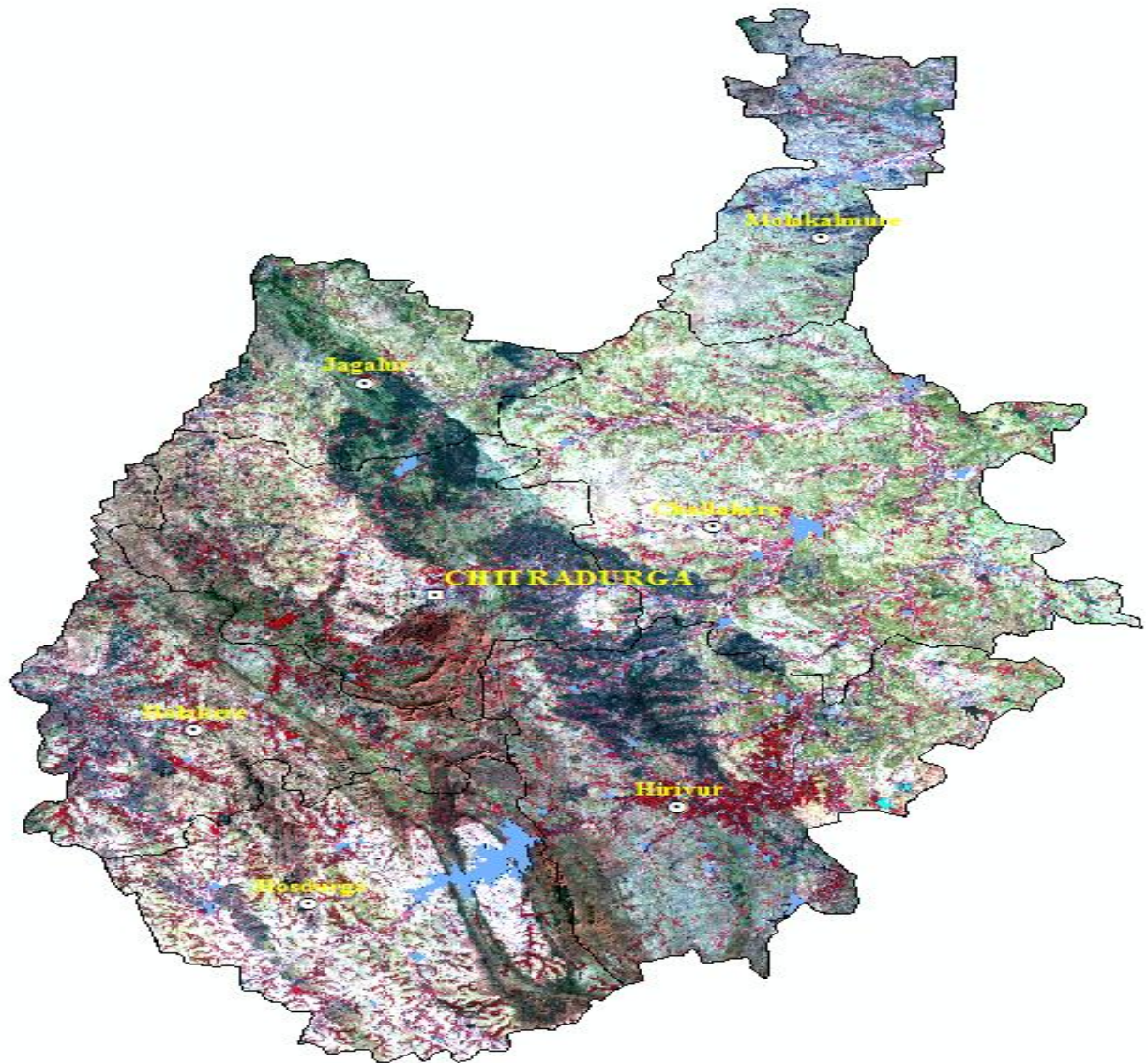


# SOILS AND LAND USE OF CHITRADURGA DISTRICT, KARNATAKA



REGIONAL CENTRE  
BANGALORE

National Bureau of Soil Survey & Land Use Planning

(Indian Council of Agricultural Research)

Nagpur - 440 033, Maharashtra, India



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## Soils and Land Use of Chitradurga District, Karnataka

### Meta Data for Soil Reports of Chitradurga District, Karnataka

Sr.No.	Elements	Scheme	Value
1.	Identification Information	Name of the Dataset	Soils & Land Use of Chitradurga District, Karnataka
		Contents	Soil Survey Reports, Maps and Imagery
		Keywords	Soil Survey Report
		Report/Map Language	English
		Map Scale	
		Survey Year	
		Imprint Year	
		Edit Year	-
		Value-addition Year	2013
		Purpose of Value-addition	To Create Interactive Maps and Reports and Disseminate to the End-User Agencies.
		Access Constraints	Permission Required
Use Constraints	Permission Required		
2.	Contact Information	Generating Agency	NBSS & LUP, Nagpur
		Contact Person	Director, NBSS & LUP, Nagpur
		Mailing Address	National Bureau of Soil Survey & Land Use Planning Sankar Nagar P.O. Amarabati Road, Nagpur - 440 033 Maharashtra, India
		City/Locality	Nagpur, Amarabati Road
		Country	India
		Contact Telephone	+91- 712- 2500386, 2500545
		Contact Fax	+91- 712- 2500534
		Contact Email	director@nbsslup.ernet.in
3.	Spatial Domain	Bound Left	75°40' E
		Bound Right	77° 0' E
		Bound Top	16° 30' N
		Bound Bottom	15°00' N
		Area/Coverage	5, 08,232 ha
		Projection	UTM
		Datum	WGS 1984
		Unit	Meter
		Administrative Location	State: Karnataka, District: Chitradurga
4.	Citation	Data Prepared By	NBSS & LUP, Bangalore (Regional Centre)
		Associated Project	
		Associated Value- additions	-
		Associated Publications	-
		Coordinator Value- added Publication	-
5.	Storage	Data Format	PDF/GeoPDF
		Data File Size	
		Data Physical Location	\\GIST6\D:\GeoPDF Mapping Project _2013\Chitradurga
		Download Location	-
6.	Quicklook	Graphic file in jpg format	Y
7.	Image Data	Name of the Satellite	Landsat
		Sensor	ETM+
		Date of Image	16 October 2002 and 27January 2003
		File Format	TIFF
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# 1.

## INTRODUCTION

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Soils form the base for the existence of all living beings on this earth. Proper understanding of the soil properties and their optimum utilization for the development of agriculture, forestry, pasture or the development of irrigation projects is of utmost importance. Soil survey report and maps provide information on the potentials and problems of soil resources of an area. Interpretation of soil data leads to adaptation of precision management. In view of this, a reconnaissance survey of Chitradurga district of Karnataka State was carried out with the following objectives:

- To characterise the soils and highlight their problems and potentials,
- To correlate and classify them according to Soil Taxonomy, and
- To prepare interpretative maps based on soil-site characteristics and their limitations for developing optimum land use plans.

## 2.

**GEOGRAPHICAL SETTING**

The district of Chitradurga covers a total geographical area of 10.78 lakh ha between 15°00' to 16° 30' North latitudes and 75°40' to 77° 0' East longitudes. The district lies at the eastern part of the state and is bordered by Bellary district in the north, Dharwar district in the north-west, Chikkamagalur and Tumkur districts in the south and south east, Shimoga district in the west and Ananthapur district of Andhra Pradesh in the east. It comprises of nine taluks. Dhevangere taluk is not included in this report as it was bifurcated as a new district. Location map of the district is shown in fig.1.

Geologically, the district rests on Archeans and Dharwars as the basement complex. The major rock formations are different forms of granites, gneisses, schists, quartzites and also a small area of volcanics.

The Chitradurga district forms a part of the Karnataka Plateau which has undergone various stages of erosion - deposition processes as a result of the upliftment of Western Ghats and the change of climate from sub-humid to semi-arid during Pliocene- Pleistocene transition. In general, two major planation surfaces have been identified based on distinctly different lithological units. They are:

- a. Granite/Gneissic landscape
- b. Schistose landscape

Both the above landscapes have been subdivided into various landform units such as hills, pediments, plains and valleys.

The landscape of Chitradurga district is rugged with number of hill ranges with elevation ranging between from 550 and 1200 m above mean sea level.

The district is drained mostly by the Vedavathi, Chikkahangari and Tungabhadra rivers. A number of irrigation canals, tanks and wells are the main water sources of the district. Out of the net area sown, about 9.5 per cent is irrigated by different sources.

Net area sown	:5, 08,232 hectares
Area under irrigation	:77,046 hectares
Area irrigated by canals	: 43,643 hectares
Area irrigated by tanks	:18,425 hectares
Area irrigated by wells	: 14,482 hectares
Area irrigated by other	: 496 hectares

The district has tropical semi-arid dry climate. The mean annual rainfall is 655 mm. A major portion of the rain is received during the south-west monsoon period (June to September) (Table-1). This district has a short period of moisture re-charge in October. Moisture control section will be moist in some part for as many as 128 cumulative days in most years (world climate, Ghent, 1987), to qualify for "ustic moisture regime" which permits growing of one kharif crop under rainfed conditions. The mean annual air temperature is 25.4°C. April is generally the hottest month and December the coldest. The difference between the mean summer and mean winter temperature is less than 5°C. Hence, the soil temperature regime is "Iso-hyperthermic" (Fig.2).

# LOCATION MAP

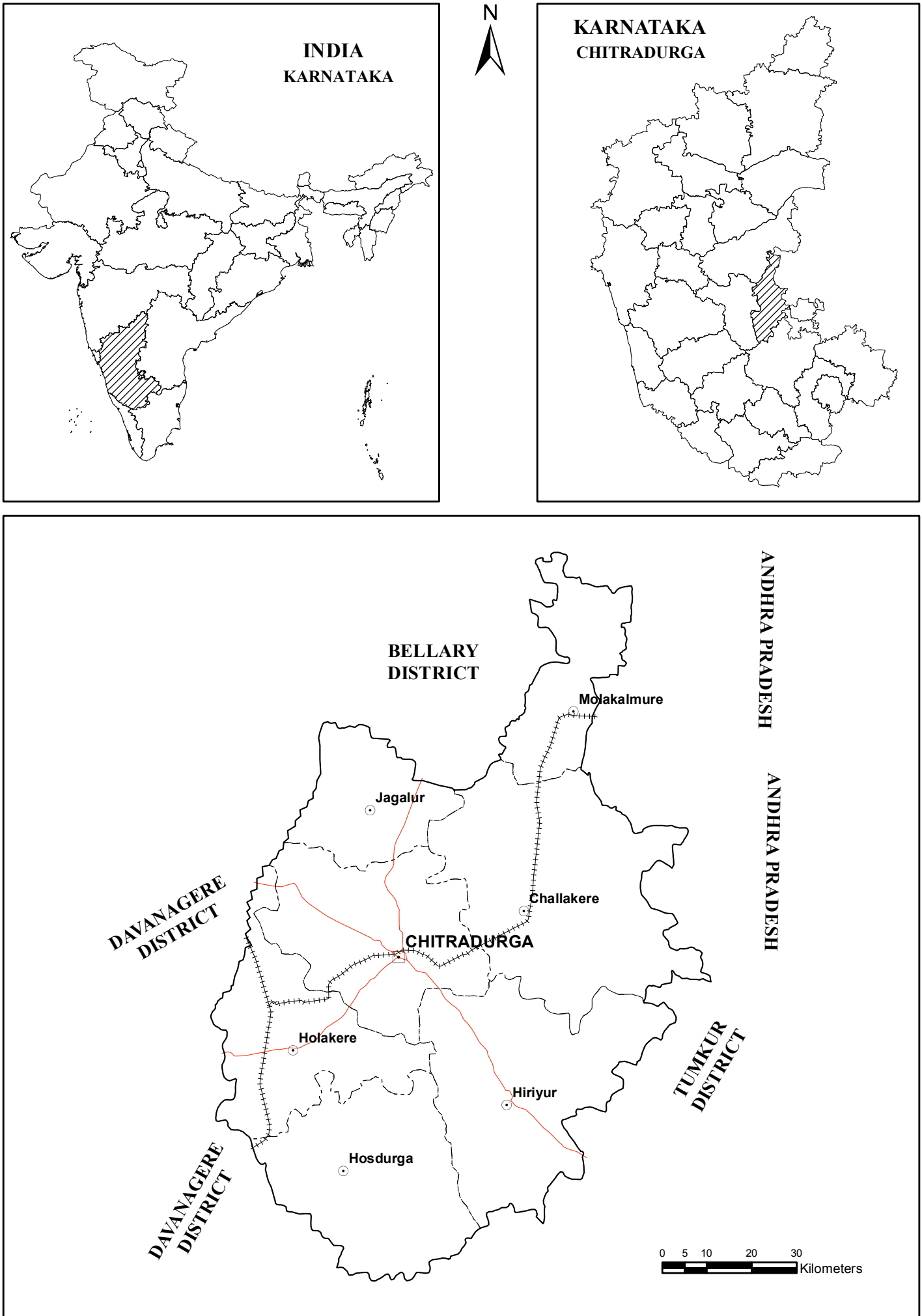


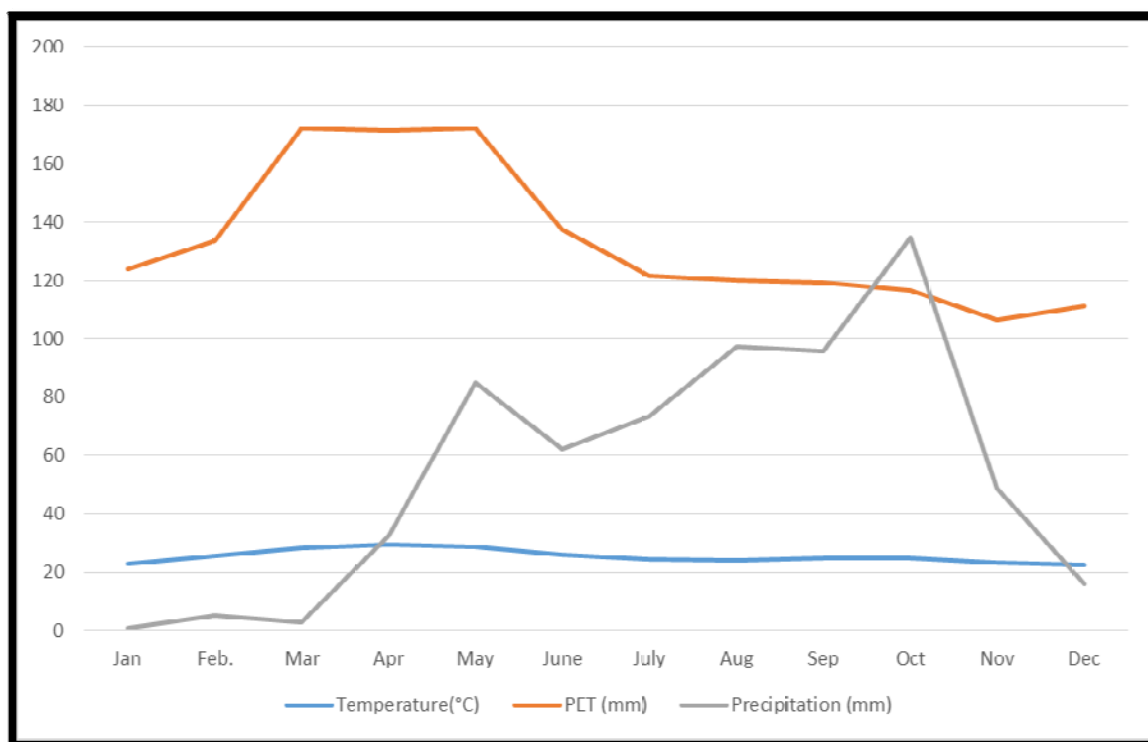
Fig:1 Location Map



**Table 1. Climatological data of Chitradurga District, Karnataka**

Station: Chitradurga Lat. 14°14' N. Long 76°26' E. Height 733 m above M.S.L.

