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Research Summary

Carbon Storage in Soils

The summary in a paper published by CAST states "As an important constituent of soils, organic matter contributes greatly to plant productivity and ecosystem stability. **Soil organic matter also is an important repository for carbon (C) and plays a central role in the global C-cycle.** Soils may act either as a source, releasing C to the atmosphere, or as a sink into which C from the atmosphere is deposited depending on season, time of day, vegetative cover, weather conditions, and land management. But land management is the critical determinant of whether the net change in soil C is a gain or loss. Since the beginning of the industrial revolution, land use changes, such as conversion of temperate forests and prairies to agricultural fields, have contributed significantly to the recorded increase in concentration of atmospheric CO_2." The body of the paper is devoted to historical aspects of carbon sequestration, followed by discussions of new technologies to fully understand the factors controlling sequestration, along with the need for monitoring and verification of soil carbon levels as affected by various agricultural soil management practices. They conclude that **soil C-sequestration can provide an important opportunity for limiting the increase for atmospheric CO_2,** especially if action is taken world-wide during the next three decades.

Comment: Nowhere in this issue paper is there a mention of the potential role that permanent grass covers play in carbon sequestration. Rather, it is entirely focused on agricultural cropping practices. Actually, if funding were made available for the appropriate studies, they would probably show that **turfgrasses offer one of the best ecosystems available for the sequestration of carbon in soils.** Environmentalists proclaim the great virtues of carbon sequestration in the forests of the tropics. Why does no one mention the key role that grass vegetations play in carbon sequestration?

Storing Carbon in Agricultural Soils to Help Mitigate Global Warming. Issue Paper Number 14 April 2000. The Council for Agricultural Science and Technology, Ames, Iowa, 8 pp.

Ask Dr. Beard

Q *Why has there been a major increase in moss and algae problems on putting greens in the last five to ten years?*

A The most obvious response to this question relating to the past 10 years is that the cutting height has been lowered significantly. The cultivars of both warm- and cool-season turfgrasses traditionally used on putting greens lack tolerance to these closer mowing heights of 1/8 to 1/10 inch (3.2 to 2.5 mm). The result is significant thinning of the turf that allows sunlight to reach the soil surface. Both algae and moss require sunlight for growth, and thus they have become an increased problem in recent years.

One other aspect that is overlooked in many situations is the root zone dimension. It is frequently observed that moss and algae problems occur on high-sand root zones, such as USGA constructions, which many people assume should tend to be on the dry side. Moss and algae are favored by high soil moisture. There is a situation where this condition can occur. That is, even if the proper high-sand root zone specifications have been employed in the original construction, the desired drainage of excess surface water can be negated through the topdressing practices. Even a single, thin layer of topdressing containing a particle size significantly more fine than the original construction can result in a perching of excess water near the surface. This in turn can result in a wet condition that is particularly favorable for moss and algae development, especially when combined with an increased sunlight level.

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