Land Evaluation Under Different Environmental And Geological Conditions In Southern Nigeria.

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Abstract:

Soils of Ibadan and Remo were evaluated for the cultivation of yam and cassava. The soils in farmers' plots in both sites were characterized by their morphological, physical, chemical and mineralogical properties. The slope, climatic and other land surface features limiting the cultivation of yam and cassava were also identified. Actual and potential land productivity indices were developed based on the soil, slope and climatic characteristics limiting the cultivation of yam and cassava at both sites.

Ibadan site is underlain by precambrian basement complex rocks whilst Remo site overlies cretaceous sedimentary rocks. Twelve soil series were identified in Ibadan site and nine in Remo site. Forty-five plots under yam and cassava were selected in Ibadan site and sixty-nine in Remo site to cover the various soil series.

The farm, management level was assessed with questionnaire and direct observation of individual farm land. Parameters considered in the land productivity index are soil depth, drainage, soil texture, surface stoniness, slope, annual rainfall, primary nutrients, organic matter, base saturation, mineral reserve and nature of clay mineral. Productivity index was developed with appropriate ranges in percentage to reflect individual factor. Soil fertility and potential productivity indices were also developed.

Land productivity index range from 3.77 to 60.91 and 19.82 to 48.27 for Ibadan and Remo, respectively. Cassava yield ranged from 6.30 to 11.50t/ha and 5.23 to 7.26t/ha for Ibadan and Remo, respectively. Yam yield ranged from 3.75 to 6.00t/ha and 6.20 to 8.00t/ha in Ibadan and Remo, respectively. The wide range of indices recorded for Ibadan soils is a reflection of the complexity of the parent material.

Correlation coefficients between calculated and measured yield are r = 0.81 and 0.77 for yam and cassava in Ibadan site and r = -0.95 and -0.22 for yam and cassava in Remo site. The poor correlation of yields in Remo site may be due to the greater response of these soils to management. Chi-squared analysis indicate the independence between measured and calculated yield in both sites.

Keywords: Morphology/ climate / cultivation/ rocks/ drainage/ organic matter/ soil texture/ soil fertility

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