District Average	Jan	Feb.	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual Average
Temperature(°C)	23	25.6	28.2	29.5	28.7	26	24.4	24.3	24.7	24.9	23.4	22.5	25.4
PET (mm)	123.7	133.6	172.1	171.3	172.1	137.5	121.4	120	119.2	116.6	106.5	111.1	1605.7
Precipitation (mm)	1.2	5.4	3.1	32.4	84.9	62.4	73.3	97.2	95.8	134.7	48.6	16	655
Rainy days	0.1	0.4	0.3	2.4	4.6	5.1	8.7	7.7	6.5	7.2	3.1	0.9	47

**Fig: 2 Water Balance - Chitradurga**

Source: Report of National Commission on Agriculture Part IV (1976) Temperature and Rainfall: Climatic observatories of India Meteorological Department (Based on observations from 1931 - 1960)

The natural vegetation in the district is limited as the rainfall is low and scanty. The vegetation is mainly of dry deciduous or thorny scrub type. Agriculture forms the main occupation of the people. Out of the total geographical area, 57 per cent of the area is under cultivation (Table-2).

The irrigation potential of the area is on the increase with the introduction of irrigation projects. The major crops grown in the area are: rice, finger millet (ragi), sorghum (jowar), pearl millet (bajra), and the other minor crops are millets, pulses, cotton, groundnut and coconut. Sorghum is the dominant crop followed by pulses, finger millet and other minor millets (Table 3). Area under rice is on the increase in recent times. Cotton, groundnut and bajra are also grown over significant area. (Fig. 3 and 4).

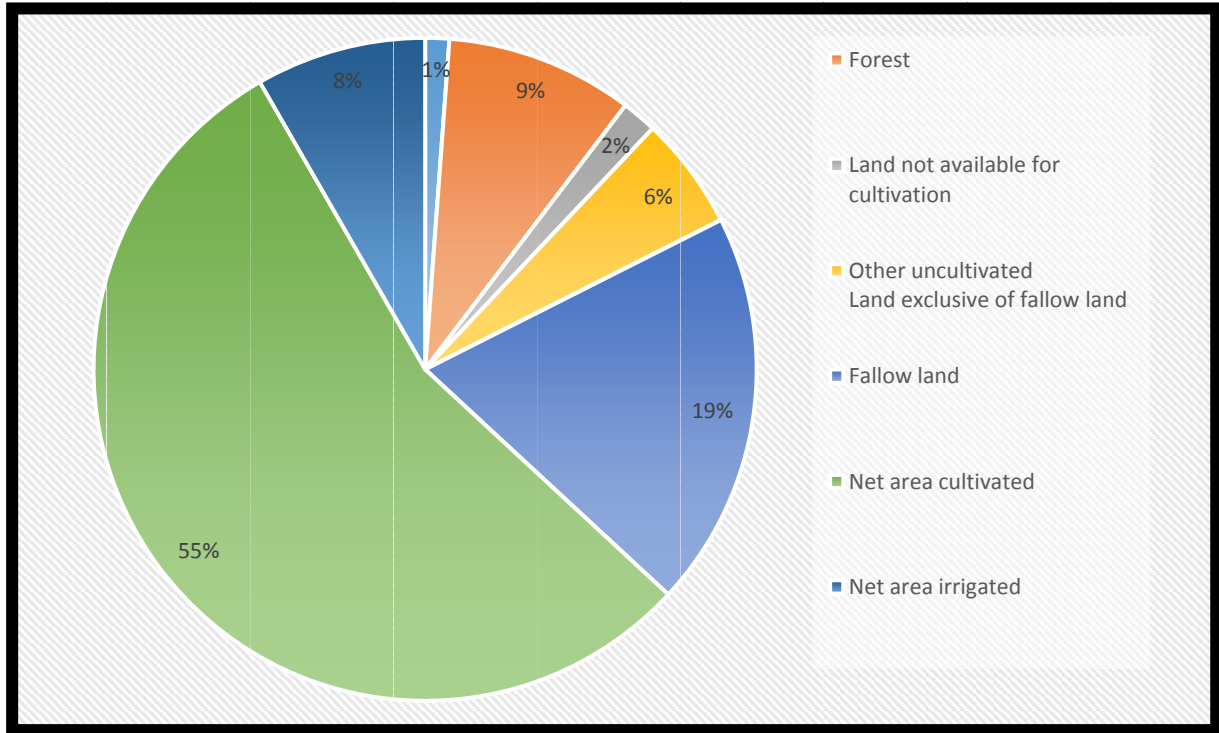
**Table. 2 Land Use of Chitradurga District Karnataka**

Taluku	Total geographical area (Gazetteer 1971)		Forest	Land not available for cultivation	Other uncultivated Land exclusive of fallow land	Fallow land	Net area cultivated	Net area irrigated
	Sq. Km	Area(ha)						
Challakere	2075	206219	6978	22662	16054 (7.8)	55199 (26.8)	83229 (40.4)	9120 (4.4)
Chitradurga	1378	136158	12028 (8.8)	20546 (15.1)	275 (0.2)	675 (0.5)	89989 (66.1)	6738 (5)
Hiriyur	1705	170093	11940 (7.1)	34724 (20.40)	5459 (3.2)	55484 (32.6)	54322 (31.9)	9624 (5.7)
Jagalur	968	95520	12670 (13.3)	12576 (13.2)	151 (0.02)	14888 (5.6)	49753 (48.1)	3452(3.6)
Harihar	488	40445	1394 (0.3)	2593 (0.5)	60 (0.01)	9742 (2)	30815 (63)	16947(34)
Davangere	958	95660	2342 (2)	5398 (5.6)	1452 (1.5)	21048 (23)	56719 (59.3)	22878 (24)
Molakalmuru	739	73859	15343 (21)	13348 (18)	532 (.01)	5673 (7.6)	33765 (46)	4034 (5.4)
Hosadurga	1429	142870	13340 (9.3)	15838 (11.1)	26620 (18.6)	8393 (5.9)	55784 (39)	2879 (2)
Holalkere	1099	109711	1810 (8.1)	28193 (25.7)	533 (0.5)	7036 (6.4)	53856 (49.1)	1974 (1.8)
Total	10839	1078535	84945 (7.9)	15878 (14.36)	51136 (4.7)	179308 (16.6)	508232 (47.1)	77046 (9.5)

**Table. 3 Distribution of major crops in Chitradurga District (Taluk wise) Karnataka**

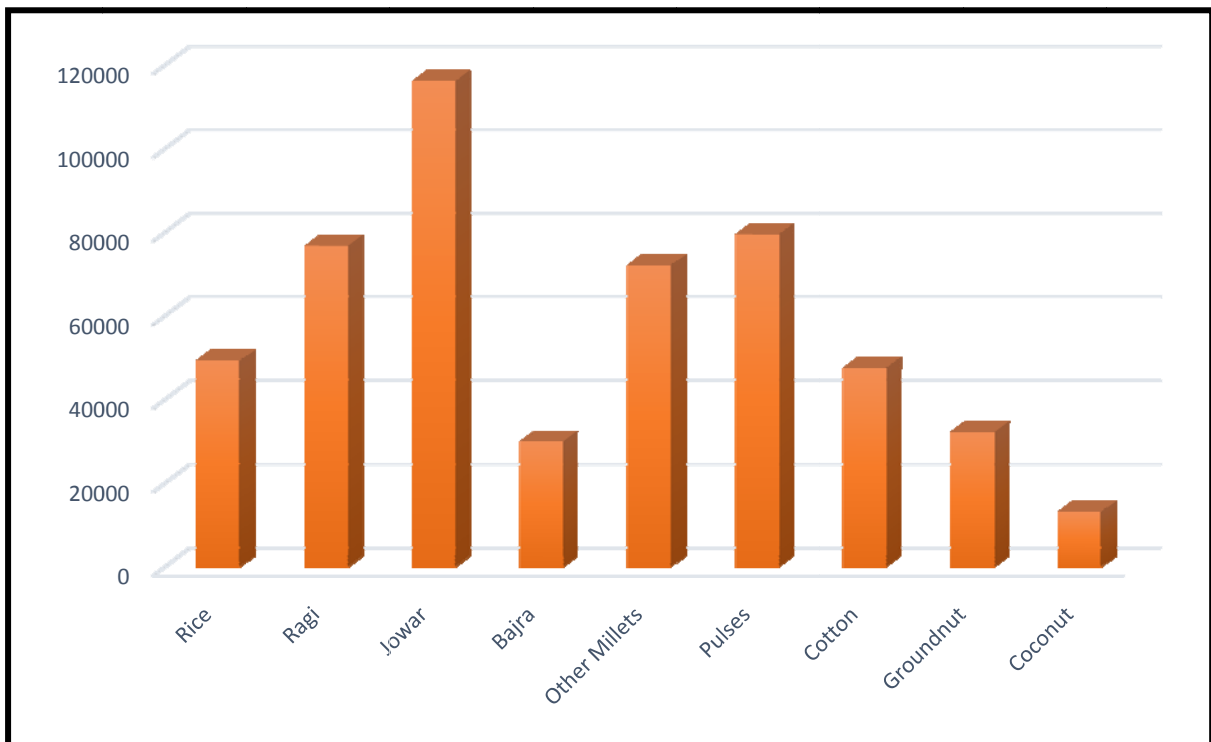
Taluk	Rice	Ragi	Jowar	Bajra	Other Millets	Pulses	Cotton	Groundnut	Coconut
Challakere	3418	6242	18174	9729	8868	21754	5117	5528	272
Chitradurga	1041	14091	26839	3224	15266	10749	1218	578	455
Hiriyur	3477	2788	5752	8966	8758	11494	6346	1137	1306
Jagalur	277	8913	13211	1068	11874	6689	6405	2189	61
Harihar	15398	5331	8587	17	2681	898	5205	4930	31
Davangere	21683	14990	12271	40	2591	4266	5210	12432	403
Molakalmuru	1613	510	11974	3541	4171	5263	2883	9918	3
Hosadurga	1546	8623	8469	2193	8982	11481	503	948	9496
Holalkere	838	15239	10960	1038	8963	7003	3423	1709	1214
Total:	49348	76827	116237	29961	72154	79579	47610	32269	13241
Percentage area Representation Percent of the Cultivated area	4.6	7.1	10.7	2.8	0.7	7.3	4.4	2.9	1.2
	9.7	15.1	22.8	5.9	14.2	15.7	9.4	6.3	2.6

**CHITRADURGA LAND USE PATTERN**



**Fig-3**

**CHITRADURGA MAJOR CROPS**



**Fig-4**

**3.**

**SOIL SURVEY TECHNIQUES**

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Reconnaissance soil survey and mapping of Chitradurga district were carried out using 1 inch to a mile scale SOI toposheets as base, and using the standard soil survey Manual (ICAR,1970). The field investigation included the study of several catenary sequences to bring out the relationship between physiography and soils. A number of traverses were undertaken in the rest of the area in support of the above. A soil map showing the soils series as mapping unit has been prepared in all 36 soil series were identified and mapped. Based on the soil map, a number of interpretative maps such as land capability, Irrigability, problem and potential soils, present land use and suggested land use, suitability of soils for the cultivation of finger millet, sorghum, and cotton have been prepared.

## 4.

**THE SOILS**

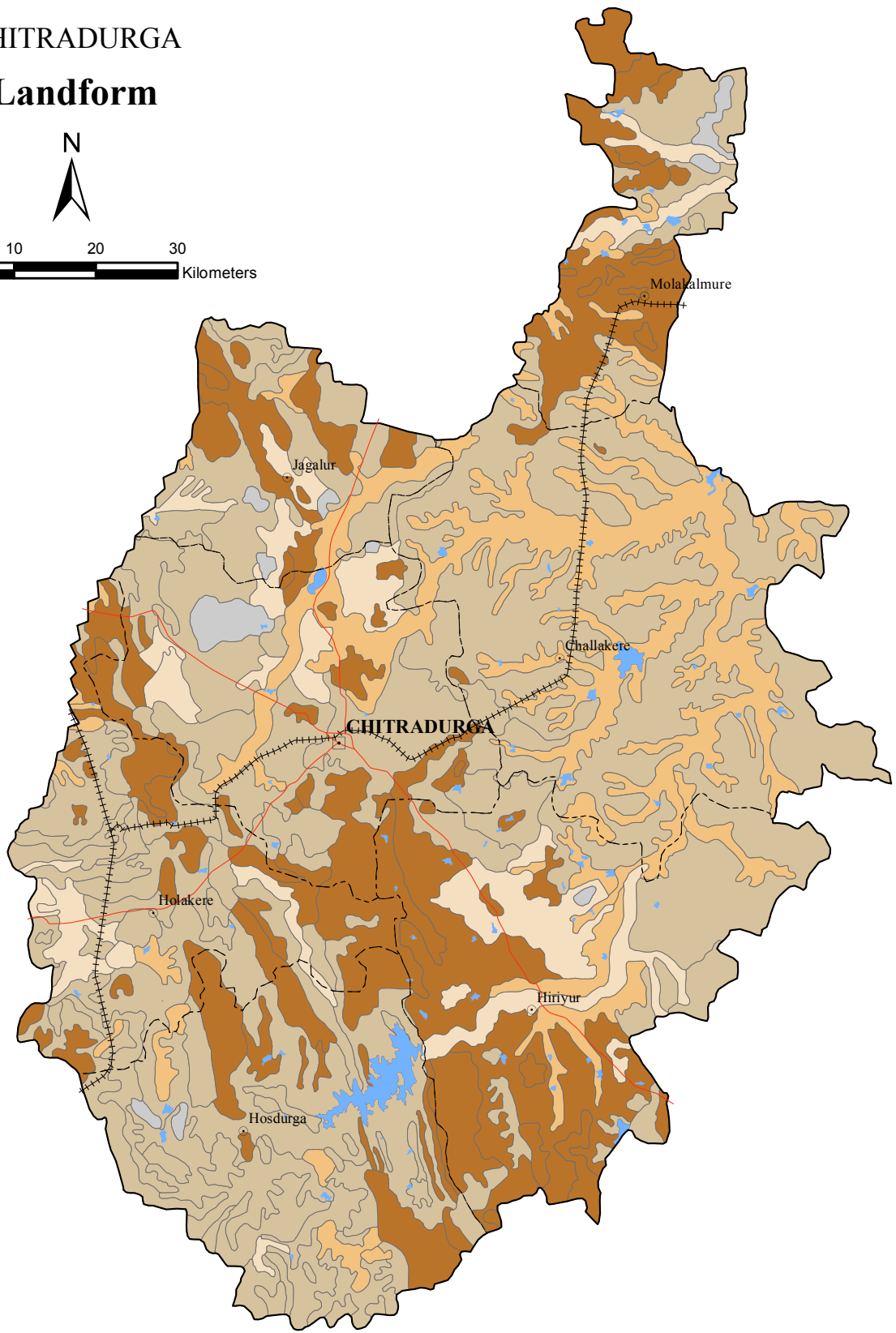
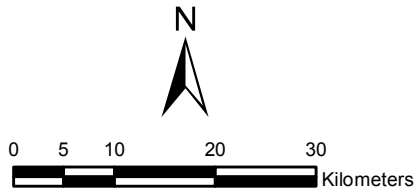
The soils of Chitradurga district occur on different physiographic units such as hills, pediments, plains and valleys. A close relationship exists between physiography and soils. In the evolution of soils of Chitradurga district, climate, parent material and geomorphological processes have played a dominant role. Brief descriptions of soil series along with their physiographic position and soil classification are given in table-4. The soils are variable due to lithology; the soils of granite/gneissic terrain are deep to very deep, yellowish red to reddish brown, loamy/clayey-skeletal; and whereas the soils of schistose terrain are shallow to moderately deep, red to dark reddish brown, clayey skeletal. The soils on the hills are shallow to moderately deep, while on the pediments and plains they are deep to very deep and in the valley floors very deep. The soils on the pediments which are generally traversed by quartz and pegmatite veins have well developed structural and textural 'B' horizons. In the lower parts of the pediments, however, very deep cracking clay soils having dark grayish brown to very dark grayish brown, vertisols occur. Thematic maps of the district are shown in figure 5 -10.

