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Land Resource and Hydrological Inventory of Mokadampur Sub-watershed for Watershed Planning and Development Yadgir Taluk, Yadgir District, Karnataka (AESR 6.2)

Sujala – III
Karnataka Watershed Development Project- II
Funded by World Bank

ICAR - NBSS & LUP

ICAR - National Bureau of Soil Survey and Land Use Planning, Bangalore
Watershed Development Department, Govt. of Karnataka, Bangalore

About ICAR - NBSS&LUP

The National Bureau of Soil Survey and Land Use Planning (ICAR-NBSS&LUP), Nagpur, a premier Institute of the Indian Council of Agricultural Research (ICAR), was set up during 1976 with the objective to prepare soil resource maps at national, state and district levels and to provide research inputs in soil resource mapping and its applications, land evaluation, land use planning, land resource management, and database management using GIS for optimizing land use on different kinds of soils in the country.

The Bureau has been engaged in carrying out soil resource survey, agro-ecological and soil degradation mapping at the country, state and district levels for qualitative assessment and monitoring the soil health towards viable land use planning. The research activities have resulted in identifying the soil potentials and problems, and the various applications of the soil surveys with the ultimate objective of sustainable agricultural development. The Bureau has the mandate to correlate and classify soils of the country and maintain a National Register of all the established soil series. The Institute is also imparting in-service training to staff of the soil survey agencies in the area of soil survey, land evaluation and soil survey interpretations for land use planning. The Bureau in collaboration with Panjabrao Krishi Vidyapeeth, Akola is running post-graduate teaching and research programme in land resource management, leading to M.Sc. and Ph.D. degrees.

Citation: Rajendra Hegde, B.A. Dhanorkar,, S. Srinivas, K.V. Niranjana, R.S.Reddy and S.K. Singh (2019). "Land Resource and Hydrological Inventory of Mokadampur Sub-watershed for Watershed Planning and Development, Yadgir Taluk, Yadgir District, Karnataka", Sujala SWs-LRI Atlas No. 30, ICAR – NBSS & LUP, RC, Bangalore. p.56.

TO OBTAIN COPIES,

Please write to:

Director, ICAR - NBSS & LUP,
Amaravati Road, Nagpur,
Maharashtra - 440 033, India.
Phone : +91-712-2500386, 2500545 (O)
Telefax : +91-712-2500534
E-Mail : director.nbsslup@icar.gov.in
Website URL : https://www.nbsslup.in

Or

Head, Regional Centre, ICAR - NBSS & LUP,
Hebbal, Bangalore,
Karnataka - 560 024, India.
Phone : +91-80-23412242, 23410993 (O)
Telefax : +91-80-23510350
E-Mail : hd_rcb.nbsslup@icar.gov.in
nbssrcb@gmail.com

PART-A

Land Resource Inventory of Mokadampur Sub-watershed for Watershed Planning and Development

Yadgir Taluk, Yadgir District, Karnataka (AESR 6.2)

CONTENTS

Contributors

Dr. Rajendra Hegde Principal Scientist, Head & Project Leader, Sujala-III Project ICAR-NBSS&LUP, Regional Centre, Bangalore - 24	National Coordinator **Dr. S.K.Singh** Director, ICAR-NBSS&LUP Nagpur - 33	
Field Work, Mapping & Report Preparation		
Dr. B.A. Dhanorkar	Sh. R.S.Reddy	Sh. Somasekhar, T.N.
Dr. K.V. Niranjana	Dr. Mahendra Kumar, M.B.	Smt. Chaitra, S.P.
	Dr. Gopali Bardhan	Ms. Arpitha, G.M.
Field Work		
Sh. C.Bache Gowda	Sh. Ashok, S. Sindagi	Sh. Manohar, Y. Hosamane
Sh. Somashekar	Sh. Veerabhadrappa	Sh. Pramod, Navale
Sh. M. Jayaramaiah	Sh. Kailash.	Sh. Ramesh Hangargi
	Sh. Yogesh, H.N.	Sh. Rakesh, Achalkar
	Sh. Kamalesh, Avate.	
	Sh. Sharan Kumar Uppar	
	Sh. Kalaveerachari, Kammar	
	Sh. Arun, N. Kambar	
GIS Work		
Dr. S.Srinivas	Sh. A.G.Devendra Prasad	
Dr. M.Ramesh	Sh. Prakashanaik, M.K.	
Sh. D.H.Venkatesh	Smt. K.Karunya Lakshmi	
Smt. K.V.Archana	Ms. Seema, K.V.	
Sh. N. Maddileti	Ms. Karuna Kulkarani	
	Sh. Madappaswamy	
	Sh. Rajendra, D.	
	Smt. Prathibha, D.G.	
	Ms. Sowmya, K.B.	
	Ms. Vidya, P.C.	

Laboratory Analysis	
Dr. M. Lalitha	Sh. Vindhya, N.G.
Smt. Arti Koyal	Ms. P. Pavanakumari, P.
Smt. Parvathy, S.	Ms. Rashmi, N.
	Ms. Leelavathy, K.U.
	Smt. Usha Kiran, G.
	Ms. Chaithra, H.K.
	Ms. Gayathri Chalageri
Soil & Water Conservation	
Sh. Sunil P. Maske	
Watershed Development Department, GoK, Bangalore	
Sh. Prabhash Chandra Ray, IFS Project Director & Commissioner, WDD	Dr. A. Natarajan NRM Consultant, Sujala-III Project
Sh. Padmaya Naik, A. Executive Director, WDD	

How to read and use the Atlas

The Land Resource Inventory of Mokadampur Sub-watershed (Yadgir Taluk, Yadgir District) for Watershed Planning (AESR 6.2) was undertaken to provide comprehensive site- specific cadastral level information useful for farm level planning and integrated development of the area under Sujala – III, Karnataka Watershed Development Project- II.

This atlas contains the basic information on kinds of soils, their geographic distribution, characteristics and classification. The soil map and soil based thematic maps derived from soils data on soil depth, soil gravelliness, slope, land suitability for various crops and land use management maps are presented on 1:12,500 scale. The maps of fertility status (soil reaction, organic carbon, available phosphorus, available potassium, available sulphur, available calcium, available copper, available manganese, available zinc, available iron, available boron and salinity (EC) on 1:12,500 scale were derived from grid point sampling of the surface soils from the watersheds.

The atlas illustrates maps and tables that depict the soil resources of the watershed and the need for their sustainable management.

The user, depending on his/her requirement, can refer this atlas first by identifying his/her field and survey number on the village soil map and by referring the soil legend which is provided in tabular form after the soil map for details pertaining to his/her area of interest.

The atlas explains in simple terms the different kinds of soils present in the watershed, their potentials and problems through a series of thematic maps that help to develop site-specific plans as well as the need to conserve and manage this increasingly threatened natural resource through sustainable land use management. The Land Resource Atlas contains database collected at land parcel/ survey number level on soils, climate, water, vegetation, crops and cropping patterns, socio-economic conditions, marketing facilities *etc.* helps in identifying soil and water conservation measures required, suitability for crops and other uses and finally for preparing a viable and sustainable land use options for each and every land parcel.

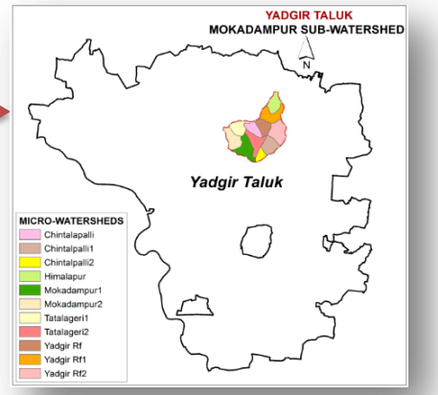
For easy map reading and understanding the information contain in different maps, the physical, cultural and scientific symbols used in the maps are illustrated in the form of colors, graphics and tables.

Physical, Cultural and Scientific symbols used in the Atlas

Each map in the atlas sheet is complemented with the physical, cultural and scientific symbols to facilitate easy map reading.

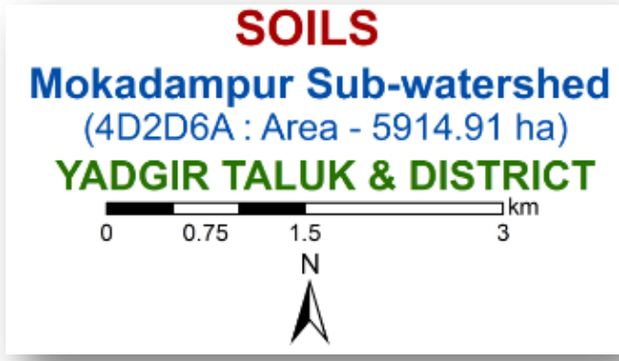
Inset map

Inset provided in each map conveys its strategic location i.e. Taluk, Sub-watershed and Sub-watershed.



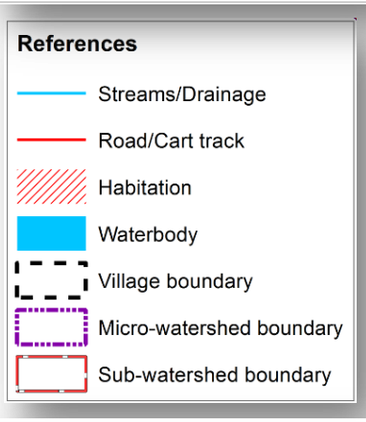
Map title

Map title conveys the relevance of thematic information presented along with a graphical scale, geographical location and watershed details in text form.



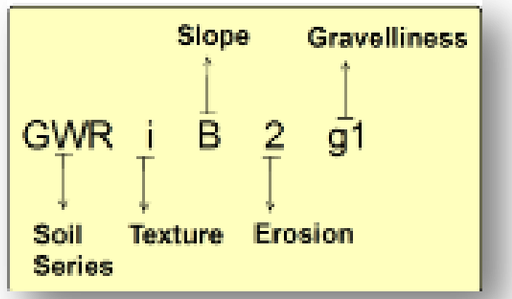
Legends and symbols

*Two legends accompany each map, a **map reference**, which depicts geographic features and a **thematic legend** which portrays spatial information. Picking up the symbol and colour of a particular enables one to go to the legends to obtain the required information.*



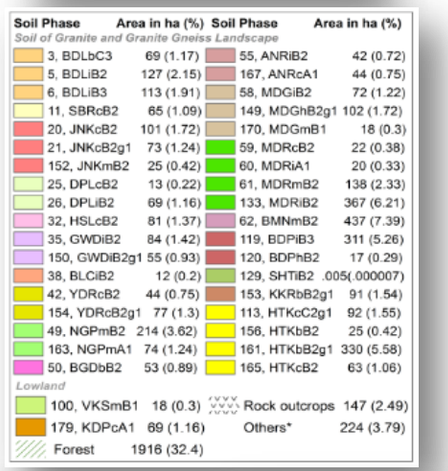
Soil Units

The soil map may be read at different levels. The most detailed level is that of the soil phase. Soil phases are distinguished within soil series mainly based on differences in surface of soil texture, slope, gravelliness , erosion ,etc.



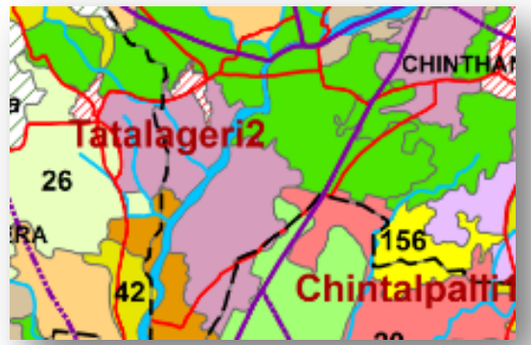
Map colours

Different shades of colours are used as an aid to distinguish the different classes of soils, crop suitability and other maps.



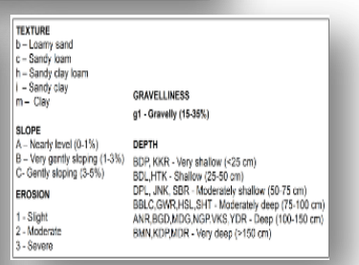
Soil and plot boundaries

Soil units shown on the map are represented by both the color and a numeral. The soil boundaries are superimposed on land parcel with revenue survey number boundaries to visualize its spatial extent.



Map key

There are many thematic types to be differentiated on the map solely based on colour. Therefore soils and suitability types and their limitations are distinguished by colours with a combination of alpha-numeric characters.



1. Introduction

Land is a scarce resource and basic unit for any material production. It can support the needs of the growing population, provided they use land in a rational and judicious manner. But what is happening in many areas of the state is a cause for concern to anyone involved in the management of land resources at the grassroots level. In India the area available for agriculture is about 51 per cent of the total area and more than 60 per cent of the people are still relying on agriculture for their livelihood. The limited land area is under severe stress and strain due to increasing population pressure and competing demands of various land uses. Due to this, every year there is a significant diversion of farm lands and water resources for non-agricultural purposes. Apart from this, due to lack of interest for farming among the farmers in many areas, large tracts of cultivable lands are turning into fallows and this trend is continuing at an alarming rate.

The watershed management programs are aimed at designing suitable soil and water conservation measures, productivity enhancement of existing crops, crop diversification with horticultural species, greening the wastelands with forestry species of multiple uses and improving the livelihood opportunities for landless people.

The objectives can be met to a great extent when an appropriate Natural Resources Management (NRM) plan is prepared and implemented. It is essential to have site specific Land Resources Inventory (LRI) indicating the potentials and constraints for developing such a site specific plan. LRI can be obtained by carrying out detailed characterization and mapping of all the existing land resources like soils, climate, water, minerals and rocks, vegetation, crops, land use pattern, socio-economic conditions, infrastructure, marketing facilities and various schemes and developmental works of the government. From the data collected at farm level, the specific problems and potentials of the area can be identified and highlighted, conservation measures required for the area can be planned on a scientific footing, suitability of the area for various uses can be worked out and finally viable and sustainable land use options suitable for each and every land holding can be prescribed to the farmer and other land users of the area.

The major landforms identified in the Sub-watershed are uplands and low lands. The database was generated by using cadastral map of the village as a base along with high resolution satellite imagery (IRS LISS IV and Cartosat-1). The objectives of the land resource survey, carried out in the Mokadampur Sub-watershed covering an area of 4 5914.91 ha are indicated below.

- Detailed characterization of all the land resources like soil, water, land use, cropping pattern and other resources available at parcel level in the village.
- Delineation of homogenous areas based on soil-site characteristics into management units.
- Collection and interpretation of climatic and agronomical data for crop planning.
- Identification of problems and potentials of the area and strategies for their management.
- Assessment of the suitability of land resources for various crops and other uses.
- Establishment of village level digital land resources database in a GIS framework.
- Enable the watershed and other line departments to prepare an action plan for the integrated development of the watershed.

To be continued….

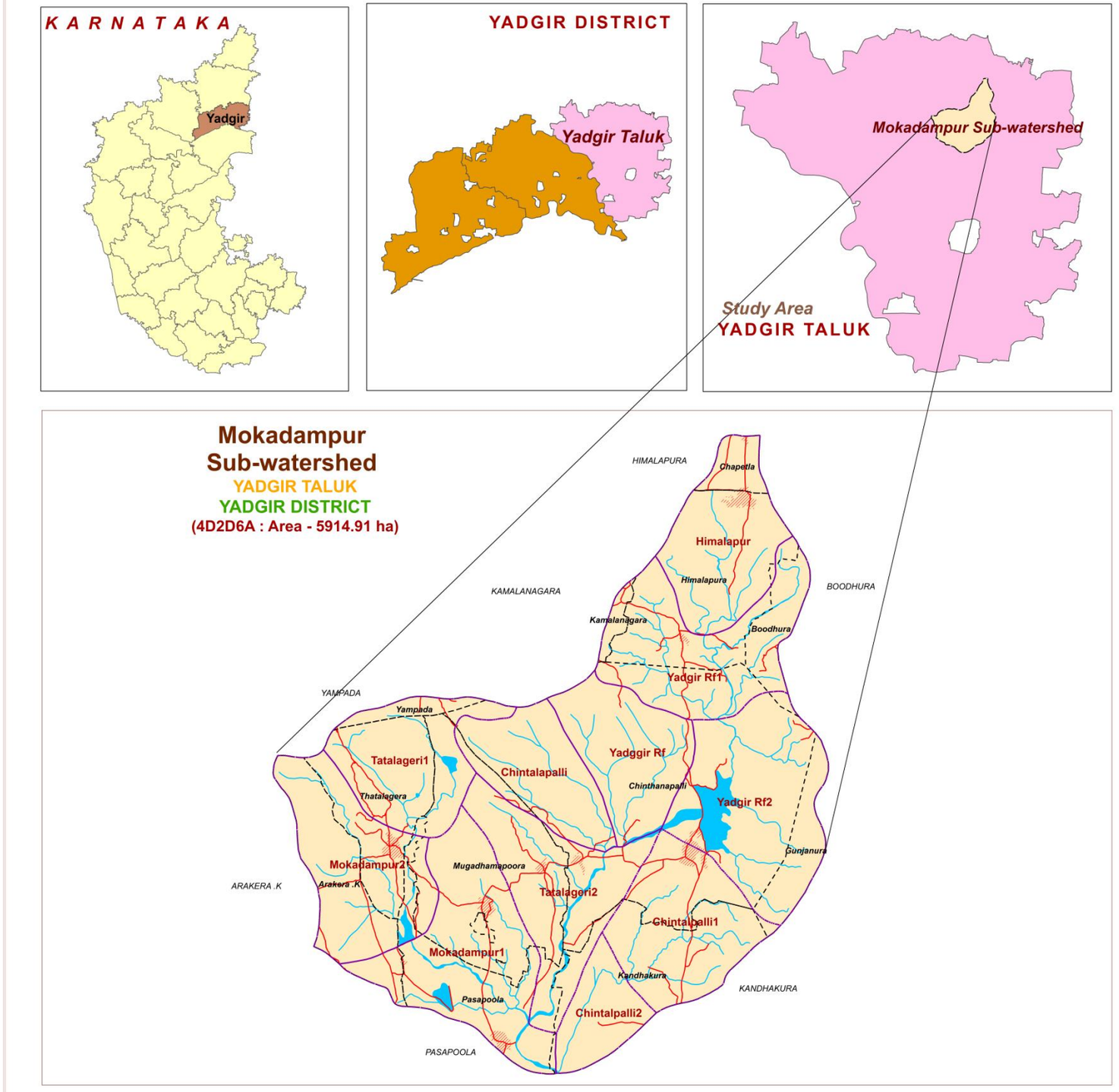
2. General Description of Sub-watershed

The Yadgir, popularly called as “Yadavagiri” by the local people, district came to existence on 30th Dec 2009 by carving out of erst-while Kalaburagi district of Karnataka with a geographical area of 5234.4 square kilometers, located in the northern part of the state. It lies between north latitudes’ $16^0$57’ – $16^0$59’ and east longitudes 77^0 12’ – 77^0 13’. The climate of the district is very hot and dry. The district has an average annual rainfall of 636 mm. Soils are well drained red sandy loam to medium deep black soils. This may be the weathering product of gneissic and granite terrain. Agriculture in Yadgir district is dependent upon rainfall, irrigation tanks, wells, streams etc. The major agricultural crops grown are Jowar, Groundnut, Cotton, Red gram, Bengal gram etc.

As a pilot study, **ICAR-NBSS&LUP, Bangalore** carried out the generation of SWs-LRI for the Mokadampur Sub-watershed in Yadgir taluk, Yadgir district. It was selected for data base generation under Sujala III project. Mokadampur Sub-watershed (code– 4D2D6A) is covering an area of 5914.91 ha and spread across Arakera ,Khimalapura,Yampada,Pasapoola,Kandhakura,Boodhura and Kamalanagara villages.

2.1. Location and Extent

LOCATION MAP OF MOKADAMPUR SUB-WATERSHED

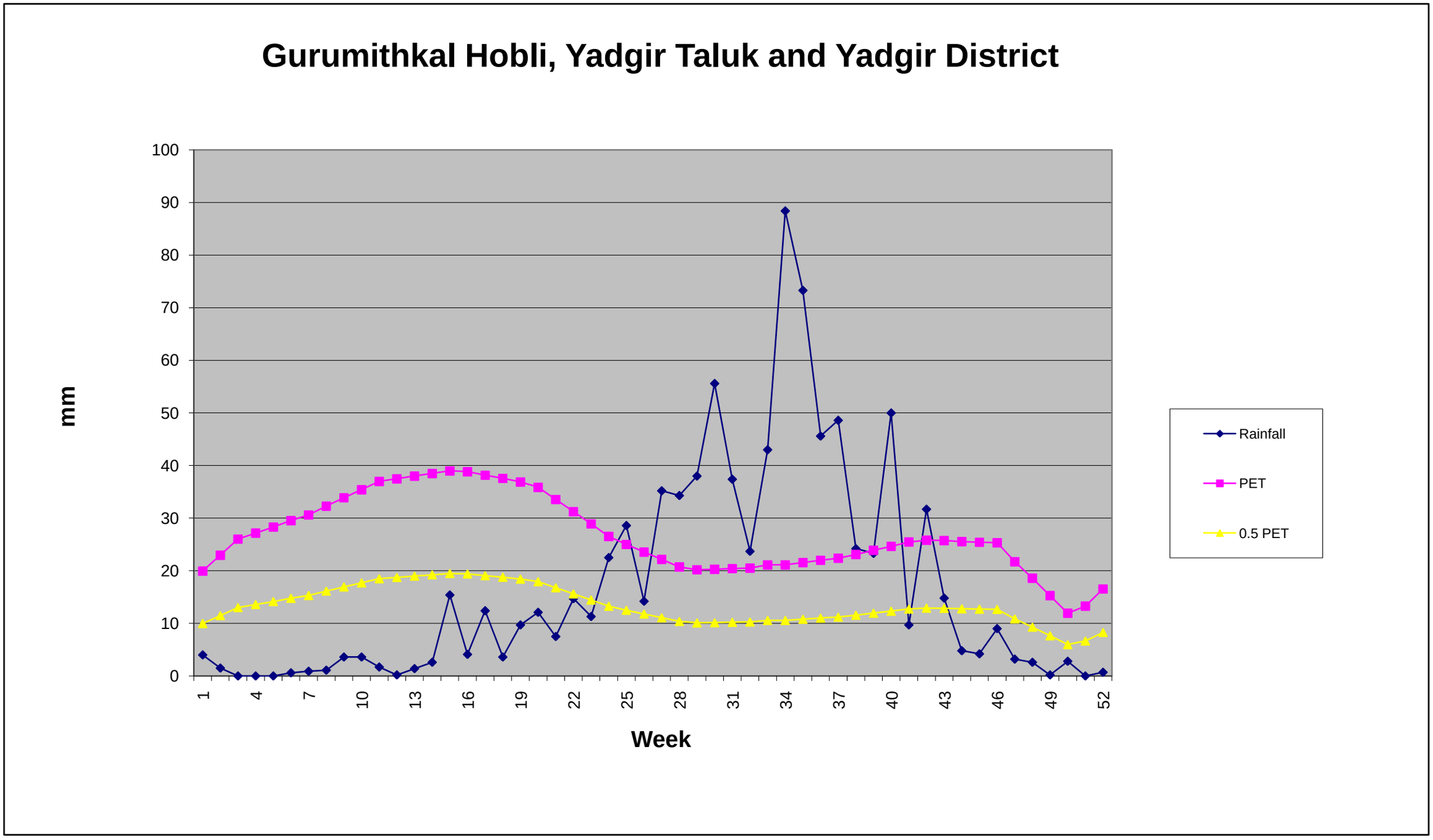


The Mokadampur Sub-watershed (Yadgir taluk, Yadgir district) is located in between $16^0$46' – $16^0$52' North latitudes and $77^0$15' – $77^0$21' East longitudes, covering an area of about 4609.21 ha, bounded by Arakera ,Khimalapura, Yampada, Pasapoola, Kandhakura, Boodhura and Kamalanagara villages.

Agro Ecological Sub Region (AESR) 6.2: Central and Western Maharashtra Plateau and North Karnataka Plateau and North Western Telangana Plateau, hot moist semi-arid ESR with shallow and medium loamy to clayey Black soils (medium and deep clayey Black soils as inclusion), medium to high AWC and LGP 120-150 days.

Agro-climatic Zone 2: North-eastern Dry Zone:
The total geographic area of this zone is about 1.76 M ha covering 8 taluks of Gulbarga district and 3 taluks of Raichur. Net cultivated area in the zone is about 1.31 M ha of which about 0.09 M ha are irrigated. The mean elevation of the zone is 300-450 m MSL. The main soil type is deep to very deep soils with small pockets of shallow to medium black soils. The zone is cropped predominantly during rabi due to insufficient rainfall (465-785 mm). The principal crops of the zone are jowar, bajra, oilseeds, pulses,
cotton and sugarcane.

Climate

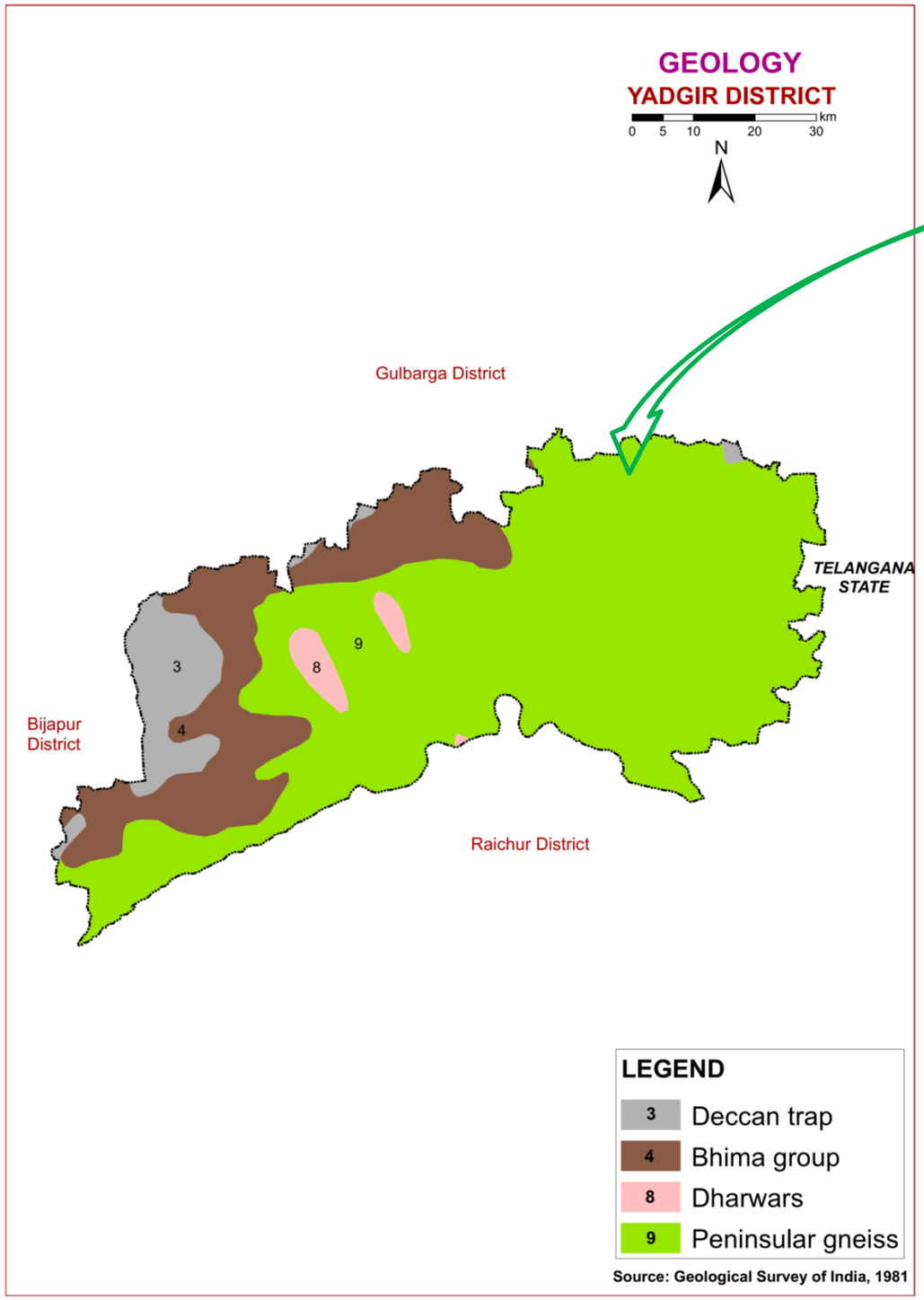


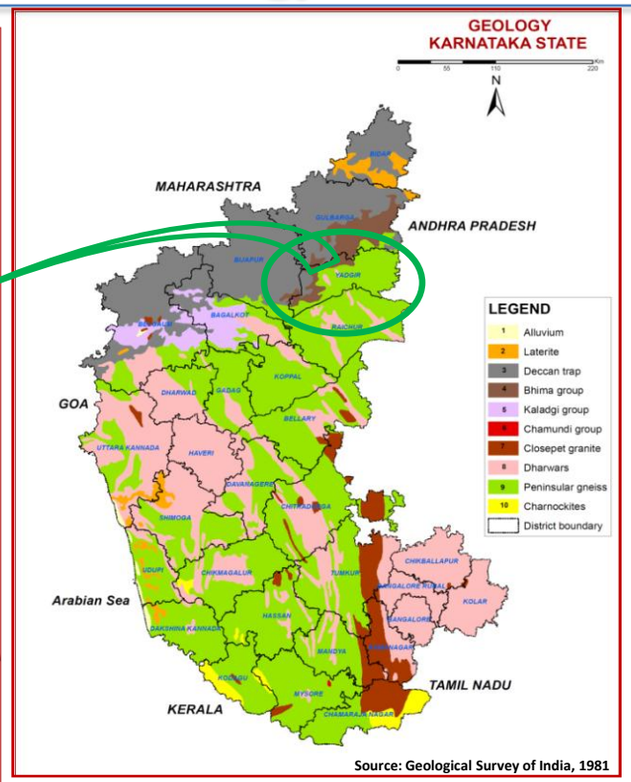
Length of Growing Period (LGP) is varying from June 4th week to 3rd week of October (120 - 150 days)

Annual Rainfall : 882 mm. in the Gurumithkal Hobli, Yadgir Taluk & District

Source: KSNDMC (1980-2011)

2.3. Geology





GEOLOGY - KARNATAKA STATE

Karnataka forms part of the Peninsular Shield, which is an ancient stable block of the earth's crust. The shield is composed of geologically ancient rocks of diverse origin. These rocks have undergone various degrees of metamorphism and crushing. Overlying these ancient rocks are Proterozoic, lete Creteceous to Palaeocene, Palaeocene to Recent, and Recent sediments.

In the stratigraphic succession of rocks in Karnataka the Archaean group is the oldest, followed by Proterozoic, Mesozoic and Cainozoic formations.

GEOLOGY - YADGIR DISTRICT

Mesozoic Group

Towards the end of the Cretaceous Period there was tremendous volcanic activity in the Peninsular part of India with eruption of a series of lava flows which came out through fissures and cracks. This formation is Known as the Deccan Trap.

Deccan Trap: The Deccan Trap covers an area of 25,000 sq. km. Eight lava flows have been identified in Karnataka, horizontally overlying the older formations. The thickness of the individual flows averages about five metres. The Deccan Trap is relatively uniform in petrographic character. The most common type is augite basalt. Dominant colour is greyish green; texture ranges from cryptocrystalline to glassy. The rock is often visicular and scoriaceous.

Upper Proterozoic Group

Formations of the Upper Proterozoic in Karnataka are closepet granites, Chamundi granites, Kaladgi series and Bhima series.

Bhima series

This series, equivalent to the Kurnool formations, is named after the Bhima river and occurs in Bijapur and Gulbarga districts. It covers an area of about 4200 sq. km and is overlain by the Deccan trap. The group consists of horizontal, unfossiliferous, unmetamorphosed sedimentary rocks such as sandstones, green, purple and black shales, and cream and bluish limestones. The thickness is about 477 metres.

Dharwar schists

The Dharwar schists consist of a complex series of crystalline schists associated with ultrabasic rocks such as amphibolite, peridotites and dunites. These schists are found in long, narrow bands of various dimensions running NW-SE through the Peninsular Gneiss. The Dharwars are divided into Upper and Lower.

Upper Dharwars are equivalent to the Archaean to Lower Proterozoic, and are divided into Bababudan.

Lower Dharwars occur in Mysore district and include amphibolite schist, quartzite, ironstone and marble.

Peninsular Gneiss

Exposed over a large area of Karnataka in all the districts except Bidar is the Peninsular Gneiss which is a heterogeneous mixture of several types of granitic rocks such as banded gneisses, granitic gneisses, granites and gneissic granites, granodiorites and diorites. The banded gneisses consist of white bands of quartz-feldspar alternating with dark bands of biotite, hornblende, and minor accessories. The granite group includes granites of all shades with varying composition. Peninsular gneiss seems to have formed by the granitization of the older rocks.

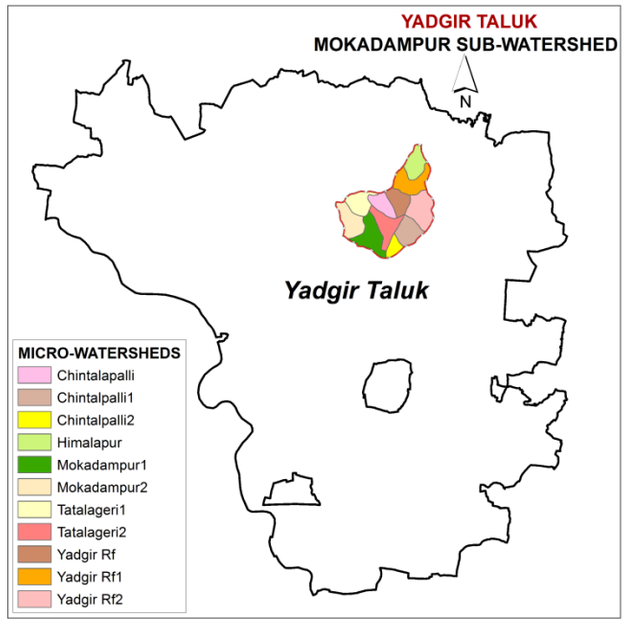
3. Survey Methodology

Sequence of activities in generation of LRI

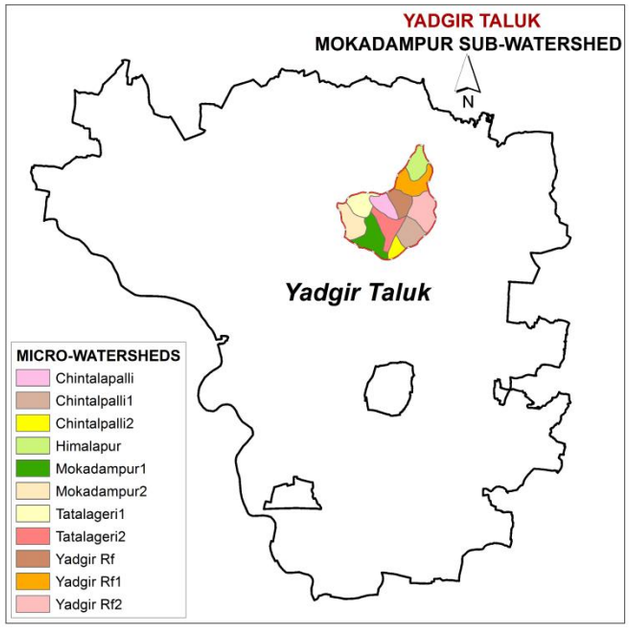
- Traversing the watershed using cadastral maps and imagery as base
- Identifying landforms, geology, land use and other features
- Selecting fields representing land units
- Opening profiles to 2 m depth
- Studying soil and site characteristics
- Grouping similar areas based on their soil-site characteristics into land management units
- Preparation of crop, soil and water conservation plan
- Socio-economic evaluation

The required site and soil characteristics are described and recorded on a standard proforma by following the protocols and guidelines given in the soil survey manual and field guide. Collection of soil samples from representative pedons for laboratory characterization and collection of surface soil samples from selected fields covering most of the management units for macro and micro-nutrient analysis is being carried out (320m grid intervals). Further processing of data at chemical lab and GIS lab are carried out to generate various thematic maps for each of the study area.

