually, turn brown and crinkle. The leaves may turn upwards as they dry. Severe outbreaks may result in the rapid death of vines, which in turn may cause handles on pumpkins to become brown.

Downy mildew requires a period of leaf wetness for successful infection. Heavy dews can provide adequate moisture to get this disease going. Although the fungal spores may land in your field, there has to be leaf wetness for the disease to cause problems. The optimum temperature for downy mildew is 59 to 68°F.

Since downy mildew does not overwinter in Indiana, rotation and tillage will not help to reduce the severity of downy mildew. (Growers will want to use these practices to manage black rot, bacterial spot and powdery mildew.) Any cultural practice, which allows good aeration between leaves, can lessen the

impact of downy mildew. An example would be wider spacing between plants in areas that are prone to downy mildew problems. Although some resistance is present in cucumbers and melons, there is no resistance among pumpkins and squashes.

The decision of whether to apply fungicides to pumpkins that have been confirmed with downy mildew will be influenced by several factors.

- 1) How soon before pumpkin harvest? Pumpkins that will be harvested in a few weeks will probably not suffer from a mild case of downy mildew. Growers who plan to pick into October should be more concerned.
- 2) How many green pumpkins are present and will ripen in time to be sold? A grower who is trying to protect young fruit should be more concerned with downy mildew than a grower with primarily mature fruit. Downy mildew does not affect fruit directly.
- 3) Other factors include, the expense of the fungicide, recent and predicted weather patterns, and one’s willingness to apply fungicides. For example, a grower who has a school children U-pick operation will probably be less willing to apply fungicides than a grower with a commercial shipping operation. Finally, be realistic as to the yields and prices expected and the amount of protection any fungicide can offer. Remember, the application of any fungicide is to protect the healthy growth—the diseased foliage cannot be “cured” of the disease.

Fungicides, which may be used to control downy mildew, are listed below.

- Fixed copper compounds—Will provide some protective control against downy mildew, especially when mixed with Maneb and Manex (see below).

Copper compounds will also provide some protection against bacterial spot of pumpkin.

- Maneb, Manex and Bravo, Echo—Protective control against downy mildew as well as black rot of pumpkin.
- Flint, Quadris—These systemic fungicides will help control downy mildew as well as powdery mildew. Quadris is also labeled for black rot of pumpkin. Thus, growers worried about downy mildew can apply these fungicides and manage additional pumpkin diseases as well.
- Aliette, Ridomil Bravo Gold—Aliette is a systemic fungicide that is labeled for downy mildew but not for powdery mildew, black rot, etc. Therefore, we do not recommend applying Aliette unless downy mildew has been confirmed. Ridomil Bravo Gold is a combination of Ridomil, a fungicide active against downy mildew (and related fungi) only and Bravo, which will be active against a wide range of fungi.

I hope the above information will help those growers worried about downy mildew. Always read the label carefully.



COVER CROPS - (Liz Maynard) - Many vegetable growers will soon be getting out the drill to plant winter cover crops. These grains or mixes of grains and legumes will provide a number of benefits to the soil. They take up some of the nitrogen remaining in the soil and prevent it from leaching – next summer after the cover crop is killed that nitrogen will return to the soil as the residue decays. The leaves, stems and roots of the cover crop become new organic matter in the soil after the cover crop is killed. This helps to replace organic matter that is lost each year due to consumption by microorganisms. As most producers are well aware, organic matter in soil improves its nutrient and water-holding capacity, and makes it more resistant to compaction and erosion. During the winter and early spring, the cover crop physically protects the soil from erosion by wind and



water. Even after a crop is planted, strips of cover left standing provide benefit by reducing wind damage to young plants. If cover crop residue is left on the surface, it can reduce moisture loss from and the soil and keep the soil temperature cooler.

