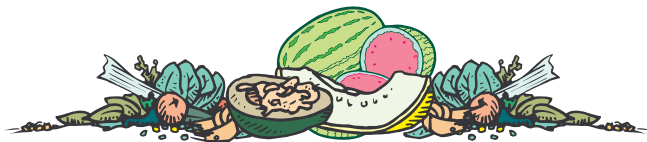


VEGETABLE CROPS HOTLINE

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

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EARLY BEETLES – (Jerry Brust) – With the mild weather has come some early striped cucumber beetles. While there are always a few beetles in late April, this year seems to have allowed a slightly larger early population of beetles to become active. Growers should watch their newly planted fields for this activity. Carbofuran (Furadan) under the plastic should control this early season flush of beetles for the most part. The transplants have to become actively growing before they will begin to take up the insecticide. Transplants that are newly in the field will not have had enough time to take up the Furadan and may need a foliar spray if beetles are very active in your area. Expect a very large flush of beetles after a couple of days of rain and a rapid warm up. This usually occurs sometime the first week of May, but may be a few days earlier this year.

Watch for aphids in your greenhouse. I have heard of several greenhouses with aphid infestations. These infestations can be taken care of as soon as the plants are outside with an application of endosulfan (Thiodan). You do not want to transplant the infested plants and let the aphids go, as the aphids will multiply rapidly on the small plants and can deform them permanently.

POWDERY MILDEW ON TOMATOES - (Dan Egel) - This disease has been reported in at least one hydroponic operation. Powdery mildew causes white, powdery spots on leaves of affected plants. Close inspection will reveal a white mold, that can be seen growing on the surface of the leaf. The spores are wind borne and do not need leaf wetness to infect. Although fruit are not directly affected, this disease can reduce yields.

There are few management options for this disease. Good management practices such as pruning and greenhouse sanitation, while important for many diseases, will have little affect on tomato powdery mildew. At this point no plant resistance exists for this disease. The few fungicides labeled for greenhouse use on tomatoes are not very effective against powdery mildew.

Vegetable growers who think they have this disease should confirm the diagnosis. For more information on alternative management practices, contact Dan Egel (812) 886-0198.

TRANSPLANT DISEASE UPDATE - (Dan Egel) - In my visits to transplant greenhouses lately, I have observed damping-off (VCH issue 358) and angular leaf spot.

Angular leafspot affects cucumber, muskmelon and watermelon. As a disease of vegetable transplants in Indiana, it is most often found on watermelon. Seed leaves as well as later leaves (true leaves) appear dark and water soaked. The lesions may appear very black. Although seedlings may be destroyed in the greenhouse, this disease is usually not serious in the field. When warmer weather shows up in late May or June, this disease will disappear. Vegetable growers should confirm the diagnosis of angular leaf spot since other more serious diseases may have similar symptoms.

Growers who are concerned about the damage that angular leaf spot may cause in the greenhouse, should discard affected trays as well as neighboring trays. Growers who are concerned enough to apply some type of pesticide may apply dithane or mancozate (in the greenhouse) and/or a copper compound (after removing the trays from the greenhouse).

The source of angular leafspot is not clear. Remember that a disease such as angular leaf spot will occur in one or a few clusters in the greenhouse. Spots that occur on most of the seedlings in the greenhouse are probably not due to angular leaf spot.

VEGETABLE SEEDLING DISORDERS- (Dan Egel & Rick Latin) - In the article above I listed the transplant diseases I have seen so far. Below are some more symptoms to watch out for.

Infectious diseases caused by fungi or bacteria may be introduced on seed or survive on transplant trays (VCH 356). Infectious diseases often start on one or a few seedlings so that they usually occur in clumps

of plants with similar symptoms.

Non-infectious disorders are sometimes known as "too much" diseases. They may be caused by too much or too little water, sunlight, fertilizer, heat, etc. Such seedlings may occur along walkways, only at one end of a greenhouse or on nearly every plant in the greenhouse. Non-infectious disorders, although important, will not spread from plant to plant.

The following is a discussion of some of the important seedling diseases and disorders we see each year:

- **Damping-off**-Seedlings may collapse at the soil line. Often, the stem has a brown color at or just below the soil line. Damping off may be caused by soil fungi such as *Pythium* or *Rhizoctonia*. Water soaked or shrunken stem lesions (tan or brown) may be an infectious problem even though the stems do not collapse. (See VCH 358)
- **Wilting/yellowing**-Root diseases can result in wilted and yellowed seedlings. The roots may be brown. These problems may be caused by the soil fungi mentioned above.
- **Leaf spots**-There are many problems that can result in what we call leaf spots. More than 90% are non-infectious. If the spots are located only on the edge of the leaf or between the veins, it is likely that the spots are non-infectious. Seedlings with infectious leaf spots will occur in a clustered pattern within the greenhouse.
- **Leaf yellowing**-In most cases, yellowed leaves are not symptomatic of infectious problems. If the yellowing occurs only on the leaf margins and/or between the veins, the disorder is non-infectious.
- **Stunting**-Sometimes growers complain that their seedlings just are not growing. Often, this can be blamed on poor growing conditions. For example, seedlings that are grown too cold and/or too wet may end up stunted.

