

GROWERTALKS

Paul's Pointers

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Look Out Below!

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I can't tell you how many times I receive images of plant symptoms and am asked if I have any idea what's going on. In the case of certain cultural problems, such as with powdery mildews, the symptoms are incredibly obvious. However, these aren't the images I normally receive. In most cases, the symptoms in the photos are more subtle, perhaps the plant is slightly off color or shorter than others it's growing near. Without physically seeing the plants, viewing the production site or knowing the plant's background and history, it can be incredibly difficult to accurately identify the problem from a simple image or two.

Before I come to any conclusions, I usually ask, "What do the roots look like?" The most common reply is, "I haven't looked." Since I commonly receive this response, I'm no longer surprised, but it's amazing how few growers actually check the roots, either routinely or especially once plant symptoms are present. I can't emphasize enough how important it is to "Look Out Below!"

Maybe I'm a little old school or perhaps I just had a good mentor (wink, you know who you are), but I firmly believe it's imperative to check the roots routinely. The quantity and health of the roots are directly related to the health and quality of the top growth, as well as a great indicator that the roots are being infected by pathogens. Instead of just focusing on how the top of the plants look, I encourage you to spend more time looking below the surface.

Besides providing an indication of the health of the root system and the presence of root rot pathogens, the appearance and quantity of roots present combined with time is a great indicator if growth is being optimized and if the crops can be finished on time or if they're taking too long to produce. (Perhaps this is a subject for another time, but let's focus on root health for now.)

Depending on the perennial, roots can take on many appearances, but healthy roots on most plants are generally firm and appear light brown to white in color. Some perennials have darker brown roots, but most of them usually have white root tips when they're healthy. If you observe roots that are brown, off-color and/or the tips aren't white, the plant's root system is likely stressed, damaged or even dead. Once the roots appear discolored and/or have patches that appear decayed or brown and mushy, it's also likely root rot pathogen has set in or is about to.

Most soil-borne diseases are opportunistic pathogens that require stressed or damaged tissues for them to

gain entry into the plant. Plant roots most commonly become stressed or damaged by high soluble salt concentrations, poor drainage of the growing medium, over-watering, being left in standing water or they dried down too far at some point. Avoiding these conditions is the first line of defense for preventing root damage and root rots.

Now let's get back to the above-ground symptoms caused by potential root problems below the surface. Anytime the top growth looks off or doesn't appear normal, you should instantly ask yourself, "How do the roots look?" and start tipping plants out of their containers to inspect their root systems. Above-ground indications of potential problems below are chlorosis, reduced plant size, reduced growth rate and wilting.

Recognizing the above-ground symptoms early and following up with an inspection of the roots can be the difference between saving the crop and losing it. Early detection allows you to adjust the cultural practices to remove the stresses and allows fungicide applications (if necessary) to be more effective, resulting in fewer losses.

While on the subject of fungicides, it would probably be best if I suggested you submit samples for diagnosis prior to treating. However, as time passes, more root damage—and potentially crop losses—are occurring, and waiting for diagnostic results may not be the best strategy before taking action. For this reason, most growers take a broad-spectrum approach and use fungicides or combinations of them that effectively control a wide range of root pathogens; target applications to control fusarium, phytophthora, pythium and rhizoctonia. Thielaviopsis is another soil disease that's often targeted. It's important to know what you're dealing with, but a broad-spectrum treatment is usually an effective strategy while you wait for the diagnostics to come back.

Even if your plants appear healthy, I cannot overemphasize the importance and value of checking the root zones of your crops routinely. If it were me, whether symptoms are present or not, I'd be checking roots from several crops each day. It literally takes a few seconds per pot. It's pretty easy to pick up a plant or two when you're walking by, talking with co-workers or during a hands-free phone conversation. Before long, checking roots will become a habit and you won't even realize you're doing it. I encourage you to "Look Out Below!" **GT**

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