Cover crops are not without disadvantages. They use soil water in the spring, and in years when we have a dry spring, can decrease the amount of water available for the crop. If irrigation is available, this is not as much of a concern. And we more often have wet springs than dry springs. A field planted to a cover crop typically takes longer to prepare for planting than one without. The cover crop should be turned under or killed several weeks before planting. When wet weather delays turning under the cover, planting may be delayed to a greater extent than in a bare field. Sometimes the delay will allow the cover crop to grow so much that it is difficult to manage with available equipment. Cooler soil temperatures under residues left on the surface do not benefit early warm-season crops.

At last January's Indiana Horticultural Congress, we heard from Pennsylvania farmer Steve Groff and New York crop consultant Dale Riggs about production methods using cover crops that are killed in the spring, left on the soil surface, and then no-till planted with crops such as pumpkins or processing tomatoes. Some of the advantages of this system, compared to tilling the cover under, are early-season suppression of weeds by the cover crop residue, conservation of soil moisture, reduced mud, and cleaner pumpkins. Trials with killed cover crops on Purdue research farms have shown potential for similar systems in Indiana.

Winter rye is commonly used as a cover crop. Plant it any time in the late summer or fall. Seeding rate recommendations are 60 to 120 lb./A if drilled, and 90 to 180 lb./A if broadcast. The higher rates should be used to maximize weed suppression if the rye will be left on the surface as mulch next spring. Even higher rates can be used to ensure a good stand if planting very late in the fall. Winter rye does a good job of taking up nitrogen left in the soil when planted early in the fall. Rye mulch provides early-season weed suppression if there is good soil cover by the mulch.

Hairy vetch is sometimes mixed with winter rye, or planted alone as a cover crop. If allowed to grow until flowering next spring, a vigorous stand of this legume can fix enough nitrogen that no additional nitrogen is needed to produce a pumpkin crop. When mixed with rye, the vetch can reduce the amount of additional nitrogen needed by 1/4 to 3/4. For a winter cover, hairy vetch should be planted in late summer (2 to 6 weeks before a killing frost). Seeding rate recommendations are 15 to 20 lb./A drilled or 25 to 30 lb./A broadcast. For late seedings, higher seeding rates will improve the stand. Hairy vetch makes little growth in the fall, but in the spring produces a lush tangled mass of growth. If left on the soil surface as residue, it decays quickly due to the high nitrogen content.

Mixtures of rye and vetch are successfully grown with 30 to 70 lb. rye and 20 to 25 lb. hairy vetch per acre. In a mixture of hairy vetch and rye, rye produces more growth in the fall and the vetch may even be difficult to spot at first glance. Rye can offer some protection to the vetch during very cold periods when there is no snow cover to insulate the soil. In the spring, both crops grow well and the stiffer stems and leaves of the rye provide support for the vetch. If left on the surface, the residue will not break down as quickly as vetch alone.

Like any growing system, successful management of cover crops takes experimentation and refinement on the farm. For vegetable growers new to cover crops it makes sense to start small, schedule extra time for observation, note-taking and unexpected setbacks, and take advantage of opportunities to learn what others are doing.

References: Sustainable Agriculture Network. 1998. *Managing Cover Crops Profitably*, 2nd ed. Beltsville, MD. Moore, R., T. Elkner and S. Groff. 2001. *No-till Pumpkin Production: Principles and Practices*. 16 pp. (copies available from Liz Maynard at 219-785-5673).



MANAGEMENT OF SQUASH BUGS IN FALL - (*Frankie Lam*) - Relatively high numbers of squash bug nymphs and adults were found in some pumpkin fields near Vincennes. Squash bug is a serious pest of cucurbits in the Midwest. In the late season nymphs, and adults that feeding on the fruit can cause the pumpkin to collapse and become unmarketable. Because adults and large nymphs are difficult to control with insecticides, the main tactics for management are early detection and control of young nymphs during the growing season. Also destruction of their overwintering sites in fall will limit future problems.

