

Soil Survey in Bastar Zone with Specific Analytical Study of Nutrients in Soil Composition for High Yield

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ABSTRACT

Classification of soils specifically in zone of Bastar that is Bastar soils is a member of fine lomykalonytic , isohyperthermic family of lithic haplustalf this series includes moderately deep well drained soil developed over laterite and occurring on level to gently sloping upper piedoment the soil pedon exhibits reddish brown to dark reddish brown sandy clay a horizon grading to BT horizon of dark reddish brown to dark red gravetly clay loam to clay loam with weak to medium by massive unconsolidated laterite. They have poor moisture holding and retentive capacity rooting depth is up to 20cm and moderate permeability. The most of the soils are under bushy and dry mixed vegetation and few patches are of fellow land. Content calcium, sodium, magnesium, potassium and few organic composition C,N,P,S all chemical characteristics and ted by fine. These nutrients gravity and concentration should analysed for using high yield or enhance the productivity.

Keywords:Classification of soils, content calcium, sodium, magnesium, potassium and few organic composition C,N,P,S.

INTRODUCTION

Good cultivation land are not only limited but different also in their production potential the soil variability within a village, district or state influence the use of soils for different purpose or land use planning survey used teo types (1) single purpose (2) standard

soil survey which used to laboratory analysis to add supplement and also the detective of composition of nutrients or essential inorganic and organic component for necessary to plant growth its examination of soil profile specially in Bastar region. Bastar district is a tribal district under intensive rural development program rapid soil survey was carried out for making resource inventory using the objective of survey were to provide basic information on soils their distribution. Characteristics problems and potentials information on landscaped, geology, vegetation, cropping pattern and socioeconomic conditions of the area were also collected during the survey. In the district about 700 soils profile and 1500 auger bores were studied and 25 soil series were identified. The soil map showing 72 soil series associated was prepared.

LITERATURE REVIEW

The soil classification and mapping are based on morphology which is family of hilhichaplustalf this series includes moderately deep well drained soil developed over laterite and occurring on level to gently sloping upper piedmont. The soil pedon exhibits reddish brown to daek (5Yr 4/4 to 5Yr 3/4) and several others clay loam etc. Cumulative effects of cropping and fertilizers use on the status of micronutrients in soil and crop.

Author in1 review to soil grading and mapping to change of physical characteristics of soil for good crop production author in2 reviewed in climatic change to crop alteration effect for good cultivation. Author in3 reviewed have a proper landuse plan so that crop cultivation should be followed for maximize the better harvest. Author in4 reviewed the soil texture which and dark red in colour should be useful for soil plantation and cultivation of mustard. Author in5 reviewed the area having single crop should facilities. Author in 7 reviewed micronutrients present in soils in their oxide, sulphide and filicate in the forming of rocks author in 6 reviewed the judicious management and conservation of soil and water is essential for realizing productivity.

Soil survey report of Bastar district

Table - 1 Geomorphic units and soils

S.No.	Geomorphic Unit	Soil series	Soil series Abb.
1.	Plateau	1. joba	Jb
2.	Escarpment	2. bastar	Bt
3.	Intervening basin	3. Ghota	Gt
4.	Gently sloping subdued plateau	4. pichekatla	Pc
5.	Upper piedmont	5. chichgaon	Ch
6.	Vally bottom	6. bodeli	Bd
7.	Lower piedmont	7. neghur	Ng
8.	Flood plain	8. pratarpur	Pp
		9. pujarikanker	Pk
		10.chaugel	Cg
		11.durgkondal	Dk

		12.bogor	bg
		13.mori	Do
		14.narharpur	Nh
		15.korogaon	Kr
		16.ghatti	Gh
		17.kharogaon	Kh
		18.kenhargaon	Kg
		19.basala	Bs
		20.mero	Mr
		21.pataud	Pt
		22.sambalpur	Sb
		23.dantewada	Dt
		24.khandi	Kd
		25.mahanadi	Mn

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The soil of the district are developed from feldspathic, quantizitic, granite rocks the area is having complex geology including shale sandstone, limestone, mica etc. the soil identified in the district are heterogeneous in nature and complex in respect of soil depth. morphological characteristics and physiochemical properties the soil are formed under the influence of tropical, subhydrid climate having thin to thick mixed dry deciduous, xenophytic of soil development would lead to formation of shallow to deep light to dark colored coarse to medium textured non calcareous soils

METHODOLOGY

Survey information includes the precaution of soil and presentation of information includes the organization qualities and behavior of soils. Soil management of soil and crop suitability for engineering purposes and other non-agricultural uses including pasture and forest.

