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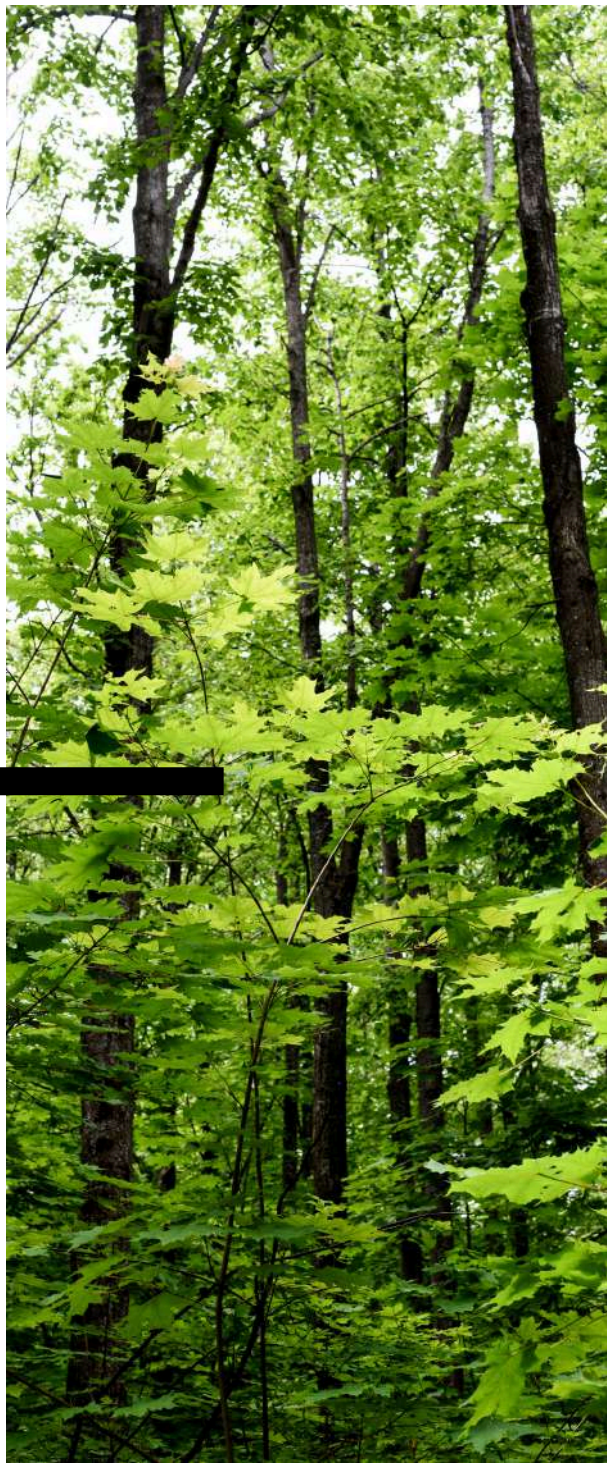
NON-TIMBER FOREST PRODUCES (NTFPs) FOR FOOD AND LIVELIHOOD SECURITY OF LOCAL TRIBAL COMMUNITIES IN GADCHIROLI DISTRICT, MAHARASHTRA

A SOCIO-ECONOMIC SURVEY



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CHAPTER I

INTRODUCTION

Chapter I Introduction

"The term Non-Timber Forest Products (NTFP) encompasses all biological materials other than timber, which are extracted from forests for human use" (De Beer and McDermott, 1989).

Non- Timber Forest Products play a vital role in livelihood of people in and around the forests (Quang, 2006). NTFPs comprise medicinal plants, dyes, mushrooms, fruits, resins, bark, roots and tubers, leaves, flowers, seeds, honey and so on (Anonymous, 1995). NTFPs (also called as "minor forest products" in national income accounting system) are sources of food and livelihood security for communities living in and around forests. They are also known as Non-wood, minor, secondary, special or specialty forest products (Shiva, 1993). According to FAO, NTFPs defined as "all goods for commercial, industrial or subsistence use derived from forest and their biomass". Somehow all these definitions vary slightly but basically give same message.

1.1 NTFPs and Tribal

At global level, more than two billion people are dwelling in forest, depending on NTFPs for subsistence, income and livelihood security (Vantomme, 2003). NTFPs are considered to be important for sustaining rural livelihoods, reducing rural poverty, biodiversity conservation, and facilitating rural economic growth (Global NTFP partnership, 2005). An estimated 80 % of the population of the developing world uses NWFP (Non-Wood Forest Products) to meet some of their health and nutritional needs (FAO, 2008). It is an important source of income for the poor in many developing countries. In addition, several opportunities for improved rural development are linked to NTFP (Adepoju, 2007).

In India over 50 million people are dependent on NTFPs for their subsistence and cash income (Hegde et al., 1996). This provides 50 % of household income for 20 to 30 % of rural population particularly for tribal. Potentially around 3000 species of forest products are found to be useful, but only 126 have developed marketability (Maithani 1994). Around 50 % of forest revenues and 70 % of forest-based export income of the country comes from NTFPs. Thus, it can be depicted that NTFPs form one of the mainstays of income and sustenance for many tribal communities (Rao, 1987; Gauraha, 1992; Chopra, 1993; Mallik, 2000).

Forests are associated with socio-economic and cultural life of tribal in India. These tribal groups inhabit wide ecological and geo-climatic conditions in different concentrations throughout the country. Tribal livelihood systems vary considerably between different regions as also among the various ethnic groups, depending on ecological, historical and cultural factors. These tribal communities largely occupy the forest regions since time immemorial, living in isolation from the mainstream life, maintaining harmony and a symbiotic relation with nature.

The collection of NTFPs by tribals was primarily for meeting their subsistence needs. Over time, these NTFPs acquired commercial value resulting from huge trade transactions and income levels due to rising demand. Trade in NTFPs can act as an incentive for forest conservation by providing a source of income from resources that might otherwise appear to have little financial value (Cottray et al., 2003).

1.2 Importance of NTFPs

NTFPs provide important products for local, national and international markets. These markets are growing rapidly and steadily (Wilkinson & Elivitch, 2000). Non timber resources have great potential for enhancing sustainable rural development and diversified economic growth, cultural endurance, and environmental health. Few NTFPs have low cash values and hence are used for consumption, rather than for sales. Whereas rest NTFPs have highly commercial value. NTFPs are significant especially for poor, because they are available at low cost on common property lands. They are used by people because they have less alternative access to food and income. In a country like India, which has more than half of its population in rural areas and a large tribal population reliant on forest produce for their sustenance, NTFPs play a major role (Sawhney & Engel, 2003). At the same time, NTFPs collection should not hamper the environmental objectives such as conservation of forest and biological diversity.

1.3 Environmental, economic and cultural importance of NTFPs

1.3.1 Environmental importance:

In Agro. forestry ecosystem, cultivating NTFPs species helps in achieving environmental objectives such as conservation of watersheds, biological diversity and genetic resource. Clark (2001) explained that NTFPs is a possible "magic bullet" to solve deforestation issues and are important, ubiquitous, and culturally integral part of rural and urban lives and must continue to be considered in forest management decisions.

1.3.2 Economic importance:

In some areas, the financial impact of NTFPs may be greater than that of timber. For example, a study in Zimbabwe revealed that small-scale NTFP- based enterprises employed the 237300 people as compared to only 16000 employed in conventional forestry and forest industries (Anonymous, 1995). According to FAO (1997), it was estimated that the total value of world trade in NTFPs is approximately US $ 1100 million. NTFPs market has grown by nearly 20 % annually over the last several years (Hammet, 1999). For instance, herbal medicine market at a rate of 13.15 percent annually (Anonymous, 1984).

1.3.3 Cultural importance:

NTFPs are also of great cultural importance. Preservation of NTFPs is fundamental to maintenance and continuation of traditional ways of life. The field of herbal medicine and biomedical research are growing rapidly. Often people who used them traditionally studied the plants, their uses and techniques of harvesting and processing over generations. As these discoveries blossom into lucrative industries an equitable share of benefits is due to the people, communities and countries from which they originate (Prakash, 2003).

1.4 Problem statement

Tribal people living in forest areas depend on non-timer forest products for their livelihood. In Gadchiroli district, many tribal families come under the jurisdiction of PARTICULARLY VULNERABLE TRIBAL GROUPS (PTGs). As much as 30% of the income of the Gond Tribe in Gadchiroli district, for example, comes from the collection of non-timber forest products. In-spite of its importance, their commercial value is low. One of the difficulties for small-scale collectors who seek to commercialize NTFPs is that often the markets for these products are relatively complex compared to those for timber and traditional agricultural

goods. Prices for NTFPs vary across different locations as well as over time. In addition, buyers also impose different quality control standards. Collectors are frequently rural people who are often poor or landless. All these factors contribute to complexity of NTFP markets leading to the problem of food insecurity by influencing the household income of the people dependent on it.

Poor tribal villages and other local community in the study region mainly depend on NTFPs for their livelihood and earn substantial income from these products. The NTFPs extracted (Appendix III) are Mahua Flowers, Charoli, Mahua Seeds, Karanj Seeds, Palas Seeds, Hirda, Behada, Awala, Palas, Khair, Karu, Dhawada, Salai, Movai, etc. These resource extractions are done for both commercial and subsistence purpose. The demand for these products is often seasonal in nature and depends on natural growth and regeneration, which makes their productivity unpredictable. Collection and selling of NTFPs is an important source of income and it contributes to food security of the people dependent on this by enhancing their income and in turn increasing their purchasing power, which creates economic access to food. So far very few studies have been done in the study area focussing poor situation of tribal economy. This study tries to fulfil this gap by analysing the contribution of NTFP towards food and livelihood security. With this background the current research is contemplated with the following objectives.

1.5 General objective of the study

- To study the contribution of NTFPs to income for ensuring food and livelihood security.

1.5.1 Specific objectives of the Study

1. To estimate the contribution of NTFPs to tribal income and employment.
2. To study the economics of NTFPs collection by tribals
3. To analyse the main factors affecting tribals' livelihoods and possible coping mechanism.

1.6 Hypotheses

1. NTFPs provide relatively better income and employment as compared to other sources of income for tribals.
2. Age, education, family size and access to other employment opportunities influences NTFP collection by the tribals?

1.7 Limitation of the study

The research had some difficulties in getting support by tribals & local community during collection of the data. Tribals usually collect NTFPs in a group rather than independent, hence quantifying the resource collected, consumed and income earned by individuals was difficult, as respondents gave the information for the group. This challenge was overcome by changing the data collection approach. In addition, individual efforts were made to collect extra information apart from the questionnaire. The data were collected with pre-tested questionnaires. The study has some limitations such as-

- Data collected is based on tribals past memory. This can lead to data inaccuracy. Efforts were made by the researcher to crosscheck to make data reliable and accurate.
- Since the study pertains to a particular location, it cannot be generalized and implied to other locations.

