



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

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For registration information go to:
www.mnlaonline.org or call 410-823-8684

Pythium Root Rot in Poinsettia

Karen Rane, Plant Diagnostic Laboratory

We are getting many questions about the best way to control Pythium root rot in poinsettia crops. It takes an integrated approach to really do the job. In a nutshell, keeping the greenhouse clean of soil and debris, keeping plants on the dry side, and maintaining good fertility without raising soluble salt levels too high will minimize Pythium problems.

Good sanitation is essential for reducing Pythium problems. Pythium is a common soil inhabitant, and can be brought into the greenhouse through unsterilized soil, used pots, dirty tools, and benches. Surface water sources such as ponds or streams can also contain Pythium; irrigating with untreated pond water may introduce Pythium to the crop with each watering. Treatment of pond water may be necessary to reduce this source of disease.



Healthy, white roots on Poinsettia



Discolored, water-soaked root system

Biological fungicides, such as Rootshield (*Trichoderma*) applied early in the season, can provide a good level of root rot control when the amount of *Pythium* inoculum is low. If a greenhouse has a history of *Pythium* root rot, fungicide drenches will help protect plants from infection.

Some materials to rotate in applications for *Pythium* include FenStop (fenamidone), Banol (propamocarb), Banrot (etr Diazole + thiophanate-methyl), Truban or Terrazole (etr Diazole) and Subdue Maxx (mefenoxam). A significant number of *Pythium* isolates are resistant to Subdue Maxx (mefenoxam), so rotation of fungicides is important.

Drs. Roberto Lopes and Janna Beckerman of Purdue University have recently written an excellent article on poinsettia problems, including *Pythium* root rot. The article can be found at: <http://www.ppd.l.purdue.edu/ppdl/weekkypics/9-15-08.html>

Xanthomonas Leaf Spot

We've also received two poinsettia samples in the Plant Diagnostic Laboratory infected with *Xanthomonas*, the cause of poinsettia bacterial leaf spot. Like most bacterial diseases, *Xanthomonas* leaf spot is spread through splashing water – overhead irrigation, high humidity and close plant spacing contribute to the spread of this disease. The foliar symptoms of bacterial leaf spot can resemble poinsettia scab, so it's a good idea to seek a confirmed diagnosis from a diagnostic laboratory if you see leaf spot symptoms. Management of *Xanthomonas* can be accomplished by discarding symptomatic plants and adjusting irrigation and humidity levels to reduce leaf wetness.



Xanthomonas Leaf Spot on Poinsettia

Scouting Reports

This week scouts are finding large populations of mealybugs (males, females & crawlers) on Geranium 'Crocodile Tears' that have moved over from a persistent population on old Rosemary stock plants. Powdery mildew is showing up on Lemon Thyme, Lime Golden Thyme, Lime Green Thyme, and Oregano Thyme. Aphids are also being seen on *Argyranthemum* 'Butterfly'. Aphids and variegated fritillary larvae continue to be a problem on pansy crops this week.



Variegated Fritillary Larva on Pansy

Black Root Rot

Thielaviopsis is showing up on pansies this week. This fungal disease is common on pansies, and very destructive. The first sign of a root rot in pansy seedlings is usually an uneven stand, and some plants are stunted and just don't grow. They may eventually start to yellow and wilt due to poor nutrient and water uptake by infected roots.

Black root rot gets its name from the chlamydospores produced inside of the roots which cause the dark discoloration. However, pansy roots are transparent and don't show the typical symptoms very clearly. Healthy roots can often appear black when the substrate is wet.

Thielaviopsis is promoted by wet soil conditions and a pH of 6.2 or above. Maintain the pH between 5.6- 6.0 and allow the substrate to dry down before irrigating.



Stunting and yellowing from *Thielaviopsis*

Controls include: Terraguard, Thiophanate-methyl (Cleary's 3336, Banrot and others). However, even the best fungicides don't provide good control once symptoms are seen. If seedlings have black root rot, it is generally advised that they be discarded. The diseased plants/soil mix can serve as a source of contamination, and fungus gnats can spread the black root rot spores. It should also be noted that cleaning used pots or trays with bleach is not enough to protect against *Thielaviopsis*; you must either steam sterilize them or use fresh ones.

Scales on Tropicals

Last week at a local garden center we discovered four distinctly different types of scale on windmill palms. Samples were sent to John Davidson, co-author of *Armored Scale Insect Pests of Trees and Shrubs*, for identification. John confirmed the presence of black thread scale, false oleander scale, Florida red scale, and Boisduval scale.

