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Utilization pattern of non-timber forest products (NTFPs) in Siddapura taluk of Uttara Kannada district of western Ghat region, Karnataka

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Abstract

Non-Timber Forest Products (NTFPs) are an integral part of development and survival of people living in and around forests. The potential economic value of NTFPs either in terms of utilization or their market value is often underestimated or unknown. The present study was conducted to document NTFPs collected by local people and their usage in Heggara, Hutgar and Hukli villages of Siddapur taluk by participatory discussion method through the questioner survey. In the present study, a total of 19 NTFP species belonging to 17 families are documented. Among different NTFP species, *Garcinia gummigutta* (100%), *Garcinia indica* (100%), *Artocarpus lacucha* (100%) are the major species harvested in high quantity. The edible fruits (41%) are the major NTFP products harvested by the farmers followed by bark (14%), seed (14%), leaves (9%), aril (9%) and roots (9%). Maximum revenue is obtained from *Garcinia gummigutta* (Rs. 82,666/annum) followed by *Garcinia indica* (Rs. 18,540/annum).

Keywords: NTFP, *Garcinia gummigatta*, regeneration, revenue, questioner survey

Introduction

Non-Timber Forest Products (NTFPs) are an integral part of development and survival of people living in and around forests and depending on them. The potential economic value of NTFPs either in terms of utilization or their market value is often underestimated or unknown. The challenge is therefore to assess and quantify the value of these products and to transform the use of many of them as are socially and ecologically viable for subsistence and development [1]. In India, there are about 15,000 plant species out of which nearly 3000 species (20%) yield NTFPs. However, only about 126 species (0.8%) have been commercially developed [2]. NTFP activities hold prospects for integrated forms of development that yield higher rural incomes and conserve biodiversity while not competing with agriculture. Non-Timber Forest Products (NTFPs) provide livelihood for millions of rural people who live in and around the forest. NTFPs offer considerable potential in the conservation of tropical forests through judicious harvest, and by enhancing rural income and motivating people to conserve their resource base. Thus, they have become an important aspect in forest conservation programmes that are aimed at extracting NTFPs in a sustainable way and consequently conserve the forest as well. Apart from providing rural employment, NTFPs also enhance the chances of forest conservation through value addition. Enhancing rural income through over harvesting of NTFPs may have a negative impact on the regeneration and survival of NTFP species [3]. In order to use forests in a sustainable manner, particularly NTFPs, it is important to note that we need data on levels of production, extraction and regeneration. Efforts to make sustainable use of forest products may prove futile, if information on these three parameters is not available beforehand [3]. Thus, it is essential to generate such information on production, extraction and utilization pattern of NTFPs. The information may particularly be useful, if the local community undertakes forest management. Uttara Kannada district is the northernmost coastal district of Karnataka falls under one of the biodiversity rich forest regions of Western Ghats. It has a total geographical area of 10,291km² and accounts for 5.4% of the total area of the state. Total forest cover is 781,600ha, which accounts for nearly 76% of the total geographical area of the district. The major forest types found here are tropical wet evergreen forest, semi-evergreen forest, moist-deciduous and dry deciduous forest [4]. NTFP resources are declining rapidly due to unscientific and unsustainable exploitation of the forest products. In the absence of proper management and control in the collection and trade, NTFPs are becoming vulnerable, endangered and even extinct. NTFP species need to be conserved and managed properly for the sustainable use of resources. Potential NTFPs have important role in the rural subsistence and livelihood. In

Order to commercialize these species and to maintain the critical population in the long run, there is need to know the existing volume of the plants in nature, their habitat and distribution. In this context, this study aims to explore and document NTFPs collected by local people, their usage and marketing pattern in three villages of Siddapur taluk, Uttara Kannada district.

Materials and methods

Study site

Siddapur is a taluk located 35-40 km (14°20' 27.6" N and 74°53' 23.94" E) from Sirsi taluk in the heart of the Western Ghats of Uttar Kannada district. The availability of plenty of natural resources have given way for the traditional forest dwellers to collect and use them for a variety of purposes in their day to day life. These traditional forest dwellers have extensive knowledge regarding plants and various other resources that are prevalent in their surroundings. They are used for a variety of purposes in their day to day life. Other than timber, plants also serve a variety of other purposes. They include; nuts, seeds, berries, mushrooms, oils, foliage, medicinal plants, species and forage, religious purposes, handicrafts and may other purposes.

