

Home & Environment

Turfgrass Color

An Indicator of Septic System Performance

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Many homeowners notice color differences in the turfgrass over their septic system soil treatment area. Most often, homeowners observe green or brown stripes in their turfgrass relative to the surrounding lawn. This discoloration is worth keeping an eye on because turfgrass color is often an early sign that serious problems are about to occur.

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Brown Turfgrass over the Trenches

In warmer months or during dry periods, turfgrass over subsurface soil treatment areas can turn brown and appear burned (Figure 1). This condition is due to the lack of water-holding capacity in soil above the absorption field trenches or beds.

Water is required by turfgrasses for chemical reactions, evaporative cooling, transportation of nutrients and organic compounds throughout the plant, and maintenance of turgidity (leaves springing back after being stepped on). In an ideal situation, open spaces in the soil would be half full of water and half full of air (approximately 25% of total soil volume is water). When

the percentage of available soil water decreases, the turfgrass plant runs into problems. Prolonged water stress will initially reduce turfgrass growth. The turf will usually lose its luster and it will not spring back after being walked on. As drought stress continues, plant cells will increase solute levels in an attempt to maintain turgidity. Further drought stress will usually result in either drought avoidance or drought escape. Drought avoidance can be defined as maintaining



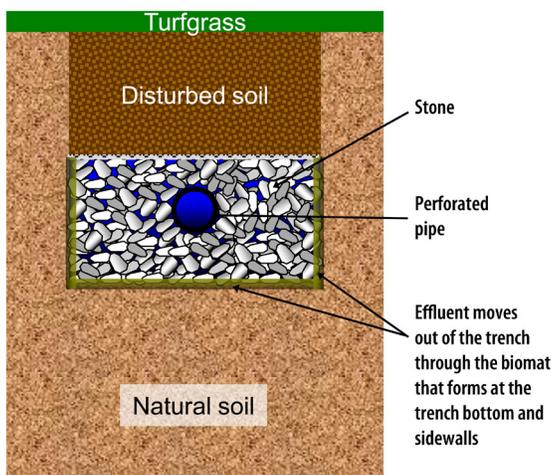
Figure 1. Brown turfgrass over soil absorption field trenches indicates an absorption field that is probably functioning as designed.

Soil Absorption Field Maintenance

To properly maintain your septic system's soil treatment area:

- Avoid vehicular traffic and construction activities in the soil treatment area. (Rule of thumb: Nothing larger than a riding lawn mower should be on top of your septic system.)
- Divert run-off water from your lawn, roof, and basement drains away from the soil absorption field.
- Do not plant trees or shrubs in or adjacent to the soil absorption field.

Cross Section of Soil Absorption Field Trench



A cross section of a typical soil absorption field trench. A foot of gravel surrounds a perforated pipe at the bottom of the trench. A geotextile fabric is placed on top of the gravel to prevent soil from filling in the spaces between the stone. The remainder of the trench is filled with soil to the original surface grade.

function (usually at a reduced level) by adapting the physical features of the plant to either save or locate more water. Examples of drought avoidance include leaf rolling to reduce water loss or increased root length to find more water. Drought escape in turfgrasses is usually defined as drought dormancy. During drought dormancy the plant will basically shut itself down until environmental conditions improve. Although there is some overlap between the two categories, the turfgrasses used in Kentucky can mostly be classified as either one or the other.

Kentucky bluegrass exhibits drought dormancy while tall fescue, bermudagrass, zoysiagrass, and perennial ryegrass are classified more often as drought avoiders. Grasses that are drought avoiders will usually remain somewhat green during the drought period but if the drought is severe enough they will not be able to recover. Grasses that exhibit drought dormancy will be straw brown and

look dead during the drought but will almost always recover fully once the drought has ended. Drought tolerance varies across species but can even vary widely within a species. Initial turfgrass selection should always consider drought tolerance as part of the criterion.

Table 1. Drought rankings of turfgrasses used in Kentucky

Very good	bermudagrass
Good	zoysiagrass
Medium	tall fescue
Poor	Kentucky bluegrass
Very poor	perennial ryegrass

What Can You Do?

Brown turfgrass over the septic system is merely an aesthetic problem. **No action is required by the homeowner.** Your septic system is probably functioning as designed. The problem is transient, and your lawn should recover fully by October when the temperatures cool and it rains. You should not water your lawn above the absorption trenches because the additional water can reduce the effectiveness of the soil treatment area and may eventually lead to soil treatment area failure.

Green Turfgrass over the Trenches

When a septic system soil treatment area overloads hydraulically, the trenches are filled with wastewater. Hydraulic overloading occurs when the soil surrounding the trenches cannot absorb and disperse high wastewater flows produced by the home. When the soil cannot absorb and disperse all the wastewater, the trench fills like a bathtub. The nutrient-rich wastewater moves through the soil pores above the trenches to the surface, resulting in lush green turfgrass over the absorption field. In dry months, the green stripes over the trenches offer a stark contrast to the grass between the trenches (Figure 2).



Figure 2. Unusually green turfgrass stripes represent a stressed septic system that is failing or likely to fail during wetter months or when the system receives high wastewater flows.

Wet Soils and Turfgrasses

As bad as dry soils are for turfgrasses, wet soils can be just as bad. Oxygen in the soil is required for root growth. When oxygen levels become low, roots become shorter and shorter. Short roots in a scenario such as this aren't a concern for water uptake, but access to some nutrients in the soil may be limited. If the load to the septic system is decreased and water levels decrease, the short turfgrass roots can be of great concern depending on the dryness of the year. Although rooting is an important part of wet soils, other factors can be of concern as well. Wet soils can result in increased thatch production due to reduced populations of soil microbes to break down dead plant parts. Increased thatch layers can lead to scalping when mowing. Thatch can also lead to raised crowns and root systems growing in the thatch layer. Exposed crowns and roots can lead to severe heat stress during the hottest times of the year. Thatch is also known to be a favorable medium for the survival of turf disease causing pathogens. When high pathogen populations are coupled with succulent and weak turfgrass, the result is often diseased turf.

If you have properly maintained your septic system over its lifetime and you observe green stripes over the soil absorption field during extended dry periods, decrease the load on the system by:

- Installing aerators on faucets and showerheads to decrease flow
- Replacing older appliances such as toilets, clothes washers, and dishwashers with newer, water-saving units
- Reducing lengthy showers
- Washing your clothes at a laundromat
- Decreasing the number of washing cycles

If you decrease water use but green turfgrass stripes persist for a few months, contact your county health department for additional advice. These health professionals will have a list of septic system professionals in your area who can assist in troubleshooting your problem. Possible solutions include adjusting flows in your septic system distribution box or adding additional trenches to an

undersized septic system.

Remember: A properly functioning septic system relies on the soil's ability to absorb wastewater. A septic system owner's primary responsibility is to protect human health and the environment. Modifying the system to be aesthetically pleasing is secondary.

For more information

Visit the Home and Environment web page at <http://www.ca.uky.edu/enri/henv/>.

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