**Table 4. Physiography and soils of Chitradurga District.**

Physiography	Soil Map Symbol	Soil series	Brief description	Soil classification	Area	
					Hectare	Percent
Granitic/gneissic Terrain Hilly	37	Rock out	Bare rock exposures		24489	2.3
	5	Bidarekere	Deep, well drained, dark brown to reddish brown, gravelly loamy sand, with e1-e2 erosion	Clayey-skeletal, UdicHaplustalf	20504	1.9
	6	Bilichodu	Deep well drained, yellowish red to dark red, sandy loam with e1-e2 erosion.	Clayey-skeletal UdicRhodustalf	23690	2.2
	11	Devalapur	Very deep, well drained, reddish brown to dark red, sandy loam with e1-e2 erosion.	Fine, OxicRhodust	50528	4.7
	34	Tallak	Deep, well drained, yellowish red to dark reddish brown, gravelly loamy sand with e1-e2 erosion.	Fine, UdicRhodustalf	295648	27.4
	27	Mamahalli	Very deep, well drained, yellowish red to dark red, sandy loam with e1-e2 erosion.	Fine, loamy UdicRhodustalf	4790	0.4
	31	Ramnagarm	Deep, well drained, yellowish red to reddish brown,	Fine,	6313	0.6

# CHITRADURGA

## Landform



### Legend

	Hill
	Gently sloping
	Level
	Valleys
	Undifferentiated soils

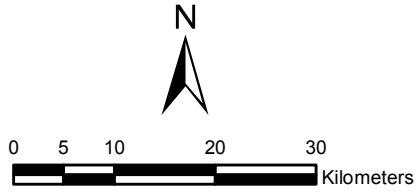
### References

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	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies

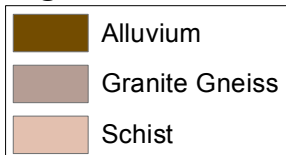


# CHITRADURGA

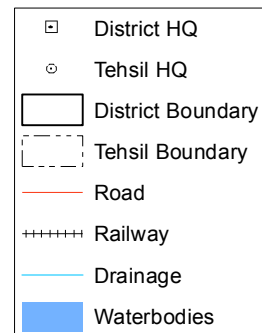
## Parent Material



### Legend

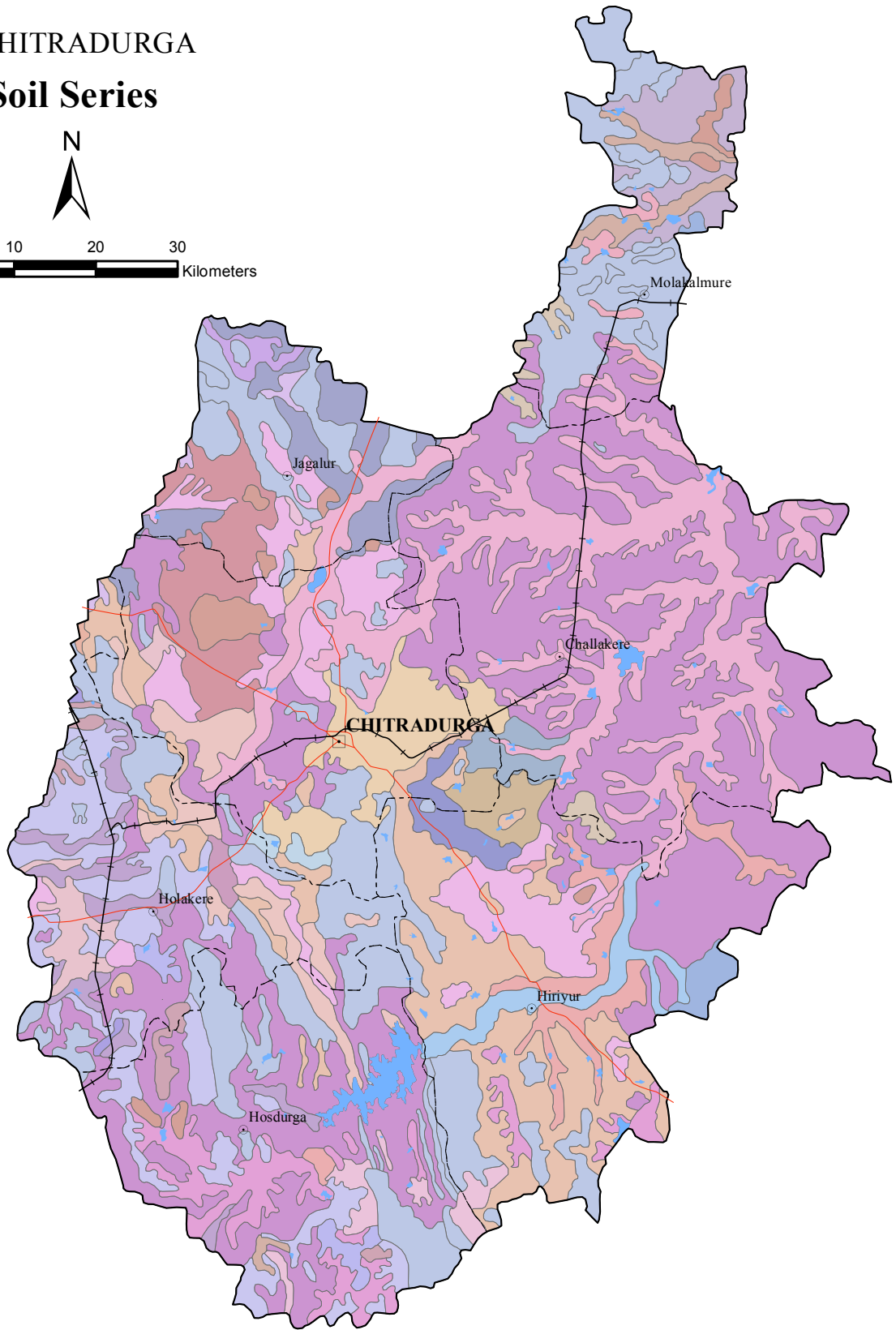
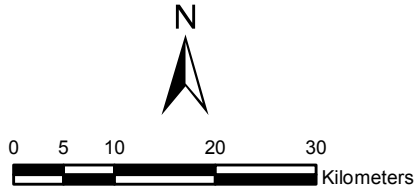


### References



# CHITRADURGA

## Soil Series



### Legend

Anguru	Harat	Mayakonda
Balenahalli	Holalkere	Molkalmuru
Banjagondana	Hosahalli	Parasurampur
Bidarekere	Hugaluru	Rock outcrop
Bilichodu	Janikal	Ramnagaram
Brahmanapalle	Kanaturu	Rampur
Chikkahagari	Karparahalli	Sandur
Chitra halli	Katamadevara kote	Tallak
Devalapur	Konasagara	Talvati
Guttikatte	Madakarinaikkana kote	Teligi
Hagari	Marnahalli	Veerapuram

### References

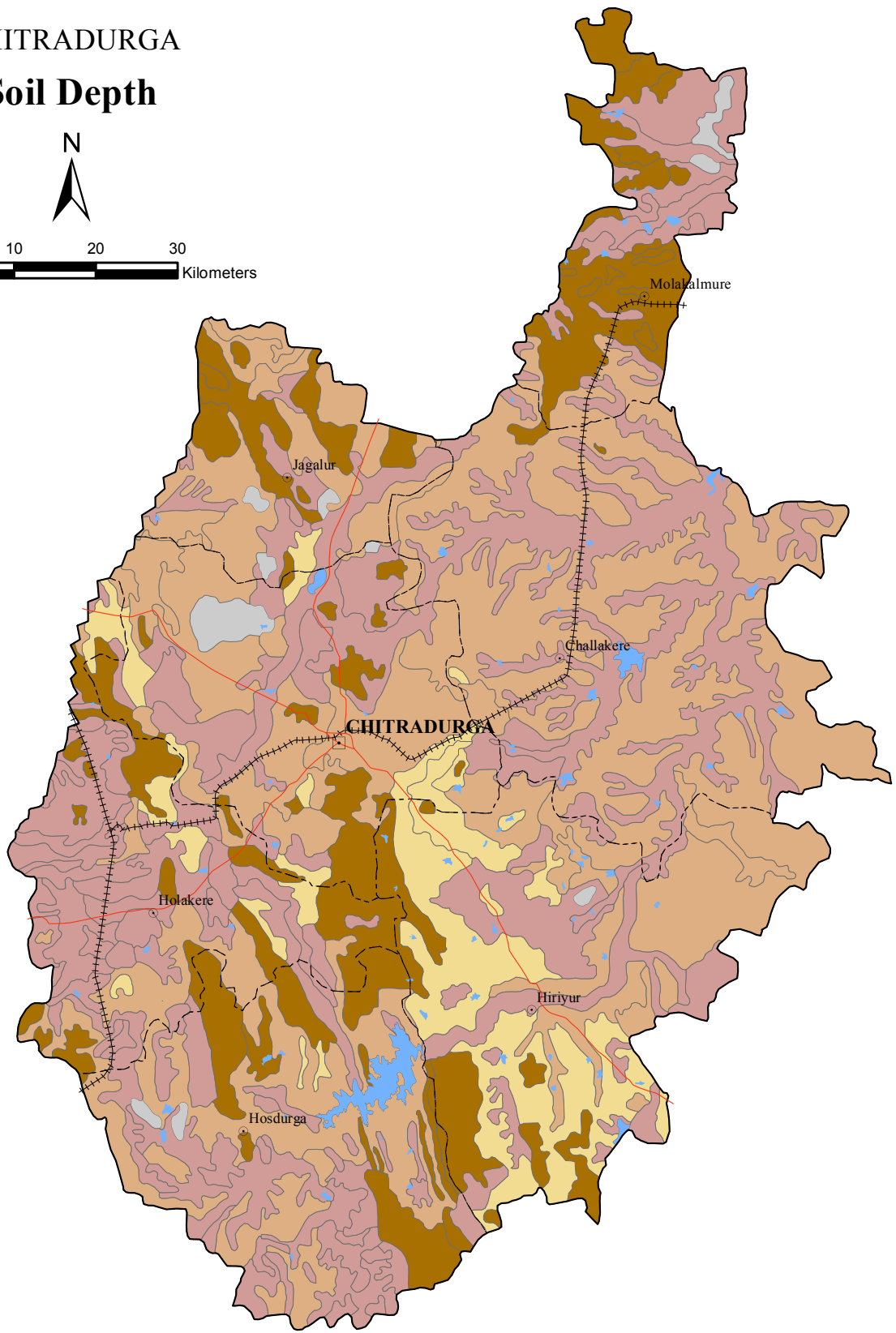
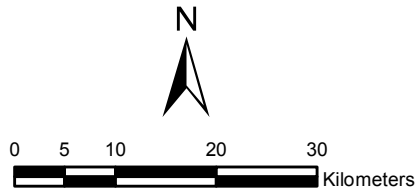
□	District HQ
○	Tehsil HQ
—	District Boundary
- - -	Tehsil Boundary
—	Road
+++++	Railway
—	Contour
—	Drainage
■	Waterbodies
■	Watershed Boundary





# CHITRADURGA

## Soil Depth



### Legend

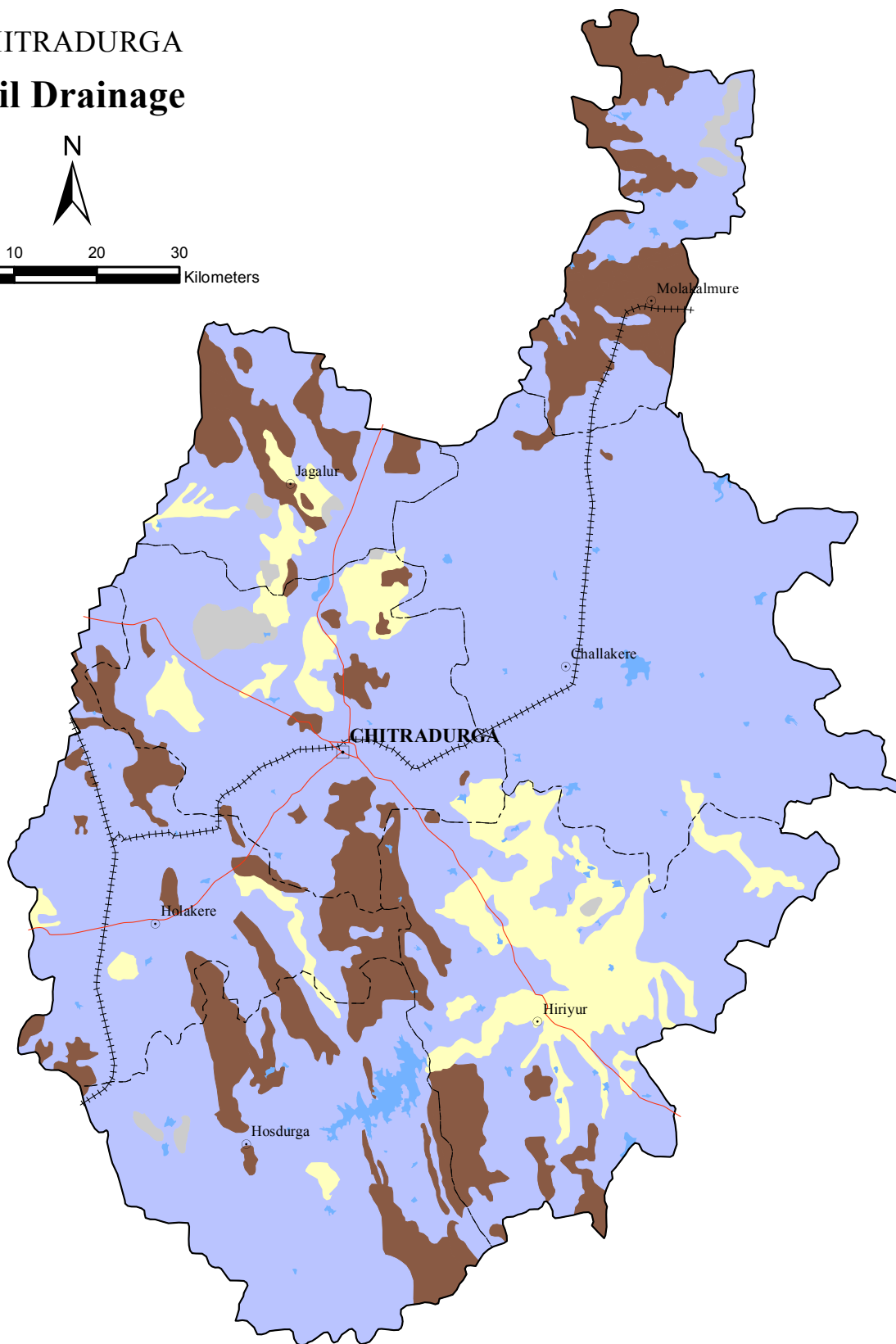
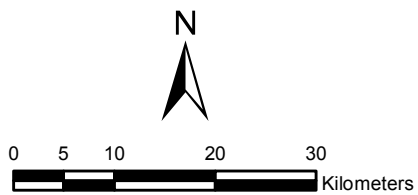
	Mod. deep
	Deep
	Very deep
	Rock outcrop
	Not Available

