Soil Improvement

Sod is grown in Florida on several general soil groups. These include clay, sands, and muck soils. The agricultural suitability of these soils is determined by their ratio of sand, silt, clay, and organic matter fractions. Clay soils are more common in the panhandle region and are least desirable due to difficulties in water, traffic, and harvest management. Clay soils do not drain well and, therefore, stay wet for extended periods. Precious harvest days may be lost due to the wet ground. Also, due to these soils holding so much water and their high bulk densities, clay soils are heavy to haul.

Loam soils, in general, have good moisture-holding capacity, drain well, are easy to work, and are relatively light in weight for transport. These contain approximately 40 percent sand, 40 percent silt, and 20 percent clay. Next to muck soils, loam soils are most desirable as growing media (2). Ideally, these soils should have at least 5 percent organic matter and 15 percent or less clay. Sandy loams are desirable because of good drainage; therefore, traffic and harvest operations may be performed sooner after water application.

In Florida, sod is often produced on so-called 'flatwood' soils. These are sandy soils overlying a hardpan or spodic horizon. This soil layering results in a perched water table, which increases the water reserves of the upper soil layer.

Muck soils are found in old bogs, river deltas, and lake beds. They contain high organic matter and have good water holding capacity. Nitrogen is also readily available through mineralization of organic matter. Muck soils are, however, typically low in potassium and phosphorous. Length of sod production on muck soil is usually shorter and production costs are less. Muck soils have less bulk density versus sandy or clay soils; therefore, they weigh less on a unit basis and are cheaper to transport. Muck soils are the most desirable for sod production.

Sod production is not recommended for deep, pure sandy soil (e.g., sand-dune-type sand) due to the difficulty of maintaining adequate soil moisture and nutrient levels. Furthermore, such soils typically have high levels of nematodes, which adversely affect soil quality and handling.

Often during extended periods of drought and hot weather, soil salinity may become a problem. As water evaporates from the soil surface, salt is deposited behind. In these cases, irrigation is needed to leach the salt from the soil. The salts wash out of the soil if the irrigation water contains a lower salinity level than the soil. Ample drainage capability is a prerequisite for this 'flushing.'

The soil type in question can be determined by a local agricultural laboratory. Characterizations of the soil type can be provided by the Soil Conservation Service, assuming that the land has been surveyed.

Irrigation

Irrigation is required for quality sod production. Ample water of good quality should be a priority during the planning stage. Water sources include wells, sink holes, ponds, streams, and canals, as well as effluent sources from nearby municipalities and industrial sites. Effluent or grey water can be an excellent and inexpensive source of irrigation. However, these water sources may fluctuate widely in pH, salt, and nutrient levels. Many municipalities also require a contract stating that the grower must accept a certain number of gallons per given time whether irrigation is needed by the turf or not. These are problems that should be addressed early in the planning stage if effluent water is to be used.

Irrigation systems normally involve center-pivots, walking or traveling guns, or subirrigation (raised water tables) (Figure 1). Consider the size and location of your operation, and the availability of a reliable mechanic, plus backup pumps and accessories when choosing a particular system.

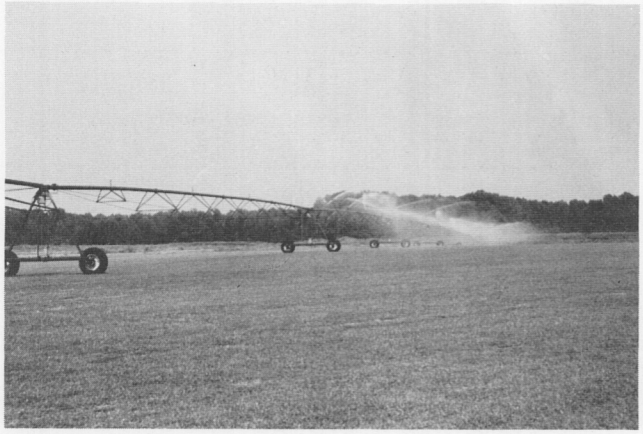

Figure 1. Center-pivot irrigation system often used in sod production.

In subirrigation, water is applied beneath the ground surface, rather than on it - usually by creating and maintaining an artificial water table at some predetermined depth. This artificial water table is created over a natural barrier located one to several feet below the soil profile that prevents deep percolation. The barrier may be a relatively