CHAPTER II

LITERATURE REVIEW

Chapter II Literature Review

This chapter is intended to report the findings and understandings of past research studies conducted by various research specialists as well as their views and opinions about different aspects of study in the light of the objectives set forth. This would facilitate the present research study to use meaningful information and subject them to sound reasoning and strong interpretation. This chapter is presented under following sub-heads:

- Contribution of NTFPs to food, income and employment
- Issues in NTFP based livelihoods

2.1 Contribution of NTFPs to food, income and employment

2.1.1 Studies in India

Studies in India have revealed that, NTFPs provide substantial inputs to the livelihoods of forest dependent population, many of whom have limited non-agricultural income opportunities (Chandrashekaran, 1994; FAO, 1991). About 70 % of the NTFP collection in India takes place in the tribal belt of the country (Mitchell et al., 2003). It would be seen from the literature that the NTFP based small scale enterprises provide up to 50 % of income for 20 to 30 % of the rural labour force. Whereas 55 % of employment in forestry sector is attributed to the sector alone (Joshi, 2003). Therefore, collection of NTFPs was a major source of income and employment for forest dwellers. For instance, tendu leaf collection was observed to provide about 90 days of employment to about 7.5 million people every year in India (Mistry, 1992). Nandakumar (1988) showed that the mean annual income of the Yerava tribes was INR. 4400 per annum among 62 % of the respondents, while 38 % of them belonged to high income group with INR. 8850 per annum. Similarly, a study by Thiagarajan (1989) revealed that 75.5 % of the tribal households had low income while the rest 24.5 % of them had high income. Therefore, the economic status of tribals (Intodia, 1990) was much below the satisfactory level as 77.87 % of them were having their annual family income less than INR. 2500, whereas 13.33 % of them were in the income group of INR 2500 to 3500 and only 9 % of them derived income above INR. 3500. Further, he reported that tribals usually had very low family annual income and spent very low amounts even for the necessities. The low level of family expenditure was mainly due to the fact of low levels of

income. Hence, the contribution of NTFPs to the improvement of livelihood of the forest dwellers and equitable distribution of the income among different sections of forest dependent people is questionable and needs to be studied further.

Appasamy (1992) stated that the majority of NTFPs collectors were males in the Palani hills of Tamil Nadu and higher proportion of the NTFPs collected was used for income generation rather than for home consumption. Fifty percent of the firewood was used for home consumption and the rest was sold. A study by Gauraha (1992) depicts that, Forest dwellers in Pendra block in Bilaspur district of Madhya Pradesh obtained 70 % of their household income from settled cultivation and sale of NTFPs. Kant (1997) studied the role of NTFPs in three tribal villages of Gujarat and West Bengal states. The study revealed that NTFPs contributed significantly to the household income in tribal village economies. In the case of Gujarat, the contribution of NTFPs to the total households' income varied from 20.1 % to 34.1 % while in the case of West Bengal, it ranged from 26.5 to 55.5 %. It was also found that majority of the household employment was generated through collection of NTFPs (36.4 %), followed by settled cultivation (15.11 %) and agricultural labour (14.3 %).

Mistry (1992) in his study on the impact of the Forest Act on the household economy of the tribals reported that tendu leaves provided enormous employment (90 days of employment to 7.5 million people every year) and income to tribes. The study by Namdeo and Pant (1994) highlighted that tendu leaves were estimated to provide employment nearly to 4 million persons annually by way of Bidi (Local cigarette) manufacturing. Rao and Singh (1996) studied the contribution of Non-wood forest products in augmenting the income of the tribal families in families of South Bihar and South West Bengal. Ten tribal villages were selected in Bihar, five in Palamau district and five in Singhbhum district and five in Midnapur district of West Bengal. They found that, among the various NWFPs collected in South Bihar, on an average, Kendu leaves contributed the most (INR.3169) per family followed by brooms (INR. 2745) whereas in west Bengal, Sal leaves contributed the most (INR. 1675) per family followed by kendu leaves (INR. 675).

A study on employment, income and expenditure pattern of tribals in the Nasik district of Maharashtra (Raut et al., 1992) found that the collection of minor forest products (MFPs)9 was found to be the only source of income during the summer season. Wage earning was the prime source of income for landless group, which amounted to the tune of 50 % of the total income. Another study by author Suryavanshi (1992) stated that the tribals got comparatively

better employment in the Kharif season due to agricultural activities. Whereas during summer season they were involved in off-farm works such as collection of fuel wood, minor forest products and scarcity works under the employment generation schemes. These studies concluded that wage earning and sale of minor forest products were the major source of income to the landless families.

Rao (1992) examined the employment and income pattern of forest dwellers in the three different ecological and economic settings in Andhra Pradesh. Resource endowment was found to have a definite bearing on the employment pattern. Position of the land and its cultivation had generated more days of employment among Araku tribes, whereas its absence drove the tribals in Nallamalai to collection of forest produce for a living. Campbell (1993) opined that according to some rough calculations based on the valuation of NTFPs, an average return of INR. 2720 was realized per hectare annually in India. He observed that forest-based enterprises provided up to 50 % of income for 20 to 30 % of labor force in India.

Sekar and Surendran (1993) found that among the tribal households, three members were involved per day in NTFPs collection, whereas only two members served as agricultural labourers. The income realised was INR. 2800 per annum per head from NTFPs' collection. In respect of marketing of the NTFPs, two marketing channels were found to exist. The study by Sekar et al. (1996) in the Sathyamangalam Hill LAMP cooperative society, found that around 83 % of the members were tribals who were actively involved in minor forest products collection and earning on an average INR. 11180 per annum by spending 8-10 hours in a day for the purpose.

The study by Namdeo and Pant (1994) highlighted that, Sal seeds had potential to provide employment to 4.5 million persons for a period of 40 days and regular employment of 300 days per year for 0.436 million persons in processing of Sal seeds. The annual production of the gum Karaya10 was about 6000 tons and creation of 600000 mandays of work at the rate of 10 kg per person per day. The study by Rao and Singh (1996) estimated that non- wood forest products offer employment to about one million people every year.

Das (1995) studied the role of NTFPs in the economy of forest fringe dwellers of South-West Bengal. He observed that on an average, one NTFP collector working for five to six hours a day could earn INR. 17 to 26 from NTFPs and the collection season was more or less distributed throughout the year. He reported that, of the five Forest Protection Committees

(FPCs) studied, the average family income from NTFPs varied from INR. 6046 in Dalangora FPC to INR. 9569 in Khatam. Palit (1995) in his study on the role of NTFP in Joint Forest Management revealed that an average, each household of Raigarh forest protection committee was engaged for 63 days per year in the collection of NTFPs. The income earned from the sale of NTFPs was INR. 2421 per household.

Olawoye (1996) opined that rural households spend income realized from NTFPs to buy food to maintain their families. This provides a supplement to the economic status in the lives of the generality of the rural dwellers. Hence, dependence upon several combined and seasonal activities is an important way to ensure household food security.

A percentage comparison of income composition and employment of the three tribal communities (Jenu kurubas, Soligas and Betta kurubas) in Madumalai Wild life sanctuary in India by Hegde (1997) showed that Jenu kurubas derived more employment and income from commercial Non- Wood Forest products than the Soligas and Betta kurubas communities. The analysis of the correlation indicates that Jenu Kuruba community was more dependent of forests than others. It was seen that all other sources of income, such as forest labour, wage labour and salaried jobs reduced the reliance of the people on the forest.

The study conducted in India (Surayya, 2000) on Contributions of Forests, Microfinance, and NTFPs Marketing and Policy interventions for Reducing Poverty portrayed that mean annual income generate by forest dwellers by NTFPs collection and sale was INR.2337, mean income from collection and sale of firewood and livestock sale is accounted to be INR.2500. Whereas income from agricultural source and borrowing and others is uttered to be highest which was about INR.4846 and INR.3388 respectively. The study by Pandit and Thapa (2002) revealed that the NTFPs grown on marginal lands contributed to farm household economies, as 24 % of the annual household income in the upper watershed and 13 % in the lower watershed was realized from the sale of NTFPs based products. They also found that the domestication of the NTFPs reduced local people's dependency on NTFPs as well as other forest resources, as the frequency of visit to forest fodder and fuel-wood resources reduced with the increasing NTFPs domestication.

The role of NTFPs in the economy of communities living in and around forests of South Bihar was highlighted by Vidyarthy and Guptha (2002). Nearly 49 items of the NTFPs found to sustain the people especially landless and marginalized groups during lean season and

supplement their income during other seasons. The study showed that NTFPs contributed significantly to the annual income of the households (86%). Besides the economic value of NTFPs, local communities were also enjoying several qualitative benefits from the forest such as medicinal, religious and aesthetic needs. The study conducted by Sawhney and Engel (2003) in Bandhavgarh National Park, India pointed out the majority of the sampled households (97%) collected NTFPs. All the households collecting NTFPs also sold it, though there is a ban on sale of NTFPs. Overall, sale of NTFPs constitutes the most important source (26%) of cash income for the households, and the third most important source of total income (13.8%). On an average each household made US $ 44 from the sale of NTFPs in 2000. From the sale of different source of NTFPs to the total NTFPs income, Amla product (42%) contribute the highest followed by Tendu Patta (41%), mahua (12%) and fuelwood (4%) where as Charoli (1%) contributed the least.

2.1.2 The studies pertaining Gadchiroli region

Gadchiroli district is one of the most backward districts of the state of Maharashtra. With little employment opportunities in the urban sector, low HDI index and lack of industrial growth majority of the people are poor and work as agriculturists and agriculture labour. With 76% of the area under forests, there is abundant scope for taking up several NTFP based livelihood activities. One of such livelihood activities undertaken is the Non-Timber Forest Produce Collection. In Wadsa Forest Division the forests are predominantly of the Southern Tropical Dry Deciduous Forests with plenty of miscellaneous species and a few patches of Teak interspersed with bamboo. An inventory of the forest areas revealed the presence of a several NTFP bearing trees like Mahua, Hirada, Beheda, Kusum, Karanj, Amla, Dhawda, Karu, Palas, Charoli etc. Thus, generation of livelihood for the local people through NTFP collection remains a viable option. Already the people were engaged in co0llection of Tendu and Bamboo and through project we just sought to expand the scope of products to be collected. Also, the collection of the NTFP was going on in the division but in an unorganized manner.

Now a day the collection activity also decreases because of deforestation and other developmental works like electricity towers going through forest areas, road construction & increasing population, unsustainable harvesting by the other area and demand of any one species. Day by day the collection was decreases informed by the NTFPs collectors. (Pradeep Saudager, Swapnil K. Kamble 2020)

2.2 Issues in NTFP based livelihoods

2.2.1 General, marketing and environmental issues

The importance of Non-Timber Forest Products (NTFPs) contributing to tribal livelihoods and alleviating rural poverty is well documented. As per 2011 census, 89.00 % population of Gadchiroli districts lives in rural areas of villages. The total Gadchiroli district population living in rural areas is 954,909 of which males and females are 481,290 and 473,619 respectively. Vast majority of its inhabitants- especially communities living inside and on the fringes of forest areas -depend on NTFP for food, shelter, medicine, cash income. Our surveys and numerous other studies have showed us that contribution of NTFPs to the total income of the households varied between 10 to 60 percent and majority of the forest dwellers depend on forests for 25 to 50 percent of their food requirements.