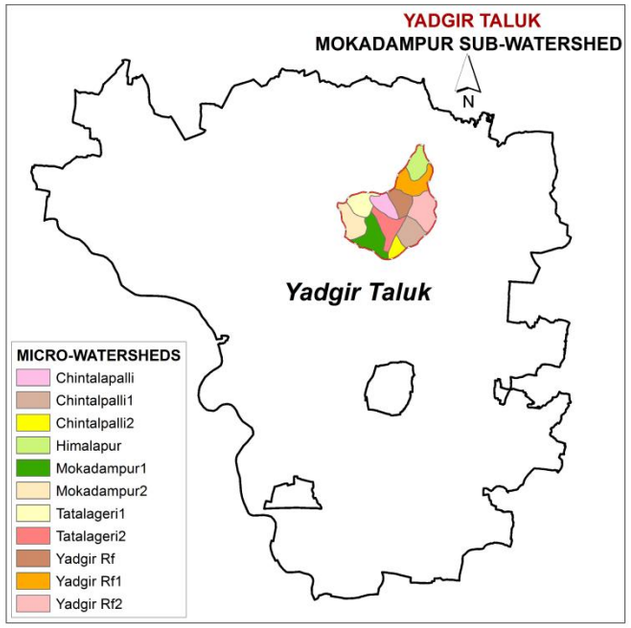
3.1. Database Used - Cadastral map



3.2. Database Used - Satellite Image



4. The Soils



References

- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

SOILS

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Soil Phase	Area in ha (%)	Soil Phase	Area in ha (%)
Soil of Granite and Granite Gneiss Landscape			
3, BDLbC3	69 (1.17)	55, ANRiB2	42 (0.72)
5, BDLiB2	127 (2.15)	167, ANRcA1	44 (0.75)
6, BDLiB3	113 (1.91)	58, MDGiB2	72 (1.22)
11, SBRcB2	65 (1.09)	149, MDGhB2g1	102 (1.72)
20, JNKcB2	101 (1.72)	170, MDGmB1	18 (0.3)
21, JNKcB2g1	73 (1.24)	59, MDRcB2	22 (0.38)
152, JNKmB2	25 (0.42)	60, MDRiA1	20 (0.33)
25, DPLcB2	13 (0.22)	61, MDRmB2	138 (2.33)
26, DPLiB2	69 (1.16)	133, MDRiB2	367 (6.21)
32, HSLcB2	81 (1.37)	62, BMNmB2	437 (7.39)
35, GWDiB2	84 (1.42)	119, BDPiB3	311 (5.26)
150, GWDiB2g1	55 (0.93)	120, BDPhB2	17 (0.29)
38, BLCiB2	12 (0.2)	129, SHTiB2	.005(.000007)
42, YDRcB2	44 (0.75)	153, KKRbB2g1	91 (1.54)
154, YDRcB2g1	77 (1.3)	113, HTKcC2g1	92 (1.55)
49, NGPmB2	214 (3.62)	156, HTKbB2	25 (0.42)
163, NGPmA1	74 (1.24)	161, HTKbB2g1	330 (5.58)
50, BGDbB2	53 (0.89)	165, HTKcB2	63 (1.06)
Lowland			
100, VKSmB1	18 (0.3)	Rock outcrops	147 (2.49)
179, KDPcA1	69 (1.16)	Others*	224 (3.79)
Forest	1916 (32.4)		

* - Habitation & Waterbody

KEY

TEXTURE
b – Loamy sand
c – Sandy loam
h – Sandy clay loam
i – Sandy clay
m – Clay

SLOPE
A – Nearly level (0-1%)
B – Very gently sloping (1-3%)
C- Gently sloping (3-5%)

EROSION
1 - Slight
2 - Moderate
3 - Severe

GRAVELLINESS
g1 - Gravelly (15-35%)

DEPTH
BDP, KKR - Very shallow (<25 cm)
BDL,HTK - Shallow (25-50 cm)
DPL, JNK, SBR - Moderately shallow (50-75 cm)
BBLC,GWR,HSL,SHT - Moderately deep (75-100 cm)
ANR,BGD,MDG,NGP.VKS,YDR - Deep (100-150 cm)
BMN,KDP,MDR - Very deep (>150 cm)

GWR i B 2 g1
Soil Series | Texture | Slope | Erosion | Gravelliness

Source: ICAR-NBSS&LUP, Bengaluru

4.1 Mapping unit description of Mokadampur (4D2D6A) Sub-watershed in Yadgir Taluk, Yadgir district

Soil map unit No*	Soil Series	Soil Phase Symbol	Mapping Unit Description	Area in ha (%)
Soils of Granite and Granite gneiss Landscape				
	BMN	Bhimanahalli soils are very deep (>150 cm), moderately well drained, have very dark gray, calcareous cracking clay black soils occurring on very gently sloping uplands under cultivation		**437 (7.39)**
62		BMNmB2	Clay surface, slope 1-3%, moderate erosion	437 (7.39)
	MDR	Madhwara soils are very deep (>150 cm), well drained, have very dark gray to very dark brown, slightly calcareous sandy clay loam soils occurring on nearly level to very gently sloping uplands under cultivation		**547 (9.2)**
59		MDRcB2	Sandy loam surface, slope 1-3%, moderate erosion	22 (0.38)
60		MDRiA1	Sandy clay surface, slope 0-1%, slight erosion	20 (0.33)
133		MDRiB2	Sandy clay surface, slope 1-3%, moderate erosion	367 (6.21)
61		MDRmB2	Clay surface, slope 1-3%, moderate erosion	138 (2.33)
	ANR	Anur soils are deep (100-150 cm), moderately well drained, have dark gray to dark brown, calcareous sodic clay soils occurring on very gently to gently sloping uplands under cultivation		**86 (1.4)**
167		ANRcA1	Sandy loam surface, slope 0-1%, slight erosion	44 (0.75)
55		ANRiB2	Sandy clay surface, slope 1-3%, moderate erosion	42 (0.72)
	BGD	Belagundi soils are deep (100-150 cm) well drained, have brown to dark yellowish brown, slightly calcareous clayey soils occurring on nearly level to very gently sloping uplands under cultivation		**53 (0.89)**
50		BGDbB2	Loamy sand surface, slope 1-3%, moderate erosion	53 (0.89)
	MDG	Mundargi soils are deep (100-150 cm), well drained, have brown to dark yellowish brown, sandy clay loam soils occurring on very gently sloping uplands under cultivation		**547 (9.2)**
149		MDGhB2g1	Sandy clay loam surface, slope 1-3%, moderate erosion, gravelly (15-35%)	102 (1.72)
58		MDGiB2	Sandy clay surface, slope 1-3%, moderate erosion	72 (1.22)
170		MDGmB1	Clay surface, slope 1-3%, slight erosion	18 (0.3)
	NGP	Nagalapur soils are deep (100-150 cm), moderately well drained, have very dark gray to very dark grayish brown, black calcareous cracking clay soils occurring on very gently sloping uplands under cultivation		**288 (4.8)**
163		NGPmA1	Clay surface, slope 0-1%, slight erosion	74 (1.24)
49		NGPmB2	Clay surface, slope 1-3%, moderate erosion	214 (3.62)
	YDR	Yadgir soils are deep (100-150 cm), well drained, have brown to dark yellowish brown and olive brown, sodic sandy loam soils occurring on very gently sloping uplands under cultivation		**121 (2.0)**
42		YDRcB2	Sandy loam surface, slope 1-3%, moderate erosion	44 (0.75)
154		YDRcB2g1	Sandy loam surface, slope 1-3%, moderate erosion, gravelly (15-35%)	77 (1.3)

To be continued….

Soil map unit No*	Soil Series	Soil Phase Symbol	Mapping Unit Description	Area in ha (%)
Soils of Granite and Granite gneiss Landscape				
	BLC	Balichakra soils are moderately deep (75-100 cm), well drained, have reddish brown to dark reddish brown, sandy clay loam red soils occurring on very gently sloping uplands under cultivation		**12 (0.2)**
38		BLCiB2	Sandy clay surface, slope 1-3%, moderate erosion	12 (0.2)
	GWD	Gowdagera soils are moderately deep (75-100 cm), moderately well drained, have dark grayish brown to very dark grayish brown, calcareous sodic sandy clay loam soils occurring on very gently sloping uplands under cultivation		**139 (2.9)**
35		GWDiB2	Sandy clay surface, slope 1-3%, moderate erosion	84 (1.42)
150		GWDiB2g1	Sandy clay surface, slope 1-3%, moderate erosion, gravelly (15-35%)	55 (0.93)
	HSL	Hosalli soils are moderately deep (75-100 cm), moderately well drained, have yellowish brown to dark yellowish brown, slightly calcareous sandy clay soils occurring on very gently sloping uplands under cultivation		**81 (1.37)**
32		HSLcB2	Sandy loam surface, slope 3-5%, moderate erosion	81 (1.37)
	SHT	Shettalli soils are moderately deep (75-100 cm), well drained, have very dark gray, slightly calcareous gravelly sandy clay soils occurring on very gently sloping uplands under cultivation		**0 (0.0)**
129		SHTiB2	Sandy clay surface, slope 1-3%, moderate erosion	0 (0.0)
	DPL	Duppali soils are moderately shallow (50-75 cm), well drained, have dark brown to dark reddish brown, sandy clay soils occurring on very gently to gently sloping uplands under cultivation		**82 (1.38)**
25		DPLcB2	Sandy loam surface, slope 1-3%, moderate erosion	13 (0.22)
26		DPLiB2	Sandy clay surface, slope 1-3%, moderate erosion	69 (1.16)
	JNK	Jinkera soils are moderately shallow (50-75 cm), well drained, have dark brown to very dark grayish brown, slightly calcareous sandy clay loam soils occurring on very gently sloping uplands under cultivation		**200 (3.3)**
20		JNKcB2	Sandy loam surface, slope 1-3%, moderate erosion	101 (1.72)
21		JNKcB2g1	Sandy loam surface, slope 1-3%, moderate erosion, gravelly (15-35%)	73 (1.24)
152		JNKmB2	Clay surface, slope 1-3%, moderate erosion	25 (0.42)
	SBR	Sambara soils are moderately shallow (50-75 cm), somewhat excessively drained, have light gray to pink, loamy sand soils occurring on very gently to gently sloping uplands under cultivation		**65 (1.09)**
11		SBRcB2	Sandy loam surface, slope 1-3%, moderate erosion	65 (1.09)
	BDL	Badiyala soils are shallow (25-50 cm), well drained, have dark brown to very dark brown and dark yellowish brown, slightly calcareous sandy loam soils occurring on very gently to gently sloping uplands under cultivation		**309 (5.2)**
3		BDLbC3	Loamy sand surface, slope 3-5%, severe erosion	69 (1.17)
5		BDLiB2	Sandy clay surface, slope 1-3%, moderate erosion	127 (2.15)
6		BDLiB3	Sandy clay surface, slope 1-3%, severe erosion	113 (1.91)

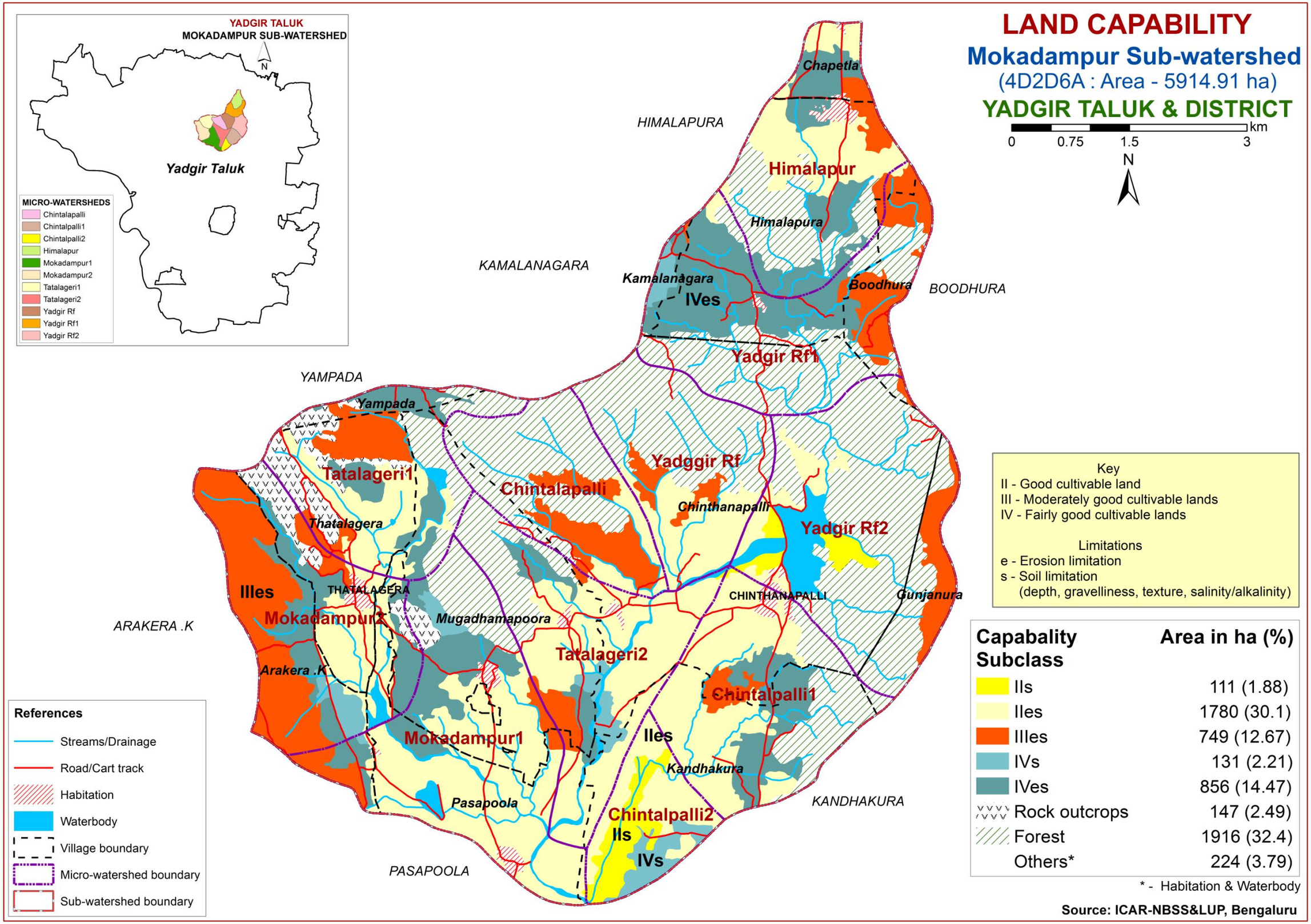
To be continued….

Soil map unit No*	Soil Series	Soil Phase Symbol	Mapping Unit Description	Area in ha (%)
Soils of Granite and Granite gneiss Landscape				
	HTK	Hattikuni soils are shallow (25-50 cm), well drained, have dark yellowish brown sandy loam soils occurring on very gently sloping uplands under cultivation		**509 (8.6)**
156		HTKbB2	Loamy sand surface, slope 1-3%, moderate erosion	25 (0.42)
161		HTKbB2g1	Loamy sand surface, slope 1-3%, moderate erosion, gravelly (15-35%)	330 (5.58)
165		HTKcB2	Sandy loam surface, slope 1-3%, moderate erosion	63 (1.06)
113		HTKcC2g1	Sandy loam surface, slope 3-5%, moderate erosion, gravelly (15-35%)	92 (1.55)
	BDP	Baddeppalli soils are very shallow (<25 cm), well drained, have dark brown to dark reddish brown, calcareous sandy clay loam soils occurring on very gently sloping uplands under cultivation		**328 (5.5)**
120		BDPhB2	Sandy clay loam surface, slope 1-3%, moderate erosion	17 (0.29)
119		BDPiB3	Sandy clay surface, slope 1-3%, severe erosion	311 (5.26)
	KKR	Kakalawar soils are very shallow (<25 cm), well drained, have dark brown sandy loam soils occurring on very gently sloping uplands under cultivation		**91 (1.54)**
153		KKRbB2g1	Loamy sand surface, slope 1-3%, moderate erosion, gravelly (15-35%)	91 (1.54)
	KDP	Kondapur soils are very deep (>150 cm), somewhat excessively drained, have strong brown, dark grayish brown to brown sandy soils occurring on very gently to gently sloping lowlands under cultivation.		**69 (1.16)**
179		KDPcA1	Sandy loam surface, slope 0-1%, slight erosion	69 (1.16)
Soils of Alluvial Landscape				
	VKS	Vankasambar soils are deep (100-150 cm), well drained, very dark brown to brown, sodic calcareous sandy clay loam soils occurring on very gently to gently sloping lowlands under cultivation		**18 (0.3)**
100		VKSmB1	Clay surface, slope 1-3%, slight erosion	18 (0.3)
900		Forest	Forest area	1916 (32.4)
999		Rock outcrops	Rock lands, both massive and bouldery with little or no soil	147 (2.49)
1000		Others	Habitation and Waterbody	224 (3.79)

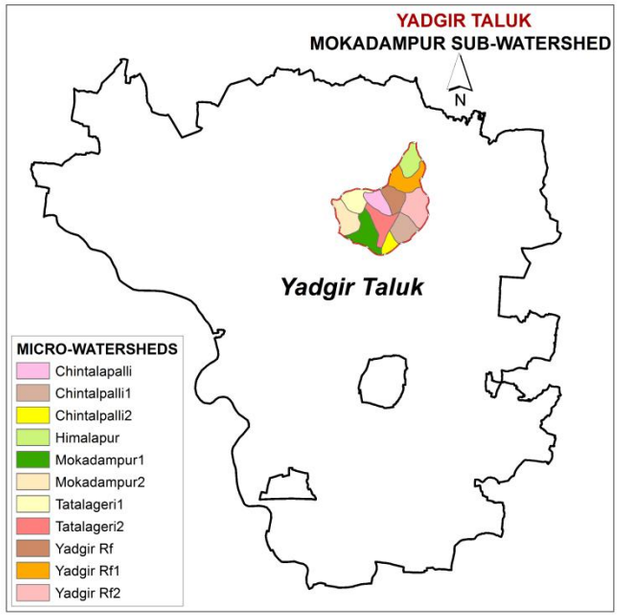
* Soil map unit numbers are continuous for the taluk, not for the sub-watershed

5. Soil Survey Interpretations

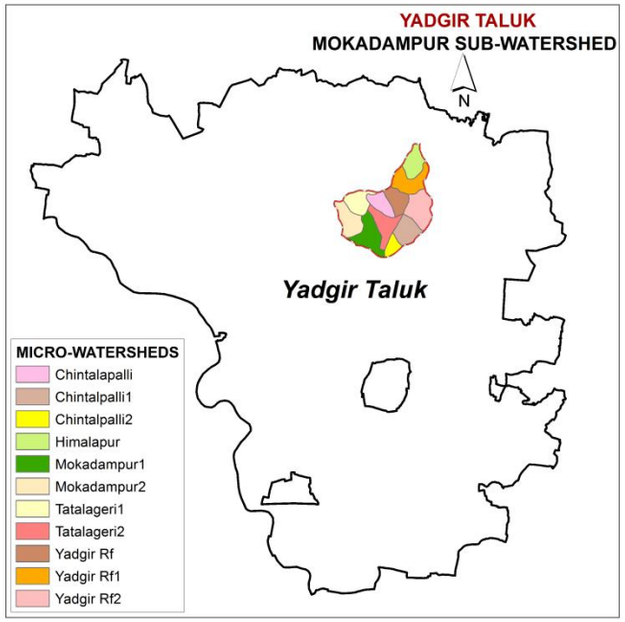
5.1. Land Capability Classification

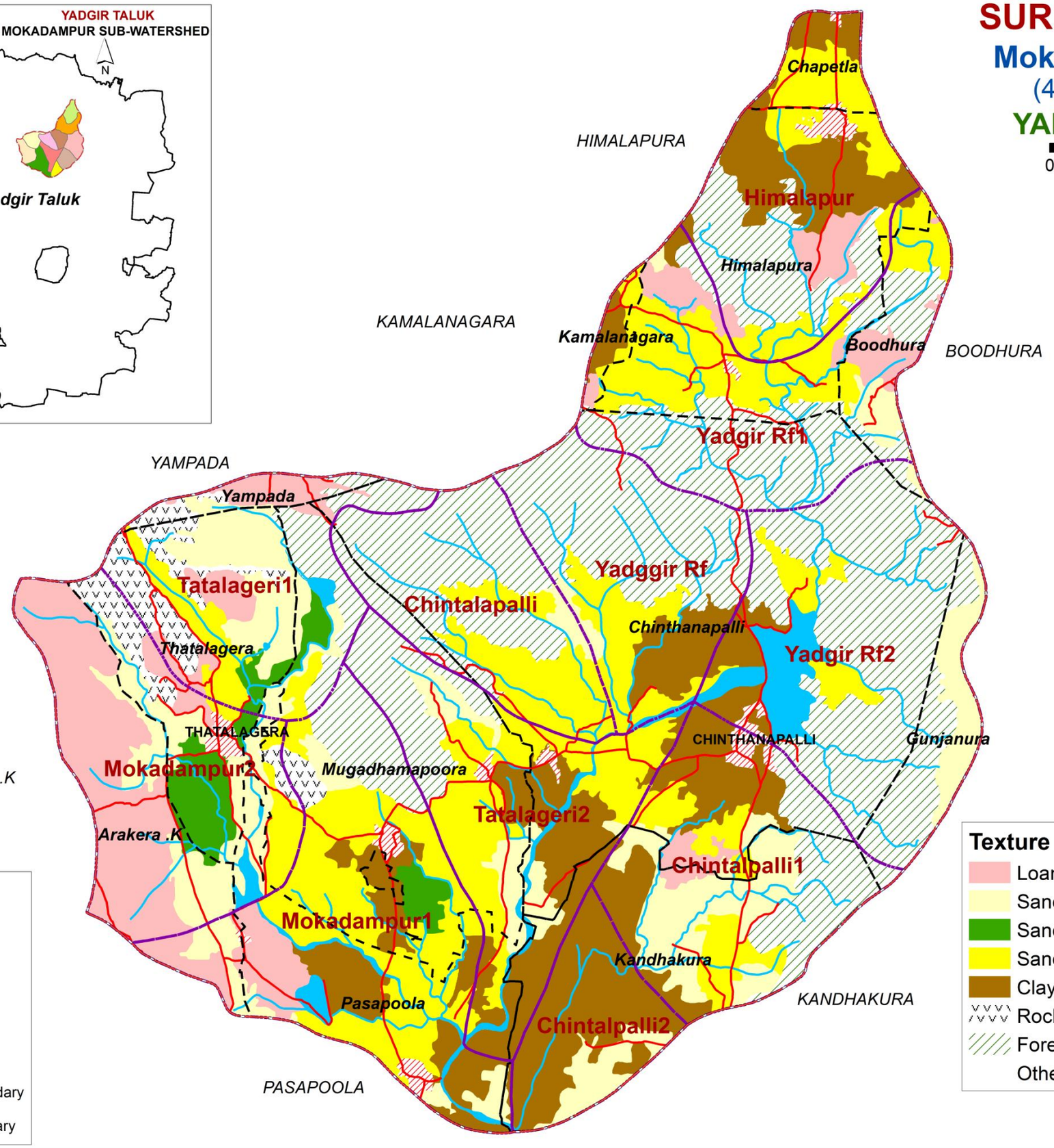


5.2. Soil Depth

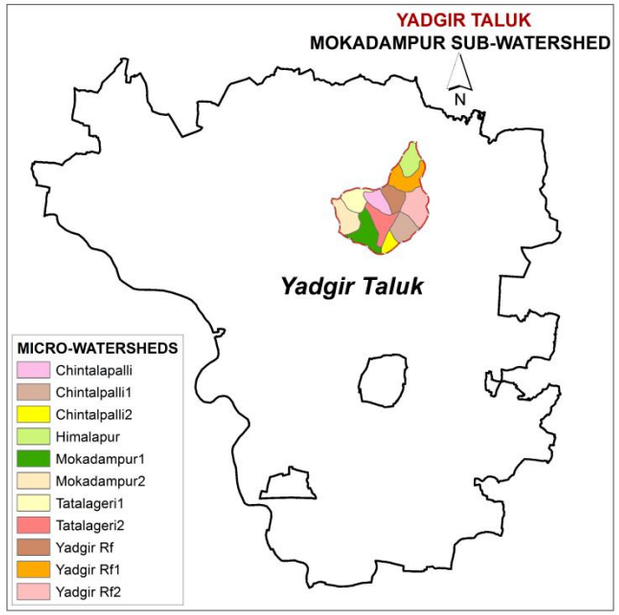


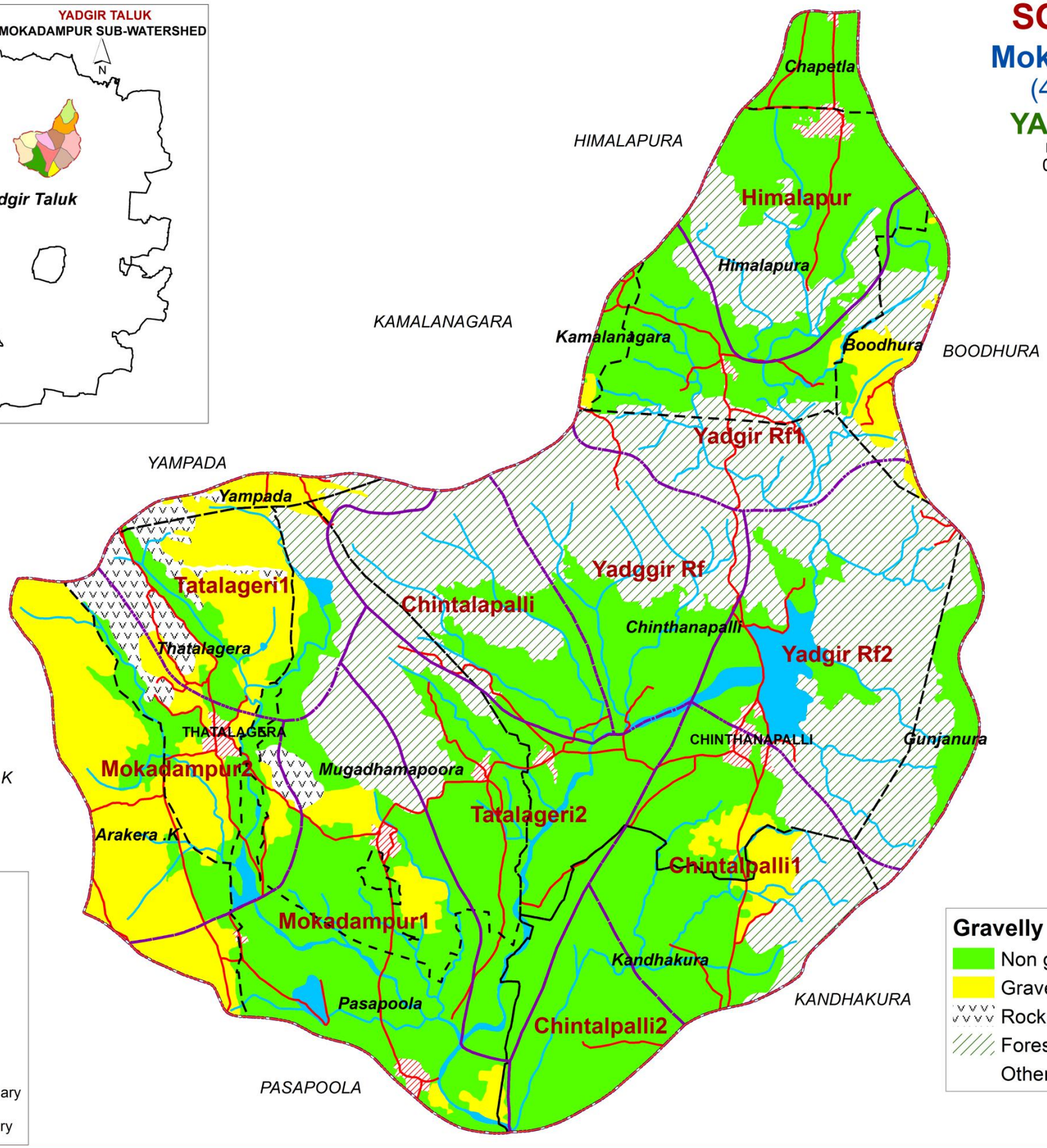
5.3. Surface Soil Texture





5.4. Surface Soil Gravelliness





SOIL GRAVELLINESS

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

References

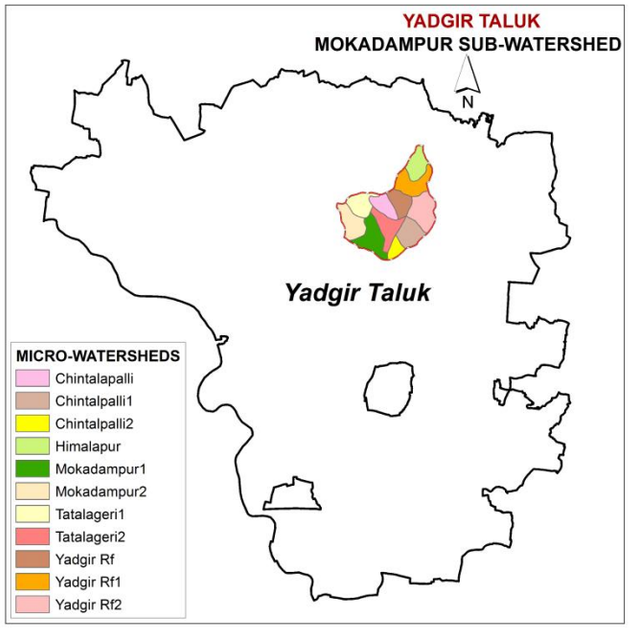
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Gravelly Class	Area in ha (%)
Non gravelly (<15%)	2807 (47.46)
Gravelly (15-35%)	820 (13.86)
Rock outcrops	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

5.5. Available Water Capacity



AVAILABLE WATER CAPACITY

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

km
0 0.75 1.5 3
N

HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA

Chapetla
Himalapur
Himalapura
Kamalanagara
Boodhura
Yadgir Rf1
Yampada
Tatalageri1
Chintalapalli
Yadggir Rf
Chinthanapalli
Yadgir Rf2
Thatalagera
THATALAGERA
CHINTHANAPALLI
Gunjanura
Mokadampur2
Mugadhamapoora
Tatalageri2
Arakera .K
Chintalpalli1
Mokadampur1
Kandhakura
Pasapoola
Chintalpalli2

References

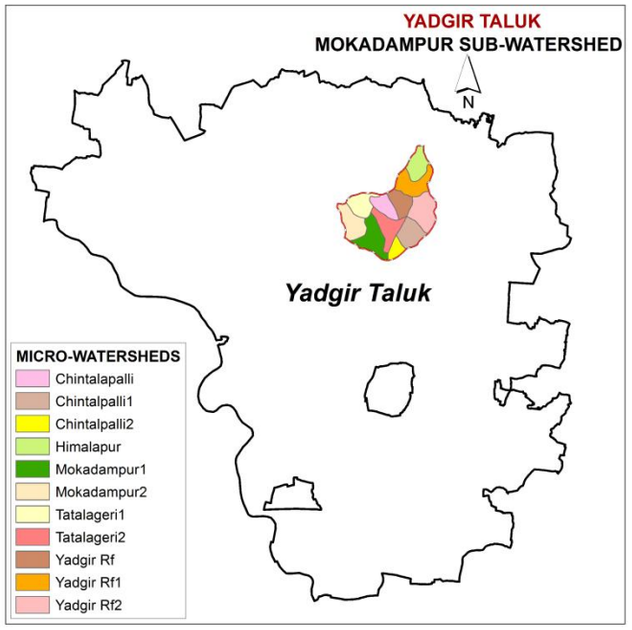
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Available Water Capacity	Area in ha (%)
Very low (<50 mm/m)	1302 (22.02)
Low (51-100 mm/m)	484 (8.18)
Medium (101-150 mm/m)	220 (3.72)
Very high (>200 mm/m)	1621 (27.4)
Rock outcrops	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

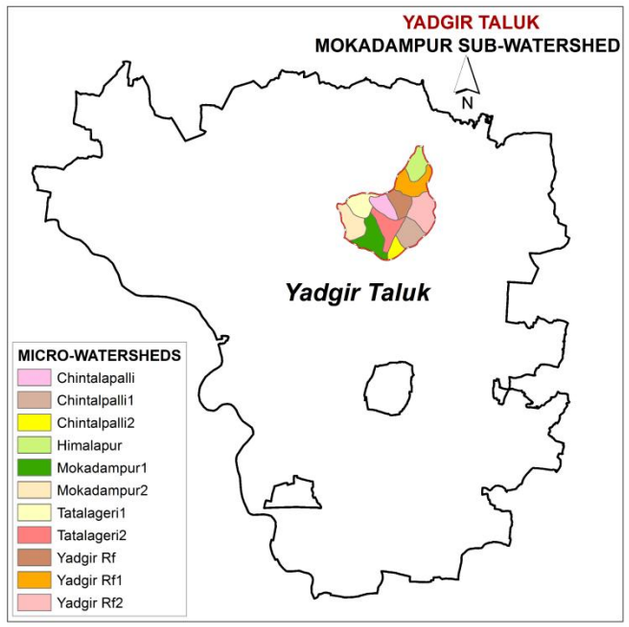
Source: ICAR-NBSS&LUP, Bengaluru

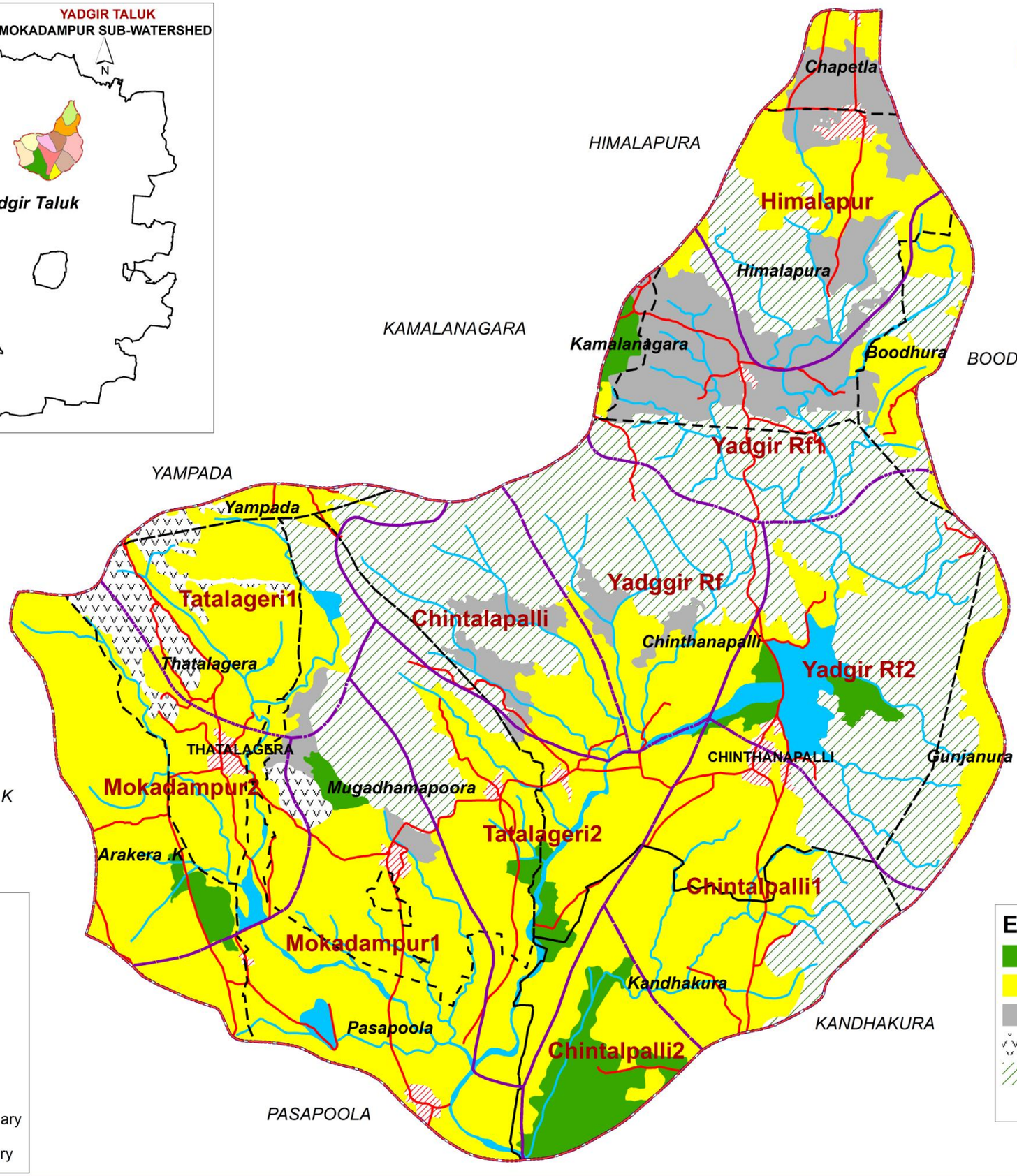
5.6.Slope


YADGIR TALUK
MOKADAMPUR SUB-WATERSHED
N
Yadgir Taluk
MICRO-WATERSHEDS
Chintalapalli
Chintalpalli1
Chintalpalli2
Himalapur
Mokadampur1
Mokadampur2
Tatalageri1
Tatalageri2
Yadgir Rf
Yadgir Rf1
Yadgir Rf2

