Role of Minor Forest Produce in Tribal Life and Culture

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P R E F A C E

The forests in the tribal tract of Gujarat represent one of the richest emporia of ethno-botanical wealth; the tribals living amidst forests have been using a variety of plants for various purposes. But there has been no systematic research on the properties of the plants and their place in the economy and culture of the tribals. In this study an attempt has been made to bring to light numerous little known or also totally unknown uses of plant life by the tribals of this State.

Shri S. A. Shah, the then Managing Director of the Gujarat State Forest Development Corporation, had been keenly interested in this study and he very much wanted to have an anthropological investigation of this subject. With this view he used to visit our Institute in order to explore the possibilities of undertaking this study by us. Ultimately this study grew out of our discussion with him. I am highly grateful to him for inspiring us to take up this study and for the financial support which he made available to our Institute through the Gujarat State Forest Development Corporation.

I owe a deep sense of gratitude to Shri M. N. Vaishnav, the former Managing Director of the Corporation, who had taken the trouble to go through the earlier draft. Shri S.A.

Shah had also gone through the earlier draft. The valueable critical comments made by them enabled me to rearrange the material and eventually in rewriting this report.

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I am also extremely grateful to Shri K. Paparao, the then Manager (Operations & Marketing) of the Corporation, who had helped me much in preparing some of the chapters of this report when I started revising the first draft.

Close at home I am deeply grateful to Prof.T.B.Naik, the Director of this Institute who gave guidance to me from time to time in conducting this study. Several other colleagues at the Institute have given their help to me. They deserve my thanks.

A word about the performance of the Research Investigators who did the main field work in the different tribal areas. The nature of the field work was such which required them to stay in isolated and remote tribal villages. In the true tradition of anthropological research, they did stay in such villages, altogether for more than six months and with utmost care collected the material. Even to reach the tribal villages, they had to walk 7-10 kms. in several

cases. If this study is of any worth, this is mainly because of the painstaking field work carried out by this team consisting of Sarva Shri Champaklal Choudhary, Kantilal Makwana and Chandrakant Patel.

R. B. Lal
Project-in-charge

C O N T E N T S

CHAPTER 1

I N T R O D U C T I O N

Man's dependence on forest for the essentials of his existence has been of paramount importance since the human race began. Thousands of years ago all humans lived by hunting and gathering in the forests rather than growing their own food. Primitive man probably had few needs, other than food and a little shelter. Civilization; however, has brought with it an ever-increasing complexity and has increased man's requirements to an amazing degree. This has incidentally increased man's dependence on forest. The three great necessities of life - food, shelter and clothing and a last of other useful products are still supplied in great part by the forests. The production and distribution of forest products have always a profound influence on the economic and social life of the mankind everywhere but more so of tribals. The maintenance of an adequate supply of food and raw materials for the use in a variety of ways, essential for the existence of tribals depend very much on forest itself. Thus, the relationship between the forest and the mankind has been traditionally a unique one.

Due to the great dependence of mankind on the forests, the forests are said to be the "green gold" of a country, the store-house of nature's wealth. The way forest shaped the

growth and stability of agriculture, starting from shifting cultivation, it can easily be considered as the guardian and foster mother of agriculture. The indisputable importance externalities of the forest, notably its environmental value for soil and water conservation and soil fertility, are extremely significant for agricultural production. The effects of forests in controlling floods and famines have an important bearing on the economic activities of a people. Thus, apart from supply of timber and variety of timber forest products which the forests have been giving to mankind its direct contribution in improving the quality of life is undoubtedly supreme. All these benefits may not be apparently realized when one looks into the way of life and the socio-economic activities of people living in urban and even rural setting where forest type habitat is absent. But if one observes the life of the tribals living in an environment dominated by forest, the extremely significant role of forest for human survival becomes crystal clear.

Since the great importance of forests is not visualized by an average person of our society, we go on encroaching on the vegetation of the forests by clearing the forests for our immediate but short-sighted gains. The result is that everywhere desertification is growing apace. In this process of destruction of forests, we are also distroying the ways of life of our tribal people, in the shaping and nurturing of which forest has been instrumental. The tribal like the forest itself

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are vulnerable. With the gradual disappearance of forests, the tribals are undergoing increasingly severe ecological stress.

Tribals and forests have remained linked with each other since time immemorial. One who is concerned with tribal people very well knows this fact. Owing to the symbiotic relationship of the tribals with forest, the former are also referred to by the generic term 'Vanya Jati'. Looking into the historical background of the tribal societies, their eco-system frame-work clearly indicates the effectiveness of forest environment with respect to their number, density, technology, social organization, perceptual ideology and interactions with other human groups. On a close observation of their social, economic and religious life, the structural and functional inter-relations of tribals and forests is clearly recognizable. Like soil and water the forests have always been a significant resource for them. In an important sense, the forest environment as an ecological factor has been vital in the creation of a particular type of socio-cultural order amongst the different tribal societies.

Majority of the tribals in our country had been leading completely a forest oriented life in the past. Forest provided them food products, including wild animals for protein, gave them wood for house construction, musical instruments and many other uses and spread before them unlimited sources of herbs and medicinal plants. They have been always engaged in gathering forest produces and hunting wild game for their subsistence. They have also been collecting and exchanging minor

forest produces for grains or money. Due to these activities forest has occupied a central position in the socio-economic life of the tribals.

The tribals living in forests have totally identified themselves with forests. They have become so much used to forests that they do not feel at home away from forestry environment. While for food, shelter and a little cash income their dependence on forests is direct, they also depend very much on forests for satisfaction of their social and religious needs. It is no exaggeration to say that forests have influenced all aspects of their ways of life.

Looking more specifically at material culture and hunting and fathering techniques, there appears to have been a basic range of equipment common to many tribal groups in the country. This included bow and arrow, throwing sticks, brush fence traps and several other implements. However, the pattern of activities of any group and their decisions to employ particular hunting and gathering techniques, can not be fully comprehended without viewing them against the background of the habitat. But, invariably, the most important weapons and implements in daily use were made of wood and bamboo.

Due to the great dependence on forests, the way of life of several tribal groups in the country seems to have originated, developed and flourished in the forest setting. A large number of tamboo, restrictions and avoidances observed by them helped

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in maintaining the ecological balance in terms of numerical strength of various species of animals, plants and other products of the forests. Thus, the forest economy of the tribals and their method of exploitation, when seen against the background of their beliefs and rituals, have been sound in so far they usually served their immediate needs and safeguarded our interest in the aforests.

Even to-day, when most of the tribal communities are no more totally dependent on hunting or gathering as a result of becoming settled agriculturists, their love for forests continues. Today also, their very habitat and economy decidedly indicate that forests occupy a prominent position in their life. The crucial role of forests in tribal economy is evident from the fact that the tribal areas are coterminous with the hilly and forested region of our state. It has been rightly observed - "there may be forests without tribals but there would hardly be any tribal community without a forest".

The role of forests, particularly of minor forest products, is one of the most widely and frequently discussed subject. While almost all agree on a national policy in regard to forests vis-a-vis tribal development, they differ substantially in the patterns and methods of their implementation. This is mainly because of the lack of proper understanding and a clear, specific socio-economic picture regarding the role of minor forest produces in tribals life.

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While adapting to the forest habitat and the resources it offered, the tribal communities, to a great extent, became dependent upon the collection of minor forest produces for their livelihood, rather for their very survival. Although the conditions have now changed much, the influence of forests, so far as collection and use of minor forest produces are concerned, continues to be deep in the life of the tribal people living in the forest habitat. They still look to the forest as a dependable source of livelihood and it certainly helps them in overcoming the economic crisis during bon reason of agriculture. Due to this dependence as well as the age-long association with the forest habitat, most of their economic activities still revolve round forests. But the exact nature as well as correct knowledge about the share of minor forest produces in their struggle for existence is not known. How much do the tribals remain dependent upon the collection of minor forest produces ? What is the exact and specific contribution of minor forest produces in socio-economic life of the tribals ? In what ways do the important part of their economic activities ? We all have rather vague and speculative notion about the significant role of the gathering economy of the various tribal communities. About the wide rengo of minor forest produces obtained from the forests by tribals, there is no accurate information collected through a scientific study. Our knowledge is rather limited, sketching and subjective. But the tribals, by virtue of living in the close association with forests since ages have acquired a sound knowledge about the

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uses of several of the minor forest produces. As the structure of the tribal societies have been in harmony with the forest environment, they have learnt, in course of time, the proper use of the wide variety of minor forest produces in their economic purquits, in their pharmacopocia and in their socio-religions ceremonies. Of late, it is being observed that due to the inslaught of modernization, coupled with the absence of sound direction in the policy of the forest via-avis tribal, the tribal's knowledge and skills regarding the use of minor forest produces is on the wane. Due to inadequate understanding and reppert between tribals and officials, the latter could have no enduring respect for the forest skills of the former regarding knowledge and use of minor forest produces. The fact that the man of the forests requires as much care and protection as forests itself has not been firmly established in minds. On account of this, the tribal's knowledge and skills about the use of a variety of minor forest produces have not been sufficiently utilized as yet. For instance, their knowledge of herbal medicines is likely to get buried with the passing away of the tribals of older generation. Herbal medicines obtained from the forests by the tribals was the chief source for curing ailments and in course of time several persons from the different tribal communities developed admirable expertise in recognizing, gathering and using medicinal herbs. Here again, we are in complete darkness about the correct knowledge about these medicinal herbs obtained from the forests and in what specific manner the tribal, have been putting them to use.

Whatever knowledge is with us is all very qualitative and sketchy.

As has been widely accepted, the goal of economic development of tribals is to bring economic opportunities to them in their own habitat and also to develop the indigenous expertise to bring improvement in their quality of life. In the forest-rich regions, forest-oriented tribal development programmes should get perference, in which other economic activities could occupy a secondary position. The basic needs of the economy of the tribals living in the forest habitat should be provided on a priority basis as part of all forestry plans, whether conventional, intensive or commercial. Keeping in tune with these goals, the Gujarat Government established Gujarat Forest Development Corporation through which an ambitious programme of collecting minor forest produces through the tribals has been put to operation. The central theme in this programme is to enable the tribals to get adequate reimbursement for the minor forest produces which they collect, which in turn, will certainly improve their earnings. The activities of the corporation are certainly in the right direction to restore the prime position of forests in the economic life of the tribals living in the forest habitat.

At this stage, it is all the more crucial to understand correctly and to have an accurate group of the role of minor forest produce in the socio-economic life of the tribals.

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A detailed knowledge about the wide variety of minor forest produces collected by different tribals in different areas and putting to different uses will help tapping of hitherto untapped resources about which the tribals have full knowledge. Additionally, in the light of the knowledge required about the traditional practices of tribals, it would enable us to motivate encourage and make them enthusiastic towards intensive collection of minor forest produces. In a practical sense, such knowledge will be of immense help to the corporation in launching new schemes, in organizing the collection in sound ways, in developing the forest by planting and growing such plants and trees whose products will fetch more rewarding economic gains for the tribals and in getting better participation from the tribals in the management of the collection. Needless to say, it will also help in the development of the forests on right lines for which we all are more concerned now than ever before. Such knowledge and insight will also be useful to the development planners and workers because it will give them not only a peretrating view in to the working of tribal economy in a Naga a forest - setting but it will also show how the forest products can be used for devising workable and viable schemes for tribal development. The knowledge acquired about the medicinal herbs will help in promoting research in ayurvedic medicines. It will also restore the faith of the tribals in their own pharmacopocia.

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In view of such an important significance of forests with respect to tribals, no serious discussion of socio-economic development for the tribals can fail to give due attention to the fact that for a large number of these people, forests have been representing the very basis of their existence. Thus, it hardly needs any emphasis that for achieving the goals of tribal development, a correct policy for the management of the forests with special reference to the collection of minor forest produces is of vital importance.

In order to have a clear, specific and realistic picture regarding the wide variety of minor forest produces found in the forests of the tribal areas of Gujarat State and their role in sustaining the tribal population, particularly in crisis situation it was decided to collect scientific and detailed information through a well planned study. The following broad objectives were kept in view.

01 To gather as far as possible a complete knowledge about the various minor forest produces which the tribals in Gujarat State have been collecting and using in a number of ways and thereby to assess the role of minor forest produces in their socio-economic life.

02 To get an accurate insight and knowledge about the traditional practices of gathering minor forest produces i.e. how these are collected, from where collected, when gathered and what are the techniques employed in the collection ?

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03 To find out who in the family gets involved, and to what extent, in the collection, including the sex-wise division of labour for this work,

04 To find out the phenomena of rise or decline in the role of minor forest produces and the factors responsible for the rise or decline;

05 To prepare a list of medicinal herbal plants which the tribals use;

06 To gain an insight into the functioning of Gujarat State Forest Development Corporation as far as their drive towards collection of minor forest produces through tribals in concerned and thereby to suggest ways and means for smooth, intensive and efficient collection.

As Gujarat State has a large population of tribals living in the forest tract of the state, it was decided to cover five areas for the purpose of this study. There are as are : (1) Dangs, (2) Dharampur, in Valsad district, (3) Rajpipla in Bharuch district, (4) Chhotaudepur in Vadodara district and (5) Ratanmal in Panchmahal district. All these regions are rich in forests and the tribals living there are living in a forest environment. From each of the regions, two or three villages had been selected for making an intensive study. In the selection of the villages, care was taken to select such villages which were either well under forests or quite adjacent to them.

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In the selection of the villages, due consultations were arranged with the local officials of the forest department as well as of the Project Offices of the Gujarat State Forest Development Corporation in the respective regions. Due care had also been taken to select such villages by which the major tribes of the area could be covered in the study.

Altogether 13 villages from the different tribal regions of the state were selected. The number of tribal households contacted for collecting data from these 13 villages was 582. It was decided to cover all the households of the central or biggest 'falia' (hamlet) of the selected villages. However, the minimum average from one village was around 25 households. Where needed, selection of the households (in a few selected villages) was done on a random basis.

The number of house-holds selected from each of the tribal regions covered under this study is given below :-

TABLE 1

STATEMENT REGARDING THE TRIBAL REGIONS, THE SELECTED VILLAGES AND THE NUMBER OF HOUSEHOLDS

Sr. No.	Forest Regions	Taluka	District	Village selected	Total number of house-holds covered	Total No. of house-holds covered from the region
01	Dangs	"	Dangs	1 Malin 2 Taklipada 3 Sulenal	70 71	203
02	Dharampur	Dharampur	Valsad	1 Mani 2 Bawanvel 3 Oundia	53 25 25	103
03	Rajpipla	Sagbara Dediapada	Dharuch "	1 Chopadvav 2 Gangapur	40 48	88
04	Chhotaudepur	Chotaudepur	Baroda	1 Bedvi 2 Kavdi 3 Chilia-want	25 56 24	105
05	Ratanmal	Limkheda	P.Mahal	1 Panam 2 Bhindol	54 29	83
			GRAND TOTAL			582

All these tribal villages are surrounded by forests. There is a pancity of cultivable land in nearly all the villages. Apart from this, the land being rocky in nature, the facility is quite low. Except one or two villages, all lack facilities for irrigation. Although the tribals inhabiting these villages are settled agriculturists, they practice agriculture on the traditional lines. By and large, they have a poor economic base.

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For collecting the data, both the survey type approach and and techniques usually employed for intensive studies in anthropological research were applied. A comprehensive schedule had been constructed for collecting quantitative data. This schedule was canvassed to all the households covered in the selected villages. In nearly all cases information for the scheduled was obtained by interviewing the head of the selected households. Apart from this, for making an in-depth study an intensive approach using the participant observation and unstructured interview techniques had also been applied to collect qualitative data regarding the socio-economic life of the tribal groups and types of role of minor forest produces in these aspects of their life. For the unstructured or informal interviews, knowledgale key informants had been selected from each village. The Research workers stayed right in the selected villages with a tribal family during the period of field work. Due to this they have been able to establish a reasonebly good rapport with the tribals of the village which helped in collecting authentic data for this study throughthe above mentioned two approaches.

Detailed discussions with both senior as well as field level officials of the Corporation were also held to collect material regarding the programmes being implemented by the Corporation for bringing improvement in the economic life of the tribals in this state. Information regarding the extent of improvement brought about the Corporation, which is an initiating as well as executive body, in the development and marketing of minor forests produces

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collected by the tribals was gathered through these discussions.

In the forest habitat of the region covered in this study several tribal groups are settled since centures. The tribals which have been covered in this study are as follows.

REGION	TRIBES
1 Dangs	- Bhils, Kounknas, Warlies, and Naikes
2 Kharampur	- Warlis, Kaukmes, Naikes and Kolghas
3 Rajpipla	- Vasave Bhils, Dhankes and Bhils
4 Chhotaudepur	- Rathwas, Bhils and Naikas
5 Ravanmal	- Bhils

Although there is a great deal of socio-ecultural diversity between the different tribal groups living in different geogru-phical regions, there is a lot of similarity between different tribal groups living in one geographical area, in particular in relation to adaptation to the conditions of their existence is concerned. Apart from the individual historical and cultural background, most of these groups of different cultural background share the common features in the means they have devised to solve the problem of subsistence posed by their physical environment. There is not much contrast in the basic economy of the people of different groups. Although it is true that in competition between the groups of differing cultural background over access to the same resources, certain groups have been able to raise their level of living due primarily to their better adaptability to

other societies of neighbourhood. But this is altogether a different theme with which we have hardly much concern in this study. So far, our main concern relates to the intimate relation with the given and take of nature and about the way the problem of existence has been solved by them by adapting to the forest environment. The life of different groups in one physical environment varies but little in its salient feature. The economic pattern to be found within groups engaged in collecting minor forest produces i.e. among food gatherers is the focus of our study which of course does not mean that the tribal groups which have been covered in this study hive only on this single and exclusive economic resource. In fact, they have, as we shall see, a combination of different economies, in which cultivation assumes the position of number one. But after taking to cultivation they have not abandoned the collecting economy which still plays a significant role in their socio-economic life.

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CHAPTER - 2

Forest in Gujarat

Only a century ago, the forests extended over most of the areas in the State. Today, 9.17 percent of the total geographical area of the State is covered with forests of various types. Altogether, the forests extend over an area of 17,872 Sq. Kms. in the State. 60% of this forest area (10910 Sq.Kms.) is located in the tribal regions of the State and abouttt 18% of the total geographical area of the entire tribal region in the State is covered by forests.

