

Common Diseases of Florist Crops

Root Rot Diseases

Rhizoctonia, *Phytophthora*, and *Pythium* not only cause damping-off of seedlings but together with *Thielaviopsis* are very important in causing root and basal stem rots of older plants. These pathogens are common inhabitants of soil and attack a wide range of plants. They are spread by the mechanical transfer of mycelia, sclerotia, or resting spores in infested soil particles (on flats, tools, pots, baskets, or in the end of the watering hose) or infected plant tissue.

Whereas sanitation measures are effective against all the root rot fungi, as well as water molds, fungicides are more specific in their control benefits. The most important control measures are (1) the use of a light, well-drained soil mix, (2) thorough pasteurization of the mix as well as disinfestation of the containers, tools, and benches that come in contact with the plants, (3) the use of clean plants, (4) the enforcement of a sound sanitation program, and (5) the use of supplementary soil treatments with chemicals to minimize recontamination.

Pythium Root Rot

Pythium causes a dark brown to black wet rot that makes roots soften and disintegrate. It typically attacks below the soil surface and may extend up into the base of the stem. For most effective management, because fungicide resistance has been observed, alternate two fungicides during production of crops such as poinsettia, geranium, and lily.

Bioenvironmental Control

Pythium is favored by cool, wet, poorly drained soils. Using a well-drained mix with sufficient air pore space and avoiding excessive levels of ammonium or soluble salts will minimize *Pythium* losses.

Chemical Control

Some *Pythium* strains are not sensitive to metalaxyl or mefenoxam (in Subdue and Subdue MAXX). Switch to other fungicides if Subdue appears to be ineffective.

Phytophthora Root and Stem Rot

Phytophthora may cause root rots, but often it attacks the stem base as well, girdling the vascular system and leading to wilting and death. In recent years *Phytophthora* diseases have been especially common on fuchsia, calibrachoa, verbena, and poinsettia.

Bioenvironmental Control

Phytophthora is favored by deep planting and by wet, poorly drained growing mixes. Avoid growing *Phytophthora*-sensitive plants in ebb-and-flood benching because the zoospores can easily spread the disease from pot to pot. Remove symptomatic plants promptly.

Chemical Control

The same fungicides that work against *Pythium* will work against *Phytophthora* because both are

oomycetes (commonly called "water molds"). Resistance to mefenoxam/metalaxyl (in Subdue and SubdueMAXX) has been observed in *Phytophthora* isolated from greenhouse flower crops in recent years, so always be careful to rotate among materials for the control of the disease. Do not rely exclusively on metalaxyl/mefenoxam for *Phytophthora* control.

Rhizoctonia Root Rot

Rhizoctonia causes a drier root or stem rot. Affected tissues are brown or tan. It is favored by an intermediate range of moisture, neither too wet nor too dry. Cankers formed by *Rhizoctonia* usually appear at the soil line; roots are also sometimes affected in peat-lite mixes.

Bioenvironmental Control

Rhizoctonia disease is often favored by warm temperatures, so losses will typically occur during spring bedding plant production and summer pot plant propagation.

Thielaviopsis Root Rot

Thielaviopsis causes a drier stem lesion than *Rhizoctonia*, one that soon turns black because a large number of black spores of the fungus are produced in the lesion. It may also cause a very black root rot. In recent years losses have been seen in pansy, vinca, and calibrachoa. High pH and poor drainage in the plug tray encourage *Thielaviopsis* root rot. Losses have also occurred in hanging baskets of fuchsia grown at high pH (6.5_7.0) and in poinsettia crops.

Bioenvironmental Control

The disease is not a problem in soil adjusted to pH 4.5 to 5.0.