GROWER 101

Disease Primer, Part II

Root Rots

The most dangerous threat to roots and stems, root rots can be stopped with proper care and treatment. Here is an outline of what to look for and how to terminate and prevent these diseases.

By Jim McLaughlin

Root rots — Pythium, Phytophthora and Rhizoctonia — are well-known enemies of flowering plants. Some root rots start with the fungal spore *Cylindrocarpon*, which thrives under wet, soggy or over-saturated conditions. Other fungi, including Phytophthora, *Pythium ultimum* and *Thielaviopsis basicola*, are known to lead to the disease. Left untreated, root rots can be fatal to many plants. While root rots do leave some hope of saving your plants, they are still formidable opponents, especially to beginning growers.

CROPS

Root rot is not a prejudiced disease; all types of plants, both greenhouse and nursery crops, are affected. Some of the most susceptible crops include rose, aglaonema, azalea, begonia, fern, impatiens, poinsettia, juniper, periwinkle, daisy, pansy and cineraria. These are, however, only a few, and research has shown that environment is a better indicator of potential problems than genetics. Basically, if the plant is in a location with unsanitary soil or standing water, root rots are a possibility.

CAUSES

Root rot diseases are caused by a number of factors. Untreated or improperly treated field soil can be a source of the bacteria, as can commercial peat moss, both of which can result in problems if spores are present. The fungus can also be present in roots of new cuttings, emphasizing the need for sanitary measures before sticking. Root rots can also enter roots damaged by high soluble salts, either from overfertilization or from letting the rooting medium dry out, even for a short period, during propagation. The most common cause of root rots, however, is water.

Crops that do not irrigate properly are a favorite target of the disease. Plants near standing water are almost sure to contract the disease. Root rots are also common and severe in areas where run-off, rain water, etc., collect around plant roots. Shallow soils with underlying rock or compacted hard pans, overwatering of plants or long periods of heavy rain also favor the development of the disease. Warm soil temperature is also a contributing factor.

SYMPTOMS

After the plant has been affected, severe disease development can occur in less than a week. One of the reasons that root rot is so dangerous is that there may be no above-ground symptoms. Meanwhile, the below-ground roots are being ravaged by the disease.

Initially, roots or portions of roots killed by the disease are brown, which is a symptom of Rhizoctonia. Black lesions or yellow to yellow-brown stripes are frequently visible on the root. Plants are often chlorotic and stunted. The plant may flower prematurely, and those flowers eventually will wilt. The plant could topple over at the base as well as from the top down. Plants ravaged by Pythium will often display flat, black root lesions as well as initial wilting. Phytophthora often gives useful but not completely diagnostic symptoms, including leaf chlorosis (yellowing), leaf necrosis (browning) and premature leaf fall and death.

TREATMENT

Root rots, despite their dangers, are controllable. The first step in any control program is to use healthy plants. Be sure to buy only disease-free plants from a reputable plug grower with whom you feel comfortable. With cuttings, inspect the cuts to make sure they are disease-free. When potting a new crop, use only sterilized containers and make sure that the container being used is the appropriate size for the plant. If the pot is too big, there is a much greater chance for standing water to accumulate. Use sterilized potting media and, if possible, steam-treated soil.

Once the plant is potted, try to avoid placing the plant directly on the ground unless you are using flood floors or a similarly controlled environment. Do not plant your crop at an angle or at a lower soil line than the rest of the crops in your nursery or, during drainage, the water will run to the lowest point on the soil level and settle there. In other words, if one plant is lower than all the other plants in the garden/nursery, water may run off the other plants and settle on the low crop. Always provide good drainage.

Use good air circulation to help plants dry out. It is important to water during summer droughts because soil temperatures should not be too high (69-76º F), but don't overwater. Avoid overfertilization, and if needed, use a slow-release fertilizer. Be sure to let plants dry out before storing, and give each plant space to create circulation.

If the plant is already in production and the disease is apparent, you must first isolate the infected plants. Then, remove and destroy affected roots, leaves and flowers. Finally, fungicides can be helpful. Recommended fungicides include: Contrast 70WSP, Terraclor 75WP, 3336, RootShield, Daconil Ultrex, Terraguard 50W, Medallion 50WP and Benomyl. Spray the infected areas lightly and let dry.

Root rots are common but controllable diseases. Root rots can, however, give beginning growers problems because they are often not easily detected, as symptoms are commonly below ground. Even if some plants develop root rot, don't think the crop is ruined. Quick work will keep the disease from spreading and causing extensive damage. GPN

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