CHAPTER-II

AGRICULTURE PROFILE OF KARNATAKA STATE

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2.1 Introduction.

2.2 Location of Karnataka State.

2.3 Regional relief.

2.4 Topography and arable landuse.

2.5 Climatic conditions.

2.6 Population of Karnataka 2001 census.

2.7 Rivers of Karnataka.

2.8 Irrigation development in Karnataka.

2.9 Recent trends in crop landuse.

2.10 Area under forest

2.11 Conclusion.

References

CHAPTER II

AGRICULTURE PROFILE OF KARNATAKA STATE

2.1 INTRODUCTION:

This chapter deals with the agriculture profile of Karnataka state. Karnataka has beautiful land with a magnificent coastline, lush forest and peaks. Situated on the Deccan Plateau, the state stretches 760 km. from north to south and 420 km from west to east with a total geographical area of 192,000 Sq. Km. (1)

Agricultural and allied activities account for nearly 65 percent of the work force in the state. Out of the total geographical area 104,19,404 hectares is cultivable land. Major food crops are paddy, jowar, ragi, bajra, maize, wheat and pulses. The state stands 7^{th} in oil seed production in the country. The production of food grains in the state increased from 76.04 lakh tonnes in 1990-93 to 93.97 lakh tonnes during 1996-97.

Horticultural crops are grown in an area of 18 lakh hectare with an annual production of 124 lakh tonnes valued at Rs.6, 000 cores. The area under forests is 30,62,391 hectare {2}

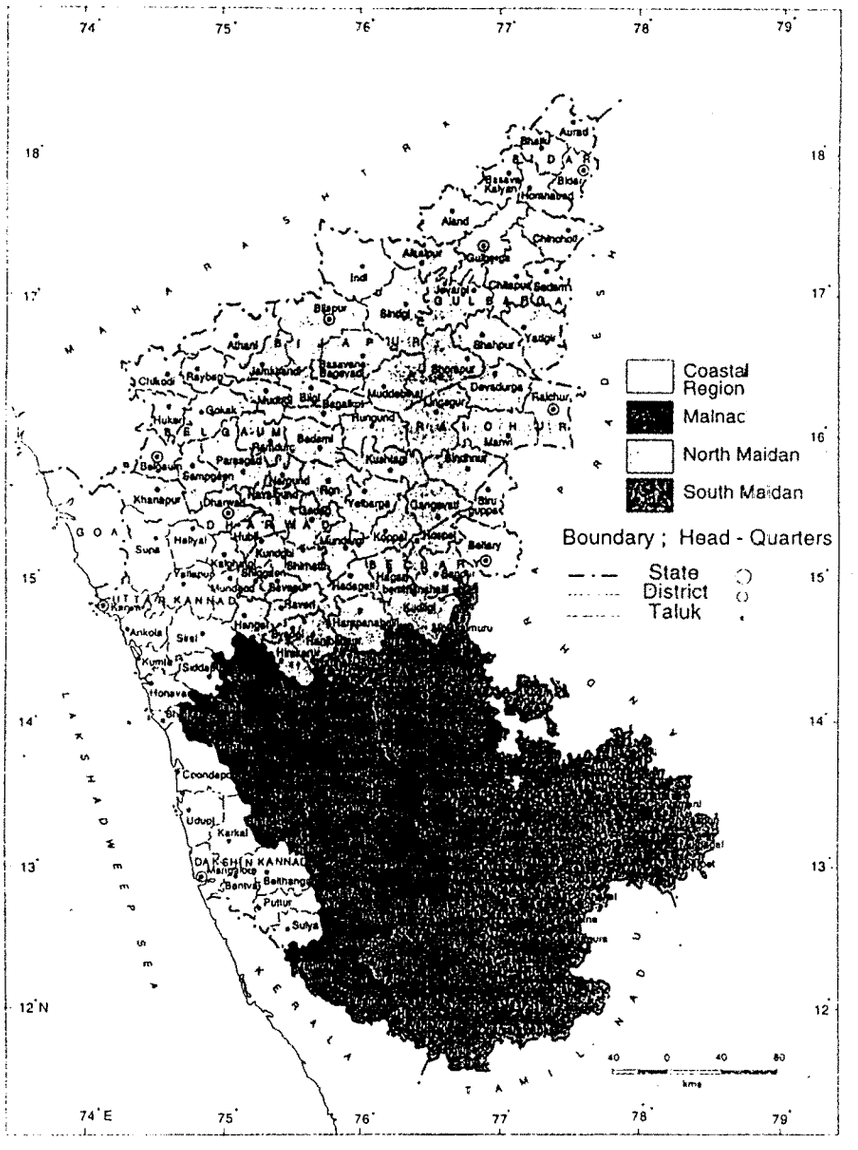
Agriculture, the most important primary economic activity, which is closely related to physical environments, particularly relief, climate and soils. The state of Karnataka has extremely diverse physical environment, which have been an important factor in the evolution of its agriculture landscape and need. The three important physical aspects analyzed here are relief, climate and soils, cropland use and crop yield and production, etc the approach is basically regional.

