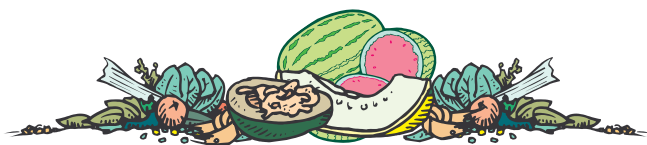


VEGETABLE CROPS HOTLINE

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

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IN THIS ISSUE

- VIRUS SYMPTOMS ON MELONS
- DRIP IRRIGATION MAINTENANCE
- MITE PROBLEMS
- BLOSSOM END ROT
- APPLYING FUNGICIDES EFFECTIVELY
- BACTERIAL WILT & PUMPKINS
- POWDERY MILDEW ON MUSKMELON
- FARM & ORGANIC TOUR

VIRUS SYMPTOMS ON MELONS - (Dan Egel)- I have observed a few muskmelon and watermelon vines with virus symptoms recently. Symptoms include puckered and distorted leaves. Virus and growth regulator herbicide symptoms are difficult to distinguish.

Aphids transmit most of the virus diseases that affect muskmelon and watermelon in this area. For this reason, many growers want to apply insecticides upon seeing virus symptoms. However, insecticides are not effective against virus transmission. Why? 1) It only takes a few aphids to transmit the virus. Insecticide treatments may kill the majority of aphids but leave enough to transmit the disease. 2) Aphids only take a few seconds to transmit the virus. An aphid may feed briefly, decide not to feed on that plant or even be killed and the virus may still be transmitted. 3) Unnecessary insecticides may kill beneficial insects. Once beneficial insects are missing from a field, pest insects will be unchecked making regular insecticide applications necessary. Finally, if fruit are set, virus symptoms will affect primarily the leaves and not the fruit or the yield. Growers should not worry too much about virus symptoms this time of year.

Although applying insecticides for aphids is not effective, it may be necessary to apply insecticides for aphid damage.

DRIP IRRIGATION MAINTENANCE - (Liz Maynard) - As more hot weather is forecast, and rainfall is slight, it pays to check that drip systems are working properly. Here are some tips from Univ. of California.

Check filters regularly and clean or backflush so they will work properly.

Flush out laterals monthly to get rid of accumulated sediment.

Observe emitters to see that water is flowing as it should be.

MITE PROBLEMS - (Jerry Brust and Dan Egel) - The hot dry weather we have had recently may have encouraged spider mites. These pests can turn leaves yellow especially in the middle of the leaf on either side of the vein. However, many fields of muskmelon and watermelon have older "hill leaves" that naturally turn yellow as they age. If you are worried about mites, shake the leaves on a piece of white paper and look for mites crawling around. Also look for webbing that the mites make. Do not spray for mites unless you know they are a problem.

BLOSSOM END ROT - (Liz Maynard) - Now is the time to take measures to avoid blossom end rot (BER) on developing tomatoes and peppers. Recall that these dark sunken, leathery areas at the blossom end of the fruit are caused by a physiological disorder, not by an infectious disease organism. As young fruit develop, calcium supply to the blossom end is inadequate, resulting in BER. The following practices should reduce incidence of BER:

-Maintain uniform, adequate soil moisture. Calcium moves into the plant with water and an even supply of water means an even supply of calcium.

-Avoid applying too much nitrogen, especially before early fruit develops. Nitrogen stimulates leafy growth, and leaves draw water and calcium to themselves at the expense of the developing fruit.

-If soil calcium levels are low, apply calcium. Calcium nitrate is a convenient source for use during the growing season and also supplies nitrogen.

-Spray applications of calcium to developing fruit are sometimes recommended, but it is not clear how effective they are. Calcium chloride (5 - 10 lb./100 gallons) or calcium nitrate (5 - 15 lb./100 gallons) can be used.

Other practices to minimize BER need to be done before the growing season starts:

-Maintain proper soil pH.

-Promote healthy root growth by providing good drainage and eliminating hard pans and compacted soil.

-Maintain a balanced plant nutrition program: especially do not over apply potassium or nitrogen.

Choose a less susceptible variety.

APPLYING FUNGICIDES EFFECTIVELY - (Dan Egel) - I am often asked whether or not to apply fungicides before or after a rain. The answer: If at all possible, apply fungicides before it rains. Rain is necessary for most plant diseases for leaf wetness and to splash spores from one leaf to the next. If the fungicide is applied before a rain, a greater percentage of the leaf surface is protected from spores that may land and cause disease. After it rains, the spores may have splashed to places on the leaf which do not have fungicide. If it looks like the fungicide may have a chance to dry, go ahead and make the application.

What is the best time of day to apply fungicides? If fungicides are to be tank mixed with insecticides, the application should not be made while bees are still active. If fungicides are to be used alone, avoid spraying in the heat of the day.