### References

	District HQ
	Tehsil HQ
	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies



# CHITRADURGA Soil Drainage



## Legend

	Well
	Mod well
	Rock outcrop
	Not Available

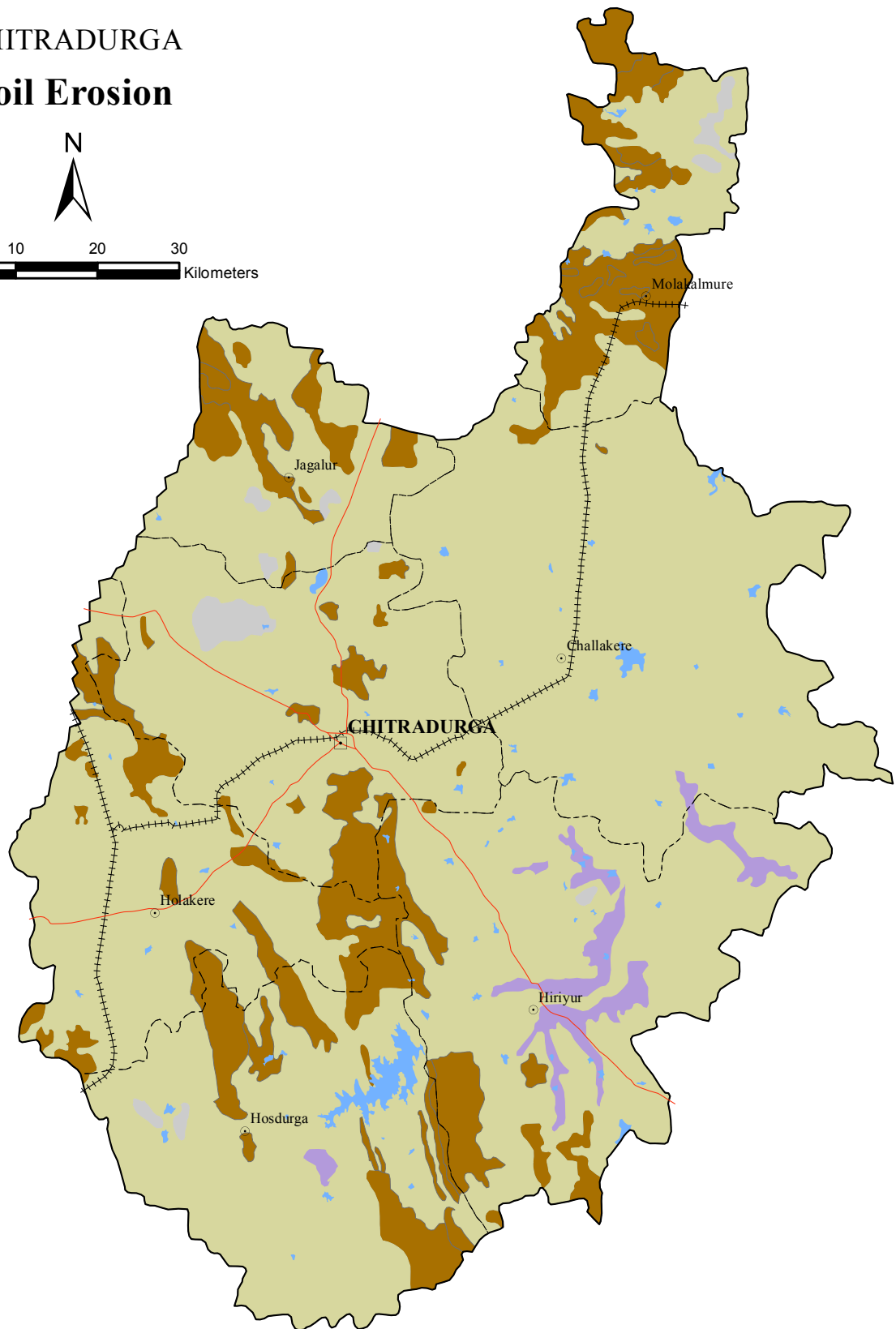
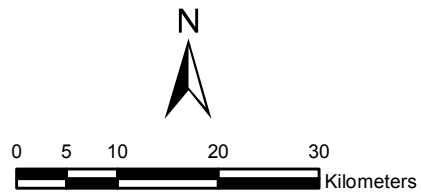
## References

	District HQ
	Tehsil HQ
	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies

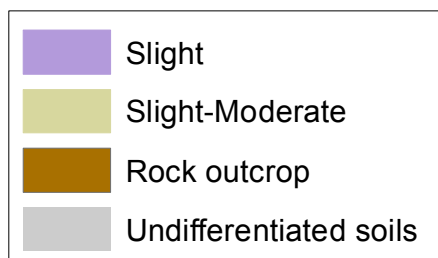


# CHITRADURGA

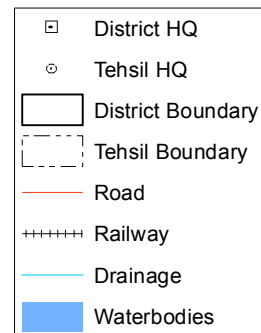
## Soil Erosion



### Legend



### References



## Soils and Land Use of Chitradurga District, Karnataka

			gravelly sandy loam, with e1-e2 erosion.	Udic Rhodustalf		
	30	Rampur	Very deep, well drained, yellowish red to dark red, clay loam with e1-e2 erosion.	Fine,Udic Paleu stalf	24986	2.3
	8	Brahmanapalle	Very deep, well drained, yellowish red to dark reddish brown, sandy clay loam, with e1-e2 erosion.	Fine,Udic Rhod ustalf	42968	4
	3	Balenahalli	Deep, well drained, dark brown to dark reddish brown, silty loam, with e1-e2 erosion.	Fine, Udic Haplustalf	26660	2.5
	4	Batrepalle	Deep, well drained, dark brown to strong brown, gravelly sandy loam with e1-e2 erosion.	Loamy-skeletal Typic Ustropepts	1140	0.1
	26	Madakarina- ikanakote	Deep, moderately well drained, dark grey, brown to very dark grey, silty clay loam, calcareous with e1-e2 erosion.	Fine loamy, Vertic Ustropepts	8030	0.7
Very gently sloping middle pediments	28	Holalkere	Very deep, well drained, pale brown to dark brown, sandy loam with e1-e2 erosion.	Fine loamy, Typic Ustropepts	12026	1.1
	12	Guttikatte	Very deep, well drained yellowish brown to dark brown, sandy loam e1-e2 erosion.	Fine loamy Typic Haplustalf	168843	1.6
	20	Katamadevarakote	Very deep, well drained, reddish brown to dark reddish brown, sandy loam with e1-e2 erosion.	Fine, Udic Paleustalf	4034	0.4
	2	Anguru	Deep, well drained, dark brown sandy loam with e1-e2 erosion.	Fine, Udic Halpustalf	28064	2.6
Nearly level Lower pediments	33	Teligi	Very deep.well drained, very dark grey to dark grey, clay, calcareous with e1-e2 erosion.	Very fine, (montmorillonitic) Typic Pellustert.	19640	1.8
Valleys	1	Anagodu	Very deep, moderately	Very fine,	2036	0.2

			well drained, dark brown to very dark grey brown clay, with e1 erosion.	Aquic Ustropept		
	19	Janikal	Very deep, well drained, dark grey brown to dark brown, silty clay, calcareous with e1-e2 erosion.	Clayey, Udic Paleustalf	2414	0.2
	14	Harat	Deep, moderately well drained, dark grey brown to very dark grey, clayey loam, calcareous with e1 erosion.	Very fine, Aquic Ustropeps	14700	1.4
	16	Hosahalli	Very deep, well drained, yellowish red to reddish brown, sandy loam with e1-e2 erosion.	Fine, Udic Haplustalf	7220	0.7
	29	Parasurampur	Very deep, well drained dark greyish brown to dark brown, silty clay loam, calcareous, with e1-e2 erosion.	Fine, Typic Haplaquepts	43717	4.1
Schistose Terrain Hilly	38	Rockout crops	Rock exposures with skeletal soils		126852	11.8
	36	Veerapuram	Moderately deep, well drained reddish brown to dark red, gravelly clay skeletal loam, with e1-e2 erosion.	Clayey-skeletal Typic Ustropepts	99571	9.2

## Soils and Land Use of Chitradurga District, Karnataka

Physiography Soil Map symbol	Soil series	Brief description	Soil classification	Physiography Soil Map symbol	Area	
					Ha	Percent
Gently sloping to undulating upper and middle pediments.	10	Chitrahalli	Very deep, well drained, yellowish red, sandy clay loam, with e1-e2, erosion.	Fine, Udic Haplustalfs	2630	0.2
	32	Sandur	Very deep, well drained, yellowish red to dark red, clay loam with e1-e2 erosion.	Clayey, Udic Rhodustalf	20990	2
	7	Banjagondanahalli	Very deep, well drained, dark yellowish brown to dark brown silty clay, with e1-e2 erosion.	Loamy- skeletal Udic Paleustalf	2036	0.2
	35	Talvati.	Moderately deep, well drained, very dark greyish brown silty clay loam, calcareous with e1-e2 erosion.	Fine loamy Vertic Ustropepts	7590	0.7
Nearly level lower pediments	17	Hugaluru	Very deep, moderately well drained, dark greyish brown, to very dark greyish brown, silty clay loam, calcareous, with e1-e2, erosion.	Very fine, Typic Chromusterts	51176	4.7
Valleys	28	Mayakonda	Very deep, well drained, dark yellowish brown to grayish brown, sandy loam, calcareous, with e1-e2 erosion.	Fine loamy, Typic Ustropepts	2522	0.2
	25	Molkalmuru	Very deep, well drained, dark brown to dark yellowish brown, loam, calcareous, with e1-e2 erosion.	Fine loamy, Typic Ustifluent	2954	0.3
	23	Kanaturu	Very deep, well drained, strong brown to light brown loam, calcareous with e1-e2 erosion.	Fine loamy, Typic Ustifluents	4747	0.4
	21	Konasagara	Very deep, well drained, dark grey to dark yellowish brown, silty clay, calcareous with e1-e2 erosion.	Fine loamy, Typic Ustifluents	1726	0.2

Physiography	Soil Map symbol	Soil series	Brief description	Soil classification	Area	
					Hectare	Percent
Alluvium Nearly level low lands	24	Kotihalu	Moderately deep, well drained, yellowish red to dark red, gravelly clay, with e1-e2 erosion.	Loamy skeletal Fluventic Ustorthents	3211	0.3
	15	Holalkere	Very deep, moderately well drained very dark grey brown to very dark grey, clay, calcareous with e1-e2, erosion.	Very fine. montmorillonitic, Typic Chromusterts	1389	0.1
	9	Chikkahagari	Very deep, well drained, dark grey brown to yellowish brown, loam, calcareous, with e1-e2 erosion.	Coarse loamy, Typic Ustifluvents,	454	1.5
	13	Hagari	Very deep, moderately well drained, weak red to very dark grey brown, clay loam, calcareous with e1-e2 erosion.	Fine loamy Typic Ustropts	2522	0.2
	-	Miscellaneous	Reservoirs-rivers, tanks and habitation	-	34291	3.2

**Most soils qualify for mixed mineralogy and isohyperthermic temperature and ustic moisture regimer.**

Depth classes		Erosion classes
Shallow	7.5 to 22.5cm	e1 sight
Moderately deep	22.5 to 45.0 cm	e2 moderate
Deep	45.0 to 90.0cm	e3 severe
Very deep	> 90 cm.	

The physical and chemical properties of typical soils of Chitradurga district are given in (Table-5). The data show an increase in gravel content (>2mm) with depth in the soils of hills and pediments. There is a significant increase in clay content, which also shows clay illuviation - argillans, in the 'B' horizon as can be seen in the soils of pediments. However, there is no significant increase in clay with depth in the black soils. The soils with low CEC (<24 meq/100 gm clay) have been observed on the upper pediments of granite/gneiss terrain (Fig 11-12).

These 36 soils series are classified according to Soil Taxonomy (Soil Survey Staff 1975). These soils belong to 4 orders (Entisols, Inceptisols, Alfisols and Vertisols); 6 sub-groups (Usterts, Ustalfs, Tropepts, Aquests, Fluvents, Orthents); 9 Great groups (Chromusterts, Pellusterts; Ustropepts; Haplustalfs, Rhodustalfs, Paleustalfs, Ustifluvents; Ustorthents and Haplaquepts); 14 Sub-groups and 22 families (Fig.13).