2.2 LOCATION OF KARNATAKA STATE:

Karnataka in south-west India is the country's eighth largest state, situated on a tableland where the western and eastern ghat ranges converge into the Nilgiri hill complex, the State of Karnataka is confined roughly within 11.5 degree north and 18.5 degree north latitudes and 74 degree east and 78.5 degree east longitude.

The State is bounded by Maharashtra and Goa States in the north and northwest; by the Arabian Sea in the west; by Kerala and Tamilnadu States in the South and by the State of Andhra Pradesh in the east. The State extends to about 750 km from north to south and about 400 km from east to west.

Figure – 2.1
Karnataka: The Study Area.



2.3 REGIONAL RELIEF:

Karnataka forms the western flank of the Deccan Plateau and its relief, eastwards from the Arabian Sea coast, falls into the three familiar divisions of i) the coastal lowlands, ii) the Sahyadris or Malnad, and iii) the interior plateaus or Maidan.

Coastal Lowlands:

Dissected by the headwaters of the rivers flowing from the Sahyadrian crest westwards to the Arabian Sea and towards east to the Bay of Bengal. It the coastal lowlands of Karnataka are a narrow strip of land between the seashore and the Sahyadrian scrap running for about 320 km from the state's boundary with Goa in the north to Kerala in the south. The coast itself is a drowned or submerged coast (Learmonth and Bhat, 1960). The width of the lowland increases towards south from a few kilometers near Karwar to over 70 km behind Mangalore. The region covers fully or partly the districts of Uttar Kannada and Dakshin Kannada.

Malnad:

The Malnad is the western part of the Karnataka Plateau, hills of the Sahyadris and the Ghats, is called locally, is a rugged country extends as a belt east of the coastal lowlands all through the state for about 320 km.the Malnad is a distinctive region of rounded, Largely forested hills.

The region covers mostly the four districts of Shimoga, Chikmagalore, Hassan, and Kodagu and small parts of Uttar Kannada, Belgaum, Dharwad, Mysore, and Dakshin Kannada districts.

Interior Karnataka Plateau:

The region can be divided into: I) the North Karnataka plateau or North Maidan, a lower and more level surface covering all the district north of Chitradurga, and ii) the higher and more rugged South Karnataka plateau

or South Maidan including Chitradurga and the other districts to, its south. The two regions have many other physical and cultural differrnces, which set them apart as unique and distinct entities.

North Maidan:

The North Maidan is a rolling country with heights varying from 400 m to 600m above sea level. The area gently slopes towards east and is drained by the Krishna river and its tributaries, the Bhima, Ghataprabha, Malaprabha, and Tungabhadra, whose valleys 15-20 km broad in the west coalesce and form a broad plain below 400 m above sea-level in the east in Gulbarga, Raichur and Bijapur districts. The North Maidan is an intensively cropped land with the net sown area occupying over three-fourths of the reporting area. Its banes, however, are scanty and undependable rainfall and irrigation development, which lead to frequent crop failures and large-scale fallowing.

South Maidan:

The South Karnataka plateau or South Maidan, the area of the old priencely Mysore state, is composed mostly of peninsular geneisses and partly of ancient granites, charnokites and Dharwad schist's. It is a higher surface, 600-900 m above mean sea-level, formed of a number of small or large rolling plateaus and disjointed, bare boulder-covered granitic hills of extremely irregular plan and elevation (Spate and Learmonth, 1967), draining mostly to the south and south-east through the Cauvery head-streams. In the extreme south, forming the state's southern boundary with Tamil Nadu and Kerala beyond the Cauvery gorge.

2.4 Topography and Arable Landuse:

The landuse patterns in Karnataka are largely governed by the nature of relief. The state as a whole has about 64 percent of the total geographical

area under arable use (including net sown area and follow lands), which proportion is exceeded in most taluks of the North Maidan, where a low and level relief and deep, medium black soils provide an ideal surface for productive agriculture. In many taluks of Bijapur, Dharwad, Gulbarga and Raichur districts, the proportion is as high as 90 per cent and it is bound to increase further with added attention to soil and water conservation and irrigation needs of the area.

Rugged relief of the South Maidan permits only a limited extent of arable landuse, about 45-46 per cent, it being somewhat higher in the low-lying areas of Chitradurga, Tumkur and Mandya districts than in Mysore, Bangalore and Kolar, where hilly terrain occupies large parts.

