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**STUDIES ON VILLAGE ECOSYSTEMS OF  
NORTH-KANARA DISTRICT OF  
KARNATAKA**

By

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## Introduction:

A thorough understanding of the rural conditions and needs of the rural people is essential from the point of view of rural development. The rural needs are inter-related in a number of ways and this inter-play is governed by the resources of land, energy, water, livestock and the human beings themselves. The present study on the needs of rural section<sup>ors</sup> with particular emphasis on food, fuel and fodder is an attempt to understand above cited relationships in four rural areas, two each in both up and down ghat areas of the Western Ghat ecosystem of peninsular India. This study is significant from the point of view of understanding the problems of the rural sectors indepth, and proper management and planning of these sectors in the area under study.

This study was initiated in August, 1983; and only some base line informations have been collected so far. The following is a brief account of some of the important observations.

### The study area:

This work was done in four villages of the North Kanara district (13.55 - 15.25°N, 74.05 - 74.55°E) of Karnataka, situated at an elevation range of

0-1025 mts. in the wet tract of the Western Ghat ecosystem of the Peninsular India. Two villages each in both up ghat (Bengle and Bhairumbe) and down ghat (Unchagi and Masur) areas were selected to get a fairly good idea on the village organization and functioning pattern of the entire area under study. While Bengle represents the cross-section of a typical village of the wet-tract of the up-ghat area, Bhairumbe represents that in the same area with more advanced kinds of land use practices. Likewise, Unchagi represents the situations of a typical village of the down ghat area and the other village Masur represents the functioning of a typical coastal village in the area.

This area experiences an annual average rainfall of 2500 mm, most of which comes during June and July months. Winter is cold and dry with occasional showers. Topography is undulating with an average slope angle of 10-20°. Soil is lateritic and is acidic with an average pH of 5 - 5.2. The soil is porous in nature, allows heavy leaching and this is poor in nutrients.

#### Methods of Study:

After identifying the village boundary using the same marked by the state revenue department, some 20%

of the total number of households representing cross-sections of each of the various classes (small, medium and large land holdings, landless labourer, skilled groups specialised in various works like carpentry, blacksmith or goldsmithship, bamboo works, fishing, etc) were selected in each of these villages for the sample study. In this study, a census approach has been adopted in which all the households of each of the sample, their domestic animals, cultivated lands, etc. were covered and studied thoroughly.

It is worth mentioning <sup>e</sup> here that, responses to various questions were supplemented with field testings to circumvent the problems of recall and seasonality.

Estimations of the actual amount of food/fuel and building material consumed, and their source of production were done on the basis of regular observations in the village. Firewood gathered /consumed by each of the households in the form of headloads of different fuel type was recorded over a period of time and these were separately converted to their respective weight in Kgs. by using the mean weight of a headload of each type. For the calculations of actual amount of food

consumed by the villagers, the daily food rations in each of the households were weighed.

Calculations of the feed/fodder consumed by the livestock are also based on the daily rations given to each of the animal category by each of the households. But, for the information on browsing by the cattle population, regular observations in the pasture lands of the villages were made at regular intervals. Total milk and dung production by each category of animals are on the basis of daily milk/dung production in each of the households.

Response to many questions are not complete, hence whatever little information is collected so far has been presented below.

#### Results and Discussion:

The above all structure of the village ecosystems in both up and down ghat ecosystems of the Western ghat is given in Table - 1. Of the total human population, 23%, 24% and 21% respectively in Unchagi, Masur and Bhairumbe fall in the category of children less than 6 years old and individual more than 60 years old. Thus 77-79% people are capable of contributing to the man power in these

villages. While about 50% of the female cattles are milk producing ones in the down ghat villages, only 38% are found milk producing in the up ghat village. In fact, in the up ghat village, more number of cows are found dry. Bullocks are used in these villages for ploughing and buffaloes<sup>e</sup> are for carting purposes.

Of the total area under cultivation, 75%, 81% and 52% are under rice cultivation in Unchagi, Masur and Dhairumbe respectively. In the upghat area about 50% of the total area under cultivation is under areca cultivation. Thus, while in the up ghat more emphasis is given by the farmer on areca cultivation, rice is grown as the major crop in the villages of the down ghat area.

An analysis of the ratio of area under areca cultivation to the same under betta land (Table-1) shows that it is 1:5 and 1:2 respectively in the up-ghat and down ghat villages. This finding clearly indicates that more of forest land is available in the up ghat compared to the down ghat area for the management of the areca gardens which could be possibly explained as due to the greater degree of forest denudation in the down ghat area.