Apart from meeting subsistence and cash income needs of the dependent communities, NTFPs also support large number of small to large scale enterprises engaged in processing and/or trading of NTFP and NTFP based products. Our surveys and field studies have revealed that NTFPs exhibit a high degree of heterogeneity in their source, production systems, characteristics, and utilization. Though precise estimates are lacking, it is estimated according to TDC, that the total production of NTFP is worth about Rs 10 crores annually (IEG, 2002). Due to the prevalence of unorganized channels of trade and the fact that NTFP consumed for subsistence do not even enter the organized markets, precise estimates are difficult to obtain. Also, it does not take in to account the value addition in processing. An abject lack of data on the quantity and value of various NTFP produced in the district, leave alone an estimation of value addition that happens subsequent to harvest, typifies the sector.

2.2.2 NTFP Trade

Primary collectors, due to their geographical limitations, cannot sell their goods directly to the end users or consumers. Between the producers and the end users stands a host of marketing intermediaries performing a variety of functions and bearing different tags like traders, commission agents, retailers, suppliers, wholesalers and exporters. There are groups and subgroups within the trade channel with various levels of bargaining power. But the

mechanism of business control is different from that of traditional business systems denying benefits to the procurers.

The price of NTFPs is most often determined by the traders – depending on the margin they earned. It is not based on demand/supply equilibrium. If the latter was true – NTFP prices would be very high, in most cases. Generally, the prices are only slightly higher than daily wages – not attaching any value to the forest or its availability. Though the prices need to be set according to the `free market' situation, the unorganized market and the market structure create price distortion. As the supply base is limited and seasonal, the traders often do not give the real price. In the bargain the primary harvester/collector is getting poor returns compared to the real value of the produce. In Maharashtra, the Forest department sets the price for NTFP collection and sale. Often this is unrealistic and unreasonable and does not take into account the market situation. Further, most NTFP rich patches in the district are socio-politically affected by extreme left-wing ideology making it easier for the unscrupulous traders to operate freely in the market and the states are often unable to play an effective role.

NTFP trade is generally based on information. Knowledge about production, valuation, processing, market channels and points are historical in nature and often guestimates, at best. For example, it is difficult to get, a reliable figure on the production and sale value of non-nationalized NTFP's in the current Year along with a breakup of its tehsil wise consumption and quantum of taxes collected by various agencies across the supply chain.

Our field studies point out the fact that traders and collectors do not know the end use of the produce and the manufacturers don't know where the produce has come from. This being the case the traders and collectors never come to know the real price of the produce. This situation affects the primary collectors and local level traders much as they are mostly unaware of the commercial worth of the produce they collect and trade. Primary collectors sell it for whatever they get. It is not possible for them to find more lucrative market which offers an assured return on effort and investment. Traders and manufacturers, on the other hand, derive benefits by manipulating the direction of information flow

2.2.3 Market Structures:

Based on our visits to Chhattisgarh and Satara I'm of the view that the current NTFP market is generally characterized by the following features:

- Lack of value chain knowledge and market informally linked.
- Demand from across the district and state met by informal market players.
- Economics of aggregation prevents development of any meaningful 'processing centres' in the vicinity.
- Wide swings in retail price depending on season and factors outside the local domain.
- Lack of scientific quality parameters or standards – traders go by physical characteristics giving scope for reducing prices arbitrarily.
- Absence of scientific weighing and volume assessment at the harvesters/Haat traders' level resulting collectors not getting fair prices.
- Practice of even rare and endangered and threatened species (banned items) traded and even billed in different names.
- Variable tax and levies (GST, check post duty etc.) between states and restrictions on inter-state transit.
- Fair returns to NTFP collectors

What is fair return to the NTFP collectors? Is it the wages of the primary collector for procuring NTFP from the forests assuming only the value of his/her physical effort? This view (even if one assumes that fair wages are paid) has to be tempered by the fact that the wellbeing of a forest resource is inextricably linked to the wellbeing of the forest dependent communities. These communities are the primary stakeholders of the resource and the national forest policies recognize the position in clear terms. The relatively recently enacted Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 gives the right of ownership and management of NTFP to the tribal people and forest dwellers. The need for providing the real value of the resource to the primary collectors is of paramount importance in the management of NTFP.

If the main purpose of a higher price is to enhance incomes of primary collectors, then one needs to differentiate between a fair return on labour and the real price for primary produce. A higher price for primary produce, in the context of NTFP management can also result in unintended outcomes when production is not price sensitive. A symptomatic approach to jack up procurement prices may lead to an unsustainable supply of NTFP resource jeopardizing futures for the current.

Ensuring a fair return to the primary collectors is not a function of price alone, though price is an important consideration. A 'price-based approach' may provide temporary incentive to the

collectors. However, a higher per unit price will draw more people into NTFP collection and thus result in reducing returns in the long run and/or can have a destructive impact on the resource itself by encouraging ecologically unsustainable removals. Undue emphasis on payment of higher prices encourages substitution of NTFP with cheaper alternatives, over-exploitation and destruction of resource base and attrition by encouraging more people to engage themselves in harvesting the resource. The poor forest dependent communities are also not in a position to break the complexities of the NTFP market and expect for a fair return. They need help to access technologies and alternative markets, which can bring in secured returns to them for their labour, investments and resources.

In this context an alternative approach to enhance incomes for NTFP dependent populations focuses on increasing the value generated by the produce through means other than administered pricing of raw material. The strategy should be enhancing the efficiency of supply chain that allows the NTFP collectors to realize more from the same through reduction of wastage, better information about markets, more value addition opportunities near the primary stages of supply chain, and access to R&D and organizational inputs. This is also the appropriate approach that can bring about a paradigm shift as to manage NTFP resources sustainably while keeping the welfare of people at the core. The gaps in management of NTFP resources need to be appreciated in the larger perspective and not reduced to a temporary need for "higher prices" merely because it is simple and/or quick.

Mishra (2007) reported that some social support system to cope during drought periods existed in Oraon tribe. At household level, reduction of food consumption and change in the pattern of food consumption are important coping strategies. The majority of people in this area changed their occupation, when agriculture fails due to drought. Also, many households either sold or mortgaged their lands and household assets. Some of the people, including young children migrated temporarily to other places for livelihood. OTELP (2007) points out that ecological degradation, erratic rainfall and a high risk of drought in the area have resulted in high food insecurity, increasing out-migration and periodic deaths from starvation. Among the disasters ecological imbalance is now seriously undermining the livelihood patterns and increasing vulnerability. In addition to these, a small land base, low agricultural productivity and low incomes have led to rising indebtedness, trapping tribals into a vicious circle of exploitation. The life of the tribals is increasingly vulnerable due to a persistent lack of assured entitlements to their resource base. Land alienation has deprived them of their land; forest legislation has turned them into encroachers on land they have always used; and they

have also been disproportionately affected by displacement due to mining operations, irrigation projects, wildlife sanctuaries, etc.

CHAPTER III

RESEARCH METHODOLOGY AND TECHNIQUES

Chapter III Research Methodology & Technique

This chapter discusses the methodology used to test the hypotheses. In particular it will provide a brief explanation of analytical tools and techniques used to understand the complex situation.

3.1 Delineation of the Study area

Gadchiroli district was carved out on the 26th of August 1982 by the division of erstwhile Chandrapur district. Earlier, it was a part of Chandrapur District and only two places namely Gadchiroli and Sironcha were tahsils of Chandrapur District before the formation of Gadchiroli District.

Gadchiroli district is situated on the North-Eastern side of Maharashtra State & district is situated on the North-Eastern side of Maharashtra State & have State borders of Telangana and Chhattisgarh. Naxalism is highly prevalent in Gadchiroli district and subsequently has been highlighted as part of the Red Corridor, used to describe areas in India that are plagued by Naxalites. They took the shelter in the dense forest & hills of this district.

Total population of the district is 10,72,942. Male and female population is 5,41,328 and 5,31,614 respectively (As per Census 2011). SC and ST population in the district is 1,20,754 and 4,15,306 (As per 2011 Census). The literacy rate of district is 74.4% (as per census 2011). The percentage of Scheduled Castes and Scheduled Tribes community population that resides in the district is 11.25% and 38.7% respectively (As per Census 2011).

The district is categorised as Tribal and undeveloped district and most of the land is covered with forest and hills. The district has forests cover near about 76 % of the geographical area of the district. This district is famous for Bamboo and Tendu leaves. Paddy is the main agriculture produce in this district. The other Agriculture Produce in the district are Jwar, Linseed, Tur, Wheat. The Main profession of the people is farming.

There are no large-scale Industry in the entire district except the Paper Mill at Ashti in Chamorshi Taluka and Paper Pulp Factory at Desaiganj. Due to this, the district is economically backward. There are many Rice Mills in the district as the Paddy is the main agriculture produce here. The Tussar Silk Worm Centre exist in Armori taluka of the district. Only, 18.5 kilometres Railway route passes through the district.

3.2 Study site

Gadchiroli is located at 20.10°N 80.0°E.[5] It has an average elevation of 217 metres (715 feet). Gadchiroli District is one of the largest in Maharashtra by land area. The town and surrounding area are considered to be beautiful during the monsoon season (July to September), and is surrounded by a teak wood forest.

Figure 3.1 Map Showing Study area

3.3 The population and literacy

In 2011, Gadchiroli had population of 1,072,942 of which male and female were 541,328 and 531,614 respectively. In 2001 census, Gadchiroli had a population of 970,294 of which males were 491,101 and remaining 479,193 were females. Gadchiroli District population constituted 0.95 percent of total Maharashtra population. Average literacy rate of Gadchiroli in 2011 were 74.36 compared to 60.10 of 2001. If things are looked out at gender wise, male and female literacy were 82.31 and 66.27 respectively. For 2001 census, same figures stood at 71.86 and 48.07 in Gadchiroli District. Total literate in Gadchiroli District were 708,365 of which male and female were 395,110 and 313,255 respectively. In 2001, Gadchiroli District had 490,121 in its district.