The hilly, forest-covered terrain of the Malnad has the lowest area-proportion under arable landuse and this situation continues also in many taluks of the coastal lowlands. Only 12 per cent of the geographical area is arable in Uttar Kannada, whereas Dakshin Kannada, Chikmagalur, Kodagu and Shimoga have about 35-45 per cent. *Indiscriminate felling of trees forest fires for Kumri cultivation by tribals are responsible for accelerated soil erosion in this region. All the valleys and low coastal plain areas have an intensive landuse pattern with a high proportion of the geographical area classed as arable. There is need to prevent the practice of Kumri and more land should be brought under forests to check soil erosion and improve ecological conditions in the region.*

2.5 Climatic Conditions:

The potential crop producing ability of a given area is dependent primarily upon the existing climate and soil conditions under which the crop in question must be grown (Singh, 1976). All agricultural geographers have, therefore, emphasized upon the need for a rapid examination of the climatic

conditions in regional studies of agriculture (KLAGES, 1958; stamp, 1963; Thomas, 1967).

Lying entirely within the tropics, Karnataka has a hot, tropical climate with rains mostly from the southwest monsoon winds from June to September. Whereas the state's low latitudes, maritime proximity, and monsoon system of winds have shaped this climatic-mix in general, areal differences in it, especially in temperature and rainfall, its two chief components analyzed here, are largely explainable as due to the spatial variations in relief, particularly the altitude and alignment of the Sahyadris, and the varying influence of the sea (3).

2.6 Population of Karnataka as per 2001 census

The total population of Karnataka as stood at 5,27,33,958 as per the provisional results of the Census of India 2001. Karnataka is now the ninth most populous state in India. The decadal growth rate of population in the state has been 17.25% between 1991-2001, lower than the rate of 21.12% between 1981-1991. Sex ratio (i.e., number of females per thousand males) in Karnataka rose to 964 in 2001 Census from 960 in 1991. Among 0-6 year age group the sex ratio has actually fallen considerably from 960 in 1991 Census to 949 in 2001 Census. . Literacy rate in the State has also shown significant improvement. This has increased from 56.04% to 67.04% during the last ten years (4).

Population of Karnataka:

	1991-2001	1991
1) Decennial growth of population %	17.3	21.1
2) Females per 1000 males	964	960
3) Rural and Urban Population (Million)		
Rural	34.8	31.1
Urban	17.9	13.9
4) Literacy Rate	67.0	56.0

2.7 RIVERS OF KARNATAKA:

The average annual yield of the rivers of the Karnataka has been roughly estimated as 98406 m.cum (3475 Tmc). The basin wise breakup of this yield is given in the following table:

Table No 2.1

WATER RESOURCES OF KARNATAKA

S.No.	Rivers	Estimated average yield in		
1	Krishna	27,451 m.cum	969.44 Tmc.	27.90 %
2	Cauvery	12,034	425.00	12.23
3	Godavari	1,415	49.97	1.44
4	West Howing river	56,600	1998.83	57.51
5	North Pennar	906	32.00	0.92
6	South Pennar			
7	Palar			
	Total	98,406	3475.24	100

2.8 IRRIGATION DEVELOPMENT IN KARNATAKA:

Agricultural being the main occupation of the state, Irrigation plays utmost significant part in obtaining increased yields from the land. The development of irrigation in the state was slow and unsystematic during the pre independence era. However, there were some notable Irrigation works undertaken and completed during the pre-independence, such as Krishnaraja Sagar (Which was the only major project completed prior to independence), Vijayanagar canals, Cauvery anicut Channels, Gokak canal. Vanivilasa Sagar, Markonahalli and Anjanpura.though major projects like Tungabhadra and Ghataprabha Stage-I were commenced prior to the plan period, their progress was slow and they got impetus only after their inclusion in the first five-year plan.

There were more than 25,000 tanks scattered over erstwhile Mysore state. But in Bombay-Karnataka and Hyderabad-Karnataka areas, the number of such minor irrigation work is meager.

Achievement Upto The End of March-2000

The total investment up to the end of March 2000 on Irrigation in the state was Rs 14,267 crores comprising Rs 13,399 crores on major and medium irrigation and Rs 868 crores on minor irrigation (using surface waters). This does not include the investment on irrigation prior to the plan period i.e. 1951. Up to the end of March 2000 a total irrigation potential of 36,22,921 hactare including ground water is created.

This comprises of the following.

Table No 2.2

IRRIGATION DEVELOPMENT

Area Irrigated	Type of Irrigation
a) 4,53,054 ha	Under 8major and 32 medium completed projects
b) 12,88,717 ha	Under 19 major and 21 medium on going projects, bringing total potential under major and medium projects to 17,41,171 ha
C) 9,39,566 ha	Under completed minor projects using surface waters.
d) 33,021 ha	Under 13,741 small tanks having less than 4 ha ayacut (now with Zilla parisheds)
e) 9,08,563 ha	Under irrigation from ground water sources.

Development of Irrigation

The need for irrigation is more acute in Karnataka than in most other parts of India; as over two-thirds of the state's cropped area receives a rainfall, which is too low (below 75 cms), seasonally concentrated, and highly uncertain (CV30 percent). Irrigation is a must in the state's drought-prone east of the Sahyadris zone even during kharif season to protect crops from dry spells, which are more frequent and prolonged here, and without irrigation a rabi or summer crop is almost impossible over most of the state.