An analysis of the household sizes reveals that the average family size in these villages is of 5 -6 members consisting of 3-4 adult and 2-3 children.

Classification of households according to their landholdings shows that on an average of 25% and 43% are land less in Unchagi and Masur respectively. The land holdings are smaller in the down ghat villages compared to the villages situated in the up ghat area.

The community structure at the Unchagi village is shown in Table -2. This village is predominantly inhabited by the Gowda community constituting 61% of the total households, the Haviyak Brahmin forms the next important group comprising of about 34% of the total. In addition, in Unchagi the total population of 361 is serviced by one goldsmith and two blacksmiths. An analysis of the community structure at Masur and Bhairumbe village, which is not shown in the table, reveals that while Bhairumbe is dominated by the Havyak community, Ambigar and Patgar whose main job is fishing and farming respectively are dominant in Masur.

Table 3 shows the varieties of building material used for house and cowshed construction at Unchagi

village. Locally available stone along with mud is used as the main building material in majority of the houses. While 65% of houses are made up of mud + stone, 30% are of mud alone and only 5% are stone built ones. This pattern holds good in case of Masur as well as Bhairumbe. While at Unchagi tile, hay<sup>and</sup> coconut leaves are used in equal proportion for roof construction of the houses, about 40% of the cowshed roof are made up of tiles only (Table - 4). But in Masur in 55%, 35% and 10% of the houses tile, coconut leaves and hay is used respectively for making the roof. When the various types of timber used for house construction was taken into consideration (Table-5), coconut timber formed the important one followed by bamboo and areca in the villages of down ghat area. Some 30% of the households used coconut timber for construction work while 18-20% households are dependent on bamboo and areca wood and the rest 30% of the household use mixed kind of timber for this purpose.

Rice<sup>and</sup> areca formed the important crop in all these villages of both up and down ghat area. Sugarcane and blackgram are also cultivated in the rice fields after the harvesting of the first crop of rice, but in lesser quantities. While only pepper with little

amount of banana and beetle leaf here and there is grown in the areca gardens along with the areca trees in the villages of the down ghat areas, a varieties of crop species like pepper, cardamom, cocoa, banana, betel leaf, etc. are grown along with areca in the up ghat villages. Coconut is grown either near the housing or on the border of the boundaries of the rice/areca fields. The pattern of crop yield at Unchagi village is shown in Table-6. The yield of rice per <sup>hectare</sup> acre in the villages of down ghat is found close to the national average and that <sup>of</sup> Bhairumbe is almost double of this value. This could be explained as due to the better physical conditions of the soil, better land management practices and use of more manure during the cultivation. Yield from the other crops are reasonably good.

An average of 5-6 hours is spent per family per day for cooking in all these villages. At Unchagi, majority of the households use either aluminium or earthen pots for cooking purpose and only 11, 10 and 7% people use respectively brass, copper and steel vessel (Table -7). Almost a similar trend is noticed in other villages under study.

Dung cake is not used as fuel for cooking in all these villages. Of the total amount of fuel wood of 742 kg consumed per day at Unchagi, 60% is accounted for cooking and rest 40% for heating water for bath (Table - 8). While wood and dry twig accounted for 50% and 47% respectively of the total fuel wood used for cooking, dry twigs and coconut by-products formed about 51% and 23% respectively of the total fuel wood need for bathing, wood constitute only 20% in this case. On an average, 1.3 and 1.0 kg of fuel wood is needed per person per day respectively for cooking and hot water for bath at Unchagi. The fuel wood consumption pattern at Masur is found close to that of Unchagi while that of Bhairumbe village is slightly more.

Table - 9 shows the quantity of various feed, fodder and plant biomass used for various purposes by the villagers at Unchagi. Of the total green fodder requirement of 16 kg/day/household, 60% comes from the minor forests situated near the village. So also 80% of the total plant biomass need of the villagers (for various purposes like green ~~mass-using~~ <sup>manuring</sup>, mulching, cowshed construction etc.) comes from these minor forests owned by the Government. Dry straw is solely produced from

within the rice field of each of the households, while needs of other feed like concentrate, bran, husk, etc. are purchased from the local village market.

