

Fertilizer Rates and Impact on Root Disease

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Ask any grower what the primary cause of root rot disease is in their plants and they will tell you it is caused by over watering.

While over watering may enhance disease development it is not the sole factor. For any disease to attack a plant, three conditions must be present; first, the pathogen must be present. Second the environment must allow for growth of the disease organism and finally, there must be a host plant that is susceptible to an attack by the pathogen. While over watering is a major contributing factor providing a favorable environment for root rot disease development, it cannot cause damage to the plant unless the plant is in a weakened condition and therefore susceptible to attack. Anything that contributes to less than optimal growth can result in a weakened plant, which is then more susceptible to disease organisms. Two commonly overlooked factors to poor growth performance are under and over fertilization.

Under fertilization

Under fertilized plants not only exhibit slow growth, but are weak in general and are at an increased risk of both insect and disease attacks. Once attacked, plants will use additional

nutrients in its attempt to fight off the disease. If plant nutrition is not quickly corrected, it can lead to compounding of damage. Under fertilization can be easily corrected by the application of water soluble fertilizer which provides immediately available nutrients for plants to use.



Example of fertilizer application for Pansy.

Adequate fertilizer application (left) and under fertilized pansies (right).

Over fertilization

Over fertilization on the other hand can be much harder to correct, especially if the over fertilization is the result of high applications of Controlled Release Fertilizer (CRF). Over fertilization damages plants in several different ways. It often results in very “leggy”, soft growth of plants and high salt levels from fertilizers can burn delicate root tips. Both of these compromised conditions will result in weakened plants and increased susceptibility to disease attacks. If the cause of over fertilization is from elevated levels of water soluble fertilizer, the situation can be corrected by leaching the growing medium with clear water to remove excess nutrients and then adjusting the rate of future fertilizer applications to meet the needs of the plants. Over fertilization when using CRFs can result from either the presence of too much fertilizer or the fertilizer releasing faster than expected because of high temperatures. In either case, there is no quick solution to removing the excess nutrients. The grower must leach on a regular basis to remove the excessive fertilizer as it is released from the fertilizer prill. In general, it is best to apply CRFs at a medium rate for the crop and supplement with water soluble fertilizer if additional nutrition is needed.



Example of over fertilization of ivy geranium from excessive CRF fertilizer.

Note the chlorosis and necrosis of older leaves from excessive fertilizer uptake.

Disease organisms are microscopic and are often undetected until the damage has occurred so preventive monitoring is highly recommended. The most effective method of reducing the incidence of root rot in plants weakened by nutrient issues is to keep the crop healthy in the first place by monitoring soil EC and making the necessary modifications to the nutritional program before the plant exhibits growth related problems and is weakened.



Example of Pythium in garden mum (center) as a result of over fertilization and disease pressure.

To avoid problems with fertilizer application rates, it is recommended to check injector flow and application rate with EC meters on a regular basis to be sure fertilizer application rate is correct. For control release fertilizers, use lower rates and supplement with water soluble fertilizer, if crops require additional fertilizer. Leach crops regularly to be sure to reduce salt build up from fertilizers. Manage fertilizer application rate for crop requirements by periodically testing growing medium EC, pH and nutrient content. Media sampling can be matched with plant tissue samples to determine the elemental content of plant tissue. From this information, you can fine tune fertilizer applications to minimize plant stress for healthier plants to lessen chances of disease occurrence. PRO-MIX® BIOFUNGICIDE™* + MYCORRHIZAE™ products can reduce incidence of disease and lessen the effects of fertilizer imbalances, as well.

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