

Diseases of Poinsettias

Stephen T. Nameth, Ohio State University, Dept of Plant Pathology



Successful poinsettia disease control/management, or lack of it, can mean the difference between a great crop and joyous holiday season, and a terrible crop and "Bah, humbug."

Poinsettias are susceptible to a wide variety of diseases that attack the plant at various stages of production.

The purpose of this article is to discuss, in somewhat limited detail, the most economically important diseases associated with poinsettia production, and to offer disease control/management strategies for these particular diseases.

FIRST THINGS FIRST

With plant diseases, as with human diseases, prevention is nine-tenths of the cure. Purchasing high-quality, certified, disease-free cuttings is critical for ensuring that your crop will start out disease-free. If you try to cut corners at this early stage of production, you will be setting yourself up for a long season filled with an over-abundance of chemical drenches and sprays, not to mention a less-than-perfect crop. Also, adhering as closely as possible to the cultural practices outlined by the supplier will help ensure the plant is less stressed and in turn, less likely to be subjected to disease attack. A plant that has the correct amounts of light, nutrients, and water has a greater ability to ward off pathogen attack.

ROOT AND STEM DISEASES

Pythium root rot. Root rot of poinsettia caused by the fungus *Pythium* sp. is one of the most common and destructive diseases associated with commercial poinsettia production. The disease is most prominent during the mid to late stages of the production cycle, but it can be a problem early if conditions are favorable. The disease is initiated by allowing the roots to sit in water for an extended period of time. This typically occurs when plants are overwatered or when the media used is not well drained. The fungus produces a spore that swims in the water. This motile spore is attracted to the plant root; if left unchecked, the spore will contact the root, germinate, and the fungus will enter. Again, the fungus must have "free water" for an extended amount of time before infection will take place. No "free water," no spore and no infection. It's that simple.

Diagnostically, infected roots appear brown in color and lack a firm texture. In advanced cases, the roots become highly decayed and the inter fibrous cortex of the root will be the only part of the root remaining. Above the media,

the plant will appear stunted and yellow; in later stages, wilting will occur. After root infection takes place, *Pythium* may continue to move up the roots to the crown of the plant and up into the stem. The infected stem turns black and will be soft to the touch.

Management strategies for *Pythium* root rot include: not overwatering plants, using well-drained media, and using labeled fungicides regularly to decrease the chance the fungus will get a foothold. If you wait until you see evidence of this disease before you apply fungicides, it may be too late. *Pythium* can advance rapidly under ideal conditions, and this is one of a very few cases where I would recommend the use of preventative fungicides prior to the onset of disease.

Labeled compounds include: Subdue (metalaxyl), Cleary's 3336, Domain, Systec (thiophanate-methyl), Banol (propamocarb), Banrot (thiophanate-methyl + etridiazole), Terrazole, and Truban (etridiazole). Note: Subdue as we know it will not be available as a stand alone product after December 31, 1997. However, there will be Subdue MAXX, and the W.A. Cleary Chemical Corp. is marketing Subdue (metalaxyl) in combination with its 3336 product under the Drench Pack name.

Rhizoctonia root, crown, and stem rot. Root, stem, and crown rot caused by the fungus *Rhizoctonia solani* is more of a problem in the early stages of poinsettia production than in the later stages. In most cases, *Rhizoctonia* shows up as a lesion or sunken area at the base of the stem. Under ideal conditions, the fungus can move rapidly up the stem and result in complete girdling of the stem and sudden wilt of the plant. If left unchecked, it can move down into the roots and cause root rot, but usually the stem symptoms are the first to be seen. By the time the fungus reaches the roots, significant damage has already occurred on the stem. It is easy to distinguish this fungal-induced root rot from *Pythium* because *Pythium* root rot tends to start on the roots and *Rhizoctonia* tends to start at the base of the stem.

The same cultural controls applied for *Pythium* control - using well-drained media and avoiding overwatering - also apply to *Rhizoctonia*-induced disease management.

A variety of excellent chemicals are labeled for *Rhizoctonia* control. These include Banrot, Chipco 26019 (iprodione), Cleary's 3336, Domain, Systec, Benefit (thiophanate-methyl + iprodione), and Terraguard (triflumazole).

Black root rot. Black root rot caused by the fungus *Thielaviopsis brassicola* is not as common as *Pythium* and *Rhizoctonia*, but it can cause severe economic damage if disease management concerns are neglected. Black root rot usually appears early to midway in the crop production cycle and is more inclined to be a problem on a plant that is stressed in some way. Soluble salts concentration, media pH, and fertilizer levels are all factors that, if allowed to get out of balance, will contribute to plant stress and give black root rot a green light.

Black root rot can be distinguished from *Pythium* root rot by looking at the color and initial infection site of the infection. Roots with black root rot are black due to the accumulation of the black, barrel-shaped fungal resting spore in the root tissue. Early stages show the fungus infects the root at a variety of sites. This is opposed to *Pythium*, which has a tendency to infect the root at the growing tip and work its way back up the root.

