

# Greenhouse Pest Posse

Colorado  
State  
University  
Knowledge to Go Places

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“What’s current on the pest, disease and production scene”

## ROOT AND CROWN ROT

Fungi that affect roots and plants at the stem base are called root and crown rotters. These fungi are very common in the greenhouse and no more so than at this time of the year in poinsettias and perennials. These organisms reside in soil or potting media. The most common fungi involved in these diseases are *Rhizoctonia*, *Pythium*, *Phytophthora*, and *Thielaviopsis*. Whether a fungus is causing the root system to rot, the stem to rot, or both, symptoms begin as yellowing or browning of lower leaves and/or leaf drop. As the disease progresses, the symptoms eventually become that of a wilt.

***Rhizoctonia* root and stem rot.** Stems are attacked at the soil line and develop dark brown cankers or lesions that eventually become soft and mushy. Roots are usually affected, as well. When examined the roots will be discolored, root mass will be decreased, and often the outer covering of the root will be soft and mushy. The disease is favored by high available moisture and high temperatures. Anything that will weaken the plant will also favor the disease. Sanitation is key in managing this problem. Many fungicides are labeled for control including: Banrot, Chipco 26 GT (26019), Terraclor, 3336, Plant Shield, SoilGard, and Mycostop.

***Pythium* and *Phytophthora* root and stem rots** usually begin in the root tips. Root tips will turn brown, the cortex of the root will slough off. Eventually the disease progresses up the roots to the stem. The diseases are favored by excess moisture and poorly drained media. A

wide variety of potted plants are susceptible to these two water mold fungi. (*Phytophthora* can also cause a leaf blight on tropical plants under very high relative humidity.) Rogue (pull and destroy) infected plants to help manage the problem.



Wilting symptoms of root and crown rot

Fungicides such as Terrazole, Truban, Banrot, Chipco Aliette, Plant Shield, SoilGard, Subdue Maxx, Banol, or Mycostop are labeled for control.

***Thielaviopsis* black root rot** is not as common as it once was because of the increase in use of soil-less mixes. Pansies, petunias and poinsettias are most susceptible. When affected by this disease roots will be very dark to charcoal black. Stem bases may crack open. The disease is favored by wet conditions and cool temperatures. Lowering pH and raising temperatures help inhibit the growth of the fungus. Fungicides labeled for control include Banrot, 3336, Domain, and Terraguard.

Good sanitation practices are essential in helping manage or minimize these disease problems.

The following should be used in prevention as well as in conjunction with fungicide applications when root diseases appear:

1. Keep hose ends off the floor.
2. Disinfect hands, knives and other equipment before handling plants.
3. Steam or fumigate all growing media or use a clean, ready-to-use, soil-less mix.

## *WPS– How to Comply*

EPA Region 8 has been visiting numerous greenhouse operations in Colorado, checking for Worker Protection Standard Compliance. WPS requires that agricultural establishments:

- train or verify training of handlers and workers
- restrict entry to treated areas
- provide notification of applications
- post specific information regarding applications at a central location
- post safety information at a central location
- provide decontamination supplies
- provide access to emergency medical assistance
- employer/commercial applicator information exchange.

WPS is a very complex regulation. You can find more information at CSU's CEPEP website:

<http://www.colostate.edu/Depts/SoilCrop/extension/CEPEP/wpsResources.htm>

Some helpful comments from Carole Howard of Lotito's, who was recently inspected:

“Purchase an EPA-accepted Bilingual WPS Training Video and make sure that the Medical Emergency Poster is up in a common area with the local (continued on page 4)

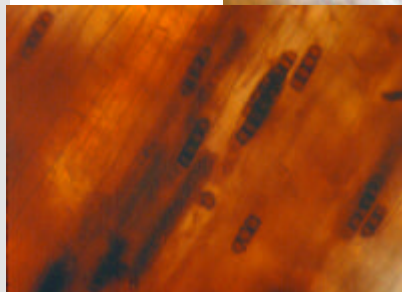
## CROWN ROT (CONTINUED FROM PAGE 1)

4. Keep plants high enough off the floor so that splashing water will not come in contact with pots. (All of the above fungi can move in water and debris).
5. Never use cuttings that have fallen on the floor.
6. Rogue diseased leaves and plants and remove them from the greenhouse.
7. Eliminate weeds and debris inside and outside the greenhouse and remove them.
8. Avoid over watering.
9. Spacing of pots should encourage maximum air movement.



