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This publication includes lecture notes of papers presented at the 2000 New Jersey Turfgrass Expo. Publication of these lectures provides a readily available source of information covering a wide range of topics and includes technical and popular presentations of importance to the turfgrass industry.

This proceedings also includes research papers that contain original research findings and reviews of selected subjects in turfgrass science. These papers are presented primarily to facilitate the timely dissemination of original turfgrass research for use by the turfgrass industry.

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MAJOR DISEASES OF ANNUAL AND PERENNIAL LANDSCAPE PLANTS

Ann B. Gould[1]

Many diseases of annual and perennial plants in the landscape can be divided into one of three major categories: foliar diseases; stem blights and diebacks; and root, stem, and crown rots.

FOLIAR DISEASES

Leaf Spots

Leaf spots are the most common of the foliar diseases and occur on many species of ornamental plants. Leaf spots are caused by leaf inhabiting fungi that discolor and kill small, discrete regions of tissue on or between the leaf veins.

To manage leaf spots:

- Improve plant vigor.
- Avoid over-head watering.
- If feasible, remove infected leaves.

For chemical control[1]:

Only if absolutely needed: Apply azoxystrobin, Benefit, copper, chlorothalonil, elemental sulfur, iprodione, mancozeb, maneb, myclobutanil, Phyton 27, potassium bicarbonate, propiconazole, Spectro, thiophanate-methyl, trifloxystrobin, or Zyban according to label.

Powdery Mildews

These foliar diseases are caused by fungi that are 'obligate' pathogens. In other words, these parasites in nature can grow and multiply only on or in living organisms. Powdery mildew fungi grow along the upper leaf surface and infect the epidermal layer of cells. Spores produced by the fungus cause the leaves to look white and 'powdery.' Almost every ornamental plant species can be affected by powdery mildew.

To manage powdery mildew:

- Sanitation.
- Space plants to improve air circulation and reduce humidity.
- Avoid practices that promote succulent growth, including pruning and nitrogen fertilizing.

For chemical control[1]:

At the first sign of disease, apply: *Ampelomyces quisqualis*, azoxystrobin, dinocap, fenarimol, kresoxim-methyl, Phyton 27, piperalin, potassium bicarbonate, propiconazole, thiophanate-methyl, thiophanate-methyl + iprodione (Benefit), triadimefon, trifloxystrobin, triflumizole, or triforine. For some hosts, caution should be taken when treating plants during bloom.

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STEM BLIGHTS AND DIEBACK

Blights and dieback are often associated with rapid collapse of affected leaf and stem tissues. Symptoms of these diseases include wilting, browning, or blackening of the diseased plant part. Flower blights start as water-soaked spots that decay petals rapidly.

Botrytis Blight

Also known as 'gray mold,' *Botrytis* is a very common and widely distributed pathogen. The fungus readily colonizes dead organic matter and, under the right conditions, can also attack many different species of plants. Leaves, flowers, stems, buds, fruit, and roots and crowns can be affected by *Botrytis*.

Proper management of Botrytis blight includes monitoring techniques. Look for symptoms (including fluffy gray mold on infected plant parts) when weather conditions favor the pathogen (wet, overcast, and very humid weather). If sporulation is not evident, place affected tissue in a moist chamber for 1 to 2 days.

Other management tools for Botrytis blight:

- Since moisture is required for germination and penetration of fresh tissue, adequately space plants to ensure good air circulation. The disease develops best at cool temperatures.
- Remove infected plant parts (sanitation); senescent and dead plant tissues are readily colonized and may serve as a 'base' from which the fungus spreads to healthy tissue.
- Avoid mechanical injury.

For chemical control[1]:

For chemical control of Botrytis blight, products such as azoxystrobin, chlorothalonil, copper, fenhexamid, fludioxonil, iprodione, mancozeb, maneb, *Streptomyces griseoviridis*, thiophanate-methyl, thiophanate-methyl + iprodione (Benefit), trifloxystrobin, vinclozolin, Ziram, or Zyban may be used. Some of these products are for use in enclosed structures (greenhouses) only, and most must be applied by a professional applicator.

Pachysandra Shoot Blight and Canker

This common disease of pachysandra is caused by the fungus *Volutella*. Large leaf spots that have a 'bulls-eye' pattern appear on leaves in the spring. Cankers that form on petioles and stems produce characteristic pink-colored fruiting bodies within several weeks in wet weather.

Proper management:

- Improve plant vigor.
- Avoid mechanical injury and moisture stress.
- Remove excess leaf litter, discard severely infected plants, and thin plants occasionally to reduce humidity.

For chemical control[1]:

Chlorothalonil twice at 10-day intervals according to label recommendations.

ROOT AND CROWN ROT

Root and crown rots are caused by fungi that live in the soil and attack the roots of susceptible plants, resulting in root rot and death. Affected plants may become yellow and stunted and will eventually wilt and die. Root rot fungi include the non-water molds (such as *Fusarium*, *Rhizoctonia*, and *Thielaviopsis*) or water molds (including *Pythium* and *Phytophthora*).

Proper management:

- Inspect stock before planting.
- Plant in well-drained locations.
- Avoid over-watering.
- Maintain plant vigor.

For chemical control[1]:

Non-water Molds: azoxystrobin, Banrot, fludioxonil, flutolanil, *Gliocladium virens*, iprodione, PCNB, Phyton 27, Spectro, *Streptomyces*

griseoviridis, thiophanate-methyl, or triflumizole (enclosed structures only),

Water Molds: Banrot, etridiazole, fosetyl-Al, *Gliocladium virens*, mefenoxam, metalaxyl or propamocarb-HCl.

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[1]No endorsement or preference of pesticides is implied. Follow all label directions carefully when applying pesticides.