Table 3.1 Taluk wise Schedule Tribes' population details in the district

Sr. No.	Talukas	ST Population	Percentage of Scheduled Tribe population to total population

1.	Desaiganj (Vadasa)	7199	8.61
2.	Armori	23120	23.81
3.	Kurkheda	46826	54.40
4.	Korchi	31333	73.19
5.	Dhanora	58745	71.04
6.	Gadchiroli	28421	19.47
7.	Chamorshi	32623	18.21
8.	Mulchera	14834	32.40
9.	Etapalli	66597	81.50
10.	Bhamragad	29459	81.10
11.	Aheri	58233	49.78
12.	Sironcha	17916	23.97
	Total	**415306**	**44.79**

Source: District Census data 2011

As per Census 2011, the District recorded 4,15,306 Scheduled Tribe population which is 38.71 percent of the total population. Etapalli Tahsil has the highest of 81.5 percent of Scheduled Tribe population while in Desaiganj (Vadasa) Tahsil it is lowest at 8.61 percent. Table 3.2 Literacy rate of the district

Table 3.2 Literacy rate of the district

Sr. No.	**Name of Taluka**	**Literacy Rate ST Population (Census 2011)**		
		Male	**Female**	**Total**
1.	Desaiganj (Vadasa)	90.00	72.84	81.33
2.	Armori	84.23	67.32	75.78
3.	Kurkheda	86.14	68.99	77.62
4.	Korchi	80.32	62.79	71.34
5.	Dhanora	77.37	59.86	68.51
6.	Gadchiroli	83.72	64.82	74.33
7.	Chamorshi	81.18	63.05	72.22
8.	Mulchera	81.70	64.55	73.30
9.	Etapalli	65.90	50.97	58.41
10.	Bhamragad	58.96	41.50	50.17
11.	Aheri	71.11	55.91	63.48
12.	Sironcha	66.63	49.04	57.77
Total		**67.09**	**75.54**	**58.69**

Source: Census of India 2011

As per 2011 Census, there are 2,34,648 literates in Scheduled Tribe population with 1,31,714 males and 102934 females in the rural area of the District. Percentage of Scheduled Tribes literates is 67.09 percent showing 75.54 percent for males and 58.69 percent for females. In the District rural area, Desaiganj (Vadasa) taluka has the highest literacy rate followed by Kurkheda, Armori, Gadchiroli, Mulchera, Chamorshi, Korchi and Dhanora. The gap in Scheduled Tribe male-female literacy rate is 16.85 percent in the District (rural) areas.

3.4 Sample data and sampling procedure

The district comprises of 12 talukas. The present study has been restricted to Dhanora Block and where majority of the tribals gather NTFPs products from forest area. A survey was conducted between December 2020 to March 2021. Data were collected through interviews questionnaire administered on 200 randomly selected household respondents from the villages in and around the forests of Dhanora taluka, which have second highest number of STs population.

The study includes both primary and secondary sources of data. The primary data were collected with the aid of structured and comprehensive questionnaire exclusively prepared for the study. The questionnaire was prepared after extensive preliminary survey Nov. 2020 in the study region that helped to choose the relevant villages for sampling. The questionnaire was subjected to pre-testing during preliminary survey to improve it.

The primary data were collected from sample tribal respondents by personal interviews. The locations of respondent's residence were identified with the help of local Resource Person working with Science and Technology Resource Centre (STRC) Gondwana University Gadchiroli. Questionnaire was administered orally in Marathi, one of the native languages. Each interview took 20 to 30 minutes. The data collected included information on NTFPs collected and their quantities, together with demographic information of the collectors (age, gender, origin, literacy level, land holding, community background, total annual earnings, collection timings and availability). In addition to primary data, secondary data were also collected from District Census 2011, District statistical office (DSO) and Integrated Tribal development programme (ITDP) office. Basic statistics about Gond Tribe were taken from the official sources of the districts.

As majority of the tribals were illiterates, they could not give absolute distance they travel (Kms) and actual time taken (hrs) for extraction of NTFPs. Hence, distance travelled and times taken were carefully approximated.

The total income generated in a season by the tribals during collecting trip was calculated from the quantity of NTFPs collected and the price received by the collectors. Revenue earned from NTFPs was recorded in Indian Rupees (INR).

3.5 Statistical tools used

The tools used in this study were MS-EXCEL, MS-WORD. MS-EXCEL was used to prepare pie- charts and graphs. MS-WORD was used to prepare or write the whole project report.

3.6 Sampling Technique:

The technique used for conducting the study was Convenience Sampling Technique as sample of respondents was chosen according to convenience.

3.7 Data Collection Methods:

The data was collected using both by primary data collection methods as well as secondary sources.

Primary Data: Most of the information was gathered through primary sources. The methods that were used to collect primary data are:

1. Questionnaire
2. Interview

Secondary Data: Secondary data that was used are web sites and published materials related to Role of NGOs in Rural Development relevant information on NGOs' various Developing programs.

The secondary data will be collected through:

- Text Books
- Magazines
- Journals
- Websites

CHAPTER IV

RESULTS AND DISCUSSION

Chapter IV Result and Discussion

This chapter presents the results and discussion of the statistical analysis.

4.1 Tribal communities in the study area

The Gadchiroli district has a high cultural diversity in terms of composition of tribals. The major tribal communities surveyed are Gond (86.8 %), Madia (7.7 %) and Pardhan (5.5 %) (Table 4.1). These communities are considered as descendants of primitive tribal groups dwelling in the interior parts of the forests, depending on NTFPs for their subsistence. The Gond tribe was sampled more since this tribe is dominant in the district and contributes 86.8 % to the total tribal population (Census Data 2011). The tribal communities' own small pieces of land on which they mainly cultivate Paddy, Cereals, Maize and Vegetables etc. Traditionally, Gond expertise in honey gathering and the NTFP Collection. They realize incomes from honey, working in NTFP collection and agricultural farms. Burud community (forest dwellers) are basically NTFP gatherers specialized in bamboo craft. While Dhivar and Gond are skilled in fishing and agriculture. Comparing these tribal communities, Gond have a relatively better socio-economic status. In this study, communities are not analysed separately since the differences in terms of their livelihood opportunities and outcomes are not that big.

Table 4.1 Major tribal communities surveyed in the study area

Community	No. of respondents
Gond	132
Madia	20
Pardhan	85
Total	**237**

4.2 Socio-economic characteristics of the NTFPs collectors

4.2.1 Family size

The basic information about the households is presented in table 4.2.1 Average household size was 4.44 with on average 1.2 adult males and 1 female respectively and 2.24 children.

Socio-economic characteristics	Gadchiroli district	
	Number	Percentage
Size of family (average)	**4.44**	**-**
a. Adult male	**160**	**-**
b. Adult female	**45**	**-**
c. Children	**32**	**-**
Literacy level of the households		
a. Adult male	**232**	**22.05**
b. Adult female	**108**	**10.26**
c. Children	**512**	**48.66**
Size of land holding (Acre)	**2.60**	**-**
Livestock (Average)	**3.24**	**-**
a. Cow	**1.77**	**-**
b. Bullock	**2.10**	**-**
c. Goat	**3.51**	**-**
d. Poultry	**4.52**	**-**
e. Buffalo	**4.00**	**-**
f. Sheep	**2.00**	**-**

Table 4.2.1 Socio-economic profile of the NTFP collectors

One characteristic feature of the tribal community is that, they go for early marriage. They live independently forming a nuclear family. This might be the reason why the average family size is quite small. Similar results were observed by Hegde (1994), Girish (1998), Prakash (2003) and Gubbi (2008). This nucleus nature was the major determining factor in the composition of the tribal families. However, formation of nuclear families depends on level of education and employment (Parvathamma, 2004).

4.2.2 Age of respondents

Most respondents were in the age group of 36 to 55 years (52.7%), followed by above 55 years age group (30%). While the age group of below 35 years contained the least respondents (17.3%). The tribes in the age of 18 to 55 years (97%) constitute main workforce who employ in collection of NTFPs, agriculture, wage earning and allied activities. On the other hand, the tribes above 55 years are rarely involved in such activities.

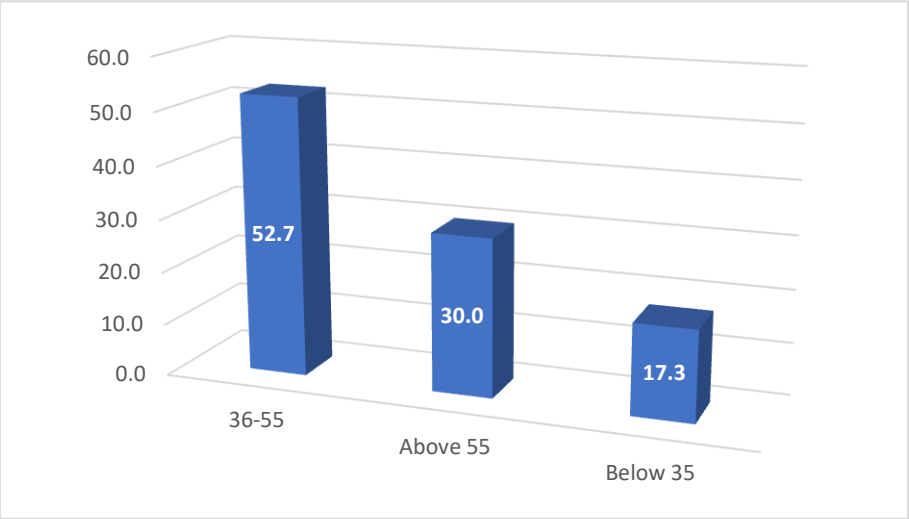


Figure 4.2.2 Age classes of surveyed respondents

4.2.3 Literacy level

The literacy rate of adult males (22.05 %) was higher than adult females (10.26 %). Literacy was highest for children (48.66%) because of encouragement from government through free educational programs and support from parents. This confirmed the results of the government survey in 2011. They found phenomenal increase in literary rate with tribals compared with the situation in 2001 (Table 4.2.3).

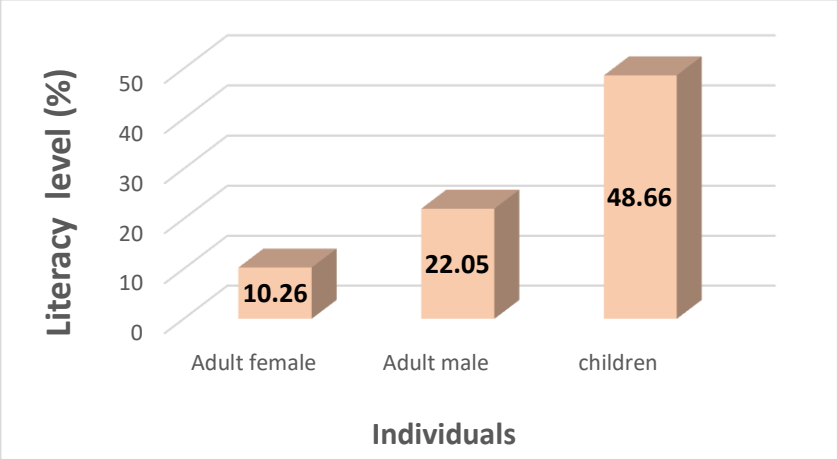


Figure 4.2.3 Literacy levels of the Individuals

4.2.4 Land holding

Out of the total 237 tribal households, the landless (19.83%) are in the study area followed by marginal farmers (87.25 %) with holdings of an average 0.88-hrctares and 0.60-hectares Agriculture lands respectively. Thus, indicating the independence on encroached forest lands for agriculture for carrying out other activities.

4.2.5 Livestock

About 42.19 % of the tribal population owns livestock with on average 3.24 animals per household. The reason for medium number of livestock is due to the practice of agriculture and availability of free fodder in the forest lands. The poultry reared per household was quite high (4.52), since this is considered as common feature among the tribals. Most of the household's own poultry because of easy maintenance and ready cash if they sell to local market. In addition, 29.95 % of the tribals own an average of 1.77 cows. In general, having animals is a kind of an economic security for forest dwellers.

