

DISTRIBUTION OF AVAILABLE MACRO AND MICRO NUTRIENTS IN SOIL PROFILES OF FOREST AREA OF NIZAMABAD, INDIA

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ABSTRACT

Studies under taken to assess the profile wise nutrient status in forest range soils of Nizamabad district of Andhra Pradesh revealed that soils were low to medium in available nitrogen ($43-346 \text{ kg ha}^{-1}$), low to high in available phosphorus (2.04 to 22.48 kg ha^{-1}) and medium to high in available potassium (125 to 672 kg ha^{-1}). The DTPA Extractable total and available micro nutrients Zn, Cu, Fe, and Mn varied from 40 to 130 mg kg^{-1} , 57.5 to 195 mg kg^{-1} , 1.2 to 3.6 mg kg^{-1} and $220-1507 \text{ mg kg}^{-1}$, and 0.1 to 1.74 mg kg^{-1} , 0.26 to 6.74 mg kg^{-1} , 4.90 to 67.58 mg kg^{-1} and 8.02 to 66.81 mg kg^{-1} soil, respectively.

Key words : Available major nutrients, Available micronutrients, Total nutrients, Forest soils.

The forests are fundamental natural resources for the ecological development and environmental stability. Forest growth and development largely depend upon potential of soil land resources and their characteristic provides water, nutrients and anchorage for the growth and development of forests. In the forest soil and land resource environment, the organic matter addition through consistent leaf litter influences greatly the pedosphere, which provides the major requirement of nutrition, moisture supply for the growth and development of plants. The available macro and micronutrients in the soil profiles of forest soil, aid in determining the soil potential, which are essential for better utilization of forest soil resources. Such forest soil data base is of limited availability. In order to provide a base line data and information, the present study was taken up in Nizamabad district forests, which are distributed mostly on hills, undulating and sloppy terrain. The altitude varies from 335m to 663m above mean sea level. The area covered by Nizamabad district forests forms part of Indian peninsular shield which remained as a stable landmass since the formation of earth crust. The rocks formed about 2500 million years ago are known as the Archaean which are mostly igneous and highly metamorphosed rocks (Krishnan, 1968). Keeping in view the above facts, the present study was carried out the available macro and micro nutrients in the soil profiles of forest range soils of

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 $18^\circ 10'$ and 19° Northern latitude and $77^\circ 40'$ and $78^\circ 37'$ 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 ($>635\text{m}$ 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 climate. The average rainfall is ranged from 999.0 to 1101.0 mm . The mean maximum and minimum temperature vary from 32.2 to 36.4°C and 23.4 to 26.4°C , respectively during southwest monsoon, the temperature range from 30.1 to 32.4°C and 15.4 to 21.2°C during northeast monsoon and 36.5 to 41.4°C and 19.3 to 25.3°C during hot weather period. The soil samples were collected forest range wise. For study, sixteen typical pedons were selected on the basis of physiography and morphological features. The soil samples representing each horizon of the pedons were collected and characterized for physico-