

My Roots are Disappearing!

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“I seem to have reasonable rooting depth by the first of June every year, but by early August, my root depth/mass has diminished significantly.” It comes as no surprise that this is a common refrain during the summer months. And we all know that once we get into that situation alarm bells start ringing. So what can we do?

First, a little perspective. In most locations, cool season turfgrasses lose their roots twice a year (during the hottest months of the summer and during the coldest months of the winter). For most species, peak root production occurs from early May through mid-June in response to cool soil temperatures, good air/water relationships, and available growth materials (carbohydrates). That is the time to prepare for what I will refer to as the ‘marathon’, the upcoming heat and stress of summer that the plant will have to fight through to survive.

New roots are initiated from adventitious buds at the base of the crown, therefore, when conditions are conducive (as described above), root growth is vigorous and prolific. However, as soil temperatures increase and carbohydrates are no longer in abundance, initiation of new roots (our bank account for saving carbs) slows dramatically and older roots become less functional and ultimately slough from the plant and become part of soil organic matter.

As a result, the observation that “my turf has lost its roots” is accurate. This obviously adds to the superintendent’s own summer stress level as we move into the stressful summer months and your grass plant has to run the aforementioned marathon with little in reserve. Therefore it is in our best interests to prepare the turf accordingly.

Now we are at the time of the year with heat and humidity, and good or bad, we now need to be ‘reactive’ and help our turf cross the proverbial finish line!

It is much like managing a bank account, in the sense that, when things are going good, deposits to the bank account / roots (carbohydrates) can be increased knowing that when withdrawals begin to exceed deposits, there is a source of reserve to draw from in order to better tolerate environmental stresses and to maintain the best root system possible.

However, once the temperature (both soil and air) exceeds that which allows the turf to easily provide carbohydrates, the turf will become physiologically stressed and less able to meet the daily demand for carbohydrates. Once the turf has reached that point, needed carbohydrate can only be supplied by that which is in reserve (the roots) or via supplemental feeding. It is obvious that if your roots are disappearing, the plant is going to have a difficult task of absorbing nutrients from the soil. Foliar feeding, which bypasses the root system, offers a very effective means to help the plant through times of stress, basically, helping the plant through the marathon, much like a runner’s glyco-gel packs and sports drinks help them finish those punishing races.

Nitrogen sources that are soluble provide the best managerial control of N release and facilitate the proper timing for sequential applications. Properly balanced Bio-stimulant products that contain gibberellins, cytokinins, auxins, and/or other organic compounds (derived from various sources) are valuable for providing

growth materials without over stimulation. Foliar sources of essential amino acids and complex sugars will assist the turf when the conditions for growth are less than optimal. The whole goal is to help the plant work as little as possible to manufacture the carbohydrates it needs to survive and foliar feeding can do that very effectively.

Once soil temperatures begin to decrease (usually in late August) the turf will begin to produce new roots, but never as prolifically as in the spring (primarily because the days are getting shorter and the level of radiant energy being received is lessening).

The bottom line is that by properly managing carbohydrates, the more likely it is that your turf can maintain root growth longer, slough less, and be more tolerant of environmental stresses. The same holds true when the stresses of summer hit, as the superintendent now has tools to supplement the plant's nutritional needs to help his turf efficiently produce the carbohydrates that will help it survive during the actual "marathon."

Until next time, Dr. Tom hopes that the summer stresses to you and your turf will be minimized and September will be here before you know it!