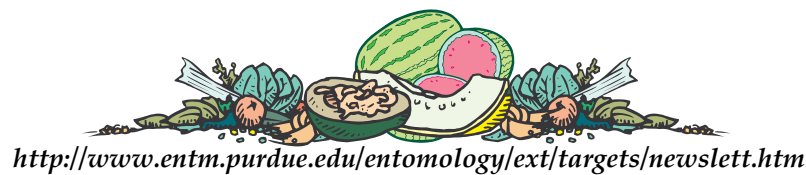


VEGETABLE CROPS HOTLINE

A newsletter for commercial vegetable growers prepared by the
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No. 365
July 22, 1999



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FOOD SAFETY - (Liz Maynard) - Earlier this year a Hotline article discussed what producers could do to minimize risk of illness or injury from fresh produce. This article is a reminder of things to do around harvest time to reduce that risk. The emphasis is on reducing microbial contamination of the produce, and so reducing the chance that someone eating the produce will become sick.

Worker hygiene is important throughout the season. Everyone who handles produce or works in vegetable fields should know how to wash their hands properly. This means washing with soap for 20 seconds, rinsing, and then drying with a single use towel. Hands should be washed at the start of the work day, after using the toilet, and after eating or smoking. Toilet and handwashing facilities should be within 1/4 mile or a 5-minute walk of the work location. Employees who are sick should not handle produce. Sick employees should stay home, or do a job which does not require them to handle the vegetables.

Before harvest, the harvest bins, harvest equipment, storage areas, coolers, and sales areas should be cleaned. Harvest bins and equipment should be sanitized. Storage and sales areas and coolers should be made inaccessible to animals, including rodents and birds.

During harvest and packing, proper handling of vegetables and management of water quality become important. Minimize breaking the skin and bruising of vegetables during harvest and packing. Injured produce is more likely to harbor microbes. Dump water should be about the same temperature as the produce, or slightly warmer. The dump water should be treated with a sanitizer, and checked or retreated regularly to make sure that the sanitizer is still active. Organic matter in the dump

water reduces the effectiveness of the sanitizers; adding new water regularly will prevent organic matter build up. Each day the dump tanks and sorting tanks should be cleaned and sanitized. If produce is given a final wash, the water used for that wash should meet standards for drinking water.

Packed produce should be placed in clean storage rooms, coolers, or sales areas. These areas should be kept clean by daily sweeping. When produce is shipped, the transport vehicle should be clean.

The information in this article is adapted from A3701: Producer's Guide to Reducing Microbial Contamination of Fresh Produce, by Teryl Roper, University of Wisconsin Cooperative Extension.

PHYTOPHTHORA FRUIT ROT ON PUMPKIN - (Dan Egel) - This disease 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 Aliete, 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.

POWDERY MILDEW ON PUMPKIN - (Dan Egel & Rick Latin) - Powdery mildew on pumpkin can be a serious problem in some years. Harris-Moran has a few numbered varieties out this year with powdery mildew resistance, most other varieties are susceptible to powdery mildew. The strategy behind powdery mildew control on midwestern pumpkins is based on protecting vines from infection through mid-September. Fungicides are much more effective when applied before powdery mildew is observed. The fungicide of choice for powdery mildew is Bayleton 50 DF. Benlate or Topsin can be used in areas where Bayleton has not been effective. This year Quadris may be applied to pumpkins for the control of powdery mildew. For powdery mildew control, Quadris has to be rotated with a fungicide that has a different mode of action. That would include any of the above named chemicals. Be sure to read and follow the label carefully. Growers in Southern Indiana should apply Bayleton 50 DF at a rate of 4 oz/acre prior to August 1. Growers in the northern part of the state should make the application prior to August 15. Spray earlier if the canopy is already full. If the vines are just starting to run, apply the fungicide somewhat later. A second application about 3 weeks after the first should control the disease through mid-September. Please note that powdery mildew, unlike many diseases, does not need leaf wetness to infect.



