

AVOIDING MUM MELTDOWNS



Though you may have solutions to most challenges dialed-in by now, this time of year is when root rot tends to strike. If one day your mums look great, but the next day you see several plants collapse, and a few more drop each day, chances are you've got a root disease outbreak on your hands. What are a few things that you should watch out for to prevent root rot issues, and what's the best way to manage an outbreak?

Let's start with properly identifying the pathogen, one of the most critical steps in managing diseases.

Pythium and *Fusarium* are generally the culprits when garden mums collapse suddenly, but *Rhizoctonia* stem rot can also cause a similar turn-for-the-worse, albeit a little more gradually in most cases. Here are a few quick identification traits for each of these pathogens:

***Pythium*.** Telltale symptoms include sudden wilting, brown/black roots and sloughing of the outer layer of roots (the cortex); fine, threadlike root tissue remains attached to plants.

***Fusarium*.** Wilting and necrotic spots/brown streaking on stems are a strong indicator. Roots may be discolored, but are generally intact compared to *Pythium* infection.

***Rhizoctonia*.** Progressive wilting and a reddish-brown canker on the stem close to the soil are typical symptoms.

Prevention starts with clean inputs, good cultural practices, and responding quickly to changing environmental conditions. If you didn't do so this year, start next year's crop with a fungicide drench of some kind approximately 10 to 14 days after transplanting liners. Reapply as directed by the label to re-up your root zone protection and be sure to rotate FRAC codes.

If you're irrigating with surface water, early protection is critical (think one to two days after or at transplant). Some conventional fungicides can slow or stunt growth of newly transplanted liners if applied too early, but biofungicides are a good early treatment option that reduce the likelihood of stunting.

Here some other scenarios to consider, along with management suggestions to prevent root rot:

High temperatures. Keep an eye on the roots in the sunward side of your mum pots. Extreme temps can cause root damage and predispose plants to disease. Irrigating healthy crops that have had a recent fungicide application on extremely hot days can help reduce soil temperatures. This should not be done on stressed plants, as hot and wet conditions will encourage warm-weather-loving *Pythium* species to infect and cause disease.

Controlled release fertilizer dump. High temps can cause CRF to rapidly release (or "dump") fertilizer salts into your growing media. Monitor soil EC and leach with clear water if necessary to keep feed from burning roots and creating an entry point for disease.

Overly wet conditions. During persistent downpours or if crops have accidentally been overwatered, monitor for root zone disease symptoms. Once crops have dried down to a moderate moisture level, reapply your favorite fungicide to ensure there is sufficient active ingredient remaining in the soil to inhibit infection and disease proliferation.