Before the British period, a large number of people, who were uprooted due to the Muslim and Maratha invasion, sought refuge in the forests which they cleared for settling down. TheMuslim and Maratha rulers were not having any special interest in the conservation of forests. They cleared them either for strategic reasons or even for other purposes. With the fall of Mughal empire, the area was divided into a number of small Kingdoms that were frequently fighting among themselves, as a result of which many people abandoned cultivation in disturbed areas and resorted to remote forest areas. This led to the clerance of more forest areas for agriculture. Shifting cultivation practiced by the Adivasis living in the forest areas was also responsible for clearance of forest lands more than necessary. Major part of the forest area was under the Princely States, the rulers of

which were mainly interested only in collecting revenue. There was no organized interest in forest maintenance. Only specified species of timber value were proclaimed by local rulers as "Royal trees" and royalty was collected for the extraction of such trees. Otherwise, the forests were open to all and the public obtained their requirements without restriction. Everyone was at liberty to fell what he liked and where he liked. The forest in those days was regarded as an inexhaustible reserve for the extension of cultivation.

Later on, in the nineteenth century, the timber forests in the Southern part of Gujarat State were heavily exploited for teak required for the Navy. When the British authorities began to realise that the forests in the State were not inexhaustible as they were earlier thought to be, the need for conservation, introduction of systematic working and regeneration measures was recognised and steps were taken to organize a forest department in the State. The initial management of this systematic working aimed at (i) prohibition of shifting cultivation practised by Adivasis, (ii) institution of thinnings in young teak areas and (iii) formation of teak plantations; but the control of forests was with the Collector only. Later on, the growing scarcity of timber and extensive demand for wood of various descriptions, led the then Govt. of Bombay to recognize that a specialist agency was necessary for the purpose. Therefore, Forest Department

was placed on an efficient footing and since then the forest have been managed in many different ways under different eminent personalities.

Gujarat State came into being only in 1960 as a result of the bifurcation of the Bombay State which itself had been reconstituted in 1956 under the states' Reorganisation Act. The present State of Gujarat includes many of the former princely States, the most important being Barode State. The district of Panchmahals and part of the present Surat district were included in British India under the Bombay Presidency.

The wide variations in the management practices of the forest areas over long periods and also the wide variations in the climatic and topographic features of the State have resulted in various types of forest growth ranging from 'moist deciduous' forest in Dangs district in the south to 'desert' condition in Kachchh and western Banaskantha districts.

According to the revised classification of forest types of India by Champion and Seth, the forests falling within the tribal area of the State correspond to the following types :-

(i) 3A-C Moist deciduous forests

(ii) 3B/c -/c - Slightly Moist Teak Forests.

(iii) 5A/C1b - Dry Teak Forests

(iv) 5A/DS1 - Dry deciduous scrub-forests.

(i) Moist Deciduous Forests :-

This type of forest occurs in Dangs and Valsad district in the Southern part of the tribal region. Teak is predominant species. These are the superior kind of forests in the State, the composition of which, in general is given below.

Overwood :- Tectona grandis (Teak, Sag), Terminalia crenulata (Sadad), Garuga pinnata (Kakad), Lannea coromandelica (Modad), Adina cordifolia (Haldu), Mitragyne parvifolia (Kelam), Albizzia procera (Kilai), Acacia ferruginia (Kanti), Sterculia urens (Kadaya), Dalbergia latifolia (Sisham)

Underwood :- Acacia catechu (Khair), Eugenia cojeinensis (Panech) Butea monosperma (Khakhra) Grewia tiliaefolia (Dhaman) Schleichera oleosa (Kusum) Emblica officinalisk (Amla) Cassia fistula (Garmalo) Aegle marmelos (Bili) Careya arborea (Kumbhi) Wrightia tinctoria (Dudhi) Dendrocalamus strictus (Manvel vans) Bauhinia racemosa (Ashitra) Diospyros melanoxylon (Timru)

Ground cover :- Lees aspera (Dhini)

Desmodium trifolium

Helecteres isora (Mardasing)

Grasses :- Sparse growth.

(ii) Slightly moist teak forests :-

This type of forest occurs mainly in Surat and Bharuch districts and is confined to valleys and plains where soil and sub-soil moisture is favourable. Teak which is the principal species forms only about 30% of the crop. The composition of the crop is as under :-

Overwood :- Tectona grandis (Teak)

Terminalia crenulata (Sadad)

Dalbergia latifolia (Sisham)

Anogeissus latifolia (Dhavdo)

Lannea coromendelica (Modad)

Garuga pinnata (Kakad)

Adina cordifolia (Haldu)

Mitragyna parvifolia (Kalam)

Acacia catechu (Khair)

Diospyros melanoxylon (Timru)

Gmelina arborea (Shivan)

Underwood :- Wrightia tinctoria (Kudi)

Grewia tiliaefolia (Dhaman)

Emblica officinalis (Amla)

Butea monosperma (Khakhara)

Morinda tinctoria (Al)

Dendrocalamus strictus (Mankal Vans)

Ground cover :- Carvia callosa (Karvi)

Helecteres isora (Mardasing)

Cassia tora (Puwadia)

Carissa congesta (Karmda)

Celastrus paniculata (Malkangni)

Grasses :- Luxuriant growth of grasses than the previous by type.

(iii) Dry teak forests :-

This type is confined mainly to Vadodara and Panchmahals districts and drier parts of Bharuch district. Heavy biotic interference like overgrazing, fires and illicit cutting has resulted in gradual decrease in less hardy miscellaneous species. Teak, however, remaining the predominant species forming about 30% of the crop. The crop is by and large malformed and crooked. The composition of the crop in general is as follows:-

Overwood :- Tectona grandis (Teak)

Terminalia crenulata (Sadad)

Lannea coromandelica (Modad)

Garuga pinnata (Kakad)

Boswellia serrata (Salai)

Lagerstroemia parviflora (Bondara)

Adina cordifolia (Haldu)

Acacia catechu (Khair)

Dissospyros melanoxylon (Timru)

Underwood :- Schleichera oleosa (Kusum)

Wrightia tinctoria (Kudi)

Morinda tinctoria (Al)

Zizyphus xylopyra (Ghatbordi)

Acacia leucophloea (Hamno)

Ground cover:- Indigofera linifolia (Kipto)

Cassia tora (Puwad)

Calotropis gigantea (Akdo)

Thinner variety of Dendrocalamus strictus (Nanvel Vans)

Grasses :- Since the density is less, growth of grass is good.

(iv) Dry deciduous scrub-forests :-

The forest in Northern part of Sabarkantha and Banaskantha districts correspond to this type. Teak forms less than 10% of the crop. The crop is stunted and malformed. The composition of the crop is as below :-

Hardwood :-	Tectona grandis (Teak)
	Acacia catechu (Khair)
	Anogeissus latifolia (Dhavdo)
	Diospyros melanoxylon (Tiaru)
	Mezindationotoria (Al)
	Albizzia lebbek (Siras)
	Azadirachta indica (Neem)
	Lannea coromandelica (Modad)
	Sangeissus pendula
	Zizyphus mauratiana (Bordi)
	Balanites aegyptica (Ingor)
	Capparis aphylla (Karda)
	Acacia senegal (Gorad)
	Acacia leucophloea (Hamo)
	Acacia nilotica (Deshi Bawal)
Ground cover:-	Barleria prionitis (Kantesariu)
	Cassia tora (Puwad)
	Cassia occidentalis (Kasind)
	Zizyphus nummularia (Chanibor)
	Calotropis gigantea (Akdo)
Grasses :-	Many grasses come up.

Since the rights and privileges given by the rulers of ex-princely States were respected and continued even after the merger, the forests today are heavily burdened with rights and

privileges, offering peculiar problems for their management, more often that not, to the detriment of the forest areas. At the time of merger, an area of _____ha. of forest area was under unauthorised cultivation and encroachment, which was settled by the State. Later on, a great deal of disforestation has been done on account of subsequence of irrigation and hydel projects, settlement of oustees of the villages under submergence, regularisation of unauthorised cultivation, mining purposes, industrial purposes, etc. Due to all those factors, the present forest area is mostly in scattered small patches and restricted to hillocks and refractory areas. The present legal status of the forest area is as under (1979-80) :-

Reserved forest	-	12,097.61 Sq.K.M.
Protected forest	-	1,105.39 -"-
Unclassed forest	-	19,535.14 -"-

The unauthorised selective fellings of trees and unscientific management of forests by the erstwhile States, have resulted in the degradation and denudation of forests. Valuable timber species are reduced in number. Out of these, species capable of coppicing have thrown out coppice shoots and remained as younger age group, while the miscellaneous, non-timber species assumed higher age groups.

Out of the above, dry teak forests of Panchmahals and Vadodara districts are of paramount importance so far as

M.F.P. is concerned. The major items of M.F.P. namely Timru leaves, Mahuda flowers and Mahuda seeds (Doli) are available in and around these forests in abundance and good quality. Thus, even though moist deciduous forests of South Gujarat are much superior in floristic composition and timber production, the contribution from these forests to M.F.P. production is negligible. Similarly, Dry Deciduous scrab forests also do not yield much of M.F.P. exceptin: gum, honey, gugal and musli.

CHAPTER 3

TRIBALS OF GUJARAT AND THEIR DISTRIBUTION

The tribal belt in the Gujarat State comprises three district ecological zones. The hills and plateans, characterized by rocky upland with small scattered deposits of minerals and tropical mixed as well as most forests, constitute the first. The valleys dominated by fertile cultivable lands, intersected by rivers and streams, make the second. The escarpments and the slopes, between the first two zones, marked by luxurient growth of trees, bamboos and other fibreus plants in major part of the belt make the third ecological zone. It is the latter, the forest covered slopes and escarpments that constitute the ecological wiches of several tribal groups in the State.

The entire strip of the eastern part of the State running right from north to south and cutting across the geographical boundary of three Indian States, viz. Rajasthan, Madhya Pradesh and Maharashtra, is mountaneous as well as covered with forests of varying denseness. In the north, the tribal region nestles in the Aravalli ranges in the central east are the Vaidhya ranges and Satpuda ranges while in the Southern east are the Sahayadri ranges.

Out of the nineteen districts in Gujarat, eight districts viz. Dangs, Surat, Valsad and Bharuch in Southern belt, Vadodara and Panchmahals with central belt and Sabarkantha and Banaskantha in the northern belt have a sizeable tribal population and from this point of view they are usually referred to as tribal districts. As can be seen from the figures given in the Table 2, 58.34 percent of the total tribal population is concentrated in the Southern zone itself. Another district having a heavy concentration of tribal population is the Panchmahals in the central zone.

Besides these eight districts, there are some other small tribal pockets in Junagadh, Kutch, Jamnagar, Surendranagar and Ahmedabad districts where the population of the different tribal groups is of not much significance but culturally it is of much importance as the different tribal groups living in these pockets display a very colourful and rich heritage. However, for purpose of planning development programmes in the State, only these eight districts have been included in the area under tribal sub-plan. In our study too, we are mainly concerned with the tribal people living in the forest areas of the State on the eastern border, right from north to south.

3/-

Although there are no truely primitive people, who used to live primarily by hunting and gathering, left today in this region, tribal people continue to live in all the forest regions. These tribal people who have settled in the hilly and forest areas of the State over the centuries have adapted themselves to the particular geographical feature of the region. In the past, however, hunting and gathering economics were found frequently in tropical forests of these areas. In the absence of concrete evidences it is difficult to make any estimate regarding the period when hunting and gathering economics were supreme in these areas. From the recorded history of the upland regions, it would seen that the tribal people living in this region had been agricultural communities, largely practising shifting cultivation.[1] But the fact, that these people practised hunting and gathering alongwith agriculture till recently, amply testifies that the former must have been principal source of getting food in earlier times. And as we know that agriculture is relatively a recent phenomoun for the human beings, dating back only about 10,000 years and that majority of the people who had lived in this world had been hunters and gatherers[2], the assumption that these these people in the long past were food collectors, not food producers, would not be far from reality.

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1 See (i) R.E. Enthoven, The Tribes and Castes of Bombay 1922

(ii) James Tod, Annals and Antiquities of Rajasthan, London, 1957 (Reprint)

(iii) Alexander Kinloch, Forbes, Rasmala: Hindoo Annals of the Provinces of Gujarat in Western India, Oxford Univ. Press, 1924, Vol. I & II.

2 Richard B. Lee and Irvven De Vore (ede), Man the Hunter, Chicago, 1968. P.3

Although not much is known about the original history of the different tribal groups which now inhabit the forest regions of the State, it is well known that the Bhils were once supreme in this and contiguous areas until driven out by invaders into the forests and mountains. It is an un-disputed fact that Gujarat has been the home of the Bhils, one of the most ancient tribes, of our country and in the present times, the second largest tribal community of India. On the strength of historical evidences it can be generalized that various Hindu and Primutive elements have gone in the physical make up of the pre sent day Bhils and also of the other tribal groups. It is believed that since pakolithic period the Bhils have been in this region.[3] But most of the other tribal groups are new comers who settled down in the hills and forests after moving from one area to the next. Recent illustration of such a group can be found in the history of Kunbis of Dangs district which, after setting in the country of Bhils, became a hill tribal community. According to the Bombay Gazetteer II-"they seen to be new-comers, many within the last generation and almost within the last hundred years. They call themselves Konkan Kunbis".[4]

3. Allchin Bridget, - The Stone Tripped Arrow, 1966

4. See Bombay Gazetteers, 1874

In the Gujarat State, twenty nine tribal groups have been recorded in the list of Scheduled tribes. According to 1981 census, the population of these scheduled tribes is 40.5 lakhs which constitute 14.22 percent of the total population in the State. The Bhils have been the largest tribal community, numbering 14,40,392 persons and forming 33.99 percent of the total tribal population in the State (1971 Census). Apart from the Bhils, there are several other important tribes in the State, most of whom have retained their language and natuve culture. Of the twenty eight tribal communities, fourteen are considered as major one on the basis of their linguistic, cultural and demographic characteristics. As is evident from the fitures given in Table 3, those fourteen major tribes account for 97 percent of the State's total tribal population.

TABLE-2

DISTRICT-WISE DISTRIBUTION OF TRIBAL POPULATION IN RESPECT OF TOTAL POPULATION AND FOREST AREAS
(1981 Censu)

Sr. No.	Name of the District.	Total population	Tribal population.	% of tribal population to total population.	% of forests to total area
1.	SURAT	2,493,211	1,038,200	41.64	12.34
2.	VALSAD	1,774,136	969,518	54.59	13.21
3.	PANCHMAHAL	2,321,689	969,523	41.76	25.06
4.	BHARUCH	1,296,451	577,393	44.54	13.32
5.	VADODARA	2,550,092	648,372	25.35	9.84
6.	SABARKANTHA	1,502,284	251,127	16.72	8.70
7.	DANGS	113,664	104,918	92.31	58.24
8.	BANASKANTHA	1,667,914	111,936	06.71	12.82
9.	OTHER DISTRICTS	20,358,358	178,599	08.77	-
10.	TOTAL	34,085,799	4,848,586	14.22	-

T A B L E - 3

SEX-WISE DISTRIBUTION OF TRIBAL POPULATION (1981 Census)

	Number	Percentage
Male	24,53,566	50.60
Female	23,95,020	49.40
Total	48,48,586	100.00

T A B L E - 4

DISTRIBUTION OF TRIBAL POPULATION ACCORDING TO MAJOR TRIBAL GROUPS (1971 Census)*

Sr. No.	Name of the Tribe	Total Population	Percentage of to the total tribal population in the State.
1.	Bhils (including Dungri Garasias, Bhil Garasias, Vasava, etc.	14,48,692	38.99
2.	Dubla	3,88,589	10.43
3.	Dhodia	3,56,455	9.59
4.	Ganit	2,76,077	7.43
5.	Naika, Naikda	2,33,243	6.27
6.	Choudhary Rathwa	1,89,335	5.09
7.	Choudhary	1,76,090	4.74
8.	Kokua	1,46,728	3.95
9.	Dhanka	1,36,624	3.68
10.	Warli	1,26,055	3.39
11.	Patelia	48,605	1.31
12.	Kunbi	34,643	0.93
13.	Koli	29,320	0.79
14.	Kotwalia	12,896	0.35
15.	Others	1,31,070	3.51
	TOTAL:	37,34,422	100.00

* Tribe-wise figures of 1981 Census have not yet been published.

Among the minor tribes, some of them have been recognized as primitive tribal groups in the State because of their extremely poor and shocking economic existance. These are Kolgha, Siddis, Kathodi and Padhar. From amongst the major tribal groups, Kotwalia has been also included in the list of primitive tribal groups. In case of these small tribal groups which have been given the status of primitive communities in the State, now special development programmes have been or are being devised only after they x acquired the label of primitiveness.

Apart from these primitive tribal groups there are some little known tribal groups. They are: (i) Rabari (ii) Vaghri (iii) Pardhi of Kutch (iv) Phase, Phardhi, (v) Bavcha, Banecha, (vi) Charan, (vii) Bhils of Kutch, (viii) Bharwad, (ix) Gouds, Rajgonds, (x) Ponla and (xi) Barda. Some of these are so unknown that sometimes it becomes even difficult to know their exact locations and distribution in the State. Almost no attention has been given to these little know tribes so far their development is concerned.

The general literacy of the tribals in Gujarat is 21.44 percent. As shown in Table 5, among the male tribal population it is 30.41 while among the femakes only 11.64 percent. As is evident, a vast number of tribal people, particularly the females among them are illiterates.

T A B L E- 5

SEX-WISE DISTRIBUTION OF LITERATES AND ILLITERATES AMONG TRIBAL POPULATION (1961 Census)

Sex	Literates		Illiterates		TOTAL	
	No:	%	No:	%	No:	%
Male	7,46,236	30.41	17,07,330	69.59	24,53,566	100.0
Female	2,78,869	11.64	21,16,151	88.36	23,95,020	100.0
TOTAL	10,25,105	21.14	38,23,481	78.86	48,48,586	100.0

Literacy-wise, the Dhodias are at the top among the different tribal communities while the Rathwas, Kothwalias, Warlis, Kolis and Naika. Naikdas have a poor literacy rate.

From the statistics given in Table-5, it is apparent that while some groups like Dhodias, Choudharys and Patelias have improved their position in this regard at a bitter faster rate, among other tribes the rate of increase from 1961 to 1971 census is marginal. Among the Naikas- Naikdas, the literacy rate has actually gone down by 1.24 percent from 1961 to 1971 census.

