A LYSISIMETER FOR ORGANIC SOILS

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A n essential feature of a lysimeter installation is that the percolate should be obtained from a soil mass under as nearly a natural or field condition as possible. This percolate is collected from drainage tubes which lead to a tunnel constructed next to or beneath the lysimeter. In a hilly terrain the installation is often on a slope thereby permitting the leachate receivers to be at a level below that of the soil mass in the lysimeters.

In an organic soil, however, the proximity of the soil water table makes impractical the conventional method of collecting the percolate. In most cultivated organic soils the water table is held from 18 inches to 3 feet below the surface. There is, therefore, not only the problem of obtaining the leached material but also that of maintaining a ground water level in the lysimeter itself.

Most organic soil areas are nearly flat and the soil fairly porous so that there is little runoff of rain. An installation in organic soils is simplified in that respect over those in mineral soils where provision has to be made for a runoff of some of the rainfall. These and other lysimeter problems peculiar to the Everglades type of organic soils are discussed below.

As pointed out by Kohnke, et al. (3), in their excellent survey and discussion of lysimeters, soil for a lysimeter should be disturbed as little as possible and to accomplish this the monolith or undisturbed soil block is the most ideal. Because of the high water table in organic soils, the monolith type is difficult to establish and the filled-in type was adopted. The high porosity of organic soils, as well as the nature of their profiles, makes it probable that the filled-in type of lysimeter is as satisfactory as the undisturbed soil type.

EVERGLADES ORGANIC SOILS

The organic soils of the Everglades of Florida comprise an area of about 3,000,000 acres which lie in an unbroken expanse extending from Lake Okeechobee southward and southeastward. Near the lake the soil is deepest, averaging about 12 feet. All of the area is underlain with a porous limestone or marl. The presence of the marl substrata makes it unnecessary to lime these soils. The subsoil waters are profoundly affected by the underlying marl (5) and special consideration was given to this fact in the operation of the lysimeters.

Most of the Everglades area is covered with soil which was formed very largely from a reed-like plant called sawgrass (Cladium effusum). This sawgrass peat extends outward from the custard apple muck zone near Lake Okeechobee and the layer is thinner the farther the location from the lake. On the Everglades Experiment Station farm where the lysimeters are installed the peat is about 7 feet deep.

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3 Figures in parenthesis refer to "Literature Cited", p. 352.