

Soil Analysis Techniques in Tier III site in Washington, Georgia

Doris M. Laguer Martinez¹ and Jill Qi²

¹Department of Geology, University of Puerto Rico at Mayaguez. ²Warnell School of Forestry, University of Georgia.

Abstract

At the Pine Integrated Network: Education, Mitigation, and Adaptation Project (PINEMAP). The education team is creating resources and programs to engage university students in collaborative, interdisciplinary research aimed at solving complex societal problems, participating on the internship and fellowship program as a research assistant. The aim of this internship was to perform and learn several soil analysis techniques such as water potential analysis, soil pH, electric conductivity, hydraulic conductivity and soil resistivity. The soil samples were collected at Tier III sites in Washington, Georgia surrounded by loblolly pine trees (*Pinus taeda*) with the following treatments: Control (C), Fertilizer (F), Throughfall exclusion (R), Fertilizer+throughfall exclusion (FR). Soils were sampled at pretreatment at 0-10, 10-20, 20-50, 50-100, 100-150, 150-200, 200-250 and 250-300 cm depths. Soil physical and chemical properties were determined by using analytical techniques above mentioned. Soil resistivity testing is the process of measuring a volume of soil to determine the conductivity of the soil. The soil pH is a number that describes acidity or alkalinity of the soil. A pH of 7.0 was considered neutral. An acid soil has a pH value below 7.0 and above 7.0 the soil is alkaline. Soil electrical conductivity (EC) is a measure of the amount of salts in soil (salinity of soil). It is an important indicator of soil health. It affects crop yields, crop suitability, plant nutrient availability, and activity of soil microorganisms which influence key soil processes including the emission of greenhouse gases such as nitrogen oxides, methane, and carbon dioxide. Hydraulic conductivity is the ability of the soil to transmit water, determined by nature and size of pore space and pores through which water moves.

Keywords: soil, pH, resistivity, conductivity