T A B L E -6

LITERACY-RATE AMONG MAJOR TRIBAL GROUPS
(1961 and 1971 CENSUS FIGURES)

Sr.No.	Name of the Tribe.	Literacy Rate	
		1961	1971
1.	Bhilas	9.83	11.73
2.	Dublas	11.61	13.74
3.	Dhodias	23.94	31.19
4.	Ganits	11.93	14.86
5.	Naika-Naikdas	10.79	9.55
6.	Rathwas	4.81	5.65
7.	Choudharys	13.43	22.04
8.	Koknas, Kunbis	8.92	12.56
9.	Dhankas	15.83	17.05
10.	Warlis	4.93	5.03
11.	Patelias	12.66	18.94
12.	Kolis	2.77	2.87
13.	Kotwalias	4.03	5.00
14.	Total	11.79	14.12

Even among the heads of the households covered in this study, a large majority are illiterates. According to the fitures given in Table 7, only 11 percent of the total heads of house-holds have reported to have received some education. The worst condition in this was among the Rathwas of Chhota-udepur region while the highest percentage of literates was among the Vasava and Dhanka communities of Rajpipla region. The census figures also point out that Rathwas are having an extremely poor literacy rates. The situation among Warlis and Koaknas of Dharampur region and Bhils of Ratanmal region is little better.

The average size of the house-holds among the houne-holds covered in this study has been 6.10. As can be seen from the figures given in Table 8, biggest size of the house-holds is among the Rathwas of the Chhota-udepur region while the smallest is among the Kanknas and Warlis of the Dharampur region. Among the Bhils of Ratanmal region too the average size of the house-holds (7.06) has been comparatively large one. Both the Bhils and Rathwas have many similarities in their socio-cultural life and here too both the groups have shown the same characteristics in respect of the size of the house-holds. The Vasava of the Rajpipla region and the Bhils, Konknas and Warlis of the Dangs region also show characteristics of medium sized house-holds.

T A B L E - 7

PERCENTAGE DISTRIBUTION OF THE HEADS OF SURVEYED HOUSEHOLDS ACCORDING TO LITERATES AND ILLITERATES.

Sr. No.	Geographical Region.	Literates	Illiterates
1.	Dangs	16.26	83.74
2.	Dharampur	8.74	91.26
3.	Rajpipla	18.18	81.82
4.	Chhota-Udepur	0.95	99.05
5.	Ratanmal.	6.62	93.98
	Total	11.00	89.00

T A B L E- 8

AVERAGE SIZE OF THE HOUSE-HOLDS AMONG THE SURVEYED HOUSEHOLDS.

Sr.No.	Geographical Region.	Total No.of house-holds.	Total No.of Family members.	Average size of the house-hold.
1.	Dangs	203	1,174	5.78
2.	Dharampur	103	551	5.35
3.	Rajpipla	88	494	5.61
4.	Chhota-Udepur	105	748	7.12
5.	Ratanmal	83	586	7.06
	TOTAL:	582	3,553	6.10

The house-holds, in most cases, among these tribal societies consist of complete nuclear or biological families. However, individuals who are un-married, old or widowed can not think of living isolated in such an economic-cultural situation and they are generally attached to a nuclear family.

According to the figures given in the next table, there are more men than women among the population of the surveyed house-holds.

T A B L E-9

PERCENTAGE DISTRIBUTION OF MEMBERS IN THE SURVEYED HOUSEHOLDS ACCORDING TO THEIR SEX.

Geographical Region	Male	Female	TOTAL
Dangs	47.95	52.05	100.00
Dharampur	54.58	45.42	100.00
Rajpipla	49.39	50.61	100.00
Chhota-Udepur	50.00	50.00	100.00
Ratanmal	50.00	50.00	100.00
Total	49.93	50.007	100.00

Only among the Vasavas of Rajpipla region, women have outnumbered men while among the Rathwas of Chhota-udepur and the Bhils of Ratanmal, the proportion of men and women in the population is just equal. Amongst the Konknas and Warlis of Dharampur region the number of men has been in prependerance over the number of women but among the Bhils, Konknas and Warlis of the Dangs region the women are in greater number than men.

For the total population among the surveyed households the sex ratio came to 1,002 women per thousand men. As the figures given in Table 10, reveal the lowest sex ratio is among the tribals of Dharampur Region.

T A B L E-10

SEX RATIO AMONG ADULT AND NON-ADULT POPULATION OF THE SURVEYED HOUSEHOLDS.

Geographical Region	Number of females per 1,000 males. Below the age of 18 years.	Above the age of 18 years.	TOTAL
Dangs	1,177	1,033	1,085
Dharampur	700	1,000	848
Rajpipla	983	1,055	1,014
Chhota-udepur	933	1,072	1,000
Ratanmal	967	1,023	1,000
Total	959	1,037	1,002

Otherwise in all other regions, the female population either exceed the male population or it is just equal. In Dharampur region too, the sex ratio is quite in equal proportion among the adult population but among the ~~adultxpopulatx~~ population of below 18 years age the number of females per thousand males is less. In fact, in all the regions, except Dangs, the number of males exceed females while among adult members the situation is quite the reverse. It is difficult to give any plansible explanation for this demographic trend amongst the younger generation of the tribal groups, except that female mortality among the children in these socities may be more and tribals like Hindus or the Muslims may have begun to pay more attention to the health conditions of their male off-springs.

The greater number of women than the number of men suggests that the women in these socities may have better longivity in comparison to the men.

According to 1981 census, only 40.55 percentage of the total tribal population in the Gujarat State are workers who participate in any economically productive activity. Figures given Table 11 reveals that nearly half of the total tribal population in the State is in the category of non-workers. 9.60 percent of the total tribal population constitute of marginal workers which means that though they have not done any work over the major part of the year previous to the census year, they might have done some work occasionally. From this definition, it seems probable that tribal women workers and children engaged in the collection of minor forest produces might have been labelled as marginal workers.

The low percentage of workers among the female population is little bit puzzling because usually, all the adult members in an Adivasi house-hold, irrespective of being male of female, do contribute in the earning of livelihood for the house-hold.

T A B L E -11

SEX-WISE PERCENTAGE DISTRIBUTION OF WORKERS, MARGINAL WORKERS AND NON-WORKERS (1981 CENSUS)

Category	Male	Female	Total
1. Workers	56.85	23.85	40.55
2. Marginal workers	0.88	13.53	9.60
3. Non-workers	42.27	57.62	49.85
Total	100.00	100.00	100.00

Looking toth the figures given in Table 12, it becomes clear that for majority of the tribal people agriculture has been the primary mode of food production. Land is the major resource for employment and agriculture is thep predominant occupation. 45.94 percent of the total working population in the State are engaged in agriculture. Of theremaining 54.06 percent, agricultural labourers constitute 40.10 percent. On combining both these categories we find that for a large majority. Of the workers, land is the major source of employment for their livelihood. In other categoes of occupation such as animal husbandry, forestry, fishery, house-hold industries, manufacturing industries (other than house-hold), construction trade and commerce, transport and communication etc. a very a small number of tribal persons are found to be working.

T A B L E - 12

INDUSTRIAL CLASSIFICATION OF MALE AND FEMALE WORKERS (1931 CENSUS)

Sr. No.	Category of Works.	MALE No.	MALE %	FEMALE No.	FEMALE %	TOTAL No.	TOTAL %
1.	Agriculture	7,16,199	51.34	1,86,981	32.73	9,03,170	45.94
2.	Agriculture Labour	4,54,696	32.60	3,33,840	58.43	7,88,536	40.10
3.	Household industry, mfg. processing, servicing and Repairs	11,227	0.81	5,055	0.89	16,282	0.82
4.	Other works.	2,12,755	15.25	45,442	7.96	2,58,197	13.14
5.	Total	13,94,867	100.00	5,71,318	100.00	19,66,185	100.0

So the participation of the working tribal population in the secondary and tertiary sectors has been quite low. But in each of these two sectors, the percentage of tribal workers has increased in 1981 census from 1971. As the figures given in table 13 indicate, while the percentage of workers in the primary sector has fallen down in 1981 by 5.00 percent, there has been a perceptible rise in the secondary and tertiary sector. It can be assumed that due to the development efforts, the economy of the Adivasies, which hither to depended solely on agriculture, is gradually getting diversified. This is a welcome trend but nonetheless, once again at the risk of being ~~suspected~~ repetitive, land is still the principal source of livelihood and non-agricultural occupation has still a limited scope. In view of this it is necessary to make concerted efforts to increase the scope of non-agricultural sources such as collection of minor forest produces, since sole dependency on land for livelihood has obvious limitations. The level of income of the Adivasis and consequently their standard of living cannot be raised unless for more and more Adivasis workers such occupations which are related to forestory are made within their reach in their own area.

TABLE - 13

SECTORAL DISTRIBUTION OF TRIBAL WORKERS; 1971 AND 1981 CENSUS (FIGURES GIVEN IN PERCENTAGE)

Year	Primary sector	Secondary and Tertiary sectors.
1971	91.86	8.14
1981	86.86	13.14

In the tribal villages covered in this study too, the main occupation is agriculture. Of the 582 households covered under the selected villages of five different geographical regions, 233 forming 40.03 percent are depending on agriculture alone as their main occupation. Further, as the figures given in table 14 reveal, 112 forming 19.24 percent and 76 forming 13.06 percent are also primary agriculturists but have to supplement their income by taking up occupations of labour work and animal husbandary respectively. 154 of them, forming 26.46 percent depend entirely upon wages earned from doing labour work, either in agricultural field or as forest labourers or as labourers in construction activities. 5 households (0.86 pc) are earning livelyhood both from agriculture and other economic pursuits such as tailoring (1), carpentry (1) and shop keeping (2).

TABLE - 14

DISTRIBUTION OF SURVEYED HOUSEHOLDS ACCORDING TO THEIR MAIN SOURCE OF LIVELIHOOD.

Sr No.	Type of occupation.	Number	Percentage
1.	Agriculture	233	40.03
2.	Labour work (both agriculture labour and other types of labour work)	154	26.46
3.	Agriculture and labour work.	112	19.25
4.	Agriculture and animal husbandry.	76	13.06
5.	Animal husbandry and labour work.	2	0.34
6.	Agriculture and other works (failoring, carpentory and shop-keeping)	5	0.86
	TOTAL:	582	100.00

Looking to the region-wise figures, as given in the next Table, it is apparent that the Rathwas, Warlis and Konknas, occupying the forest regions of Chhota-Udepur and Dharampur have less dependency on agriculture economy since long.

T A B L E- 15

PERCENTAGE DISTRIBUTION OF HOUSE-HOLDS IN DIFFERENT REGIONS ACCORDING TO THEIR OCCUPATIONS CATEGORY.

Geographical Region.	O C C U P A T I O N A L CATEGORY					
	Agricul-ture.	Agricul-ture and Labour.	Agricul-ture & animal husbandry.	Labour.	Animal husbandry & labour.	Agri-culture and other works.
Dungs	49.79	9.36	19.21	20.68	0.49	1.47
Dharampur	29.13	37.86	-	32.04	-	0.97
Rajpipla	47.73	9.08	-	40.91	1.14	1.14
Chhota-Udepur	17.14	43.81	-	39.05	-	-
Ratanmal	53.01	-	44.58	2.41	-	-
Total	40.03	19.25	13.06	26.46	0.34	0.86

Only 17.14% of the house-holds in Chhota-udepur and 29.13 percent in Dharampur exclusively depend upon agriculture. A fairly good number of house-holds to the tune of 37.05 percent and 32.04 percent respectively in these two regions have to eke out their living by doing labour work. The percentage of agriculturists who also take up wage labour for sustaining their family is

highest among the tribal house-holds of Chhota-udepur (43.81 percent) followed by those of Dharampur region (37.36 percent). Among the tribal households of Ratanmal region quite a large number of households, forming 44.58 percent, have to supplement their income from agriculture by pursuing animal husbandry. In Dangs too, animal husbandry has been taken up recently by several agriculturists to supplement their income.

Although cultivable land happens to be cominant source of livelihood for the tribals in all the five regions, their land holdings are small and scattered. Majority of the tribal cultivators have less than 5 acres of cultivable land. One can easily imagine that with low fertility of the soil, traditional practices of agriculture and above all, lack of irrigational facilities, how can the subsistance economy, based largely on one crop, be able to feed the family from the agriculture source alone. No wonder, for a large majority of these tribal families it is a grim struggle to make both ends meet. Securing sufficient food is a constant problem and a never ending concern. A majority of these tribals invariably supplements the supply of food from agriculture by other allied activities determined by environment and their culture. Hunting, collection of edible roots, leaves and fruits from the forest for the family's consumption as well as other minor forest products for a significant part of their economic activities. They have not forgotten their original means of livelihood, such as food-gathering, hunting and fishing.

By and large, the development programmes have made little impact on removing the poverty of the tribals. Very few changes are noticed in the economic pursuits of these people. Many of them are still having shocking and sub-human conditions of existance. Majority of these people as mentioned earlier, have to fight hard for existance. Food gathering still plays a significant role in saving themselves from hunger. Thus, in their struggle for livelihood, they very much depend on the collection of forest products for saving themselves from starvation. It is a common sight in these hilly and forest regions to find tribal families eating edible roots, leaves and fruits. Collection of minor forest products other than for for own consumption is also gradually becoming an important source of income for them. Let us find out in the next Chapter how much this activity - Collection of minor forest products - Contributes in meeting their requirements of livelihood.

CHAPTER 4

IMPORTANT MINOR FOREST PRODUCTS, THEIR UTILIZATION AND TRIBAL WELFARE

Food collection or hunting and gathering which is dependent upon naturally occuring plants and animals- is the oldest human food getting technology. "Throughout history, humans have spent much of their time in getting food. During the 2 to 3 million years that the humans have been on earth, 99 percent of the time they have obtained food by gathering wild plants, hunting wild animals and fishing"[5]. Richard B. Lee and Iroven Devora have noted that of the 80 billion people who have ever lived, 90 percent have been hunters-gatherers and 6 percent have been agriculturists. As a number of an industrial society we are among the remaining 4 percent.[6] Although the number of hunting andgathering communities is dewinding rapidly, they are still found in every type of climate and vegetation region frrnn the equatorial forests to the tundra. But there are indications that this life form will be extinct within a few years.

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5. Carol R. Ember and Malvni Ember; Cultural Anthropology, P rentice Hall Inc, New Jersey (Second edition) 1977, P.80

6. Richard B. Lee and Iroven De Vora (Eds); Man the Hunter, Chicago, Aldine, 1968, P,3.

However, it is important to recognise that the surving hunting and gathering people are the cultural ancestors of all mankind. And since great bulk of man's time, as pointed out above, on this earth has been spent in a hunting and gathering socio-economic context, this form of human adaptation must be seen as eminently successful.

But in earlier times, the food gatherers lived mostly in some very beautiful forest environments while the contemporary tribal people who still pursue this form of existence live in marginal environment where the resources for gathering are becoming less and less available for exploitation for a successful adaptation to this form of living. However, the primary feature of the gathering economy of these people has been that it offered important sources of food- wild vegetables and plants- material for shelter, herbs and medicinal plants to be used as medicines, materials for recreation and products to be used in their arts and crafts. And in recent times, collection of a variety of minor forest produces bring a substantial income to their households. Thus, the economic system of these people is nevertheless still ~~insufficient~~ influenced to a large extent by the material sources found in the forest environment. Despite the large scale replacement of the pre-existing natural economic system by an artificial system (agriculture), the adaptive relationships between these tribals and the forest environment have remained stable and persisted over

long periods of time. Due to this stability, they have maintained distinctive long-term relationship with the plants that has persisted even in the face of changes in the economic system.

As
A precise understandingof of the relationship between the tribals and the forests environment can be had only when looks into the interaction between the tribals and the food resources offered under the ecological system of the forests in which they live. So let us first discuss about the ways forest serve as a source of food.

MINOR FOREST PRODUCES FOR FOOD

Collecting wild vegetables, leaves and fruits was the primary source of livelihood for these tribals in the distant past. It would be however, impossible to talk about this source in the present day situation as having the same importance in their economic pattern as was during the precontact (before they came into contact with other cultural groups) period. But gathering wild roots, leaves and fruits still continue to be an important source of getting food supply. From the figures given in the Table 16, the extent to which these tribals depend on gathering tubers, leaves, young short of bamboo and fruits can be visualised. It is apparent that in all the regions for a vgt vast majority of the tribals, recourse to gathering is taken to manage the supply of food.

T A B L E - 16

REGION-WISE PERCENTAGE DISTRIBUTION OF SURVEYED HOUSE-HOLDS ENGAGED IN GATHERING.

Sr. No.	Region	Vegetables (tubers)	Green Leaves	Young Shoots of Bamboo.	Fruits
1-	Dangs	84.73	96.55	93.50	100.00
2.	Dharampur	99.03	100.00	74.76	100.00
3.	Rajpipla	83.64	98.86	96.59	100.00
4.	Chhota-Udepur.	98.10	100.00	70.48	100.00
5.	Ratanmal	86.39	100.00	45.78	100.00
	Total	91.92	98.63	79.73	100.00

But for some of them who have become modernised gathering has become an unattractive way of getting food. In case of the low percentage of house-holds engaged in gathering young shoot of bamboo in the Ratanmal region, the simple reason is this that there is not much bamboos in the forest there.

Gathering of Tubers:

Great quantities of wild yams (tubers) which are considered "food" are collected during monsoon season when these tribals have to practically depend on these almost as stample diet. At present 15 varieties of wild tubers are collected by these tribals. Some of them are found in all the forest regions such as Vaj Kand and Kadu Kand while some are restricted to certain regions only, for instance, Vara Kand is found only in the Dangs and Dharampur Regions.

The tubers are generally rounded and large and having either white or purple sikin. Some of the tubers weigh about 3 to 4 Kilos. In the forest patches quite near to the villages, the plant produces small tubers while deeper in forest they grow into large ones. Some taste very bitter and acrid, while some are almost tasteless. But before the consumption, tubers and bulbs are kept in running water for a whole day or for a whole night and the repeated boiling and washing are done. If eaten without processing it this way, it may produce un-consciousness, giddiness and weak pulse. In such a case, either mollasses or curd or lemon is given as antidose.

Before it is thoroughly washes, its skin is removed and it is sliced into thin pieces. It is used as vegetable, either baked, cooked or fried. Extremely poor tribals even eat these raw after seasoning with salt and chilli powder only. Sometimes after fully processing the tubers and bulbils,

these are thoroughly dried in the sun and then beatorn down into small pieces. Finally, these pieces are grounded in the grinding wheel and flour is obtained. This fe flour is used for making "rotla" (eulivened bread). But the common use, as found among these tribals, is as vegetable.

Usually a family consumes nearly two quintal of these tubers within a span of four months. The tubers are dug out by means of a pointed digging stick and gathered in a basket. With the help of the digging stick gathering is hardship and slow method but efficient in that the equipment is light and easily portable. Gathering tubers which are repetitive and labourious are usually women's work. A woman digs for tubers in course of her daily forging during the monsoon season.

Most of the plants, producing tubers, belong to the Dioscoreaceae family, with slender twinding or procumbent stens, bearing large or small subterranean tubers. The name of the plants is given below:

Sr.No.	Local name of the plant.	Botanical Name.	Where found.
1	2	3	4
1.	Vajkand		In all the forest regions.
2.	Kadukand	Dioscorea belophylla	In all the forest regions.
3.	Varakand or Kenkodikand	Dioscorea bulbifera	In the forests of Dangs and Dharampur regions.