What is the best way to apply fungicides? Vegetable growers may have heard that hollow spray tips and high spray pressures make the most effective spray methods. However, I haven't seen any differences between spray tips and moderate spray pressures. It is probably safe to say that the more gallons per acre used the better.

The most important factor in fungicide application is timing. Growers should keep to a regular schedule for protectant fungicides. Intervals will vary from 7 days to 2 weeks. Apply fungicides more often in times of rain and heavy dews. Timing is where the Melcast system can help melon growers in southern Indiana.



BACTERIAL WILT AND PUMPKINS – (Jerry Brust) - Over the last 4-5 years, pumpkin growers have noticed that it is more difficult to grow healthy pumpkins with ‘good handles’ than in the past. One of the reasons has been a problem that starts with a yellowing of the pumpkin leaves and a general decline in the growth of the plants. The yellowing leaves soon turn necrotic (brown) around the leaf edges and sometimes start to wilt. Vine-type pumpkins may look like bush-types. This has been noticed especially in the Midwest and Northeast part of the country. In the East, bacterial wilt (caused by *Erwinia tracheiphilia*) has been found in pumpkins with the above symptoms.

Do we have bacterial wilt of pumpkins? Perhaps, but there are two observations that argue against bacterial wilt as a problem with Indiana pumpkins. The first observation is that in trials where pumpkins are sprayed weekly with an insecticide, I have seen the ‘pumpkin decline’ in sprayed plants as well as in non-sprayed controls (but not as severely). If the decline were as a result of wilt, the insecticide treated plants should have had much more wilt than the unsprayed plants.

The bacterium, *E. tracheiphilia*, that causes bacterial wilt, is carried by the striped (mostly) and spotted (less common) cucumber beetles. The beetles need to feed on plants enough to open wounds and have their feces (the bacteria are in the feces) come into contact with these wounds. Research we have done at SW Purdue Ag Center shows that the wounds must come into contact with the feces, or vice-versa, within a relatively short time period (6 hrs or less) for any appreciable amount of infection to take place. A good infection scenario is when there are many beetles feeding and defecating on a plant and there is wet weather. The rain helps to move the bacteria from the feces into the wounds. Beetles usually cannot infect plants if they only feed (and don’t defecate) or when there is only 1 beetle per plant. This is the threshold in cantaloupe for striped cucumber beetle – 1 beetle/plant. However in pumpkins, which are not as easily infected with bacterial wilt, you need many more beetles to cause infection – 5 beetles/plant or if there is more than 40% defoliation of plants. Studies at Cornell by Mike Hoffman have shown that plants that have had 50% defoliation still yield as well as plants that were not defoliated. Does this mean sprayed pumpkins have no beetle feeding? No, it does not, and there is a possibility that beetles are feeding at very low levels on the plants.

The second observation is that when it rains (>0.75 inches) the plants recover and lose most of the decline symptoms. Rain or irrigation should not cause plants to

recover from a disease. However, it is possible that bacterial wilt is at a low level in the plant, slowing the uptake of water but not stopping it. If this were the case, then any stress on the plant would cause the problem to be worse. A heavy watering could help the plants recover, at least partially. For this to be likely, it would take a different type of *E. tracheiphilia* (bacterial wilt) than the one we see in cantaloupes or cucumbers. Some of my research hints that this may be the case. I will talk about this in Issue 364.



POWDERY MILDEW ON MUSKMELON - (Rick Latin and Dan Egel)-Growers who have planted muskmelon varieties that are susceptible to powdery mildew should be thinking about applying a systemic fungicide.

We recommend that growers with early melons apply systemic fungicides 10-14 days before harvest. Another spray is advisable in 14 to 21 days for fields with the potential for a 4 to 6 week harvest period. Powdery mildew is not a serious disease of watermelon.

Growers who found Bayleton useful against powdery mildew for the last few years should go ahead and use it again this year. However, for growers who have not had success with Bayleton, Benlate may be the best choice. Apply Bayleton 50 DF at 4 oz./acre and reapply at about 3 weeks. Apply Benlate at 8 oz./acre and reapply at about 2 weeks. Please note that no fungicide will control powdery mildew once the disease is wide spread.



LEARNING PEST CONTROL THE ORGANIC WAY - Farm and Organic Trial Tour with IPM Specialists, Cliff Sadof and Jerry Brust, June 30, 1999.

We will have a tour of the Purdue Southwest Agriculture Center and of the Simpson Nursery in Knox County near Vincennes, Indiana. To those interested please register at the Floyd County Extension, 812-948-5470 or email Kevin_Thompson@floyd.ces.purdue.edu or Roy_Ballard@floyd.ces.purdue.edu. There will be no fees so bring your own drinks and snacks. The tour will begin at SWAC at 10:30 (fast time) (9:30 Knox Co. time) and end at Simpson’s approx. 2:30. Opportunity for Advanced Master Gardener Hours but everyone is invited.



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