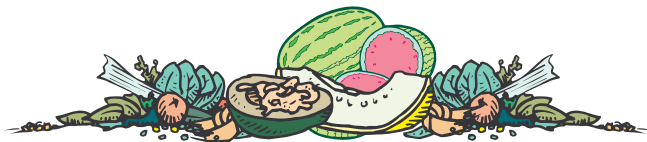


# VEGETABLE CROPS HOTLINE

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

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



No. 379  
July 13, 2000

<http://www.entm.purdue.edu/entomology/ext/targets/newslett.htm>

## IN THIS ISSUE

- WHAT TO SPRAY
- BACTERIAL SPOT OF PUMPKINS
- PHYTOPHTHORA FRUIT ROT ON PUMPKIN
- BACTERIAL FRUIT BLOTCH
- HARVEST AND POST-HARVEST TIPS FOR PRODUCE

**WHAT TO SPRAY - (Dan Egel)** - Many of the phone calls I receive go something like this: "I need to spray my melons this evening. Is there anything special I should put in?" Let me try to address some of these questions.

**Protective fungicides:** Such chemicals include Bravo, Echo, Dithane, Penncozeb, Maneb 80, Manex, Ziram 76DF etc. These products should be the bulk of your pesticide applications. Most pesticide applications will consist only of the protective chemical of your choice. If you are a watermelon or muskmelon grower in southwest Indiana you may rely on MELCAST to tell you when to apply these chemicals.

**Quadris/Flint:** These chemicals are considered protective chemicals with systemic properties. Apply these chemicals as you would any of the protective chemicals listed above. Do not wait until disease shows up and then expect Quadris or Flint to clean up the problem entirely. Note that while Quadris is labeled for most fungal diseases of cucurbits and tomatoes; Flint is labeled on cucurbits for powdery and downy mildew only. Remember to rotate Quadris/Flint with chemicals with a different mode of action.

**Systemic chemicals:** Examples would be Benlate or Topsin - These chemicals are effective as powdery mildew fungicides for muskmelon. For most foliar fungal diseases such as gummy stem blight of watermelon or early blight of tomato, however, we recommend the protective chemicals listed above. For those growers who have not found Benlate or Topsin to be effective powdery mildew chemicals, see Quadris/Flint above.

Ridomil Bravo Gold - This chemical can be applied when phytophthora is known to be a problem, for example buckeye rot of tomatoes.

**Copper:** Copper is a protective chemical. This chemical is more effective for bacterial diseases than for fungal diseases. Diseases for which copper products would be effective include bacterial fruit blotch of watermelon, bacterial spot of peppers and tomatoes, and bacterial speck of tomatoes. Unless you have a bacterial disease, copper is not as effective as the protective chemicals listed above.

**Insecticides:** As a general rule, do not apply insecticides unless a problem is noted. The application of insecticides on a weekly basis results in a lower beneficial insect population such as ladybugs and lacewings and thus MORE problems, not less.

It is OK to call me about what to spray. But I hope this list will help.



**BACTERIAL SPOT OF PUMPKINS - (Rick Latin and Dan Egel)** - We have received several samples and reports of this disorder that primarily affects pumpkins. Symptoms on leaves are not obvious. The spots are small (1/8 - 1/16 inch across), angular, necrotic lesions that coalesce to form larger, irregularly shaped necrotic areas that can be mistaken for a non-infectious disorder. Lesions may have a white to light brown coloring. Although these leaf lesions are unimportant, fruit lesions may appear which are unsightly. Fruit lesions start as small (1/16 - 1/4 inch across), round, tan scabs that occur in clusters, often on the "face" of the jack-o-lantern. The scab-like lesions begin as tiny watersoaked spots on developing fruit. As fruit mature, the spots enlarge and give rise to tan, raised "blisters".

Details regarding the bacterial spot disease cycle are still uncertain. The bacteria that cause the disease may be carried in infested seed. The bacteria may also survive locally on infested residue of diseased crops for a year or two.

Like most bacterial diseases, the disease probably spreads by splash dispersal during rain or irrigation

events. Long distance spread (one mile or more) is unlikely.

Fruit infection probably occurs during early fruit development. Symptoms develop on infected fruit in 7 to 14 days.

No host resistance has been identified. Therefore, growers must rely on a combination of cultural and chemical methods to reduce the disease threat. Since it is possible that the bacteria can be carried in seed, growers are advised not to save their own seed. Affected fields should be planted to crops other than cucurbits for at least 2 years. If fields are transplanted, then transplant production facilities and transplant materials should be sanitized with commercial disinfectants. <<http://www.agcom.purdue.edu/Agcom/Pubs/BP/BP-61/BP-61.html>>.

Early season copper applications may also be used to reduce the amount of infection. Three sprays applied at 10 to 14 day intervals beginning when the fruit are about 4 inches in diameter may provide some degree of black rot control as well as protect vulnerable fruit from the bacterial spot pathogen.