Sr. No.	Local name of the plant.	Botanical Name.	Where found
4.	Goichikand	Dioscorea oppositifotia	In the forests of Dangs and Dharampur regions.
5.	Suro		Except in the forests of Dharampur region, everywhere.
6.	Lunda		In the forests of Dangs region.
7.	Kanda	Dioscorea belophylla	In the forests of Chhota-udepur region.
8.	Shirabala		In the forests of Chhota-udepur region.
9.	Boda Kantasaliyo	Barleria peattensis	In the forests of Chhota-udepur and Sabarkantha region.
10.	Jeem Kanda	Ceropegia bulbose	In the forests of Panchmahal region.
11.	Janjaria	Liliacea	In the forests of Panchmahal.
12.	Karur-nai (Bhoi Kdu)	Puararia tuberosa	In the forests of Dangs.
13.	Shend-Val	Dioscorea pentaphylla	In the forests of Dangs, Dharampur and Rajpipla.
14.	Shatavari	Asparagus racemosus var. javanicus	In the forests of all regions.
15.	Sap-Kanda	Arisaema fortwosum	In the forests of Dangs and Dharampur.
16.	Jangh Suram	(i) Amorphophallus commutatus (ii) Amorphophallus Sylvaticus	Everywhere.

If all the tribal groups covered in this study, the Rathuwas of Chhota-udepure are found to collect a vast quandity od these tubers while the Vasava Bhils of Rajphipla region comparatively collect small quantity. But, by and large, in all the regions tribals still use the above mentioned plants as sources of food especially during times of scarcity.

Gathering of edible greens.

Apart from the wild tubers, there are a number of vegetable items which do infact serve as supplements. In this category are included a variety of plants whose young leaves and in some cases the new flowers are used as vegetables. A feveric term for these edible greens is "Bhaji". These leafy vegetable are availbable during summer and rainy seasons. For about four to five months in a year, one or the other kind of these edibles are collected by the tribal people. In the normal way the leaves are cooked as vegetables and after seasoning it with salt and spices, they are eaten as a side dish. In case, the leaves are big, they are cut down into small pieces before cooking. Some families cook it with pulses i.e. while cooking the pulse, the leaves are also boiled alongwith the pulse. In case of Vasdi (young shoots of bamboo), their skin is first removed and then the inside portion is cut into thin pieces which are

thoroughly boiled and after seasoning with salts and spice, the tribals consume it.

The leafy vegetables are gathered by all the grown-up members of the family. On an average, a family collects about 16 Kg. of leafy vegetables during the period of 4-5 months.

The name of the leafy vegetables gathered by these tribals are given below:

Sr.No.	Local Name.	Botanical name of the plant.	In which forest region/s collected.	REMARKS
1.	Tera		Dangs, Dharampur and Rajpipla.	Leaves are used.
2.	Kavach	Mumna prurita	Dangs	Leaves are used.
3.	Gangadi	Xeromphis uliginosa	In all forest regions.	Its fruits are used, either cooked or roasted.
4.	Tandalio	Amarantus lividus	Dangs.	Leaves are used.
5.	Mokho	Schrebera suretenoides	In all regions.	Leaves are used.
6.	Kurdu	Celosia argentea.	Dangs and Rajpipla.	Its tender shoots are used.
7.	Shisham	Dialberga latifolia	Dangs, Dharampur, Rajpipla and Ratanmal.	Its young leaves are used.
8.	Ambadi	Hibiscus sabdariffa	In all regions.	Fleshy calyx of the flowers are used.

Sr. No.	Local Name	Botanical name of the plant.	In which forest/ region collected.	REMARKS.
1	2	3	4	5
9.	Jangli Kel or Dungri Kel.	Ensete Superbum	Dangs and Ratanmal.	Peduncle and inflorescence are used.
10.	Alladi	Morinda tinct.	Dangs	Leaves are used.
11.	Thikodi	Boerhaavia diffusa	In all regions.	Leaves are used.
12.	Kuvadia	Cassia tora	Dharampur and Chhota-udepur.	Leaves are used.
13.	Kangui or Jangar Vel	Celastrus paniculatus	Dharampur and Ratanmal.	Its young flowers are used.
14.	Kumbi	Careya arborea	Ratanmal	Its young leaves are used.
15.	Manvel or Vasdi	Dendrocalamus strictus	Dangs, Dharampur & Rajpipla.	Its young shoots after repeated boiling are used.
16.	Borthada	Sphaeranthus indicus	Dharampur.	Leaves are used
17.	Velando	Ipomoea aquatica	Chhota-udepur and Sabarkantha.	Leaves are used.
18.	Vasanvel or Vaydi	Cocculus hirsutus	In all regions.	Its tender leaves are used.
19.	Maya-ni-Bhaji	Basella rubra	In all regions.	Leaves are used.
20.	Sengani or Shengwan	Moringa Oleifera	In all regions	Leaves are used.

1	2	3	4	5
21.	Kena	Commelina benghalensis	In all regions.	Leaves are used.
22.	Waiwurna	Crateva nurvala	In all regions.	Its young leaves are used.
23.	Papat	Paveta indica	In all regions.	Its flowers are used.
24.	Koliath	Vigna unguiculata	Ratanmal, Chhota-udepur and Dharampur.	Leaves are used.
25.	Mogra	Poinciana regia	In all regions.	Calyx of the flowers are used.
26.	Nichardi	Triumfeta rhomboidea	Dangs, Dharampur & Rajpipla.	Leaves are used.
27.	Ambuti	Oxalis corniculata	Ratanmal, Chhota-udepur and Rajpipla.	Leaves are used.
28.	Kand-vel or Chodhari	Cissus quadrangularis	Dangs & Dharampur	Stens & leaves are used.
29.	Gunja or Chanoti	Abrus precatorius	Dangs & Dharampur & Sabarkantha.	Leaves are used; Seeds are also used.
30.	Jahava or Garmala	Cassia fistula	In all regions.	Flowers are used.
31.	Bharangi	Clerodendron serratum	In all regions.	Leaves are used.
32.	Beheda	Terminalia belerica	Dangs, Dharampur & Rajpipla.	Seeds are used.
33.	Hardo	Terminalia chebula	Dangs, Dharampur & Rajpipla.	Seeds are used.

1	2	3	4	5
34.	Under-Kane	Merremia gangetica	Dangs, Dharampur and Rajpipla.	Leaves are used.
35.	Shidodi	Holostemma annularium	In all regions.	Young leaves are used.
36.	Sarpakhoo	Tephrosia parpurea	Ratanmal	Leaves are used.
37.	Kadukobi	Leucas spp.	Ratanmal.	Leaves are used.
38.	Safed musli	Chlorophytam tuberosum	Rajpipla.	Leaves are used.
39.	Gundo Selur	Coréia diehotoma	Rajpipla & Dharampur.	Leaves are used.
40.	Dadavana	Amberoa ramosa	Ratanmal	Leaves are used.
41.	Vans	Dendrocalamus strictus	Chhota-Udepur, Dangs & Dharampur.	Seeds are used to make flour.

These tribals also collect mushrooms of the Amanita and Pallocybe spices from the forest which they are use as vegetables. It is known as "Vasurta" in ex their dialect. In the forests of Dangs, Dharampur and Rajpipla regions, they grow in huge quantities. But since the juice of the roots contains hydrocyanic acid, there is every chance of having adverse effect when consumed. These have many chemical substances which when consumed, are fatal to human beings or affect the nervous system creating hallucination, unreasonable sense of happiness, etc.

Due to this, a lot of care is taken in the preparation of vegetables from them. After bringing the collected plant, each one is cut longitudinally into two pieces; then thoroughly washed and is cooked without any delay. The cooked vegetable can be preserved for a day but in its raw form it cannot be preserved even for a few hours. If it is cooked in the medium of vegetable oil, the cooked vegetable has a delicious taste.

As said earlier, in the normal way the leaves and young flowers are eaten as a side dish after cooking them as vegetables. But sometimes when faced with starvation situation, these leafy vegetables are consumed as the main dish.

Gathering of wild fruits.

There are a number of trees in the forests of the tribal regions that provide fruits to the tribal people. They are brought home as treats for children or eaten as sweets on the way to and from work and sometimes eaten to-ward off starvation.

As we have observed earlier in case of edible tubers and leafy vegetables, it is generally the older persons who do most of the gatering. But so far edible fruit collection is concerned, the tribal children are in the forefront. One reason for the little interest of the elders in the gathering of the fruits is the short duration for which these are available.

In a year, an average household gathers about 20 kg. of fruits for its consumption. The tribals of Chhotaudepur and Ratanmal regions collect greater amount of wild fruits than the tribals of other regions.

Several varieties of wild fruits are gathered the names of which are listed below.

Sr. No.	Local name	Botanical name	In which forest region/s found
1	2	3	4
1.	Timbra	Diospyros melanoxylan	In all regions.
2.	Umbra	Ficus racemosa	In all regions.
3.	Bor	Lizyphus mauratiana	In all regions.
4.	Jambu	Syzygium cumini	In all regions.
5.	Kali Umbar	Ficus glomerata	Dharampur.
6.	Karmada	Carissa conguesta	Dangs, Dharampur & Rajpipla.
7.	Amla	Emblica officanalis	In all regions but in Dangs in abundance.
8.	Bel	Aegle Marmelos	In all regions.
9.	Dhaman	Grewia filiaefolia	In all regions.
10.	Charoli	Buchanania lenzan	In all regions but in abundance in the forest of Dangs, Dharampur & Chhota-Udepur.

1	2	3	4
11.	Sevan	Gluelina arborea	Dangs, Dharampur and Rajpipla.
12.	Sitaphal	Anona squamosa	In all regions but more common in the Chhota-udepur and Rajpipla regions.
13.	Kumbi	Careya arborea	In all regions.
14.	Kosum	Schleichera Oleosa	In all regions.
15.	Kakda	Garuga pinnata	Dangs and Dharampur.
16.	Fonzo	Opuntia elatior	Dharampur.
17.	Bhilama	Semecarpus anacardium	In all regions.
18.	Tambli	Ehretia lavis	In all regions
19.	Khajuri	Phonix Sylvestria	Chhota-udepur.

Besides the above mentioned fruits, there are some more trees as Vando (Loranthus, longi florus) Alu (Meyna laxiflora), Ankol (Alangum salorifolium), Khat-dhammi (Creura hirsula). Beheda (Terminatia belerica) and Kanji (Holoptelia integuflora) whose fruits are collected by the tribals for consumption. Apart from these fruits, Mahuda (Madhuca indica) is one of the important fruit-bearing trees which has multiple economic utilities for the tribals. Mahuda trees, found in all the forest regions of the State, provide these tribals with flowers and fruits.

The Mahuda flowers are eaten by the tribals even as a vegetable. The fruit of this tree is used as two ways. The upper portion is used for the purpose of eating while the kernel is dried and used for making 'ghee' (clarified butter). The flowers of the mahuda tree are used not only for eating but also for distilling liquor.

The tribals have generally a full knowledge about how these edible roots, leaves and fruits should be processed for human consumption. They take all the necessary and proper precautions in processing these for their own consumption.

They have also some sort of expert knowledge in the ethno-botany of the area in which they live. To be an efficient gatherer requires a vast fund of knowledge about the growth cycle of these tubers, leaves and fruits. The skills of harvesting, which is relatively simple when once learned, are taught by the old members to the younger ones. The expertise in the field botany possessed by the adults is passed on to children while they are out gathering with their parent and other persons of the gathering group. They learn to identify the useful spices, their seasons of availability and the types of locations and plant associations in which each is found. It will be no exaggeration to say that gathering minor forest produce for food is an applied since when the younger members of these tribal communities learn in the process of their growing up.

The ecological system in which these tribals have been living provide them with a supply of nutritious food. From the examples given in the Chart (See Appendix -) it can easily be observed that these tribals have been eating such food, which they either collected or obtain from hunting and fishing, through which it has been possible for getting the supply of all essential vitamins. Further, the way they look their food also help in preserving the vitamin contents intact to a good extent.

MINOR FOREST PRODUCES FOR SALE AND BARTER.

In the traditional economic life of the tribals, gathering economy was mainly veered around food-getting and for obtaining several requirements for living. It was not geared to earn cash income. In a subsistant economy the tribal's need of cash was little. The value of many items of minor forest produce was hardly anything more than for limited local use. After the opening up of forest areas and the penetration of non-tribal merchants in the tribal regions, many items of minor forest produce became a source of commerce for the tribal people. But as the concept of profit in economic dealings was un-known to the tribals, the commercial dealings with the non-tribal merchants with regard to the gathered minor forest produces was hardly bringing any worthwhile cash income. The non-tribal merchants fully exploited the barter system of economic exchange prevalent among the tribal people for making profit for themselves. In the barter system,

as

as we know, the value of the give and take is not considered only in terms of money. It fulfills one's requirement but does not give any profit to the tribals. For instance, the tribals needed salt from the merchants which they supplied to them (the tribals) in exchange of some important minor forest produce. In this manner, the merchants obtained valuable minor forest produces from the tribals who in exchange got either salt or spices or such other things. When the tribals gradually became familiar with money economy, they started earning cash income by the sale of minor forest produces to the merchants. But this commercial activity brought little cash earning as the tribals had no idea about the real worth of a particular minor forest produce in the outside markets. Whatever price was fixed by the merchants- which was normally extremely low- the tribals had had to remain contended with that. The over all result was that the minor forest produce could never became a source of earning substantial income for them. It did not bring much economic incentive to them although the merchants depended upon them for obtaining the valuable minor forest produces. A commercial attitude in relation to minor forest produce could not develop among these tribals for earning cash income. It is only in recent years that the collection and sale of minor forest produces has become an important source for meeting their cash requirement, which has been increasing with the diversification of their wants.

For members of the same tribal groups, collection of minor forest produces brings a substantial income to their household. The important minor forest products which these tribals have been collecting mainly for the purpose of barter and sale but also for personal consumption are listed below:

Sr. No.	Name of the product.	Botanical name of the plant.	In which forest/region/s found.	Remarks.
1	2	3	4	5
1.	Tiruru leaves	Diospyros melan oxylon.	In all the forest regions.	The leaves are used in the rolling of 'bidis'
2.	Ashotri leaves.	Banhinia racemosa.	-do-	-do-
3.	Mahuda flowers.	Madhuka latifolia.	-do-	The most common use is the distillation for manufacturing spirit. It has medicinal values too.
4.	Mahuda fruits (Doli)	Madhuka Latifolia	-do-	Oil is produced and also has medicinal value.
5.	Barks of Chillar	Acacia pennata	Chhota-udepur, Rajpipla.	The bark is used as an auxiliary in dyeing.
6.	Kanji seeds	Pongania pennata	Danta, Dangs, Rajpkpla, Chhota-udepur, Ratanmal & Dharampur.	Its oil is useful for soap-making.

1	2	3	4	5
7.	Awal Bark	Cassia auriculata	Rajpipla Danta, Sabar-Kantha.	The use of it is preferred in tanning. It has medicinal value too.
8.	Sadad bark	Terminelia crenulata	Dharampur Rajpipla Sangs.	The chief use is as a tar.
9.	Kadaya-gum	Sterculia urens	Rajpipla Chhotaudepur Danta, Dangs Ratanmal and Dharampur.	This is very astrigent and is used medicinally. Also used as an ingredient for face creams, cosmetics and for thickening ice-cream.
10.	Salaigum	Boswellia serrate	Danta Chhotaudepur	It has aromatic smell and it burns readily. Its main use is as incense. It has also medicinal value.
11.	Safed Musli	Chlorophytum tuberosum	Rajpipla Danta	It has great medicinal value. It is used as an appetiser tonic, aphrodision etc.
12.	Puwad seeds	Cassia tora	In all regions.	It is mainly used as a cattle feed. It is a rich source of protein.
13.	Aritha	Sapindus laurifolius	Danta, Dangs Rajpipla Dharampur Gir forest.	It is used as a substitute for soap and is good for washing hair as well as silken and woolen clothes.
14.	Amla	Phyllanthus emblica	Dangs, and Dharampur Rajpipla, Ratanmal	It is used in tanning and dyeing. It is one of the ingredients of "triphala" used as laxative and astringent.

1	2	3	4	5
15.	Boheda	Terminalia bellirica	Chhota-udepur, Dangs, Ratanmal Dharampur, Rajpipla.	It has great medicinal value. It is also a constituent of "triphala".
16.	Charoli.	Buchanania lanzan.	Chhota-udepur, Ratanmal.	The kernel of the fruit is used as substitute for almounds in the preparation of sweet meats. It has lot of medicinal value. Oil is also extracted extracted.
17.	Khakhra leaves.	Butea monosperma.	Ratanmal, Rajpipla, Chhota-udepur, Panchmahal.	It is used for making leaf-p plates and leaf-cups.
18.	Khakhra Gun	-do-	-do-	It is used in tanning.
19.	Rosha grass	Cymbopogon martini	Chhota-udepur.	It yields the commercially palm rosa oil which is extracted by distillation.
20.	Rosha Oil	-do-	-do-	The oil is used as base for several perfumes, cosmetics and also sopp.
21.	Moina gun	Lannea grandis	In all regions.	Its commercial value is quite important.
22.	Dhavda gun	Anogeissus Lati-folia.	Danta, Rajpipla, Chhota-udepur, Dharampur, Dangs.	It is used in the preparation of sweets and also medicinally.

1	2	3	4	5
23.	Gorad gum	Milletia auriculata	Rajpipla.	It has medicinal value.
24.	Baval gum	Acacia arabica	Dharampur, Rajpipla, Kachh, Panchmahal.	As tan it is used.
25.	Bila Kernel.	Aegle marmelos.	Chhota-udepur, Rajpipla.	It has medicinal value.
26.	Khakhra seeds. seeds.	Butea monosperma	Danta, Rajpipla, Ratanmal.	For extracting Oil.
27.	Chanothi.	Abrus precatorius.	Dharampur, Dangs, Rajpipla.	It has medicinal value.
28.	Marda sing	Helecteres isora.	-do-	-do-
29.	Chat bor	Ziziphus, Xylopyras.	Chhota-udepur, Ratanmal, Panchmahal.	
30.	Garmala Sing	Cassia fistula	In all regions.	
31.	Brahmi leaves.	Hydrocotyle asiatica.	Panchmahal.	Used in making oil.
32.	Guggal gum.	Boswellia serrata.	Kachh	Used as incense.
33.	Gando Baval Gum.		Kachh	
34.	Khair gum	Acacia catechu.	Rajpipla.	
35.	Khajuri leaves.	Phoenix sylvestris	Danta, Rajpipla, Chhota-udepur.	For making brooms and mats.