**Table 5. Physical and Chemical properties of major soils of Chitradurga District**

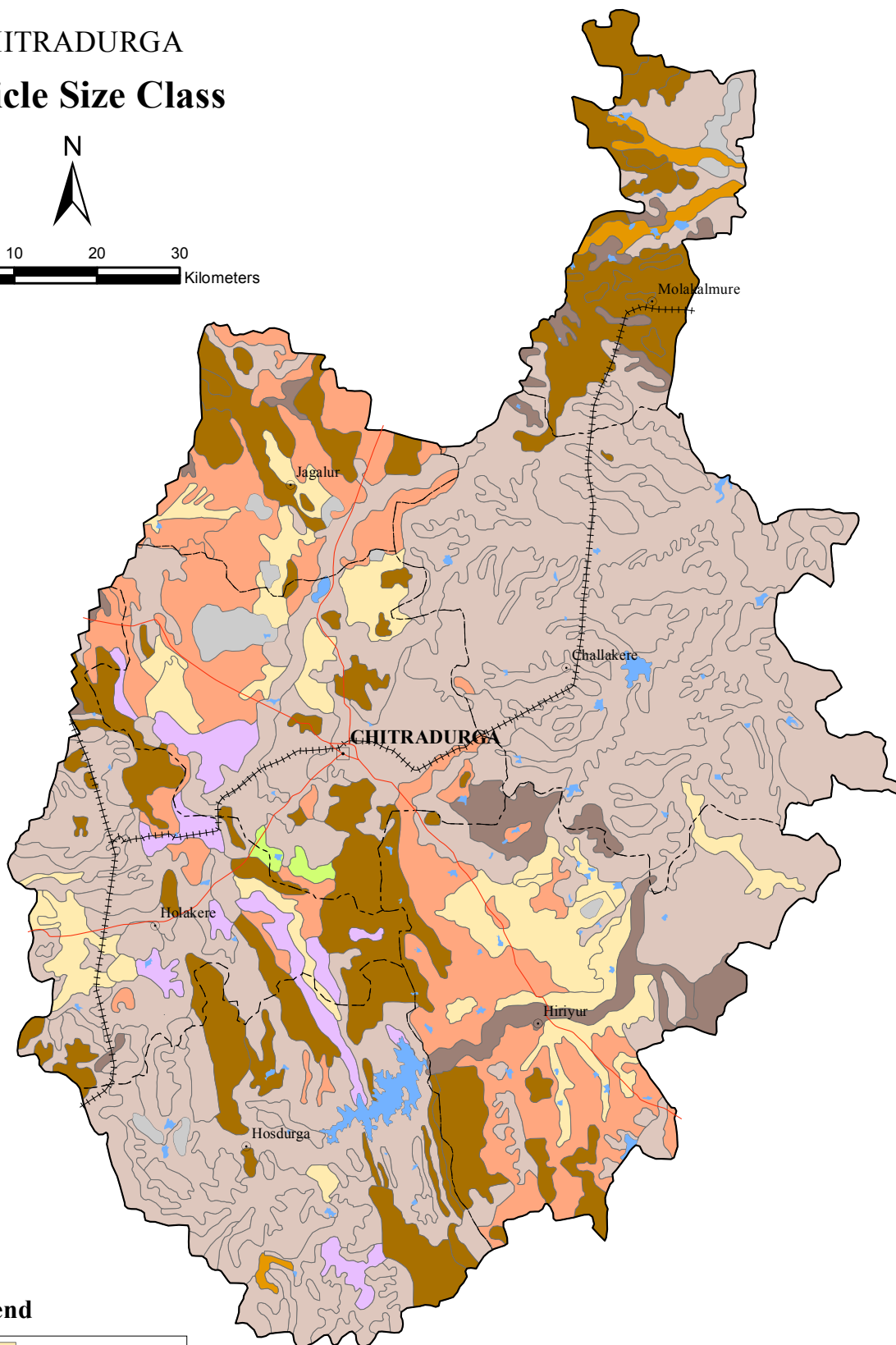
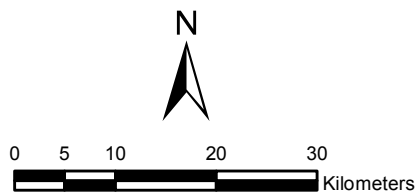
	Horizon	Sand %	Silt %	Clay %	Textural class	Coarse fragment	Soil: pH	water 1:2.5 EC.
Hugaluru Series	Ap	21.8	13.8	64.4	c	8	7.8	0.1
	AC	20.4	15.1	64.5	c	12	8.2	0.2
Harat Series	Ap	66.6	9.1	24.3	Set	—	8.5	0.7
	B	59.9	7.6	32.5	cl	36	8.6	0.5
Kaparahalli Series	Ap	21.8	13.8	64.4	C	—	7.8	0.1
	AC	20.4	15.1	64.5	c	12	8.2	0.2
Parasuramapura Series	Ap	38.2	16.8	45.0	C	9	8.9	1.9
	C	40.8	18.2	41.0	c	9	9.1	1.2
Ramapur Series	Ap	52.8	12.8	34.4	Cl	15	7.6	0.1
	B2t	51.6	15.0	43.4	c	5	7.8	0.1
Sandur Series	Ap	56.3	8.0	35.7	Sc	1	7.0	0.1
	B2t	38.6	10.8	50.6	c	4	6.2	0.4
Tallak Series	Ap	75.6	5.2	19.2	Si	17	5.6	0.1
	B2t	60.2	4.8	35.0	sc	34	5.8	0.1

Soil Series	Horizon	O.C. %	CaCO <sub>3</sub> %	C.E.C	Extractable cations cmol / kg			
					Ca+Mg	Na	K	Base sat. %
Hugaluru Series	Ap	0.70	1.0	54.1	43.9	8.8	0.9	100
	AC	0.50	0.9	51.8	45.2	3.1	3.1	100
Harat Series	Ap	0.86	—	16.6	8.6	1.8	4.1	96
	B	0.06	3.8	20.4	7.6	3.6	4.7	83
Kaparahalli Series	Ap	0.70	1.0	54.1	43.9	8.8	0.9	100
	AC	0.50	0.9	51.8	45.2	3.1	3.1	100
Parasuramapura Series	Ap	1.22	2.7	25.8	15.5	0.7	7.3	95
	C	0.50	3.4	27.5	12.4	8.4	4.7	97
Ramapur Series	Ap	0.13	—	25.7	17.1	5.1	1.4	93
	B2t	0.20	—	25.0	21.6	2.8	0.4	95
Sandur Series	Ap	0.34	—	14.8	9.1	3.7	1.2	100
	B2t	0.55	—	18.4	10.6	4.4	1.9	93
Tallak Series	Ap	0.10	—	5.0	1.6	1.3	0.4	70
	B2t	0.20	—	9.5	6.8	0.7	0.7	88



# CHITRADURGA

## Particle Size Class



### Legend

	Very fine
	Fine
	Clayey
	Fine loamy
	Clayey skeletal
	Coarse loamy
	Loamy skeletal
	Rock outcrop
	Not Available

### References

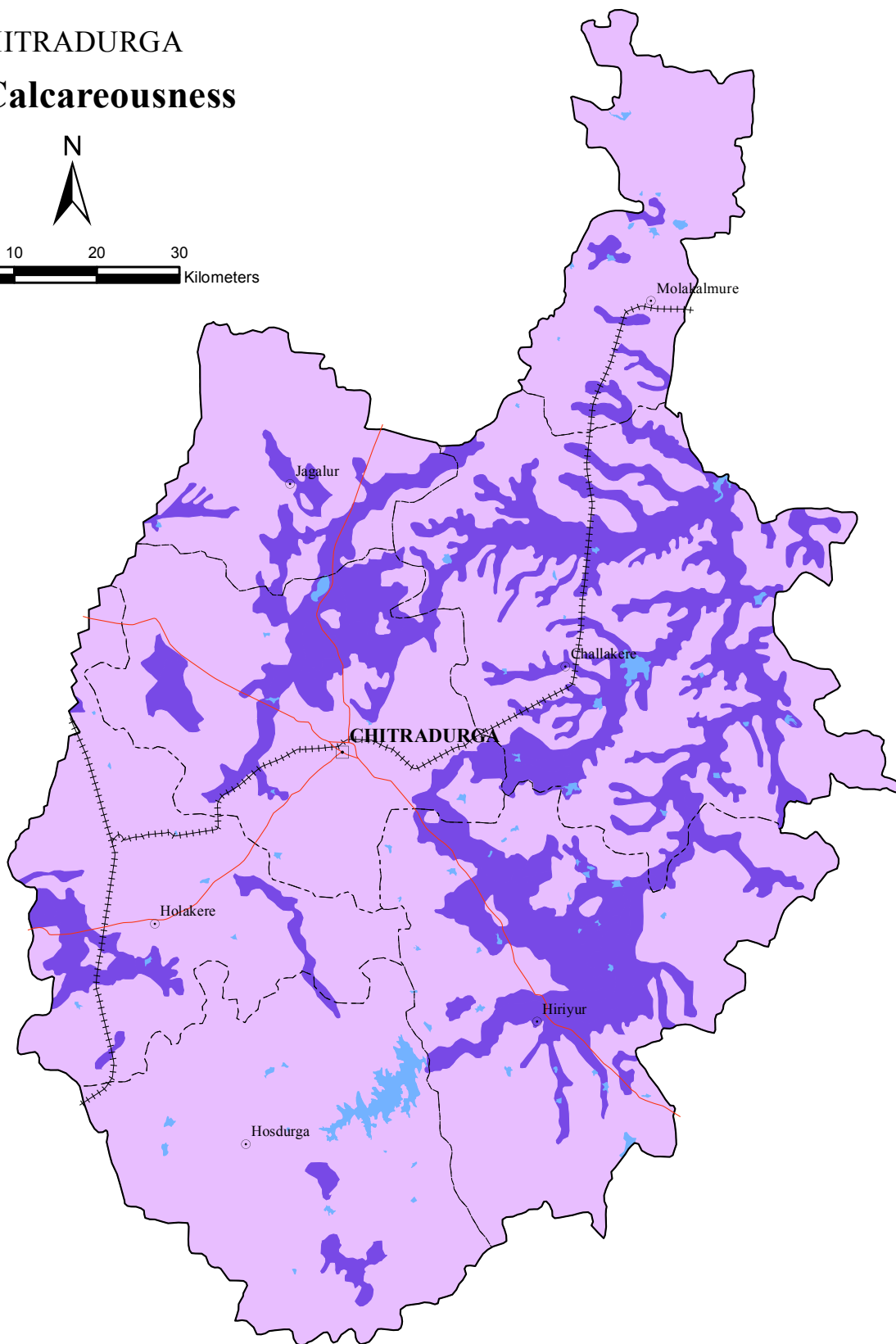
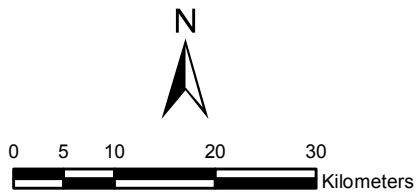
	District HQ
	Tehsil HQ
	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies



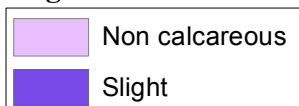
Fig: 11 Partical Size Class

# CHITRADURGA

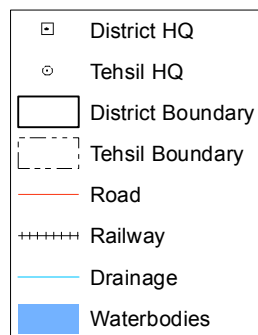
## Soil Calcareousness



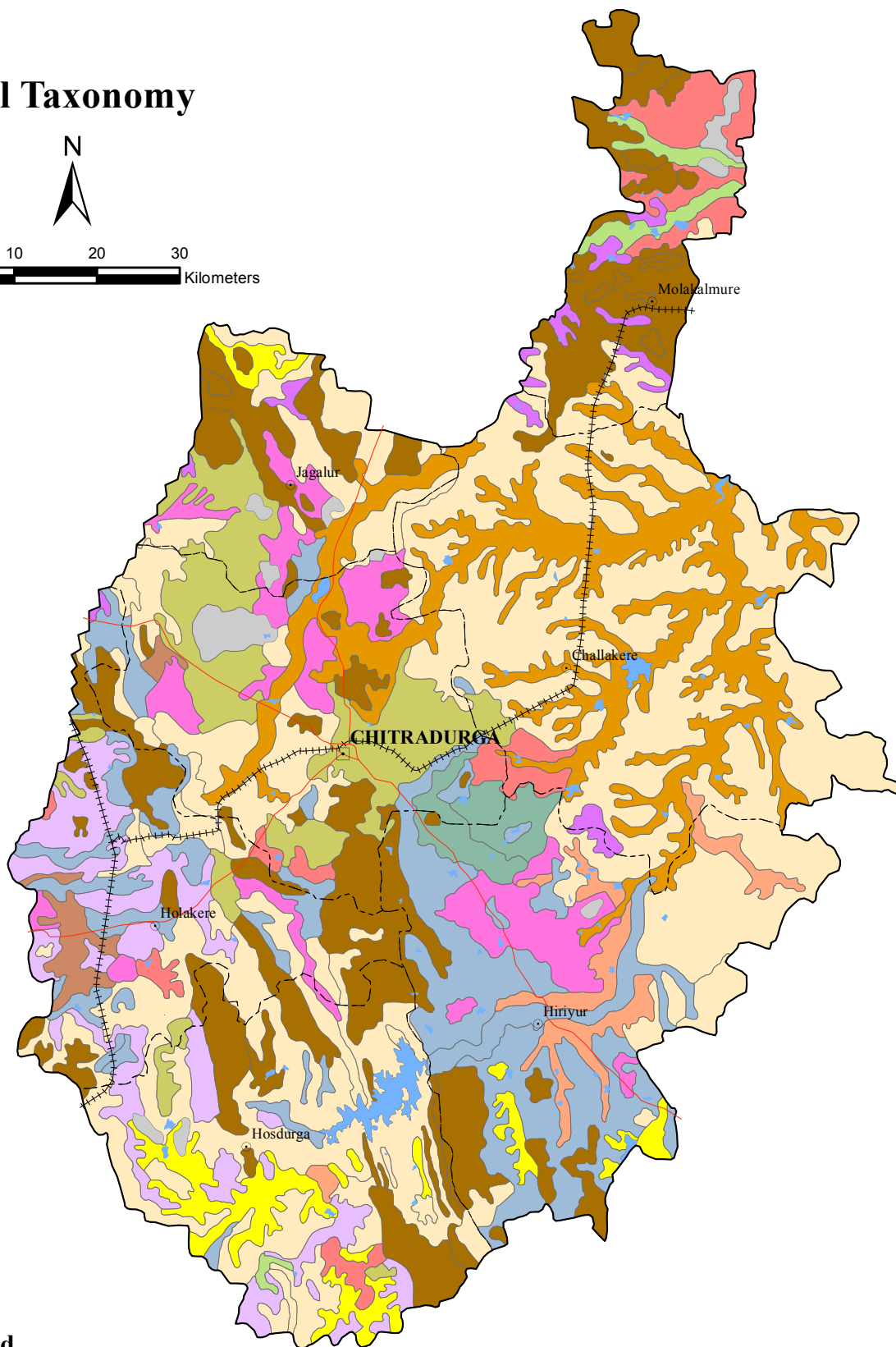
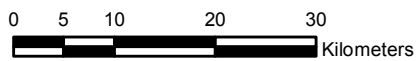
### Legend



### References



# Soil Taxonomy



## Legend

	Aquic Ustropepts		Typic Ustropepts
	Oxic Rhodustalf		Udic Haplustalf
	Typic Chromusterts		Udic Paleustalf
	Typic Haplaquepts		Udic Rhodustalf
	Typic Haplustalf		Vertic Ustropepts
	Typic Pellustert		Rock outcrop
	Typic Ustifluvent		Not Available
	Typic Ustifluvents		

## References

	District HQ
	Tehsil HQ
	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies



	Horizon	Sand %	Silt %	Clay %	Textural class	Coarse fragment	Soil: pH	Water 1:2.5 EC.
Teligi Series	Ap	23.0	21.7	55.3	c	5	7.9	0.1
	AC	26.0	11.0	63.0	c	11	8.2	0.7
Virapuram Series	Ap	69.4	12.6	18.0	sl	24	7.0	0.2
	B	46.0	17.1	36.9	cl	59	6.8	0.2
Anguru Series	Ap	78.9	3.5	17.6	sl	17	6.9	0.1
	B2t	43.8	15.8	40.4	c	18	6.7	0.1
Balناهalli Series	Ap	31.3	16.3	52.4	c	16	8.1	0.2
	B2t	27.4	15.4	57.2	c	9	7.9	0.1
Bidarekere Series	Ap	81.5	6.5	12.0	sl	40	6.3	0.1
	B2t	55.3	9.3	35.4	c	42	6.4	0.1
Bilichodu Series	Ap	78.7	4.3	17.0	sl	17	6.4	0.1
	B2t	56.0	9.0	35.0	c	38	6.7	0.1
Brahamanapalle Series	Ap	78.3	5.4	16.3	sl	11	6.3	0.1
	B2t	47.2	10.0	42.8	c	21	6.4	0.1
Devalapur Series	Ap	83.2	2.3	13.9	sl	22	6.4	0.1
	B2t	51.2	4.8	44.0	c	19	6.0	0.1
Guttikatte Series	Ap	81.3	4.6	14.1	sl	2	7.6	0.1
	B2	62.6	6.9	30.5	scl	32	8.1	2.4