The state, specially the interior plateaus, experiences droughts with 25 per cent more loss on crop production every fourth or fifth year and it has so far, only 13 per cent of the net sown area cropped more than once during the year compared to 27 per cent in the country as a whole and as high as 90 per cent in Punjab mainly because of moisture deficiency. Only 21 per cent of the cropped area is covered with irrigation in Karnataka so far compared to

31 per cent in India as a whole 90 per cent in Punjab. This is despite the fact that the state's resources are adequate to irrigate up to 50 per cent.(5)

Development of Irrigation Before Independence

Though concern for irrigation has been there in Karnataka since ancient time, the progress was insignificant till Independence. It is estimated that out of 76.8 lakh hectares of cultivated area only about 5 lakh hectares was under irrigation in the state in the year 1901 (Government of India, 1972). Tanks were the main source of irrigation and the only major irrigation scheme before 1947 was the Krishnarajsagar dam. The few other scheme existing was much smaller. They included the Vijaynagar canals on the Tungabhadra, the Cauvery anicut channels, the Gokak canal on the Ghataprabha and the Vanivilassagar on the Vedavati. The Famine Commission of 1878-80 and the First Irrigation Commission (1901-03) underlined the need for large-scale protective irrigation as a major to combat droughts and famines, and only one of the several recommended schemes (reservoirs on all rivers with catchments in the Western Ghats) was undertaken, the Krishnarajasajar project on the Cauvery in 1924. It is estimated that between 1901 and 1950 only about 1.8 lakh hectares was added to the irrigated area in the state and with only about 7 per cent of the net sown area under irrigation in the latter year, the state was only marginally better placed than it was 50 years before.

Irrigation Development In Karnataka Key Issues

Irrigation is the key infrastructure for the agricultural development of Karnataka ¾ of the cultivable area in the state is dry land, monsoons being uncertain, the agricultural production in the rain shadow areas if the state is object to considerable instability, which affects the economic position if the farmers. There has been considerable slow down in the growth of agricultural sector in the eighties and nineties leading to stagnation in

Agricultural output. The state has turned out to be a net importer if food grains from rest of the country recognizing the situation irrigation have been considered as one of the major inputs essential to step up the productivity. Therefore there is an urgent need to increase the percentage of cultivated area under irrigation by judicious tapping of available irrigation potential in the state.

The beginning if the planning has accorded high priority for the development of irrigation in the state public investment in major and medium irrigation project and private investment in to be well irrigation has increased phenomenally in the recent years. The share of the irrigation in the total plan outlay has increased from 19.4 percent in the eight planes to 26.4% in the ninenth plan. Though high priority has been accorded for the development of irrigation in the state, the irrigation potential created till the end of 1995-96 was 23.02 lakhs hectares out of which 8 lakhs hectares is from well irrigation which is for below the national average of 38 lakhs hectares.

Table No 2.3

Net Area Irrigated By Different Source In Karnataka, During 1960-61 To 1995-96.

YEAR	*CANALS*	*TANKS*	*WELLS*	*TUBE WELLS*	*OTHER SOURCE*	*TOTAL*
60-61	2.36 (27.51)	3.43 (39.98)	1.33 (15.50)	NA	1.46 (17.02)	8.58 (100)
70-71	3.97 (34.76)	3.72 (32.57)	2.60 (22.77)	NA	1.13 (9.89)	11.42 (100)
80-81	5.46 (40.12)	3.04 (22.34)	3.63 (26.67)	NA	1.48 (10.87)	13.61 (100)
90-91	8.02 (39.08	2.39 (11.65)	5.40 (26.32)	1.73 (8.43)	2.98 (14.52)	20.52 (100)
93-94	9.35 (40.22)	2.72 (11.70)	4.87 (20.95)	2.90 (12.47)	3.41 (14.61)	23.25 (100)
95-96	9.50 (41.26)	2.30 (10.00)	4.27 (18.55)	3.72 (16.16)	3.32 (14.03)	23.02 (100)

In the above table the composition of net area irrigated by different source has undergone considerable change during the last four decades. Canal irrigation, which accounted for 27% of the net area irrigated during 1960s, has registered a four-fold increase in its area during the last decades, irrigating 41% of the net area during the year 1995-96. Tanks were the major source of irrigation during 1960s. It accounted for nearly 40% of the area under irrigation. As revealed in the table there has been a drastic decline in the area irrigated by tanks hardly accounted for 12% of net irrigated area. The area under well irrigation, which was 15% during 1960s, has increased to 26% during 1990s. The decline in well irrigation due to a phenomenal growth in tube well irrigation in the state in the recent years. The tube well irrigation which accounted for 8% of the net area irrigated during 1990s has jumped to 16% of the area irrigated during 1995-96.

