



Extension FactSheet

Plant Pathology, 2021 Coffey Road, Columbus, OH 43210-1087

Botrytis Gray Mold in Greenhouse Floral Crops

Stephen Nameth
Department of Plant Pathology

Without a doubt the most common disease of greenhouse floral crops is gray mold. The disease can affect almost every type or variety of floral crop grown. This disease can either be a common nuisance or an economic disaster depending on the host and the conditions under which the crop is grown. It is also one of the easiest diseases to control using nonchemical means.

Symptoms

Symptoms of gray mold vary depending on the host and the environmental conditions associated with the host. Under most conditions and with most hosts the disease is characterized by the production of leaf spots, flower blight, bud rot, stem canker, stem and crown rot, cutting rot, damping off, and in extreme cases, plant death. When conditions of high relative humidity prevail, **at or above 85%**, the fungus can be seen growing and sporulating on the infected tissue. Fungal growth is characterized by the presence of fluffy, gray/brown mycelium that produces a cloud of spores if disturbed. Affected tissue is soft and brown, and sometimes has a water-soaked appearance.

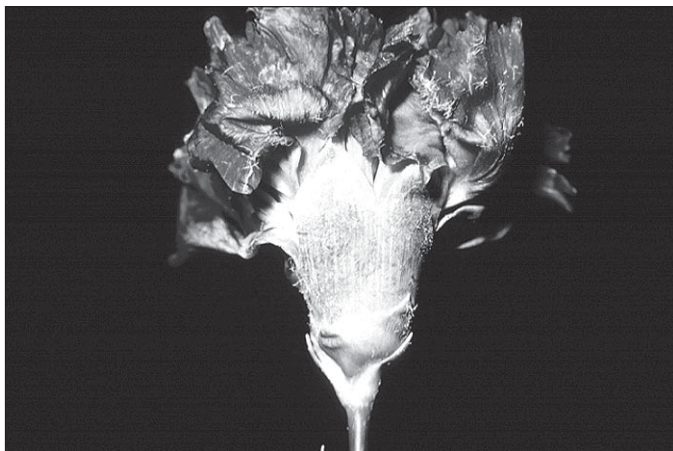


Figure 1. Botrytis flower blight on carnation. Note the tan, irregular areas on the petals.



Figure 2. Botrytis flower blight on Geranium.

Flower Blights and Bud Rots

Flower blight of greenhouse crops such as begonia, carnation, chrysanthemum, cyclamen, geranium, impatiens, marigold, and petunia often precedes and leads to stem rot. The fungus becomes established in the flower petals and under ideal conditions moves from the flower to the pedicel or peduncle, and eventually to the stem. Symptoms appear as tannish, irregular spots on the flower petals. Flowers can also become infected in the bud stage. The buds turn brown and appear to be water-soaked. Infected buds fail to open and may sometimes abort.

Leaf Spot and/or Blight

Leaf spot often appears when infected flower petals or other plant parts fall on the leaves. The pathogen can also invade damaged tissue on leaves that have marginal or tip burn. When this happens, the affected leaf may develop a triangular-shape lesion. Other leaf spots appear water-soaked, are brown in color and have irregular margins.



Figure 3. Botrytis stem blight on Vinca.

Damping-Off or Bed Rot

Damping-off of floral crops can commonly be associated with gray mold. Susceptible hosts include, cineraria, cyclamen, exacum, and snapdragon. Damping-off is prevalent when the relative humidity is high or when the growing medium is contaminated with the fungus. Infected seedlings wilt or collapse at or near the soil line.

Causal Agent and Disease Cycle

Gray mold is caused by the fungus *Botrytis cinerea*. It is a common fungus, with a very wide host range and can persist in the greenhouse year-round as mycelium, conidia, or as sclerotia on living or dead tissue. The fungus produces a large amount of spores that move throughout the greenhouse via air currents. Under optimum environmental conditions (**relative humidity at or above 85%, with little or no air circulation or with free water on the leaf surface**), the spores land on the plant surface, germinate, and penetrate the host plant. The optimum temperature for spore germination is 72 to 77 degrees F (22 to 25 degrees C). Germinating spores rarely penetrate actively growing tissue directly. However, penetration of actively growing tissue can take place through wounds. Cutting stubs are particularly susceptible to gray mold infection. Symptoms, like those described earlier, will appear on infected plants within a few days. If left unchecked the fungus will grow and sporulate and the newly produced spores will be the source of infection for other hosts in the greenhouse. The fungus can also be a post-harvest problem, becoming established at temperatures of 32 to 50 degrees F (0 to 10 degrees C).