4.3 Respondents' involvement in different sectors

The tribals meet food and income needs from collection of NTFPs, wage earning, agriculture, livestock rearing and services and allied activities.

Table 4.3 indicates that, most of the tribal households are traditionally involved in NTFPs collection. An average number of 1.20 tribals in each household depend on this activity. In addition, tribals also depend on Agriculture (80.58%) followed by Wage labour (18.98%), others (0.42%). In conclusion, NTFPs is the important activity in terms of labour contribution.

Table 4.3 Percentage of sample respondents in different sectors

Activities	**Number of respondents**	**Percentage**	**Average numbers of family members involved**
NTFP collection	158	66.66	1.20
Agriculture	191	80.58	1.62
Wage labour	45	18.98	1.00
Other	1	0.42	-

4.4 Composition of tribal employment

Comparing employment generation in various sectors, the Agriculture generated the highest employment (80.58%) followed by NTFP (66.66%), and other sectors. This was similar to the results of Prakash (2003).

Table 4.4 Composition of employment in different sectors

Activities	**Employment generated** **(**days/HH/year**)**
NTFP collection	15.05
Agriculture	40.20
Wage labour	186.65
Other	7.08
Total	**248.98**

The larger employment in NTFPs and Agriculture is because of two reasons: (i) most of the tribes have occupied forest land for agriculture purpose (72.53 %) and have dense forest dominating NTFP species (ii) Demand of NTFP. Furthermore, forest departments also engage for planting, digging and other maintenance activities. This was supported by the results of Shrinidhi (2006) in Gadchiroli district. She found that, agriculture and NTFPs collection are the major sources of income and employment.

The agriculture is the largest employment provider throughout the year. Weed control measures, application of manures and fertilizers are executed during May – June (before onset of monsoon). During the rainy season (June to September) a large number of tribals (84.6 %) are involved intensively in padkarnatakady cultivation. The second weeding and application of fertilizers in paddy is done during October and November. At this time tribals are less employed in gathering NTFPs. Paddy harvesting is done from November till January, which has provided larger employment with attractive wages (INR.200/day) compared to other seasons (INR.150/day) in the economy.

4.5 Contribution of income from different sources to average household income

The collection of NTFPs by tribal households is a traditional activity for their livelihoods for a long time. Earlier, these NTFPs had only value in use. Of late, due to commercialization, most of these products have additionally acquired exchange value. Due to this, NTFPs collected by forest dwellers are not only meeting their subsistence needs but also for earning cash income. Thus, collection and selling of NTFPs is an important source of income. In this

way, NTFPs contribute to food security by increasing their purchasing power, which increases their economic access to food.

Income in the study area is generated by five major activities: NTFPs, wage earning, agriculture, livestock rearing and services and allied activities. Wage earning generated the highest average annual income (INR. 1,11,600) accounting 40% to the total income (INR. 2,73,286.11).

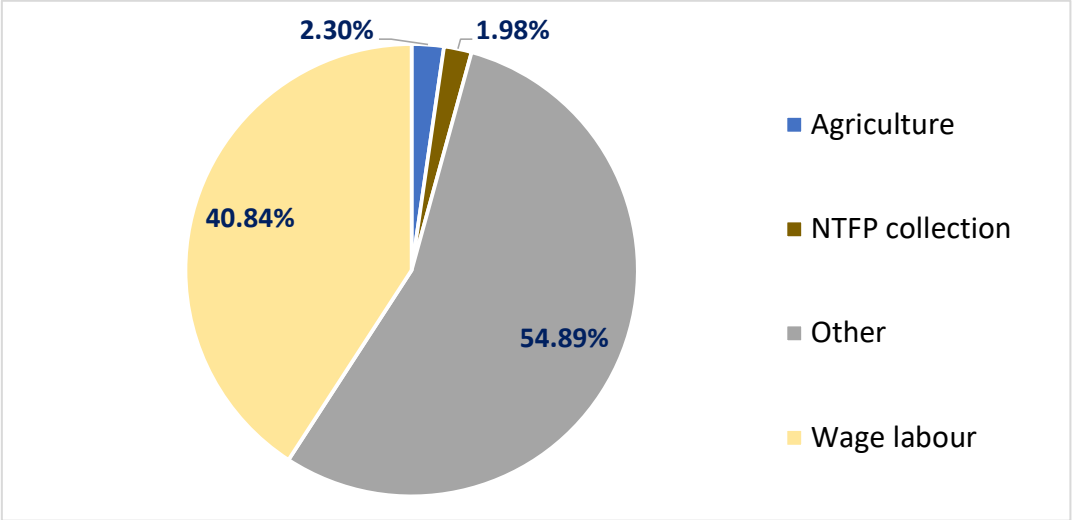
Table 4.5 Composition of average annual household income derived from different sectors (Household/year)

Activities	Income generated (INR/HH/year)
NTFP collection	5,411.23
Agriculture	6,274.88
Wage labour	1,11,600.00
Other	1,50,000.00
Total	**2,73,286.11**

The next important income source was Agriculture contributing 2.29% (INR. 6,274) to the total income (Table 4.5). The findings are similar to the studies of Acharya (2007) and Prakash (2003). They found that, the average income contribution from NTFPs ranges between INR. 5000 - 6000.

Other sectors, like wage labour and services and allied activities are also important income generating activities. Agricultural production in the region tends to be moderate because of the marginal holding (averaging 0.88 ha), lack of irrigation, and moderate soil quality. With the small farms and low production, most households grow crops primarily for home consumption. Not surprisingly, therefore, the contribution of agriculture to cash income was small. Livestock (0.77%) contributed the least to the total annual income but led to a higher consumption of livestock products at the household level. The cattle owned by the households were being used solely for carrying out agricultural operations. Therefore, NTFPs income and wage earning were important sources in providing income to households as evidenced by higher percentage share towards total household income (Table 4.6).

Figure 4.5 Average income shares of households from different activities



It can be depicted from figure 4.5 that income contribution from NTFPs is an important source of livelihood for households in the study area. Moreover, for tribals not having agriculture land it becomes the primary activity during certain periods of the year. Thus, households depend on NTFP not only for their livelihood but also to earn cash income. Apart from NTFP collection, most tribals were also engaged as wage labourers in paddy cultivation. As could be seen above, this activity actually generates the highest income share, which fetched them larger wage income.

Agriculture as income generating activity provides relatively more income (averaging INR.6274) than activities. The majority of the cultivators grow paddy, cereals and vegetables on small pieces of land. Paddy is for home consumption while vegetables is for sales. Income generating potential of agriculture is thus rather meagre if compared with wage earnings and NTFPs.

Animal husbandry is a minor source of income. Milk production from cows and goats is low and are normally used for household consumption. However, the sale of goats and poultry fetches some money every year.

Since the collectors were also involved in other minor activities such as petty business, cooking in government schools and elephant rearing, they earn some income, which also contributes to their livelihood.

4.6 Distribution of income from different sectors

The contribution of income from various sectors is presented in table 4.6. All the sample households in the study area depend on NTFPs collection for their subsistence. However, tribals cannot depend on a single source for their income and employment. Since NTFPs collection provides employment for few days in a year. For instance, according to the current study, it provides an average employment of only 15.05 man-days per year (Table 4.4). Therefore, they depend on multiple sectors for their income and employment. Currently tribals are receiving income from NTFPs collection, agriculture, livestock, wage earnings and services and allied activities. Among these sectors, the average income from NTFP per year is around INR. 5411, the income from agriculture (INR. 6273) will increase the total average income level to INR. 5842, which adds around 2.13 % to the total income. Further, average income from livestock is negligible (INR. 781) and adds around 0.5 % to the total income. Wage earnings, which form one of the major incomes, contributed 40 % (INR. 111600) to the total income (INR. 273286). Additionally, the income from services and allied activities contributes around 1% to the total income and raises the average total income level. Thus, the approach of sector-wise income distribution indicates the importance of each sector to the total income of tribal households.

Comparing income levels from various sectors indicates: (i) NTFPs collection followed by all households irrespective of income contribution and (ii) income contribution from wage earning forms the highest income followed by other sectors. The higher contribution of wage income to the total income of tribals is due the employment absorption in the agriculture during different seasons of the year. Thus, tribals are realizing more income if they depend on the Agriculture, NTFP and other activities. The income levels are directly proportional to the number of activities followed by them in general and the share of the NTFPs income in particular declines as income from other activities increases. For the lowest income groups, contribution of NTFPs accounts for more than 40% of the total income, indicating a greater economic role of NTFPs among low-income category. Therefore, income contribution from NTFP is an important source of livelihood activity.

Table 4.6 Sector wise income distribution (Household income/year)

Type	NTFP income (INR)	Agriculture income (INR)	Wages earning (INR)	Other income (INR)	Average total income (INR)
A.	5411.23				5411.23
B.	5411.23	6274.88			11668.11
C.	5411.23	6274.88	111600.00		123286.11
D.	5411.23	6274.88	111600.00	150000.00	273286.11

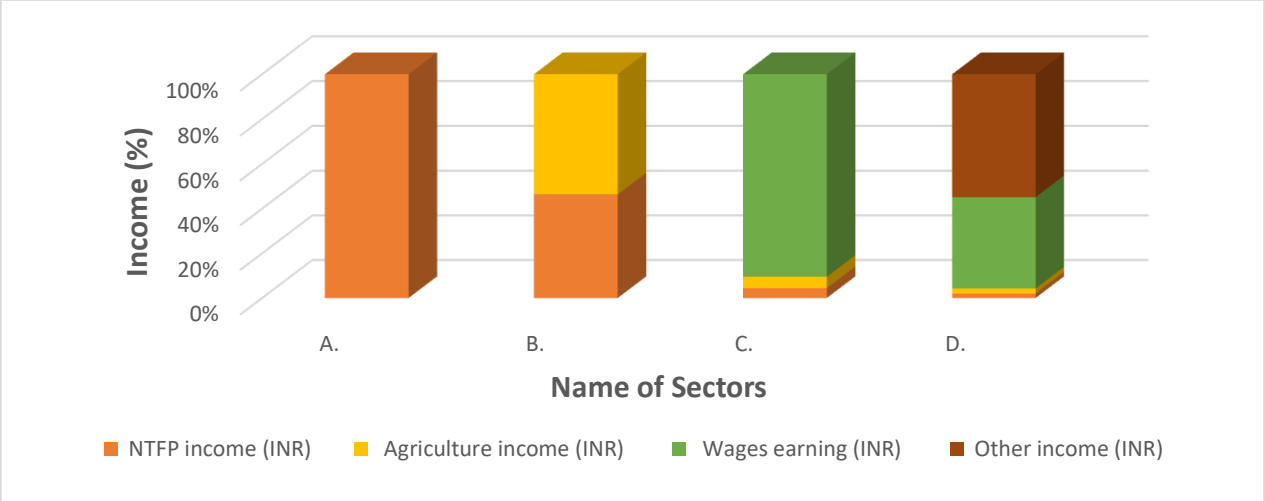


Figure 4.6 Sector wise income distribution

4.7 Scenario of NTFPs in the study area

Table 4.7 depicts details on various NTFPs available, botanical name, the collection parts, period of collection and end use of the products. The major NTFPs are Hirada, Behada, Charoli, Mahua flowers and seeds, Tendu leaves etc. While Sitafal and Jamun were available in minor quantities.