2.9 RECENT TRENDS IN CROP LANDUSE.

Jowar: The Major Crop

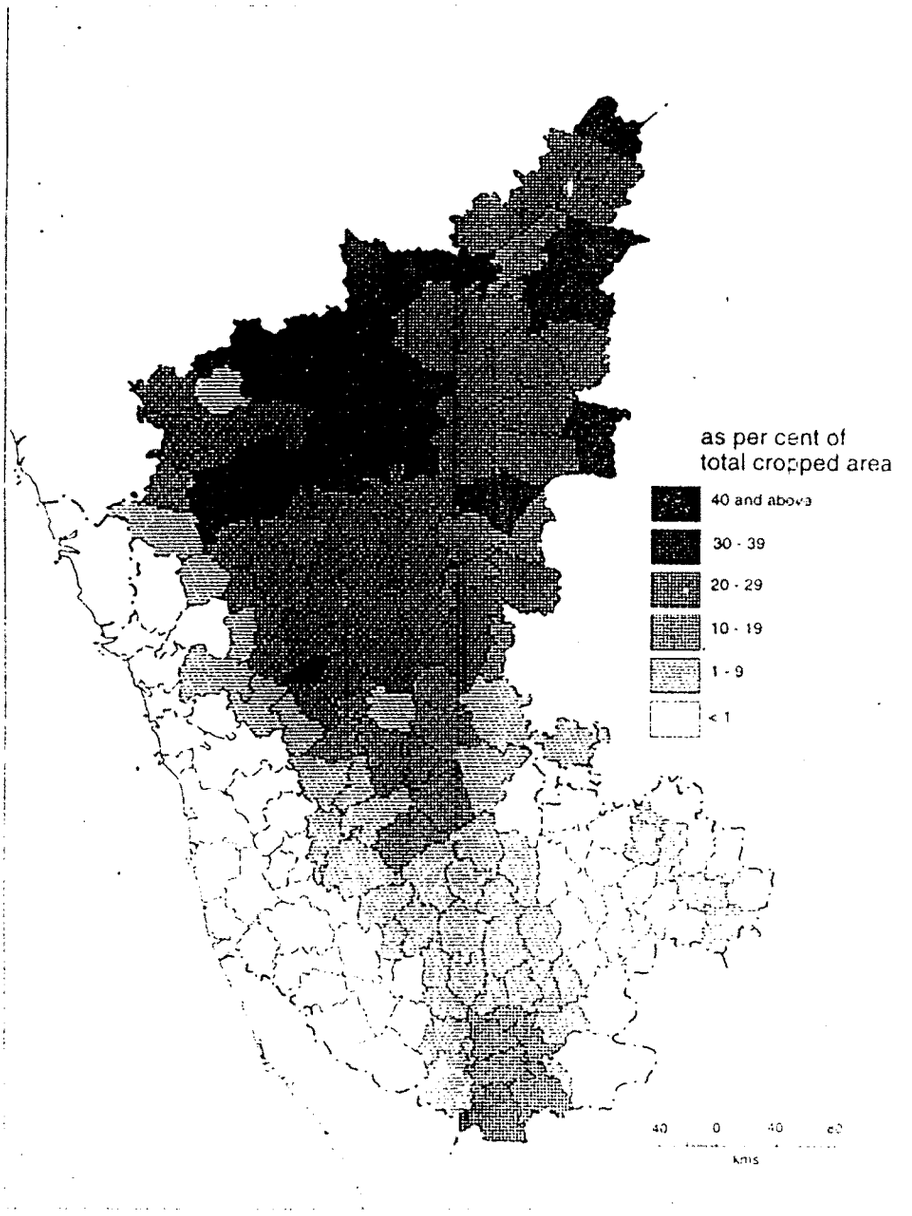
Karnataka has more area under this crop than any other states, except Maharashtra and the crop occupies the first rank in the Karnataka state. But during 1966-90, Jowar area has recorded a decline of about 19 per cent in the 1966-69 as compared to 25 per cent in the period 1987-90.

North Maidan

Within the state, jowar cultivation is spatially concentrated in the North Maidan region (See in map2.2), which has over 90 per cent of the state's total area of this crop. Jowar is the leading crop in as many as 52 taluks of this region and it has a second place in most of the remaining and still a leading cereal crop in almost all. This region's moisture black soils, late Monsoon rains and poor irrigation development render Jowar as a *faut de mieux*.

Almost the entire Jowar crop is raised in rabi season in the deep black soil in Bijapur, Gulbarga and Raichur districts and in the eastern taluks of Belgaum and Dharwad districts. Jowar cultivation is almost equally divided between the rabi and kharif season crops in Bellary district and it is largely a kharif crop in Bidar district and in the areas outside the North Maidan region.

