



Research Article

Nutrient availability in soils as influenced by physiography in Ayyammanahalli village, Bangalore rural district, Karnataka

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Summary

Soil-land form relationship was studied for Ayyammanahalli village by the interpretation of satellite and Google earth imagery. Sampling areas in transect were marked along the slopes based on the tonal variation. The selected transect areas were marked for profile study, five representative pedons were exposed on five different physiography, like Upland summit, Upland lower sector, Upland upper sector, shoulder of upland and lowland. The study area represents semi arid tropical climate. It has vast areas of upland and considerable area of lowland. Majority of the upland is under field crops. Upland has very gentle to gentle slope.

Key words : Nutrient availability, Physiography, Soil land form relation, Image interpretation

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Introduction

Soil properties vary from place to place arises from difference in parent material, climate, topography, biosphere and the age of ground surface. Even if the parent material does not vary, the variation in physiography in given area significantly affects the soil properties and, in turn nutrient availability. The information regarding effect of physiography on nutrient availability is limited. Therefore, an investigation was carried out to study the landform-nutrient availability nutrient relationship in Ayyammanahalli village, Bangalore rural district, Karnataka.

Research Findings and Discussion

The area representing eastern dry agro climatic zone, covers an area of 80.5 ha, lies between 13°23' 42" to 31°25' 39" N latitudes and 77°33' 36.8" to 77°33' 54.3" E longitudes. The elevation is in the range of 925 m to 939 m MSL. Geology of

the area is granite. Climate of the study area is semi arid tropical monsoonic type. Mean annual rainfall is about 826.3 mm (IMD, 2001). The rainy days extends from July to mid October. The moisture and temperature regimes are 'ustic' and 'isohyperthermic', respectively.

Five representative pedons were exposed on five different physiography (Fig. 1) viz., Upland summit, Upland lower sector, Upland upper sector, shoulder of upland and lowland. The soil-land form relationship studied based on the terrain analysis study is given in Table A. Morphological characteristics were studied horizon wise for each pedon. The characteristics studied were depth of soil, boundary characteristics, structure, consistency, size and type of pores and roots, type, thickness and quantity of cutans, size and quantity of nodules. Based on the recorded observations, the soils were grouped into different soil series, soil depth, amount and nature of gravel, depth of occurrence of gravel layer and nature of substratum present below soil and horizon sequence