

B-47: Sampling scheme for selected soil properties in Alfisols of Sri Lanka

Ranjith B Mapa

(Dept of Soil Science, Faculty of Agriculture, University of Peradeniya)

Soil is a natural product formed from rocks and minerals due to factors of soil formation. Therefore, soil physical, chemical and biological properties vary from place to place. There are over 10,500 soil series recognized in USA alone showing the magnitude of this variability. The sampling intensity for estimating soil characteristics will depend on the magnitude of the variation within the population under consideration.

With limited resources for experimentation the challenge for soil scientists is to determine sample numbers to measure soil properties at the accuracy needed with the lowest possible cost. This study was conducted to propose a sampling scheme using the relative variability for soil pH, electrical conductivity (EC), sand, silt and clay content for Alfisols of Sri Lanka. These properties were measured using 100 soil samples obtained from the surface horizon from a 45 x 45 m area.

Soil pH and sand% showed low variation with coefficient of variation (CV) less than 10% while EC, silt and clay content showed medium variability (CV 10-100%). When the sample numbers to estimate the mean with $\pm 10\%$ accuracy at 95% probability level was calculated pH, EC, sand, silt and clay contents needed 2, 70, 17, 87 and 150 samples respectively.

This study shows how the intensity of sampling is related to variability of soil properties. The knowledge of variability from previous studies will help in determining the sample number to estimate the mean with the needed accuracy with the lowest possible cost.