Disease Management

Control the Environment

If there is one practice that will go a long way toward the management of gray mold, it is controlling the environment. Maintaining an environment within the greenhouse that will not permit the fungus to grow and sporulate is essential to control.

By keeping the relative humidity below 85%, as well as maintaining good air circulation and adequate plant spacing, excellent control can be achieved. Whenever possible, plants packed closely together should be spread apart to allow better air circulation and to reduce relative humidity within the plant canopy. Fans should be used to provide good air movement above the canopy. Plants with wounds should be either protected with a fungicide or removed from the greenhouse, as the wound is the perfect environment for the fungus to initiate the infection process.

Sanitation

Infected plant material should be removed from the greenhouse so that it is not a source of inoculum for the rest of the house. Infected plant material should not be allowed to sit in trash cans within the house as the fungus will continue to grow and sporulate on the dead and dying tissue. Subsequent opening and closing of the trash cans will produce enough air movement to release spores out into the greenhouse.



Figure 4. Botrytis stem blight on Vinca.



Figure 5. Botrytis blight on Poinsettia.

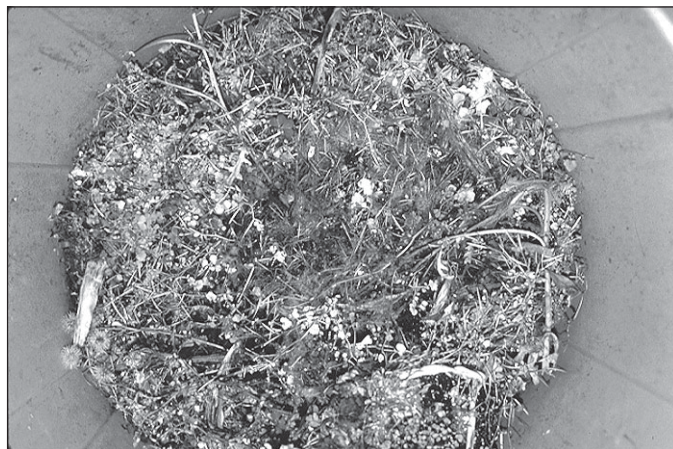


Figure 6. Botrytis sporulating on plant material in a trash can.

Fungicide Treatments

There are a variety of labeled fungicides that will offer good control of gray mold disease in the greenhouse. Products such as Cleary's 3336, Domain, (Thiophanate-methyl), Phyton-27, Kocide 101, (Copper-based compounds), Chipco 26019, (Iprodione), and Exotherm Termil, Daconil 2787,

(Chlorothalonil), are all products labeled for the control of this disease. You should contact Extension specialists in your state for the chemical treatment that may be right for your particular situation. (For additional information please refer to Ohio State University Extension Bulletin 538, Insect, Mite, and Disease Control on Commercial Greenhouse Floral and Foliage Crops.)

This publication contains pesticide recommendations that are subject to change at any time. These recommendations are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. Due to constantly changing labels and product registration, some of the recommendations given in this writing may no longer be legal by the time you read them. If any information in these recommendations disagrees with the label, the recommendation must be disregarded. No endorsement is intended for products mentioned, nor is criticism meant for products not mentioned. The author, The Ohio State University and Ohio State University Extension assume no liability resulting from the use of these recommendations.

Visit Ohio State University Extension's web site "Ohioline" at:
ohioline.osu.edu

All educational programs conducted by Ohio State University Extension are available to clientele on a nondiscriminatory basis without regard to race, color, creed, religion, sexual orientation, national origin, gender, age, disability or Vietnam-era veteran status.

Keith L. Smith, Associate Vice President for Ag. Adm. and Director, OSU Extension
 TDD No. 800-589-8292 (Ohio only) or 614-292-1868