1	2	3	4	5
36.	Kuda	Holarrhena antidysenterica	Dangs & Dharampur.	It has medicina value.
37.	Ratanjot	Jatropha gossypifolia	Rajpipla, Dharampur, Dangs.	-do-
38.	Hirda	Terminalia chebula	Rajpipla, Dangs, Dharampur.	It has medicinal value.
39.	Indrajav			
40.	Darudi	Argemone medicana.	Danta, Sabarkantha, Panchmahal, Rajpipla, Dangs & Dharampur.	Oil is extracted from its seed which has medicinal valu value.
41.	Barks of Beheda	Terminalia bellirica	Rajpipla, Dangs & Dharampur	For tanning leatner.
42.	Amli seeds	Tamarindus indica	Panchmahal, Rajpipla, Chhota-udepur.	It has medicinal value.
43.	Limbodi	Melia azadirachta	Rajpipla, Panchmahal, Danta.	It has medicinal value.
44.	Bark of Limbodi	-do-	-do-	For tanning.
45.	Baval seeds	Acacia arabica	Dharampur, Rajpipla, Kachh.	Oil is extracted.
46.	Pilu seeds		Kachh	-do-
47.	Vadhvadia		Panchmahal	
48.	Kernel of mangoe			
49.	Kachdi or Kachita	Strychuos nux-vomica		

1	2	3	4	5
50.	Adusa	Adhatoda vasica	In all regions.	Its leaves are use for dyeing.
51.	Muna	Fibris glomerata	-do-	-do-
52.	Sag leaves	Tectona grandis	-do-	-do-
53.	Karad	Temola tricandra	Dangs, Dharampur Rajpipla	As fodder.
54.	Sukbali	Heteropogon contorfus	In all regions	-do-
55.	Satavari	Asparagus racemosus	In all regions	It has medicinal value.
56.	Honey	-	Banta, Sabar-kantha, Rajpipla, Kachh.	It is used as tonic. It has great medicinal value.
57.	Beeswax	-	-do-	
58.	Kusumbo	Carthamus tinctorius.		

There are also several other minor forest produces which are collected in smaller quantity. These minor forest produces are now gradually becoming a major source of earning cash. In some of the regions, next to agriculture, the second most important source of income for the tribals has been through the collection of minor forest produces.

Majority of the surveyed households earned less than Rs. 500 in a year from the collection of minor forest produces. According to the figures given in the next table, 54.19 percent of the total households were able to earn cash from collection of minor forest products, ranging from Rs. 20 to Rs. 500 while 22.59 percent earned something between Rs. 501 and Rs. 1000.

Annual income (in Rs.)	Percentage of households
1. Upto 500	54.19
2. 501 - 1000	22.59
3. 1001- 2000	2.94
4. 2001- 3000	1.58
5. Above 3000	0.47
6. Nil	18.33
Total:	100.00

Only 18.33 percent of the households were not found to participate in the collection of minor forest produces during the survey year. 4.89 percent of the households could be able to earn as much as Rs. 1000 to Rs. 3000. On an average Rs. 129.00 was earned by a household during the survey year through collection of minor forest produce. In three regions, the annual income of an average household through this source has been Rs. 210, Rs. 193 and Rs. 157.

MINOR FOREST PRODUCES FOR MEDICINE.

The tribal communities have existed for several centuries in the forest environment as isolated groups without access to the modern medical practices of the so called "civilised" society. As isolated societies, they are relatively closed community of knowledge and experience. The very fact that they have been able to survive so long without the medical care of the modern industrial societies clearly proves that they have a system of health care of their own which served them adequately throughout the period in which they had a relatively isolated existence. Their medical systems may be difficult for us to comprehend but as Polgar has pointed out that "it is not true that primitive groups are lacking ideas about ~~xx~~ health and how to care for it - - - 7

The adapive relation of these tribals with the forest environment is not confined only to food getting. For their medical system too, they have been very much dependent upon the products obtained from the forest. In each of these communities several persons, because of their knowledge of the plants which have healing qualities have developed the art of medico-~~xxxxxxx~~ religious practitioners.

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7. Polgar, S. Health and human behaviour in current Authropology, 3, 1962, pp. 159-205

The knowledge and experience which they gained was passed on by word of mouth to the succeeding generations. The knowledge thus passed from one generation to another generation depended upon how much they could memorise to retain that in practice. The limitation of memory restricted the diversity and detail of knowledge that can be preserved. Due to this, the number of people who may contribute their abilities and experience to the common fund of knowledge has been always small in these preliterate tribal communities. Clearly, it was not possible for them to accumulate and store experience of the elaborate, descriptive kind are in our society have used in recognising the variety of ways of being ill and the regularities diseases show in their development and outcome. Due to this, many of the illness must remain peculiar, undifferentiated and anomalous to the traditional healers.

We are concerned here with their knowledge of the minor forest products which these tribals have been using to cure diseases. As we will see, the range of herbal products identified by the healers is quite impressive. The achievements in developing a pharmacopoea by these exotic people show remarkable resourcefulness in discovery in powers of observation and deduction about natural processes and about the plants in the forest ecology where they live. With this vast knowledge of the herbal

medicines and the way these should be used, tribal medical system as found among these communities satisfies the human needs of the society.

These tribal communities identify a number of sorts, tubers, creepers, herbs and shrubs which have got medicinal value and utilise them as required. On a rough estimate, it has been said that of the total 900 different varities of medicinal plants found in the Gujarat state, more than 750 grow in the forests of the Dangs alone.[8] The names of several important plants used by them as herbal treatment have been collected by us from different tribal areas during our field work. These are listed below.

Dangs and Dharampur regions.

Sr No.	Name of the plant.	Ailment in which used.	How applied.
1	2	3	4
1.	Dhadhed kavé (Dioscoreaceal family)	Snake bite.	The stem of the plant is given to the patient for chewing. The poisonous effect of the snake-bite is neutralized.
2.	Umbar (Ficus Racemosa)	i. Stomach troubles. ii. Gravid uterus.	The root of the plant is grounded with water and after adding milk to it, a decoction is prepared which is orally administered.

8. Proceeding of the second workshop on herbal medicines (editors- Dr. Ratilal Adatia, Dr. Yashvant Dave, Shri Chunibhai Bhatt, Billimora, 1978, p.18 (in Gujarati)

1	2	3	4
3.	Nikhisoti or Nisholtara (Ipomoca turpethum)	i. Inflammation in ear. ii. Scorpion bite.	In case of the inflamnation in ear, the twigs of the plant are tied around the affected ear. In case of scorpian bite, the leaves are grounded with water to prepare a sort of paste which is applied at the place of bite
4.	Bibla (Ptero-carpus Marsupium)	i. Leucoderma ii. Uterus diseases	In the case of leucoderma, its bark is grounded with water and a sort of paste is prepared which is applied on the affected part of parts. It checks the spread of this disease. In the case of uterus troubles of the women, a decoction is prepared by grounding the bark or leaves with water and is given to the patient for drinking.
5.	Rohani or Rohin (Soymida febrafuga)	i. Leucoderma ii. Leprosy.	A paste is prepared from grounding the bark with water. The paste is applied to the affected part or parts. Its bark, after drying, can be preserved for a long period.
6.	Mardasing (Helecteres isora)	Stomachache	The young stems, density pipesent, are grounded with water to prepare a decoction which is orally administered to the patient. It can be preserved for a long time after gathered.
7.	Bile or Bel (Aegle marmelos)	(i) Abdominal pain (ii) Urinary troubles of pregnant women.	The flowers of this plant are grounded with water to prepare a decoction which when taken relieves the abdominal pain and cures the urinary troubles of pregnant women.

1	2	3	4
8.	Aauval or Satuwari (Asparagus racemosus)	Tumour and Inflamation.	The root is grounded with water to prepare a sort of paste. This paste is applied on the affected part. If the tumour or inflammation is unripe, it has astriqent effect; and in case of ripe ones, it helps to open the mouth and ultimately in the discharge of the pus.
9.	Pili vel or Pilosundro (Pachiula Tomentosa)	Ulcer and Pile	A decoction is prepared by grounding the root with water. This is orally administered to the patient.
10.	Shisham (Dalbergia latifolia)	Liver trouble of cattle.	The wood of this tree are burnt and the cattle is made to inhale the smoke. This treatment cures the cattle suffering from liver troubles.
11.	Kudo (Holarrhena antidysenterica)	Diarrhea, Dysentery	The bark of the tree is dried and beaten down to make it pulpy. It is then boiled with water. The decoction thus prepared is orally administered.
12.	Jungli Kel (Sesbete super bum)	Dog-bite	The seeds crushed and mixing with water a decoction is prepared.
13.	Dini (Leea indica)	(i) Dysentery (ii) Scorpio-bite.	In both the cases, the root is roasted and then grounded. The powder thus obtained is boiled with water. This decoction is given to the patient to drunk.

1	2	3	4
14.	Rohadi (Oloygonum glalrum)	Menustral trouble of women.	Its bark is grounded thoroughly and after mixing it with water is given to patient for oral administration.
15.	Bordi and Siris (Zizyplus mauratiana)& Albizzia lebbiek)	Cough	The bark is grounded and given to the patient to chew.
16.	Dhorairi (Artemisia nilagirica)	Asthma	Its root is grounded thoroughly and is eatern with jaggery.
17.	Khair (Acaua catechu)	loose motions.	Gum from the tree is given to stop loose motion.
18.	Chikatiyun (Achyranthes aspera)	Cough, Asthma	Plant ash with honey is given.
19.	Samundrasosh (Arovreia nervosa)	As tonic	Seeds are used.
20.	Ran Rel (Ensota superba)	(i) Snake bite (ii) Dysentry	Seeds are powdered and used.
21.	Kakada (Ganuga pinnata)	For treatment of sty.	Gall paste is used.
22.	Dholi Ratanjot (Jatropha gossypifolia)	Tooth-ache	Milky latex from the petiole is applied.
23.	Gangutai (Lantana Camara)	(i) Ulcers (ii) Skin diseases.	Plant ash is applied externally.
24.	Vinchhudo (Martynie diandra)	Burns and Skin diseased	Oil extracted from the seed is used.

1	2	3	4
25.			
25.	Rajjamani or Lajjalu (Mimosa pudica)	Ordinary fever.	The leaves are dried and after powdering, it is filled as tobacco in the 'Bidi' when smoked, it cures fever.
26.	Khakhro (Butea Monosperma)	Bone-fracture or sprain	After thoroughly pounding the bark, it is heated and then it is applied on the affected part in the bandaged manner.
27.	Jangli Bhendi (Hydie Calyana)	Healing of wound.	Its leaves, after making holes in them, are tied around the wound.
28.	Sherwadh (Nussaenda frondosa)	Abdominal pain	Its root is powdered and is soaked into water for some time. Later, the water is orally administered.
29.	Ketiki (Agave americana)	Healing of wound, tumourous growth in any part of the body.	Its bark is used. The bark is kept over the affected part.
30.	Umbra (Ficus racemosa)	(Pathri) Stone in the gall bladder.	If its fruit is taken regularly, it cures tthis disease.
31.	Udala or Udhadi (Nephrosia purparea)	Bone-fracture.	The root of this plant is pounded thoroughly and then applied over the affected part.
32.	Kalar (Albezzia Procera)	Healing of sore.	Its gum is applied over the affected part. Gradually, it heals the sore or wound.

1	2	3	4
33.	Tanachh and Bibla (Eugenia Cujelnensis & Pterocarpus Marsupium)	Leuconhea.	From the bark of both these trees, juice is extracted and mixed together. It is then orally administered.
34.	Baphdi (Leucadenum grande)	Abdominal pain.	Its seeds are grounded and after soaking it in water for sometime, the mixture is administered orally.
35.	Akdo (Calotropis gigantea)	Disease of the cattle.	Its leaves are heated on fire and then applied as poultice through-out the body of the cattle.
36.	Dhanturo (Datura fastuosa)	Diarrohea and Dysentery of young children.	Its leaves are heated and used as poultice on the stomach.
37.	Shivari (gesbania aegyptiaca)	Worms in the digestive organs	Its root is grounded with water and the covection is orally administered.
38.	Kidmar (Aristoloshia Bracteata)	For flow of the milk into the mother's breasts.	Its leaves and brats are wrapped around the breasts.
39.	Dampan or Adusa (adhatoda vasica)	Asthma, cough.	Leaves are expectorant in chronic cough. The leaves of this plant are soaked into mud. After some time new shoots come out. These shoots are given to the subject to eat

1	2	3	4
40.	Bhutia palas (Cassine glauca)	For curing the cracks in the tips as well as in the foot-soles.	The juice obtained from this tree is applied on the affected part.
41.	Sadado (Terminalia crenulata)	Sprains	The bark is grounded and then is applied on the affected part.
42.	Amli (Tamarindus indica)	Scorpion bite	Its seed after rubbing it on the earth, is put on the bitten part.
43.	Dab Dhurvo (cynodu)	Voming.	If its leaves are bruised and the smell is inhaled, the vomiting is checked.
44.	Sthli	-	In the presence of this plant, witch-craft cannot be effectively practiced. It is also used for inducing abortion.
45.	Kindhal (Xeromphis spinosa)	Diarrhoea & Dysentry.	Bark is astrungent given internally.
46.	Beheda (Terminalia Belerica)	Anaema leucorrhea.	Its bark is mild dieuretic. It is used in several ways.
47.	Kasur (uraria picta)	Paralysis and healing of wound.	The root is grounded with water into paste which is applied on the affected part.
	MATHIAL AND CHHOTA-UDEPUR REGIONS.		
48.	Dhad (Lagerstroemia parviflora)	For healing wounds.	The root is grounded with water into paste which is applied on the affected parts.

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49.	Vavadi (Cocculas hirsutus)	(i) Curing ordinary fever. (ii) Tearing eye-troubles	Thera Juice is extracted from the leaves which is administered orally. In case of the treatment ~~x~~ of eyes, the leaves are powdered and after mixing it with, it is applied to the affected eye.
50.	Gulvel- (Tinospora Cordifolia)	Ordinary fever.	Its stem is thoroughly pounded and after mixing water, a decoction is prepared. This also serves as a good tonic.
51.	Darudi (Argarone mexicana)	Skin diseases.	Oil is extracted from its seed which is applied on the affected parts .
52.	Kan Phuti (Cleome viscosa)	For inflammation and other wound.	Its leaves are bruised and juice is extracted from it which is applied on the wound.
53.	Tilvani (Cleome gynandra)	Skin disease	The leaf juice is applied on the affected part. Oil extracted from its seeds are also used in similar ways.
54.	Phutni (Polygola Chinensis)	Healing inflammation.	A decoction is prepared from the leaves which is orally administered.
55.	Kunvund (Bergia odorata)	Scorpion bite.	Paste is made from this plant which acts as antidose against scorpion bite.
56.	Manedo (Azanza Lampas)	Inflammation.	A decoction is prepared from its leaves which is administered orally.

1	2	3	4
57.	Varan/ Kydia Calycina)	Body ache	The leaves are braised and after grounding with water, a paste is prepared which is applied externally on the affected parts of the body.
58.	Gangarasi (Greura hirsuta)	Healing of Cut or wound.	Paste is prepared from the root which is applied externally on the wound on cut.
59.	Ardusa (Ailanthus excelsa)	Curing of skin diseases.	From the bark of this, a decoction is prepared and is applied externally.
60.	Rota Dana (Leea macrophylla)	Kills worms of the digestive organs.	Its root is pounded and after mixing water, it is administered orally.
61.	Mal Kangani (Celastrus Paniculatus)	Body-ache	Oil from its seeds is extracted which is massaged on the body.
62.	Khaidhro (Butea monosperma)	Eye-diseases.	The flowers are distilled to prepare a lotion which is applied externally on the yes.
63.	Karanj (Pongamia pinnata)	Skin diseases	Oil from the seeds is extracted which is applied externally on the affected parts.
64.	Kavario (Oraria Picta)	Relieves fever.	Juice from the bruised leave is extracted, which when taken internally relieves fever.
65.	Kasundi (Cassia occidentalis)	Scabies and other skin diseases.	Paste from the root and leaves is prepared and is applied to externally.

1	2	3	4
66.	Kunvadio (Cassia tora)	Vermicide	Leaves are generally aperient and prescribed in decoction for children from suffering from vermicide.
67.	Kumbi (Careya arborea)	Cough & Cold.	Juice of fresh bark, flowers is administered with honey as demulcent in coughs & colds.
68.	Gilodi (Coccinia indica)	Cough	Leaf in juice is used for curing 'Kapha' and 'pitta' .
69.	Ankul (Alangium Salvifolium)	Skin diseases	Paste is prepared from the bark of the root and it is applied externally.
70.	Ajganda (Ageratum Conyzoides)	Healing of wounds.	Juice is extracted from the plant and is used externally.
71.	Kalijeeri (Veronia anthelmintica)	(i) Asthma (ii) Hiccap	Its seeds which are aerid, are used for curing Asthma, and Hiccup.
72.	Gorakmundi or Bodio (Sphaeranthus indicus)	(i) Stomach-ache (ii) Killing of worms (iii) Gastric troubles.	Powder is prepared from the roots and seeds which is administered orally. Juice is extracted from the plant is also used.
73.	Brahmadandi or utateri (Wricholetria glaberrima)	(i) Seminal debility (ii) Snake-bite.	(i) Decoction prepared from the plant is used for seminal debility. (ii) The paste prepared from the plant is used as anti-dose in snake bite.

74.

1	2	3	
74.	Sadori or Sahadevi (Vernonia cinerea)	(i) Ordinary fever. (ii) Bronchitis	(i) The plant decoction is used internally to cure fever and bronchitis.
75.	Chitaro or chitra (Plumbago Zeylanica)	Skin diseases.	From its root which is a powerful poison and its internal use is said to be attended with great danger, paste is prepared which is applied externally on the affected part or parts.
76.	Mahuda (Madhuca latifolia)	(i) Snake bite. (ii) Rheumatic pain.	Bark decoction is astrigent and tonic which is used as anti-dose in snake-bite and for relieving theumatic pain.
77.	Uhhilhu ringni (Solanum indica)	(i) Bronchitis fever	The decoction prepared from the root is said to be expectorant and useful in cough.
78.	Setu or Setoli (Croxylum indicum)	(i) Intestinal worms (ii) Wounds of Cattle.	Paste prepared from the bark of the root is used internally. The paste is applied externally on the wound of the cattle.
79.	Agheda or Andaro (Achyranthes aspera)	(i) Bites of poisonous insects (ii) Pneumonia.	(i) Leaf paste with water is applied with benefit to bitten part (ii) Decoction of the whole plant is administered orally.