NTFPs are collected all year round. However, most of them are seasonal in nature. The late winter and summer season (February to May) is considered as the peak season for NTFPs collection. Out of the seven species, four species were collected in this season. The other important season was monsoon season (June –September) dominated by collection of Jamun and Sitafal. While berries were collected during the winter season (December to February)

(Table 4.7). Thus, maximum NTFPs collection was done during summer and monsoon seasons.

Each collector makes on average 2 to 3 visits to the forest in a week. However, this frequency may vary according to season and type of NTFP collected in the respective season. Collection of NTFPs in the study area is only by men. Though women are interested in that job, they were not involved in collecting because of fear of left-wing extremist and drudgery in collection process.

Fig 4.7. Name of the NTFPs in the study area:

Sr.No.	Local Names	Botanical Names	Family	Part Collected	Remarks(uses)
1	Awala	*Emblica officinalis*	Phyllanthaceae	Fruit	Regular
2	Hirda	*Terminalia chebula*	Combretaceae	Fruit	Regular
3	Behada	*Terminalia bellirica*	Combretaceae	Fruit	Regular
4	Vaymiri	*Embelia ribes*	Myrsinaceae	Fruit	Regular
5	Charoli	*Buchania lanzan*	Anacardiaceae	Seed	Regular
6	Tendu	*Diospyros melanoxylon*	Ebenaceae	Fruit	Ocassional
7	Godhan	*Cordia gharaf*	Boraginaceae	Fruit	Ocassional
8	Bor	*Ziziphus mauritiana*	Rhamnaceae	Fruit	Regular
9	Sitafal	*Annona squamosa*	Annonaceae	Fruit	Regular
10	Chinch	*Tamarindus indica*	Fabaceae	Fruit	Regular
11	Bel	*Aegle marmelos*	Rutaceae	Fruit pulp	Regular
12	Palash	*Butea monosperma*	Fabaceae	Flower	Ocassional
13	Moh	*Madhuca longifolia*	Sapotaceae	Flower	Regular
14	Dowari	*Woodfordia fruiticosa*	Lythraceae	Flower	Ocassional
15	Aamba	*Mangifera indica*	Anacardiaceae	Seed	Regular
16	Bibba	*Semecarpus anacardium*	Anacardiaceae	Fruit	Regular
17	Kusumb	*Schleichera oleosa*	Sapindaceae	Seed	Ocassional
18	Karanj	*Pongamia pinnata*	Fabaceae	Seed	Ocassional
19	Jambhul	*Syzygium cumuni*	Myrtaceae	Seed	Regular
20	Yeroni	*Ziziphus oenoplia*	Rhamnaceae	Fruit	Regular

4.7.1 Charoli

Returns from Charoli can be enhanced by taking certain measures during collection, processing, extraction, grading and storage as well as timely marketing. High demand for gently (kernels enclosed in their hard testa) often leads to harvesting of the fruits at an immature stage. The kernels are then small and the gently lighter. As a result, the rejection percentage increases and the produce as a whole fetch a low price. As a value adding option, collection should be delayed till such time as the fruits are fully matured. Often the

gently is not properly washed and such produce fetches a lower price. After washing, the current practice is to sundry for 2-4 hours. This is often insufficient leaving the gently moist. It is essential that proper drying is carried out.

Another step in adding value arises at the stage of extraction of kernels. Crude methods such as hammering invariably results in breakage of kernels. Manually driven mills worked by women who also sieve and winnow the produce cause damage to kernels varying from 10-15%. Power driven kernel extractors are also available. This work 3 to 4 times faster than hand driven ones and the damage to kernels is negligible. Grading of kernels is of great importance. Bigger sized kernels are higher priced than medium or small sized ones. A study carried out on graded material with traders showed that small-sized Charoli sells at prices ranging from Rs. 75-100 per kilogram, medium sized ones average Rs. 150 and large seeds Rs. 200-250 per kg. Once the kernel has been extracted it cannot be stored in gunny bags or earthen structures because the kernels develop a bad odour on contact with air. Therefore, if the kernels are not sold within a month of their extraction, they are bound to fetch a lower price. The price of kernels peaks only at a much later stage. A rise in price for kernels from Rs.100/- per kg in July- August to Rs. 300/- per kg in October-November, a time of many festivals, has been recorded. To increase returns, it is clearly necessary to enhance the shelf life of the kernels after extraction. Kernels packed in polythene bags before being stored in gunny bags can be stored upto 3 months after extraction. Cold storage facilities at district headquarters can also be used if the entire production is handled by the community as a whole.

4.7.2 Mahua

Mahua plays a significant role in the income of rural households. The value of mahua flowers in the market depends on their grade. The best grade flowers are those that have a golden yellow colour and a succulent appearance. Flowers that have turned black in colour and have a dry, shrivelled appearance fetch a lower price. The loss of value for poor grade produces ranges from 20-80% of the best grade. Increased returns can be achieved by grading during collection, proper drying and proper storage. The three phases of flower dropping should be kept separate since these produce different grades. Drying is also important. The present practice of sun drying leaves the product with about 20% moisture content. Research carried out by the Tropical Forest Research Institute; Jabalpur has shown that drying should aim at reducing the moisture below 12%. Solar drying can do this while the draught type dryer is another possibility and this can be manufactured locally for community drying. Like Charoli, dried mahua flowers can be packed in polythene bags and then stored in gunny bags;

alternatively, gunny bags plastered with cow-dung have also been used successfully. Mahua seed also fetches poor prices on account of higher moisture content, lack of grading and imperfect storage. Oil extraction using a local extractor provides flexibility for long storage and higher returns.

4.7.3 Awnla

As with the other three NTFPs described, a number of steps in collection, grading, drying and processing can be useful means of enhancing the returns to collectors. Awnla is collected green for sale to manufacturers for the preparation of chyawanprash. Awnla which is collected later in the season is normally dried for powdering and for making other products. A significant increase in the level of returns may be achieved by drying Awnla collected in February when the fruits are mature. The black Awnla produced as a result of collecting immature fruit and then drying fetches between Rs. 600-700 per kg. Mature fruit on the other hand fetches Rs. 800-900. Another possible method of adding value involves powdering using a small pulveriser. Commonly the price for powdered Awnla is about Rs. 1400- per kg.

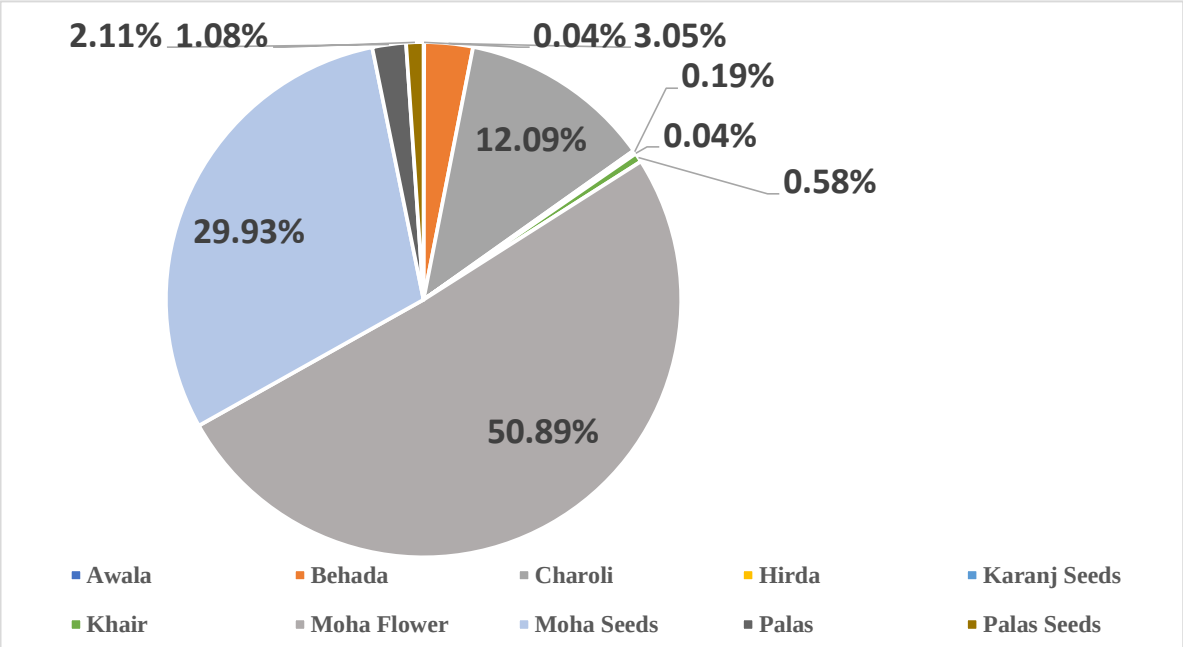
4.7.4 Hirda

After collecting Hirda, it is sundried or it can be sold undried to the small vendors at village level at cost of Rs. 10 per kg. These vendors dry it and sell it to hirda societies or private vendors in the weekly market at an average rate of Rs. 60 per kg. The village level vendors, who buy undried hirda, earn a profit of Rs. 25–30 per kg after drying. Private vendors and hirda societies buy hirda from local people. Sometimes private vendors buy hirda from local people at low cost and stock it tills Tribal Development Corporation increases the prices. After the price of Hirda reaches a peak, they sell it to societies and earn a profit. Private vendors sell hirda to vendors in Chhattisgarh and other cities such as Pune, Mumbai and Hyderabad with a profit margin of Rs. 3–5 per kg. On the other hand, hirda societies buy hirda and store it in storehouses of Tribal Development Corporation and report it to TDC sub-regional office.

After value addition, the products are sold into market at cost of Rs. 250–300 per kg, depending upon the type of value addition and company. The profit at each level of supply chain and scale up to which they dealt in; hence it is necessary to connect women SHG to fifth, sixth level of supply chain. Shows the value chain of hirda which includes sun drying, de-shelling or decortications and grinding. To increase the income, decortications was the best possible intervention which could help tribal people earns three times the current practice of selling after sun-drying.

4.8 Income composition of NTFP collectors

NTFPs contribute to livelihoods for the large proportion of poor living in forests of most tropical countries (Arnold and Perez 2001). The NTFPs incomes vary across tribal households. They collect seven NTFPs, however only few of these contribute significantly to the total household income. In the study area, Mahua flower and seeds for more than 70 % of annual NTFPs income. It was found that, behada (43 %) contributed the most to the NTFPs cash income followed by honey (19 %), charoli (12 %), broom grass (10 %), berry (6 %), beeswax and Jamun with 5 % each. NTFPs, the cash income generated was higher because of: (i) the high unit price and (ii) the export demand.



