Hurricanes and Flooding...

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under flooding should be lifted out and examined carefully. **Cut a horizontal cross section through the grass crowns and the nodes on lateral stems to determine if they are white, firm, and healthy, or brown, mushy, and dead.** This will be an indicator of the amount of turfgrass recovery that can be anticipated. **Numerous multiple samplings are critical to get a representative assessment.** Then the decision must be made whether replanting of critical turf areas will be required to repair the damage. Removal of any dead turf plant material and thatch from the surface is important to avoid a future organic layer problem. If soil deposition has occurred, fairly intense core cultivation will aid in disrupting the clay or silt layer that has developed. The usual establishment procedures can then be followed.

The relative submersion tolerance of 20 turfgrasses.

Relative Submersion Tolerance	Turfgrass
excellent	seashore paspalum American buffalograss dactylon bermudagrass creeping bentgrass hybrid bermudagrass
good	tropical carpetgrass St. Augustinegrass turf timothy rough bluegrass tall fescue common carpetgrass
medium	meadow fescue Kentucky bluegrass
fair	crested wheatgrass annual bluegrass perennial ryegrass
poor	annual ryegrass red fescue hard fescue centipedegrass

Natural Organic Chelating Agents for Plant Nutrients

The organic matter component in soils is vital to a quality, living root zone. **It contributes significantly to adequate soil aeration, water retention, water movement, and nutrient availability, as well as providing a resilient upper root zone, which is important in the playing quality of numerous sport surfaces.** Organic matter also is a key substrate required for sustaining the life of numerous soil organisms, including bacteria, fungi, and actinomyces. In addition, the ongoing decomposition process of dead plant organic matter such as roots contributes to the recycling of plant nutrients. The soil organic matter content depends on the rate of soil organic matter accumulation relative to the decomposition rate. Grasses are known to be very effective in terms of a positive contribution to soil organic matter through their high-density, fibrous root system, which continues to grow and be replaced in a perennial manner.

Perhaps one of the least recognized and understood **beneficial contributions of organic matter is in providing organic compounds that function as natural chelating agents for a number of essential plant nutrients. Iron (Fe), manganese (Mn), copper (Cu), and zinc (Zn) become more soluble and plant-available in the soil solution by complexing with one of the numerous organic compounds.** In addition, these nutrients naturally chelated by the organic compounds are more easily moved to the uptake sites on the plant root hairs. Without the presence of these natural organic chelating agents both iron and manganese tend to be chemically bound in unavailable forms, while both copper and zinc are inherently water insoluble.

Some individuals advocate that the addition of organic matter in new high-sand root zone constructions is not needed, because it will eventually be formed through root decomposition. While roots will eventually contribute significantly to the soil organic matter content, the lack of needed organic compounds in the early developmental stages of the turf can result in significant turfgrass nutrient stresses that delay proper rooting and turf development. Thus, this natural chelating is one of a number of beneficial effects from organic matter that justify the inclusion of an organic matter component in the original high-sand root zone construction. In addition, it emphasizes the importance of developing an active, living root system in all soil textures, which will contribute significantly to a sustained, acceptable level of organic matter within the soil root zone.