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80.	Gorkhabundi (Aerua lanata)	Headche	Paste prepared from the root is applied on the fore-head.
81.	Kidavari (Aristolochia bracteata)	Intentional worms.	Plan- juice is used as it is said to be purgative and anthelmintic.
82.	Dandatio thora (Euphorbia tirucalli)	(i) Snake-bite (ii) Rheumatism	Fresh milk juice is used as a rubefacient embrocation.
83.	Satavari or Saslanu ghas (Asparagus racmosa)	As tonic for increasing sexual progress	The root is said to possess aphrodisiac properties and is chewed.
84.	Dadhiyo Vachhonag (Gloriosa Superba)	Snake bite and bites of poisonous insects	Paste prepared from the tuber and formed with water is said to be useful anodyne application for snak-bite and bites of poisonous insects.
85.	Kantalo Limado (Achyranthes aspera)	Headche.	Fruit ash is applied on the fore-head.
86.	Roda Kantasaliyo (Barleria prattensis)	Eye	Leaf powder is used.
87.	Aladi (Morinda tinctoria)	Skin diseases.	Bark juice is used.
88.	RAJPIPLA REGION		
88.	Podina or Kodarsi (Securinega virosa)	Fracture	At certain places in the forest, white mud is available. The paste prepared from this plant is formed with this mud and this preparation is applied externally on the affected parts.

1	3	3
89.	Vasa (Boerhaavia diffusa)	Eye diseases.	Bruised leaves of this plant are applied externally on the affected eye or eyes.
90.	Kiroth (Ipomoea turpethum)	Constipation	The root is thoroughly pounded and is soaked into water for sometime. It is then administered, alongwith the water, orally.
91.	Koidu (Skdo) and Kukkad Kand (Calotropis gigantea and Scilla indica)	Stomach-ache Rat	The bark of the Koidu plant and the the pulp of the Kukkad Kand are thoroughly pounded together and decoction is prepared from this which is applied externally on the stomach.
92.	Mardasing (Helecteres (sora)	ear troubles.	The juice extracted from the bark is used internally in the ear.
93.	Khati Ambli (Tamarindus indica)	Tooth-ache	Decoction is prepared from its leaves and forming it with water, it is gargled.
94.	~~Satavari (Asparagus racmosa)~~	~~Diabetes~~	~~Decoction is prepared from its leaves and forming it with water it is~~
94.	Satavari (Asparagus raumosa)	Diabetes	Its root is dried and then pounded thoroughly. The powdered form is mixed with water and is administered orally.

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95.	Nilgiri (Eucalyptus)	(i) Body ache (ii) Cold	(i) After boiling the leaves in water, the hot water is used for taking bath. (ii) The vapour of the boiled leaves is inhaled.
96.	Vadlo (ficus Bengal enisis)	Uterus diseases.	Bark infusion is mixed into Mahuva liquor and is administered orally.
97.	Galedu (cocarea indica)	Throad trouble.	Its fruit is used to prepare paste which is applied externally.
98.	Vari or Varno (Crataeva nurvala)	Cures wound, sores and blisters.	From the barks and leaves, paste is prepared which act as rubefacent and resicant.
99.	Sisam (Dalbergia latifolia)	In cattle disease.	The break is used for the treatment.
100.	Gandio (Aristolochia bracteosa)	Wound of cattle.	Its bruised leaves are externally applied.
101.	Ardusa (Ailanthus excelsa)	Bronchitis fever	The bark is used to prepare decoction which is administered orally.
102.	Ran-Draksha (Vitis indica)	Bone fracture	The fresh twig of this plant is chewed for five to six days. The root is also powdered and applied on the affected part.
103.	Jaya Parvati (Nyctantes arbertristis)	Loose motion.	Decoction prepared from the root is orally administered.

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104.	Kowtá (Holarrhena antidysenterica)	(i) Gout (ii) Fever	(i) The bark and root are grounded into paste which is applied over the affected part. (ii) Root decoction is orally administered.
105.	Charoli (Buchanania lanzan)	Snake-bite	Paste is prepared from the bark of young tree which is thoroughly mixed with white mud. It is then applied extenrally at the bitten part.
106.	Agheda (Achyranthes aspera)	Body pain.	Root decoction is used to relieve pain.
107.	Kherati (Gida cordifolia)	Stomach pain	Root infusion is orally administered. The paste of the root is also applied externally.
108.	Dhamin (Gravia hirsuta)	Rheumatism	The root-bark is used to prepare a paste which is applied externally.
109.	Dari (Pueraria tuberosa)	Fever	Root-decoction is administered orally.
110.	Shopha (Peucedanum graveolens)	Stokach ache Rheumatic pain.	Seeds bruised and boiled in water and mixed with root are applied externally.

~~111.~~

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	DHALA REGION:		
111.	Gorhai (Aphaeranthus indicus)	Cough (Asthma and Bronchitis)	Its root is chewed. Juice prepared from the plant is also administered orally.
112.	Kansaki (Abutilon indicum)	Ulcers and skin diseases.	Root decoction is used. Leaf juice is applied on the affected part of the skin.
113.	Khan (Acacia catechu)	Dysentery	Its gum is mixed with milk and drunk.
114.	Mado (Calotropis gigantea)	(i) Stomach ache (ii) Head-ache	Its leaves are warmed and are applied. The process is repeated several times.
115.	Halad (Curcuma longa)	Eye-sores	Decoction is prepared which is applied externally.
116.	Khati Mado (Asathracjta indica)	Wound	Paste, prepared from the root, is applied externally.
117.	Mejal	Sprains	Leaves of the tree are boiled with water and then applied on the affected part.
118.	Sag (Tectona grandis)	Scorpion-bite.	Bark paste is applied at the bitten part.
119.	Kandar (Nerium Odorum)	Tiger-bite	From its leaves and stems paste is prepared, which is applied at the bitten parts.

1	2	3	4
120.	Kurva (Mitiveria Zisanoides)	Snake-bite	From the root of this plant a paste is prepared. After adding more water, a drink is prepared which is administered orally. The victim vomits down and thus the snake poison flows out of the body.
121.	Chanothi (Abrus pres-atorius)	Inflamation or boils in mouth	Leaves are used in pan.
122.	Nagur Velo	Snake-bite	The paste prepared from its root is applied externally at the bitten place as well as on the fore-head. The victim is then wrapped with a thick, 'chaddar' .
123.	Keda (Capparis decidua)	Tooth-ache	Twigs are chewed.
124.	Ghayo (Corchorus tridens)	Sexual debility	Entire plant decoction is given.
125.	Timra (Diospyros melanoxylon)	Controlling seminal discharge.	Unriped fruits are dried and powdered to be used.
126.	Panchamani (Mindernia oppositifolia)	To check mis-carriage or abortion.	Leaf juice is given.
127.	Dhonya Ringani (Solanum Surattense)	Cough	Root decoction is used.

The hilly forest areas of the Gujarat State have a wealth of herbal medicines which still remain under explored. From the foreging discussion one can clearly see that those tribal people use minor forest products in a big way to cure several type of diseases. XX

MINOR FOREST PRODUCES FOR ARTS AND CRAFTS

Most of the house-hold belongings such as baskets of various shapes and sizes, mats, strings for cot, winnowing fans, grain containers, hunting weapons, fishing traps and traps for birds, etc. are made out of the forest products. These are made in an artistic manner. Bamboo is one of the most important forest products which is used in a variety of ways by these people. It occupies an important place in their technology. They show an exemplary craftmanship in making several things from bamboo. It is used for making frames of houses, both of the vertical walls and the sloping roofs. In the Dangs, Dharampur and Rajpipla regions, the walls are invariably constructed of mats of bamboo strips which may sometimes be plastered smoothly by by mud. The bamboo frames of roofs are filled with grasses, leaves of sag (Tectona grandis), Khakhra (Butea monosperma) and Kosim (Soweichera oleosa) trees or straw. Sometimes wall are erected with sticks of the Karvi (Carria callosas).

Several plants are utilized by the tribals for obtaining dyes to be used in making artistic drawings on the walls of the houses. Some of these are listed below:

i. Aduso (Adhatoda vasica) - A yellow dye is obtained from the leaves by boiling it in water.

ii. Khakhra (Butea monosperma)- The dried flowers yield a brilliant yellow dye.

iii. Umro (Ficus glomerata)- Its bark yield good black dye.

iv. Sag (Tectona grandis)- Its leaves are used to obtain yellow or red colour.

v. Amli (Tamarindus indica)- From the infusio of its leaves, the tribals get yellow or red dye.

Rope making is an important craft among these tribals. The forests in the tribal regions of the State abound in suitable plants and trees which provide fibres which they use for making ropes and cords. Some of the plants used for this purpose are as follows.

i. Khakhra (Butea monosperma)- Its root-bark yields a strong fibre called "chhoel" which is used for making ropes and cords.

ii. Bamboo (Dendrocalamus strictus and Bambusa arundinacea)- Fibre obtained from bamboo shoots is used for making ropes.

iii. Dhaman (Grewia tilliaefolia)- The bark of this tree yields a fibre which they use for making cord.

iv. Chambul (Bauhimia vahli)- This is a gigantic climber; the inner bark yields fibre used for making ropes. The strong cords prepared by the tribals is an important article with them.

v- Kadu-ch (Corchorus trilocularia)- A good rope is manufactured from its fibre .

vi. Ambadi (Hitrians cannatrinus)- The inner bark yeilds fibre which is of good quality. Ropes and cords are manufactured by the tribals.

vii. Mardasingh (Heleteres igora)- The inner bark yields a light brownish or greyish fibre which is not very coarse. It is soft, silky but rather lacks in strength.

Nearly all the agricultural implements which these tribals have been using such as tool handles, axles, shafts, pounders, mortars, wheels, carts, ploughs, yokes, etc, are made from wood of a variety of trees. Most of these are manufactured in quite artistic fashion.

As mentioned earlier (in the section of MFP or sale & Barter), bark of several trees are used for tanning which is an important craft of the tribals.

MINOR FOREST PRODUCE FOR RECREATION.

Several varieties of musical instruments which the tribals use for recreation are made from materials obtained from the forest. The bamboo is the main forest products which is used for making musical instruments.

In Dharampur, Dangs and Rajpipla regions, the tribals make a lighter from the forest products to produce fire. The fruits of the savar tree (Bombax malabaricum) yield cotton which is stuffed by the tribals inside a small wooden hollow cylinderical container (for this too the wood of this very tree is generally used). Both ends of the container are covered by using separate wooden lid type devices. The container is is filled with cotton to its brim. With the help of flint and iron sparks are produced near the mouth of the container. The cotton inside the container easily starts burning and in this manner fire is produced. After making use of the fire, the lid of the container is put back to seal the mouth and the fire inside automatically gets extinguished. This container is particularly used for smoking "bidi".

As indicated earlier hunting weapons, fishing traps and traps for birds are made out of the forest products. These are used for recreational purposes too apart from serving as a means to obtain food. For catching fish, which is an important source of recreation for these tribals, they use several plants as fish-poisons for the purpose of catching fishes in the streams. The names of such plants are given below.

1. Safed siris or kilar (Albrizzia procera)- The bark, pounded and thrown into water stupefies fish.
2. Chilla or Kofi (Casearia tomentosa)- The milky juice of the fruit is used for poisoning fish.
3. Dendalio thor (Euphorbia tirucalli)- The milk juice is used.
4. Maluda (Madhuka latifolia)- The oil cake which remains after extraction of the oil from the fruits is used.
5. Shaunari or pandharpheti (Securinega virosa)- It is used to intoxicate fish.
6. Sandan or Tivas (Onganic oofeeinensis)- The pounded bark is used.
7. Kuichal dela (Xeromphus spinosa)- The pounded bark is used.
8. Arita (Sapindus laurifolius)- The fruits and the soap water are used.

Mahuda flowers are extensively used by all the tribal communities for distilling spirit, the drinking of which is a major source of recreation. Besides this, liquor is also prepared by distilling "gur" (jaggery). At the time of distillation the bark of the khaiger (Acacia ferruginea) is mixed with "gur".

The "tad" (Borassus flabellifer) also provide the tribals an intoxicating drink called 'tadi'. The copious sap from the tree is obtained by tapping the spadix

(inflorescene) which is used after fermentation. The fresh sap is sweet and forms a pleasant and wholesome drink, but the tribals prefer to take it after fermentation. These trees are in abundance in the Chhota-Udepur forests.

MINOR FOREST PRODUCE FOR EMPLOYMENT GENERATION.

Apart from the collection of minor forest produces which is in itself a good source for generating employment for the tribals, there is further scope to generate employment by using several minor forest produces for starting cottage based industries. Another important way to generate employment is to start a chain of processing units for the collected minor forest produces in the tribal regions.

The minor forest produces which are being used and which have the potentiality for generating employment are listed below

1. Temru leaves (Diospyros melanoxylan)- for bidi making.
2. Ashotri leaves (Banhinia racemosa)- for bidi making.
3. Kanji seeds (Pongamia pennata) for making soaps and detergent powder.
4. This is an important ingredient used in the manufacture of soaps and detergent powder.
4. Khakhra leaves (Butea monosperma)- for making leaf-plates and leaf-cups.

5. Salai gum- (Boswellia serrata) - for making vermillion, guggal (incense) and aggarbati (incense stick)

6. Mahula fruits (Madhuca latifolia) - for extracting oil.

7. Seeds of Kogum tree (Schleichera oleosa)- for extracting oil.

8. Roshu grass (Cymbopogon martini)- for extracting oil by distillation.

9. Bark (all varieties)- for making ropes and cords. Special scheme for making ropes and cords can be put into operation for generating more employment.

Bark of several trees are also used for tanning. Thus, there is scope to start tanning industry (cottage-based) for generating more employment.

10. Bamboo (Dendrocalamus strictus and Bambusa arundinacea)- for development of bamboo crafts which will generate productive employment. A variety of fancy articles and toys can be manufactured.

11. Growing lac on Khakhra (Butea monosperma) and Ber (Zizyphus maurationa) and processing of stick lac.

12. Sadad bark (Terminalia cremulata)- for extraction of Oxalic acid.

13. Hirdo (Terminalia chebula)- Plantation of this plant will generate employment. Important of myrobalans is due to their tanin content which converts the animal skin into leather.

21. Development of tubers and mushrooms- Since the tribals collect a variety of tubers and also mushroom, a scheme for developing these can be undertaken to ensure supply of food to them.

22. Bee keeping and honey extraction schemes- There is every scope to generate employment among the tribals through this scheme.

Several of these family beneficiary schemes for generating employment have already been undertaken in Gujarat by the Gujarat State Forest Development Corporation, such as Bidi making, establishing oil crushing units to process mahuva seeds, making of leaf plates and moulded leaf-cups, honey extraction etc. The corporation has also established Vanil Udyog in Valsad District to generate employment among the tribals. It comprises of following units.

(i) Saw milling, (ii) Seasoning (by convantional and Solar methods), (iii) treatment, (iv) wood working and joinery and (v) Assembly and finishing.

It is manufacturing panelled door- shutters, frames, window shutters, furniture and allied articles such as battons , sticks etc.

INCREASED IMPACT OF MINOR FOREST PRODUCTS ON SOCIO-ECONOMIC LIFE OF TRIBALS

From the foregoing discussion regarding the gathering of minor forest products by tribals, it becomes quite apparent that this economic activity serves as a link

between different individual tribal groups and nature. It may now be seen that the floral resources in their forest environment offer ample opportunities for collecting the products for various purposes. The tribals obtain most of their requirements of food, shelter, medicines and other material possessions from the forest around which they live, with the help of most simple implements and without any technological aid from outside. They had successfully and positively adapted to a forest habitat. The close adaptive relationship between them and the forest environment has enabled them remarkably to survive while leading a relatively isolated life in a difficult environment. Future was also kind that during the last thousand of years it had been possible for the tribal population to live with comparative ease simply by hunting and promoting food gathering. "That may be one of the reasons for the existence of aboriginal culture in the remote forest areas as against the number of civilizations emerging, flourishing and getting destroyed during many hundred years B.C. to the great modern era." 8

Although agriculture is now the basis of subsistence, gathering minor forest products provides a substantial complement to agriculture. During the summer and rainy seasons,

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8. Vatsak, V.D. - Observations on wild plants from hilly regions of Maharashtra and Goa, Resume and future prospects, in Glimpses of Indian Ethnobotany (Ed-S.K. Jain), Oxford, New Delhi, 1981

Due to this reason gathering is, as has been discussed earlier, still very much a part of their economic life. The families of these ~~trib~~ tribals still move inside the Forest seizing whatever opportunity the floral life provides, although it is affected now by large scale destruction of forests in some areas. In comparison to earlier times, their availability is less now. Gathering today produces supplemental food or income, it can no longer support the community as in earlier times. The forests have dwindled and the needs and demands of the tribal people have changed to fit a new model of economic life, which has emerged due to the culture contact with non tribal societies as well as a result of the development programmes carried out among them.

The modern economic activities are gradually being pushed into the life of these people, as a result of which the traditional economic activities are giving way to new ones. In this changing situation, gathering minor forest products is now getting geared to earn cash income. Although minor forest products play such a significant role in the life of these people, proper encouragement and impetus for the collection of these for earning cash income has never been given to them till now ~~th~~ by the wider society. Infact, because these tribals gather a large variety of vegetable foods and other commercially important minor forest products, the stigma of

aboriginality is attached to them by the non-tribals. Due to this, there was certainly the danger that their economic system, in which gathering has been a one of the major constituent, would have rapidly collapsed. The role of the Gujarat State Forest Development Corporation and its policy towards the collection of minor forest products thereby those tribals has the premise to save the gathering economy of those people from being collapsed and to use this traditional economic activity for their economic development.

After the formation of the Corporation with its benevolent policies, the participation of tribal house-holds in the collection of minor forest products for the purpose of earning cash is catching speed. Their participation could be achieved due to the concerted efforts made by the Corporation. The natural and clear implication of their participation is that there has been always a tremendous scope to tap the forest resources, so far collection of minor forest products is concerned, for improving the economic condition of the tribals. Earlier, the private merchants had been collecting the commercially important minor forest products through the tribals but they used to derive maximum profits for themselves depriving the tribals who actually collected from gaining any worthwhile economic benefit. The tribals suffered greatly from the economic exploitation by the private merchants who used

their skills. There was not much economic incentive for the tribals to participate in the collection of minor forest products for earning cash income. It is only after creation of the Corporation that collection of ~~them~~ minor forest products could now become a viable source of gaining steady, regular, good and definite income. Now, they have a chance to ~~improve~~ improve their standard of living through collection of minor forest products which formerly they have been collecting mainly for domestic consumption. A large majority of the surveyed house-holds have been found to use the income gained from the collection of minor forest products; towards house-hold expenditure. It has been observed that in the weekly markets and fairs, the young-man and women spend the earning in buying dresses and fancy goods for themselves. Young tribal women particularly spend the earning from collection of minor forest products towards purchase of trinkets, bangles, ribbons, combs, powder and other fashionable articles.