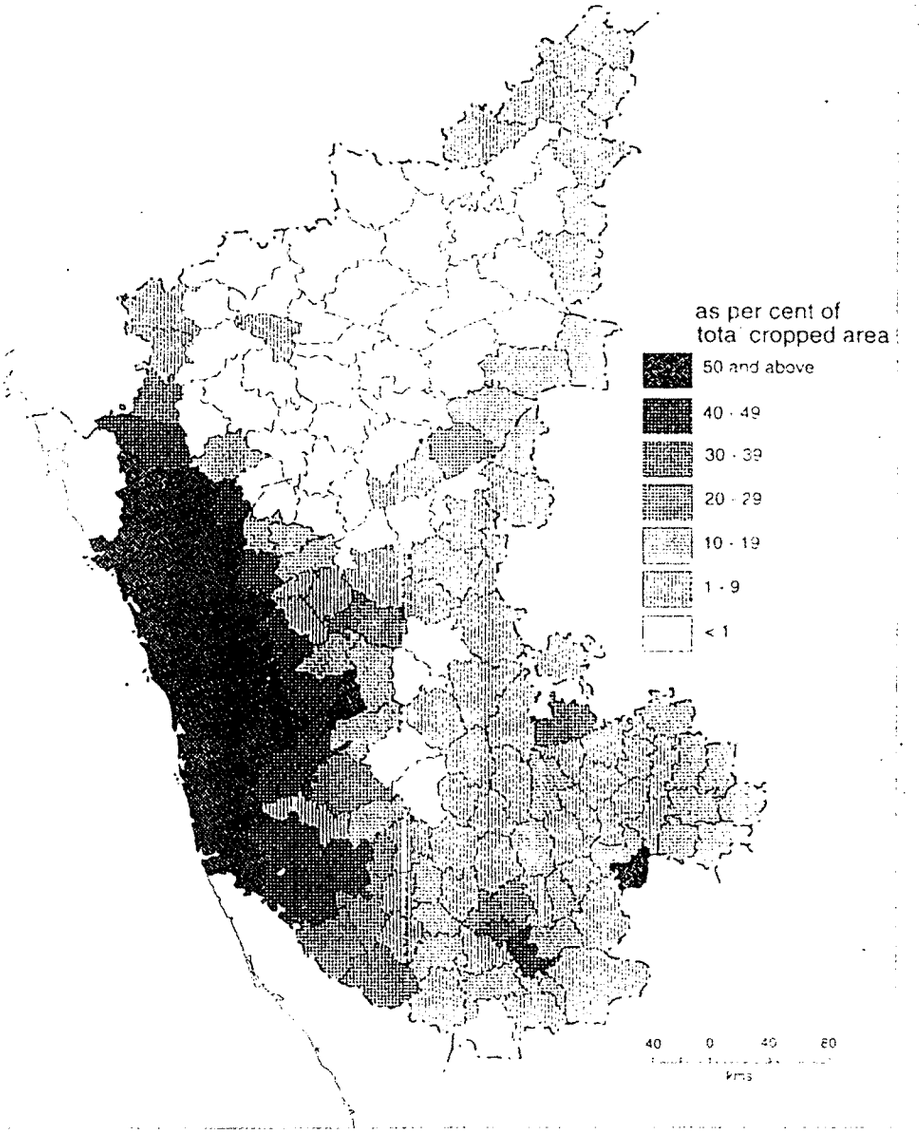
Figure – 2.2
Karnataka: Jowar Cropped Area, 1990



Rice:

Rice crop share in the state's total cropped area has shrunken from 10.9 per cent to 9.58 per cent in the period 1966-69to 1987-90year. However, the crop occupies an important position in Karnataka next only to mower. About 85 per cent of the crop in this state is raised in kharif season, its cultivation is predominant in the high rainfall coastal and Malnad regions and nearly two-thirds of the crop is raised irrigated. Semi-arid climate and lack of irrigation development have thwarted the growth of rice cultivation in the North and South Maidan regions.