SLOPE
Mokadampur Sub-watershed
(4D2D6A : Area - 5914.91 ha)
YADGIR TALUK & DISTRICT
km
0
0.75
1.5
3
N
HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA
Chapetla
Himalapur
Himalapura
Kamalanagara
Boodhura
Yadgir Rf1
Yampada
Yadggir Rf
Tatalageri1
Chintalapalli
Chinthanapalli
Yadgir Rf2
Thatalagera
THATALAGERA
CHINTHANAPALLI
Gunjanura
Mokadampur2
Mugadhamapoora
Tatalageri2
Arakera .K
Chintalpalli1
Mokadampur1
Kandhakura
Pasapoola
Chintalpalli2
References
Streams/Drainage
Road/Cart track
Habitation
Waterbody
Village boundary
Micro-watershed boundary
Sub-watershed boundary
Slope Class
Area in ha (%)
Nearly level (0-1%) 206 (3.49)
Very gently sloping (1-3%) 3260 (55.11)
Gently sloping (3-5%) 161 (2.72)
Rock outcrops 147 (2.49)
Forest 1916 (32.4)
Others* 224 (3.79)
* - Habitation & Waterbody
Source: ICAR-NBSS&LUP, Bengaluru

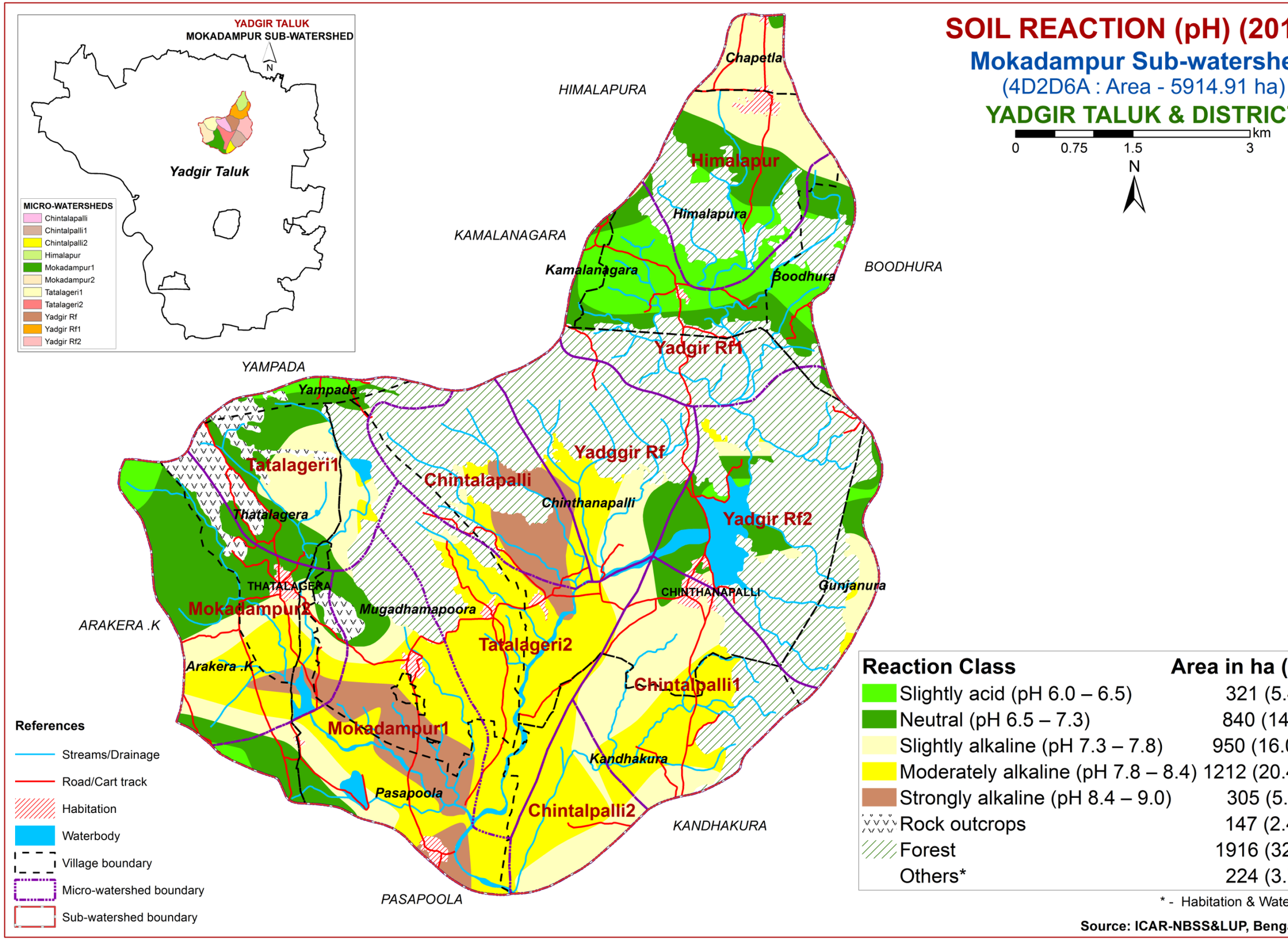
5.7.Soil Erosion



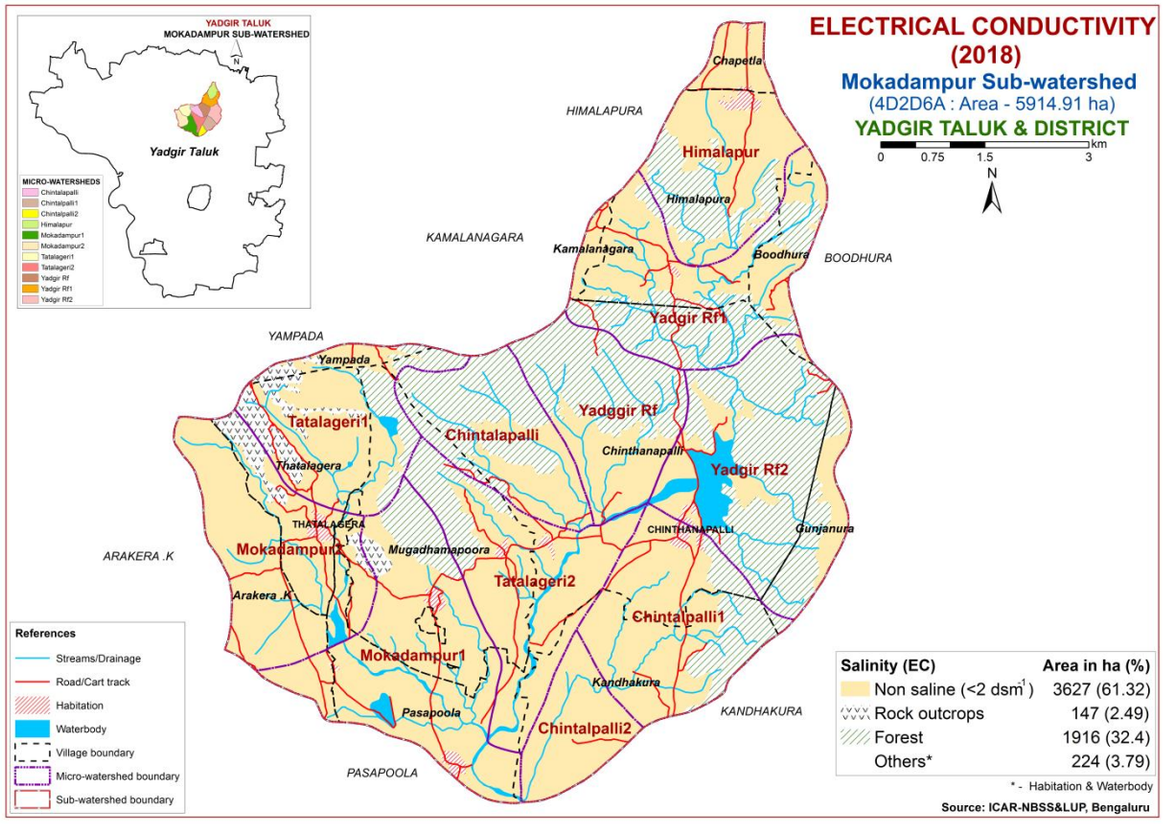


6. Soil Fertility Status

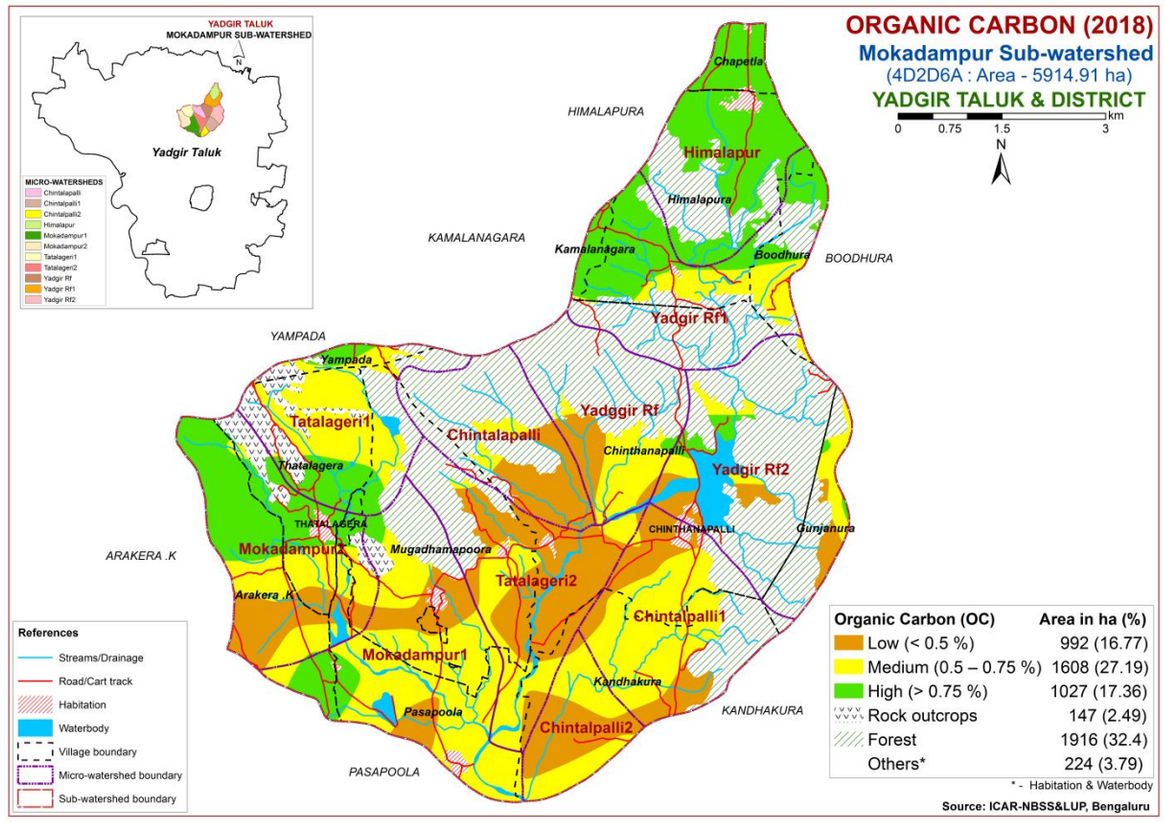
6.1. Soil Reaction (pH)



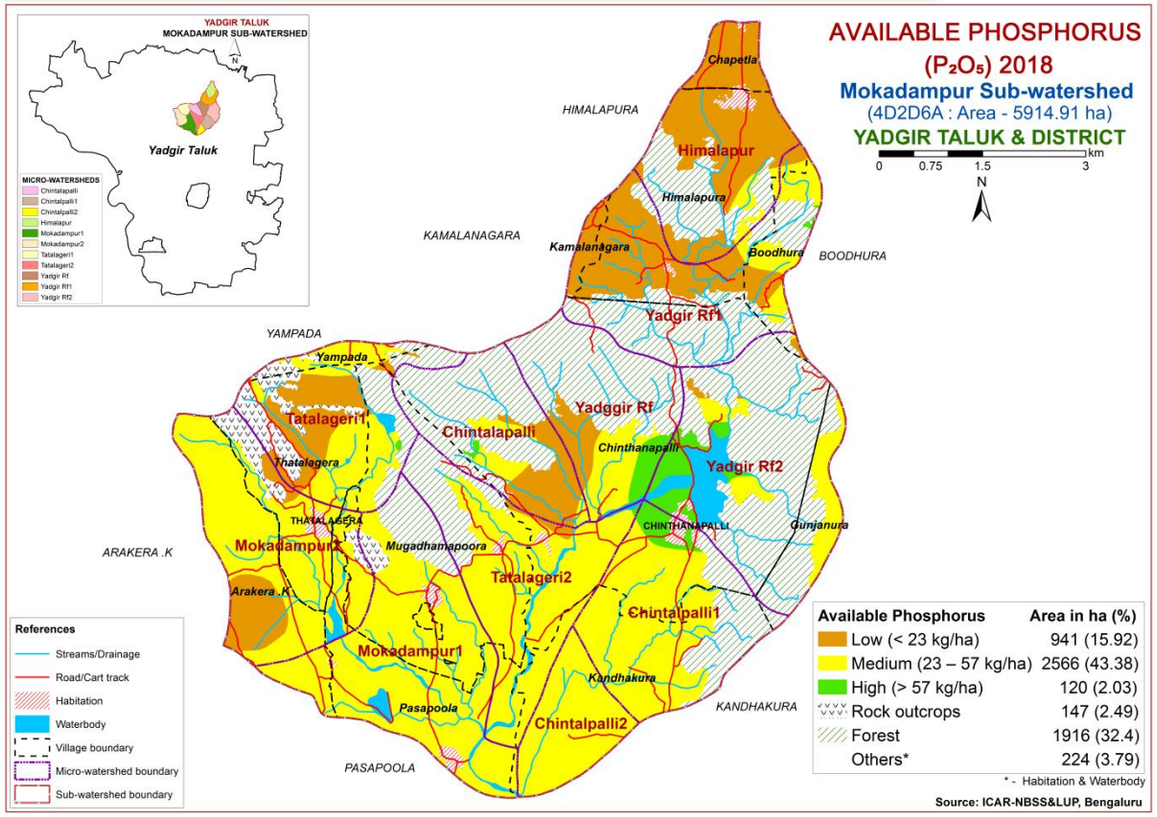
6.2. Electrical Conductivity (EC)



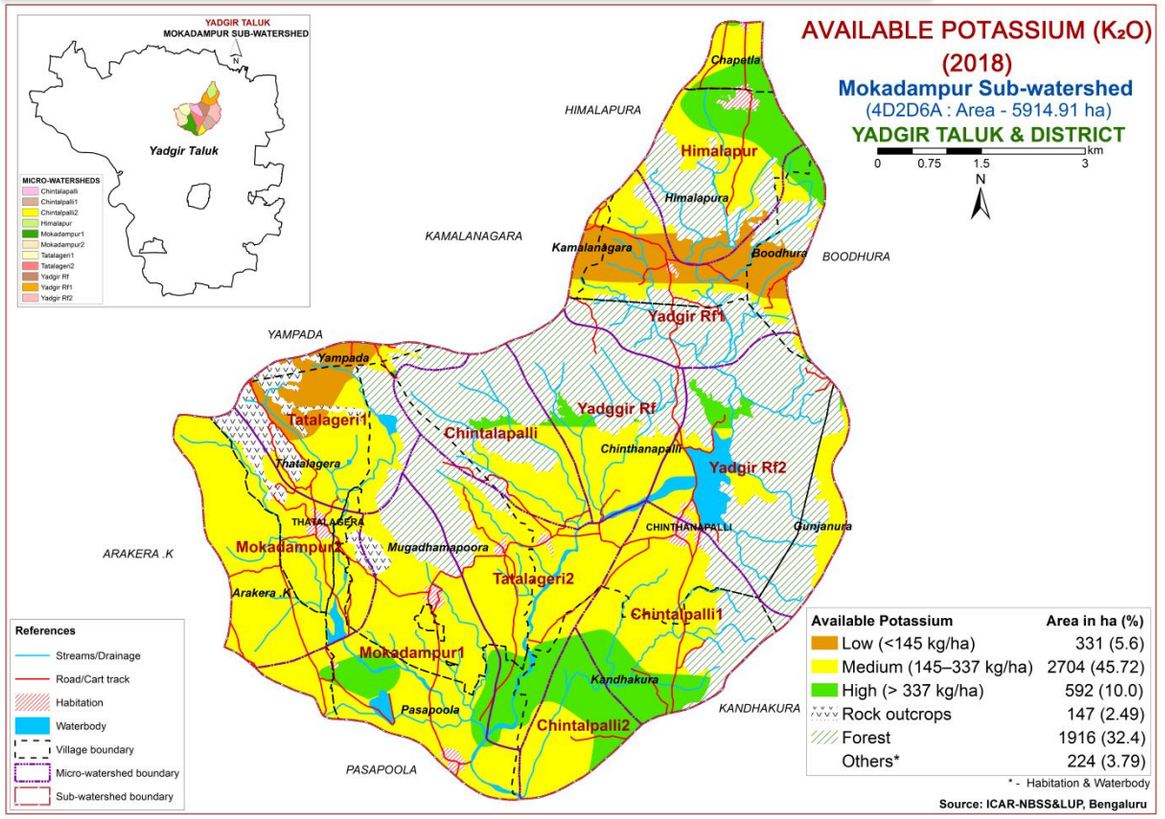
6.3. Organic Carbon



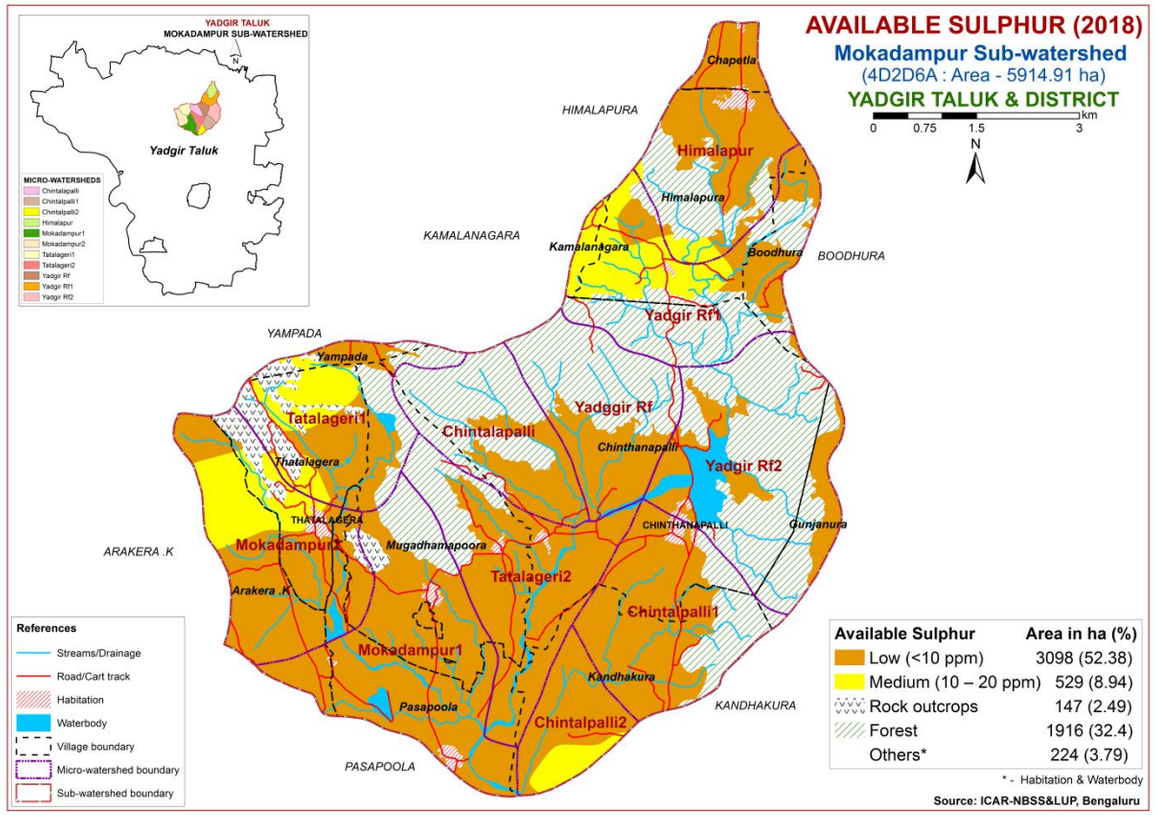
6.4. Available Phosphorus (P_2O_5)



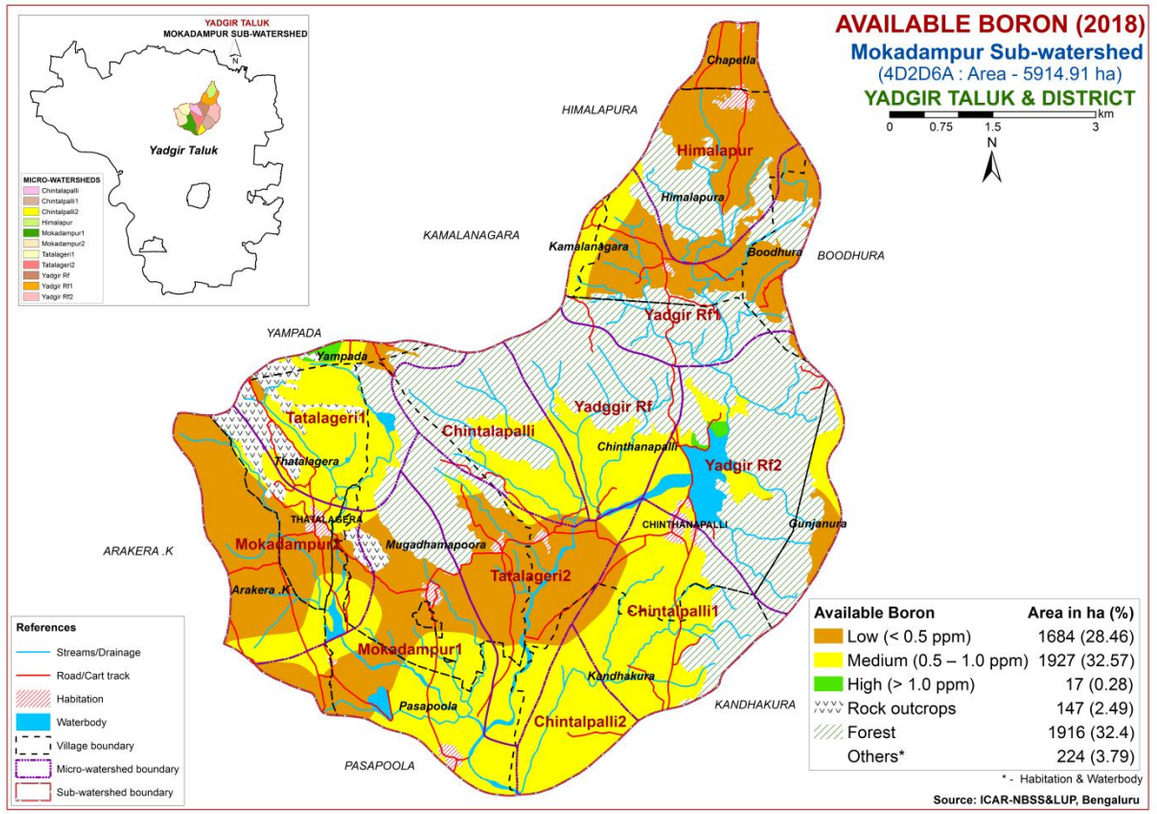
6.5. Available Potassium (K_2O)



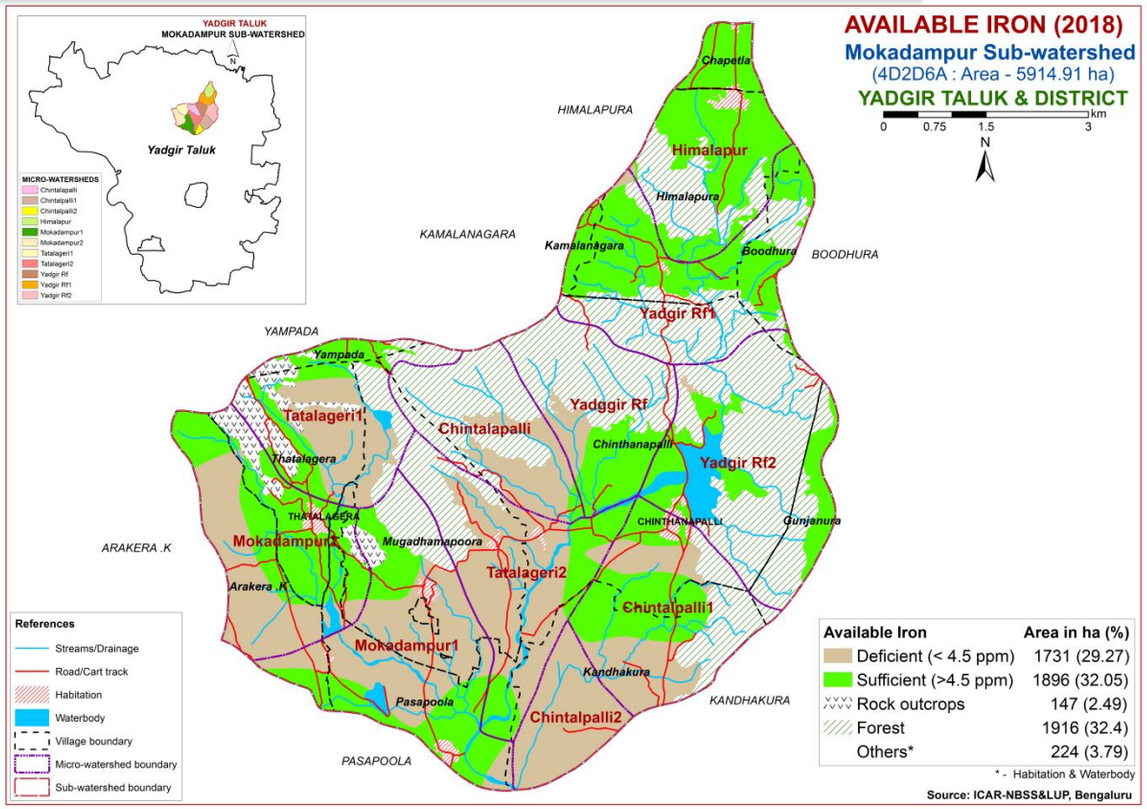
6.6. Available Sulphur



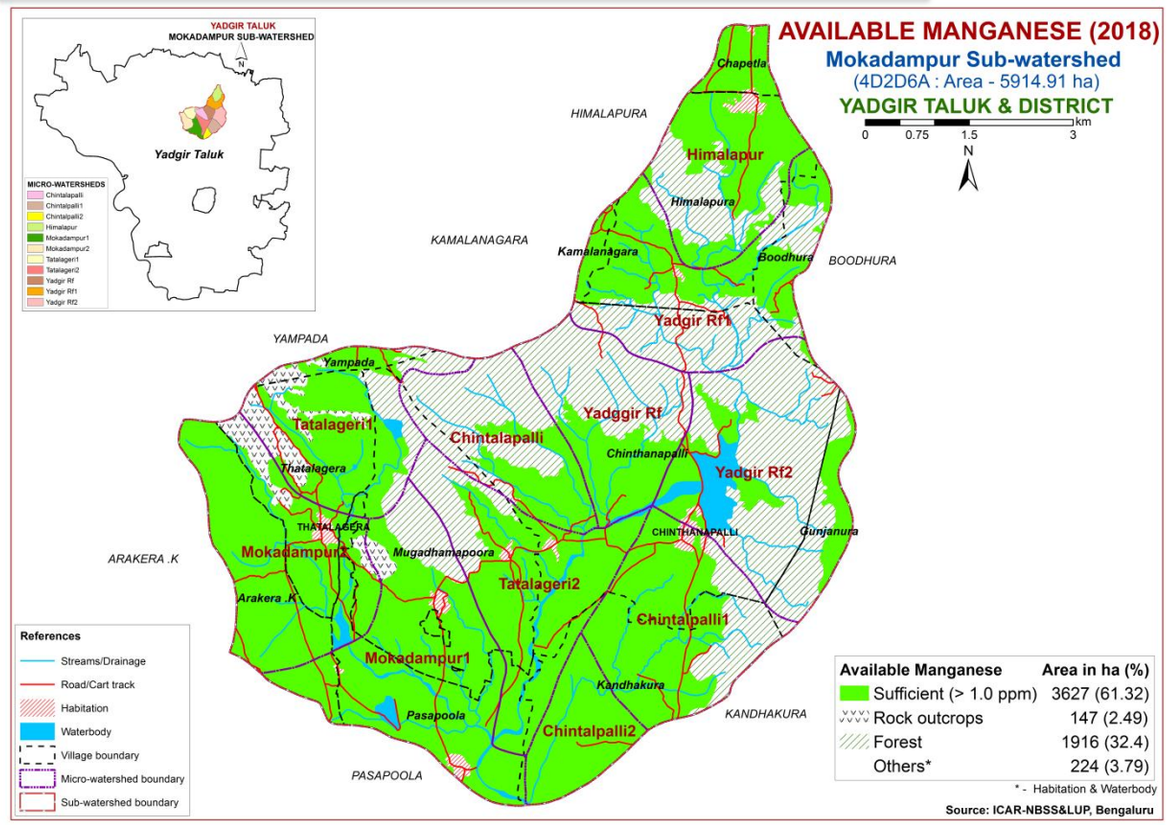
6.7. Available Boron



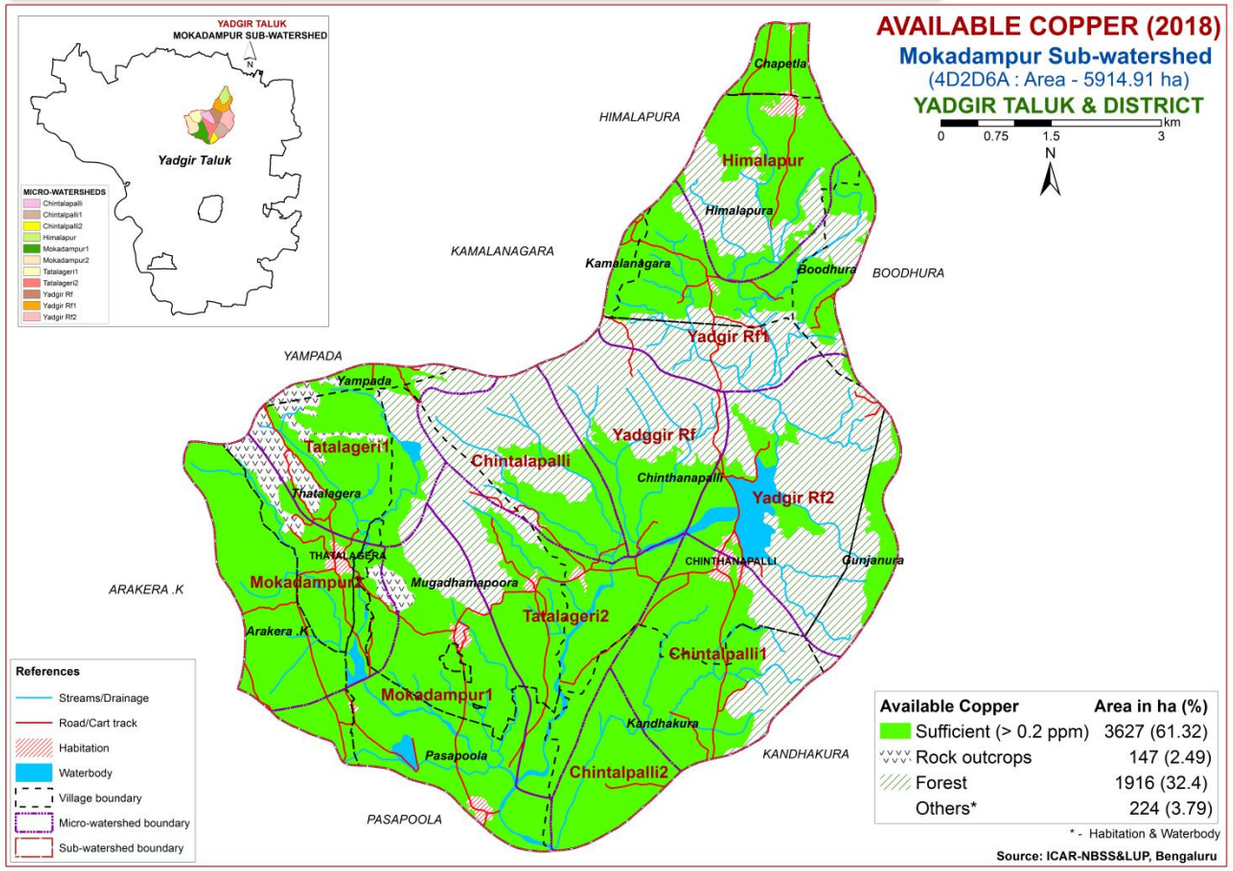
6.8. Available Iron



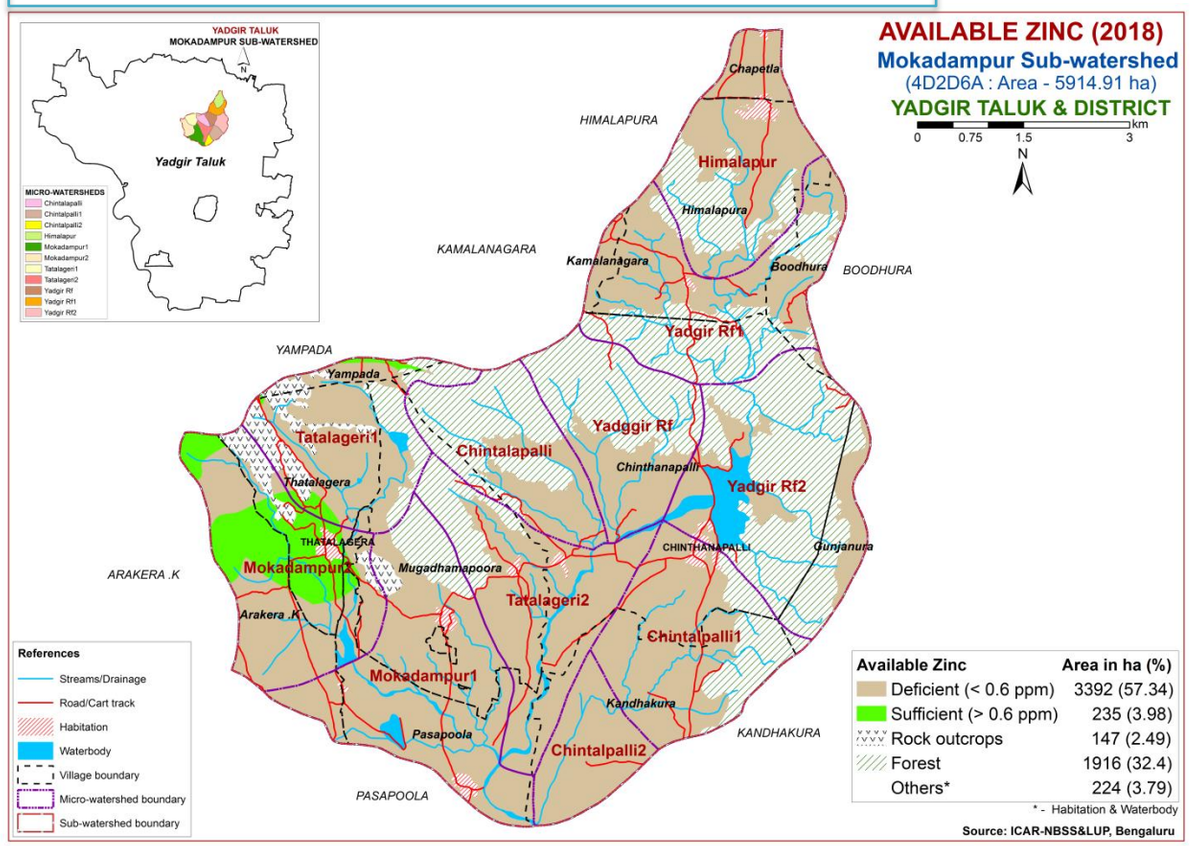
6.9. Available Manganese



6.10. Available Copper



6.11. Available Zinc



6.12. Correcting the Soil Nutrient Deficiencies

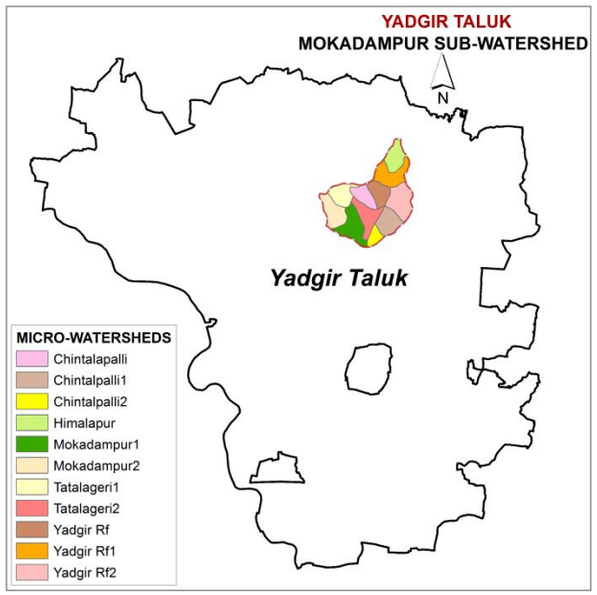
1. Reclamation of Salt affected soils
   a) When the soil is having neutral pH (6.5-7.5), no need of adding amendments (lime or gypsum)
   b) If the soil pH is <6.5, apply burnt lime to soil as per specifically recommended dosage and again after 2 years proper change has to be made based on soil test results.
   c) If the soil pH is 7.5-8.5 due to excess calcium content, drain out the excess calcium form the soil with good quality irrigation water.
   d) If the soil pH is more than 8.5 due to higher sodium content in soil, apply specifically recommended dose of gypsum & drain out the excess salts with good quality irrigation water.