Managing transplant disorders relies on prevention since few fungicides are labeled for use in the greenhouse (see VCH 358). Do not dump a bag of "clean" soil mix onto a dirty surface where it will likely become contaminated. Use new transplant trays or clean and disinfect the old ones.



DUAL MAGNUM HERBICIDE- (*Dan Egel*) - Indiana has been granted a Section 18 emergency use permit for Dual Magnum herbicide on tomatoes. The exemption authorizes use of this product in Indiana for Eastern black nightshade control through July 1, 1999. Be sure to read the label carefully. For more information, contact a Purdue specialist.



INSECT PHEROMONE TRAPS - (*Rick Foster*) - One method insects use to communicate with individuals of the same species is with pheromones. Usually the females will emit a tiny amount of a chemical that attracts the male to her and increases the likelihood of mating. The male detects the pheromone in the air with receptors on his antennae. He then flies upwind to find the source of the pheromone, a prospective mate. Synthetic pheromones can be used in conjunction with traps to catch male insects. Some vegetable pests for which pheromones are available include corn earworm, European corn borer, cabbage looper, diamondback moth, and black cutworms.

There are a number of different types of pheromone traps. Many are made of paper and use a sticky material to catch the insects. Some use funnels and canisters to capture them. Either of these types of traps can be used for a number of different insect species, although only one pheromone can be used in a single trap. Two pests that require a special type of trap are the corn earworm and the European corn borer. The trap for this insect is a large (3 ft. diameter) screen cone. This trap is available made of wire or nylon. The wire version catches more moths, is more durable, but is bulky and awkward to transport. The nylon version will last a couple of years, catch about half as many moths, but is less expensive and more portable. The nylon version is available from most pheromone suppliers. The only source I know of for the full size, wire version of this trap is: **Bob Poppe's Service; R. R. #1, Box 33; Lexington, IL**

Listed below are several suppliers of pheromones and traps.

Biocontrol Limited; 719 Second Street; Suite 12; Davis, CA 95616; 916-757-2307
Consep Membranes, Inc.; P. O. Box 6059; Bend OR 97708; 503-388-3688
Great Lakes IPM; 10220 Church Rd., NE; Vestaburg, MI 48891; 517-268-5693
Gemplers; P. O. Box 270, 211 Blue Mounds Road, Mt. Horeb, WI 53572; 800-382-8473
Insects Limited Inc.; 10505 N. College Avenue; Indianapolis IN 46280-1438; 317-846-3399
Pest Management Supply Co.; P. O. Box 938; Amherst, MA 01004; 413-253-3747
Scentry Inc.; P. O. Box 426, Dept. MPI; Buckeye, AZ 85326-0090; 602-233-1772
Trece Incorporated; P. O. Box 6278. 1143 Madison Lane; Salinas, CA 93912; 408-758-0204

To get the most from your pheromone traps, they must be used properly:

- Place the traps and the pheromones out before you would normally expect the insect pest to be active. That way you can monitor the adult activity, which will warn you that damage from the larvae may be coming soon.
- Be careful how you store pheromones. Ideally, they should be frozen until ready for use. At the very least, they should be refrigerated. If you keep them on the dashboard of your truck, they won't work well when you place them in the trap.
- When handling pheromone lures, do not touch them with your hands. Use a pair of forceps or wear latex gloves. This is especially important when you are using pheromones for more than one pest. Contamination of a lure with another pheromone will likely reduce the effectiveness.
- Lures usually should be changed every 3-4 weeks, although this will vary for individual lures.
- Check traps regularly, at least weekly. Daily would be better.



HERBICIDE DRIFT - (*Liz Maynard*) - Every year we hear about herbicides moving off-target and injuring nearby crops or ornamental plants. Communication and common sense go a long way to reducing these problems.

- Get information: Identify areas neighboring your fields and greenhouse that are likely to receive a herbicide application. Contact the person farming those areas and find out what the plans for herbicide application are — what products will be applied and when. Determine the potential for drift or volatilization damage from those products.
- Communicate your concern: Talk with and/or write a letter to the person in charge of farming the neighboring fields and the people involved in applying herbicides. Tell them where your crop or greenhouse is (or will be). Let them know which herbicides are most likely to damage your crops. They may not know the value of your crop, or the potential for financial loss due to delayed yield, decreased yield, poor quality, or loss of certification in the case of organic crops.
- Discuss ways to avoid problems: Ask what ideas they have for avoiding drift. Contact the Cooperative Extension Service for recommendations on reducing drift. Find out if the date of an application can be adjusted so that it is made before your crop is in the field. Ask them to notify you before applying the herbicide. Let them know what you could do to help avoid the problem (e.g., closing greenhouse vents during spray application, moving transplants that are being hardened out of potential drift area).
- Be observant and aware: Be aware of what is going on in neighboring fields. When field conditions permit herbicide application — in particular after a period when applications weren't possible — be especially alert. Be prepared to talk to the applicator, and if necessary and possible, move plants or close greenhouse vents when you see a potentially harmful application.



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.



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