Soil Series	Horizon	O.C. %	CaCO <sub>3</sub> %	C.E.C.	Extractable cations cmol / kg			
					Ca+Mg	Na	K	Base sat. %
Teligi Series	Ap	0.48	2.2	39.8	28.6	9.3	1.3	99
	AC	0.55	0.7	46.7	16.2	3.6	6.2	75
Virapuram Series	Ap	0.64	—	11.7	6.4	3.6	1.0	92
	B	0.54	—	16.4	11.0	3.5	0.8	95
Anguru Series	Ap	0.41	—	10.0	3.1	3.7	0.4	89
	B2t	0.32	—	22.7	17.2	0.8	0.9	96
Balناهalli Series	Ap	0.54	—	51.7	44.4	3.5	0.8	98
	B2t	0.57	0.4	51.8	44.1	5.0	0.9	97
Bidarekere Series	Ap	0.23	—	5.5	3.5	0.6	0.4	96
	B2t	0.25	—	13.2	8.8	2.4	0.6	95
Bilichodu Series	Ap	0.35	—	7.3	5.7	0.2	0.5	92
	B2t	0.38	—	14.7	10.7	2.7	0.5	96
Brahamanapalle Series	Ap	0.55	—	7.4	4.3	2.1	0.3	94
	B2t	0.38	—	14.7	10.7	2.7	0.5	96
Devalapur Series	Ap	0.23	—	3.5	2.2	0.3	0.1	97
	B2t	0.30	—	8.9	7.0	0.8	0.3	94
Guttikatte Series	Ap	0.31	—	5.6	2.3	2.6	0.3	100
	B2	0.40	1.1	19.2	7.5	1.5	8.1	91

## 5.

**SOILS SURVEY INTERPRETATION FOR LAND USE PLANNING**

Evaluation of the soil map units for land use planning has proved its usefulness and gained high popularity in almost every land development programme. Based on the available data in the soil survey reports, the land use planning will have to be initiated. In view of the practical need for using the soils of Chitradurga district for optimum land use planning land capability, land irrigability, assessment of productive and problem soils, and suggested land use and soil suitability for crops have been worked out.

**5.1 Land Capability:**

Land capability classification is an interpretative grouping made primarily for broad agricultural, forestry and non-agricultural uses. The arable soils are grouped according to their limitations in class I-IV; the forest soils are grouped in Class VI and VII; the class VIII soils having maximum limitations are used for recreation or for quarrying (Fig.14).

Further sub-division of classes are based on the dominant limiting factors such as 'e' for erosion, 's' for soil limitations and 'w' for wetness. The mapping units have been grouped into different sub-classes (Table-6).

**5.2 Land Irrigability**

About 9.5 per cent of the total cropped area is under irrigation. The irrigated area is mostly in pediments and the valley floors. The soils were evaluated for irrigation so that, wherever possible, more area could be brought under irrigation.

Soil irrigability classification is made on the basis of important soil characteristics namely surface soil texture, depth, available water retention capacity and permeability, saline and alkali conditions. Land irrigability classification is made taking into consideration, in addition to soil irrigability class, the quality and quantity of water, drainage requirements, topography and economic considerations.

Irrigability class includes both soil and land irrigability classes. Sub-classes have been devised to cover similar limitations such as 's' problems due to soils, 'd' problems due to drainage, 't' problems due to topography.

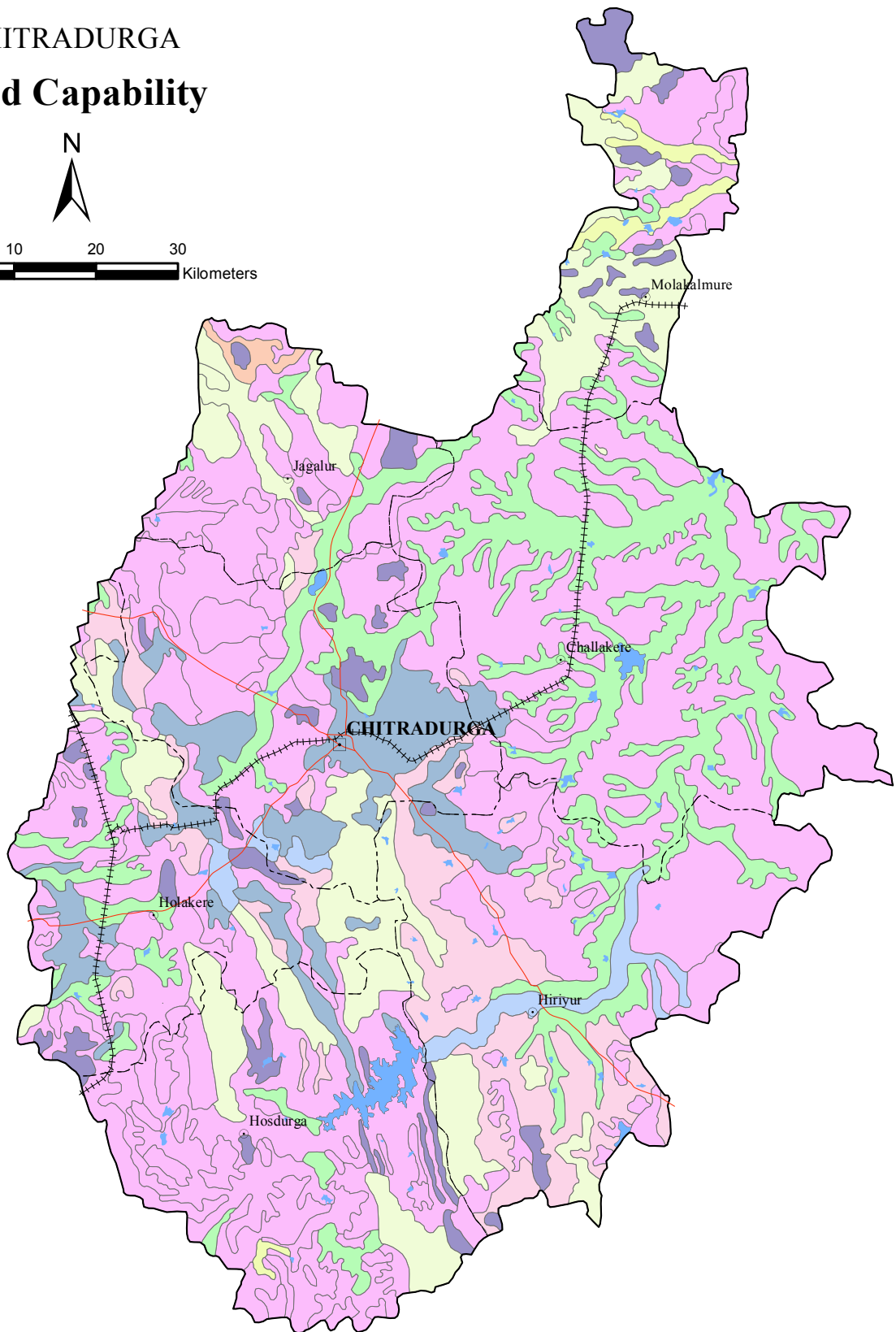
Mapping units have been grouped into various irrigability classes and sub-classes (Table-7 and Fig.15).

**Table 6. Land capability classification of soils**

Land capability sub-Class	Mapping units	Description	Area	
			Ha	Percent
II s	9	Good lands with minor limitations of clayey sub-soil, slight sodicity, somewhat poor drainage.	16454	1.5
II e	10,7,13	Good lands with minor limitations of erosion hazard	7188	0.6
IIsw	18,1,19,14,29,25,23,21,15	Good lands with minor limitations of soil and wetness characteristics.	85709	8.0
III e	3,33,32,35,28	Moderately good lands with erosion hazard.	77410	7.2
III s	2	Moderately good lands with limitations of soil	28064	2.6

# CHITRADURGA

## Land Capability



### Legend

	Ile		IIles
	IIs		IVes
	IIsW		Vles
	IIIe		VIII
	IIIs		Waterbody

### References

	District HQ
	Tehsil HQ
	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies

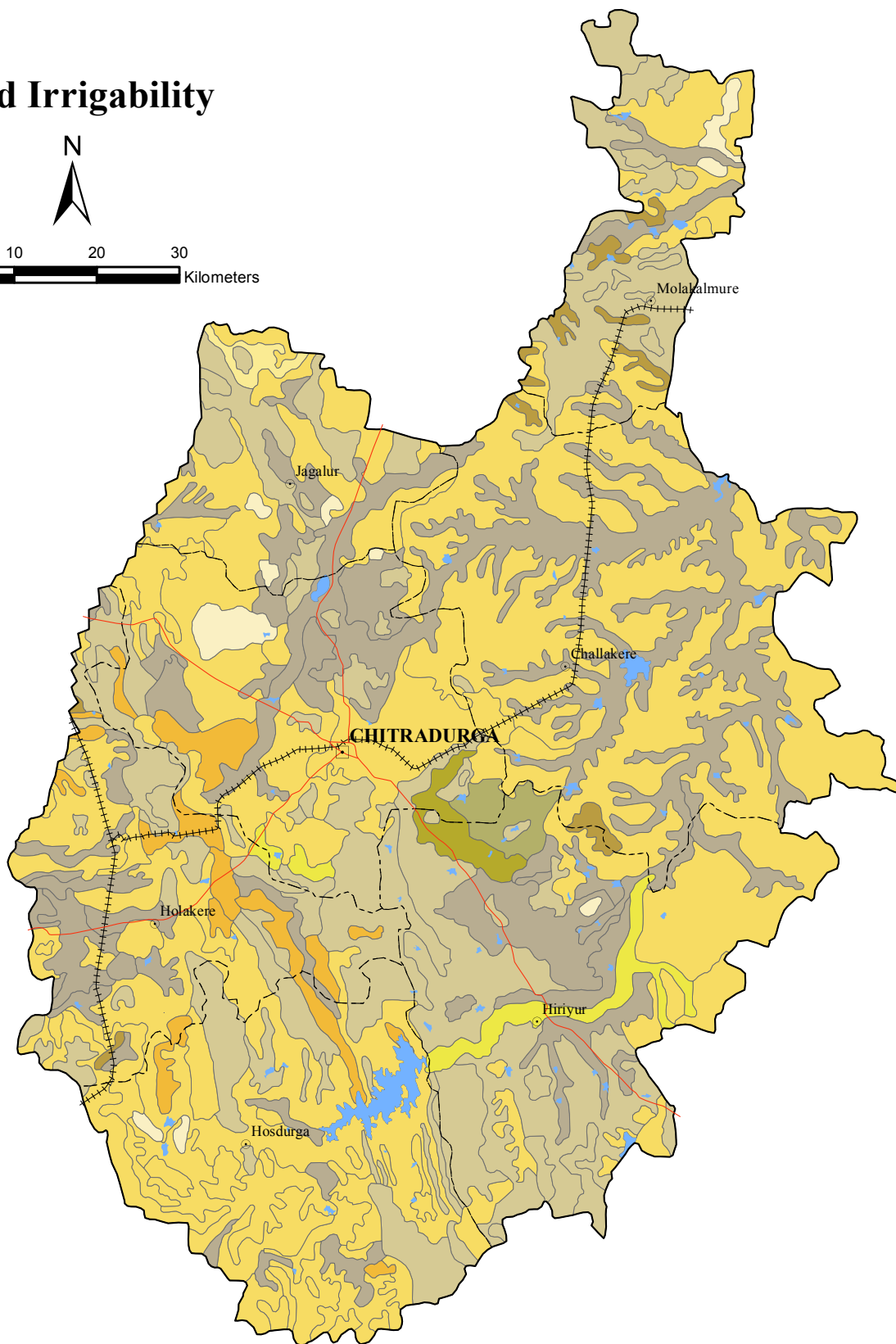
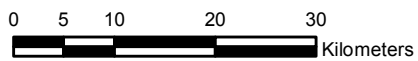


		characteristics.		
II es	5,6,11,34,27, 31,30,8,4,26, 12,20,22,16, 17	Moderately good lands with limitation of erosion, gravelliness and depth.	575303	53.3
IV es	36,24	Fairly good lands with limitations of slope, gravelliness, erosion and depth	102782	9.5
VI es	38	Lands not suitable for cultivation with shallow soils, gravelliness .steep slopes and severe erosion.	126852	11.8
VIII	37	Hillocks and bare rock out crops	24489	2.3

**Table 7 Land irrigability classification**

Land Irrigability sub-Class	Mapping units	Description	Area	
			Ha	Percent
2s	7,13	Irrigable lands with moderate limitations of soil.	4588	0.4
2d	18,33,1,19,14,29,17, 23,15,9	Irrigable lands with moderate limitations of drainage.	168299	15.5
2t	16,10,32	Irrigable lands with moderate limitations of topography.	30840	2.9
2 st	2	Irrigable lands with moderate limitations of soil and topography.	28064	2.6
2 sd	28,25,21	Irrigable lands with moderate limitations of soil drainage.	35266	3.3
3 d	22	Marginally irrigable lands with limitations of soil texture and drainage.	17426	1.6
3 st	5,6,11,34, 27,31,30,8, 3,12,20	Marginally irrigable lands with limitations of soil texture and topography	516964	48
3 sd	26	Marginally irrigable lands with limitations of soil texture and drainage.	8030	0.7
3 std	35,24	Marginally irrigable land with Limitations of soil texture, topography and drainage	7598	0.7
4 st	4	Rarely irrigable land with maximum limitations of soil texture, grave-illness and topography.	1140	0.1
6 st	38,37,36	Lands not suitable for irrigations steep slopes, hilly, very shallow gravelly soils	99571	9.2

# Land Irrigability



## Legend

	2d		3d
	2s		3sd
	2sd		3st
	2st		3std
	2t		6st

## References

	District HQ
	Tehsil HQ
	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies





### 5.3. Productivity of soils:

Soils identified and mapped in the district, which have least limitations and are expected to respond well to management for major crops are classified under productive soils. Based on the soil characteristics and availability of water and nutrients, the soil mapping units have been grouped under three classes: Good, Average and poor (Table-8).

**Table 8. Productivity classification of Soils**

Productivity Class	Description	Recommendation	Area	
			ha	Percent
Good	Very deep, moderately well drained, clayey soils in valley regions under irrigation.	Response to management is good. Suitable for paddy sugarcane and vegetables.	102411	9.43
Average	Deep to very deep, well drained, clayey and skeletal soils with good moisture retentivity on gently sloping lands. Goods vegetation cover at places.	Requires minimum soil and water conservation measures. Response to management is average under dry land agriculture. Suitable for long duration crops.	706451	65.5
Poor	Excessively drained, shallow to moderately deep, clayey skeletal soils on undulating lands.	Response to dry land agriculture. Suitable only for shallow rooted crops.	102782	9.5

### 5.4. Problem soils:

Soils with considerable limitations, which hinder crop growth and yield are termed problem soils. Problems associated with soils of Chitradurga district are shallow to moderate rooting depth, gravelliness, stoniness, rockiness, low to moderate water storage, poor fertility, tendency towards development of saline and alkali conditions, high water table, flooding, sheet, rill and gully erosion and steep slopes. Based on the intensity of above limitations soil mapping units have been grouped into 3 classes of soil problems namely slight, moderate and severe (Table-9).