2. In case of low & high content of major nutrients in the soil, follow the modifications as given bellow:
   - N: P: K (N: P_2O_5: K_2O) **For low N content**, add 25 % extra to the Recommended Dose of Fertilisers (RDF).
     For high N content, reduce 25% from the RDF and apply to soil.
     Eg:- if 100kg N, then we have to apply
     100+25% for deficient soil.
     100% for medium available N content soil.
     100-25% for higher N content soil.
   - Follow the same in case of P & K.

3. Use or Incorporation of biofertilizers like Rhizobium, Azotobacter, Azospirillum, Phosphate Solubilizing Bacteria and mycorrhiza enhances normal available nutrients in soil to the plants and also reduce the input cost of cultivation.
4. For calcium deficient soil, apply N-fertilizers like calcium ammonium nitrate; Gypsum can also supply calcium ($CaSO_4.2H_2O$)
5. Apply 405kg $MgSO_4$ per ha to the magnesium deficient soil. In case of perennial horticulture crops apply 150-200g/ plant.
6. In sulphur deficient acid soils (Humid region) apply phosphorus (in the form of) through SSP & use sulphur coated urea to the crops.
7. Apply 30-50kg ferrous sulfate ($FeSO_4$) per ha to the iron deficient soils. In case of perennial Horticulture crops apply 3-5g/ litre $FeSo_4$ /plant as foliar spray.
8. Apply 30-40kg/ha – manganese sulfate ($MnSO_4$) as soil application to the manganese deficient soils. In case of perennial Horticulture crops apply 3-5 g/litre $MnSO_4$ /plant as foilar application.
9. Apply Zinc – 10-25 kg/ha –$ZnSO_4$ – soil application to the Zinc deficient soils. In case of perennial Horticulture crops apply 3-5g/ litre – foliar application.
10. Apply Copper – 5-10 kg /ha – copper sulfate ($CuSO_4$) soil application for the copper deficient soils and for Perennial horticultural crops 3-5g/ litre – $CuSO_4$/plant as foliar application.
11. Apply borax 8-10 kg/ha in boron deficient soils and for Perennial horticultural crops as foliar application – 1g / litre.
12. Apply molybdenum – ammonium molybdate 200-250 gm/ha for Molybdenum deficient soils or dissolve 1g / litre ammonium molybdate for Foliar spray.
13. Soil sampling and testing needs to be done at every 2-3 years interval.

7. Land Suitability for Major Crops

7.1. Land Suitability for Sorghum



LAND SUITABILITY FOR SORGHUM

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

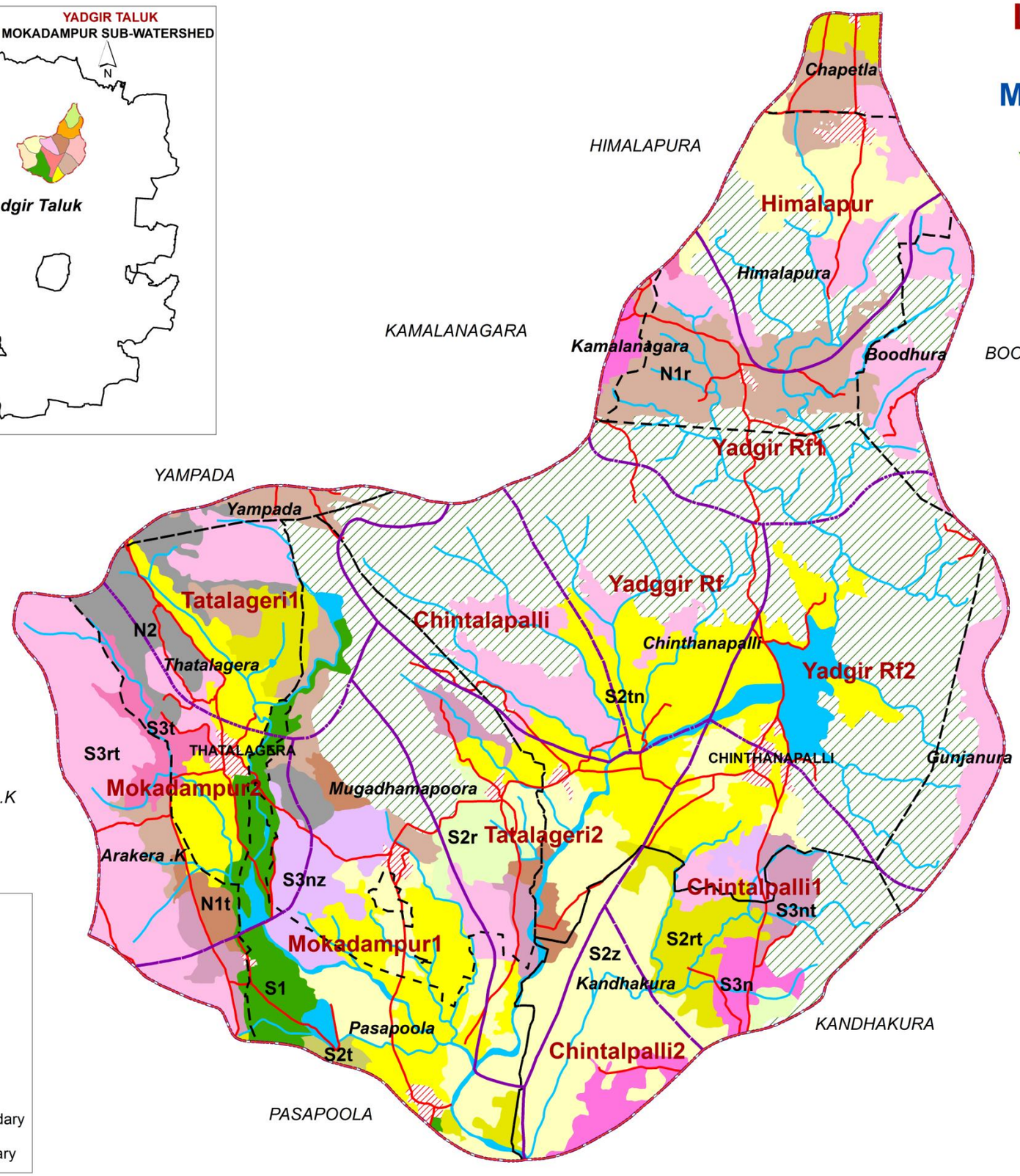
Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

Suitability subclass	Area in ha (%)
S1	134 (2.27)
S2r	82 (1.38)
S2t	12 (0.2)
S2z	725 (12.26)
S2rt	200 (3.38)
S2tn	739 (12.49)
S3n	104 (1.76)
S3t	65 (1.09)
S3nt	121 (2.05)
S3nz	139 (2.35)
S3rt	818 (13.84)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

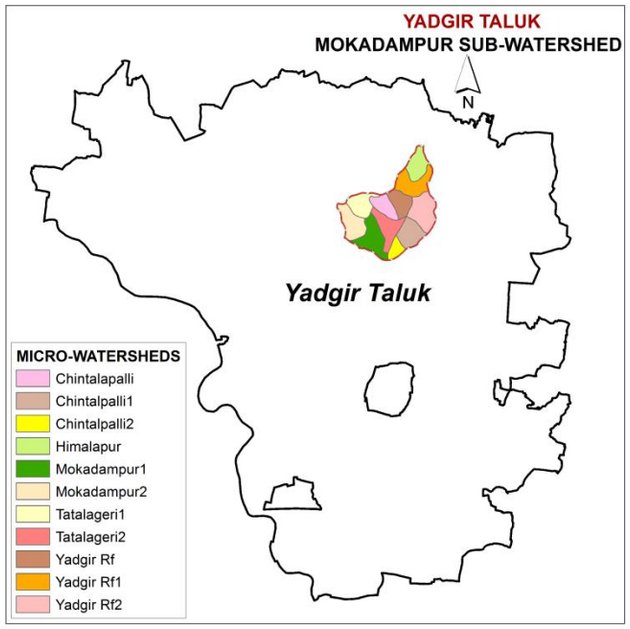
* - Habitation & Waterbody

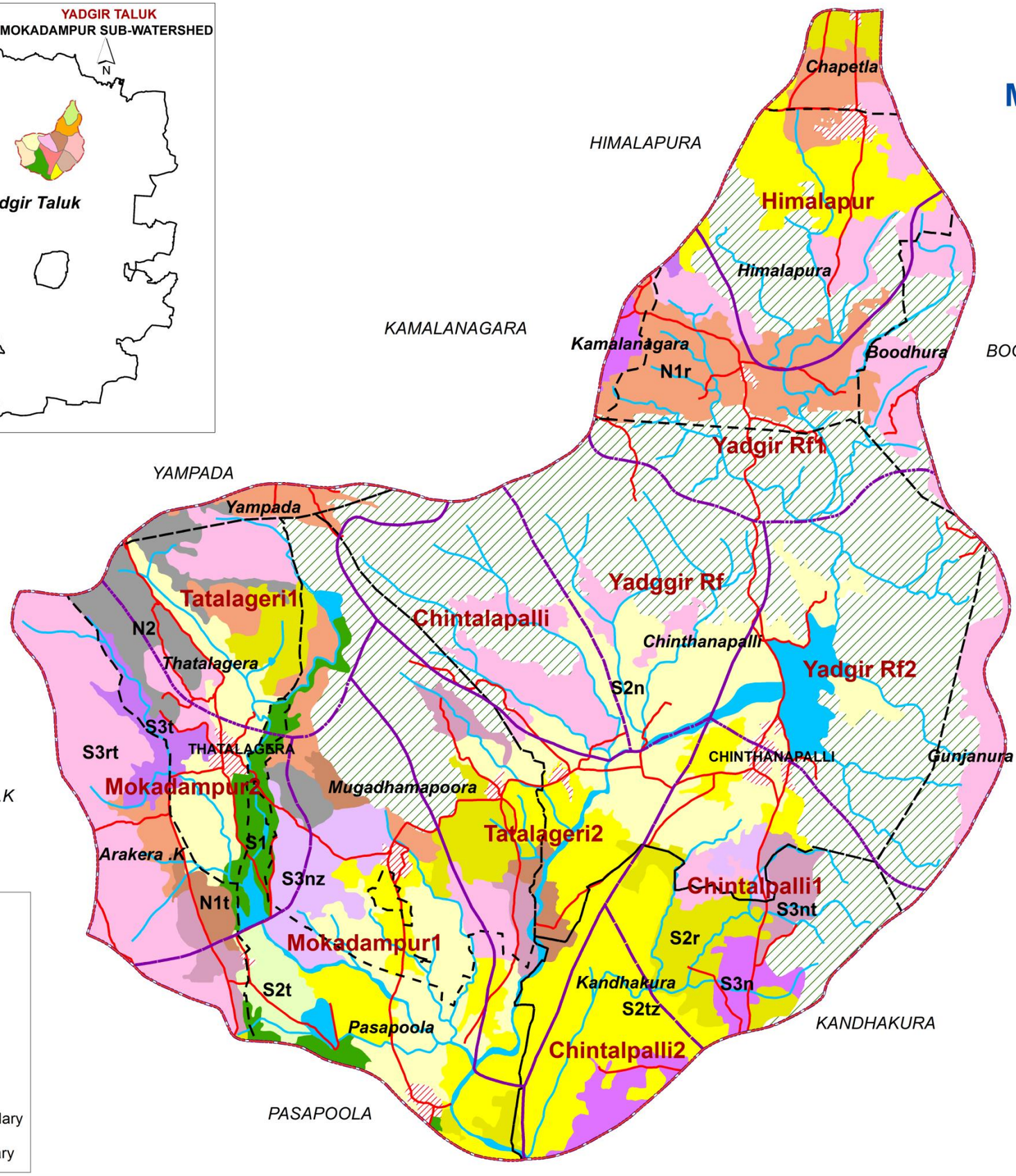
Source: ICAR-NBSS&LUP, Bengaluru



References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

7.2. Land Suitability for Maiz





LAND SUITABILITY FOR MAIZE

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

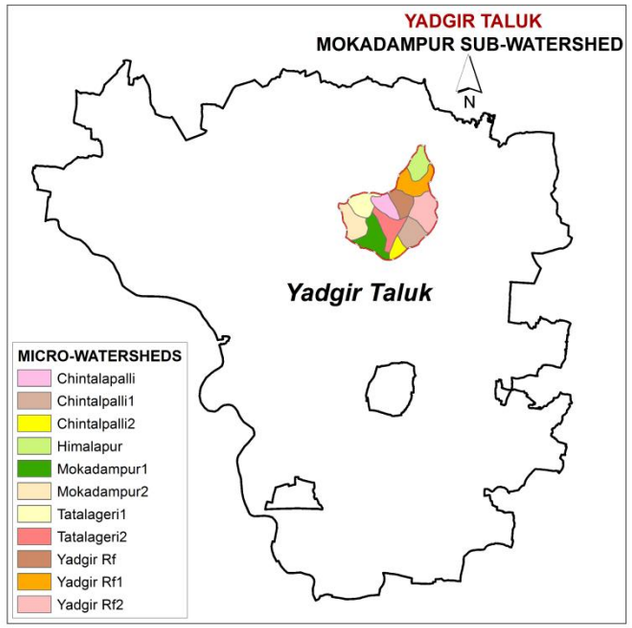
Suitability subclass	Area in ha (%)
S1	93 (1.58)
S2n	739 (12.49)
S2r	282 (4.76)
S2t	53 (0.89)
S2tz	725 (12.26)
S3n	104 (1.76)
S3t	65 (1.09)
S3nt	121 (2.05)
S3nz	139 (2.35)
S3rt	818 (13.84)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.3. Land Suitability for Redgram



LAND SUITABILITY FOR REDGRAM

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

References

- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Key
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

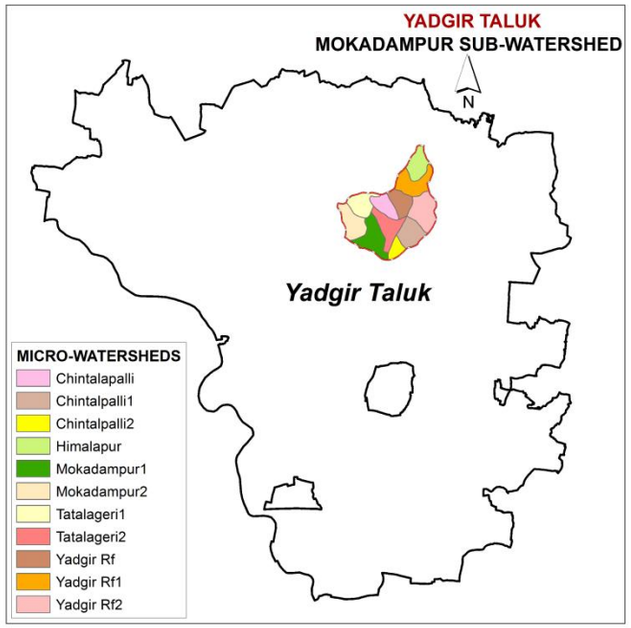
Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

Suitability subclass	Area in ha (%)
S2r	81 (1.37)
S2t	53 (0.89)
S2rt	12 (0.2)
S2tn	739 (12.49)
S2tz	725 (12.26)
S3n	225 (3.81)
S3r	282 (4.76)
S3nz	139 (2.35)
S3rt	65 (1.09)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

7.4. Land Suitability for Bajra



LAND SUITABILITY FOR BAJRA

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA

Chapetla
Himalapur
Himalapura
Kamalanagara
N1r
Boodhura
Yadgir Rf1
Yampada
Tatalageri1
N2
Thatalagera
Yadggir Rf
Chintalapalli
Chinthanapalli
S3r
S2n
Yadgir Rf2
S3rt
THATALAGERA
CHINTHANAPALLI
Gunjanura
Mokadampur2
Mugadhamapoora
Tatalageri2
Arakera .K
S1
S3nz
S3t
Chintalpalli1
S2r
Mokadampur1
S2t
Kandhakura
S3n
S2tz
Pasapoola
Chintalpalli2

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

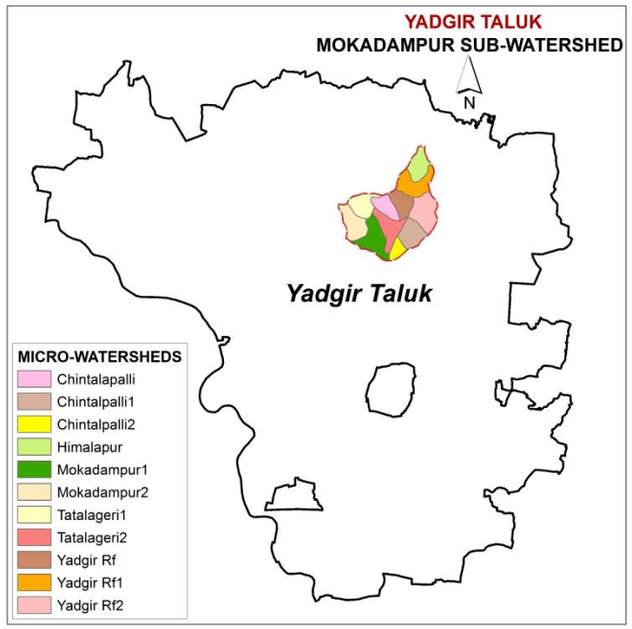
References
Streams/Drainage
Road/Cart track
Habitation
Waterbody
Village boundary
Micro-watershed boundary
Sub-watershed boundary

Suitability subclass	Area in ha (%)
S1	93 (1.58)
S2n	739 (12.49)
S2r	282 (4.76)
S2t	53 (0.89)
S2tz	725 (12.26)
S3n	225 (3.81)
S3r	309 (5.23)
S3t	134 (2.26)
S3nz	139 (2.35)
S3rt	509 (8.6)
N1r	419 (7.09)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

7.5. Land Suitability for Drumstick



LAND SUITABILITY FOR DRUMSTICK

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA
THATALAGERA
CHINTHANAPALLI
Chapetla
Himalapur
Himalapura
Kamalanagara
Boodhura
Yadgir Rf1
Yampada
Tatalageri1
N2
Thatalagera
S3rt
N1r
Mokadampur2
Arakera .K
S2r
N1t
Mokadampur1
S2t
Pasapoola
Chintalpalli
Yadggir Rf
Chinthanapalli
N1n
Yadgir Rf2
Gunjanura
Mugadhamapoora
Tatalageri2
Chintalpalli1
S3r
S3z
Kandhakura
Chintalpalli2

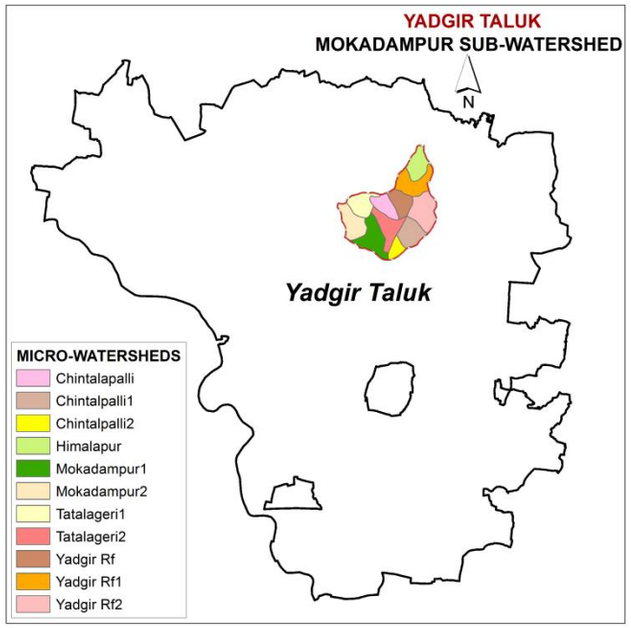
Suitability subclass	Area in ha (%)
S2r	93 (1.58)
S2t	53 (0.89)
S3r	282 (4.76)
S3z	725 (12.26)
S3rt	65 (1.09)
N1n	1103 (18.65)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

7.6. Land Suitability for Sunflower



LAND SUITABILITY FOR SUNFLOWER

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

km
0 0.75 1.5 3

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

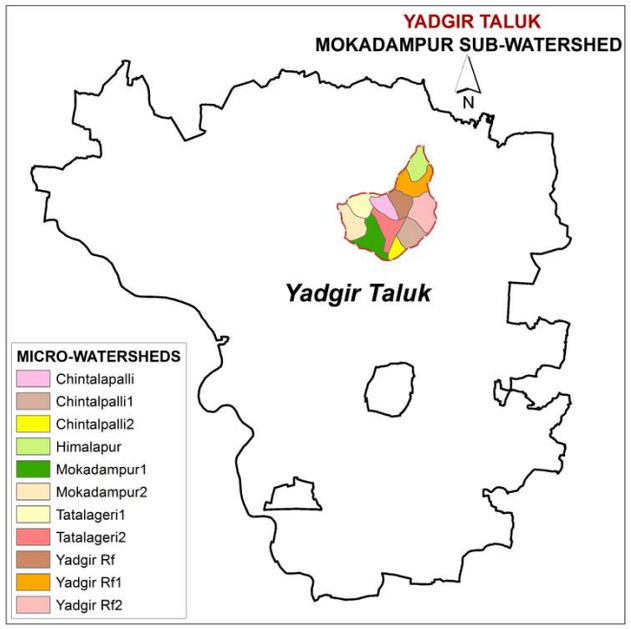
Suitability subclass	Area in ha (%)
S1	53 (0.89)
S2r	81 (1.37)
S2z	725 (12.26)
S2rt	12 (0.2)
S3n	739 (12.49)
S3r	282 (4.76)
S3rt	65 (1.09)
N1n	364 (6.16)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

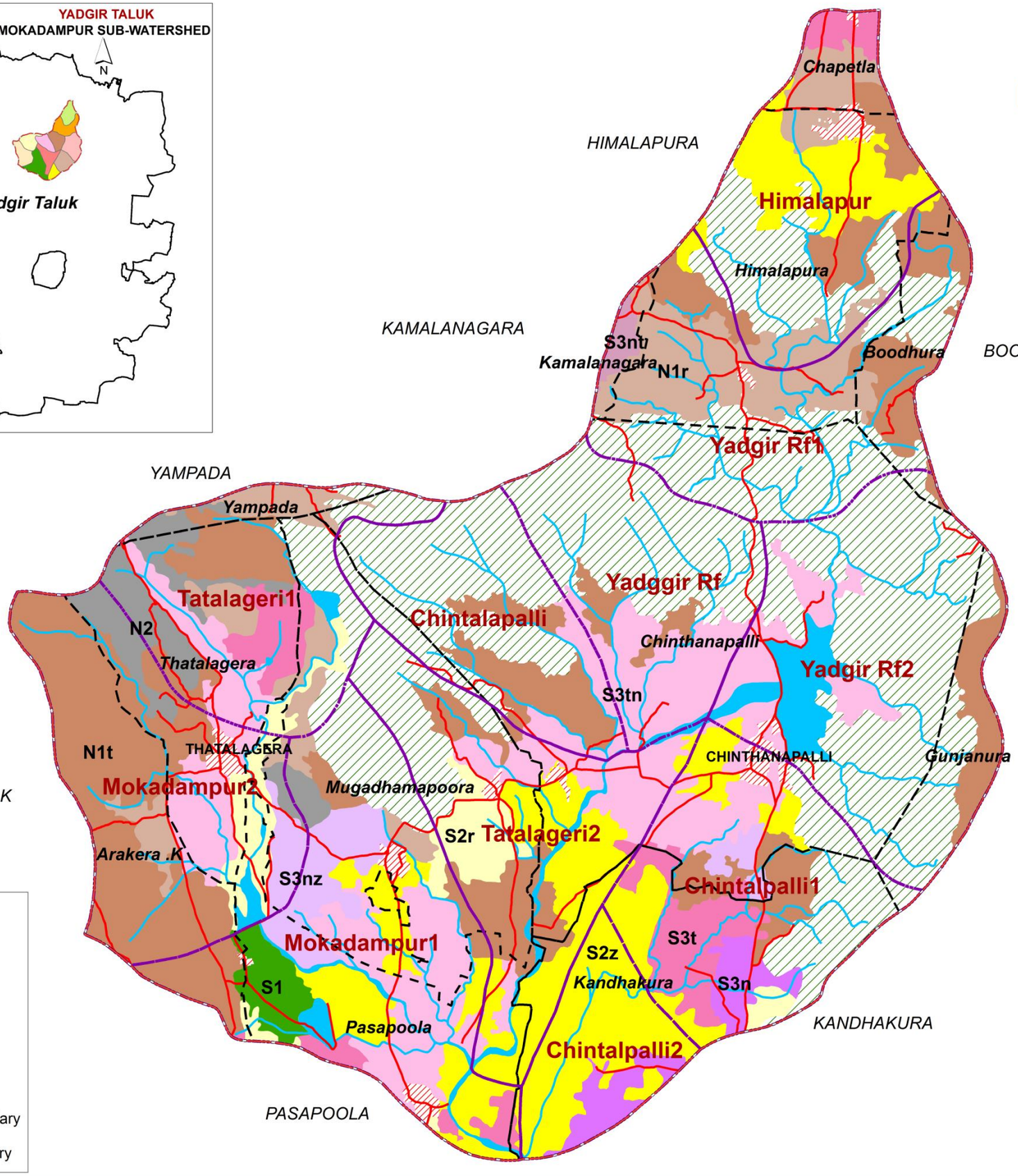
* - Habitation & Waterbody

References
Streams/Drainage
Road/Cart track
Habitation
Waterbody
Village boundary
Micro-watershed boundary
Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.7. Land Suitability for Cotton





LAND SUITABILITY FOR COTTON

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

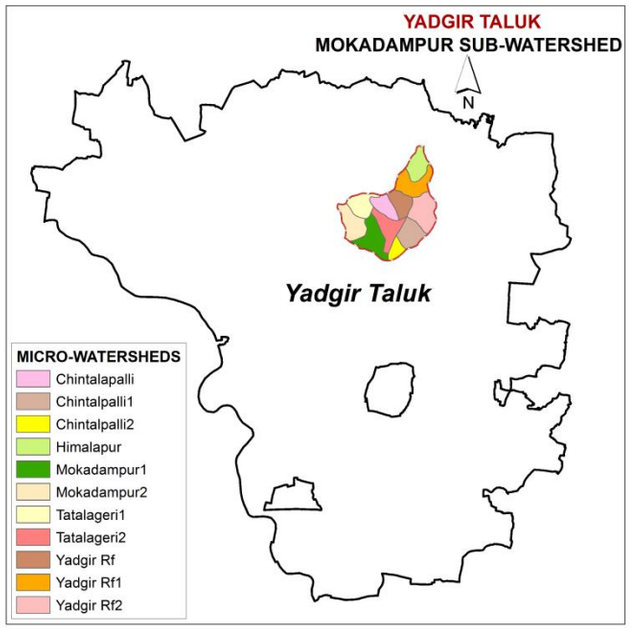
Suitability subclass	Area in ha (%)
S1	53 (0.89)
S2r	163 (2.76)
S2z	725 (12.26)
S3n	86 (1.46)
S3t	212 (3.58)
S3nt	18 (0.3)
S3nz	139 (2.35)
S3tn	739 (12.49)
N1r	419 (7.09)
N1t	1073 (18.14)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

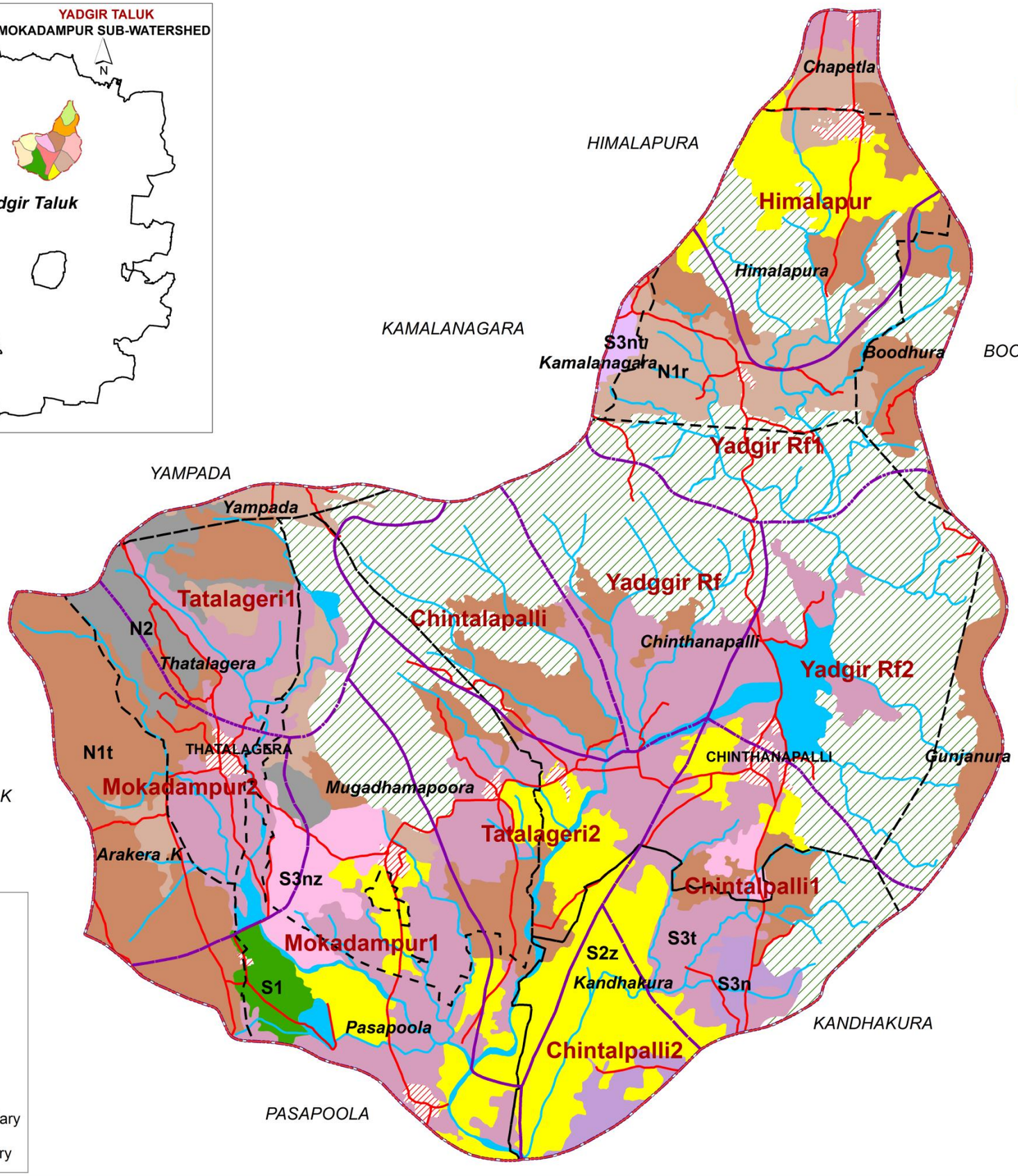
* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.8. Land Suitability for Bengalgram





LAND SUITABILITY FOR BENGALGRAM

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

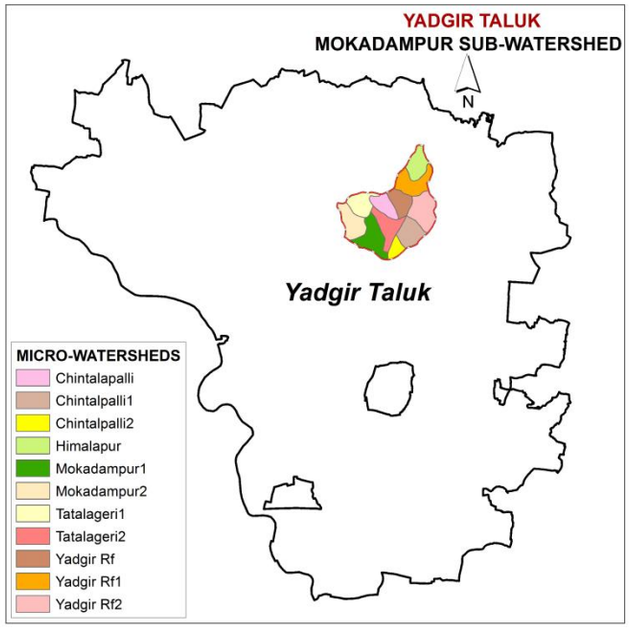
Suitability subclass	Area in ha (%)
S1	53 (0.89)
S2z	725 (12.26)
S3n	86 (1.46)
S3t	1114 (18.83)
S3nt	18 (0.3)
S3nz	139 (2.35)
N1r	419 (7.09)
N1t	1073 (18.14)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

