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Measurement of Soil Moisture Potential

Previously we must describe or know the changes in the components of the potential of soil moisture in the soil. In the saturated and unsaturated zones, the potential of soil moisture can be seen in the unsaturated zone in the pores of the soil that have not been sided by water, in such conditions, the potential of soil moisture is in a negative state on the contrary in conditions of water saturation, the potential condition of soil moisture in a positive state. The deeper it reaches saturation the potential becomes negative.

The hydraulic picture of the potential of the soil in the state of unsaturated and saturated water, the deeper the more it reaches its potential saturation becomes positive. This important potential profile of mensurpey before undertaking for example the design of drainage systems or when we want to water crops in agricultural areas, so engenering measures is an important requirement to know this before the action is carried out on a field or soil.

Measurement of soil gauge potential, the measured soil gauge potential is the matrix so the measured potential is the soil gauge matrix potential measured in cm units of the water column with a tensiometer, and the scheme of this potentiometer can be described including the Gipsilm soil surface whose shape has pores Above it there is a negative pressure gauge (tensiometer).

The principle works by plugging into the soil at a certain depth, then filled with water then closing and a few moments later the water in the tensiometer tube will be sucked out by soil that has a negative pressure on unsaturated soil, the drier or lower the soil flow, the more water that comes out meaning here in this tube because the water is decreasing the pressure becomes negative because the water surface here Down to the bottom, the pressure is getting lower or there is a decrease in pressure.

Gypsil is a material made of ceramics made from gypsum and allows it to be penetrated by water in surrounding conditions when experiencing lower soil moisture conditions soil moisture measurements can be done directly and indirectly, but direct measurements can only be done in conditions of 0-800 cm water column more than that can be done by indirect measurements with laboratory analysis. Then the principle of the tensiometer Schema

Types of measurements using tensiometers

Sphygmomanometer using mercury, using electronic transducer measured is the electric voltage with the principle of using a welson bridge by measuring voltage and voltage correlates with soil moisture, which converts the voltage into an indirect measurement electric current by taking soil samples by drying 100 c until the scale is constant and the amount of water that comes out is characteristic of moisture, closely related to the pores of the soil and how it relates between soil moisture potential and soil pores², namely D is soil pores or capillary diameter = soil pore diameter expressed by cm, this diameter size determines the characteristics of water restence or soil moisture characteristics The phenomenon that the decrease in matrices from -30

K₃ -100 causes large soil pores to experience a void of water will come out, this situation if the change from 30 to 100 largest pores² will be empty first based on the results of research And the potential of this matrix has a density between 0 – 10,00,000 cm for dry soil in the open. The characteristics of soil moisture can be symbolized by pf log, the value of pf on the groundwater table, which is = 0, assuming that under equilibrium conditions, measurements of soil laxity characteristics of soil samples are saturated, put them on porous slabs (plate shafts) or sane boxes, apply the decreasing pressure as pf curves