

# Poinsettias: Disease Prevention and Control

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**A** major factor in the production of a timely and healthy poinsettia crop is disease control. Effective disease control integrates a strict sanitation program, cultural manipulations and appropriate pesticide applications. Sanitation is the first line of defense against disease, both before each crop is started and during crop production. Clean greenhouse benches and floors, disinfested equipment, tools and supplies are very important. Use pasteurized potting media and store in such a way so as to prevent recontamination. Cultural manipulations such as adjusting soil pH, selecting appropriate potting media and modifying watering practices all contribute to maintaining plant vigor and reducing the threat of disease. Apply pesticides according to the specific recommendations found in the *New England Greenhouse Pest Control and Growth Regulator Recommendations for 1990-1991* (NE Recommendations) to reduce the impact of disease.

The primary disease problems on poinsettia can be divided into those that occur during propagation and those that occur during finishing or on mature plants.

## **Diseases that Occur During Propagation**

The primary disease problems during propagation are *Rhizoctonia* stem and *Phythium* root rots and bacterial soft rot. These diseases are usually spread by mechanical transfer of mycelia, sclerotia or resting spores of these pathogens in infested soil particles on flats, tools, baskets or the end of watering hoses or from infected plant tissue.

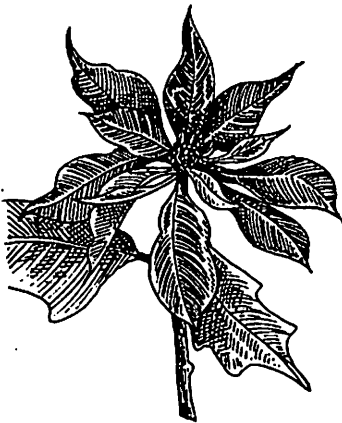
***Rhizoctonia* Stem Rot**, caused by *Rhizoctonia solani*, is characterized by tan to brown, fairly dry, well-defined stem cankers at the soil line or brown discolorations at the base of

the cutting. Roots are rarely affected in soilless media. Symptoms usually appear shortly after cutting or planting and are more prevalent on cuttings that have been handled improperly during shipment or transplanting. Lesions that quickly girdle the stem cause whole plant death. When disease progress is slower, foliage becomes chlorotic and lower leaves abscise. This disease is most severe at high soil temperatures and intermediate soil moisture.

**Control:** Sanitation is very important for disease control since this fungus has no significant airborne spore stage to complicate disease spread. Fungicides can limit losses from this root rot and can be applied according to NE recommendations.

***Pythium Root Rot***, caused by *Pythium* spp., is characterized by soft, brown-black, wet rot and decay of roots, sometimes extending up into the stem where it causes a brown or black basal canker. A diagnostic symptom of this root rot is the ability to slip the rotted outer covering of the root from the stele or central core. Infected plants appear wilted, stunted or show lower leaf yellowing and drop. This rot is usually associated with poorly aerated or waterlogged soils and is favored by cool temperatures.

**Control:** Excessive levels of ammonium or soluble salts promote disease development. Monitor their levels during production to reduce disease incidence. Use a well-drained potting medium and uniform watering practices to reduce disease. Fungicides are effective in limiting disease incidence and spread (applied according to NE recommendations).



**Bacterial Soft Rot**, caused by *Erwinia carotovora*, is characterized as a soft, watery rot that occurs before or shortly after potting. Infected plants often show a sudden wilt or watery collapse of the main stem and leaves.

**Control:** Pesticides are not effective for control of this bacterial disease, a strict sanitation

program throughout all stages of crop production is very important. Roguing and destroying infected plants, plus limiting overhead or excessive watering will reduce disease spread.

### **Diseases that Occur During Finishing or on Mature Plants**

The primary disease problems during finishing or on mature plants are *Botrytis* leaf, stem and bract infections, *Thielaviopsis* root rot, and bacterial stem and soft rots. The bacterial diseases and *Thielaviopsis* are spread by mechanical transfer. *Botrytis*, the nemesis of greenhouse floral crops, is spread by airborne spores, splashing water and mechanical transfer of fungal propagules.