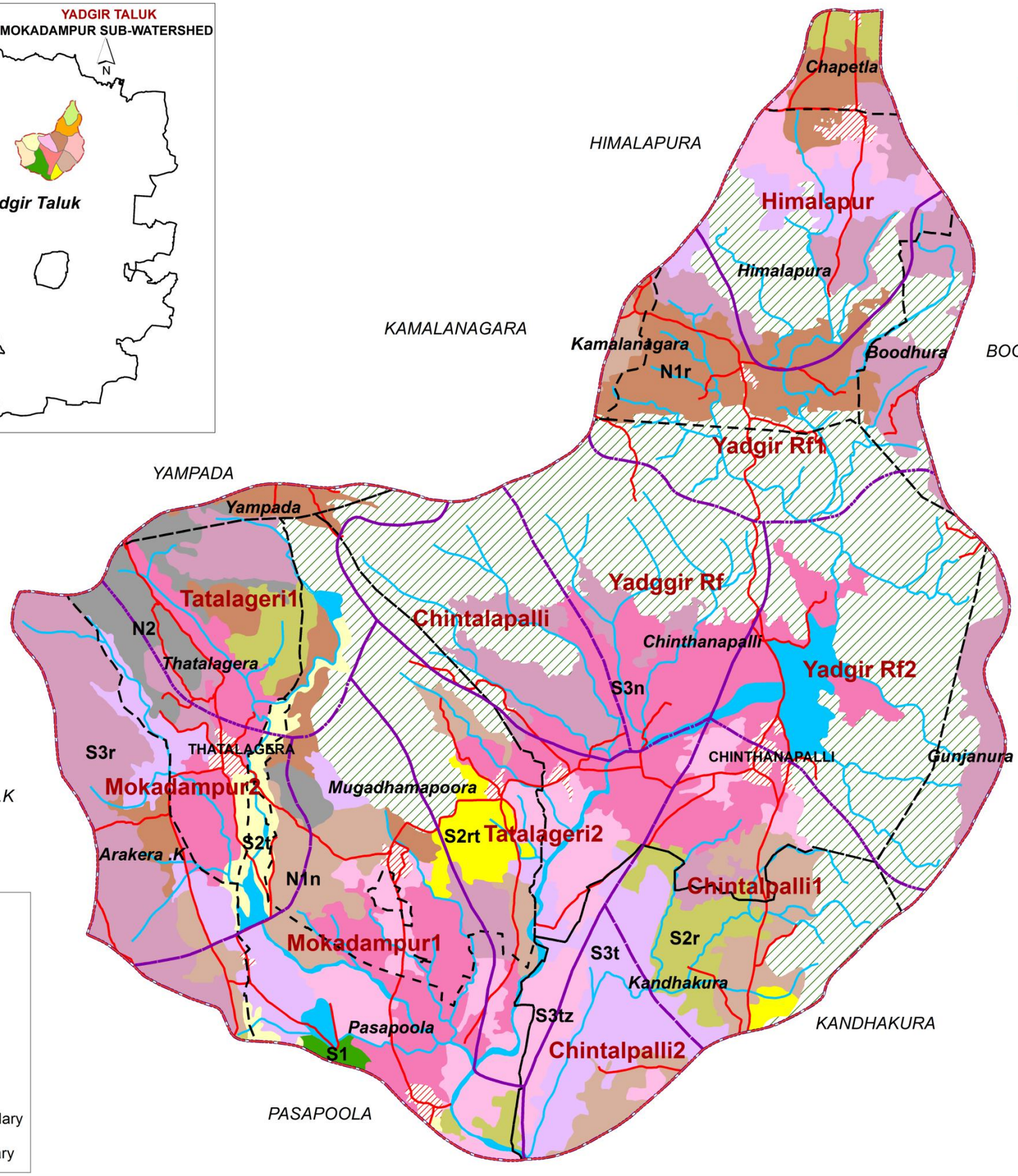
* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.9. Land Suitability for Groundnut





LAND SUITABILITY FOR GROUNDNUT

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

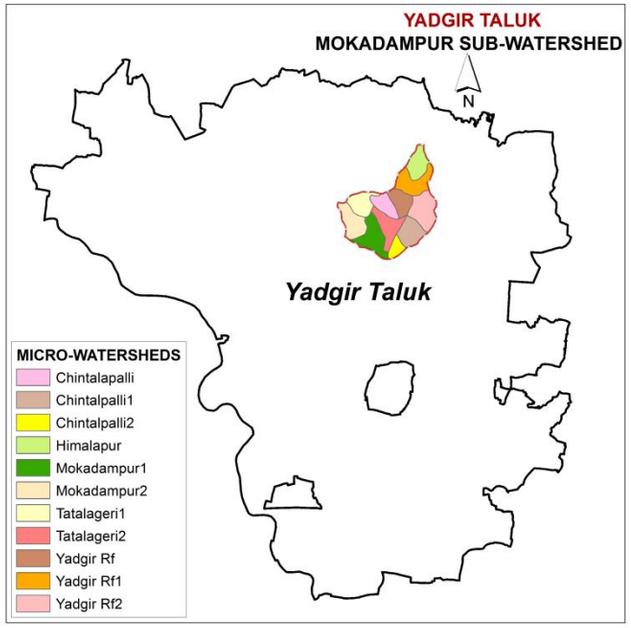
Suitability subclass	Area in ha (%)
S1	12 (0.2)
S2r	200 (3.38)
S2t	81 (1.37)
S2rt	82 (1.38)
S3n	739 (12.49)
S3r	818 (13.84)
S3t	474 (8.02)
S3tz	437 (7.39)
N1n	364 (6.16)
N1r	419 (7.09)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

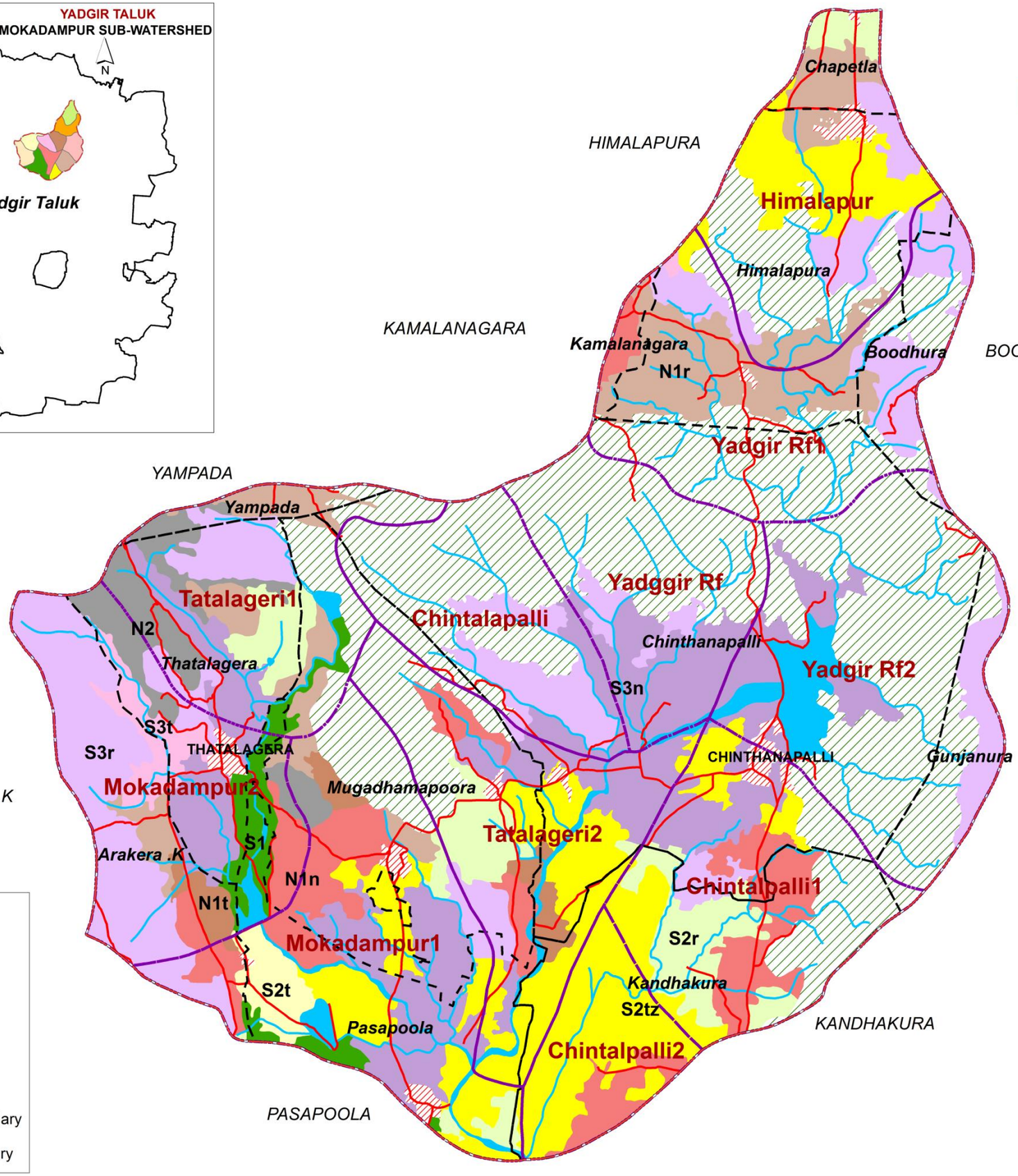
* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.10. Land Suitability for Chilli





LAND SUITABILITY FOR CHILLI

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

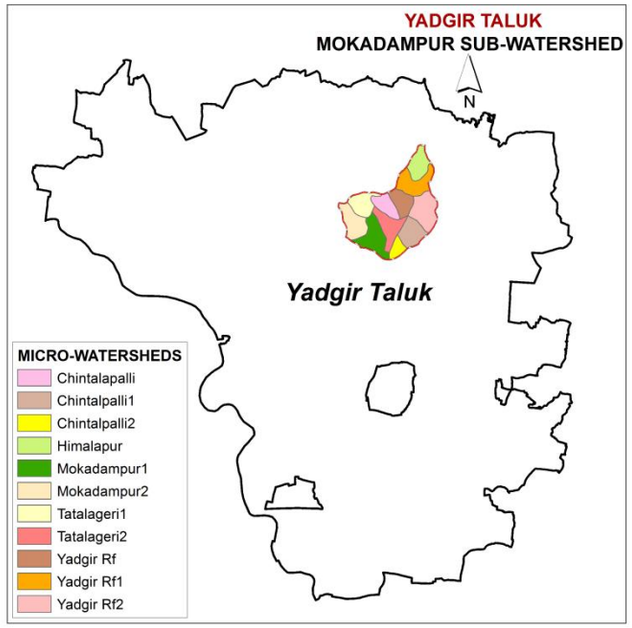
Suitability subclass	Area in ha (%)
S1	93 (1.58)
S2r	282 (4.76)
S2t	53 (0.89)
S2tz	725 (12.26)
S3n	739 (12.49)
S3r	818 (13.84)
S3t	65 (1.09)
N1n	364 (6.16)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.11. Land Suitability for Pomegranate



LAND SUITABILITY FOR POMEGRANATE

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

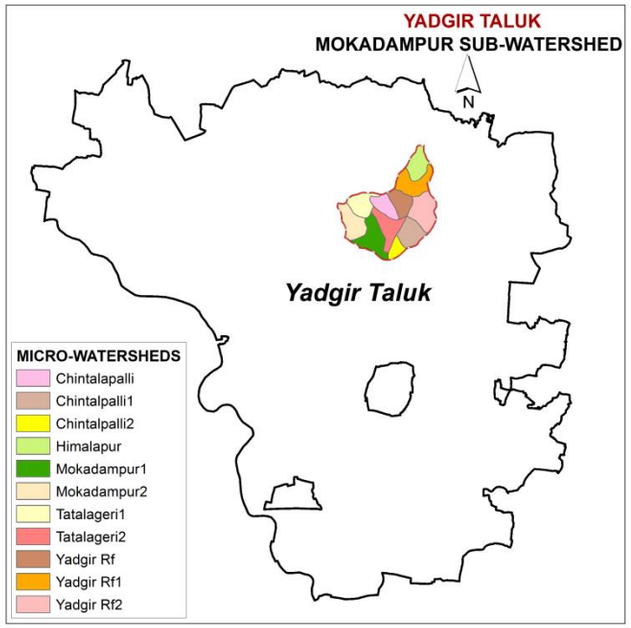
Suitability subclass	Area in ha (%)
S2r	93 (1.58)
S2t	53 (0.89)
S2tz	725 (12.26)
S3n	739 (12.49)
S3r	282 (4.76)
S3rt	65 (1.09)
N1n	364 (6.16)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

References
Streams/Drainage
Road/Cart track
Habitation
Waterbody
Village boundary
Micro-watershed boundary
Sub-watershed boundary

7.12. Land Suitability for Tomato



LAND SUITABILITY FOR TOMATO

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

HIMALAPURA

KAMALANAGARA

BOODHURA

YAMPADA

ARAKERA .K

PASAPOOLA

KANDHAKURA

Chapetla

Himalapur

Himalapura

Kamalanagara

N1r

Boodhura

Yadgir Rf1

Yampada

Tatalageri1

N2

Thatalagera

Chintalapalli

Yadggir Rf

Chinthanapalli

S3n

Yadgir Rf2

S3r

THATALAGERA

Mokadampur2

Mugadhamapoora

CHINTHANAPALLI

Gunjanura

Tatalageri2

S1

Arakera .K

N1n

N1t

Chintalpalli1

S2r

Mokadampur1

S3t

Kandhakura

Pasapoola

Chintalpalli2

Key

S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations

n- nutrient availability
r- rooting condition
t- texture

References

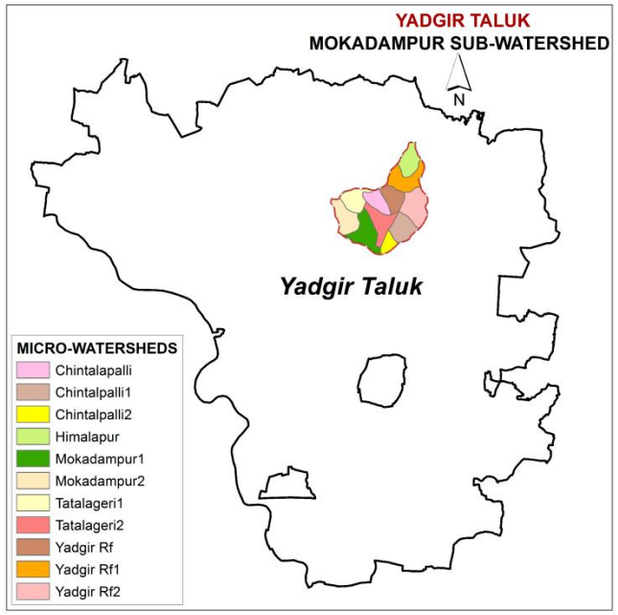
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

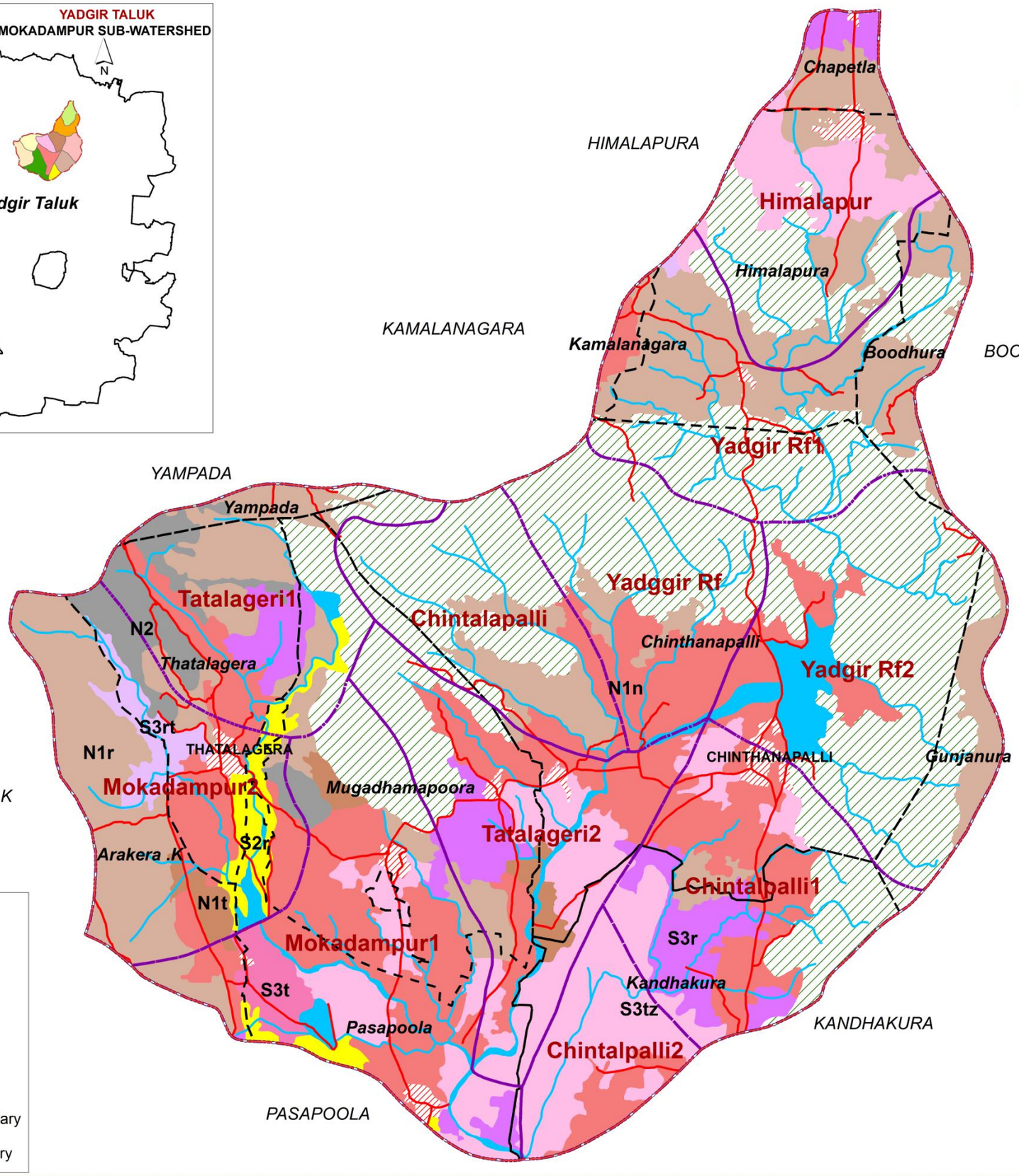
Suitability subclass	Area in ha (%)
S1	93 (1.58)
S2r	282 (4.76)
S3n	739 (12.49)
S3r	818 (13.84)
S3t	843 (14.24)
N1n	364 (6.16)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

7.13. Land Suitability for Mulberry





LAND SUITABILITY FOR MULBERRY

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

Suitability subclass	Area in ha (%)
S2r	93 (1.58)
S3r	282 (4.76)
S3t	53 (0.89)
S3rt	65 (1.09)
S3tz	725 (12.26)
N1n	1103 (18.65)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

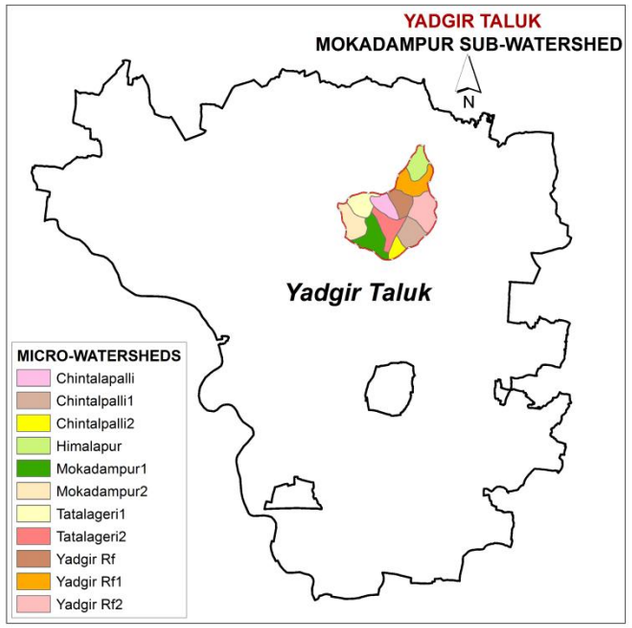
* - Habitation & Waterbody

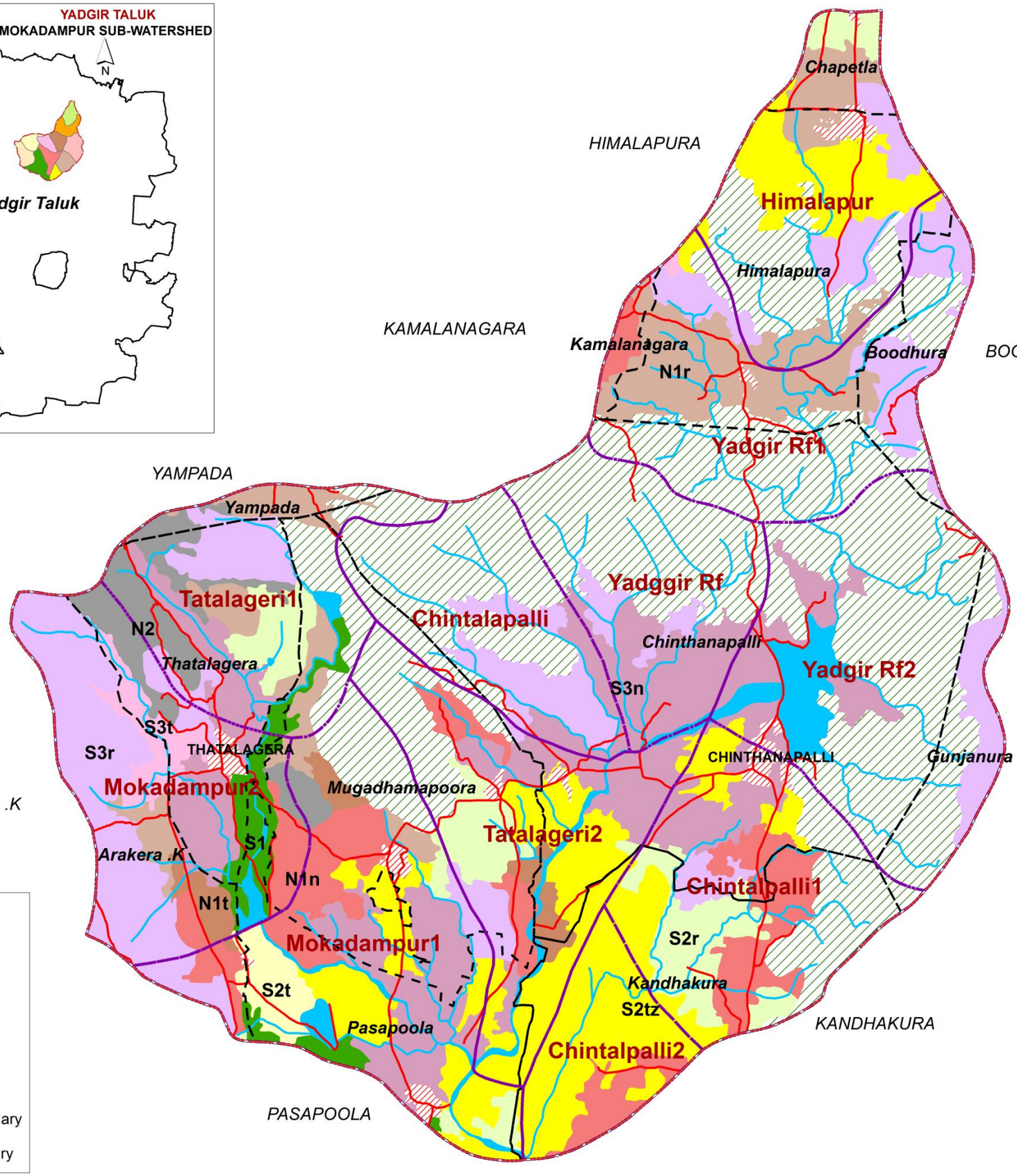
References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

NOTE: Mulberry suitability evaluation only for mulberry leaf, not for silkworm rearing

7.14. Land Suitability for Bhendi





LAND SUITABILITY FOR BHENDI

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

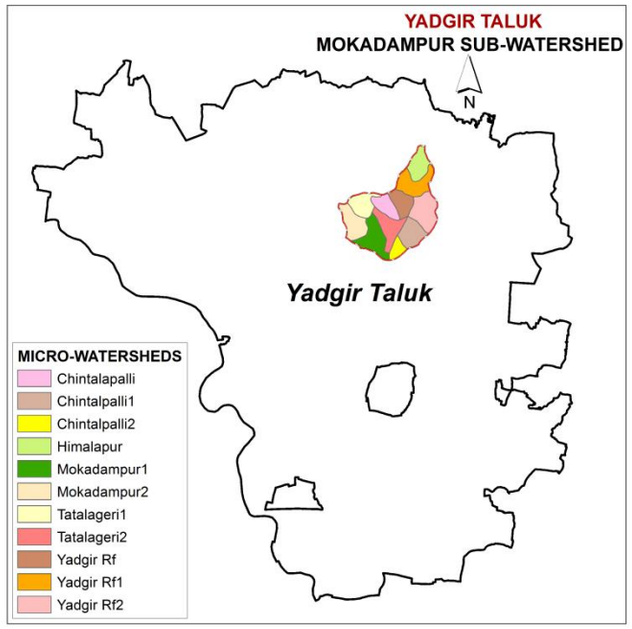
Suitability subclass	Area in ha (%)
S1	93 (1.58)
S2r	282 (4.76)
S2t	53 (0.89)
S2tz	725 (12.26)
S3n	739 (12.49)
S3r	818 (13.84)
S3t	65 (1.09)
N1n	364 (6.16)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

7.15. Land Suitability for Guava



LAND SUITABILITY FOR GUAVA

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA
CHINTHANAPALLI

Chapetla
Himalapur
Himalapura
Kamalanagara
Boodhura
Yadgir Rf1
Yampada
Tatalageri1
N2
Thatalagera
S3rt
N1r
THATALAGERA
Mokadampur2
Mugadhamapoora
S2r
Arakera .K
N1t
Mokadampur1
S3t
Pasapoola
Chintalapalli
Yadggir Rf
Chinthanapalli
N1n
Yadgir Rf2
Gunjanura
Tatalageri2
Chintalpalli1
S3r
Kandhakura
S3tz
Chintalpalli2

Key
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

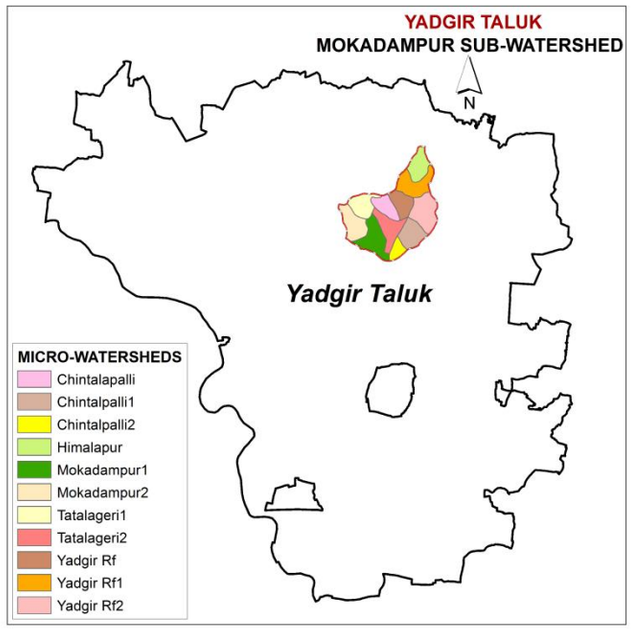
References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

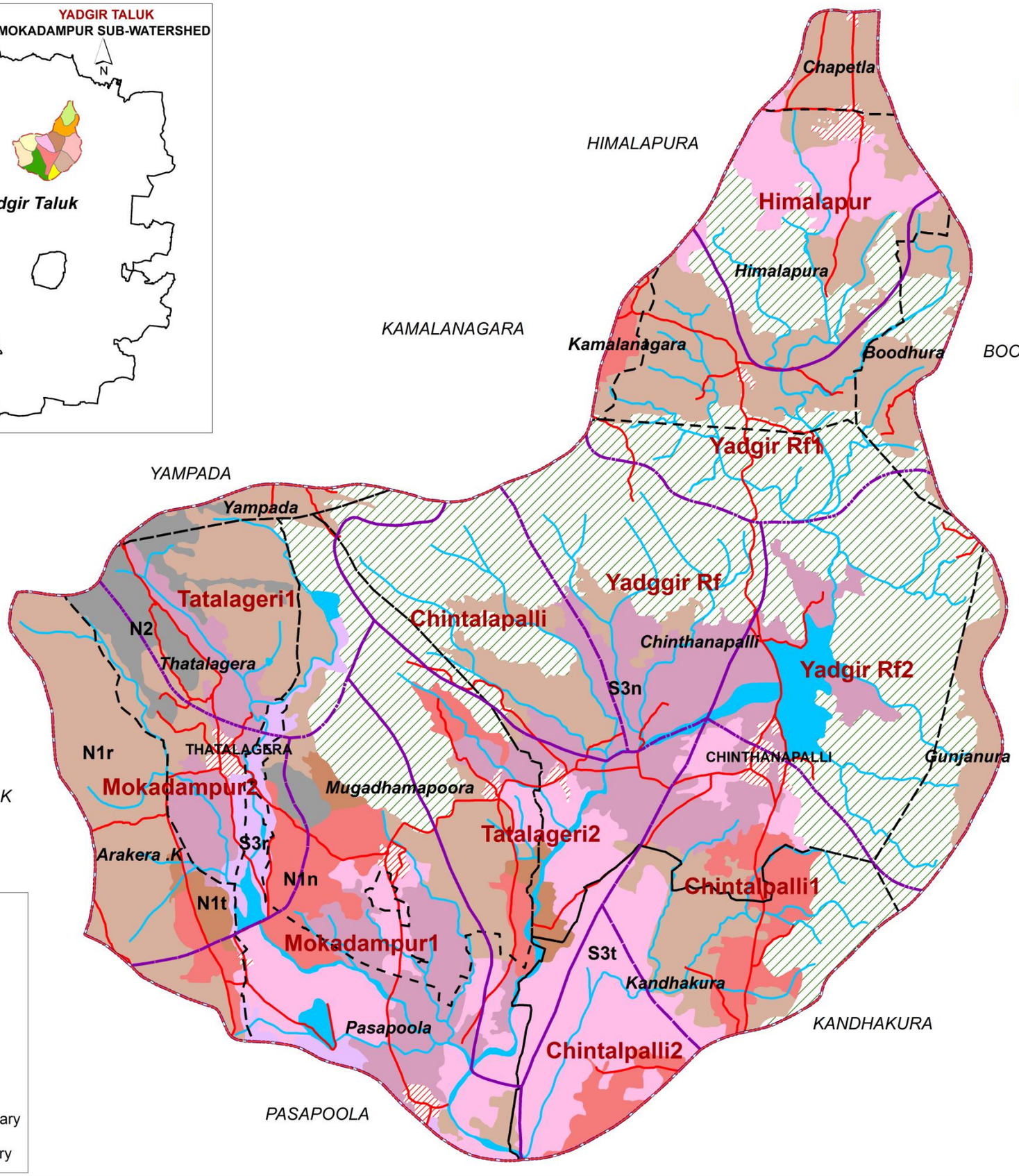
Suitability subclass	Area in ha (%)
S2r	93 (1.58)
S3r	282 (4.76)
S3t	53 (0.89)
S3rt	65 (1.09)
S3tz	725 (12.26)
N1n	1103 (18.65)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

7.16. Land Suitability for Mango





LAND SUITABILITY FOR MANGO

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture

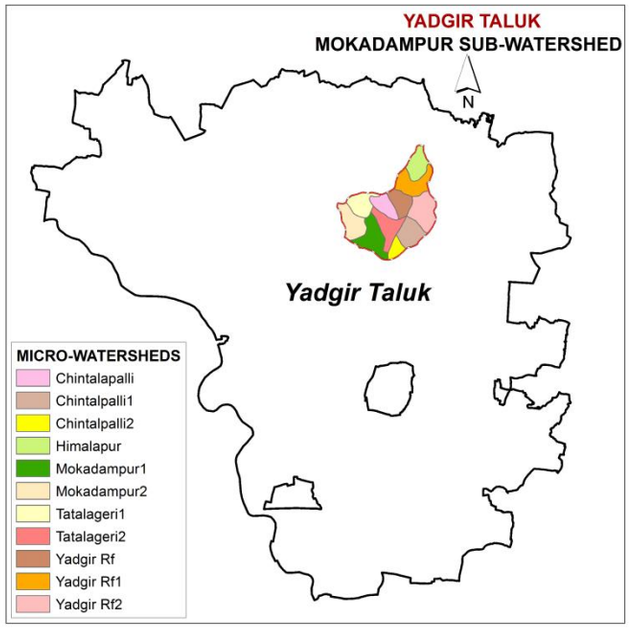
Suitability subclass	Area in ha (%)
S3n	739 (12.49)
S3r	93 (1.58)
S3t	778 (13.15)
N1n	364 (6.16)
N1r	1584 (26.78)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.17. Land Suitability for Sapota



LAND SUITABILITY FOR SAPOTA

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture

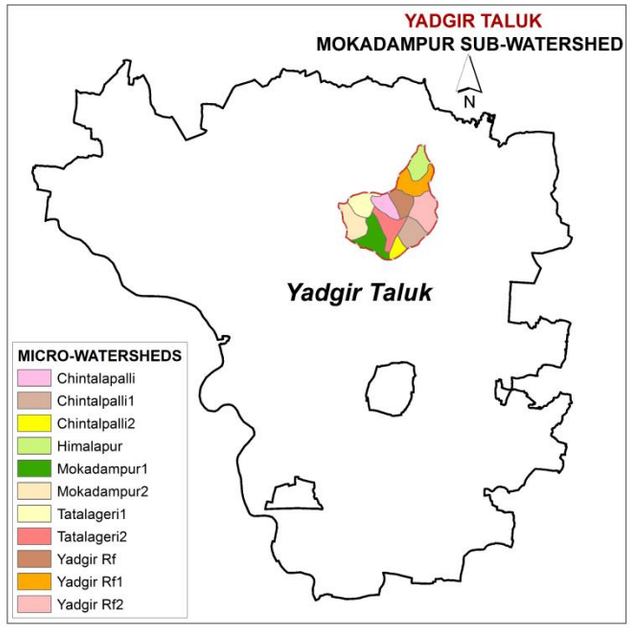
Suitability subclass	Area in ha (%)
S2r	93 (1.58)
S3n	739 (12.49)
S3r	282 (4.76)
S3t	778 (13.15)
S3rt	65 (1.09)
N1n	364 (6.16)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.18. Land Suitability for Jackfruit



LAND SUITABILITY FOR JACKFRUIT

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA

Chapetla
Himalapur
Himalapura
Kamalanagara
Boodhura
Yadgir Rf1
Yampada
Tatalageri1
N2
Thatalagera
Yadggir Rf
Chintalapalli
Chinthanapalli
N1n
Yadgir Rf2
S3rt
N1r
THATALAGERA
CHINTHANAPALLI
Gunjanura
Mugadhamapoora
Mokadampur2
Tatalageri2
Arakera .K
S2r
N1t
Chintalpalli1
S3r
Mokadampur1
S3t
Kandhakura
S3tz
Pasapoola
Chintalpalli2