4.9 Economics of NTFPs collection

Economics of NTFPs include costs and returns involved in NTFPs collection and marketing. The opportunity cost of labour is estimated considering average labour man-days involved in NTFPs collection. Opportunity cost is an important economic concept that measures the economic cost of an action or decision in terms of what is given up to carry out that action (USDA, 2007). For example, the opportunity cost of labour for the tribal is often measured using wage rate in paddy plantations (INR.150/day). The cost of time spent for NTFPs collection is imputed from the opportunity wage rate prevailing in the study area. The gross income per household derived from the sale of products, was calculated by considering difference between total quantity collected and sold.

Net returns from NTFPs are calculated using a simple concept as the difference between gross returns and costs excluding the opportunity costs of labour and transportation costs. Therefore, a total net return from NTFPs was INR. 5411 Out of this, the most important product in the category on the basis of net returns generated was Mahua Flowers which contributed the highest net return (INR. 3038) due to highest unit price and export demand. On the other hand, the net return from Charoli was negative.

To explain this, the researcher would like to introduce a new idea concerning the tribals' subsistence living within their systems considering opportunity cost of labour. If labour is valued at an average off seasonal wage rate (INR. 150/day – which is considered as the opportunity cost), then opportunity cost of labour, will be more than NTFPs income.

In conclusion, NTFPs also contribute to the household income of tribals to a considerable extent. But associated drudgery with its collection is enormous. There is less income sources which can uplift tribals from the existing situation. The uncertainty about their annual income still remains questionable.

4.10 NTFP trade in the study area

The state forest department has to grant a lease to TRIFED for collecting 50 % of NTFP from forests. The 50 % restriction in collection of NTFPs in certain areas connoted it for ecological, conservational and tribal livelihoods for future needs. Before collection season starts, for each product the TRIFED announce the collector's price, which is paid by the TRIFED to the tribals. In turn Forest Department issues the identity card (collector's pass) to the tribal who wish to collect NTFPs which he has to carry when he goes to forest for collecting products. Here the forest department is enforcing the tribals to carry the pass.

The TRIFED was the sole agency handling the NTFPs' trade. Society will appoint an agent among tribals in each tribal settlement who works on a commission basis. The agents procure the produce from the collectors on the behalf of TRIFED for which they get commission per kg of produce they handle. For marketing of the produce the TRIFED calls for tenders/public auction to local brokers/dealers to dispose the produce to traders under the presidency ship of Corporation. According to the secretary of local society the 'TRIFED should find better markets for NTFPs using auctions. However, this study revealed that the Community sells the NTFPs that are collected directly to the traders.

4.11 Calculation of price spread

An analysis of price spread has been carried out to understand the share of final price going to the primary gatherers. Price spread is the difference between the price paid by the ultimate consumer and price received by the gatherers in case of NTFP (Shylajan and Mythili, 2007). Here final consumers' price was considered sales price of the LAMPs co-operative society, because it was difficult to assess ultimate consumer price by researcher.

Table 4.12 Estimation of price spread of major NTFP's

Name of the NTFP	Selling price by the collectors to middle man (INR/Kg) *	Sales price of Middle man	Price difference between collectors and the middle man	Percentage appreciation
Mahua Flowers	30	45	15	50
Mahua Seeds	30	45	15	50
Charoli	125	160	35	28
Hirda	25	50	25	100
Behada	20	45	25	125
Honey	250	450	200	80
Lac	275	400	125	45.45

*Data collected From Gondwana Herbs, Gadchiroli

Table 4.12 highlight the price spread, which is estimated for some of the NTFPs collected by the local tribal people in the study area. A perusal of table indicates that the price differences (in INR) between the collectors and middle man for the NTFPs such as mahua flower, seeds, Charoli, hirda, behada, honey and lac were 15,15,35,25,25,200 & 125 respectively.

It could be noted that, the middle man gets sufficiently high margins which is even over 50 % in case of mahua flowers and seed followed by charoli (28 %), hirda (100 %), behada (125 %) and honey (80 %). Middle man has the monopoly over marketing of NTFPs and gatherers were not allowed to market their products according to their wish even though some products have alternative market in the nearby town. Hence, price spread is generally high between the collectors and middle man.

4.12 Testing of hypotheses

Based on the objectives, following hypotheses were set for present study:

- NTFPs provide relatively better income and employment as compared to other sources of income for tribals.
- Age, education, family size and access to other employment opportunities influences NTFP collection by the tribals.

The first hypothesis regarding the contribution of NTFPs to the household income and employment are not accepted, as NTFPs has some role in generating employment and contributing income which accounts 20% to the total employment and for about 25% of the total income of the households. Therefore, local tribes are realizing insufficient source of income and employment as compared to other sources of the income derived from agriculture, livestock rearing and services and allied activities. However, the major source of income and employment is wage employment responsible for more than 50% of the total days of employment and income of the households.

Regarding the second hypothesis, the percentage share of income derived from NTFPs gathered by tribal households was found to be influenced by the total hours of collection, income from agriculture, wage income and income from services and allied activities is accepted. However, some factors (age, education, distance travelled, family size and transportation cost and livestock income) were found to be non-influencing factors on share of NTFPs income to the total household income.

CHAPTER V

GENERAL CONCLUSIONS AND RECOMMENDATIONS

Chapter V General Conclusion and Discussions

The production of timber in India is mainly on public forest lands with relatively well-defined markets. Forests produce multitude of NTFPs inter alia medicinal plants, dyes, mushrooms, fruits, resins, bark, roots and tubers, leaves, flowers, seeds, honey, lichens and so on. NTFPs are sources of food and livelihood security for rural communities living in and around some of the forests. Despite of its importance, availability and prices of NTFPs are varying from place to place and their commercial value is low. In addition, markets for these products are relatively complex compared to those for timber, imposition of different quality control by buyers. Tribal people are often poor or landless. All of these factors contribute to the complexity of NTFP markets influencing the income of the households and leading to the problem of food insecurity. With this background, the main thrust of the present study is to assess the contribution of NTFPs to income and employment for ensuring food and livelihood security of tribal economy, cost and returns of NTFPs collection and identifying the factors affecting tribals' livelihoods and their coping mechanisms in the Gadchiroli district located in Eastern Vidarbha of Maharashtra. India.

5.1 The conclusions of this study are presented in three sections:

The first section of the study presents the income and employment pattern of the tribal households from different sectors. The study indicated that, the wage sector was the major employment generating activity constituting 75% (186 days) of the total days of employment. Agriculture was found to be the second major employment generating activity contributing 16.12% (40.20 days/HH/year) for the collectors. Therefore, wage employment and Agriculture were the prominent source of employment among the collectors.

It can be observed that wage earning generated maximum annual income of INR.1,11,600 per households constituting 40% of the total income of the households. The next important contributor was sales of agriculture, which depict an interesting picture in terms of income. The study revealed that sale of NTFPs is third most option of providing an important source of cash income for poor forest dwellers. The most important point is that NTFPs represents nitty-gritty component of their live hood strategies accounting 12% (INR. 5411) of their total annual household income.

However, one can understand crucial role of the NTFPs and agriculture in light of tribal economy in case of sector wise income distribution. The results of study revealed that,

percentage share (>50 %) of NTFPs played greater economic role among low-income households, which forms an important source of livelihood. It also becomes a primary activity during certain period of the year for those not having agriculture land. Thus, households were found to depend on NTFP not only for their livelihood but also to earn cash income, which in turn make them to increase their purchasing power to buy food.

The extraction pattern of the NTFPs showed that there was a significant difference in the rate of extraction of NTFPs and also number of days spent in collection of each of these produces. A total of 20 NTFPs were extracted from the forest (Table 4.7). Out of these, a few NTFPs make a sizable proportion of household income. Mahua flower was the most important NTFP in terms of income which contributed 43 % for the collectors followed by mahua seeds and the Charoli (24%).

The second section portrays the results of the cost and returns of NTFPs collection, trade of NTFPs and factors influencing share of NTFPs income. The study shows that, total opportunity cost of labour was highest in case of mahua flower, followed by seeds, Charoli hirda, behada and so on. This is mainly due to more time spent for NTFPs collection. Gross income per households from NTFPs was INR. 5411, whereas net returns is INR. 5000. Of the total net returns, lichens contributed the highest due to highest unit price and export demand followed by honey with beeswax and soap nuts. The economics of NTFPs collection proved that, opportunity cost of labour is well above the NTFPs income. But in reality, taking into account real labour opportunities it is well below the NTFPs income. That is gatherers are gaining during NTFPs season compared to working in paddy cultivation with the off seasonal wage rate. However, the study revealed that, during the period of NTFPs collection most of the tribals realized substantial income despite the pervasive low incomes in the wage earning from off seasonal works in paddy farming. Thus, incomes from NTFPs contribute to the tribals total annual households' income for considerable extent.

The trade of NTFPs clearly indicated that most of the tribes preferred to sell the produce to middle man. The middle man retained sufficient margin in the NTFPs trade. The tribal were found to receive low price for the NTFPs to an extent of 10 to 50 % of the consumer price. The middle man who operates at the tribal village level were also found to deceive the collectors at the time of weighments of the produce.

Finally, the third section will conclude with explaining problems faced by tribals in NTFPs collection followed by suitable recommendations. The major constraints faced by the respondents were restrictions to enter certain parts of the forest. Some of the tribals stated that while commuting in the forest they had serious problems of physical attacks by wild animals, which can be lethal or cause severe lifetime injuries. Though NTFPs collection fetches income to the people, it is also associated with high risk to their life. Some of the tribals inhabited in the isolated and remote hamlet areas do not have access to other basic facilities. The assistance through the supporting policy measures of the government is not efficiently functioning to overcome poverty and assurance for their livelihood.

In general, NTFP is an important source of employment and income in poor remote places of the study area. It is striking that NTFP contributed significantly to household income with off-farm activities. The NTFP contributes a lower proportion of total household income (about 25 %) than wage earning (> 50 %) but it is a source of cash income during the season of extraction, which increases economic access to food.

Therefore, NTFPs play a prominent role in both life and economy of the three surveyed tribal communities dwelling in and around forests of Gadchiroli district. The main conclusion from the study approximates that the NTFPs were collected for both subsistence and commercial use. NTFPs add to peoples' livelihood security especially for forest dependent people (Posey 1999, Cocks et al 2003). NTFPs were found to be the second major employment and income generator. Thus, NTFP collection is important and moreover it becomes one of the primary activities during certain periods in the year. But this is also associated with high risk to life of collectors and also economic exploitation of the poorly educated people by the traders. The study also proved that wage earnings were the major source of employment and income for tribals in the study area, as it was evidenced by higher percentage share towards total household income. This is also a stable and relatively risk-free source of income for the people. However, NTFPs supplement households' income and ensure food security indirectly by increasing their purchasing power over foodstuff which creates an economic access to food. Olawoye (1996) opined that rural households spend income realized from Nontimber forest products to buy food to maintain their families. This provides a supplement to the economic status in the lives of the rural dwellers. Hence, dependence upon several combined and seasonal activities ensures household food security.

