



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

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Asters

Rust is being reported on asters this week. Rusts are easy to diagnose because they all make bright orange or brown spores in a pustule or a cup. However, nearly a dozen species in three different rust genera are reported on asters. Microscopic examination is required to identify the rust to genus.



Management: Fungicide sprays can be applied to prevent infection. Spores are carried from aster weeds to infect plants in landscape and production. Many fungicides are good protectants including mancozeb (Cleary's Protect TO, Fore) and chlorothalonil (Daconil Ultrex, Spectro 90). Once symptoms (yellow spots with pustules) are present a systemic should be used. These include Strike, Heritage, Compass, and Contrast.

We are also finding chrysanthemum lace bugs on asters this week (ironically, they are rarely a pest on fall mums). Lace bugs cause damage by inserting their needlelike mouthparts (stylet) and extracting plant juices. These sucking insects cause stippling of foliage and leave fecal spots on the undersides of the leaves. The nymphs are found on the undersides of the leaves, where most of the feeding injury occurs. Adult lace bugs may be found walking around on the upper leaf surfaces.

Control: No biological controls are sold for the specific control of chrysanthemum lace bug. Lacewing larvae and other general predators should help control them. Chemical controls include Orthene (acephate), Merit-landscape and Marathon – Nursery (imidacloprid), Safari (dinotefuran), and TriStar (acetamiprid)



We will start to see lots of activity of bandedwinged whiteflies on asters from late September to mid-October. As the weeds and soybeans dry down in the fall, bandedwinged whiteflies migrate into greenhouses and will also show up on poinsettia and cabbage and kale crops. The settled nymphs look like greenhouse whitefly, but the pre-pupal stage has a distinct dark band running down the center. When we have extended drought and soybean crops dry up, the bandedwinged whitefly migrate onto ornamental crops earlier. John Speaker is reporting very little activity so far this season.

Controls include: Marathon, Safari, Celero, Flagship, Tristar, Judo, Astro, Talstar, Sanmite, Endeavor, and Azatin



Chrysanthemums

John speaker is reporting *Pythium* on mums this week. This soil-borne disease thrives under prolonged periods of wetness and high soluble salts. The plant in this photo was being grown in a low spot where puddles accumulate. Plants that have experienced stress due to heat or drought are more susceptible to infection. Symptoms of root rot include chlorosis, wilting, and stunting. Roots infected with *Pythium* appear tan and water-soaked.

Control: Cultural methods include removing infected plants, adjusting watering and fertilization practices, managing fungus gnats, and avoiding the reuse of pots and trays.

Chemical control options include Subdue MAXX, Alliette, Truban, Alude, Terrazole



Milkweed Bugs

Milkweed bugs were reported this week on *Asclepias incarnata*. The milkweed bug rarely reaches high enough levels to warrant spraying. If necessary, try acephate (Orthene) or a synthetic pyrethroid.



Black Vine Weevil

Perennial growers should check astilbe, bergenia, convallaria, epidmedium, ferns, lirioppe, heather, heuchera, phlox, tricyrtis, and sedum for black vine weevils this week. The adults will feed at night and notch the margins of the foliage from June through September. The adult females lay eggs into the substrate and the white, legless larvae can be found feeding on roots from August through the fall.

Control: Soil drenches of entomopathogenic nematodes such as *Heterorhabditis bacteriophora* or soil drenches of bifenthrin (Talstar) will control the larval stage of this pest.



Photo by John Davidson

Predict Your Heating Costs

The USDA Agricultural Research Service has developed a decision support tool for greenhouse growers called Virtual Grower. According to their website, “Users can build a greenhouse with a variety of materials for roofs and sidewalls, design the greenhouse style, schedule temperature set points throughout the year, and predict heating costs for over 230 sites within the US. Different heating and scheduling scenarios can be predicted with few inputs.” The program can be downloaded at: <http://www.ars.usda.gov/services/software/download.htm?softwareid=108>

Cuban Laurel Thrips, *Gynaikothrips ficorum*

Carol Allen sent us this photo of Cuban laurel thrips on ficus. The adults are large and dark black. Look for curled tip growth and sunken reddish spots on the foliage. Immature thrips cause a pocket gall to form and then develop in the protected environment of the distorted leaves. Heavily infested foliage will turn leathery and eventually drop.



