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PHYSICO-CHEMICAL AND NUTRIENT STATUS OF FORESTS SOILS OF NIZAMABAD, INDIA

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ABSTRACT

Thirty two surface samples representing eight forest range soils of Nizamabad districts of Andhra pradesh namely Nizamabad, Gandhari, Indalwai, Varni, Banswada, Yellareddy, Kamareddy and Kammarpalli forest ranges were studied for their physico-chemical properties and nutrient availability status. The climate of the study area was semi arid and monsoonic climate. The sites selected were confined to hilly upland with steep sloping, upland lowland plains to flat undulating plains with nearly level to gently undulating slopes and have granular to sub angular blocky structures. The soil texture, bulk density, pH, EC, OC, $CaCO_3$, exchangeable $Ca^{2+}$and Mg^{2+}, available N, P, K and available micronutrients *viz.*, Zinc, Copper, Manganese, Iron ranged from loamy sand to clay loam, 5.0 to7.3, 0.04 to 0.76 dSm^{-1}, 0.35 to1.4 %, 0.0 to 2 %, 3.8 to 18.9 c mol (p+) kg^{-1} and 1.6 to 8.8 c mol (p+) kg^{-1}, 183 to315 kg ha^{-1}, 3.0 to 17.1 kg ha^{-1}, 200 to 672 kg ha^{-1} and 0.52 to 2.89 ppm, 0.32 to 3.9 ppm, 9.4 to 60.1 ppm, 15.4 to 65.6 ppm, respectively. The soils are acidic to neutral in reaction and non-saline. Most of the soils are sufficient in micronutrients.

Key words : Physico-chemical characters, Nutrient availability, Forest soils

The forests are very important fundamental natural resources. They are vital for the ecological development and environmental stability. The forest growth and development largely depend upon potential of the soil. It provides water, nutrients and anchorage for the growth and development of forests. The surface processes are predominantly influencing the development of soils. In the forest soil and land resource environment, the organic matter addition through consistent leaf litter influences greatly the pedosphere. It provides the major requirement of nutrition, moisture supply for the growth and development of plants.

In the process of development, there are number of obstructions and hinderances which are preventing or disturbing the supply chain for the plant growth and soil development in forest eco-system. Topographically the Nizamabad district forests are distributed mostly on hills undulating and gentle slopes. The altitude varies between 335 to 663 m above Mean Sea Level. The area covered by Nizamabad district forests, forms part of Indian peninsular shield which remained a stable land mass, since formation of the earth crust.

The present study is a major endeavor in assessing the surface soil characteristics and nutrient resources to comprehend and understand the potential capability of the forest soils. Systemic study of forest soils is important for better management and scientific utilization of its resources. The information available on the forest soils of Nizamabad district on these lines is meagre. Keeping in view the above facts, the present study was carried out to characterize surface soils and nutrient availability of the forest range soils Nizamabad district of Andhra Pradesh.

MATERIALS AND METHODS

Location and site characteristic of study area :

The Nizamabad district of Andhra Pradesh, extending over an area of 7956 Km^2 is bounded between 18^0 $10^/$ and 19^0 Northern latitude and 77^0 $40^/$ and 78^0 $37^/$ Eastern longitudes, the river Godavari constitutes the northern boundary of Nizamabad district separating the latter from Adilabad district of Andhra Pradesh. Physiographically, the study area can be divided into Manjira zone (335 to 490 m above MSL), Central hill zone (>635m above MSL) and Bheemnagar plateau (427 to 663 m above MSL). The main forest composition of the study area was southern tropical dry deciduous, southern dry teak, southern dry mixed deciduous, dry deciduous scrub, dry savannah, dry grass lands and secondary dry deciduous forests. The forest area is represented by a hot summer and generally dry temperate