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An Evaluation of Soil Quality and Soil Indicators of Sutanpur District, U.P.

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ABSTRACT

Sultanpur District lies between $25^0$58 to $26^0$40 north latitucle and $81^0$33 to $82^0$40 eart longitude. In sultanpur district chief vatiations of soil are Dumat ar loam which is a mixture of sand and clay in various proportions matiyar ar clay and Bhur or sand. Pre-dominant soil of the district in loam ar Dumat occurring in central level land. Matiyar occurs in low lying areas while Bhur in found along the river Gomti. The low-lying land Consists of paddy land with patches of "Usar" swamps and marshes. Objectives of this paper are to review current efforts to define, soil quality.

Keywords- Soil quality, soil indicators

I.INTRODUCTION

The Information on natural and spatial distribution of soil is pre requisite for optimal land use planning. Soil surveys provide such information in the form of soil maps and attribute information in terms of its physical, chemical and marphological properties.

The utilization of remotely sensed data in the study of natural resources, specifically in soil resources inventory, has resulted in the development of well establized methodologies to generate soil maps and other related information in an effective manner. Satellite data provide a synoptic view of soil patterns of very large area and hove the added advantage of multi spectural and multi termral capacity. These data after interpretation and selective field traverse, leads to sppedy preparation of reliable reconnaissance level soil maps.

The present study was taken up to prepare a reconnaissance soil map of sultanpur District, Using IRS-1B-LISS-11 Satellite data.

Soil Classification-

According to soil taxonomy, soils of the area have been calssified mainly into two soils orders- Alfisoil and in ceptisoils

Alfisoils- Alfisoils are also mineral soils but they have full development of surface and sub-surface diagnostic horizons. They are well cultivated land and can observed in low laying areas.

Inceptisoils- Inceptisoils are also mineral soils that have developed over sub-humid and semi-arid regions and possers altered horizons, but do not have diagnostic horizon, which shows accumulation of clays. gupsum and salt of trans located alluvium.

Soil Information :- Five soil forming factors, climate, vegetation, parent material relief and time are responsible for the soil formation, Precipitation and high temperature have influenced some of the soil forming processes such as calcification, decalcification, In sultanpur district, mainly inceptisoils and entisoils, order have

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been found, due to alluvim parent material, which are washed out by river Gomti. Alluvim near the river is younger alluvim, leads to formation of Entisoils.

Discription of soil - The soild of Sultanpur district are mainly Aeolian & fluvial, which are transformed from Himalayas, through the river & wind action and deposited in these forms. Soil of the district are generally deep to very deep in depth fine textured, i.e. course loamy & loamy silty (mainly on action flood plain), well dreained and calcareous in nature.

II. RESULTS & DISCUSSION

Table- 1- Soil physical chemical and biological characteristics proposed by doral and porkin (1994) as basic indicators of soil quality

Soil characteristics	Relationship to soil condition or function	Rationale for selection as priority measurement
Soil texture	Retention and transport of water and chemical	Process modeline erosion and productivity estimates
Profile topsoil and rooting depth	Productivity and erosion estimates	Normalization of landscape and geographic variables
Total organic C and N	Teaching, productivity and erosivity estimates	Physical characteristics and for adyustment of measuments to volumetric basis
	Chemical Characterstics	
Ex. tractable N.P.K.	Ptentioan N Loss and pant available nutrients	Process modelling and harmalization of site charactricsts
	Biological Activities	
Soil respiration water	Micropial and sometimes plant content and temperature activity	

each biological, chemical, or physical measurement that was used to compute the soil quality index was normalized to a value between o and 1 using standerlized scaring fuctions. The values chose to normalize each soil quality measurement were derived from literature values for each parmeter. Values selected for normalizing soild aggregation data were based on studies by **Wilson and Browning (1945),** while those for bulk density were as suggested by **singh et al (1992**) for their filth index water filled pare space narmalization was based on information published by **Daran et al. (1990)** and **Linn and Doran (19840).** For plant available water in silt loan soil, we utilized relationship suggested by Hudson (1993). total carbon and total nitrogen scaling were based on experience with Rozetta and palsgrove silt loam soils, while cation exchange capacity, microbial biomars, respiration, ergo sterol concentrations, and earthwarm populations were normalized based on literature reviewed by each (1993).

After normalizing or scaring each measurement used for the proposed soil quality index, scares were multiplied by the appropriate weighting factor.

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III. CONCLUSION

Sultanpur is an agrarian district of eastern- plain zone of U.P. It lies between 81032! and 82041! east longitude and 25059! and 250401 Noarth latitude with geographical areas of 4436 km^2 . Initially district was divide in to four sub-divisions and 19 blocks for administrative and development purpose. The result shows that soil physical, chemical & biological characterstics.

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