Figure – 2.3
Karnataka: Rice Cropped Area, 1990

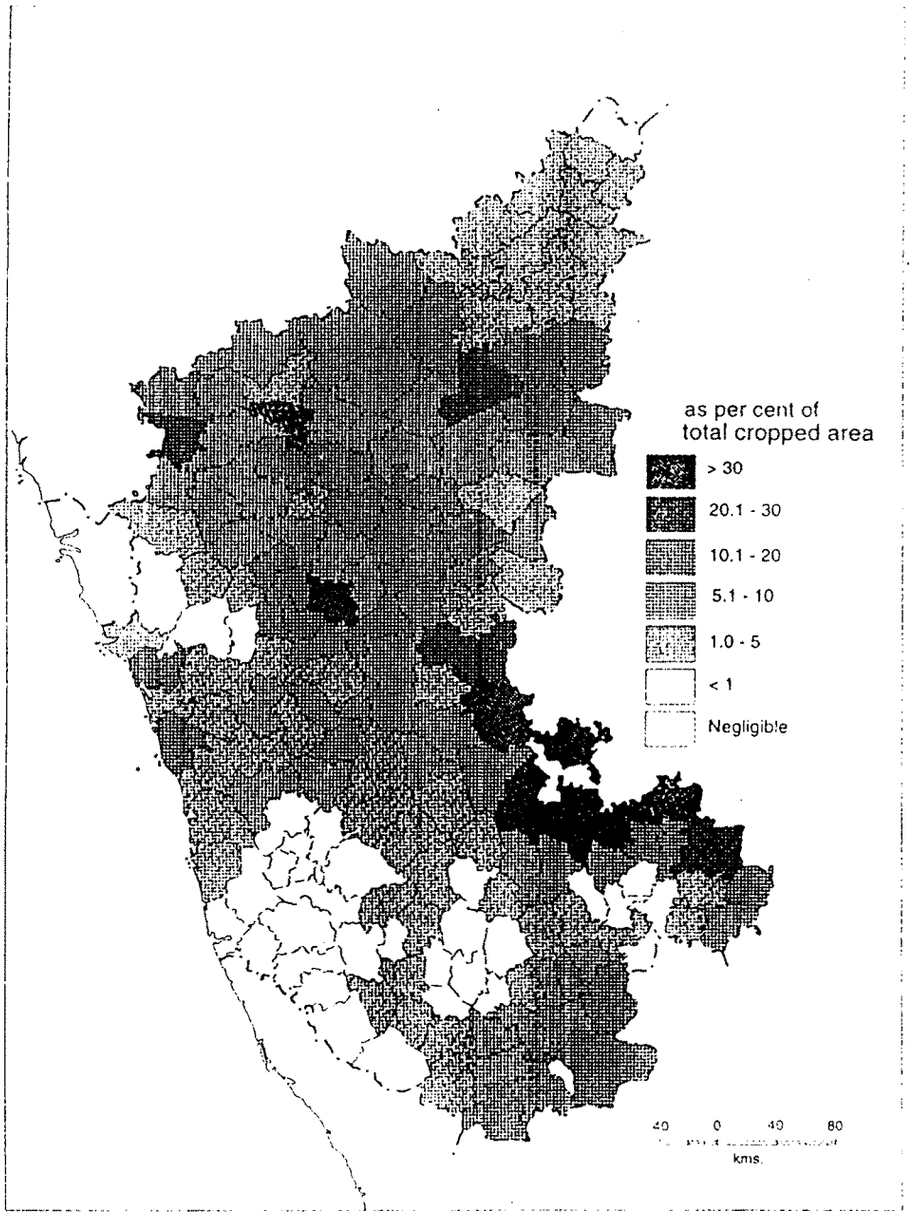


Groundnut:

The groundnut is the most important oilseed crop in Karnataka. It figures prominently in the state's cropping pattern with a third rank and Karnataka's groundnut area (14-15per cent of India's total groundnut area) is next only to that of Gujarat and Andhra Pradesh. Groundnut area in the state has risen marginally from about 9 per cent of TCA in the first triennium to 10 per cent in the last.

Groundnut is raised mainly in the *kharif* season with over 80 per cent of its total area, of which only 7-8 per cent is irrigated. The small *rabi* crop is grown almost entirely irrigated area and it has more than 200 per cent of the yield rate of the unirrigated *kharif* crop. Low yield of the *kharif* crop, particularly in the North Maidan, which has about 60 per cent of the crop's total area, is a major problem facing groundnut cultivation in the state. Presently, Karnataka's yield rate (about 840 kg/ hectare) is 30-40 per cent lower than the level in the neighbouring major groundnut producing states of Maharashtra and Tamil Nadu and 20 per cent less than in Andhra Pradesh and India as a whole.