**PHYTOPHTHORA FRUIT ROT ON PUMPKIN - (Dan Egel)** - This disease has been reported from northern Indiana. Phytophthora fruit rot has become increasingly important in the last several years. The first symptom of this disease is often a water-soaked spot or depression in the fruit. The portion of the fruit in contact with the ground is often the first to be affected. Later, fruit may have a cottony white mold. This mold is mostly spore bearing structures. Vines may wilt as a result of infections along the stem.

Water is essential to the fungus that causes Phytophthora fruit rot. Water is required for spores to be released, for spore dispersal, and for new infections to take place. The spores that cause Phytophthora fruit rot are motile in water. That is, they can "swim" to find new infection spots. The fungus can survive for at least two years between hosts. Possible hosts besides pumpkin can include pepper, tomato, and eggplant.



Management options for this disease are limited. The most important option is water management. Avoid poorly drained fields, especially those with a history of the disease. The use of raised beds can help control this disease in some crops. Limit irrigation as much as possible. Fumigation has been effective in some cases. The use of preventative fungicide applications from the start of the season may also be useful. Possible fungicides include Aliette, Ridomil Bravo Gold and EBDC related compounds (e.g., Dithane, Penncozeb). No fungicide will provide adequate control without also using the cultural controls discussed above.



**BACTERIAL FRUIT BLOTCH** - (*Dan Egel*) - This disease has been reported in southwestern Indiana. The primary symptom is a dark green irregular blotch that occurs on the top of the watermelon fruit. Older lesions will have a necrotic area in the center of the lesion. Watermelons are the only host with economically important damage. Sometimes the rind will crack and white ooze will come out of the fruit. Although bacterial fruit blotch will seldom invade the fruit farther than the rind, the fruit may start to rot from other organisms. The leaves also have necrotic lesions, however the lesions are easy to miss. Damage results in rotted or defaced fruit.

The bacterium that causes bacterial fruit blotch may be seed borne. The causal bacterium may survive short periods in the greenhouse.

Bacterial fruit blotch will spread rapidly in warm moist conditions. Rains will quickly spread this disease. All watermelon varieties are susceptible to fruit blotch. However, dark skinned varieties appear to be tolerant. Growers who discover they have bacterial fruit blotch, may want to apply a copper product to protect the healthy fruit. Fruit become infected when they are about two weeks old from pollination. Thus, if there is a significant amount of young fruit in a field, it may be worth applying copper. Although fruit blotch has not been known to over-winter in Indiana, it is always a good idea to practice fall tillage and rotate from cucurbit production for 2 to 3 years.



**HARVEST AND POST-HARVEST TIPS FOR PRODUCE** - (*Liz Maynard*) - The beginning of sweet corn harvest in Northern Indiana signals the start of the season for warm weather crops. Consumers are excited about buying local produce. It's a good time to review practices, which will help deliver high quality, wholesome vegetables to the market.

- **Harvesting:** Pick vegetables at the proper stage for the crop and your market. Train pickers to harvest only marketable product. Double-check the pre-harvest interval for any pesticides used (refer to the pesticide label or ID-56). Clean and disinfect harvest bins before using them.
- **Handling:** Cuts, nicks, and bruises reduce quality, speed decay, and open wounds where plant or human pathogens can enter. Handle vegetables with care. Bruising can result from tossing into harvest buckets, or from piling produce too deep. For crops with thin skins, such as summer squash, the use of gloves by pickers can reduce damage from fingernail nicks.
- **Cooling:** The temperature of harvested produce is a major factor in determining how long it will maintain quality. High temperatures speed metabolic activity and reduce quality. Refer to ID-56 for proper storage temperatures. To minimize field heat, pick in cool part of day (or at night). Keep harvested produce in the shade and cool as quickly as possible. Store and transport at appropriate temperature. Use a thermometer to measure temperature of the produce itself, not just the air around the produce.
- **Dump tanks and Washing:** When dump tanks are used after harvest, the water temperature should be at, or slightly above, the produce temperature. Use of a sanitizer in the water will help prevent problems with plant or human pathogens. Organic matter in the dump water (e.g., soil) reduces the effectiveness of the sanitizers; adding new water regularly will prevent organic matter build up. If vegetables are given a final wash, the water used should meet standards for drinking water quality. Water is easily contaminated with microbes that can make people sick, so attention to water quality is important in reducing the risk of food borne illness.
- **Grading:** Know the requirements of your market, and grade produce for size, quality, and degree of ripeness accordingly. Train employees so they know how to grade.
- **Packing and Storing:** Storage areas and storage shipping containers should be clean and protected from rodents and birds to prevent contamination with disease-causing organisms. The storage areas should be cleaned daily for the same reason. Maintain good air low and appropriate temperature and humidity for the produce.
- **Hand Washing:** To reduce the chance that vegetables will carry disease-causing organisms, everyone who handles vegetables should wash their hands regularly: at the start of the work day, after using the toilet, and after eating or smoking. Keep soap, water, and single-use towels readily available. Employees who are sick should not handle produce.

Disclaimer

Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer.



Printed on Recycled Paper

Purdue University is an equal opportunity/affirmative action institution

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