Photo by Carol Allen

Scouting Reports

This is a first...we received a report of bagworms on heuchera being grown inside a greenhouse this week. Apparently, there is a Japanese maple outside that is covered with bagworms. Before the tree could be sprayed, they made their way into the greenhouse and are now damaging the heuchera. They are hand-picking the bagworms off of the plants.

Scouts are also reporting problems with aphids on gazanias, armyworms on zinnias, mites on peppermint, and mealybug on mandevilla. Pythium is showing up on zonal geraniums. We have received samples of caterpillars tunneling into the stems of Rudbeckia and *Echinacea tennesseensis*. Leafminers are being seen on lisianthus cut flower crops. Oedema is still being seen on ivy geraniums. Aphids and thrips are showing up on calibrachoa.



Armyworm on Zinnia



Mealybug on Mandevilla



Leafminer on Lisianthus



Caterpillar in Echinacea



Oedema on Ivy Geranium



Aphids on Calibrachoa

Vinca

The Plant Diagnostic Laboratory received a vinca sample with *Phytophthora* crown rot last week. Like *Pythium*, *Phytophthora* is a “water mold” favored by poorly draining potting mixes and overwatering. The pathogen produces swimming zoospores that can move from pot-to-pot through irrigation water that drains from infected plants. Look for discoloration on the lower stem. Discard symptomatic plants promptly to reduce the chances of pot-to-pot spread.

Controls include: Subdue Maxx, Aliette, Terrazole, Stature, Truban, Alude, Heritage, Banrot, Camelot, and Compass

A nice publication on this and other diseases of vinca from Auburn University can be found at:

<http://www.aces.edu/pubs/docs/A/ANR-1023/ANR-1023.pdf>



Root rot symptoms on vinca

White Smut

We are seeing white smut on Gaillardia this week. Growers should look for pale, circular leaf spots. This disease is caused by the fungus *Entyloma polysporum*. Other plants infected by this fungus include sunflower, senecio and golden-glow. Other species of the *Entyloma* fungus infect a wide variety of composites, including dahlia and calendula. The tissue in the leaf spots is packed with thick-walled spherical ustulospores of the fungus. As the spots mature, a white powdery material (spores called conidia) appears on the surface of each spot. This fungus requires very moist conditions to infect and spread. Our growing conditions are usually too warm and too dry for this disease to be a problem in the landscape. In the landscape you can just ignore this disease. It should not be able to cause serious disease or persist over the winter in the mid-Atlantic region, so it won't cause problems next spring.



Management: The only time a fungicide would be used on this disease would be inside the greenhouse when conditions are highly favorable (cool, moist). Any fungicide effective against basidiomycetes should work to prevent further infections. So, control in the greenhouse is a two step process: 1- Remove all symptomatic leaves, those leaves showing the distinctive pale circular spots. 2 – Treat the plant with a fungicide. Some fungicides that should work include: Contrast, Cygnus, Heritage, Compass, and Terraguard.

Powdery Mildew

We are seeing powdery mildew show up this week on zinnias, monarda, and honeysuckle. Powdery mildew can be easily seen as a white coating on the upper and lower leaf surfaces. The over-wintering stage of the fungus, small dark structures which resemble coarsely-ground pepper, are produced on the white patches. Infected foliage, shoots and flowers may be distorted, cupped or curled.

Management: There are several approaches to powdery mildew control. Mildew resistant varieties should be selected whenever possible. If highly susceptible varieties are to be grown, then some sprays may be needed to maintain an attractive appearance.

The “soft” chemicals include baking soda (MilStop) and oil at summer rates. Once mildew appears, a systemic is probably the best choice- Strike, Terraguard, Heritage, Compass



Gerber Daisies

Not a good week for gerbers...we are finding powdery mildew, leafminers, and whiteflies. The photo below shows an adult whitefly and empty pupal cases. The bead of honeydew closely resembles a spider mite egg.



Photo by Sarah Kenney



Leafminers on Gerbera