So, to whatever extent the tribals participate in the collection of minor forest products as an economic activity, this much is certain that through collection of these products, they become

committed to the consumption of commercially manufactured products and thereby to the money- and - market economy of the modern world. It has been rightly observed that "the Gujarat State Forest Development Corporation has demonstrated the potential of the so called minor forest products in bringing about an economic revolution in the tribal belts".[9]

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9. S.A. Shah, Tribal Development and Forests, paper presented in the Seminar on Tribal Life, Culture, Art and their changing Pattern, held at Ahmedabad (as part of Gujarat Adivasi Kala Mahotsva) on 11-12 February, 1984.

CHAPTER - 5

IMPROVEMENT BROUGHT ABOUT BY GIRIJAN CO-OP. FOREST DEVELOPMENT CORPORATION IN DEVELOPMENT AND MANAGEMENT OF MINOR FOREST PRODUCTS AND THEIR IMPACT ON SOCIO-ECONOMIC CONDITIONS OF THE TRIBALS.

(1) Lac Development :- Lac is one of the main items of M.F.P. collected in Gujarat. It is collected from the forest areas of Chhotaudepur Taluka of Vadodara District and Dang Taluka of Panchmahals District. The lac is collected by the lowest strata of tribal groups in these areas. Though lac was collected and marketed in the past, it has lost its grounds due to stiff competition from the synthetic products. However, after GSFDC took over M.F.P. collection, it has taken up several measures to rejuvenate the lac production and its marketing, with the help of the Lac Development Institute, Ranchi.

300 tribal families are involved in the rearing of lac insect and collection of lac. Due to the concerned efforts of GSFDC like imparting training to tribals, donating special implements to them, supplying brood lac (seed lac), etc., the production of lac has shown an upward trend.

(2) Payment of proper wages :- The entire operation of collection of M.F.P. and sale was in the hands of private contractors prior to the year 1976. After the

GSFDC Ltd. Has been instituted for the collection of M.F.P. in the year 1976, it has taken steps to increase the collection charges paid to the primary collectors, from time to time. The following statement gives the comparative idea as to how the collection charges have been increased.

Table 18

Statement regarding rates fixed by GSFDC for artani M.F.P. and rates fixed earlier.

Name of M.F.P.	Rate for collection before GSFDC in 1976	Rates in Rs. given by GSFDC			
		1978	1980	1982	1984
	Rs.	Rs.	Rs.	Rs.	Rs.
Timru leaves (Per Std.Bag)	12.50	20.00	35.00	45.00	60.00
Mahuda flowers (Per quintal)	20.00	40.00	100.00	100.00	140.00
Mahuda seeds (Per quintal)	150.00	175.00	250.00	250.00	400.00 to Rs. 450.00
Sadad bark (Per quintal)	5.00	-	7.50	10.00	14.00
Puvad seeds (Per quintal)	25.00	-	60.00	40.00	45.00

In addition to the payment of proper and fair wages to the primary collectors, the efforts of GSFDC also resulted in the increase in the quantity of M.F.P. collected from year

to year, which means the increase in the generation of employment. For example, the collection of Sadad bark reached an all time high of about 22,000 quintals in 1980, against only 4,000 quintals during 1976 (Before the Corporation). Similarly, against only 500 quintals of Puwad seeds collected in the State prior to 1977, the Corporation during the 1981 season collected more than 10,000 quintals. The Corporation collected 1,00,000 quintals of Mahuda flowers in the 1982 season, against 19,000 quintals in 1976.

Similarly, a number of commodities which were never collected in the past are also now being collected by the Corporation. The number of items collected in 1976, prior to Corporation were only about 20 which rose to more than 50 items in 1982 season after the establishment of Corporation. Due to this, the earnings of tribals and the employment generated have gone up, which will be evident from the following statement :-

Table 19

Statement regarding tribals (Years-wise) earning of and Mandays

Sr. No.	Season	Earning of the tribals (Rs.in lac)	Employment (Mandays in lacs National full days)	Remarks
1	2	3	4	25
1	1977	26.62	8.89	
2	1978	77.00	12.50	
3	1979	97.01	19.00	
4	1980	120.00	20.00	
5	1981	172.00	25.00	
6	1982	226.00	30.15	

(3) Bhavfer :- A certain pre-decided collection rate is paid to tribals by Corporation at the time of collection. However, many times, profits earned on a particular M.F.P. are higher than the costing worked out at the time of collection when marketed due to market forces, etc.

Corporation has, therefore, designed a system of ploughing back such additional revenue to the primary collectors who collected that particular M.F.P. as the additional wage (which is know as Bhavfar). Rs.5.7 lacs were paid as Bhavfer to tribals for Timru leaves in the year 1981. Similarly, Bhavfer was paid to 34 beneficiaries who collected seed lac in the 1983 season.

(4) Rural development :- Corporation has been participating in various rural development as well as community welfare programmes. Corporation contributed Rs.7.53 lacs in the year 1979-80 to Rural Development Society, Surat for taking up developmental works such asas construction of wells for drinking water, construction of community halls, etc. in five villages of Panchmahals and Vadodara districts in collaboration with the Corporation. In the same year, Corporation contributed Rs.24,000/- to Sadvichar Pariver, Ahmedabad for taking up soil conservation and tree plantation works in villages of Meghraj taluka of Sabarkantha district and Rs.5,000/-to Shram Mandir Trust for taking up welfare programmes for lepers.

So as to enable the Society of Gujarat State Corporations for Rural Development undertake development of villages in in Panchmahal and Ahmedabad districts, Rs.2.25 lacs were contributed in the year 1980-81. Further Corporation has contributed to the Chief Minister's Relief Fund for the welfare of the cyclone-affected in the State a sum of Rs.1.00 lac in the year 1982-83. The Corporation has also contributed Rs.1.00 lac to "Adivasi Seva Nidhi" - a fund created by Sadvichar Pariver, Ahmedabad for ameliorating the conditions of tribals in Gujarat.

(5) Training in M.F.P. collection :- Corporation has introduced (2 to 3 days) field training programme to train tribals in improved collection and storage practices, standardisation, quality control and related matters.

Tribals are trained by practical demonstrations, charts, maps, etc. in the natural environment. Over 61,500 primary collectors have benefitted from such training programmes. Evaluation of such programmes does indicate improvement in quality of M.F.P. collected.

(6) Research & Development :- Corporation has undertaken research and development on its own. A Central Research Station is established in 5 ha. area at Kollary in Panchmahal district for taking up research on meditional plants, it collection, improvement of M.F.P. crop, etc.

Corporation has also taken up a research Project in collaboration with B. A. college of Agriculture, Anand evolve grafted variety of Mahuda and Churoli, so as to bring down their gestation period and facilitate cultivation of these grafted varieties for increased and early production of good quality M.F.P. (Mahuda flowers and seeds)

(7) With a view to replenish the important M.F.P. yielding trees like Mahuda, Kinnu, etc; seedlings are raised under the nursery programme and distributed to the Forest Department for raising them in their plantations. During 1992-93, 5000 such seedlings were distributed and one ha. of Kinnu plantation was raised by the Corporation at Bolliary. 300 seedlings were also reared by the staff of the Corporation.

Similarly, efforts to rear seedlings of Mahua and Kinnu through motivation to tribal ryot owners continued to receive attention. During 1992-93, 200 Mahuda seedlings were reared by them in their fields at Bamboli and Dabhave villages of Bardez taluka.

Efforts are being made by the Corporation to encourage the people in the rural areas to plant and rear Mahuda trees on their lands by giving them some cash incentives in addition to supply of free seedlings and technical know-how.

(8) The Corporation is organising collection of M.F.P. from the forest areas through a network of agents. These agents are generally the local chowkidars, who were handling M.F.P. collection prior to Corporation's entry into M.F.P. collection. Even though, the Corporation is taking timely and appropriate steps to ensure the payment of

remuneration to primary collectors as per the fixed rates for M.F.P., the primary collectors are not yet completely free from being cheated by these shopkeepers in the transaction. Therefore, the Corporation is organising collection of M.F.P. through direct purchasing centres at all possible places, at which the M.F.P. is purchased from primary collectors directly by the Corporation employees, without any agents in between. The number of such direct purchasing centres was 42 during 1984 season. Since interest and response shown by the tribals in such direct purchasing centres is very encouraging, more such centres would be opened in in the coming year.

(9) Similarly, the primary collectors have shown great enthusiasm in organising M.F.P. collectors Co-operative Society in the forest areas, especially in Chhotaudepur Project Division. These Societies cover the entire area of Chhotaudepur Project Division and the membership of these Societies stands at 13. The tribals get lower remuneration through mere collection, but they can increase the same by dovetailing grading and manufacture of value added products. This is the main reason for the increase in the number of M.F.P. collecting Co-operative Societies.

CHAPTER - 6

TRIBALS' PERCEPTION OF THE DEVELOPMENT OF MINOR FOREST PRODUCE IN GUJARAT

(1) Eversince the functioning of Corporation, the tribals have been getting fair remuneration for the labour put in by them for the collection of M.F.P. The Corporation has been encouraging the tribals for collecting good quality produce in maximum quantity, by giving them prizes. For example, in Timru leaf collection, the Corporation has been distributing prizes to all the tribals whose collections are maximum, as detailed below :-

Season	Name of tribal and address	Wages earned by the tribals
		Rs.
1980	Smt. Soniben Goziabhai Vasava At & PO: Netrang, Dist, Bharuch.	2,050.00
~~1981~~		
1981	Smt. Vechhiben Govindbhai At & PO: Panwad, Dist. Vadodara.	2,508.00
1982	Smt. Samrathben Sabbhai At & PO: Singpad. Dist.Panchmahal	2,695.50
1983	Shri Mavabhai Bhurabhai At & PO : Bhul, Dist.Panchmahal	2,880.00

(2) In Timru collection, the Corporation has been engaging lady promoters to explain the primary collectors, who are mainly women and children, the correct methods of plucking the Timru leaves, tying into bundles, etc. Initially, Corporation has employed 43 such lady promoters in the year 1982-83. This figure has been rising every year thereafter.

(3) The Collection centre of Timru leaves is called 'Phad'. At all these 'Phads', Phad-writers are employed to maintain the correct record of primary collectors, for a period of 30-45 days. These Phad-writers are generally drawn from the same villages where phads are situated. Since the season of Timru leaf collection coincides with the vacation in colleges and schools. these phad writers are generally employed from the students of colleges and schools. enjoying the vacation. Thus, these students earn about Rs.150/- to Rs.175/- during that period. In all about 1600 phad writers are employed every year. The Corporation has been engaging disabled persons also from tribal area for this work. In the 1983 season, 4 disabled persons were engaged as phad writers/phad munshies.

(4) A series of questions were asked in the questionnaire circulated among the selected informats in the surveyed villages, so as to know the perception of the tribals about Corporation's activities. Regarding the usefulness of Corporation for the tribals, the figures given in the next table indicate that majority of the tribals are yet unaware of the activities of the Corporation. Only 32.99 percent of the total informats gave responses in the affirmative which means that they have found the role of the Corporation useful so far collection of M.F.P. is

concerned. Only a small number of informants forming 2.75 percent expressed that the Corporation's activities have not proved to be of any use. It is apparent that the Corporation is not yet known to a large number of tribals. This is particularly so in Dange and Dharampur regions. Only in Chhotaudepur region, quite a large number of the respondents have felt the usefulness of the Corporation.

Table 20

Response regarding usefulness of the Corporation in the collection of Minor Forest Produce :-

Region	RESPONSES			Total
	Yes	No	Don't know	
Dange	5	4	194	203
Dharampur	21	6	76	103
Rajpipla	34	-	54	88
Chhotaudepur	88	6	11	105
Ratanmal	44	-	39	83
Total No.	192	16	374	582
Percentage	32.99	2.75	64.26	100.00

It may be worthwhile to clarify here that Mahuda flowers and Mahuda seeds are the two important items which generate considerable employment in the M.F.P. activity. The majority of Mahuda trees are located mainly in Chhotaudepur and Baria regions. Thus, the tribals of

Chhotaudepur area felt the usefulness of the Corporation. The forests of Dangs and Dharampur, even though superior in biological character, the major M.F.P. producing trees like Mahuda and Timru have a comparatively much less occurance due to preponderance of teak and its and other associates. Thus, the tribals of these areas depending on M.F.P. collection might not have felt the usefulness of the Corporation to that extent.

Table 31

Response regarding increase in income due to selling minor forest produce to GSFDC

Region	RESPONSE				No.of house-Holds who did not earn any income
	Yes, it increased	No increase	Difficult to say	Total	
Dangs	2	41	105	148	55
Dharampur	-	7	59	66	37
Rajpipla	3	-	80	83	5
Chhotaudepur	65	27	5	97	8
Ratanmal	39	1	37	77	6
Total	109	76	286	471	111
Percentage	23.14%	16.14	60.72	100.00	

The above table reveals that only 23.14 percent of such households have been convinced about the increase in the income on account of selling the products to the

Corporation. But 16.14 percent of households have also expressed a feeling that there was no rise in the income. Considering the response regionwise, it can be seen that a large majority of the informant from the Dangs, Dharampur and Rajpipla regions, have expressed that it was difficult to say 'yes' or 'no' to this querry. It was again from the Chhotaudepur region only that a majority of the informants experienced an increase in the income. In Ratanmal region too more than half of the respondents had a similar experience. Here again, the concentration of Mahuda trees is the governing factor for the above expressions.

It is obvious from the foregoing discussion that the activities of Corporation are laudable in enabling the tribals to earn cash income and have shown the way of bringing economic development right in the habitat of these tribals. If successfully operated, the schemes would certainly help in checking the migration of the tribals to far off places to work as daily labourers. And instead of wage labour, the minor forest produce, with which they are familiar since ages, would provide economic security to them. It is also felt that the benevolent activities of GSFDC only can bring revolutionary change in the socio-economic life of tribals.

CHAPTER - 7

Potential Development

(1) Technological :-

(a) Timru Operations :- The collection of Timru leaves is one of the important items for generating employment in the tribal and forest areas. When the new leaves become, tie them into small bundles of about 50 leaves, which are called 'Pudas' and sell them fresh at the Timru leaf purchasing centres, locally called 'Phads'. These pudas are further dried under sun and later on packed in gunny bags and transported to the godowns for further onward transmission to Bidis factories. This system of working which was in vogue since times immemorial, is still being which wa followed without much change.

In the present system, some bad, inferior Timru leaves also find their way into the stock, which are discarded and thrown away at the beedi factories, after having gone through the process of drying, packing and transport. There is a great potential for grading the Timru leaves into different grades and discard the inferior defective leaves at the time of grading and thereby improve the quality of leaves.

(b) Processing of Mahuda flowers :- Mahuda flower is another major item which generates sizeable employment in the rural areas. The tribals, especially ladies and children enjoy the collection of Mahuda flowers. They collect the flowers, dry them and sell them at the shops of agents, appointed by the corporation. These flowers later on, are transported to godowns and stored, till they are sold and delivered to the parties concerned.

The shelf life of Mahuda flowers depends very much on the moisture absorbed by them. Being highly hygroscopic in nature, these flowers readily absorb moisture from the atmosphere and deteriorate in quality. Thus, there is a great need and potential for improvement in drying the Mahuda flowers and store them properly. In addition to this, there is also a possibility of processing Mahuda flowers into various consumable articles like 'Kakam', Biscuits, Jam, Tartaric acid, etc.

(C) Development of grafted variety of Mahuda and Charoli :-

Mahuda and Charoli trees are very important trees in the tribal tract giving important M.F.P. to tribals. Mahuda is available in good number while Charoli is available in limited areas. Unfortunately, these trees have a long gestation period. They take anything between 15 to 20 years before coming into flowering and fruiting.

This factor is the main reason for discouraging the tribals to take up planting and rearing of these trees. If the gestation period is brought down from 20 years. to 4 to 5 years, by developing grafted Mahuda and Charoli plants, then the tribals and rural folk will be interested to take planting of Mahuda in their homesteads and along field boundaries. Thus, the dwinding resources like Mahuda and Charoli can be replenished in due course of time.

(d) Identification of best genetical variety of Timru and its propagation :- Timru is one of the important M.F.P. available in Gujarat. Even though its contribution to the national production is less than 1%, its role in the economy of tribal belt of Gujaret is pronounced.

It is noticed that the quality of Timru leaves varies considerably from area to area and within the same area from tree to tree. The revenue realised from the Timru sales mostly depends upon the quality of Timru leaves. Therefore, it is advisable to propagate Timru of good known genetical variety and thereby improve the quality of leaves. The present afforts of raising scope to raise Timru plantations on large scale in the degraded and blank forest areas.

(2) Structural :-

At present, there are 7 Project Divisions covering the whole States area. Some of these (like Bansda and

Rajpipla) cover large areas and it is quite likely that due to such large areas, the tribals do not get the advantage of G.S.F.D.C. Limited in their areas. Therefore, it is suggested that the present Project Divisions may be made smaller by creating more Project Division For example, each of Rajpipla and Baroda Project Divisions cover 3 territorial divisions. Instead 3 Project Divisions may be established in place of the present 2 Project Divisions. Similarly, the present Himmatnagar Project Division also covers vast area, which may be devided into two Project Divisions. One new Project division at Junagadh is also suggested, and this new Project Division can look after entire Saurashtra area.

(3) Administrative :-

Even though the GSFDC Limited is doing excellent work in eliminting the middle men in the trade of M.F.P. there are certain inherent difficulties in achieving the goal. The following suggestions are given to strengthen the G.S.F.D.C. Limited for serving the tribals.

(a) National-isation of Important M.F.P. :-

At present only important items of M.F.P. like leaves, Mahuda flowers, Mahuda seeds, various gums are covered by the M.F.P. Trade Nationalisation Act, 1979, under which the collection and trade of these items has been nationalised.

However, there are certain items other than the above, like Honey, Wax, Lac, Bahda, Herda, etc. which are also important from the point of tribal economy. It is advisable to bring all the important items of M.F.P. under the purview of M.F.P. T.N.A. 1979.

(b) The field staff of GSFDC Limited do not have any legal powers under M.F.P. T.N.A. 1979 to stop or apprehend the offenders from committing offences under the Act. Whenever they need to take action under M.F.P. T.N.A. they have to invariably approach the officers of the forest Department. The Forest officers on deputation to GSFDC Limited are empowered to take action under I.F.A.1927 Similarly, if they are empowered under M.F.P. T.N.A. 1979 also, it will go a long way in booking the offenders and serve the tribals better.

