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Research Article

Soil-site suitability for major crops in Renigunta mandal of Chittoor district in Andhra Pradesh

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Summary

A reconnaissance soil survey was undertaken in Renigunta mandal of Chittoor district, Andhra Pradesh to evaluate the suitability of soils for paddy, groundnut, redgram, sugarcane vegetables and mango. The soil belongs to Inceptisols, Entisols and Alfosols. More than 60 per cent base saturation, texture was finer and regular decrease in organic carbon with depth in Typic Haplustepts. Organic carbon, base saturation are major limitation in Typic Ustipsamments and Typic Ustifluvents. However, organic carbon and base saturation did not show limitation in Typic Haplustalfs. In general, texture, base saturation, pH and organic carbon are the major limitation for crop growth in all the soil. The limitation level of the land characteristics varied from crop to crop. The suitability classes can be improved if the corrective limitations (soil fertility characteristics) are altered through soil amelioration measures.

Key words : Soil-site suitability, Renigunta mandal, Groundnut, Paddy, Sugarcane, Vegetables, Mango

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Introduction

Land evaluation is the ranking of soil units on the basis of their capabilities (under given circumstances including levels of management and socio-economic conditions) to provide highest returns per unit area and conserving the natural resources for future use. The land suitability evaluation for field crops forms a pre-requisite for land use planning (Sys *et al.*, 1991). Performance of any crop is largely influenced by soil-site parameters as conditional by climate and topography and management level (Sehgal, 1991). Thus, it is essential to interpret the soil-site suitability for major crops grown in the area. However, each plant species requires specific soil and climatic conditions for its optimum growth. Production oriented crop cultivation on appropriate soils (taxonomic unit) appeared to be more beneficial (Bhaskar *et al*., 1988 and Naidu *et al*., 1988). Information on soil site suitability for crops in Renigunta mandal in particular and Chittoor district of Andhra Pradesh in general is very much lacking. Hence, in this study an attempt has been made to evaluate the soil suitability for major crops *viz.*, for paddy, groundnut, redgram,sugarcane, vegetables and mango on Inceptisols, Entisols and Alfisols in Renigunta mandal of Chittoor district, Andhra Pradesh.

Resources and Research Methods

Study area :

The study area comprising of 12,397 ha, lies in between 13° 32' and 13°53' N latitude and 79° 29' and 79°59' E longitude (Fig.A). It represents semi-arid monsoonic climate with distinct seasons. The soils were developed from granite-gneiss and alluvium parent material. The annual precipitation is 1286 mm of which 90 per cent is received during June to December. The mean annual soil temperature is 31°C with mean summer and winter soil temperatures of 31° and 27°C, respectively. The soil moisture regime is *ustic* and soil temperature regime is *iso-hyperthermic* (Soil Survey Staff, 1999).The natural vegetation comprised of *Azadirachta indica, Mangifera inidca, Pongamia glabra, Cynodon dactylon, Cyprus rotundus, Lantana camera, Parthenium hysterophorus* and *Lucas aspera.*