Figure – 2.4
Karnataka: Groundnut Cropped Area, 1990



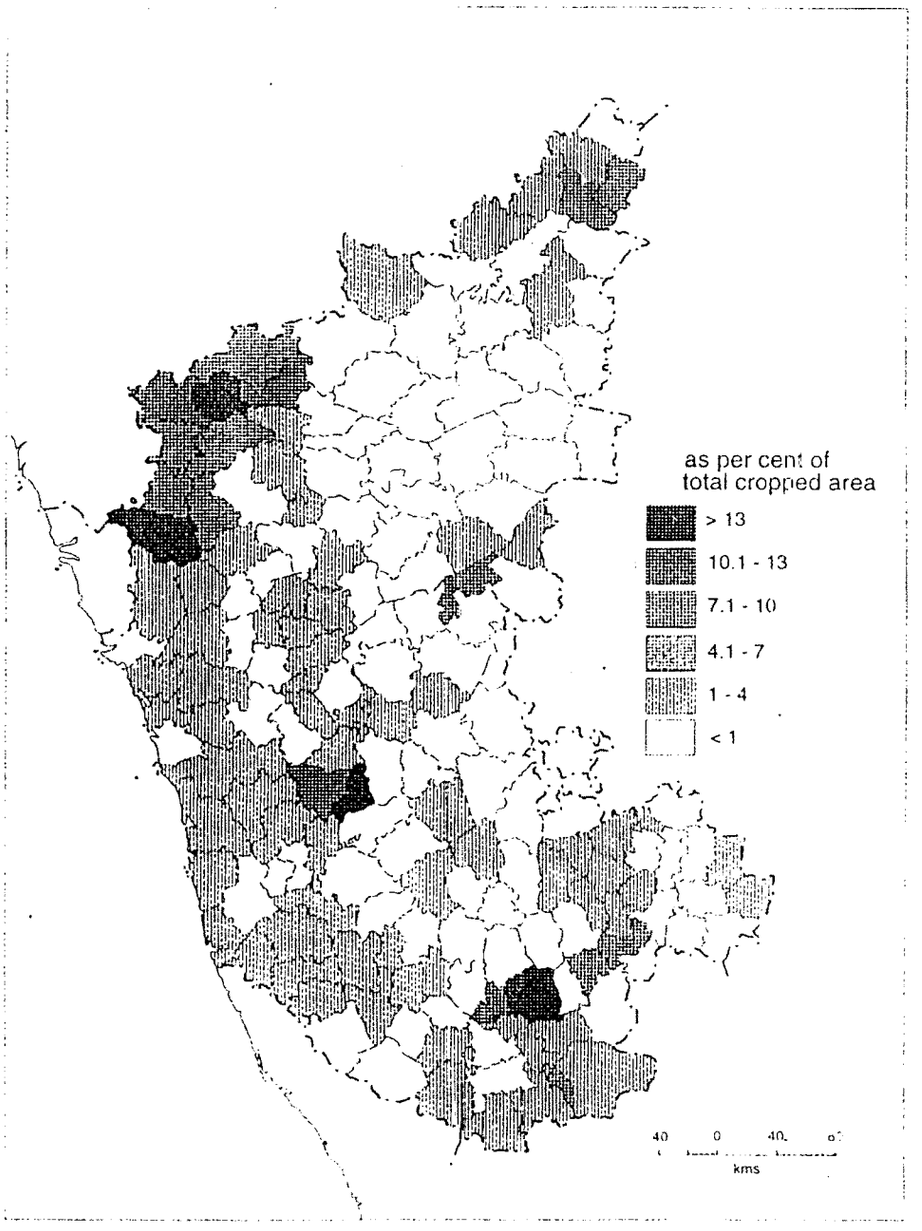
Sugarcane:

Next to Uttar Pradesh and Maharashtra, Karnataka has the third largest area under sugarcane cultivation in the country and its significance enhances further when it is realized that the state has nearly the highest per hectare yield among all states, it being nearly 30 per cent higher than the national average and more than double the yield of Uttar Pradesh. The crop requires enormous amount of irrigation water which has deleterious effect on soil (water logging, salinity and alkalinity), specially in the black soil tracts of the North Maidan and its cultivation is not desirable in view of scarcity of water resources in this region. With less than 2 per cent of total cropped area sugarcane accounts for 10 per cent of the gross irrigated area in the state.

Special Dynamics

Though sugarcane is a widely distributed crop in the state, its area is concentrated in the irrigated tracts of Belgaum, Bijapur, bidar and Bellary districts of the North Maidan; Mandya, Mysore and Chtradurga districts of the South Maidan; and Shimoga district of the Malnad (Fig 2.5). The largest sugarcane concentration zone in the state runs through the northern part of Belgaum and Bijapur districts from Khanapur (Belgaum) to Jamkhandi and Mudhol (Bijapur) in the lift irrigated tracts in the command areas of the Malaprabha and Ghataprabha irrigation projects.

Figure – 2.5
Karnataka: Sugarcane Cropped Area, 1990



2.10 AREA UNDER FOREST

According to the national forest policy, 33 percent of the geographical area of the country and of the states should have forest cover. But Karnataka is hardly having 16 percent of the geographical area under forest. There is virtual stagnation in the area under forest starting from the period of reorganization of the state; the only redeeming feature is that area has not come down. The forest helps to agricultural development in many ways.

Uttara Kannada district, which is the coastal and hilly district, is having 81 percent of its geographical area under forest cover. Kodagu district is having 33 percent followed by Shimoga with 31 percent, Chickamagalur with 28 percent; Dakshina Kannada district has lost some forest cover. Bangalore (rural), Bidar and Chitradurga districts have gained marginally in the forest cover. What is significant is the enormous amount of money spent on a forestation, social forestry and forest plantation has not increased the area under forest cover. It has only prevented the decline during the five- year plan regime. The forest Department has expanded and also the number of personnel has increased.

2.11 CONCLUSIONS:

In Karnataka State, various soil groups are in different regions. The state grows all types of crops. Karnataka has more area under Jowar crop than any other crops. Also rice, groundnut, sugarcane are the prominent crops of Karnataka.

After independence, up to the year 2000 the total irrigation potential of Karnataka was 36,22,92 hectares. Due to irrigation facilities, the use of fertilizers,improved seeds,etc. is increasing.

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