Black thread scale, *Ischnaspis longirostris* (Signoret), is a serious pest of palms and greenhouse plants in Florida. Boisduval scale (*Diaspis boisduvalii* Signoret) is the most important insect pest of orchids in Florida. False oleander scale, *Pseudaulacaspis cockerelli* (Cooley), was introduced to Florida in 1942 and was soon the most serious economic pest of ornamentals there. Florida red scale, *Chrysomphalus aonidum* (Linnaeus), is commonly found on citrus and palms. **Note the stylet tracks clearly visible in the photo of the Florida red scale.**



Black Thread Scale



Boisduval Scale



Florida Red Scale



False Oleander Scale

Florida Fern Caterpillar

We found Florida fern caterpillars, *Callopietria floridensis* (Guenee), feeding on ferns at a local garden center last week. The bright green larvae were about 1½ inches long and blended in perfectly with the fern fronds. The only clue was the frass gathering on the floor directly under each hanging basket. Florida fern caterpillars feed through five instar stages over a 3-4 week period. They remain green until the third instar, after which they can develop into one of five different color forms. The larvae have four pairs of prolegs- a diagnostic feature of members of the Noctuidae family. The larva spins a cocoon, which is covered with soil or plant material, and pupates on the soil surface or on the greenhouse floor.

Controls: Adept, Dipel, Talstar, Astro, and Conserve



Florida Fern Caterpillar

Imported Cabbageworm

Pieris rapae (Linnaeus) larvae were feeding heavily on 'Osaka White' ornamental cabbages last week. The larva is velvety green with a light yellow stripe running down its back. Interestingly, only one or two were seen on the 'Osaka Pink' variety and none were found on the 'Osaka Red'.

Control: *Bacillus thuringiensis* (Bt) on early instar larvae or Conserve.



Imported Cabbageworm Larva

Chrysanthemum White Rust Update: The following Official Pest Report was posted on the North American Plant Protection Organization's Phytosanitary Alert System on September 4, 2008...

On August 20, APHIS confirmed the detection of CWR, *Puccinia horiana* P. Henn., in suspect samples collected from mums planted outdoors at a home in Norwalk, Connecticut. The samples were submitted to APHIS for confirmation by the Connecticut Agricultural Experiment Station. It was reported that the resident of the affected premises bought eight plants last year and planted them in the ground last fall. The affected plants were destroyed on August 21, 2008, and a delimiting survey was conducted approximately 400 meters around the affected garden site. No other chrysanthemums were found in the area.

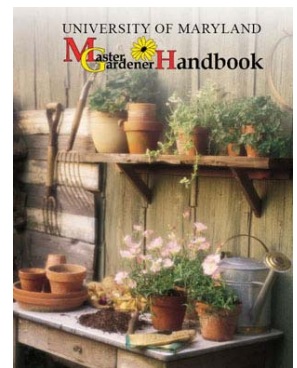


On August 7, APHIS confirmed the detection of CWR in suspect chrysanthemum specimens from a nursery in Grand Blanc, Michigan. The Michigan Department of Agriculture (MDA) submitted the samples to APHIS for confirmation. This is the first CWR detection to occur in a nursery setting this year.

The affected Michigan nursery received approximately 600 cuttings from a nursery in Pennsylvania on August 12, 2008, and noted that a number of these plants were dying. The dying samples were sent to MDA to identify the cause. As a result of this detection, APHIS issued an Emergency Action Notice and the nursery agreed to destroy all plants at the site via deep burial, under the supervision of APHIS and MDA inspectors. All equipment associated with the potting of, movement, and burying of the infected plant material was disinfected with a bleach solution. The affected nursery did not sell any plants. The area where the infected chrysanthemum plants were grown and stored will not be used until next year.

APHIS is also working with the Pennsylvania Department of Agriculture to inspect mums from the nursery that sent cuttings to the affected Michigan nursery. This Pennsylvania nursery consists of 7 acres of field-grown mums. No symptomatic plants were found. CWR is of plant quarantine importance in the United States. This fungal disease primarily attacks cultivars of mums grown for flower production and could have significant impact if it becomes established and is transported into greenhouses or nurseries.

New Master Gardener Handbooks Are Now Available: The new handbook is 640 pages and includes 400 color photos. All material has been completely revised and updated. There are 28 chapters, including 9 new chapters (e.g. ecology, weeds, invasive species, alternatives to turf, landscape design, water quality and conservation). The cost is \$69 and includes shipping and handling. Mail your order form and check made payable to the University of Maryland to Robin Hessey at the Home and Garden Information Center at 12005 Homewood Road Ellicott City, MD 21042. Order forms can be found on the HGIC website at: <http://mastergardener.umd.edu/Handbook.cfm>. For more information contact Robin Hessey at 410-531-1754.



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