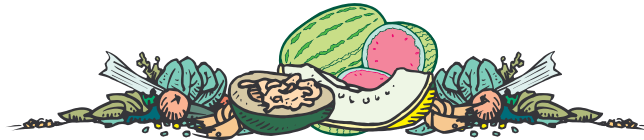


VEGETABLE CROPS HOTLINE

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

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SEEDCORN MAGGOT ADULTS AND CUCUMBER BEETLES IN THE EARLY-SEASON - (Frankie Lam) – *The following article was written as a Vegetable Crops Hotline – BULLETIN, May 4, 2004.* One of my muskmelon studies was transplanted in the field on April 29 at Southwest Purdue Agricultural Center near Vincennes. The field was sampled for insects on April 30 and May 3. Almost all of the melon plants that I sampled had a few seedcorn maggot adults (Figure 1) on or around the



Figure 1. Seedcorn maggot adult and striped cucumber beetles. (Photo by Frankie Lam)

plants. However, the cucumber beetles were not very active during recent cool weather with only 10 cucumber beetles found on April 30 and 21 found on May 3 in the 300 plants sampled in the field.

In the past 10 days we have had relatively wet and cool weather at Vincennes. From April 24 to May 3, the accumulated precipitation was 1.42 inches and both air

and soil daily mean temperatures at 4-inch below soil surface were less than 70°F. This means that a high infestation of seedcorn maggots might occur in the melon fields. If the melons have been transplanted, not much can be done to avoid the infestation of maggots. The curative tactic for the management of seedcorn maggots on muskmelons is to replace the transplants. Scout your field in the following weeks and estimate the size of maggots in the plants. On an average, if the maggots are less than 1/4 inch long, replant the muskmelons after 10 days. If the maggots are fully-grown and equal to or greater than 1/4 inch long, the muskmelons can be replanted after 5 days.

To avoid high infestation of seedcorn maggot, transplant the melons during warm weather. A few consecutive days with soil temperature reaching 70°F at 4-inch depth will reduce the chance for an outbreak of seedcorn maggots. However, if melons have to be transplanted in the coming few days and the soil of the field is heavy, consider applying Furadan (2.4 fluid ounces per 1,000 linear feet of row) at planting. In the past two seasons the results of my insecticide trials indicated that applying Furadan at planting significantly lowers seedcorn maggot infestation compared to other treatments.



SCOUTING AND MANAGING STRIPED CUCUMBER BEETLES - (Frankie Lam) - Striped cucumber beetle populations began to buildup in southern Indiana during last week. Beetles were randomly scouted in a muskmelon field and an average of 0.83 beetles per plant were found on May 5. However, in the same field an average of 1.84 beetles per plant were observed on May 10. These results indicated that over-wintering cucumber beetles have emerged and scouting your field for striped cucumber beetles should begin.

The adult beetle has three black stripes along the length of the body and a black abdomen (Figure 1). The over-wintered beetles feed on the cotyledons, leaves, and stems of seedlings or transplants (Figure 2). The pest is a vector of the bacterium that causes bacterial wilt of muskmelons and cucumbers. Muskmelons and cucumber are susceptible to bacterial wilt, but

watermelons, squash, and pumpkins are not. The bacterium which causes the disease is transmitted to the plants during feeding by the beetles. The bacteria multiply in the water conducting vessels of the plant



Figure 1. Striped cucumber beetles feeding and mating on the leaf of muskmelon. (Photo by Frankie Lam)

and stop the flow of water, resulting in sudden and permanent wilt of a vine (Figure 3) or the entire plant. The symptoms appear 2-6 weeks after the plant is infected. Once a plant is infected with the bacteria, nothing can be done to save the plant. The management tactic for the disease is to avoid the beetle feeding on the plants especially during the early-season. For muskmelons and cucumbers, the economic threshold is 1 beetle / plant, whereas for watermelons, squash, and pumpkin, the economic threshold is 5 beetles / plant.

The beetles tend to congregate on plants along the borders during the early season. Sample the field borders 2-3 times a week. Once beetles are found on several scattered plants along the field edges, the entire field should be scouted in a "Z" pattern. For each 20-acre field, at least 10 plants in 10 locations should be



Figure 2. Feeding damages of cotyledons, leaves, and leaf stalks by striped cucumber beetles. (Photo by Frankie Lam)



Figure 3. Sudden wilt of a vine in muskmelon caused by bacterial wilt. (Photo by Frankie Lam)

checked. If the population numbers reach the economic threshold, the whole field should be treated. The influx of beetles into the field should last for 2-4 weeks. After the period of beetle influx, sample the field weekly and treat the field only when the beetle population exceeds the threshold. The foliar insecticides recommended for control of cucumber beetles are Adios, Pounce, Ambush, Capture, Asana, Sevin, and Thiodan. Follow label directions carefully before using any pesticides.