**Table 9. Soil problems**

Intensity of problem	Associated problems	Recommendations	Area	
			ha	Percent
Slight	Shallow to moderate rooting depth, gravelly, stony, rock outcrops, moderate slopes, Sheet erosion, scanty vegetation.	Require intensive soil and water conservation measures and dry farming practices. Suitable for pasture and limited Agriculture.	325651	30.2
Moderate	Shallow rooting depth, highly gravelly, stony, moderate to steep slopes, severe erosion, scanty vegetation.	Require high input in soil and water conservation measures and dry farming practices, suitable for forest and limited agriculture of short duration crops.	103922	9.6
Severe	Rocky, bouldery, stony with very shallow rooting depth, steep slopes, excessive relief with scrub vegetation.	Require permanent vegetative cover; suitable for quarrying, recreation and forms good catchment for watersheds.	151341	14

### 5.5. Present and Suggested land use:

Present land use map was prepared using the statistics available for the district. The crop combinations such as groundnut - jowar - pulses and cotton - jowar -ragi occupy major area in the district. Rice is mainly grown in the valleys.

Based on the interpretation of soil survey data, and the present land use map, the suggested land use map is given as a general guide for cropping. The suggested land management practices (Table-10) emphasis on soil and water assessment and cultivation of short duration crops which require lesser water.

### 5.6. Soil suitability for crop growth

The present day needs of the planners are thematic maps showing soil suitability for different crops rather than elaborate soil survey data and reports in order to optimise the soil resources for sustained agricultural production. The most common crops grown in the district are sorghum (jowar) finger millet (ragi) and cotton. An attempt has been made in this report to evaluate the suitability of soils for growing these crops. The criteria used, for the purpose is based on parametric approach developed by Sys (1975) as modified by Sehgal (1986). The soil site characteristics considered important for growing finger millet (ragi), sorghum (jowar) and cotton were evaluated in terms of their limitations vis-a-vis the requirements of specific crop. The final suitability for a crop is based on the number and degree of limitations as defined by Sys (1975), FAO (1976) frame work for land evaluation and modified to suite local conditions. The suitability classes are as follows;

**Table 10. Suggested Land use**

Map symbol	Descriptions Soil Map Unit	Suggested Land use
1	Bare granitic hillocks (37)	Suitable for quarrying.
2	Bridges of schistose rocks with skeletal soils(38)	Suitable for forestry, pasture, recreation and grazing; occasionally for plantation crop and medicinal plants.
3	Rolling lands with shallow gravelly soils and few rock out crops. Veerapuram (36) Kotihalu(24), Baterepalle (4) soils.	Suitable for forestry, pasture and plantation crops.
4	Gently sloping lands with gravelly clayey soils and few rockout crops. Bilichodu(6), Bidarekere (5), Ramnagaram(31). Devalapur (11) Tallak(34) and Chitrahalli (10) soils.	Suitable for agriculture with minor amendments for soil and water conservation. Rainfed crops recommended are groundnut, jowar, finger millets and pulses.
5	Very gently sloping lands with deep clayey soils. Holalkere (18), Marenahalli(27) Ramapur(30), Brahmanapalli(8) Guttikatti (12), Katamadevarakote(20)Balenahalli (3),Sandur(32) and Banjagondanahalli(7) soils.	Suitable for agriculture, rainfed crops with very minimum amendments; Rainfed crops recommended are; finger millet, jowar, groundnut, pulses.
6	Nearly level to very gently sloping lands. Telegi (33), Kaparahalli (22), Madakarinaikana -kote (26), Hugaluru (17),Holalu (15) Talvati (35) soils.	Suitable for agriculture with very minor amendments. Suitable for cotton, jowar, pulses and groundnut
7	Nearly level low land/valleys Anagodu (1) ChikkaHagari (9), Hagafi (13), Hara t(14), Holalu (15), Hosahalli (16),Janikal (19), Konasagara (21), Kanaturu (23), Molkalmuru (25),Mayakonda (28), Parasharampur (29) soils	Suitable for irrigated crops, with minor amendments for drainage. Recommended crops are; paddy, sugarcane, vegetables, flowers and coconut.

**S-1 Highly suitable:**

Land units represent optimum conditions for plant growth, without limitations or with only slight limitations.

**S1-2 Suitable**

As above with slight to moderate limitations or slight and /or no more than 1 moderate limitation.

**S2 Moderately suitable**

Land units, which have slight to moderate limitations and/ or not more than 3 moderate limitations.

**S3 Marginally suitable**

Land unit(s) representing moderate growth environment affect productivity significantly, but still economical and have more than 3 moderate limitations and/or not more than 1 severe limitation, that however does not exclude the use of land.

Order 'N' not suitable

Land, which has qualities to preclude sustained use of the land under consideration.

**N1: currently not suitable**

Land units have marginal conditions and uneconomical to use; severe limitation that excludes the use of land or more than 1 severe limitation that can be corrected.

**N2: Permanently not suitable**

Land unit(s) which yield below the profitable level; inhibits the use of land for considered land use; have severe or very severe limitations which excludes the use of land and which cannot be corrected.

**5.7 Soil suitability for sorghum**

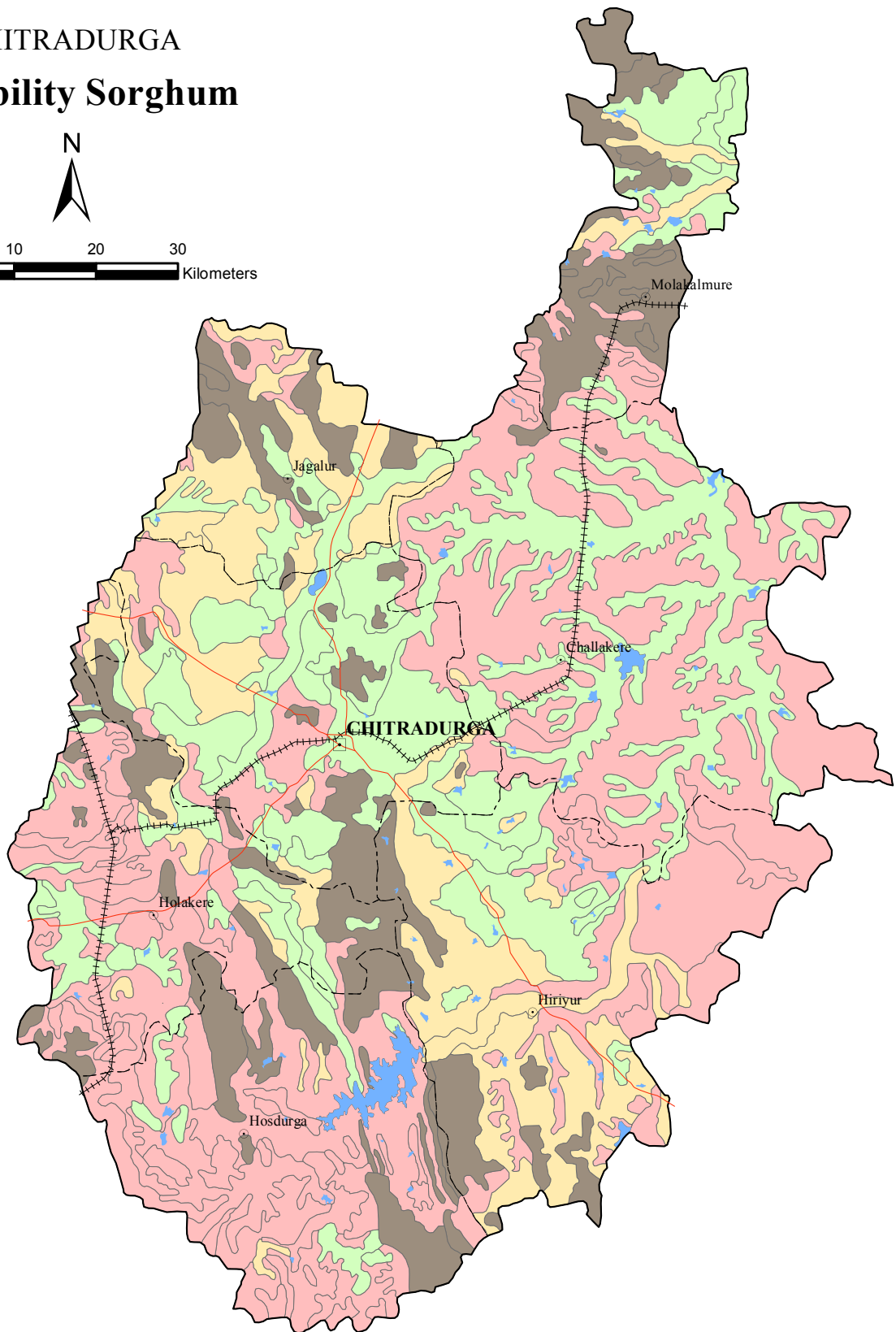
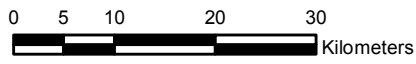
Sorghum covers an area of 116237 ha, about 23 percent of the total cropped area in the district. Several parameters have been considered for the evaluation and every soil unit was rated as per limitation technique comparing soil site requirements of the crop (Table-11) with the actual soil site characteristics. The overall suitability of the soils is determined based on the degree and number of limitations for that mapped unit. The soils in different suitability classes along with the area covered are given in (Table-12). From the data it is observed that 45% of the cultivated area is moderately suitable, about 21 % highly suitable about 16 % marginally suitable and 14 % permanently not suitable for the cultivation of sorghum (Fig.16).

**Table 11. Criteria used for assessing the suitability of soils for Sorghum**

Soil site Characteristics	Degree of Limitation				
	None	Slight	Moderate	Severe	Very severe
	0	1	2	3	4
Rainfall (mm)	Above 750	750-600	600-500	500-400	<400
Slope(%)	7-3	3-5			
Drainage	Well drained	Moderately well drained	Imperfectly drained	Poorly drained excessively drained	Very poor drained very excessively
Depth (cm)	> 80	80-50	50-20	< 20	
Texture	Clay (fine) silty clay	Clay (very fine); sandy clay loam silty clay loam, loam	Sandy loam; silt loam	Loamy sand	Sand
Stoniness(Surface Coverage)	< 3	3-15	15-40	40-70	>70
Base Saturation	80	80-50	50-35	35	
Salinity (mmhos/cm)	<2	2-4	4-8	>8	
Sodicity (ESP)	5	5-10	10-15	15-25	
CaCO <sub>3</sub> (%)	3-5	5-15	15-25	25-50	>50

# CHITRADURGA

## Suitability Sorghum



### Legend

	Highly suitable
	Moderately suitable
	Marginally suitable
	Unsuitable presently & potentially

### References

	District HQ
	Tehsil HQ
	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies



Source: Soils bulletin 11. The soils of Mondha village (Nagpur) for agro technology transfer (1987)

**Table 12 Suitability of soil mapping units for sorghum**

Suitability Class	Soil mapping units	Area	
		ha	Percent
S1 Highly suitable	1,17,22,29,30,33,3,7,15,16,19,26,32,35	2,28,479.00	21.27
S2 Suitable	2,11,8,14,21,28,25,34,10,12,20,31,23,18,27	4,90,493.00	45.5
S3 Marginally suitable	5,6,9,36,13,4,24	1,67,092.00	15.6
N2 Unsuitable, presently and potentially	37, 38	1,51,341.00	14.1

### 5.8 Soil suitability for finger millet

Finger millet (Ragi) covers about 76827 ha, 15 percent of the total cultivated area of the district (Table- 3). Several parameters have been considered for the evaluation and every soil unit was rated as per limitation technique using the criteria given (Table-13). The limitation, 2 indicate that the crop can be still grown economically but with a marginal profit. The overall suitability of the soils is determined based on the degree and the number of limitations for that particular unit. The soil maps units are grouped into different suitability classes (Table-14). The data show that about 53 percent of soils are suitable, about 17 percent are highly suitable; and 14 percent is permanently unsuitable for the cultivation of ragi very small area are moderately (5%) and marginally (10%) suitable (Fig.17).

**Table 13: Criteria used for assessing suitability for ragi**

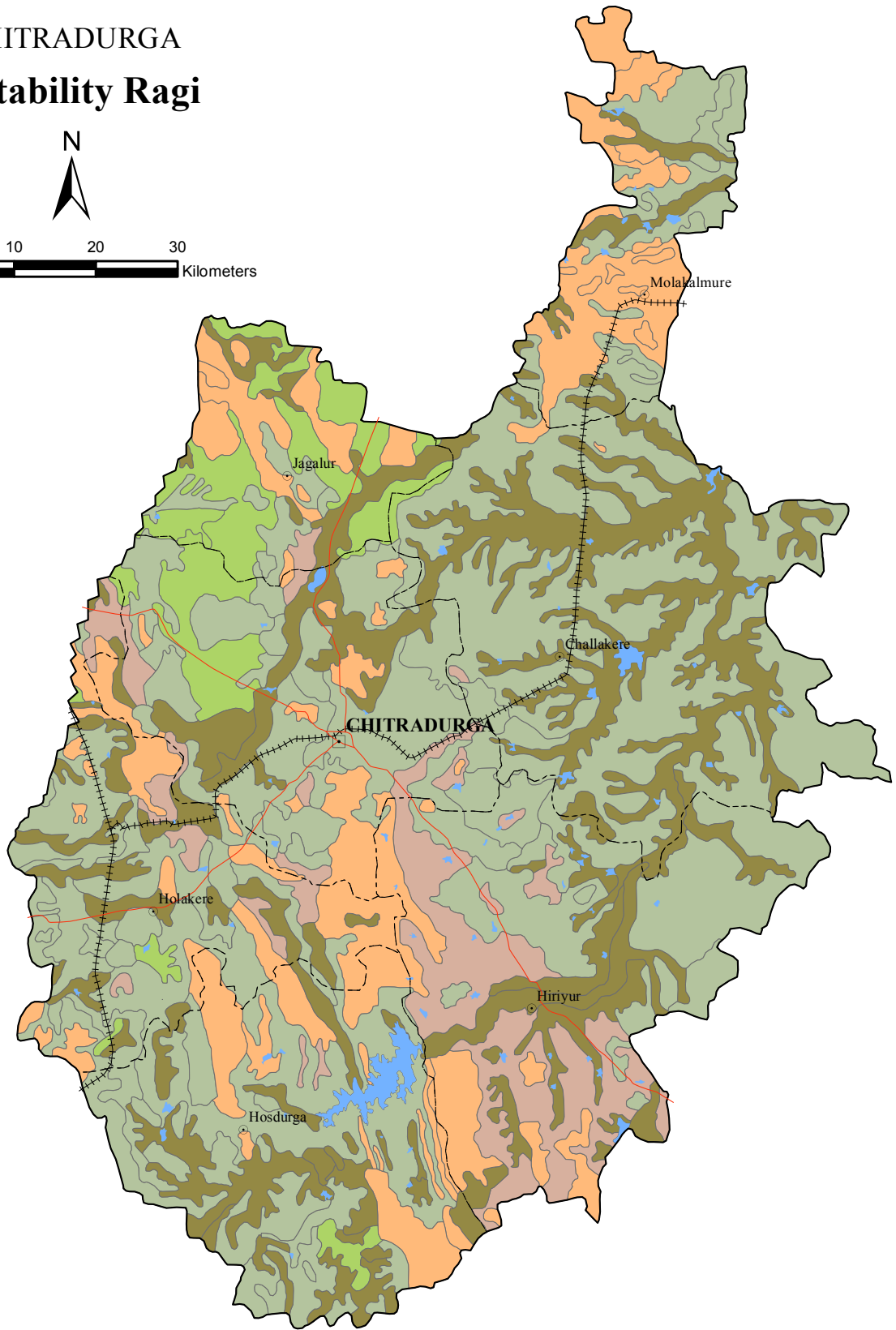
Soil site characteristics	Degree of limitations				
	None	Slight	Moderate	Severe	Very severe
	0	1	2	3	4
Climate Annual rainfall(mm)	>750	500-750	400-500	<400	—
Topography (Slope%)	1-3	3-5	5-10	10-15	>15
Drainage	Moderately well	Imperfect to well	Poor Excessive	Very poor	
Texture	loam, silt, sandy clay loam	clay loam, silty clay	loam and silty clay loam	sand fine clay	
Gravelliness/ Stoniness surface coverage (%)	<3		15-40	40-75	>75
Sub-soil (vol %)	< 15	15-40	40-75	>75	—
Soil depth(cm)	>80	50-80	20-50	< 20	—
Lime (per cent)	< 15	15-25	25-50	>50	—
Base saturation (per cent)		>80	50-80	35-50	<35

