



MORRIS WHOLESALE NURSERY

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ROOT ROTS

SOURCES OF ROOT ROT PATHOGENS:

1. Irrigation water from storage ponds which are fed by run-off water.
2. Contaminated soil or soil mixes.
3. Contaminated nursery stock.

**Water from municipal treatment plants or deep wells are usually free of plant pathogens.

STRESS FACTORS THAT INCREASE THE INCIDENCE OF ROOT DISEASES:

1. Irrigation practices (flooding/drought).
2. Poor planting practices.
3. Soil mixes (percent of air, space, drainage).
4. Winter injury.
5. Fertilizer levels.
6. Salts levels in the soil.
7. Change in soil pH.
8. Insect infestations.
9. Changes in light levels.
10. Air pollution.

Many native soils contain fungal pathogens that are capable of causing root rots on a wide range of ornamentals. Therefore, native soils, even if used as a low percentage of a potting mix can carry enough inoculum to initiate root rot problems, particularly if plants are stressed.

Peats, depending on the source, can contain pathogens such as *Fusarium* and *Pythium*.

STRATEGIES FOR CONTROL OF ROOT ROTS:

1. Sanitation.
2. Avoid overkill of soil micro-organisms. Elimination of micro-organisms by heat or chemical sterilization make it easy for introduced pathogens to get established.
3. Selective kill of pathogens is a better approach. This leaves some antagonistic activity against introduced pathogens.
4. Manipulate nutrition. Incidence of *Rhizoctonia* and *Fusarium* can be reduced by avoiding ammonium sources of nitrogen; soil calcium levels influence *Pythium* and *Phytophthora* inoculum levels.
5. Manipulate pH and moisture. *Pythium* and *Phytophthora* propagules are reduced by low pH and low soil moisture.
6. Treat contaminated irrigated water with chlorine, copper or use UV filtration.
7. Treat all containers that are to be re-used. Use either Clorox or hot water treatments.
8. Be familiar with the pathogen's life cycle. This will enable the selection of the chemical that would give the best control against that particular pathogen. Treat early before symptom expression. Timing of application is quite often critical for certain root rot pathogens.

CONSIDERATIONS FOR SUCCESSFUL CONTROL IN ORNAMENTAL PLANTS:

1. Identify the pathogen involved and become familiar with its host range and method (if any) for long term survival. Does it produce dormant resistant spores? Survive in debris?
2. Can re-infection occur? From contaminated soil mixes?
3. What stresses are present? Stresses that increase the incidence of root rots are: flood soil, high salt levels, cold injury, improper soil mixes, excessive fertilizing, and herbicide injury.
4. Follow a good preventative chemical and cultural control program.