

## **Temperature Modification of the Athletic Field Rootzone**

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For many years, athletic field managers in cool northern climates have struggled with managing cool season grasses that cease active growth and enter dormancy during the playing season. With the playing season for NFL teams reaching into January, and college seasons ending in December, field managers struggle with one to three months of reduced and inactive growth. This creates a situation, which produces both unsafe and unsightly playing fields.

In the past, some fields have been constructed with soil heating systems. These systems deliver warmth to the soil by either a system of electrical cables or pipes filled with glycol. These systems have had mixed results. Many problems occur with uneven spacing or shallow burial, that can interfere with necessary cultural practices, including core aerification or deep-tining. Currently field managers use traps and covers to create a greenhouse effect, using direct sunlight to increase soil temperatures.

New methods of athletic field construction involving modular turf systems have created new opportunities in soil heating methods. The Greentech ITM modular turf system has pockets measuring approximately three inches by eight inches on all four sides used to move the modules with a forklift. These forklift pockets create an evenly spaced systems of ducts the function as the drainage system. This drainage system can be attached to an air blower and heater to create an efficient sub-surface, air driven heating system.

This study will investigate the feasibility of modifying the soil temperature of an athletic field rootzone build on the Greentech ITM module system. The study will focus on the basic air movement properties of flow and pressure and how soil type, soil moisture content and soil depth affect these properties. Once a basic understanding of the airflow characteristics has been established, heat will be added to the air stream. During the fall months the study will be evaluated to gauge the efficiency and effectiveness of the heating system at improving turf color, turf recovery, and increasing soil temperatures. The following spring tests will be done to induce more rapid green up in early spring.