Key
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

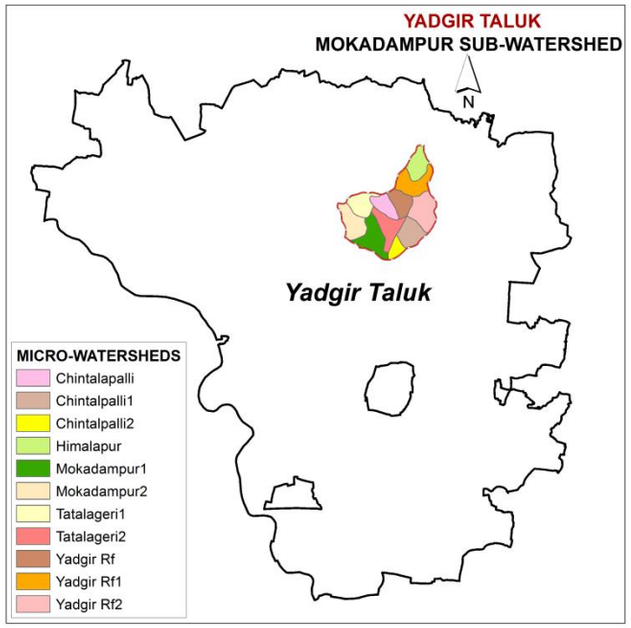
Suitability subclass	Area in ha (%)
S2r	93 (1.58)
S3r	282 (4.76)
S3t	53 (0.89)
S3rt	65 (1.09)
S3tz	725 (12.26)
N1n	1103 (18.65)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.19. Land Suitability for Jamun



LAND SUITABILITY FOR JAMUN

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key

S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations

n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

Suitability subclass	Area in ha (%)
S2rt	53 (0.89)
S3r	375 (6.34)
S3z	725 (12.26)
S3rt	65 (1.09)
N1n	1103 (18.65)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

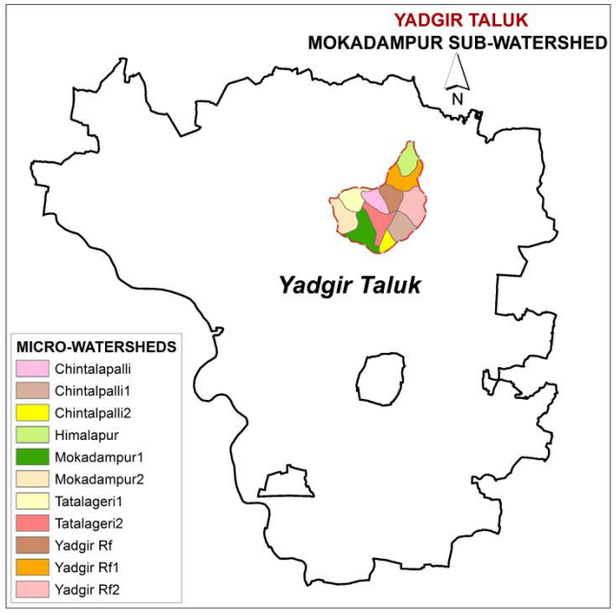
* - Habitation & Waterbody

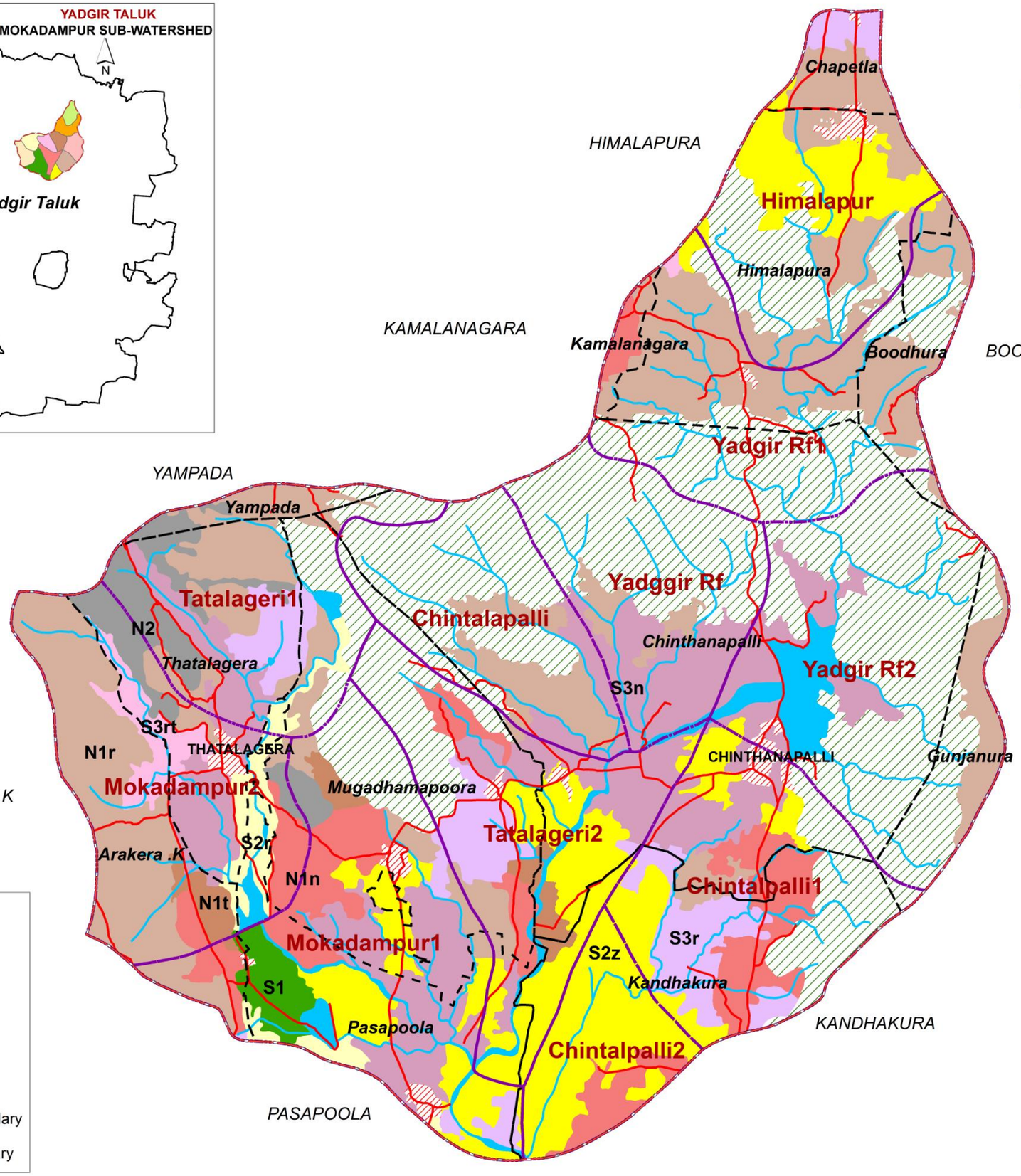
References

- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.20. Land Suitability for Musambi





LAND SUITABILITY FOR MUSAMBI

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

km
0 0.75 1.5 3
N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

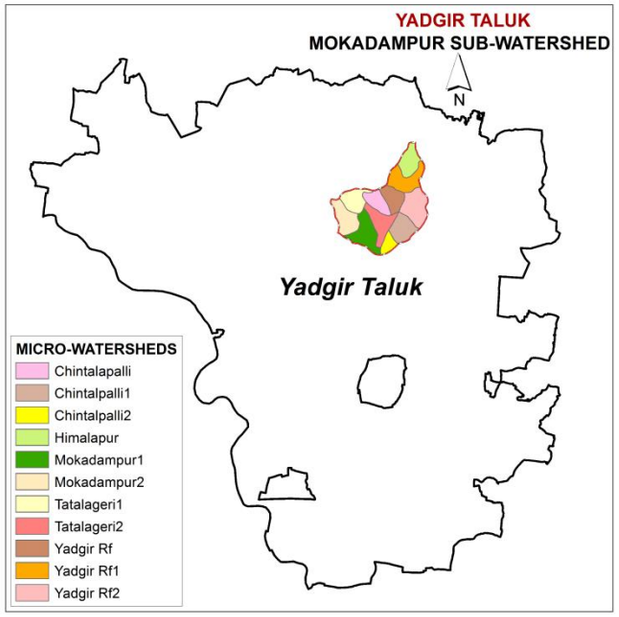
Suitability subclass	Area in ha (%)
S1	53 (0.89)
S2r	93 (1.58)
S2z	725 (12.26)
S3n	739 (12.49)
S3r	282 (4.76)
S3rt	65 (1.09)
N1n	364 (6.16)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

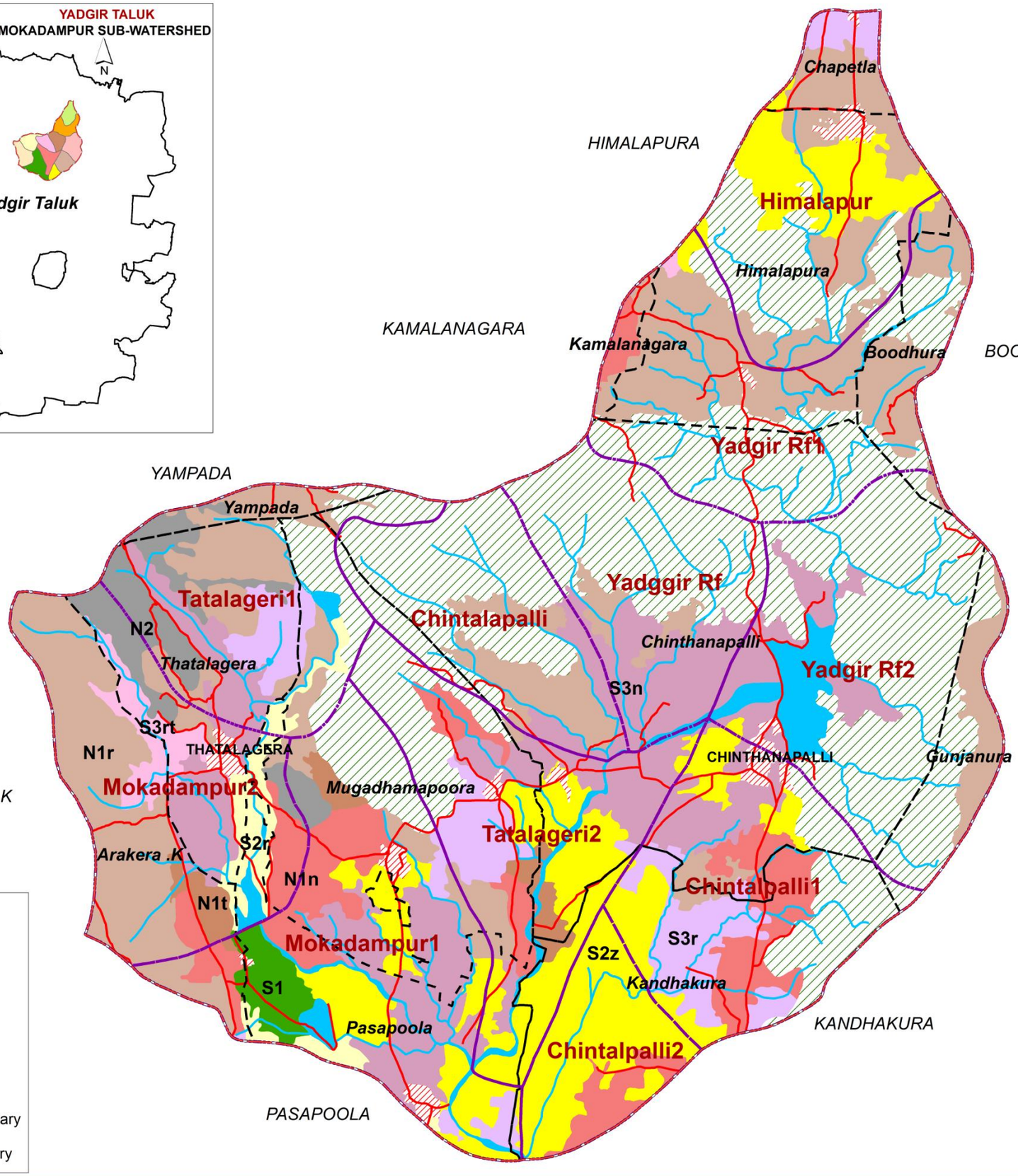
* - Habitation & Waterbody

References
Streams/Drainage
Road/Cart track
Habitation
Waterbody
Village boundary
Micro-watershed boundary
Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.21. Land Suitability for Lime





LAND SUITABILITY FOR LIME

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

km
0 0.75 1.5 3
N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

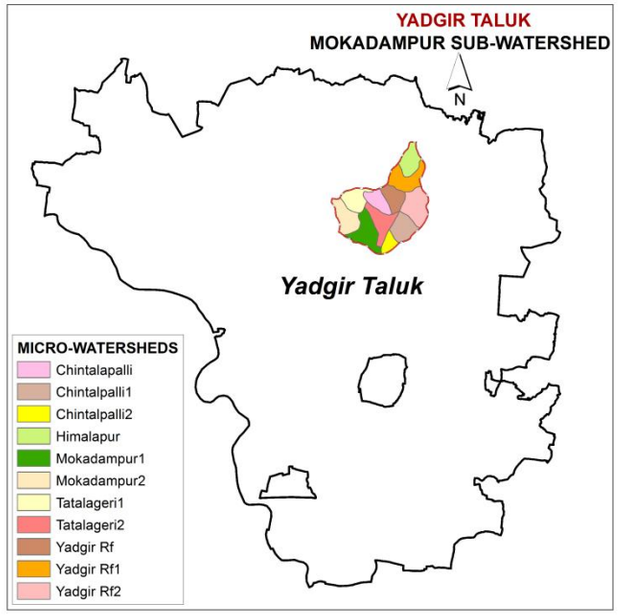
Suitability subclass	Area in ha (%)
S1	53 (0.89)
S2r	93 (1.58)
S2z	725 (12.26)
S3n	739 (12.49)
S3r	282 (4.76)
S3rt	65 (1.09)
N1n	364 (6.16)
N1r	1238 (20.92)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.22. Land Suitability for Cashew



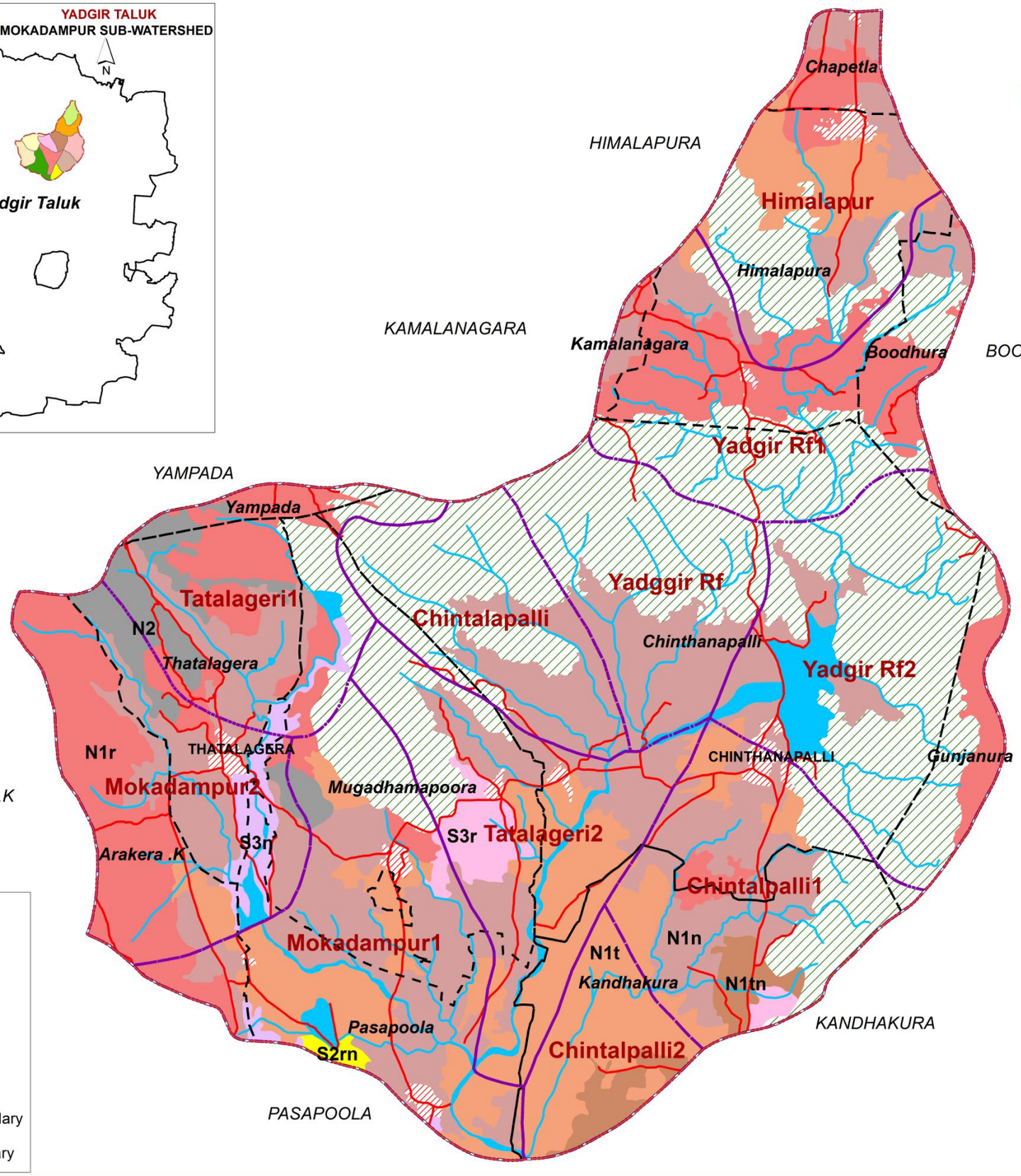
LAND SUITABILITY FOR CASHEW

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

km
0 0.75 1.5 3
N



Key
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture

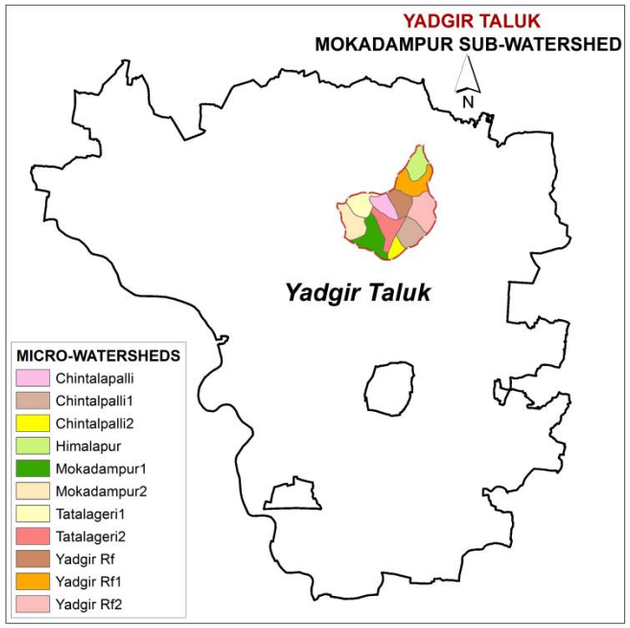
Suitability subclass	Area in ha (%)
S2rn	12 (0.2)
S3n	81 (1.37)
S3r	82 (1.38)
N1n	1591 (26.89)
N1r	928 (15.69)
N1t	847 (14.32)
N1tn	86 (1.46)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.23. Land Suitability for Custard Apple



LAND SUITABILITY FOR CUSTARD APPLE

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA
THATALAGERA
CHINTHANAPALLI

Chapetla
Himalapur
Himalapura
Kamalanagara
N1r
Boodhura
Yadgir Rf1
Yampada
Tatalageri1
N2
Thatalagera
Chintalapalli
Yadggir Rf
Chinthanapalli
S3n
Yadgir Rf2
S3rt
Mokadampur2
Mugadhamapoora
Gunjanura
Arakera .K
N1n
S3t
Tatalageri2
Chintalpalli1
S2r
S2z
Kandhakura
Mokadampur1
S1
Pasapoola
Chintalpalli2

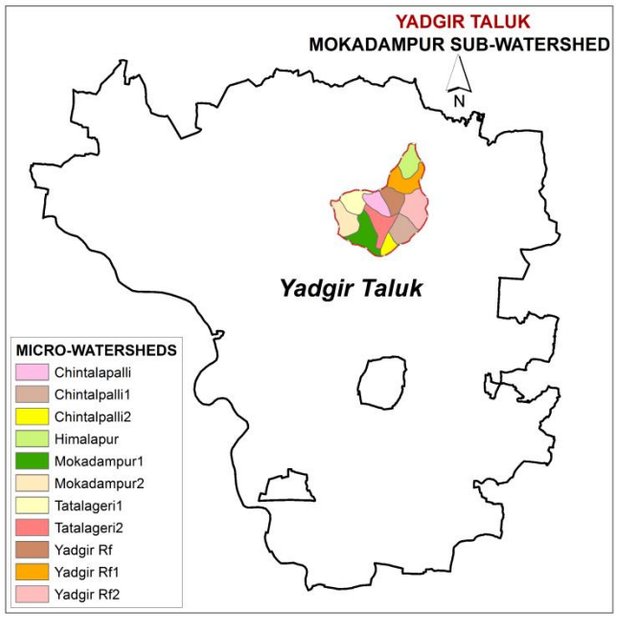
References
Streams/Drainage
Road/Cart track
Habitation
Waterbody
Village boundary
Micro-watershed boundary
Sub-watershed boundary

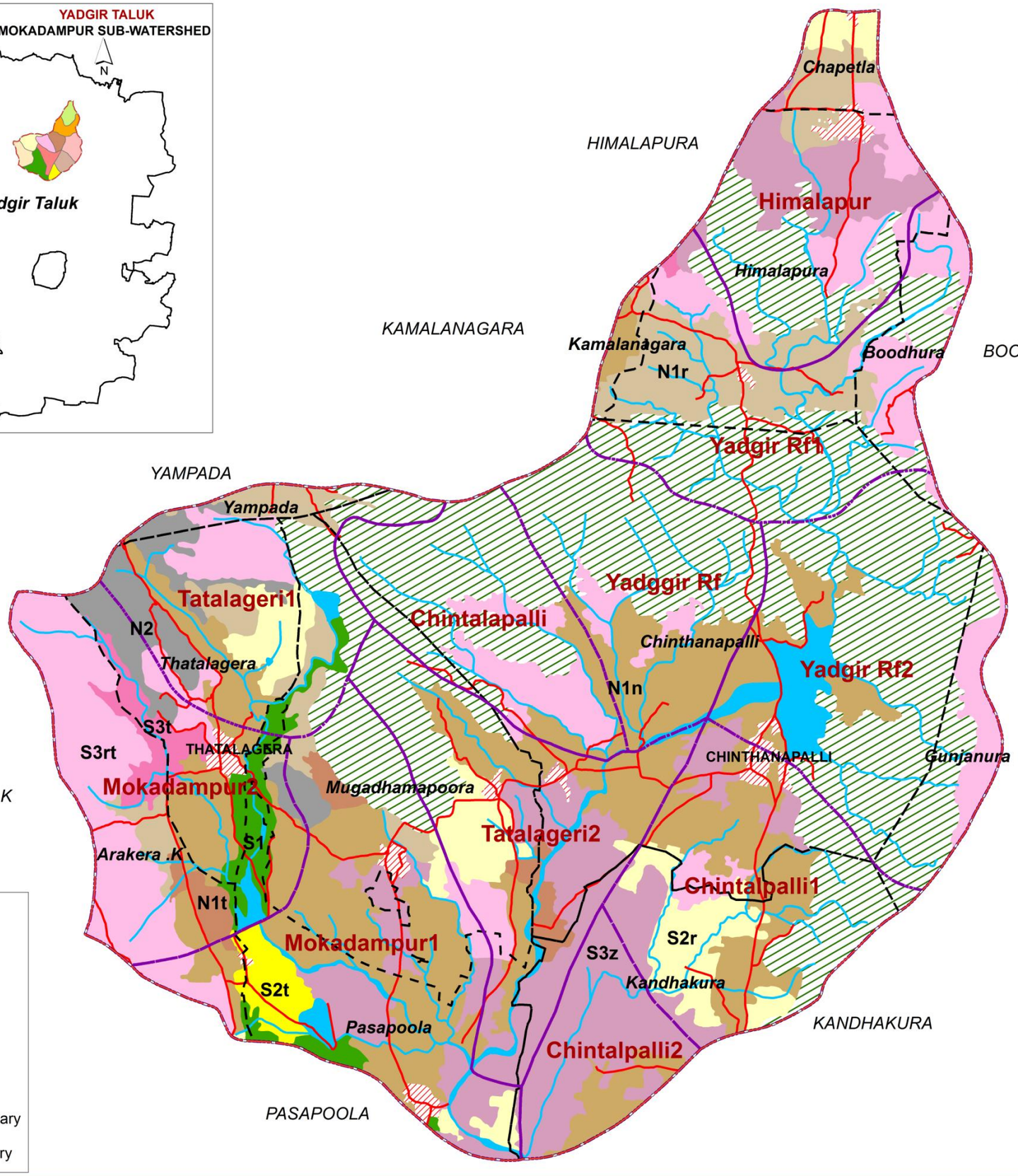
Suitability subclass	Area in ha (%)
S1	65 (1.1)
S2r	363 (6.13)
S2z	725 (12.26)
S3n	739 (12.49)
S3t	134 (2.26)
S3rt	818 (13.84)
N1n	364 (6.16)
N1r	419 (7.09)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

Source: ICAR-NBSS&LUP, Bengaluru

7.24. Land Suitability for Amla





LAND SUITABILITY FOR AMLA

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

km
0 0.75 1.5 3
N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

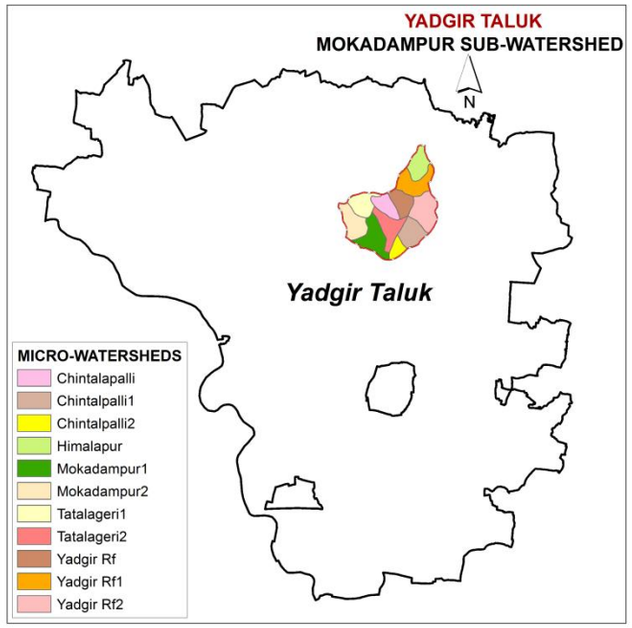
Suitability subclass	Area in ha (%)
S1	93 (1.58)
S2r	282 (4.76)
S2t	53 (0.89)
S3t	65 (1.09)
S3z	725 (12.26)
S3rt	818 (13.84)
N1n	1103 (18.65)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.25. Land Suitability for Tamarind



LAND SUITABILITY FOR TAMARIND

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA

Chapetla
Himalapur
Himalapura
Kamalanagara
Boodhura
Yadgir Rf1
Yampada
Tatalageri1
N2
Thatalagera
Chintalapalli
Yadggir Rf
Chinthanapalli
N1n
Yadgir Rf2
N1r
THATALAGERA
CHINTHANAPALLI
Gunjanura
Mokadampur2
Mugadhamapoora
Tatalageri2
Arakera .K
S3r
N1t
Chintalpalli1
Mokadampur1
S3z
S2rt
Kandhakura
Pasapoola
Chintalpalli2

Key
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

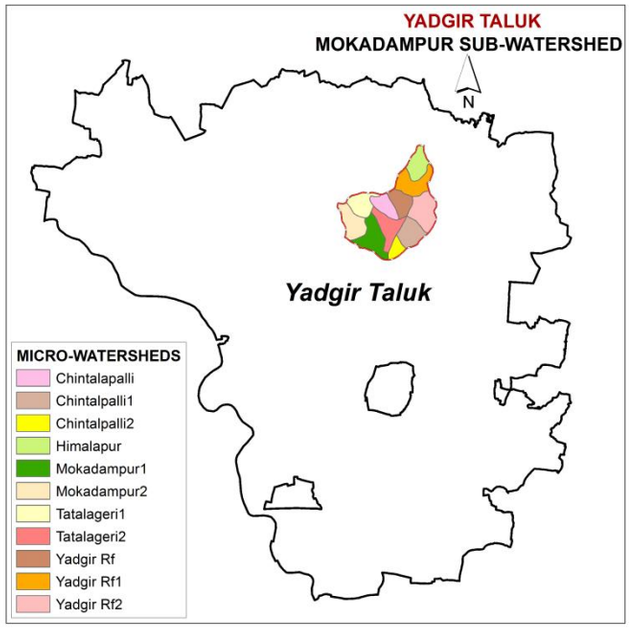
Suitability subclass	Area in ha (%)
S2rt	53 (0.89)
S3r	93 (1.58)
S3z	725 (12.26)
N1n	1103 (18.65)
N1r	1584 (26.78)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.26. Land Suitability for Brinjal



LAND SUITABILITY FOR BRINJAL

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture

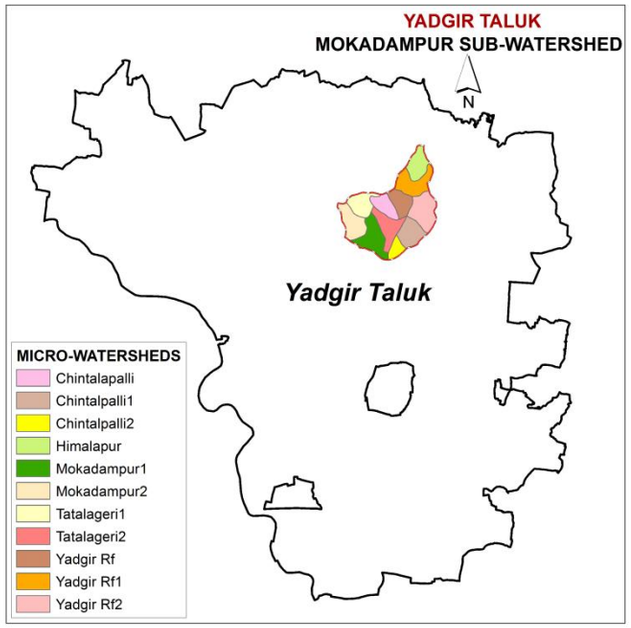
Suitability subclass	Area in ha (%)
S1	93 (1.58)
S2r	282 (4.76)
S3n	739 (12.49)
S3r	309 (5.23)
S3t	843 (14.24)
S3rt	509 (8.6)
N1n	364 (6.16)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.27. Land Suitability for Onion



LAND SUITABILITY FOR ONION

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA

Chapetla
Himalapur
Himalapura
Kamalanagara
N1r
Boodhura
Yadgir Rf1
Yampada
Tatalageri1
N2
Thatalagera
Yadggir Rf
Chintalapalli
Chinthanapalli
N1n
Yadgir Rf2
S3r
THATALAGERA
CHINTHANAPALLI
Gunjanura
Mokadampur2
Mugadhamapoora
Tatalageri2
S1
Arakera .K
N1t
Chintalpalli1
S2r
Mokadampur1
Kandhakura
S3tz
S3t
Pasapoola
Chintalpalli2

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

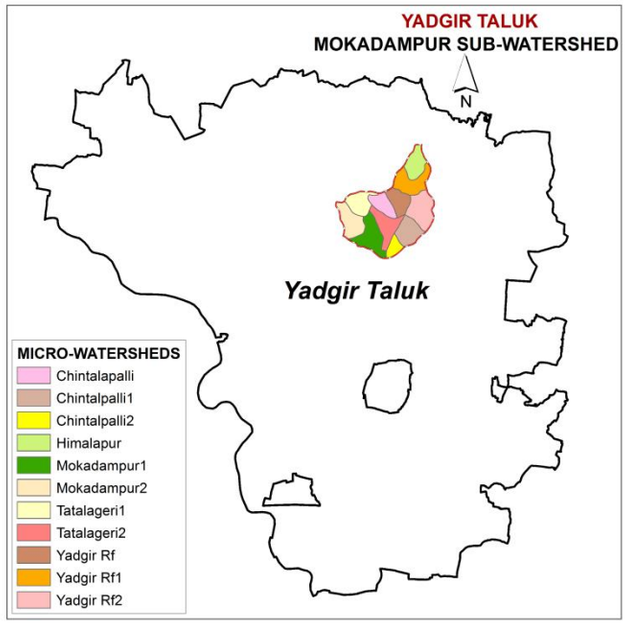
Suitability subclass	Area in ha (%)
S1	93 (1.58)
S2r	282 (4.76)
S3r	818 (13.84)
S3t	555 (9.38)
S3tz	288 (4.86)
N1n	1103 (18.65)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

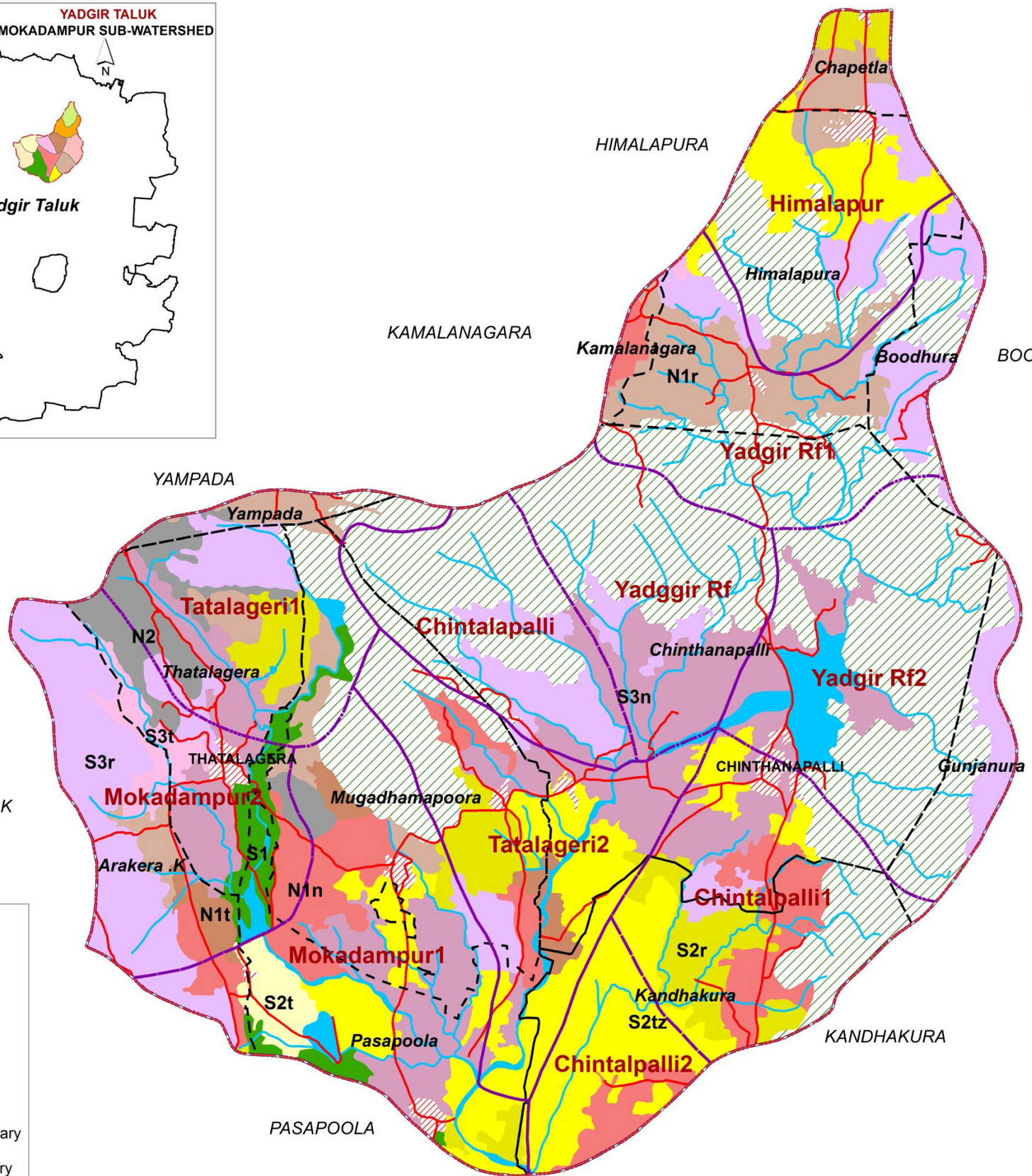
* - Habitation & Waterbody

References
- Streams/Drainage
- Road/Cart track
- Habitation
- Waterbody
- Village boundary
- Micro-watershed boundary
- Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.28. Land Suitability for Marigold





