



Greenhouse TPM/IPM Weekly Report
University of Maryland Cooperative Extension
Central Maryland Research and Education Center

From: Stanton Gill, Regional Specialist and Karen Rane, Plant Pathologist
Ginny Rosenkranz, Chuck Schuster and Brian Clark, Extension Educators
Suzanne Klick and Shannon Wadkins, Technicians, Maryland Cooperative Extension
John Speaker, Independent IPM Scout

June 27, 2008

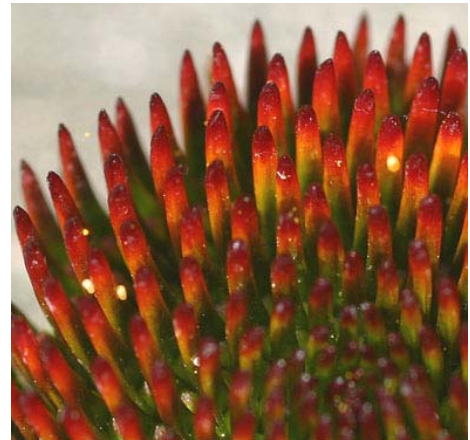
Sunflower Moth, *Homoeosoma electellum*

We are beginning to see the eggs and early instar larvae of the sunflower moth this week. This moth, in the family Pyralidae, is one of the most damaging pests of coneflower, sunflower and zinnia. We first saw it in Maryland in 2005 damaging Echinacea crops at a perennial nursery.

The night-flying adult moths are gray to tan in color and present in late June through early July. Females lay their eggs at the base of the florets on flowers in the early stages of bloom. The newly-hatched larvae are reddish-brown with light yellow stripes running the length of the body.

Early instar larvae feed on pollen and florets. Tangled mats of silk webbing and frass on the face of flowers are signs of larval feeding. Later instar larvae bore into the flower head and consume receptacle tissue and seeds.

Control: Bt on early instar larvae. Conserve. If the *Echinacea* are in a greenhouse then Pylon would also be a good choice.



Eggs Laid on Flower Head



Early Instar Webbing and Frass



Later Instar Larva Tunneling

Cut Flower Pests

This week we are seeing grasshopper damage on zinnias, *Cosmopepla* bugs on snapdragons, and rose slug sawfly damage on roses in the cut flower plots here at the Central Maryland Research and Education Center. Japanese beetles are just beginning to show up on the zinnias. These plants are part of our 2008 Trap Plant Trial for the Association of Specialty Cut Flower Growers.



Japanese Beetle on Zinnia



Grasshopper on Zinnia



Cosmopepla bimaculata



Rose Slug Sawfly

Daylily Rust

James Key, UMD Plant Diagnostic Lab

Daylily rust is caused by the fungus *Puccinia hemerocallidis*. Originating in Asia, daylily rust was first discovered in the southeastern United States in August 2000 and has since been observed in about 30 states. The fungus infects only daylily in the US, and overwinters in leaf litter where winters are mild. Spores are carried by wind, dirty equipment and through the transport of infected plant materials. Symptoms may appear within 2 weeks after infection, and include yellow spotting, disfigurement of foliage, and raised, yellow-orange pustules that contain powdery spores. Daylily rust usually does not kill plants but can reduce their health and aesthetic value and predispose them to other



problems. Some control can be achieved by the removal of infected plants or plant parts, dead leaves and leaf litter. Try to avoid highly susceptible varieties such as 'Pardon Me,' 'Stella de Oro,' or 'Leebea Orange Crush'. Some more resistant varieties include 'Frankly Scarlet' and 'Butterscotch Ruffles'. Effective control may be obtained with protectant sprays of azoxystrobin (Heritage), propiconazole (Banner Maxx) and chlorothalonil (Daconil Ultrex), following label directions. Rotate fungicides to reduce the chance of resistance development.

For more information on this disease, check the following websites:

USDA/ARS Link:

<http://www.ars.usda.gov/Research/docs.htm?docid=14045>

All-American Daylily Selection Council:

http://www.daylilyresearch.org/PR_DaylilyRust.html

Cornell's Daylily Rust Fact Sheet:

<http://plantclinic.cornell.edu/factsheets/daylily%20rust/daylilyrust.htm>

Heuchera

One local perennial grower is having problems with leaf necrosis on their Heuchera crop- the 'Citronelle', 'Pistache', 'Tiramisu', and 'Carmel' cultivars in particular. The damage looks like scorching on the foliage, but the house is covered with a 30% shade cloth. They grew the 'Citronelle' the same way last year with no problems.

Symptoms were continuing to develop on the new growth so tissue and media tests were run. The tissue test turned up very high levels of copper in the leaves. The copper was at 122 ppm, and the normal range is 7-30 ppm. We don't think that the high reading was from a copper-based fungicide spray residue. The last spray was applied two months prior to testing.



Necrosis on 'Citronelle' Heuchera

The grower spoke with Will Healy from Ball who feels that this is a simple pH problem. Heucheras like a more alkaline soil that is somewhere between 6.0 and 7.0. Copper is more soluble at a low pH, and the soil test did come out at 5.34. The potting soil used was composted bark with an 8-9 month slow release 18-6-12 fertilizer and lime. Will recommended that they add some additional pulverized lime and wait 3-4 weeks to see some results. We will follow up on this.

