Comparative Evaluation of Some Soil Chemical Properties among Orchards and Natural Forest in Fruit Research and Development Institute, Horana

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Abstract

The research work was conducted in Fruit Research and Development Institute, Horana in Kalutara district of Western province to evaluate and compare the selected soil chemical properties among the selected areas of orchards and the natural forest. Soil samples were collected from 20 cm to 25 cm depth from cultivated area 1 and forest area 1 located on the valley and cultivated area 2 and forest area 2 located on the slope. Two hundred and thirty two samples were collected and analyzed for pH, EC, exchangeable potassium, available phosphorus, organic matter percentage, Zn, Fe and Cu. Data were statistically analyzed by paired t test using Minitab. Exchangeable potassium (p=0.001) and Available phosphorus (p=0.00) showed a significant difference among the cultivated area 1 and forest area 1.pH (p=0.00), organic matter percentage (p=0.049), Fe (p=0.049) and Cu (p=0.026) showed a significant difference among the cultivated area 2 and forest area 2.This study revealed that soil of both cultivated areas and forest areas has acidic and has a low electrical conductivity. Also, soil of both cultivated areas is enriched with high organic matter content and poor in exchangeable potassium content. Available phosphorus concentration is very high (80.2874 ppm) in the cultivated area 1 and very low in the cultivated area 2. Both cultivated areas are sufficient in Zn and Fe while insufficient in Cu content. The correct management of such effects would require proper fertilizer application according to the recommendations given by Department of Agriculture. Geographic Information System (GIS) is a reliable tool to produce thematic maps in order to manage, manipulate, visualize and interpret the data of the study as further studies.

Key words: Comparison evaluation, Forest, Orchard, Soil chemical properties
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