LAND SUITABILITY FOR MARIGOLD

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

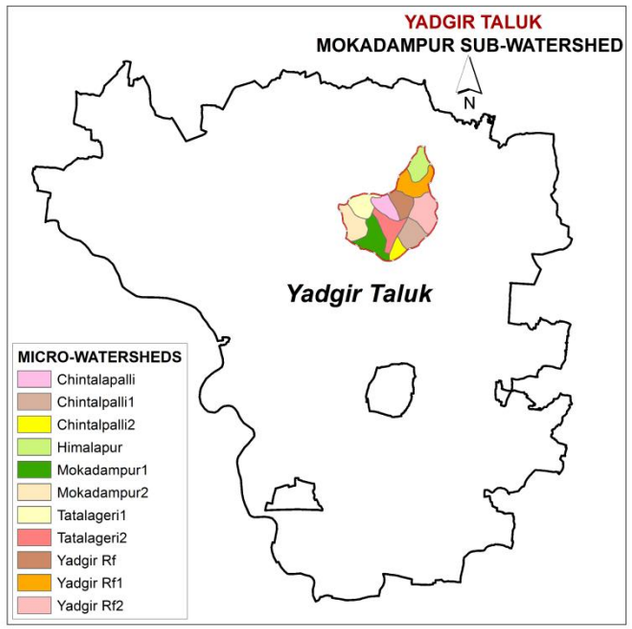
Suitability subclass	Area in ha (%)
S1	93 (1.58)
S2r	282 (4.76)
S2t	53 (0.89)
S2tz	725 (12.26)
S3n	739 (12.49)
S3r	818 (13.84)
S3t	65 (1.09)
N1n	364 (6.16)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

* - Habitation & Waterbody

References
Streams/Drainage
Road/Cart track
Habitation
Waterbody
Village boundary
Micro-watershed boundary
Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

7.29. Land Suitability for Chrysanthemum



LAND SUITABILITY FOR CHRYSANTHEMUM

Mokadampur Sub-watershed

(4D2D6A : Area - 5914.91 ha)

YADGIR TALUK & DISTRICT

0 0.75 1.5 3 km

N

HIMALAPURA
KAMALANAGARA
BOODHURA
YAMPADA
ARAKERA .K
PASAPOOLA
KANDHAKURA

Chapetla
Himalapur
Himalapura
Kamalanagara
N1r
Boodhura
Yadgir Rf1
Yampada
Tatalageri1
N2
Thatalagera
S3t
S3r
THATALAGERA
Mokadampur2
Mugadhamapoora
Arakera .K
S1
N1n
N1t
Mokadampur1
S2t
Pasapoola
Yadggir Rf
Chintalapalli
Chinthanapalli
S3n
Yadgir Rf2
CHINTHANAPALLI
Gunjanura
Tatalageri2
Chintalpalli1
S2r
Kandhakura
S2tz
Chintalpalli2

Key
S1- Highly Suitable
S2- Moderately Suitable
S3- Marginally Suitable
N1- Currently Not Suitable
N2- Permanently Not Suitable

Limitations
n- nutrient availability
r- rooting condition
t- texture
z- excess salt/calcareousness

Suitability subclass	Area in ha (%)
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S2tz	725 (12.26)
S3n	739 (12.49)
S3r	818 (13.84)
S3t	65 (1.09)
N1n	364 (6.16)
N1r	419 (7.09)
N1t	69 (1.16)
N2	147 (2.49)
Forest	1916 (32.4)
Others*	224 (3.79)

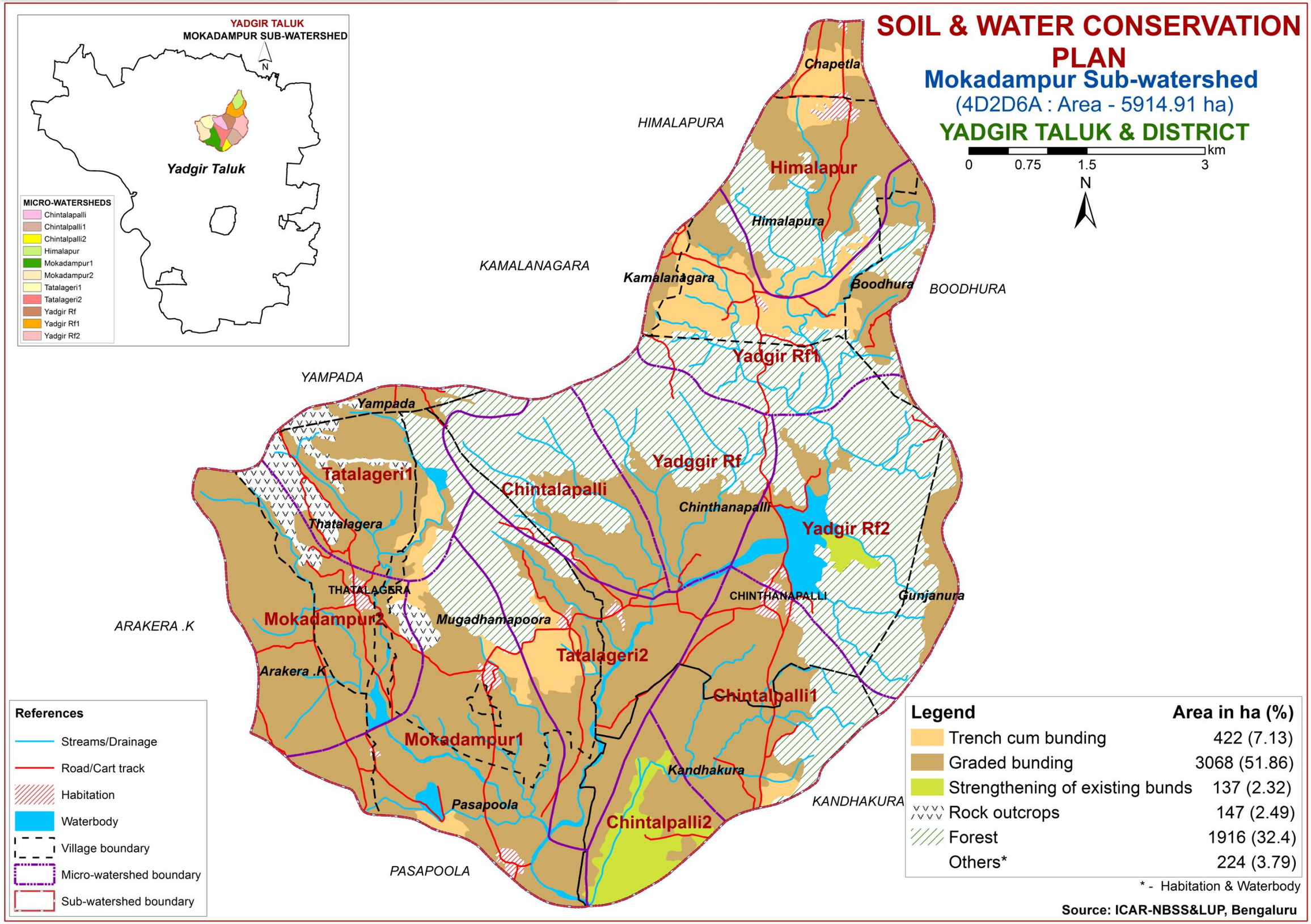
* - Habitation & Waterbody

References
Streams/Drainage
Road/Cart track
Habitation
Waterbody
Village boundary
Micro-watershed boundary
Sub-watershed boundary

Source: ICAR-NBSS&LUP, Bengaluru

8. Soil and Water Conservation Measures

8.1. Soil & Water Conservation Plan



9. Table. Proposed Crop Plan for Mokadampur Sub-watershed, Yadgir Taluk, Yadgir District based on soil-site–crop suitability Assessment

LMU. No	Soil Map Units	Field Crops/ Commercial crops	Horticulture Crops (Rainfed/Irrigated)	Suitable Interventions
1	149.MDGhB2g1, 58.MDGiB2 170.MDGmB1 ,59.MDRcB2 60.MDRiA1, 133.MDRiB2 61.MDRmB2 (Deep to very deep, sandy clay loam soils)	Sorghum, Maize, Bajra	**Agri-Silvi-Pasture** Ber, Aonla, Acacia sp. Dhaincha, Rhodes grass, Para grass ,Bermuda grass	Application of gypsum, iron pyrites and elemental sulphur. Addition of farm yard manures, green manures and providing subsurface drainage
2	50 BGDbB2,62 BMNmB2 32 HSLcB2,163 NGPmA1 49 NGPmB2,129 SHTiB2 (Moderately deep to very deep, black calcareous clay soils)	Maize, Sorghum, Sunflower, Groundnut, Red gram, Bajra, Bengal gram, safflower, linseed	**Fruit crops:** Musambi, Sapota, Pomegranate, Amla, Custard apple, Guava, Jackfruit, Lime **Vegetables:** Tomato, Onion**,** Bhendi, Chilli, Brinjal, Drumstick, Coriander **Flowers:** Marigold, Chrysanthemum	Application of FYM, Biofertilizers and micronutrients, drip irrigation, Mulching, suitable soil and water conservation practices
3	167 ANRcA1,55 ANRiB2 35 GWDiB2,150 GWDiB2g1 100VKSmB1,42 YDRcB2 154 YDRcB2g1 (Sodic soils)	-	**Agri-Silvi-Pasture** Ber, Aonla, Acacia sp. Dhaincha, Rhodes grass, Para grass ,Bermuda grass	Application of gypsum, iron pyrites and elemental sulphur. Addition of farm yard manures, green manures and providing subsurface drainage
4	179 KDPcA1 (Very deep, lowland sandy soils)	-	**Agri-Silvi-Pasture:** *Styloxanthes hamata,* Glyricidia, *Styloxanthes scabra*	Application of FYM, Biofertilizers and micronutrients, drip irrigation, Mulching, suitable soil and water conservation practices -
5	38 BLCiB2 (Moderately deep, red sandy clay loam soils)	Sunflower, Sorghum, Maize, Groundnut, Red gram, Bajra	**Fruit crops:** Mango, Musambi, Sapota, Tamarind, Pomegranate, Amla, Custard apple, Guava, Jackfruit, Jamun, Lime **Vegetables:** Tomato, Onion**,** Bhendi, Chilli, Brinjal, Drumstick, Coriander **Flowers:** Marigold, Chrysanthemum	Application of FYM, Biofertilizers and micronutrients, drip irrigation, Mulching, suitable soil and water conservation practices

To be continued….

LMU. No	Soil Map Units	Field Crops/ Commercial crops	Horticulture Crops (Rainfed/Irrigated)	Suitable Interventions
6	11 SBRcB2 (Moderately shallow, loamy sand soils)	-	**Agri-Silvi-Pasture:** Hybrid Napier, *Styloxanthes hamata, Styloxanthes scabra*	Application of FYM, Biofertilizers and micronutrients, drip irrigation, Mulching, suitable soil and water conservation practices
7	20 JNKcB2, 21 JNKcB2g1 152 JNKmB2 ,25 DPLcB2 26 DPLiB2 (Moderately shallow, sandy clay loam soils)	Maize, sorghum Groundnut, Bajra	**Fruit crops:** Amla, Custard apple **Vegetables:** Tomato, Chilli, Brinjal, Bhendi, Onion **Flowers:** Marigold, Chrysanthemum	Application of FYM, Biofertilizers and micronutrients, drip irrigation, Mulching, suitable soil and water conservation practices
8	3 BDLbC3, 5 BDLiB2 6 BDLiB3, 156 HTKbB2 161 HTKbB2g1 165 HTKcB2, 113 HTKcC2g1 (Shallow soils)	-	**Agri-Silvi-Pasture:** Hybrid Napier*, Styloxanthes hamata,* Glyricidia*, Styloxanthes scabra*	Use of short duration varieties, sowing across the slope and split application of nitrogen fertilizers
9	153 KKRbB2g1 ,120 BDPhB2 119 BDPiB3 (Very shallow soils)	-	Hybrid Napier, *Styloxanthes hamata, Styloxanthes scabra*	Use of short duration varieties, sowing across the slope

PART-B

Hydrological Inventory of Mokadampur Sub-watershed for Watershed Planning and Development

Yadgir Taluk, Yadgir District, Karnataka (AESR 6.2)

Sujala - III
Karnataka Watershed Development Project-II
Watershed Development Department
Government of Karnataka

THE WORLD BANK

Hydrological Inventory of Mokadampur Sub-watershed, Yadgir Taluk, Yadgir District, Karnataka for Watershed Planning and Development

Prepared by
ICAR-National Bureau of Soil Survey and Land Use Planning
Regional Centre, Hebbal, Bangalore - 560 024

ICAR - NBSS & LUP

Phone:080-23412242

E-mail: hd_rcb.nbsslup@icar.gov.in
nbssrcb@gmail.com

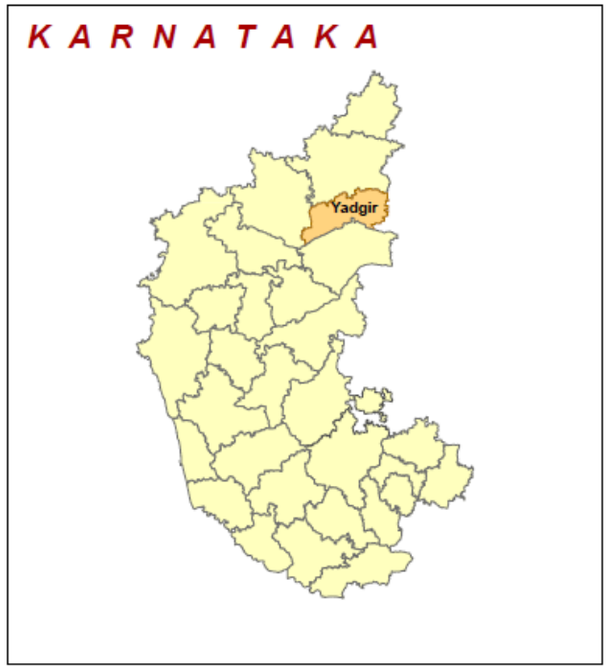
Details of Hydrology Team of LRI Partner Responsible for Preparation of Atlas

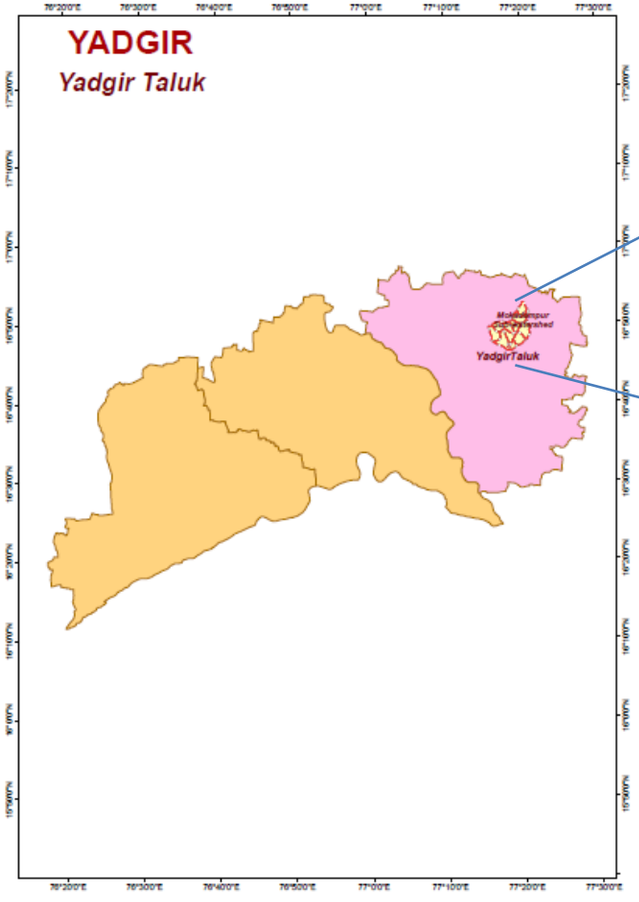
Name	Designation
Dr. Rajendra Hegde	Principal Scientist & Head Coordinator
Dr. S. Srinivas	Principal Scientist
Dr. K .V. Niranjana	Chief Technical Officer
Sh. R.S.Reddy	Consultant
Sh. A.G.Devendra Prasad	Consultant
Smt. K.Karunya Lakshmi	Research Associate
Ms. Seema, K.V.	Senior Research Fellow
Dr. Sekhar Muddu (Reviewed and approved)	Professor & Lead Scientist, Dept. of Civil Engineering & ICWaR, IISc, Bangalore
	Email: hd_rcb.nbsslup@icar.gov.in nbssrcb@gmail.com **Phone: Office:** 080-23412242,23410993 **Fax:** 080-23510350

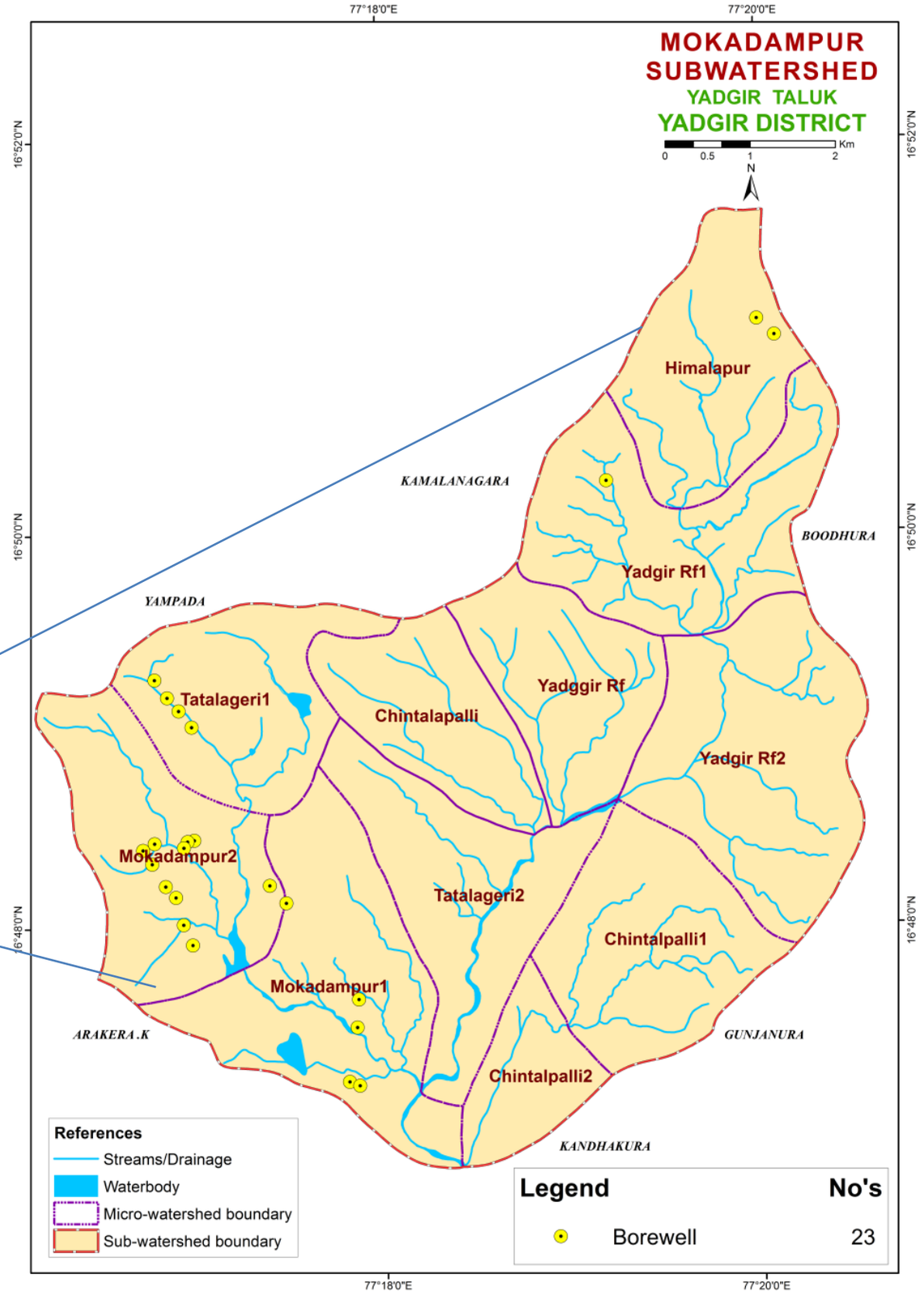
INTRODUCTION

- The inventory and documentation of spatial and temporal changes in hydrological components of Mokadampur sub-watershed (4D2D6A) in Yadgir taluk, Yadgir district, has been undertaken for integrated planning, development and management at the level of soil mapping units.
- Mokadampur sub-watershed (Yadgir taluk, Yadgir district) is located between $16^0$46'28''–$16^0$52'31'' North latitudes and $77^0$15'51''–77^0 21'13'' East longitudes, covering an area of about 5888 ha.
- This sub-watershed encompasses of 11 MWs namely, Yadggir Rf (4D2D6A1a), Tatalageri-2 (4D2D6A1c), Himalapur (4D2D6A2a), Yadgir Rf1 (4D2D6A2b), Tatalageri-1 (4D2D6A1d), Chintalapalli (4D2D6A1b), Mokadampur-2 (4D2D6A1e), Mokadampur-1 (4D2D6A1f), Chintalpalli-1 (4D2D6A2d), Chintalpalli-2 (4D2D6A2e) and Yadgir Rf2 (4D2D6A2c) micro watersheds. Land Resource Inventory (LRI) was generated for all the eleven micro-watersheds.
- Average annual rainfall (1960-2014) of the Hobli (Block) pertaining to the sub-watershed is 887 mm.
- In this sub-watershed major *kharif* crops grown are Maize, Cotton, Sunflower, Groundnut, Redgram, Chilli, Soybean , Paddy and major *rabi* crops are Sorghum, Bengal gram and Bajra.

LOCATION MAP OF MOKADAMPUR SUB-WATERSHED

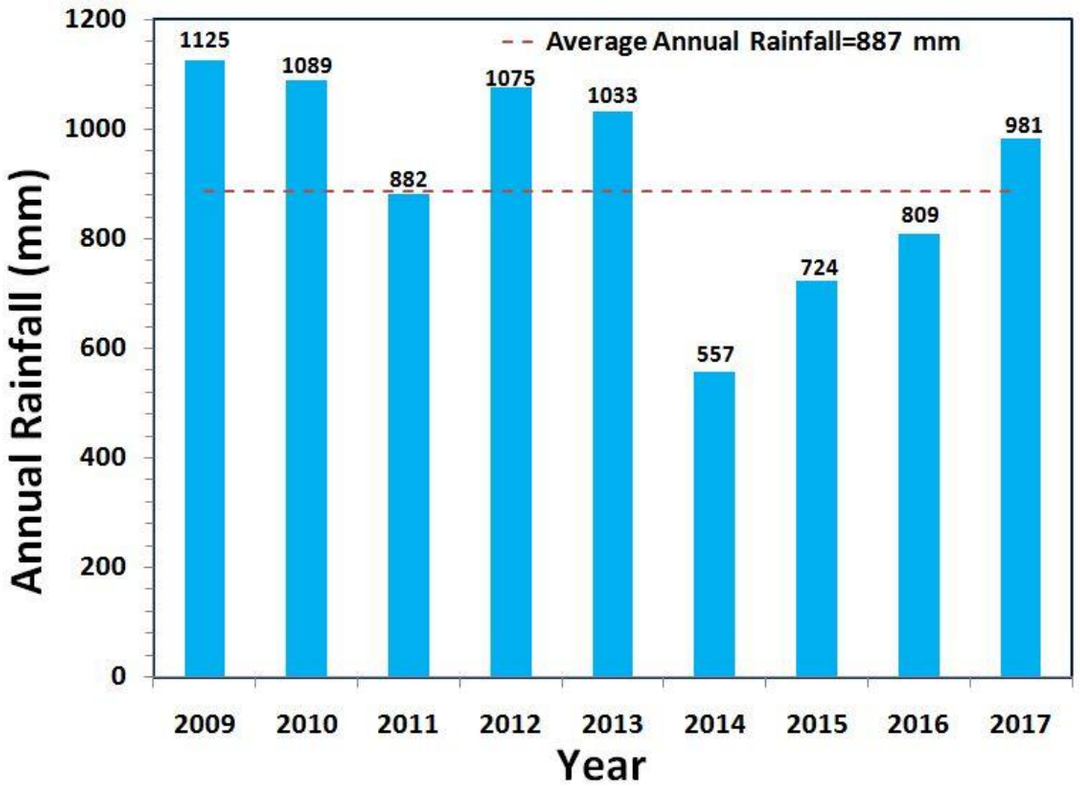






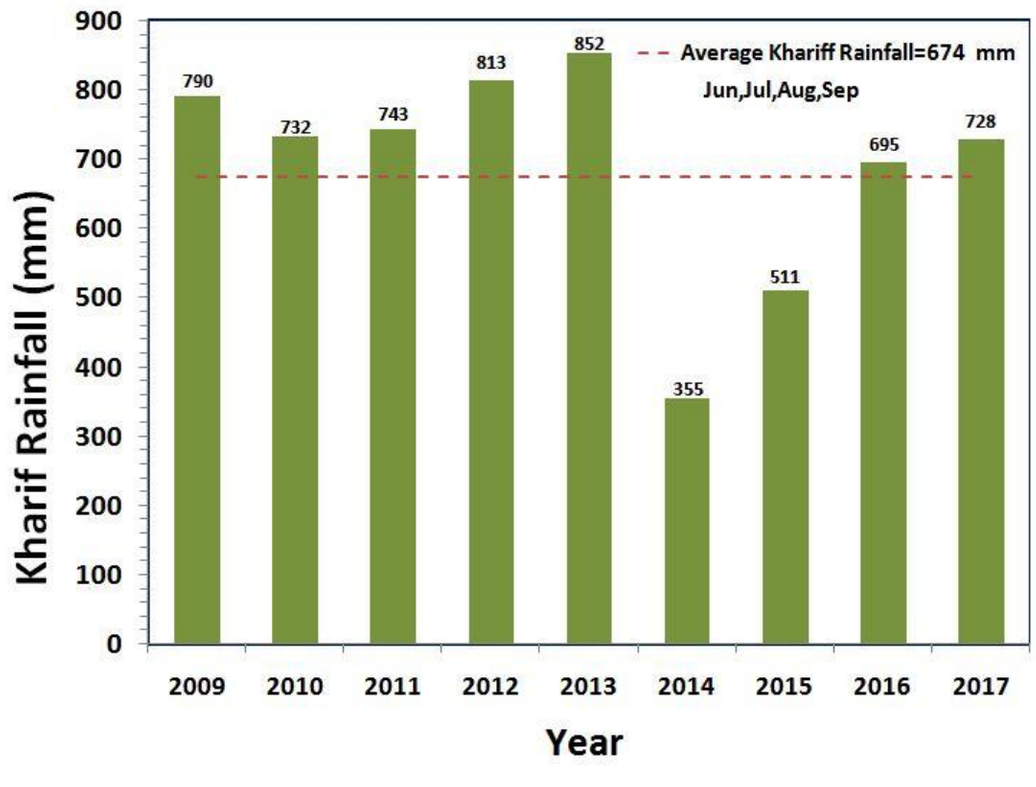
Soil & Water Conservation Structures in Mokadampur Sub-watershed, Yadgir taluk, Yadgir district

RAINFALL INDEX

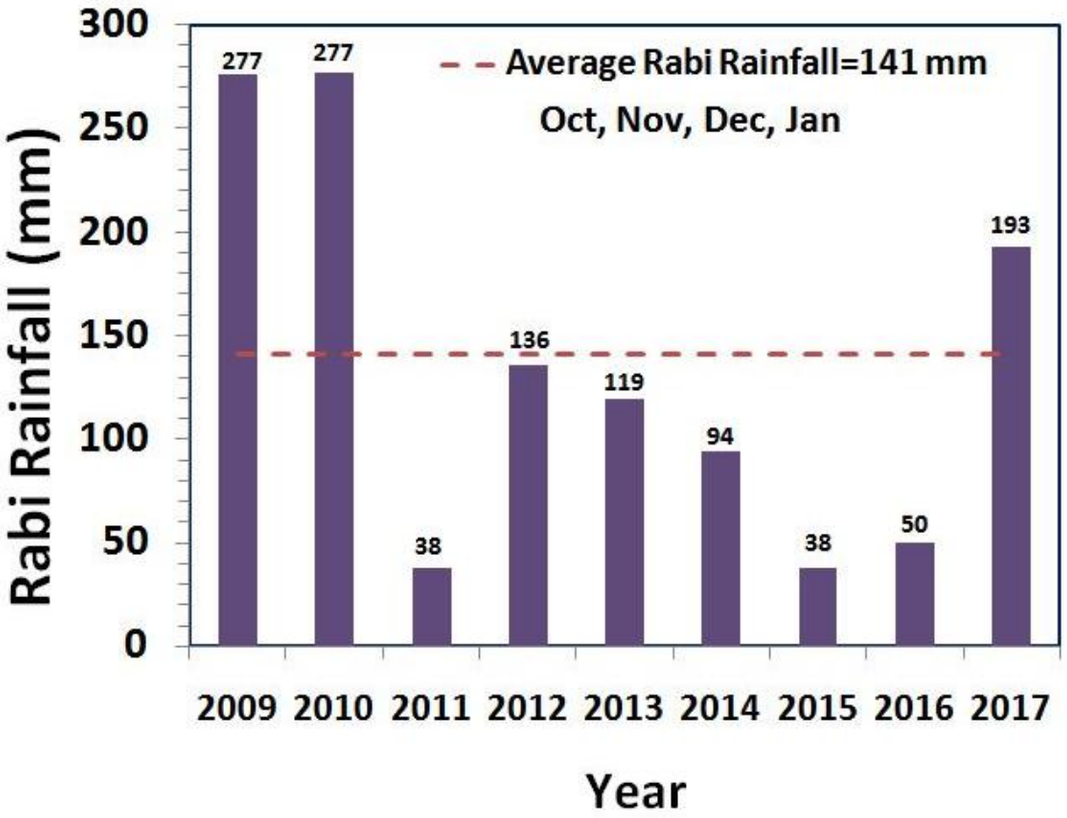


The average annual rainfall (1960-2014) recorded at the Yadgir station in Yadgir taluk of Yadgir district is 887 mm. The annual rainfall at Gurmitkal station (Hobli H.Q.) is presented. During the years 2014, 2015 and 2016 the annual rainfall was deficient by 37%, 18% and 9% respectively.

The *kharif* rainfall (Jun–Sep) is an average about 75% of the annual rainfall and it typically follows the annual rainfall patterns. During the years 2014 and 2015 the *kharif* rainfall was deficient by 47% and 24% respectively.

