

Watch for Pythium & Phytophthora Problems:

Dr. Larry W. Barnes, Professor and Extension Specialist
Department of Plant Pathology
Texas A&M University
College Station, TX

Each year during the spring months, there are a significant number of plant disease problems submitted to the Texas Plant Disease Diagnostic Laboratory (TPDDL) resulting from infection by the water-mold pathogens, Pythium and Phytophthora. These specimens range from pot crops and color (bedding plants) to woody ornamentals. Water mold disease problems can be some of the most serious and economically important diseases as well as some of the most frustrating ones with which to deal.

Symptoms of Pythium and Phytophthora Damage:

The water mold pathogens usually infect the root, crown, and lower stem tissue of plants, causing deterioration of root, crown, and stem rots. Infected plants may be stunted and chlorotic and may wilt and die. Infected roots will usually be mushy and discolored and will not be able to function in absorption of water and nutrients, resulting in symptoms of stunting and plant death. Infected stems are easily observed as a dark green to black deterioration, as in the case of Pythium black leg of geranium. Phytophthora may cause a crown rot in plants, as well as root rot.

Unfortunately, certain species of Phytophthora can also cause serious aerial blights. Aerial Phytophthora blight has become a particularly serious problem over the past several years, and although it generally is more damaging to woody ornamentals, it also causes significant problems in bedding plants such as periwinkle and petunia.

Brown, sunken stem lesions and brown, desiccated terminal growth are characteristic of aerial Phytophthora blight. Rainy weather and overhead irrigation encourage plant infection as well as splash inoculum from plant to plant.

Conditions that Favor Water Mold Diseases:

As the name implies, the water mold pathogens Pythium and Phytophthora are favored by wet conditions. Both fungi produce "swimming spores" that can move in water. Rainy weather and overhead irrigation splash spores from plant to plant. Soil saturation from overwatering and/or soil compaction also encourages water mold diseases. Cultural stresses that weaken or damage plant roots allow sugars and amino acids to "leak" from plant roots, thereby attracting the swimming water mold spore.

Management strategies to minimize Pythium and Phytophthora diseases.

Consider these steps to reduce water mold problems:

To Reduce Root and Crown Rots.

1. Avoid excessive soil compaction when transplanting. Soil compaction reduces needed air space and can significantly reduce drainage.
2. Schedule irrigations as needed to avoid prolonged soil saturation. This is important in greenhouse and nursery crops, as well as in bedding plants and other landscape situations.

3. Avoid excessive drouth as well as excessive irrigation. Stress from either factor can weaken plant roots and predispose them to infection.
4. Keep soluble salts within acceptable levels; excessive soluble salts can damage roots resulting in root leakage and increased water mold diseases.
5. Practice strict sanitation. Grow on raised benches if possible. Remove infected plants from the growing area.
6. Use effective fungicides.

To Reduce Aerial Blights.

1. If feasible, reduce overhead irrigation.
2. Prune infected twig/branch/shoot tissue from infected plants as soon as symptoms develop.
3. Schedule fungicide spray applications following shearing and during flushes of new shoot growth. Phytophthora infection is enhanced by wounding from shearing and tender, young growth is more susceptible to infection.

Possible Water Mold Tolerance to Subdue

There has been recent concern about possible resistance or tolerance by Pythium and Phytophthora to the fungicide Subdue. To address this concern, Pythium and Phytophthora isolates from plant specimens submitted to the Texas Plant Disease Diagnostic Laboratory over the past 12 months were collected for metalaxyl (the active ingredient in Subdue) sensitivity tests. A total of 20 Phytophthora and 10 Pythium isolates were tested. Tests were performed by transferring a 6 mm plug of each test water mold isolate to the center of a petri dish containing fungal growth media to which had been added either 0, 0.1, 1.0, 10.0, or 100 ppm of metalaxyl. Pythium or Phytophthora isolates that grow on the media to which has been added 10.0 ppm or more metalaxyl are generally considered to be either tolerant or resistant to Subdue, depending on the amount of fungal growth that occurs. In our tests, any growth beyond the 6 mm fungal plug size at the 10.0 ppm or 100 ppm metalaxyl level suggests resistance or tolerance to the fungicide.