WATERMELON ANTHRACNOSE - (*Rick Latin*) - We have arrived at that time of year when growers report watermelon anthracnose. Growers may lose money on a shipment of watermelons that are believed to have anthracnose. However, other problems resemble anthracnose. Therefore, it is in the grower's best interest to know the diagnostic signs of anthracnose infection.

Initial symptoms of anthracnose infection on watermelon foliage include irregular-shaped dark brown leafspots. The leafspots may have pointed margins and the center of the lesions may fall out. The lesions can usually fit within the circumference of a dime. Lesions on stems and petioles are generally oval, sunken, and tan to salmon colored. Sunken fruit lesions most often occur on the melon surface nearest the ground. Fruit lesions are ALWAYS observed along with distinct clusters of collapsed vines. The point is that growers should be aware of anthracnose infections long before the fruit are harvested and loaded onto trucks.

There are no varieties of watermelons that are completely resistant to anthracnose. However, I am investigating whether enough resistance exists in watermelons to recommend one variety over another. Anthracnose is usually not observed on muskmelons. My research indicates that muskmelon varieties are more susceptible to the cucumber race of the anthracnose fungus than the watermelon race.

To prevent epidemics of anthracnose from developing, it is necessary to use foliar fungicides. The MELCAST system can be used to determine when to spray. Growers who have been using Bravo for protection against gummy stem blight and alternaria leaf blight also are protected against anthracnose. Trials in Vincennes and Lafayette indicate the Mancozeb fungicides (Dithane DF, Penncozeb, Manzate 200) consistently out-performed Benlate and Topsin in terms of anthracnose control. Reduce the amount of overwintered inoculum by fall plowing and crop rotation.



CORN EARWORMS - (*Rick Foster*) - As I reported in early June, corn earworm moths arrived early in the Midwest from the southern US this year. Now, we are getting a number of reports of damage in early planted sweet corn. Once again, this points out the importance of using pheromone traps to monitor for corn earworm moth activity. The second generation moths will be flying soon. If you are growing sweet corn, it is important that you know when moths are flying in your area so that you can make good management decisions. The second generation is almost always larger than the first, so the

amount of first generation damage would lead us to believe we have the potential for lots of problems with the second generation. Remember, the key to managing corn earworms is to have a lethal dose of insecticide present on the silks so that when the eggs hatch, the young larvae will be killed before they enter the ear. Once they enter the ear, there is nothing you can do to kill them. The guidelines we recommend are to treat with an insecticide when fresh, green silks are present and you are catching more than 10 moths per night in your pheromone trap. The interval between sprays should be somewhere between 2 and 5 days. Spray more frequently when moth populations are higher (>50 per night) or when temperatures are hotter (>85 F for daily highs). Spraying more frequently than every two days should not be necessary since it takes 2 to 3 days for the eggs to hatch. Once the silks turn brown, they are not as attractive to the female moths and treatment can stop. Warrior has provided the best control of corn earworm larvae. When moth catches reach levels of 100 per night or more, you should consider adding some PennCap M for adult control.



POTATO LEAFHOPPERS - (*Rick Foster*) - Potato leafhoppers continue to be present in very large numbers. Snap beans and potatoes are the vegetables most likely to be attacked, although other vegetables may be fed upon when numbers are this high. Remember that you should get leafhoppers under control before you begin to see feeding injury. Once the leaf curling or hopperburn symptoms appear, you have already suffered significant yield loss. There are a number of insecticides labeled for use against potato leafhoppers. See the Midwest Vegetable Production Guide for details. If you are close to harvest, be sure to watch the pre-harvest intervals.



BEAN LEAF BEETLES - (*Rick Foster*) - Large populations of bean leaf beetles are present on snap beans, feeding on both the leaves and pods. Snap beans can sustain a considerable amount of defoliation, over 30%, before there is any appreciable affect on yields. However, pod feeding is another matter. In most markets, any pod that has been fed upon is not saleable. If you are seeing pod feeding, apply an appropriate insecticide as soon as possible.



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