***Botrytis* leaf, stem and bract infections**, caused by *Botrytis cinerea*, is also called Gray Mold. *Botrytis* causes considerable damage during all stages of production but is most critical during the flowering period, when it causes symptoms on bracts. Symptoms include brown lesions on leaf, stem and floral tissues which are characterized by the gray, fuzzy growth of the fungus on the affected tissues. Infection and initial disease development occurs on tender new growth or on wounded, weakened or dead tissues. Leaves and bracts are predisposed to infection if under stress from other agents such as chemical injury (pesticide, growth regulators, fertilizer, air pollutants), drought or mechanical bruising. Senescing floral parts are particularly prone to infection. This disease is favored by free moisture, high humidity and cool temperatures.

**Control:** Sanitation is very important for *Botrytis* control. Periodically remove plant debris and senescing tissue to reduce the spread of disease. Use heat and ventilation to reduce humidity in the greenhouse and use circulating fans to keep foliage dry. Since *Botrytis* is a prolific spore former, use watering methods that limit splashing to reduce the spread of disease. Fungicides are usually necessary if *Botrytis* becomes a problem, apply according to NE recommendations.

***Thielaviopsis* Root Rot**, caused by *Thielaviopsis basicola*, is characterized by a black root rot that occurs near the end of the growing season. Affected plants are usually stunted, often wilt on bright days and have badly rotted roots. A diagnostic symptom is the upward rolling of leaves before they yellow and abscise. Basal leaves are most frequently affected. While infection is often confined to the roots and underground por-

tions of the stem, black, longitudinal cracks can develop on basal portions of the stem. This symptom helps to distinguish this root rot from *Pythium* and *Rhizoctonia*. *Thielaviopsis* root rot is favored by cool temperatures, high soil moisture and high soil pH. Poinsettias growing in media that do not contain mineral soil are highly unlikely to develop *Thielaviopsis* root rot. The current trend towards widespread use of soilless media helps to explain why this disease has been on the decline in recent years.

**Control:** Adjusting soil pH to 4.5 to 5.0 discourages disease development. Fungicides are effective for control of this root rot and should be applied according to NE recommendations.

**Bacterial Stem Rot**, caused by *Erwinia chrysanthemi*, is characterized by chlorotic lesions on the stems and purplish black petioles. Stem lesions enlarge and form irregular chlorotic blotches. Petioles quickly turn black, collapse and wilt. Often within a few hours, the stems collapse and tissue appears watery and soft. This disease is most serious on succulent plants grown at 63° to 74°F.

**Control:** A strict sanitation program throughout the production of the crop is very important for control of this bacterial disease since pesticides are virtually ineffective. Roguing and destroying infected plants and limiting overhead or excess watering also reduce disease spread.

### **Unusual Disease Problem in 1990**

An unusual poinsettia problem was reported from Pennsylvania during the 1990 growing season. Several large commercial growers had what appeared to be powdery mildew. The sources of the stock were not identified but affected plants included several red varieties (e.g. "Red Velvet") and a yellow variety. Both leaves and bracts were affected and significant losses were reported. Work is in progress on trying to identify the specific pathogen.

### **Summary Checklist for Disease Control**

1. Clean house, equipment and supplies.
  - Disinfest benches, supports, all irrigation equipment and tools (use steam, household bleach, etc.)
  - Use new or sterilized pots, flats, pans, etc.
  - Remove all weeds and debris
  - Have a strict program to keep area surrounding house free of weeds and plant debris (remove cull piles)

2. Use pasteurized or sterilized potting media (by steam or chemical fumigation) and store so as to prevent recontamination before use.
3. Use clean, disease-free cuttings.
  - Handle properly during transport
  - Avoid unnecessary wounding
  - Use well-drained potting media
  - Water properly and keep watering equipment off the ground to prevent contamination
4. Drench rooted cuttings with fungicides that are effective against all three major root rot pathogens soon after transplanting. This has been found to significantly reduce recontamination.
5. Inspect foliage and roots periodically for symptoms of disease during crop production. If root rot is found, remove and destroy affected plants. Isolate suspect plants, verify type of root rot and apply appropriate fungicides. If foliar disease is found, apply appropriate fungicide. Refer to NE recommendations for current pesticide recommendations.