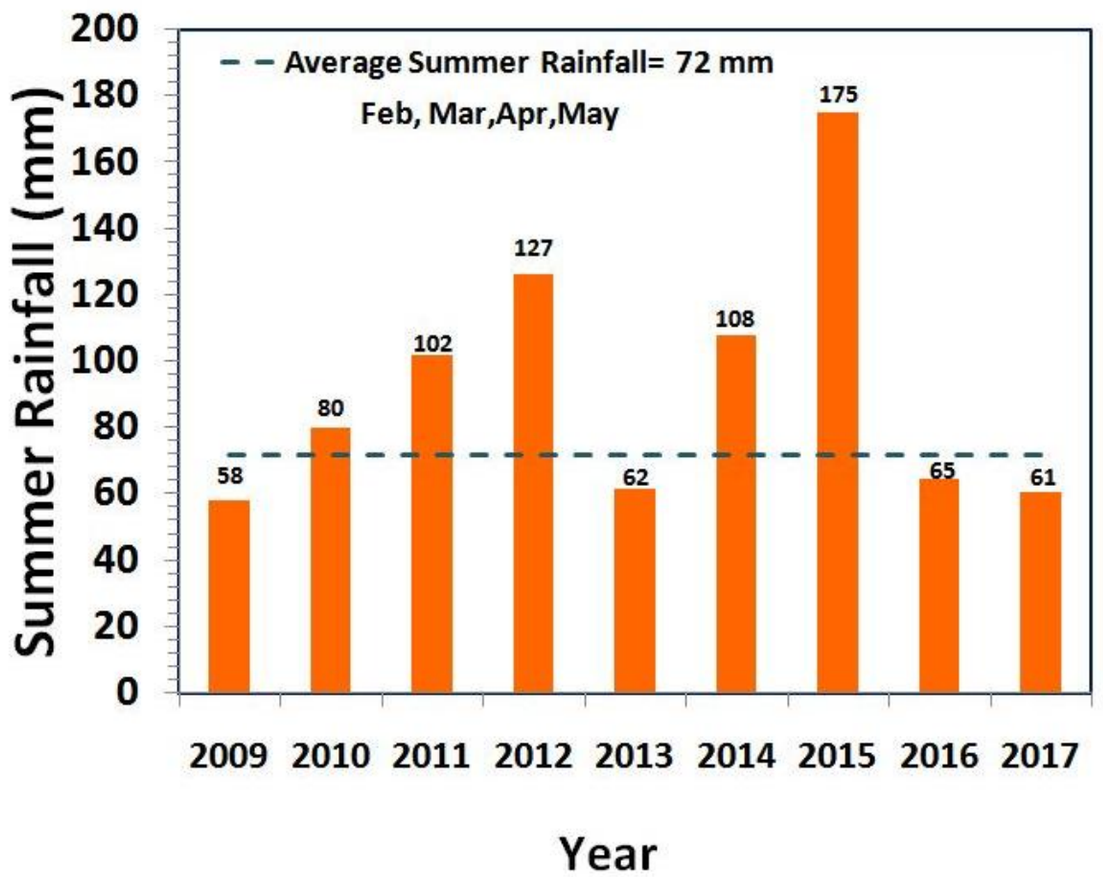


RAINFALL INDEX

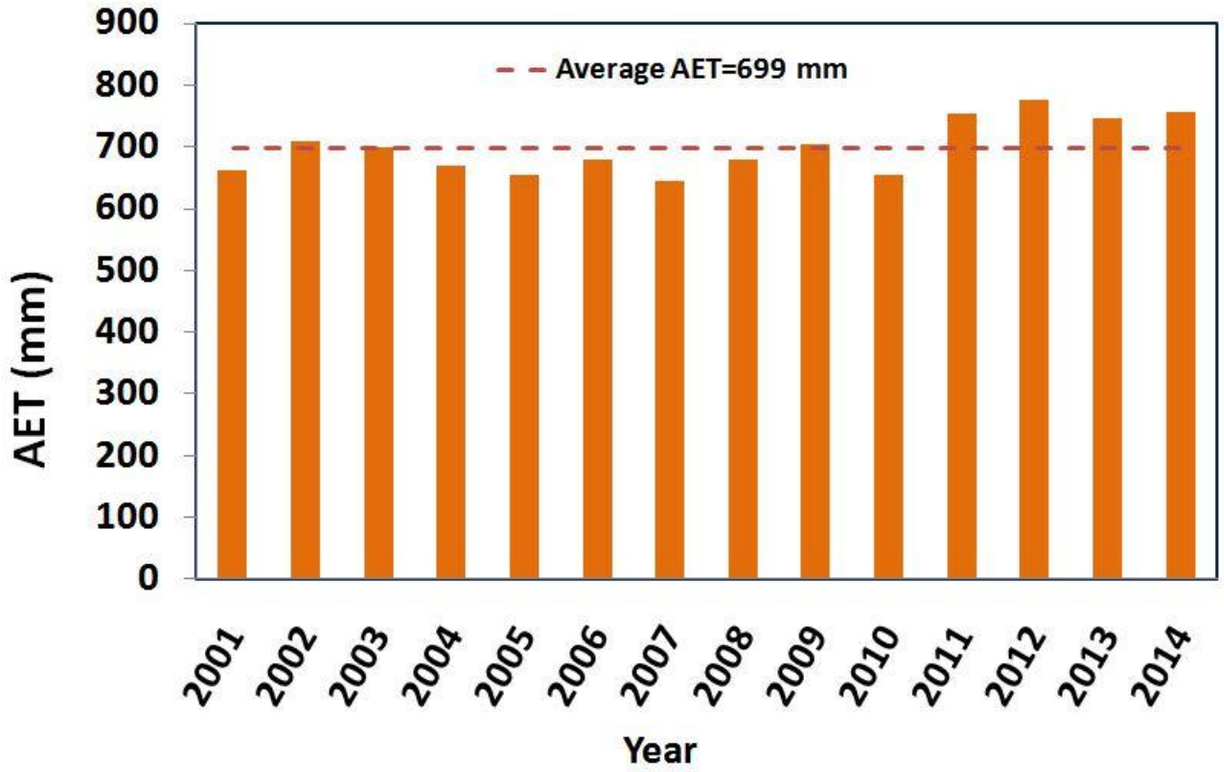


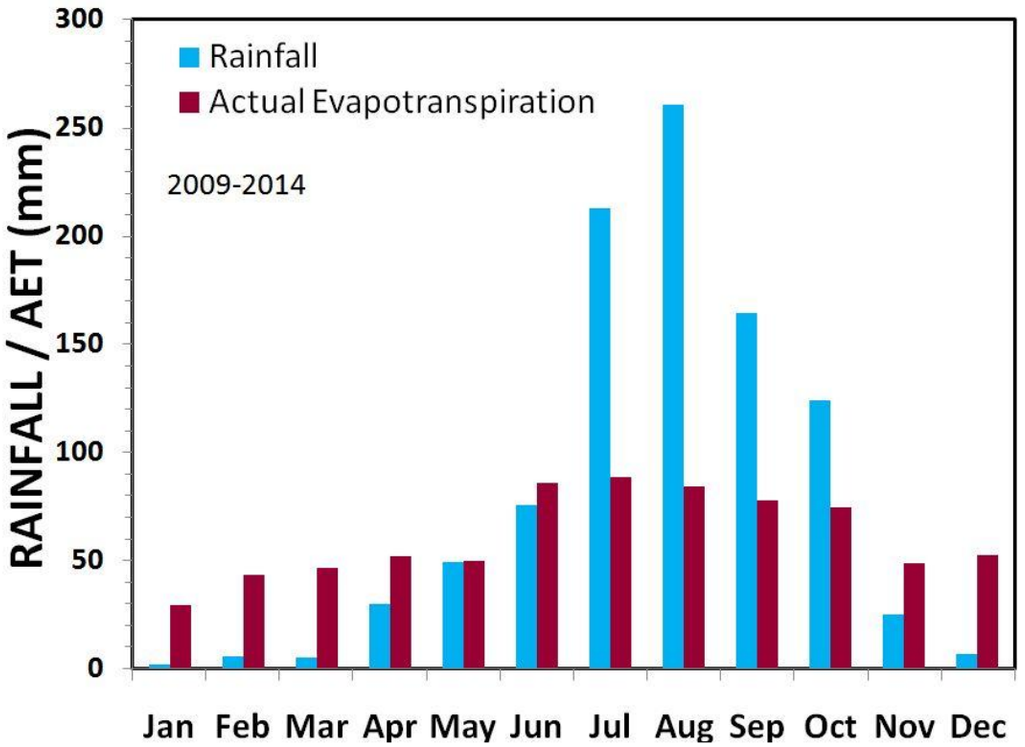
The average *rabi* rainfall (Oct-Jan) is about 14% of the average annual rainfall. During the years 2011, 2012, 2013, 2014, 2015 and 2016 the *rabi* rainfall was deficient by 73%, 4%, 16%, 33%, 73% and 65% respectively.

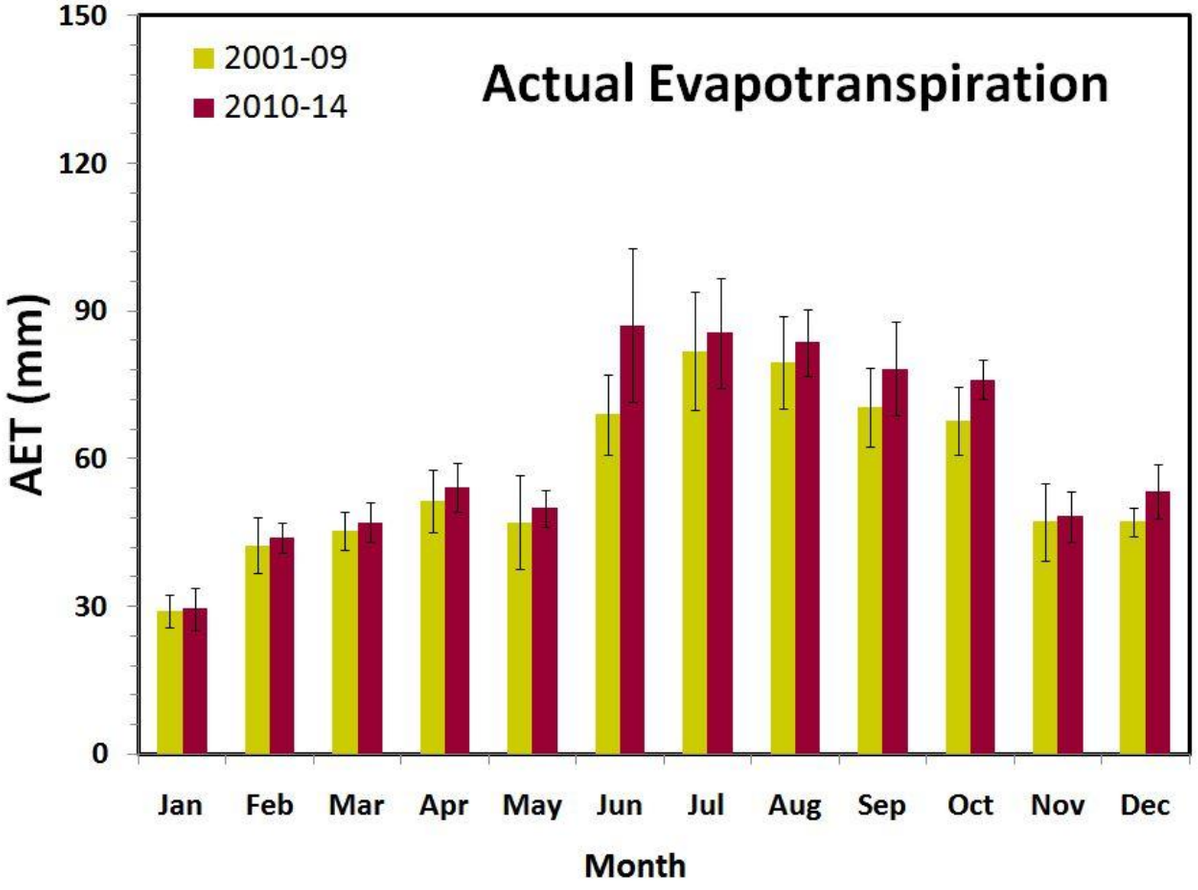
The average summer rainfall (Feb-May) is about 11% of the average annual rainfall.



EVAPOTRANSPIRATION

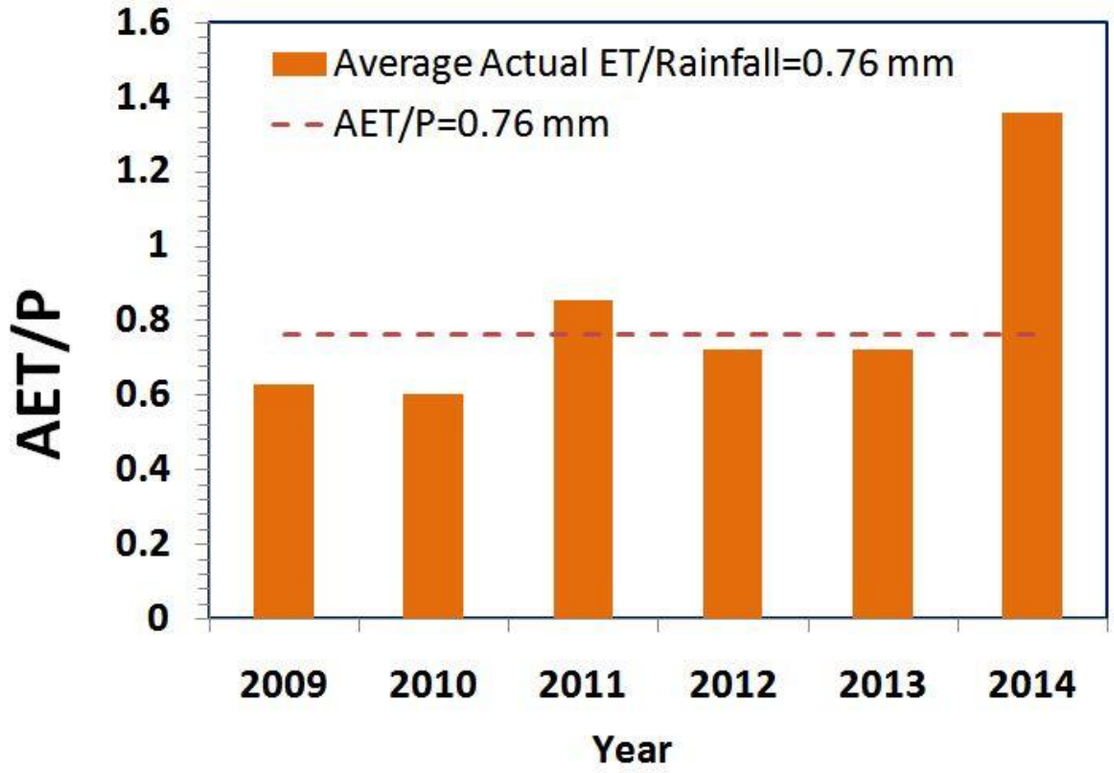


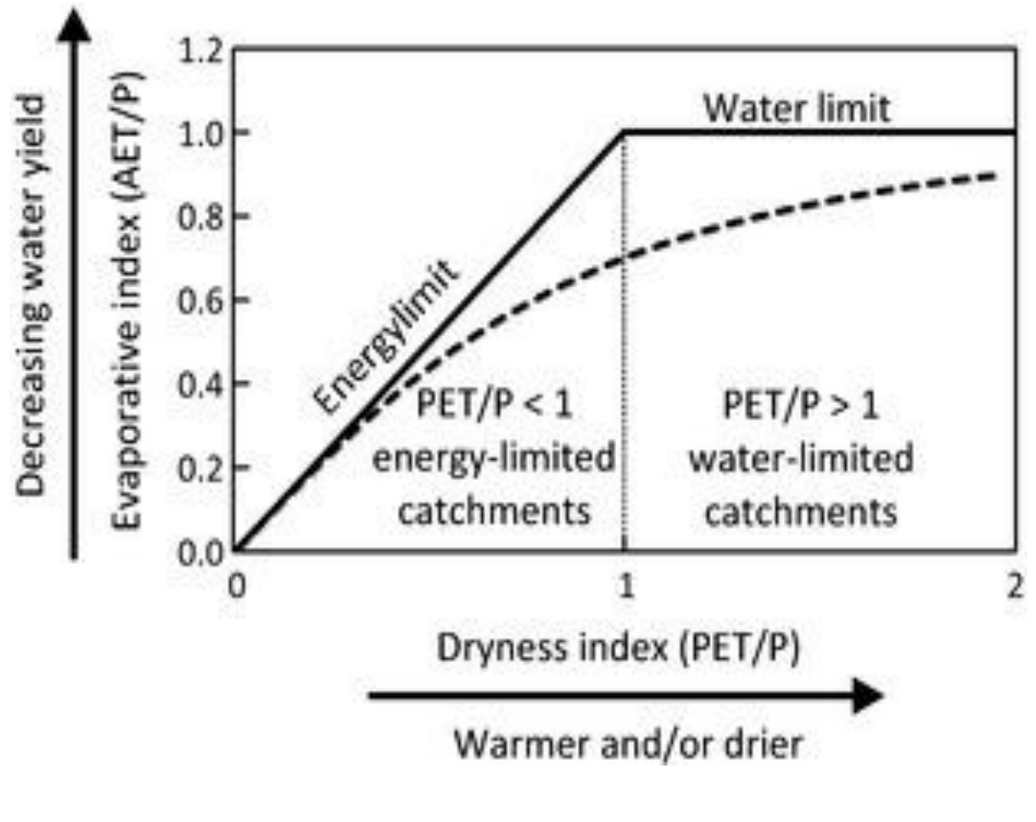




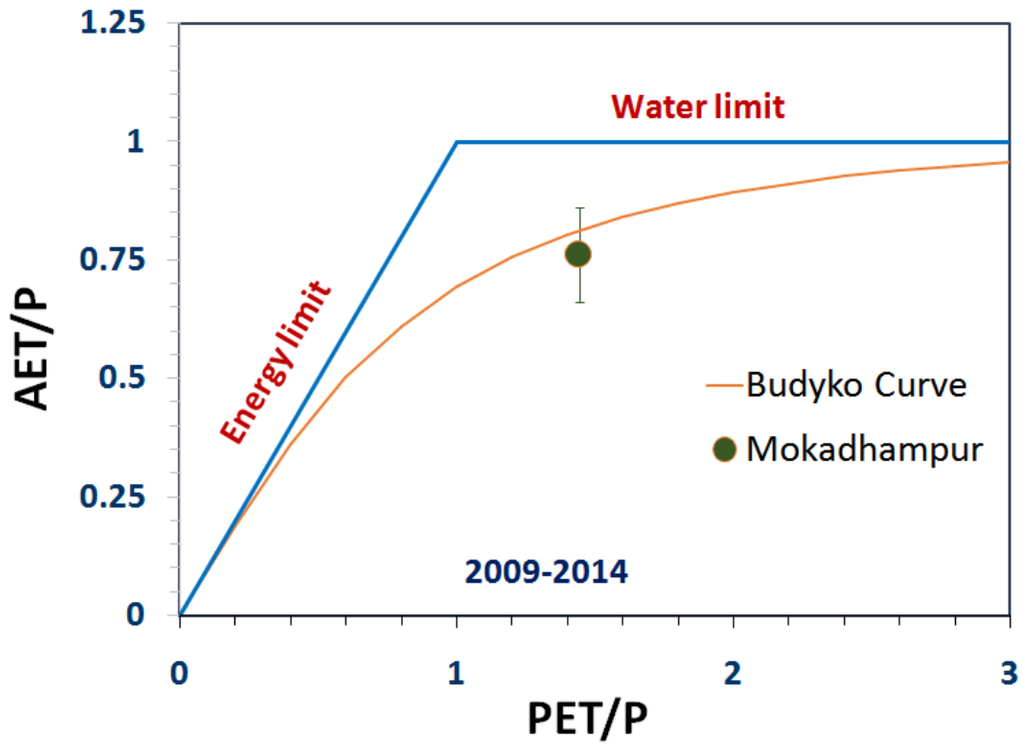
The average annual actual ET is lower than the average annual rainfall. During *kharif*, average rainfall and ET was found to be 691 mm and 336 mm respectively, whereas in *rabi* it was about 136 mm and 205 mm. In comparison to the 2001-2009, the annual ET increased by 8% during 2010-2014.

EVAPOTRANSPIRATION INDEX

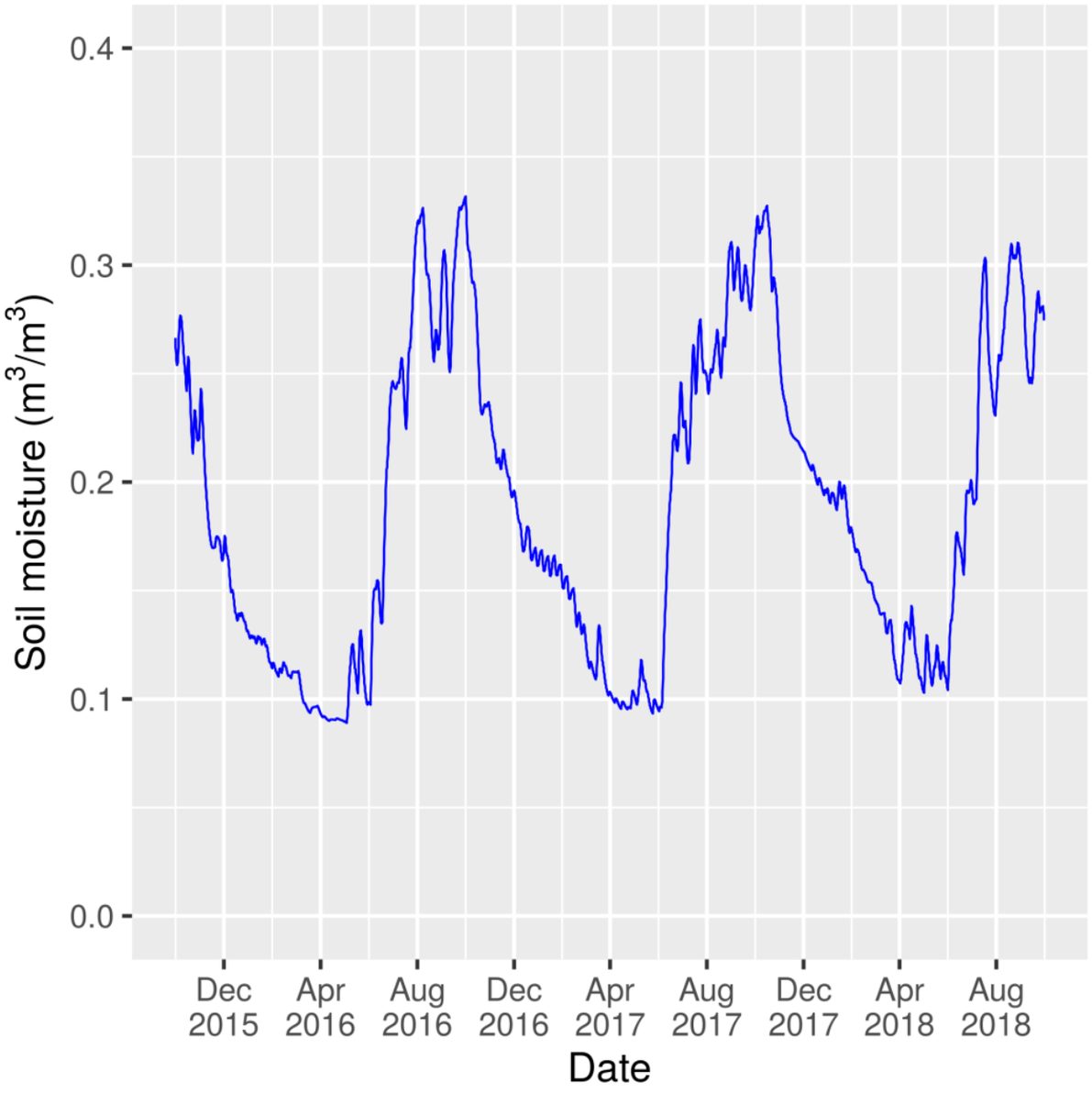


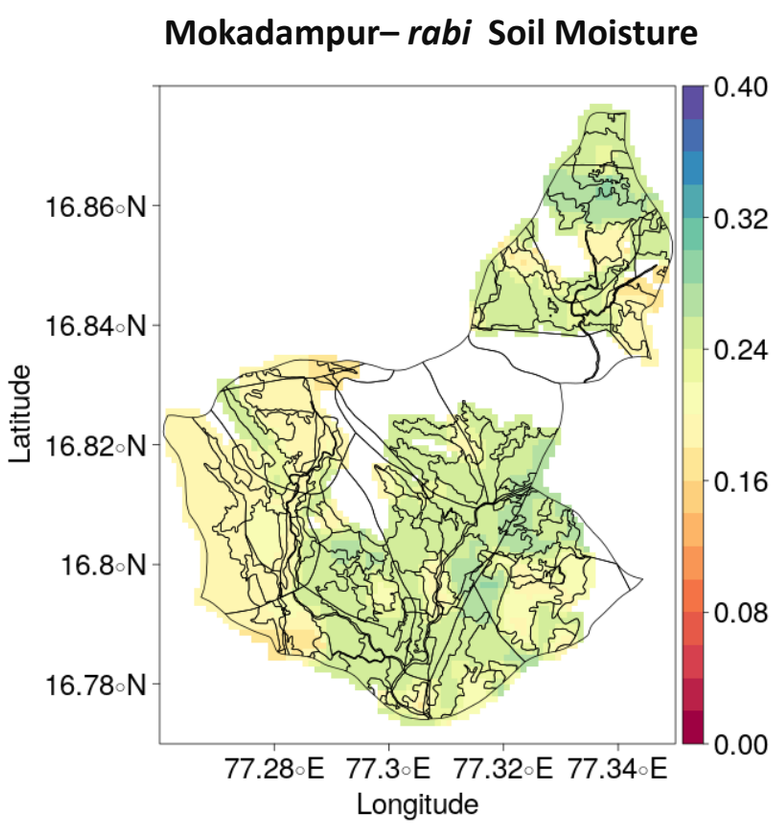


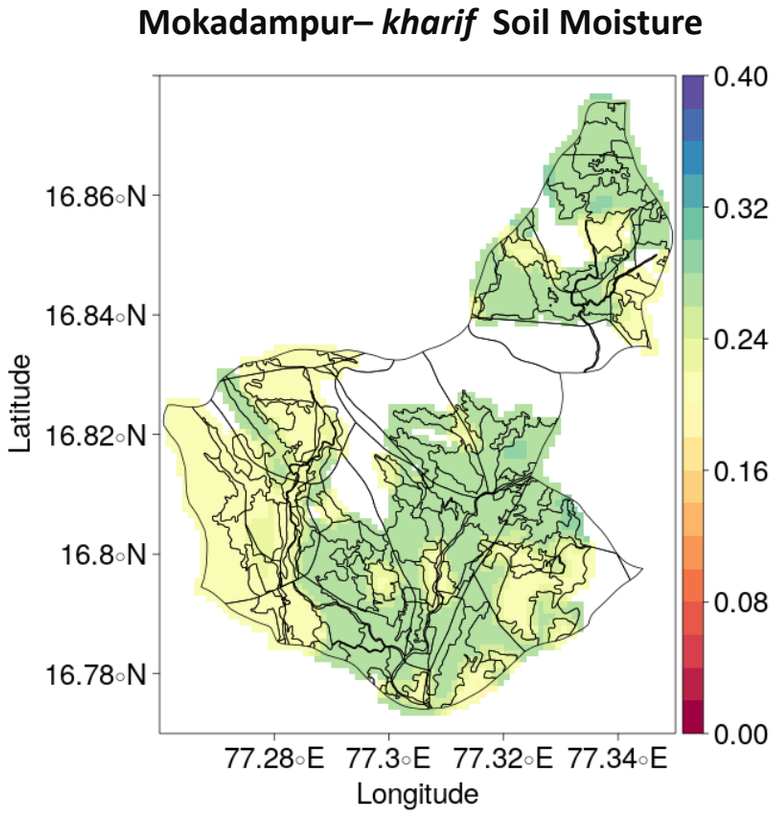
The average AET/P ratio was about 76%, which is lower than the sustainable limit of about 80%. This suggests the sub-watershed is in sustainable limit due to good rainfall during *kharif* season.



SATELLITE RETRIEVED SOIL MOISTURE





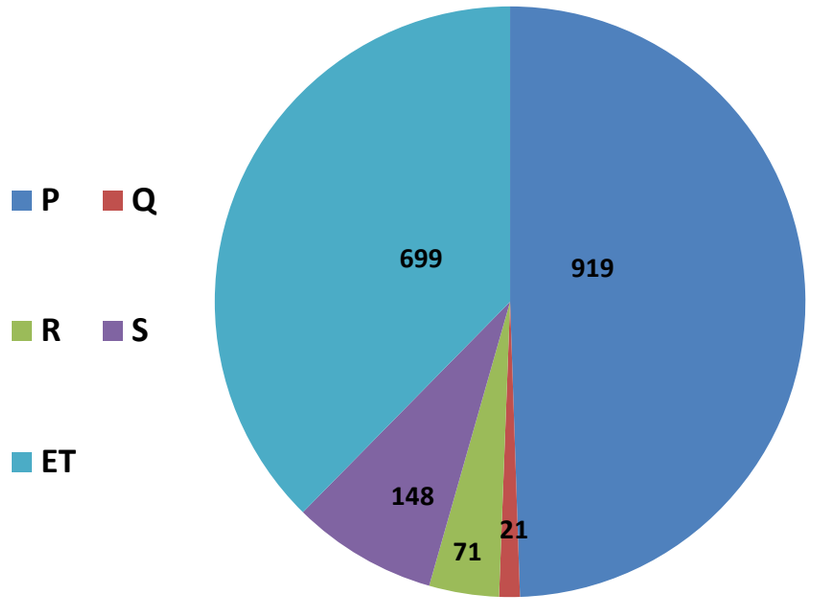


The method developed for retrieving soil moisture from multi-satellite observations allowed to map surface soil moisture behavior in the micro-watershed. The available surface moisture was varied in the range of 10-26 % in *kharif* and 17-33 % in *rabi* seasons of 2016, 10-31 % in *kharif* and 29-32% in *rabi* seasons of 2017.

WATER BALANCE

$$Q = P - E - R - S$$

- Q = Runoff
- P = Precipitation
- E = Evapotranspiration
- R = Groundwater recharge
- S = Soil moisture storage change

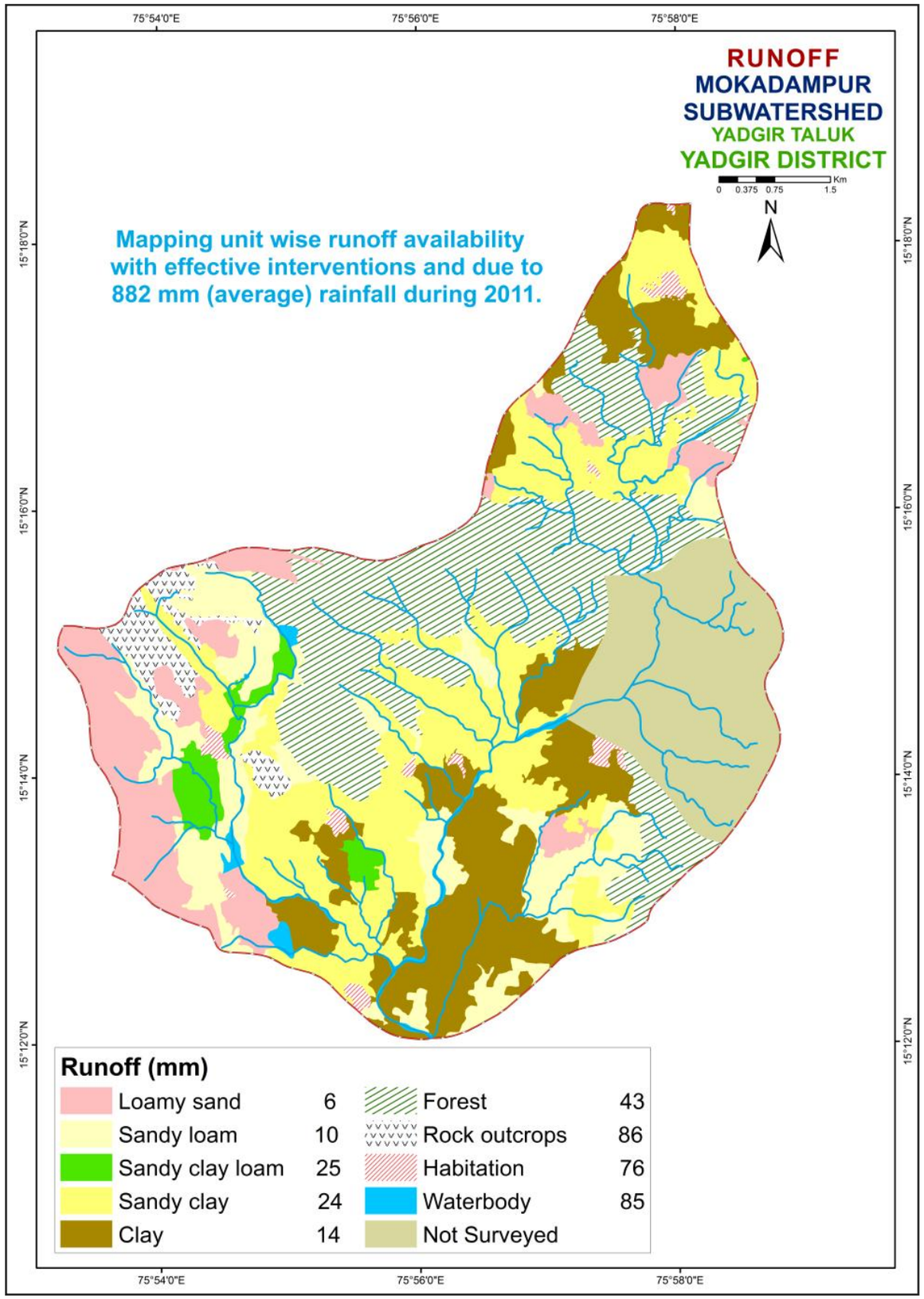


During July-September months, Precipitation is slightly higher than Evapotranspiration, hence slight Runoff can occur in the watershed.

P = 919 mm (average of 2009-2017) ET = 699 mm R = 71 mm S = 148 mm Q = 21 mm

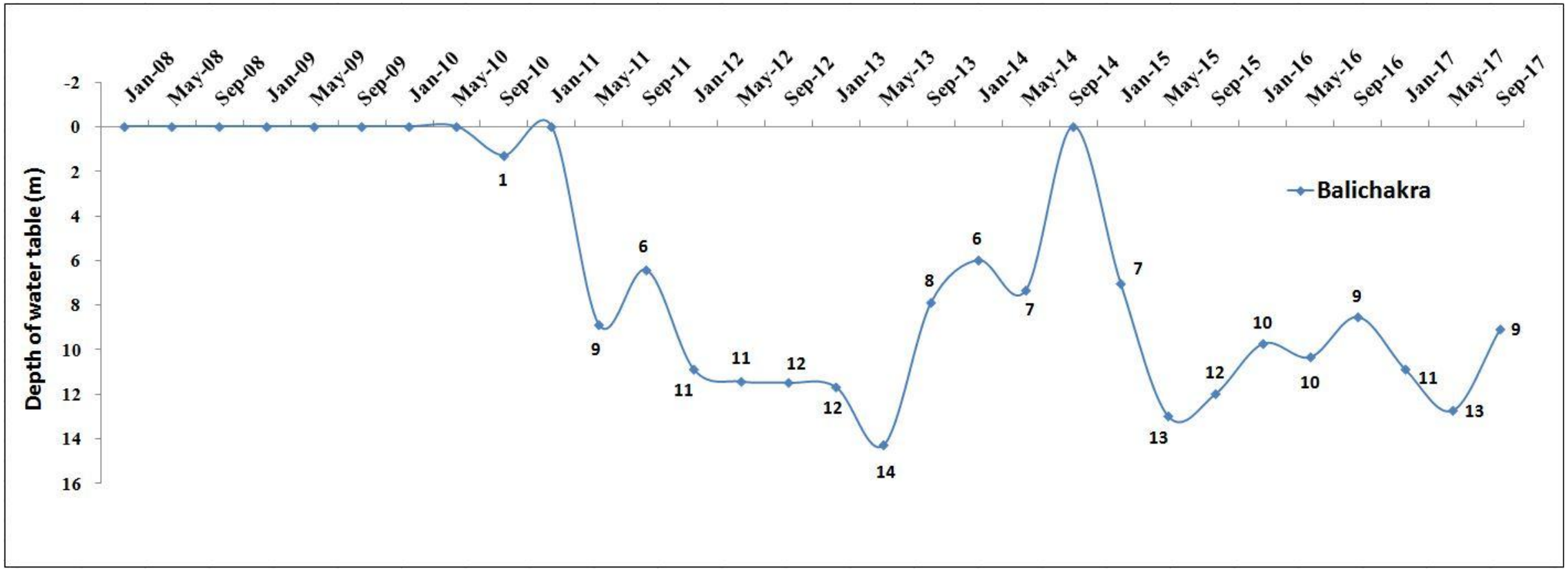
Sl. No.	Parameters	Average_ 2011 (mm)
1.	Rainfall	882
2.	Runoff availability with existing conditions	40
3.	Runoff availability with effective interventions	26
4.	Runoff allowed as environmental flow at the outlet	5
5.	Runoff excess for harvesting by construction of structures	21

RUNOFF


RUNOFF
MOKADAMPUR
SUBWATERSHED
YADGIR TALUK
YADGIR DISTRICT
0 0.375 0.75 1.5 Km
N
Mapping unit wise runoff availability with effective interventions and due to 882 mm (average) rainfall during 2011.
75°54'0"E
75°56'0"E
75°58'0"E
15°18'0"N
15°16'0"N
15°14'0"N
15°12'0"N
Runoff (mm)
Loamy sand 6
Sandy loam 10
Sandy clay loam 25
Sandy clay 24
Clay 14
Forest 43
Rock outcrops 86
Habitation 76
Waterbody 85
Not Surveyed

GROUND WATER STATUS

BALICHAKRA STATION



The total number of wells present in Mokadampur Sub-watershed as per LRI data is 23 (23-Borewells). The groundwater level was found from the data obtained from KSNDMC for the nearest station Balichakra. The above graph depicts the groundwater levels during the years 2008-2010 was almost constant. Whereas groundwater levels during the years 2011-2017 was slightly varying except Sept-2014. Deepest levels were found in 2013.

SUMMARY

- The average annual rainfall of 887 mm in the Mokadampur sub-watershed as recorded from the Gurmitkal station data by KSNDMC.

- 75 percent, 14 percent and 11 percent of the annual rainfall occurs during *kharif*, *rabi* and summer seasons respectively and exhibited a higher temporal variability.

- The evapotranspiration estimation tool developed indicates that the watershed water balance is in sustainable limit.

- The estimated runoff available to use is 21 mm for an average annual rainfall of 919 mm (2009-2017). The utilizable groundwater is 50 mm (70% of 71 mm recharge estimated). This means the total available water resource combining the soil moisture store for kharif & rabi (148 mm) and utilizable runoff plus recharge is 219 (=148+50+21)

- The average actual evapotranspiration estimated in the watershed based on the current land use and irrigation practices for the kharif and rabi seasons is 541 mm. Hence the amount of water use for kharif and rabi seasons may be estimated as 676 mm (i.e 125% of AET). This demand for the two seasons is higher by 457 mm, i.e. (676-219). The AET in June-Sept months is 47% of rainfall. Hence, there is a good opportunity to harvest the excess water through watershed management practices for utilizing during rabi season.

- The total number of wells present in Mokadampur Sub-watershed as per LRI data is 23 (23-Borewells). The groundwater level was found from the data obtained from KSNDMC for the nearest station Balichakra. Deepest levels were found in 2013.