Cultural-based disease management methods for black root rot include not reusing pots or flats that have been used the previous year and keeping dust production in the greenhouse to a minimum. The previously mentioned resting spore produced by the black root rot fungus can survive from year to year in dust and on plastic containers. These precautions, along with keeping plant stress to a minimum, go a long way toward keeping poinsettias black root rot-free.

A variety of chemicals are labeled for black root rot control, with one of the best being products that contain thiophanate-methyl as the active ingredient. Cleary's 3336, Domain, and Systec are the most common. Terraguard also has good activity against this disease.

LEAF AND BRACT BLIGHTS AND STEM CANKER

Poinsettia leaf and bract blight is one of the most common diseases associated with poinsettia production. This disease is caused by the fungus *Botrytis* sp. This fungus is probably the most widespread pathogen associated with greenhouse production of floral crops. It is everywhere in every greenhouse and, given the right environmental conditions, it can spread like wildfire through a crop. This disease thrives in conditions of high humidity (at or above 85 percent) and stagnate air. The disease usually starts at the margin of a leaf or bract (in a wound or burn scar) and then moves quickly through the leaf, down the petiole, and in some cases into the stem. In most cases, the gray, fluffy, growth of the fungus can be seen sporulating on the leaf, bract, or stem. The fungus produces enzymes that break down the plant cells and leaves the infected tissue mushy and water-soaked in appearance. The fungus can advance rapidly in green tissue, but it really takes hold in dead or declining plant parts such as spent bracts or leaves.

Cultural controls - such as keeping the relative humidity in the greenhouse below 85 percent, allowing for good air circulation and ventilation, keeping plant wounding to a minimum, and not allowing free water to sit on plant parts for extended periods of time help keep the threat of this disease to a minimum. Removing spent tissue from developing plants is a must for proper disease control. Chemicals, if applied in a timely manner are effective avenues for curtailing this disease. Many chemicals are labeled for *Botrytis* control, and they all show some degree of efficacy depending on the type of chemical and the formulation. Some of the best contain chlorothalonil as their active ingredient. These include the Daconil and Exotherm Termil line of products. When you treat poinsettias for *Botrytis*, be careful not to apply chemicals that will burn or discolor the bracts. Once the bracts are fully developed, the only product labeled for effective *Botrytis* control is copper-based Phyton-27. If used as directed by the manufacturer, this is one of the safest and most effective methods of *Botrytis* control on finished poinsettias.

LEAF SPOTS

Powdery Mildew. This is the newest in the onslaught of diseases that attack poinsettias. This disease is caused by the fungus *Oidium* sp., and it affects poinsettia at its most vulnerable time- during bract production. The disease is easy to diagnosis because it produces white fluffy lesions or spots on the affected bracts. Due to color contrast, it is most obvious in the reds and the pinks, but will infect the whites with just as much fervor. Recent work by Celio and Hatisbeck at Michigan State University indicates that the non-red varieties appear to be less susceptible to infection; however, at 31 days post-infection, none of the cultivars tested were considered saleable. Fungicides shown to be effective against powdery mildew include: Phyton-27, Chipco 26019, Domain, Strike 25, and Terraguard. Again, be careful if you apply any of these chemicals when the bracts are fully developed.

OTHER DISEASES

Approximately a dozen other diseases adversely affect the production of quality poinsettias, although most of these play somewhat of a minor role compared to the previously mentioned diseases. Most notable would be bacterial stem and cutting rot caused by the bacterium *Erwinia* sp. Controls include: not wounding plants and cuttings, avoiding production of "soft" plants with overfertilization, making sure that all surfaces the cuttings come in contact with are disinfected and bacteria-free, and applying bactericides such as copper-containing compounds in a timely manner.

With the exception of powdery mildew, all the diseases mentioned have plagued poinsettia production for many

decades. Knowing what to look for and when to look for it are major factors in timely disease control. Using cultural or nonchemical controls whenever possible will help control disease as well as reduce the amount of chemical fungicides and bactericides needed for effective disease suppression.

All in all, if you have had disease problems previously, try some of these methods of disease identification and control - you may just be surprised by the results. The ghost of seasons future may paint a brighter pointsettia this growing season. OFA

Flora Mart

Your Best Source For
Plugs - Seeds - Liners - Cuttings

Annual Plugs - Perennials - Grasses - Bulbs - Landscape Liners
Spring Plants - Foliage Cuttings - Seeds - Ferns - Flowering Tropicals



For a complete product list call:
1-800 - 749- 3148 FAX 407-433-3952
Lake Worth, Florida Carthage, North Carolina



For more than 27 years

The One-Stop Fern Shop

- 27 varieties of perennial garden ferns for all hardiness zones
- over 5 million plantlets in 40 varieties of perennial and tropical ferns from our tissue culture lab
- 72 cell trays + 4" pre-finished pots
"New" 70 mm (2 1/2")

Call or fax for our lists

Phone: 1-800-ADD-FERN or (972) 225-6111

or your favorite broker

Fax: (972) 225-5210

P.O. Box 41140, Dallas, TX 75241

Casa Florá