*Pythium* oospore

Mycelium of *Rhizoctonia* in root tissue



Spores of *Thielaviopsis* in root

## THE GREAT PLAINS DIAGNOSTIC NETWORK

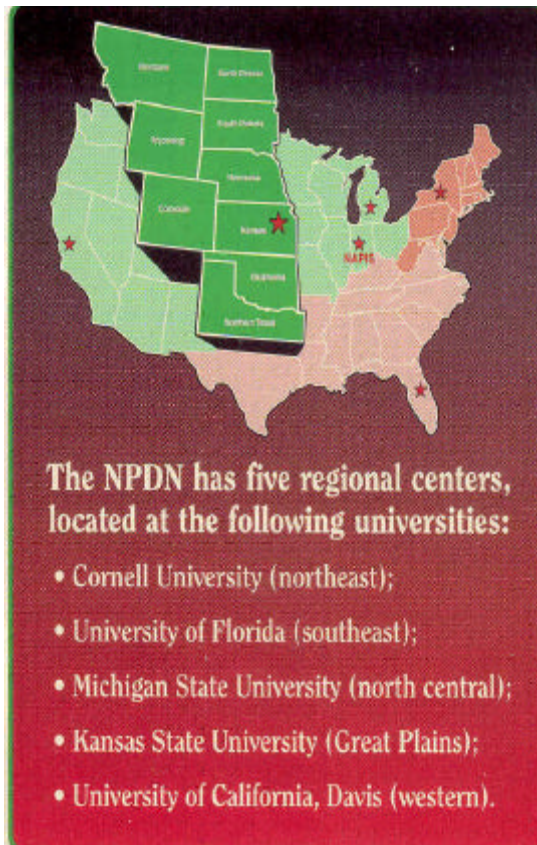
Colorado State University's Plant Diagnostic facilities are now part of a National Plant Diagnostic Network (NPDN). CSU has four pest and disease diagnostic clinics/labs located in various areas around the State; these include the Jefferson County Plant Diagnostic Clinic (specializing in Landscape Horticulture and Turf problems), the Adams County Regional Greenhouse Program Diagnostic Lab (specializing in Greenhouse crop production problems) and two other labs located in Grand Junction (TriRiver Extension) and on the CSU Campus, both specializing in Landscape, Turf Agriculture, as well as 'all other' plant problems.

The National Plant Diagnostic Network is divided into 5 regions. Colorado is part of the Great Plains Diagnostic Network (GPDN), administered by Kansas State University. The purpose of the national network is to provide a cohesive distribution system to quickly detect pests and pathogens that have been deliberately or accidentally introduced into agricultural and natural ecosystems, identify them, and report them to appropriate responders and decision makers.

GPDN is developing a web-based plant pest diagnostic and reporting system, which will help University and Cooperative Extension personnel submit plant samples, digital images, and detailed crop information for pest diagnosis. Advantages of this system include:

- v Rapid evaluation and reporting of potential bioterrorist threats.
- v Shorter response time for diagnosis.
- v Established links among diagnostic labs in the GPDN and other labs in the NPDN; Established links to regulatory agencies (i.e. USDA's Animal and Plant Health Inspection Service and Colorado Department of Agriculture).
- v Better quality and uniformity of information associated with samples.
- v Better record keeping and reporting of pest outbreaks.

How does this benefit Colorado's Greenhouse Industry? As we experienced with the accidental introduction of *Ralstonia solanacearum* race 3 biovar 2 last winter, this pathogen could directly cause losses in geraniums, as well as possibly infect potatoes and tomatoes. We live in a society that is global in its' economy; protecting agriculture in the Great Plains is vital to the food security and prosperity of the United States. What better way to mitigate potential problems by capitalizing on the expertise of plant scientists experienced in integrated pest management and who have well-equipped plant pest and disease diagnostic labs.



## QUESTIONS OR COMMENTS?

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Colorado State University, U.S. Department of Agriculture and Adams County cooperating. Cooperative Extension programs are available to all without discrimination. If trade names are mentioned, it is for educational purposes, endorsement over those products not mentioned is not intended. Read and follow manufacturers directions.

## Phytotoxicity

Poinsettias and other plants are susceptible to damage by many labeled pesticides. Why and when would a labeled pesticide cause injury? Many pesticides may burn leaf tissue when the compound is allowed to remain on the leaf for a prolonged period of time. Conditions that may allow this include high relative humidity and/or prolonged cloud cover. Under these conditions, some chemicals stay in the liquid phase a bit longer than normal, allowing cuticle transport, and hence tissue burning. Check the labels of all chemicals prior to use. If a chemical is likely to cause plant injury under certain circumstances, the precautions will be listed on the label.



Damage to poinsettia from a copper compound applied when weather was cloudy



Phytotoxicity on poinsettia due to chemical application under unusually high humidity

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## Greenhouse Pest Posse

*A newsletter designed to keep greenhouse growers informed of current pest, disease and production information. Produced by Laura Pottorff, Regional Greenhouse Specialist, Colorado State University*

Want to see the photos in color? Access this publication on the web at: [www.colostate.edu/depts/coopext/adams/gh](http://www.colostate.edu/depts/coopext/adams/gh)

### **From WPS page 2**

**nearest** hospital, address & telephone number prominently displayed". Sources for the training video includes SAF and Gemplers. Carole says it better than any one: "It is a good review time to make sure that greenhouses are in compliance."

County Extension Office in Brighton. This years workshop will focus on the relationships between plant nutrition and the incidence of pests and diseases. If you have ever been curious as to how pests, diseases and even biological control organisms are discouraged (or enhanced) by how much you fertilize a crop- this day long workshop is for you. Attendance will count toward continuing education credit for the Certified Greenhouse Professional Program. Contact Teresa at (303) 637-8100.

## **DON'T MISS- GREENHOUSE PEST MANAGEMENT SCHOOL**

The 2003 Greenhouse Pest Management School will be held November 6 at the Adams

Subscription- FREE!

**SEND TO:**  
Colorado State University  
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