At night and under cool climates, squash bugs prefer to hide under protective areas, including leaves, fruits, stones, boards, and beneath mulch, in the field. For home gardens or small fields, placing flat wooden boards or shingles near the plants to provide shelters for the bugs is the best tactic to manage the fall populations. Early in the morning or in the evening when the temperature is cool, check the undersides of the boards or the fruits, the bugs congregate in such places and can be easily collected, crushed and killed by hand. However, crushing a "true" bug might give off a disagreeable odor from the insects abdomen; an alternative method is to put the bugs into a container with water and a little cooking oil. After the bugs have drowned the contents in the container can be dumped on the compost pile.

Field sanitation is a successful strategy to manage the overwintering squash bug populations in large pumpkin fields. The unmated adults overwinter in all kinds of protective shelters, including dead leaves, vines, stones, buildings, and dwellings. After the crop is harvested, vines and non-harvested fruits should be removed from the field and burned or destroyed by cultivation. Field margins should be as free as possible of rubbish, piles of leaves, boards, and other shelters. Unfortunately, most of these useful tactics for the management of the pest are not agreeable with the goals of sustainable farming. Therefore, growers should consider both the management of the bugs and the conservation of the field when making decisions in the fall. A better option to leaving the ground bare through winter may be cover crops (see Cover Crops article in this issue).

No active threshold for squash bug nymphs and adults in the late season has been established. Unless high numbers of squash bugs are found and direct damage of the fruit is observed in the field, application of insecticides is not recommended. This is because large nymphs and adults are active and difficult to control satisfactorily. For insecticidal management of squash bugs, please read *Midwest Vegetable Production Guide for commercial Growers* (ID-56) <<http://www.entm.purdue.edu/entomology/ext/targets/ID/index.htm>>. Be certain to read the label carefully before using any pesticides.



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Industry/Corporate memberships are available for those involved in supplying seeds, plants, supplies and equipment to the vegetable industry.

To join IVGA, use the attached form.

BENEFITS OF MEMBERSHIP

- Midwest Vegetable Production Guide for Commercial Growers (1 copy, available January 2003)
- Vegetable Crops Hotline subscription (1 year, January thru December)
- Inclusion in IVGA Directory of Wholesale Vegetable Producers (optional)
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MIDWEST VEGETABLE PRODUCTION GUIDE FOR COMMERCIAL GROWERS (ID-56)

This publication combines the expertise of researchers and extension specialist from Purdue University, the University of Illinois, the University of Missouri, Iowa State University and the University of Minnesota. It contains information on cultural practices, fertilizer rates, and chemical and non-chemical management strategies for weeds, insects, and diseases. (\$10.00 value)

VEGETABLE CROPS HOTLINE

This newsletter from Purdue University provides the commercial vegetable grower with timely information about soil pH, fertility, varieties, insect, weed, and diseases problems (including control recommendations) throughout the entire growing season. Information about upcoming meetings, twilight tours, and the annual state convention, as well as short articles describing applied research conducted by Purdue specialists are included. (\$15.00 value)

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IVGA members selling to wholesale accounts may choose to be included in this directory. The directory identifies crops produced by each grower and provides contact information. The directory is available to the public online at www.in.gov/oca/other/vegetable.html.

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If you completed the form on the reverse side, for membership to the Indiana Vegetable Growers' Association 2003, then your subscription to the 2003 Vegetable Crops Hotline is included in your IVGA membership.

Fill out the form below if you wish to receive only the Vegetable Crops Hotline and no other IVGA Membership benefits.

2003 Vegetable Crops Hotline Subscription Form

The *Vegetable Crops Hotline* newsletter provides the commercial vegetable grower with timely information about disease, insect and weed pests, fertility practices, post-harvest problems, pesticide label changes, meetings and much more. Each year, the Hotline is published 13 times during the growing season with off-season issues in November and January.

Again this year, in addition to receiving the regularly scheduled *Hotline* issues, subscribers may also receive the ***Vegetable Crops Hotline - BULLETIN*** either by e-mail or FAX. This will require that subscribers to the 2003 *Hotline* indicate how they want to receive the bulletins. The *BULLETIN* articles will also appear in the next regularly scheduled *Hotline* issue along with other pertinent articles written by the Purdue staff.

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