

Soil Physico-Chemical Properties, available Nutrient Status of Agricultural College Farm, Naira

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ABSTRACT

Soil Physico-chemical properties and available nutrient status of soils in different block of Agricultural college farm was investigated. Soil samples were collected at two depths viz., 3 surface samples (0- 15cm) and 3 subsurface samples (15-30cm) in each from 9 blocks, constituting a total of 54 soil samples. The results of the study revealed that the soil texture ranged from sandy loam to clay, soil reaction was slightly acidic to alkaline. The soils were non-saline. Soil organic carbon (SOC), available nitrogen (N) contents were low, available phosphorus (P_2O_5) content was low to medium, available potassium (K_2O) and sulphur (S) contents were medium to high. Available Zinc (Zn) and Iron (Fe) contents were deficient to sufficient. Exchangeable calcium and magnesium was relatively higher in E- block compared to other blocks. Cation exchange capacity (CEC) ranged from 6.35 to 16.33 Cmol/kg. Soil clay, CEC, and pH values were relatively higher in subsurface compared to surface. SOC, available nitrogen, phosphorous, potassium, sulphur, Zn and iron values were higher in surface soils than in subsurface. Nitrogen, phosphorous sulphur, zinc and iron deficiencies were more pronounced in sub-surface. Significant positive correlation was noticed between percent clay content with available N ($r = 0.316^{**}$), available P_2O_5 ($r = 0.234^*$), available K_2O ($r = 0.473^{**}$), available Sulphur ($r = 0.249^*$). The organic carbon content was positively correlated with available N ($r = 0.456^{**}$), available P_2O_5 ($r = 0.578^{**}$), available K_2O ($r = 0.211^*$) and available sulphur ($r = 0.298^*$) while available phosphorous, was negatively correlated with soil pH. The variations in soil properties and nutrient status within the blocks and among the blocks indicate the need for employing integrated and soil test based site specific nutrient management particularly for sustainable productivity.

Keywords: Available macronutrients, Available sulphur, Physico-chemical properties, Iron, Zinc.