Scouting Reports

This week we are seeing leafrolling caterpillars in the family Tortricidae and brown soft scale on sweet bay. Leafminers are causing substantial damage to zinnia crops.



Leafminers on Zinnia



Tortricid Caterpillar on Sweet Bay

Tomato Spotted Wilt Virus

John Speaker is reporting tomato spotted wilt virus on double impatiens this week. This tospovirus is very closely related to impatiens necrotic spot virus.

Tomato spotted wilt virus is more commonly seen on vegetable crops, but can cross over onto ornamentals like chrysanthemums and dahlias. Impatiens necrotic spot virus is usually seen on ornamentals, but it can also cross over to vegetable crops. Tospoviruses are not seed-transmitted. They are spread on infected cuttings and by thrips.



Tomato Spotted Wilt Virus

Thrips Control

We have moved into the part of the summer when thrips populations really take off. We will see thrips continue to be a factor through September. Thrips are not a much of a problem on pansy plants started in summer, but they can become a major problem on mums.

How about some long term control options?

Have you wanted to try biological control? Chrysanthemums might be a good test crop to try it out on this summer. Adult thrips show up on chrysanthemums in large numbers just before the flower buds open. Early in the crop cycle (like now) the predatory mite, *Amblyseius cucumeris* can be released. The mites will establish themselves in the crop and feed on the 1st instar thrips larvae. While the plants are spaced close together, you can place small piles of the predatory mite and grain mix on the surface of the substrate. The mites will migrate up onto the foliage and reproduce throughout the season.

The next thing that I would suggest is releasing *Orius*. The minute pirate bug is very efficient in searching for thrips and will feed on adults and larval stages. They like to feed on pollen for energy for flight and reproduction. If you have a good pollen source among the crop, they will tend to hang around and feed on any thrips that are present. Try starting black pearl peppers which produce large amounts of flowers and pollen most of the summer. Place 4 or 5 pepper plants per 10,000 ft² of growing area. Once you have a good pollen source among the chrysanthemums, you can release *Orius*. The contents of a container of minute pirate bugs should be divided among the banker plants so that you have concentrated populations. The minute pirate bug adults are winged and will fan out across the crop on their own.

Another good method is to apply beneficial nematodes, *Steinmerma feltiae*, as a soil drench. The nematodes will feed on fungus gnat larvae and the pupae of western flower thrips.

Chemical control options

Don't worry if thrips populations start to build up late in the season and you lose your nerve. You can always switch to chemical control, but at least you can say that you gave biological control a chance. Keep in mind that you will need to rotate between different classes of chemistry to keep from developing resistance. Try using neem early in the chrysanthemum

The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by Maryland Cooperative Extension is implied. Read labels carefully before applying any pesticides. Photographs are by Suzanne Klick, Stanton Gill and Shannon Wadkins unless stated otherwise.

season when thrips are in the early instar stages. The neem acts as an insect growth regulator and works fairly well in controlling young thrips larvae. It should be applied as fine mist spray. Some of the brand names that neem is sold as include **Aza-Driect, Azatrol, and Neemix**.

During the summer when humidity is high, try rotating in an entomopathogenic fungus such as *Beauveria bassiana*, sold under the brand names **BotaniGard and Naturalis-O**. These should also be applied as fine mist sprays. The conidia germinate very nicely with the humid weather of summer and give a fair infection of thrips.

Spinosad, sold under the names **Conserve and Entrust Naturalyte**, are standards being used by most growers. Just don't use these as your only control measure for thrips. I would tend to hold off on these materials until your blooms are just ready to open when a lot of adult thrips activity is high in chrysanthemums. **Overture** from Valent Company recently received a label for use in thrips control. This is new chemistry that can be used in your control strategy rotation.

Plantable Pots Approved by OMRI

At the Southeast Greenhouse Conference in Greenville, South Carolina last week we found out that the Organic Materials Review Institute has approved biodegradable, containers called DOT pots for use under the National Organic Program. We contacted William Evans from Fertil for more information about DOT pots. Please see his comments below:

“DOT pots are plantable spruce-fiber containers that produce a very natural root structure. The open composition of the wall of the DOT pot allows roots to penetrate the wall as soon as they reach the edge of the pot. Natural air-pruning will force lateral development of the root structure, increasing the number of root tips (and uptake of nutrients and moisture).

A naturally air-pruned root structure can have advantages that may not be at first apparent. Growers frequently find that the air-pruning may lead to more compact growth in the canopy during the growth time on the bench. The plants' natural tendency to return to a balance of roots and shoots can lead to faster canopy growth when the plant material is placed into the landscape or potted up.

Transplanting is accomplished by placing the entire pot into the next larger container or landscape. No manipulation of the pot (ripping, scoring, etc...) is advised since disturbing roots may set plants back in development. DOT pots are completely biodegradable and do not require composting to break down. The pot will last approximately one growing season on the bench and break down in the soil within 1-2 years, depending on microbial activity.”

You can learn more about DOT Pots at www.dotpot.net or 800-226-3057.