Human pressure on the minor forests in terms of the amount of fuel, fodder and plant biomass collected for various use is shown in Table -10. Of the total pressure, 53%, 36% and 11% is accounted due to green manure preparation, fuel and fodder needs respectively.

The total dung production at Unchagi is found close to Masur, while that at Bhairumbe was slightly higher. The amount of dung produced at each of these villages is just sufficient to meet the manure requirement. More detail study is required to find out the potential of biogas production in these villages.

Table - 11 presents the pattern of food consumption at Unchagi. At Masur and Bhairumbe the pattern is found almost similar. In Unchagi, of the total per capita milk production of 0.12 kg/day, only 46% is used as food within the village and the rest is sold in the market which adds up the rural economy.

**Concluding Remarks:**

Many lessons are drawn from the mistakes committed in this preliminary survey work, which have been incorporated to modify the previous questionnaire to the final version. Complete response to this new set of questionnaire will take atleast another couple of years, and thus it is hoped that this study on completion would generate<sup>t</sup> much information of value on the needs of the rural sections<sup>ors</sup> of the North Kanara district of Karnataka and would help us in adoption of more realistic rural planning in the area under study.

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Table - 1

## Structure of the Village Ecosystem

	Name of the village		
	Unchagi	Masur	Bhairumbe
No. of adult male	154	44	39
No. of adult female	103	44	43
No. of children	103	28	18
Total human population	360	116	100
No. of cows	66 (33)	30 (14)	44 (13)
No. of calf	43	29	14
No. of she-buffalo	25 (15)	11 (5)	17 (10)
No. of calf	10	10	1
No. of bullock	69	8	11
No. of buffalo	8	-	6
Total area under cultivation (ha)	29.2	8.3	12.7
Total betta land (ha)	14.5	3.0	34.8

Values within the parentheses refer to the number of milking cows/shebuffalows<sup>e</sup>. Dash indicate absence of the item.

Table - 2

## Community Structure in Unchanggi

Community type	No. of households	% of <sup>total</sup> type
Havyak	21	34.4
Gowda	37	60.7
Blacksmith	2	3.3
Goldsmith	1	1.6

Table - 3

## Building material used for house/cowshed construction at Unchagi

Type of building material	No. of households	
	house	cowshed
Mud	18	19
Mud + stone	39	31
Stone	3	1

Table - 4

Building material used in roof construction of the house/cowshed at Unchagi.

Type of building material	No. of households	
	house	cowshed
Tile	38	25
Hay	33	14
Coconut leaves	32	16
Areca tree product	3	11
Corrograted sheet	-	1

Table - 5

Timber used for construction at Unchagi

Timber type	No. of households	Percentage of total
Coconut	43	28.10
Bamboo	31	20.26
Areca	29	18.95
Teak	1	0.65
Mixed	49	32.03

Table - 6  
Crop yield (Kg) at Unchagi

Crop type	Crop yield (Kg)	
	Total/year	Kg/ha/year
Rice	25350	1156
Areca	20645	3157
Sugarcane	3290	4780
Pepper	67	946
Coconut (No./No. per family)	18400	2673

Table - 7  
Kind of vessels used for cooking  
at Unchagi

Vessels type	No. of households	Percentage of total
Aluminium	40	37
Brass	12	11
Steel	7	7
Copper	11	10
Earthern pot	38	35

Table - 8  
 Type and quantity (Kg) of fuel wood used for  
 cooking and bathing at Unchagi

Fuel type	Quantity (Kg)/day		Total
	cooking	bathing	
Wood	223.5	49.0	272.5
Shrub and dry twig	207.0	151.5	358.5
Coconut by- product	12.5	68.5	81.0
Areca byproduct	3.3	16.75	20.0
Miscellaneous	-	9.75	9.75
Total	446.3	295.5	741.75

Table 9  
 Quantity (Kg) of feed/fodder and plant biomass  
 used for various purposes at Unchagi

Item	Quantity/day/family
Green fodder	16.0
Drystraw	10.7
Brazn	1.6
Concentrate	4.1
Husk	1.6
Biomass for mulching/ manuring/construction work	45.7

centage  
total

Table 10

Human pressure on the government land  
at Unchagi

Category	Quantity(mt/Yr) removed
Fuelwood	233.6
Fodder	69.7
Biomass for green manuring	341.6
Total	645

Table - 11

Per capita food consumption  
at Unchagi

Food item	Quantity(Kg)/day/person
Rice	0.40
Jaggery	0.04
Oil	0.008
Milk	0.055

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