**Table 14 Suitability of soil mapping units for ragi**

Suitability Class	Soil mapping units	Area	
		ha	Per cent
S1 Highly suitable	2,8,9,14,21,12,16,32,29,13,23,18	1,85,977.00	17.2
S1-2 Suitable	1,11,17,22,25,30,34,33,3,7,10,15, 20,26,35,31,27	5,68,961.00	52.7
S2 Moderately suitable	5,6,28,19	49,130.00	4.6
S3 Marginally suitable	4,24,36	1,03,922.00	9.6
N2 Unsuitable, presently & potentially	37, 38	1,51,341.00	14.1

# CHITRADURGA

## Suitability Ragi



### Legend

	Highly suitable
	Suitable
	Marginally suitable
	Moderately suitable
	Unsuitable presently & potentially

### References

	District HQ
	Tehsil HQ
	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies



### 5.9 Soil suitability for Cotton

Cotton covers an area of 47610 ha, about 9.5 percent of the total cropped area of the district. Similar to sorghum and finger millet, several parameters have been considered for the evaluation of cotton and every soil unit was rated as per limitation technique using soil site requirements (Table-15). The overall suitability of soils is determined based on the degree and number of limitations for that mapped unit. Summarised table of soils falling in different suitability classes along with the area covered are given in (Table - 16 and Fig.18).

From the data, it is observed that about 40 percent of the cultivated area is suitable, about 25 percent marginally suitable, about 18 percent highly suitable for the cultivation of cotton crops.

**Table 15: Criteria used for assessing the suitability of soils for cotton**

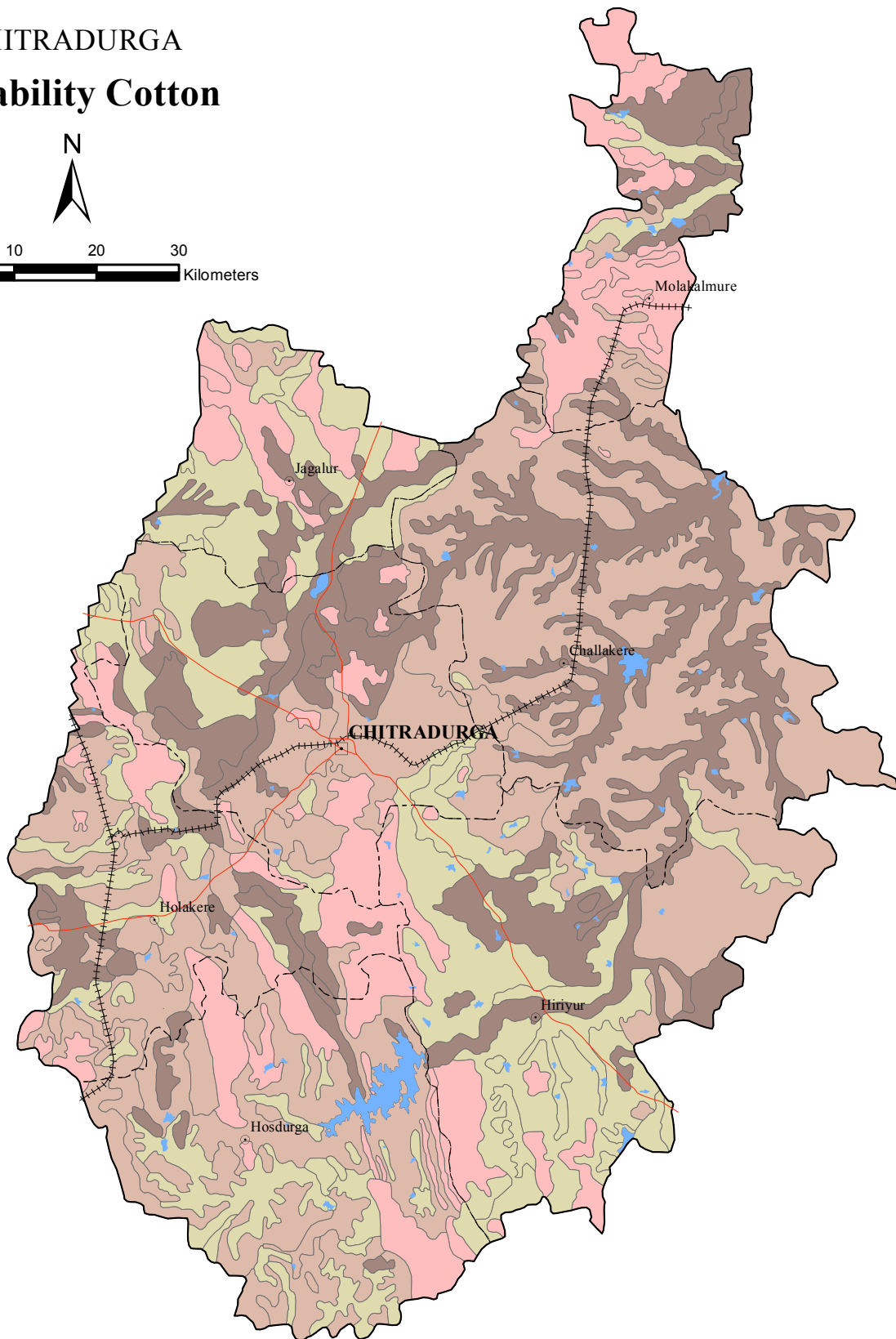
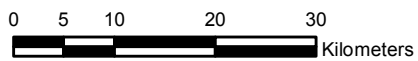
Soil site Characteristics	Degree of Limitation				
	None	Slight	Moderate	Severe	Very severe
	0	1	2	3	4
Rain fall (mm)	above 1000	1000-800	800-650	650-500	<500
Slope %	1-3	3-5	5-8	>8	---
Drainage	well drained	Moderately well drained	Imperfectly drained	Poorly drained excessively drained	Very poorly drained; very excessively drained
Depth (cm)	> 120	120-80	80-50	50-20	< 20
Texture	Clay (fine) silty clay	Clay (very fine) clay loam, silty clay loam, loam	sandy loam, silt Loam, sandy clay loam	coarse sandy loam loamy fine sand	Loamy sand, sand
Stoniness (% Surface Coverage)	< 15	15-40	40-75	>75	—
Base saturation(<%)	>80	80-50	50-35	> 35	—
Salinity (mmhos/cm)	<2	2-4	4-8	> 8	—
Sodicity (esp)	<5	5-10	10-15	15-25	> 25
CaCO <sub>3</sub> (%)	2-5	5-15	15-25	25-50	>50

**Table 16. Suitability of soil mapping units for cotton**

Suitability Class	Soil mapping units	Area	
		ha	Percent
S 1 Highly Suitable	1,17,22,21,29,30,33,13,15,16,32,27	1,97, 418.00	18.3
S 2 Moderately suitable	2,11,25,28,34,3,7,10,19,20,26	4,25, 519.00	39.3
S 3 Marginally suitable	5,6,8,9,13,23,18,14,36,4,12,24,35,31	2,72, 287.00	25.3
N 2 Unsuitable presently & potentially	37,38	1, 51,287.00	14.1

# CHITRADURGA

## Suitability Cotton



### Legend

	Highly suitable
	Marginally suitable
	Moderately suitable
	Unsuitable presently & potentially

### References

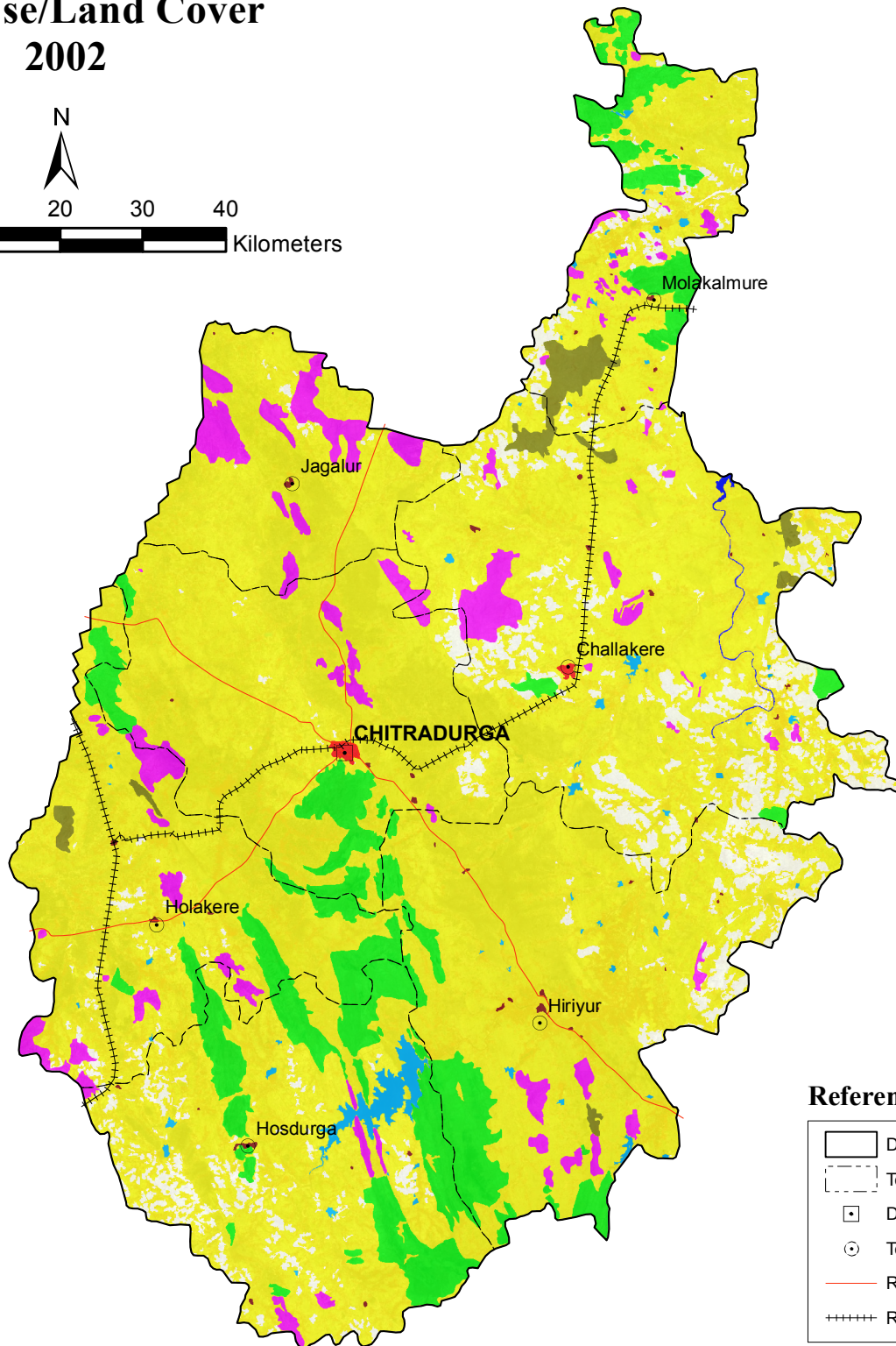
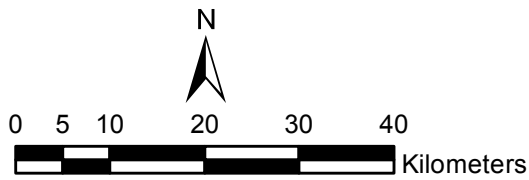
	District HQ
	Tehsil HQ
	District Boundary
	Tehsil Boundary
	Road
	Railway
	Drainage
	Waterbodies



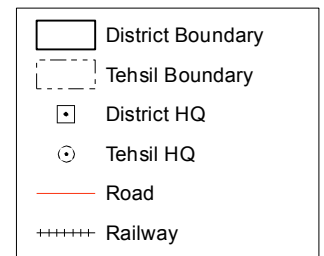


# CHITRADURGA

## Land Use/Land Cover 2002



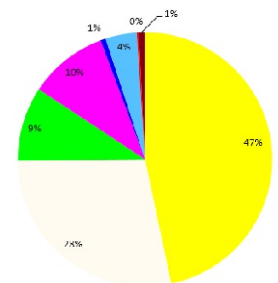
### References



### Legend

Classes	Area [sq.km]	Classes	Area [sq.km]
Agriculture		Uncultivable	
Agriculture, Cropland	4285	Barren/Uncultivable/Wastelands, Scrub Land	920
Agriculture, Single Crop, Fallow	2580	Water	
Builtup		Wetlands/Water Bodies, Reservoir/Lakes/Ponds	365
Built-up, Rural	72	Wetlands/Water Bodies, River/Stream/Canals	62
Built-up, Urban	23		
Forest			
Forest, Deciduous	868		

LULC (2002): Area Statistics for Chitradurga District  
Total Geographic Area: 9175 sq.km



Note: Refer Legend for Category

Data Source: Landsat ETM+ Satellite data of Kharif (2002) and Rabi (2002), SRTM DEM, Existing Soil Maps & Reports (NBSS & LUP), and other Statistical Data

**6.**

**SUMMARY**

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The inventory on the soil resources of Chitradurga district, Karnataka, was made using survey of India toposheets. The soil survey data have been interpreted to derive the basic information about problems and potentials of different soils; their suitability for major crops and their nature, extent and distribution in space. Out of the total geographical area of 10.78 lakh ha, about 57 % is available for cultivation (including 9.5% under irrigation), 23 % under fallow lands, 12% under uncultivated lands, and only 8 % under forests.

The major limitations associated with the soils of Chitradurga are the depth, gravelliness and stoniness, coarse soil textures at the surface, low to medium moisture retention capacity, poor nutrient status, excessive relief and rapid runoff, scanty vegetative cover, severe sheet and rill erosion, poor ground water availability.

Deep, clayey soils on the pediments and that on the valley floors have greater potential for agricultural use. In general, however, soils are highly variable in their properties. The study shows that 66 per cent of the area is suitable for growing sorghum with profitability, 74 per cent of the area is suitable for growing ragi and 58 per cent of the area is suitable for growing cotton. The spatial distributions of the suitability of soils are shown in the respective maps. The problems in the other soils are also discussed. This bulletin highlights these points for the land use planners and those involved in basic Land Resource Management.