RAIN AND HERBICIDES - (Liz Maynard) - Rainfall and irrigation move surface-applied herbicides into the soil, and move soil-incorporated herbicides deeper into the soil. For soil-applied herbicides to be most effective they need to be at the soil depth where most germinating weeds will take them up. The right amount of rain or irrigation can put them in that zone. Too much water can move herbicides out of that zone, and possibly into the root zone of the crop where in some cases injury can occur. In sandy soils and soils with low organic matter, herbicides will move into the soil more easily than in clay soils and those with high organic matter.

Since May 1 much of Indiana has received over an inch of rain, often within 1 or 2 days. This could be enough to move herbicides deeper in the soil than desired. It would not be a surprise to see reduced weed control. In cases where there is a narrow margin of crop safety, some crop stunting or discoloration might be observed. It is not too early to begin to think about what additional weed management could be used in fields where herbicide effectiveness is reduced. Extra cultivation and handweeding, additional banded pre-emergence herbicides, postemergence herbicides labeled for use over the top of the crop, or post-emergence herbicides labeled for use as directed or shielded sprays are all options, depending on the crop. There is not much that can be done to cure the crop if injury is observed. It is advisable, however, to make

sure to minimize any additional stress on the crop until it has recovered. For example, avoid additional herbicide application to the crop, inadequate mineral nutrition, and water stress.



WILTING PLANTS - (Dan Egel) - Imagine your favorite vegetable plant. The leaves and stem are able to maintain the form and structure that we find so familiar due to a constant supply of water. Water is supplied from the soil, is transported up the stem, and finally evaporates through tiny pores in the leaves. This process must be maintained if the plant is to be productive.

Wilted plants have had an interruption in the process. This article briefly describes some of the problems that might lead to a wilted plant.

- First let's rule out drought. If plants are wilting, look for moisture in the soil. Does the pattern of wilting plants in the field follow the drier portions of the field? Are adjacent weeds wilting? Young plants may not have developed sufficient root systems to avoid wilting in dry weather. In sandy soils the lateral movement of water is restricted and may not reach young transplants.



Figure 1. This healthy watermelon root system has plenty of light colored roots of different sizes. (Photo by Dan Egel)

- Plants may wilt as a result of too much water. Waterlogged roots may cease to function, thus causing the plant to lose the ability to take up water. Often the symptoms associated with roots that have been waterlogged do not show up until after the water has receded.
- Roots must be healthy if plants are to function. Carefully dig up wilted plants. Healthy roots should look white or light tan (Figure 1). The roots should feel firm to the touch. Along with large structural roots, smaller "feeder" roots should be present. Dark, discolored rotten roots may be a symptom of fungal infection. It is not uncommon to find rotten roots in soils that have been too cool and too wet. Examples of root rots caused by fungi include *Pythium*, *Phytophthora* and *Rhizoctonia* root rots.

- The roots may be fine, but if the stem is not healthy, water cannot get to the rest of the plant. Cut open the stem of the plant near the base. Depending on the plant, the inside of the stem should be a creamy white or green. Brown or dark discoloration indicates a



Figure 2. Watermelon plants affected by *Fusarium* wilt have a dark discoloration in the stem. (Photo by Dan Egel)

problem. *Fusarium* and *Verticillium* are examples of fungi that cause vascular wilt. That is, these fungi plug the plant's plumbing in the stem (Figure 2). This is why the stem looks discolored. Bacterial wilt of muskmelon is a vascular wilt but does not have obvious discoloration in the stem. Instead, growers should look for the presence of the cucumber beetle and stringiness in the stem (Figure 3).

In addition to the above listed reasons, any problem that injures or restricts the roots of a plant may result in wilting. Such problems might include improper fertilizer application, injury to the roots sustained in transplanting, or a herbicide problem. In any case, wilted plants indicate a problem that should be corrected soon or at least avoided in the future.

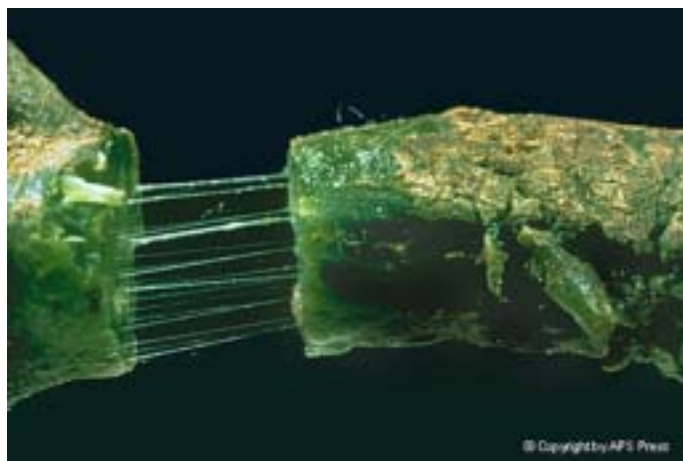


Figure 3. A muskmelon plant affected by bacterial wilt will often exhibit this stringy appearance if the stem is cut, pressed together and then slowly drawn apart. (Photo APS press)

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Purdue Vegetable and Specialty Crops Web Page

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Purdue Vegetable Insect Web Page

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