

Why Roots are so Important to Turf Quality

Managing turf for maximum root growth

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A healthy lawn depends upon a healthy, vigorous root system. Why are roots so important to turf quality? The answer lies in the fact that a lawn is composed of a population of grass plants that are pretty well pushed to the edge in the level of growth and development they can withstand. Not everyone follows the proper cultural guidelines in terms of mowing, irrigating etc., and this in turn may cause the turfgrass plant to fluctuate from its normal growth cycles. Plants need a constant supply of photosynthetic energy from their leaves, as well as mineral nutrients and water from their roots. If this balance is disrupted in any way, the grass plants health will decline and so will the lawns appearance.

Roots are a very important part of a grass plant, providing:

Anchorage – Turf is anchored to the soil primarily by its roots and soil erosion is prevented by healthy turf root system.

Absorption of water and nutrients – Mineral nutrients and water enter turfgrass plants through their roots. To utilize fully the available soil resources, a lawn must have a vast root system that extends throughout the greatest possible volume of soil. The more effectively turf roots can extend through the soil for water and nutrients, the less need for a turf manager to supply these resources. An extensive system of roots also offers the greatest insurance that mobile plant nutrients will not leach through the root zone (This is very important in maintaining water quality).

Stress tolerance – During times of environmental stress, such as periods of drought or excessively high temperatures, a deep root system is one of the greatest assets turf can have. A well-rooted lawn will respond more quickly to fertilization and other management practices intended to help turf recover after stress. A well-rooted lawn can better withstand damage from destructive insects or other pests as compared to turf, which has a poorly developed and weak root system.

Hormone Balance – Roots produce hormones which act as "traffic signals" letting the grass shoots know if soil conditions are a "go" for vigorous growth or a "stop" due to stressful conditions, when the turf should reduce growth and conserve water and nutrients. Poorly developed root systems are less able to send such hormonal messages and, as a result, will not coordinate grass growth with environmental conditions.



Soil organic matter – The production of an extensive root system and the subsequent development of new and death of old roots introduces raw organic matter into the upper part of the soil profile. Over the years, this annual recycling of fine roots results in an increase in residual soil organic matter which aids in greater water holding capacity, increased nutrient holding and exchange(CEC), better aeration, and improved physical soil structure.

Since roots provide so many important functions for a healthy stand of turf, as well as contributing to water and environmental quality, it is important for us to focus on the impact of turf management practices on root health.

- From a homeowner's standpoint; he or she must learn and understand the importance of mowing high and regularly. This increases the size of the "solar panel" or blade, allowing the grass plant to produce more photosynthetic energy and have it available to support root growth. Also it is important to mow with a sharp mower blade. This reduces leaf injury and allows faster healing over of the cut, thus keeping the "solar panel" in action and preventing turf damaging organisms from entering the grass plant.
- The part a responsible turf manager plays is a little more complicated than the homeowners is. It includes ensuring proper fertility through soil testing, nutrient management plans, equipment calibration and the introduction of all-natural microbial agents. Through soil testing, learning the soil's pH and the level of nutrients already available in the soil, a turf manager can make the appropriate decisions, and avoid using "standard" maintenance amounts of nutrients giving the turf exactly what it needs. Proper calibration is important in preventing over-application or under application of nutrients, which may upset balanced growth, as well as save money in the long run. Organic matter incorporated into the soil improves structure, increases cation exchange capacity (nutrient retention), and promotes improved aeration. Also the proper use of natural microbial root stimulants can increase root development and health thus giving a healthier stand of grass.



Just because the roots are underground and out of sight does not mean that they do not play an essential part in the long-term health of a lawn. **Remember that turf performance begins and continues with a healthy root system!**

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