(c) Mahuda is the most important tree in the tribal tract for its flowers andseeds, which are the main M.F.P. items. it is estimated that the Mahuda trees occuring in malki lands are more in number than the Mahuda trees available in forest areas. It is also a fact that major portion of Mahuda flowers that come to G.S.F.D.C. is from the trees of Malki lands. However, the tribals who bring Mahuda flowers and Doli from such trees of Malki lands are not getting the increased collection rates (including the royalty). In order to ensure the payment of fair and

proper collection rates, all the owners of Mahuda trees should be registered as Private growers and increased collection charges should be paid to them for their produce.

(d) In the tribal area, weekly markets (locally called Hasts) are held at certain places. The tribals bring M.F.P. to these weekly Hasts and sell their produce. At all such centres, G.S.F.E.D.C. Limited should construct its godowns and open purchasing centres, so that the tribals get proper and fair wages from G.S.F.E.D.C. for their produce.

(e) At present, G.S.F.E.D.C. Limited is organising the collection of M.F.P. from tribals through the agents appointed by the Corporation. These agents, more often than not are the petty shop keepers in the tribal areas. These shop keepers were purchasing M.F.P. from tribals inspite of vigilant and strict measures taken by the Corporation to ensure a proper deal to the tribals, it is quite likely that, the tribals are cheated to some extent. The tribals also carry an element of doubt about the integrity in selling their materials at the direct purchasing centres opened by Corporation. It is, therefore, suggested that the agency system of private individuals/ shop keepers may be replaced in a phased manner with

direct purchasing centres and cooperative societies, over a period of 5 years.

(f) The Govt. has fixed some royalty rates on all the M.F.P. collected from the forest areas. Many of the M.F.P. come from the non-forest areas. Even then, Forest Deptt. collects royalty on these items, thus increasing the cost price of the produce. If the royalty is not charged on these items by Govt. then the Corporation can collect the same by paying higher collection rates to the tribals. It is, therefore, suggested that there should not be any royalty on M.F.P.

(g) In our forest areas and neighbouring rural areas, the resources of M.F.P. importance are getting depleted day by day due to various reasons. Some of these trees, due to their long gestation period, are not preferred by the tribals and rural folk for planting. If the tribals are given some encouragement in the form of cash incentives for raising and protecting the M.F.P. yielding trees and shrubs on their field bunds and in homesteas it will go a long way in augumenting the natural resource and earning capecity of the tribals.

(4) Organisational :-

(a) At present G.S.F.D.C. Ltd. have 7 Project divisions, namely, Bansda, Rajpipla, Chhotaudepur, Dahod, Godhra,

Himmatnagar and Bhuj, against the 24 territorial forest divisions. Some of the Project divisions like Vanada, Rajpipla, Himmatnagar, Bhuj etc. cover 3 to 4 territorial Forest divisions and due to this, proper attention is not paid to the collection of M.F.P. from the interior areas. The impact of the creation of G.S.F.D.C. Ltd. is not strong enough in the remotest areas of these divisions. It is, therefore, suggested that the area of the the Project Division should be limited to the territorial division and more Project divisions be created and the work of collection of M.F.P. is strengthened at grass roots level.

(b) The tribals are in the habit of selling the M.F.P. collected by them, to the local shop keepers and in exchange, they use to purchase articles of daily necessity like wheat, jowar, salt, chillies, etc. from them, sometimes, the shop keepers give the commodities to the tribals on credit also, especially during lean season. During this process, the tribals always remain in the grip of these shop keepers. In addition to this, the tribals are in the habit of bartering their goods in the remote tribal areas.

It is, therefore, essential that the tribals should not be exposed drastic changes in their daily routine work, if proper and enthusastic participation from tribals in the M.F.P. collection is expected from them. The direct purchasing centres opened by O.S.F.D.C. Ltd., although attracting the tribals, do not have the facility of selling commodities of daily requirement. Thus, it is suggested that O.S.F.D.C. Ltd. May also manage some shops of groaries along with their direct purchasing centres.

CHAPTER - 8

RECOMMENDATIONS

1 Studies :-

a) Mahuda flowers is one of the main items of M.F.P. in the tribal tract of Gujarat. The tribals consume the Mahuda flowers in different forms as (a) article of food, (b) base for liquor, (c) Kakam (a sauce prepared from Mahuda flowers), etc. Moreover, the consumption pattern of the one product is not uniform among all the tribals. Therefore, it is essential to know the exact pattern of Mahuda flower consumption among the tribals. It is recommended that a study may be conducted on the above topic.

b) Mahuda seed (Doli) is the main oil seed in the tribal area. The tribals consume the Doli oil to a large extent. However, it is not known which tribals consume Doli oil and what are the main reasons for its increased consumption. It is also said that F.F.A. (Free Fatty Acid) content in Doli oil increases due to its prolonged storage and when the FFA is more than the permissible limit, the oil is not allowed to be mixed in Vanaspati oils, but the tribals consume this oil without looking into these factors. It is, therefore, suggested that a study may be conducted to know the exact consumption pattern of Doli oil in tribal area and its effect on the human health.

(c) Mahuda tree is the most important tree available in the tribal belt. This tree is often seen on the malki lands of tribals. Since, this tree is declared as "Reserved tree" under Saurashtra Tree Felling Act, it is not allowed to be felled without prior permission from the proper authorities.

However, it is seen that whenever the tribals are hard pressed for money for various reasons, they are in the habit of selling their Mahuda trees for a paltry sum to the local people, who deal in timber, and firewood. Those people, in turn, manage to get the permission to fell the trees and take away the timber worth few thousands, against a meagre sum of around Rs. two to four hundred only. Thums, the tribals who get Rs.100/- to Rs.150/- of income per tree every year from flowers and seeds, lose them for ever and the natural resource is diminished.

In order to put a check on such activities in a non-legal way, efforts should be made to create a 'Tree-mortgage bank' under GSFDC Ltd., where, the tribals can get some financial help to tide over ~~this~~ difficulties, against the motgage of the Mahuda trees. Before taking up this scheme, a detailed study on various aspects of this matter may be taken up.

(d) Mahuda tree has tremendous influence on the culture and economy of the tribals in Gujarat. It is said that some tribal families earn as much as Rs. 4,000-00 to Rs. 5,000-00 a year from the sale of Mahuda flowers and Mahuda seeds collected by them. The advent of Mahuda flowering season bring cheers among the children and ladies of tribals. It it is said that the newly wedded brides come back to their parents in Mahuda bearing tracts, during Mahuda flowering season, just to collect Mahuda flowers, sell them, earn some money and purchase clothes for them and then they go back to their in-laws' places. Some tribals allow the Mahuda flowers to dry under the trees only and after the flowering season is over, they collect the dried flowers in one operation only. They call this type of flowers as "Ghor no Mahuda". When they collect such flowers, they celebrate by inviting their friends and relatives and brewing liquor and enjoying the same. There are many such interesting facts connected to Mahuda tree in the tribal life. It is therefore, recommended that a study may be conducted by GSFDC to know the exact role of Mahuda trees in the life and culture of tribals in Gujarat.

(e) There are many variations in Mahuda flowers and Mahuda seeds produced. Some trees yield smaller flowers while some are big. Similarly, the seeds of some trees are big and round in size, while some are small and oval shaped. Since

the idea of large scale propagation of Mahuda trees in Gujarat trees in Gujarat is on the anvil, it is desirable to identify the best clonal variety of Mahuda tree from the point of view of the size of its flowers, quantity of flowers, quality and quantity of Doli, etc. and then propagate only those varieties.

Therefore, it is recommended that a study may be conducted to identify the best varieties of Mahuda from all points.

(g) During the flowering period, Mahuda tree sheds its leaves and the floor below Mahuda trees is covered with Mahuda leaves. Therefore, the tribals clear the ground by burning the leaves on the ground. In this process, the fire escapes to the adjoining forest areas and causes immense damage to the forest wealth in the form of death of micro-flora, fauna, natural regenration, etc.

It is, therefore, suggested that the possibility of avoiding these forest fires by collecting the leaves in manure pits without burning and to undertake mud plastering on the floor around the Mahuda trees, etc. may be studied.

Very little has been done so far to incorporate in practice by us the medicinal plants which the tribals have been using for curing diseases. It should be our endeavour to scientifically test the efficiency of these medicinal plants for blending them into other systems of medicines.

These plants should be used as new materialy for pharmacological and clinical research.

(2) STRUCTURE

The existent structure of the Corporation is quite good and should be continued and strengthened. It is recommended that the network of collection centres may be strengthened by creeting more direct purchasing centres. The Corporation should be capable of wide-spread reach and provide assistance to tribals in remote villages. Involvement of a large number of tribals will have to be ensured. Collection of minor forest products should take the form of a movement for the economic regeneration of the tribal people.

(3) RESEARCH

(a) There are may gum yielding plants in tribal areas, namely steculis urens (Kadaya), Anogeissus latifolia (Dhavda), Acacia nilotica(Bawal), Lannea coromandelica (Moina), Boswellia serrata (Salai), etc, The tribals earn quite a sizeable amount of wages through the collection of these gums. There are certain methods in vogue, wherein, some chemicals are used in tapping to get good quantity of gum, but with injurious results sometimes. Therefore, it is essential to know the best tapping method, and best chemical to be used, to get increased output of gum without causing a serious injury

to the natural plant. It is suggested that a study may be conducted on this aspect, so that the same can benefit the tribals as well as to conserve the natural resources.

(b) The gum yielding trees may react to the different treatments like watering, manuring, soil working, etc, during tapping season. If their reaction is favourable from the point of view of its quantity and quality, then it would be advisable to practice the best treatment in the field also. It is therefore, recommended that a study on the effect of watering soil working, manuring, etc. on the gum yielding trees may be conducted.

(c) Timru is one of the important trees, which generate lot of employment in the tribal areas during lean period April-May when the tribals do not have any other job. However, it is seen that all the leaves are not collected by them, as most of the leaves are damaged and deteriorated either due to fungus attack or due to insect attack. It is estimated that more than 60 % of the leaves are damaged in this way. It is therefore essential to devise ways and means to control the insect and fungus damage in Timru leaves. A research study may be conducted on this aspect, which will result in the betterment of quality and quantity of Timru leaves.

(d) The leaves of Timru plant vary much in size and shape. The quantity of leaves depend upon the size, shape,

thickness, pliability, colour, etc. of the leaves. All best characters are sometimes found in certain clonal varieties of Timru. It is, therefore, essential to identify the clonal variety with the best characters and then propagate the same on extensive scale. It is recommended to take up a study to identify the best variety of Timru and propage the same.

(e) Mahuda tree produces seed at the beginning of monsoon. Even though the seeds are set by April, they ripe only at the beginning of monsoon. Generally the tribals are busy with their agricultural work on the onset of monsoon and therefore, they can not concentrate on the collection of Doli. Thus, the tribals, specially children and women, pluck unripe fruits in May itself and extract the seeds when they do not have any other work. These unripe seeds do not have full percentage of oil in them. Thus, the quality of the seeds is affected adversely due to this untimely collection. If the flowering and fruiting period of Mahuda can be advanced by one or two months, this will solve the problem of matching the tribals' requirement with the Mahuda fruiting. In the recent past, the fruiting season has been advanced or delayed in case of some fruit trees by using harmones. Therefore, it is recommended that some research may be taken up to advance the fruiting season of Mahuda by using different hormones.

(f) Generally, the fruiting of any tree depends upon its flowering and pollination. In case of Mahuda, the pollination takes place in the night time and the pollination agents are said to be of some nocturnal insects like moths. However, major portion of the pollination process is not know. Sometimes, even though the following is very good, the fruit-setting turns out to be poor due to failure in pollination. It is, therefore, essential to know the entire phenomenon of pollination of Mahuda flowers. It is recommended that a research activity should be taken up to study the pollination of Mahuda flowers.

(g) Timru leaves are collected and dried and processed before transporting to the consumption centres. The processing takes about 10 to 15 days and it is mostly done in open with solar energy. The season of Timru leaves collection generally ends up with the onset of monsoon. Therefore, the collection of Timru leaves is discontinued much earlier due to the onset of monsoon as the leaves are likely to be damaged due to rains during the processing. If an artificial drier (electric or solar powered), is devised, the time taken in processing may be reduced. In addition, the leaves can be collected for a longer period and the production can be increased. Even during rainy season and winter season also, the collection of Timru leaves can be continued. Therefore, it is recommended

that research efforts should be made to devise a Timru leaf drier.

(h) At present, the Timru leaves are packed, and transported to far off places in special gunny bags, these Timru leaves contain some quantity of inferior variety of leaves also, which ultimately get rejected and discarded at the consumption centres. Moreover, the leaves are also damaged during transit due to poor packing and rough handling in transport. The existing system is very old and there has been no change in this system since last more than 50 years. It is, therefore, suggested that some innovative measures be taken up so as to bring revolution in the packing and transport methods and improve the same for the betterment of the quality and reduction in the cost of transport.

(i) There are many important M.F.P. plants available in Gujarat, namely Chlorophytum tuberosum (Safed musli), Gloriosa superba (Vadvadio), Buchanania lanzan (Charoli), etc. Due to the depletion of natural resources, the production of these M.F.P. is declining day by day. Therefore, it is very essential to propagate those species artificially in the tribal areas of Gujarat. However, authentic information about their cultivation is not freely forthcoming. Thus, it may be worthwhile to find out the fool proof technique of raising these plants

artificially. Hence, it is recommended that efforts should be made to evolve fool-proof techniques for raising the plantations of these species artificially.

(j) Our country is experiencing acute shortage of oil and is importing oil worth Rs.600/- crores every year. Thus, the attention is now focussed towards unconventional oil sources and trees with oil seeds of forest areas are gaining ground over the conventional resources. In our forest areas, there are many trees which can give us oil seeds in considerable quantity, but their seeds are not collected due to various reasons. It is essential to explore the possibility of collecting the unconventional oil seeds from forest areas in maximum quantity. Therefore, it is recommended to take up the exploratory survey of oil seeds of forest origin and organize the collection.

(4) Developmental :-

(a) The success of M.F.P. collection in the tribal areas mainly depends upon the storage facilities available in tribal areas. Generally, the storage facilities available in tribal areas are inadequate and due to this, the quality the product can not be maintained. It is also difficult the infrastructure of godowns in tribal areas on sis. It is therefore, essential to have small by the Corporation at all the main centres ea, so that necessary processing if be taken up and the quality maintained.

It is recommended that Corporation should take up construction of the smaller godowns at all the main centres in the tribal areas.

(b) At present, GSFDC Limited do not have their own trucks for the transport of the M.F.P.collected from rural areas. Sometimes, it is seen that the field staff experience great difficulties for want of vehicles for transporting the M.F.P. during peak collection season. Therefore, it is desirable that every Project Division to have one truck for transporting the M.F.P. from the collection centres to godowns and godowns to consumption centres, if necessary. Hence, recommendation is made to GSFDC Ltd. to provide one truck to each of its Project Divisions.

(c) Honey collection is one of the important activities of tribals in this area. The crude honey collected by the tribals is purchased, purified, and put in the market for sale, by the GSFDC Ltd. Major portion of this honey comes from the honey combs available in the forest areas naturally. Even though the Corporation maintained some apiaries in Vansda Project Division, the contribution of apiaries in Vansda honey is almost negligible. It is desirable to increase the activity of bee-keeping in all the possible areas. Therefore, it is recommended that bee-keeping activity be extended in all possible areas.

(d) Several minor forest produces are getting exhausted because of over-exploitation or non-maintenance and inadequate care. There is no clearly defined place for

these items in new forestry plantation programme. As Sharma[10] has suggested a positive policy should be evolved for including these items in new forestry plantation programme. He further adds that the active participation of the tribals should be sought for this purpose so that they gradually become grower of minor forest produce rather than remaining merely a collector.

(5) Cooperatives:-

(a) Even though the Cooperative Societies have taken up some participation in M.F.P. collection, their contribution is almost negligible. The Cooperatives so far participated in this activity are of LAMPS, Milk producers' societies, F.L.C.S., Beedi workers' societies, etc. It is desirable to establish small cooperatives of tribal people who are the primary collectors of M.F.P. and entrust the work of M.F.P. collection to them only.

(b) Help from N.C.D.C. will be of great assistance to the small cooperatives. N.C.D.C. gives loans and subsidies to the cooperatives for the construction of godowns, working capital, etc. Therefore, it is recommended that GSFDC Ltd. may obtain all financial help for the cooperatives.

(6) Training:-

(a) There are plently of tribal youth available in the tribal areas. Most of them are earning their bread by doing some manual labour. If these youngsters are trained in some crafts like wood-turning, lecquer work, etc. then they can

10 S.D. Sharma, Forest, Tribal Economy & Regional Development Occasional Papers on Tribal Development, New Delhi, 1978.

improve their living conditions and remain self-sustained. It is, therefore, recommended that the tribal youth be trained in various crafts in the tribal areas.

(b) At present, the training programmes are conducted for the tribals in the scientific and systematic collection of N.F.P. and its processing. These programmes should be continued vigorously in future also. In addition to this, lower subordinate field staff also should be trained in various new horizons of N.F.P. It is recommended that the training programmes be continued for both the tribals and lower subordinate staff.

(c) As has been rightly pointed out,[11] the field level executive and the administrators know precious little about tribals. In view of this it will be necessary for them to acquire a sound knowledge about tribal life and culture by undergoing training courses at Tribal Research and Training Institute.

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11 S. A. Shah, Opp. cited.

APPENDIX

Examples of essential vitamins and some foods that contain them* and food eaten by the tribals living in the forests of this State

Vitamin	Function	Food source	Food source for the tribals
A	For healthy skin and gums, and night vision	Animal levers, egg, and dairy foods. Fruits and vegetables contain carotene which can be converted into vitamin A in the body.	Animal livers of hunted animals, fruits and edible roots used as vegetabses, also leafy vegetables
B, a group of light vitamins	For helping to maintain functioning of circulatory and digestive systems	Liver, yeast, whole grains unpolished rice	From hunted animal liver, whole grains and unpolished rice
C, absorbic acid	For healthy gums, skin and blood vessels	Citrus fruits and leafy green vegetables	From citrus fruits and leafy green vegetables
D	Involved in the absorption and utilization of calcium and phosphorus in the bone	Fish liver oils, vitamin D can be produced from a precurs or in green plants	Fish eaten by them and leafy green vegetables and edible tubers
E	Believed to be involved in reproductive functions	Vegetable oils	Mahuda seed oil
K	For normal blood clotting	Green leaves and egg yolk	Green leaves eaten by them

*Source : For the function and food source of the vitamins George Moriber, Environmental Science, Boston. Allyn and Bacon: Inc, 1974, quoted from Donald L. Hardesty, Ecological Anthropology, New York, 1977, p.27.

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