RECOMMENDATIONS / SUGGESTIONS

Recommendations/Suggestions

1. In the study area NTFPs collection provides substantial employment and income opportunities to the poor forest dwellers. However, resource decline is also reported due to commercial extraction, logging and fire hazards. This destabilizes the NTFPs based income. There is a strong need for scientific management and strict monitoring of forest resources. Besides, local people should also be educated about the ill effects of man-made fire in the forest and fire protection should be proactively followed by the forest department involving local people.

2. Middle man has the monopoly over the NTFPs trade. The middle man reportedly followed misappropriate weighting of the products and large buyer retained higher margins through sales as indicated through price spread analysis. Therefore, concerned authorities of forest department and TRIFED should ensure fair practices in the trade of NTFPs and explore the possibilities of increasing price benefit to the collectors.

3. Crop raid by Wild pigs over agricultural farm is a major problem which is restricting agricultural activities of the tribals. Government should ensure proper compensation for the loss and take up effective preventive measure against crop raids.

4. Scientific studies have to be carried out to assess the short and long run impact of NTFPs extractions on forest and ecosystem. Based on this, tribals have to be educated on sustainable ways of harvesting NTFPs.

5. The forest laws prevent extraction of NTFPs in the Dense Forest. In such cases, tribal people should be given suitable alternative sources of livelihood outside the protected forests and also government should explore the possibility for voluntary relocations outside the forest.

6. The concerned government authorities should ensure that the benefits of the development policies and programs targeted exclusively at the forest dwellers should effectively reach the needy people. Besides health, education and infrastructures facilities should be ensured to people with in the available provisions.

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APPENDICES

Appendix I. General Profile of the Gadchiroli District

Sr. No.	Particulars	
1.	Geographical area in sr. km	14412.0 Sq.Km.
2.	Forest area in hectares	14.9 lakh hectares
3.	No. of revenue blocks	12
4.	No. of educational blocks	12
5.	No. of Gram Panchayats	457
6.	No. of Town Panchayats	3
7.	No. of Assembly seats	3
8.	No. of villages	1688
9.	Per-Capita Income	Rs. 58,603
10.	No. of Forest Divisions	5

Source: Gadchiroli district at a glance

Appendix II. Estimated NTFP Potential of Forest Divisions- Gadchiroli

ESTIMATED NTFP POTENTIAL OF ALLAPALLI FOREST DIVISION				
Sr. No.	**NTFP**	**Annual Approx Production (Kg)**	**Total Economic Value (Lakhs)**	**60% of Total Economic Value (Lakhs)**
1	Moha Flower	17888687.33	3041.076	1824.646
2	Charoli	662876.107	722.534	433.52
	TOTAL	**18551563.44**	**3763.61**	**2258.166**
3	Moha Seeds	7155474.93	1788.868	1073.321
4	Karanj Seeds	13884.09	2.637	1.582
5	Palas Seeds	323920.227	64.784	38.87
	TOTAL	**7493279.247**	**1856.289**	**1113.773**
6	Hirda	112030.704	11.203	6.721
7	Behada	1017070.043	182.081	109.249
8	Awala	7778	2.333	1.4
	TOTAL	**1136878.747**	**195.617**	**117.37**
9	Palas	64784	126.328	75.797
10	Khair	17695.731	34.5	20.704
11	Karu	623.11	1.215	0.729
12	Dhawada	182998.966	356.847	214.108
13	Salai	77013.694	150.176	90.106
14	Movai	55799.836	108.809	65.285
	TOTAL	**398915.337**	**777.875**	**466.729**
	TOTAL FOR NTFP	**27580636.77**	**6593.391**	**3956.038**

ESTIMATED NTFP POTENTIAL OF SIRONCHA FOREST DIVISION				
Sr. No.	**NTFP**	**Annual Approx Production (Kg)**	**Total Economic Value (Lakhs)**	**60% of Total Economic Value (Lakhs)**
1	Moha Flower	19258224.84	35984.443	21590.66
2	Charoli	713625.1466	777.851	466.41
	TOTAL	**19971849.99**	**36762.294**	**22057.07**
3	Moha Seeds	7703289.938	1925.822	1155.493
4	Karanj Seeds	14947.04	2.839	1.703
5	Palas Seeds	348719.191	69.743	41.84
	TOTAL	**8066956.169**	**1998.404**	**1199.036**
6	Hirda	120607.647	12.06	7.236
7	Behada	1153069.947	196.021	117.613
8	Awala	8374.14	2.5122	1.507
	TOTAL	**1282051.734**	**210.5932**	**126.356**
9	Palas	69743.838	136	81.6
10	Khair	19050.497	37.148	22.289
11	Karu	670.815	1.308	0.784
12	Dhawada	197009.158	384.167	230.5
13	Salai	82909.158	161.674	97.004
14	Movai	60071.808	117.14	70.284
	TOTAL	**429455.274**	**837.437**	**502.461**
	TOTAL FOR NTFP	**29750313.16**	**39808.7282**	**23884.923**

ESTIMATED NTFP POTENTIAL OF WADSA FOREST DIVISION				
Sr. No.	**NTFP**	**Annual Approx Production (Kg)**	**Total Economic Value (Lakhs)**	**60% of Total Economic Value (Lakhs)**
1	Moha Flower	10489866.62	1783.277	1069.966
2	Charoli	388708.339	423.692	254.215
	TOTAL	**10878574.96**	**2206.969**	**1324.181**
3	Moha Seeds	4195946.65	1048.986	629.391
4	Karanj Seeds	8141.584	1.546	0.928
5	Palas Seeds	189945	37.989	22.793
	TOTAL	**4394033.234**	**1088.521**	**653.112**
6	Hirda	65694.431	6.569	3.941
7	Behada	628071.903	106.772	64.063
8	Awala	4561.355	1.368	0.821
	TOTAL	**698327.689**	**114.709**	**68.825**
9	Palas	37989.148	74.078	44.447
10	Khair	10376.718	20.234	12.14
11	Karu	365.39	0.712	0.427
12	Dhawada	107309.983	209.254	125.55
13	Salai	45160.573	88.063	52.83
14	Movai	32720.838	63.805	38.283
	TOTAL	**233922.65**	**456.146**	**273.677**
	TOTAL FOR NTFP	**16204858.53**	**3866.345**	**2319.795**

ESTIMATED NTFP POTENTIAL OF BHAMRAGARH FOREST DIVISION				
Sr. No.	**NTFP**	**Annual Approx Production (Kg)**	**Total Economic Value (Lakhs)**	**60% of Total Economic Value (Lakhs)**
1	Moha Flower	10489866.62	1783.277	1069.966
2	Charoli	388708.339	423.692	254.215
	TOTAL	**10878574.96**	**2206.969**	**1324.181**
3	Moha Seeds	4195946.65	1048.986	629.391
4	Karanj Seeds	8141.584	1.546	0.928
5	Palas Seeds	189945	37.989	22.793
	TOTAL	**4394033.234**	**1088.521**	**653.112**
6	Hirda	65694.431	6.569	3.941
7	Behada	628071.903	106.772	64.063
8	Awala	4561.355	1.368	0.821
	TOTAL	**698327.689**	**114.709**	**68.825**
9	Palas	37989.148	74.078	44.447
10	Khair	10376.718	20.234	12.14
11	Karu	365.39	0.712	0.427
12	Dhawada	107309.983	209.254	125.55
13	Salai	45160.573	88.063	52.83
14	Movai	32720.838	63.805	38.283
	TOTAL	**233922.65**	**456.146**	**273.677**
	TOTAL FOR NTFP	**16204858.53**	**3866.345**	**2319.795**

Sr. No.	NTFP	Annual Approx Production (Kg)	Total Economic Value (Lakhs)	60% of Total Economic Value (Lakhs)
1	Moha Flower	15229472.68	2589.01	1553.406
2	Charoli	564337.3035	615.127	369.076
3	Moha Seeds	6091789.074	1522.947	913.768
4	Karanj Seeds	11820.17272	2.245	1.347
5	Palas Seeds	275768.3765	55.153	33.092
6	Hirda	95376.956	9.537	5.722
7	Behada	911851.812	155.014	93.008
8	Awala	6622.295	1.986	1.192
9	Palas	55153.675	107.549	64.529
10	Khair	15065.2	29.377	17.626

Appendix III: Survey Questionnaire

Sample no: …… **Village name: …….**

Head of Family: ……**….. Date: .....**

Total No. of Family members: ☐

Male ☐ Female ☐ Children (1 to 14 years) ☐

contact details:……..

1. Personal background:

Respondent Name**:** ……..

- Age: Below 35 ☐ 35-45 ☐ 45-55 ☐ 55-65 ☐ Above 65 ☐
- Education: Illiterate ☐ Up to Std.5th High School ☐ 12th& above ☐

- Gender: Male ☐ Female ☐

- Social Category**:** 1. SC ☐ 2.ST ☐ 3. OBC ☐ 4.GC ☐ 5.Other ☐

- Do you have Ration card: Yes ☐ No ☐

  Type of card APL ☐ BPL ☐ Antodaya ☐

- Primary Occupation of Family**:**

  Farming ☐ Wage labor ☐ Others Business ☐

  Secondary Occupation**:** Yes ☐ No ☐ If Yes,

Specify……..

2. Land and Land use Pattern:

Types of land		**Area in acres**	**Farmer category**
Agriculture			
Cultivable land	Irrigated		
	Rain-fed		
Fallow/ Barren			

3. Irrigation facility: a) Sources of irrigation

Micro irrigation Dug Well ☐ Bore Well ☐ Farm Pond ☐

4. Cropping pattern, Production, sale:

Season	**Crop Name**	**Input cost (Qt.)**	**Total Production (Qt.)**	**Selling Price/ Qt. (Rs.)**	**Revenue (Rs.)**
Kharif (June-Sept)	1				
	2				
	3				
Rabi (Oct.- Jan)	1				
	2				
	3				
Summer	1				

(Feb-May)	2				
	3				

Net Profit = Net Revenue– Input Cost …… **/- Rs.**

5. Livestock detail:

Livestock	**No. of livestock**	**No. of productive livestock**	**Unit Selling Price (Rs)**	**Net Sale**	**Income (Rs.)**

6. Wage labour and status of migration:

Wage labour Details; ☐ ☐

Annual	**Place**	**Total No. of working days**	**Daily Wages rate (Rs.)**	**Approx. income (Rs.)**
Men				
Women				

7. Income source from forest produce

Name of NTFP's	**Total Collection (Kg)**	**Sale Quantity (Kg)**	**Average Price (Rs)**	**Total Sale**

8. Any other source of income: …….

9. Gross Annual income of Family from all Sources …….

Appendix IV: Glimpse of the Survey

Pic 1: NTFP Collectors

Pic. 2 : Visit to NTFP Processing Unit

Pic. 3: Survey

Pic. 4: Mahua Seeds

Pic. 5: Lac

Pic 6: Charoli

गोंडवाना विद्यापीठ
गडचिरोली

॥ ज्ञानादेव तु कैवल्यम् ॥

GONDWANA UNIVERSITY, GADCHIROLI