- (1) Land capability grouping for sustained use under defined set of management practices
- (2) Soil and land irritability classification
- (3) Crop adaptability grouping
- (1) Land capability and classification at their levels (i) class (ii) subclasses (iii) units
- (2) Soil and land irritability classification:-

Recently sys (1976) has proposed a parametric approach for evaluating the suitability of soil for irrigation capability index $C_i = ABCDEFG$

Where A- rating for soil texture

B – rating for soil depth

C- rating for $CaCo_3$ status

D- rating for gypsum status

E- rating for salinity /Alkalinity

F- rating for drainage

G- rating for topography (slope) have been used A,B,F and G rating for Ci

Ci more than 30(class I) Ci 60-80(class II) Ci 45-60 (class III) Ci 30-45 (class IV) Ci less than 30 class(VII)

Table- 2 vegetative grouping and their limitations

S No.	Vegetative grouping class	Soil series	Limitation
1.	D	Khandipataud chichgaon	Choice of plants limited by slowly permeable, heavier texture soil medium nutrients status
2.	B	Bastar, jobapratapur	Low fertility level, coarsegravelly low availability moisture, low, medium nutrients status
3.	A	Dantewadanarharpur Mahanadi mero	Choice of plant limited because very rapid permeability,porus in nature, medium nutrient level
4.	F	Neghur, bodeli, korogaon	Pourly drained slow permeability and water logging during rainy season
5.	G	Ghattikheregaon	Choice of plants as lateriferous species suitable lighter in texture high amount of iron
6.	C - D	Ghotapujarikanker	Choice of plant slow to moderately slow permeability. Good moisture holding and retentive capacity
7.	B - C		Choice of plants limited by low fertility
8.	J		Choice of plants limited by soil depth, topography and thus shallow rooted plant species

RESULTS AND DISCUSSION

From the assessment of the above table 2 shown the importance of texture the soil series are identified as a textural families as series differentiation the other important factor is the climatic parameter i.e moisture in the soil classification the metrological data soil morphological characterization classified it according to soil taxonomy (USDA 1978) five soil order VizEntisol,Inceptisol, mollisol,alfisol and vertisol have been identified. Soil fertility particularly interested in the physical component plant to take up by criteria (i) root interception (ii) mass flow (iii) diffusion are identified as a textural families as series differentiation the other important factor is the climatic parameter i.e moisture in the soil classification the metrological data soil morphological characterization classified it according to soil taxonomy (USDA 1978) five soil order VizEntisol,Inceptisol, mollisol,alfisol and vertisol have been identified. Soil fertility particularly interested in the

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- A. Plant Nutrient requirements – the crop growth is proportional to the amount available of the most limiting plant nutrient nitrogen supply sufficient to produce 70 bushels of wheat per acre enough phosphorus for 50 bushes per acre
- B. Macronutrients and micronutrients – plant nutrients are divided into two category macronutrients are those that make up the greatest proportions of the plant and so that make up the greatest proportion of the plant and so are needed in large quantities these are nitrogen, phosphorus, potassium, Sulphur, calcium and magnesium, micronutrients are needed in small quantities these are boron, copper, Iron, manganese, molybdenum, Zinc, Chlorine and cobalt.
- C. Soil of high productivity potential for paddy pataud, kanhargaoon, Mahanadi, mero, korogaon, sambalpur series are mainly under paddy cultivation these series occupy considerable area in distinct occurring in lower piedmont flood plain intervening basin and valley bottom with slope gradient range 1-3% they are very deep and non calcareous soils these soils medium to high productivity potential for paddy crops. It is observed in the area even with poor crop management it is giving good response for crop yields.

The recommendation gives general guidelines for cropping and management practices which are made by JNKVV, Jabalpur the agricultural agencies need to give importance for crop production to soil use of improved seeds use of manure and fertilizers use of plants protection measures improved implements for farming plant protection measures export these no. taulka/block/big villages and villages along the road sides. They need to be convinced about modern technique in agriculture workers / agencies data district statically record book the estimated productivity potential for different crop graded as if it is more than 80% high 80-40% for medium and less than 40% low based on these grading the soil have been grouped and brief about the same is as follows.

CONCLUSION

The district is having complex and heterogeneous physiographic setting nearly half of northern part of district is undulating comprising plateau and piedmonts the plateau are scattered or disconnected chain of low hills the main river is Indrāvati other important river are katri, khadi, kuha, sabri and Mahanadi. The constituents minerals of the feldspar, oligoclase, quartz, zircon, chlorite and epidote, kaolin are the most abundant seen in above discussion and the further scope of few minerals finding in caves area of Bastar that is rare earth minerals.

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