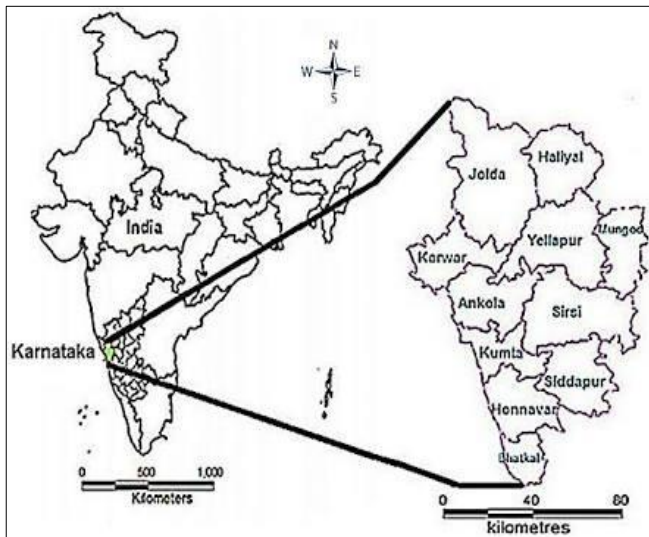


Fig 1: Map of India, Karnataka and Uttara Kannada District

Data collection

Siddapur taluk is embedded with rich biodiversity and forest resources and information regarding production, utilization and marketing of NTFPs of this region is very limited. Therefore, this study was undertaken in 3 different villages of Siddapur taluk, (Heggarani, Hutgar and Hukli). From each village families are selected based on their land holdings (small, medium and large) and sampled randomly. Information on NTFP utilization pattern and other relevant information were

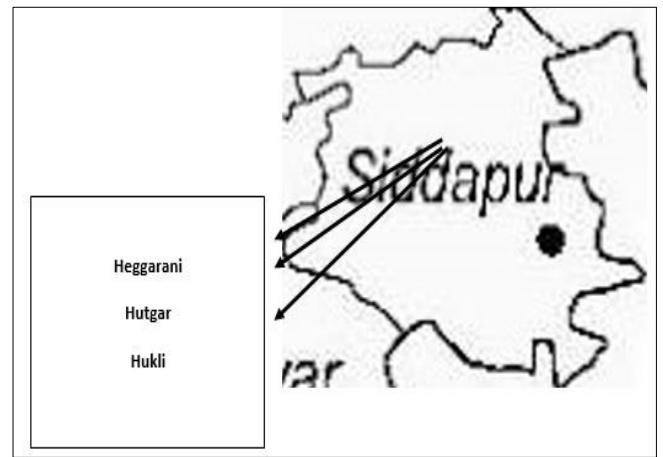


Fig 2: Map of Siddapur taluk, showing Heggarani, Hutgar and Hukli Villages

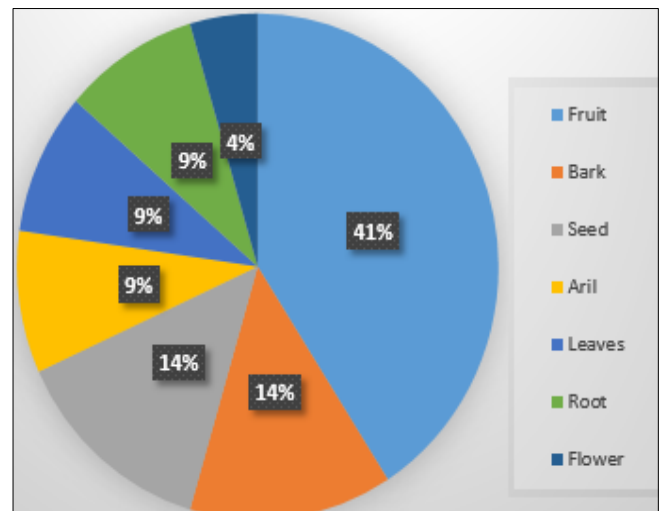


Fig 3: Different parts of plant used as NTFP

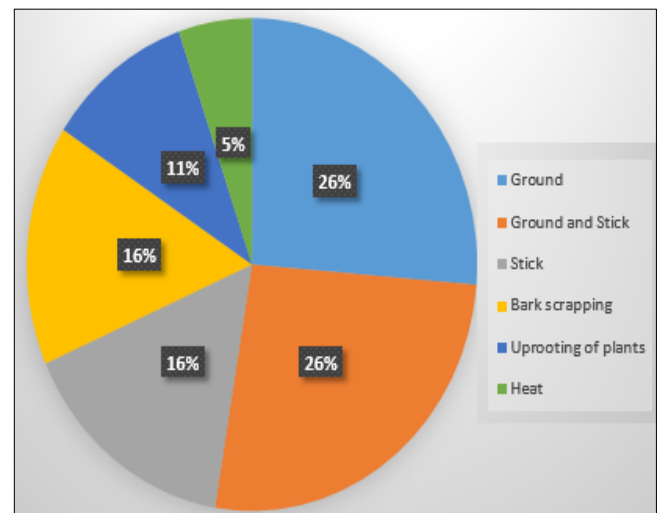


Fig 4: Method of collection of NTFP

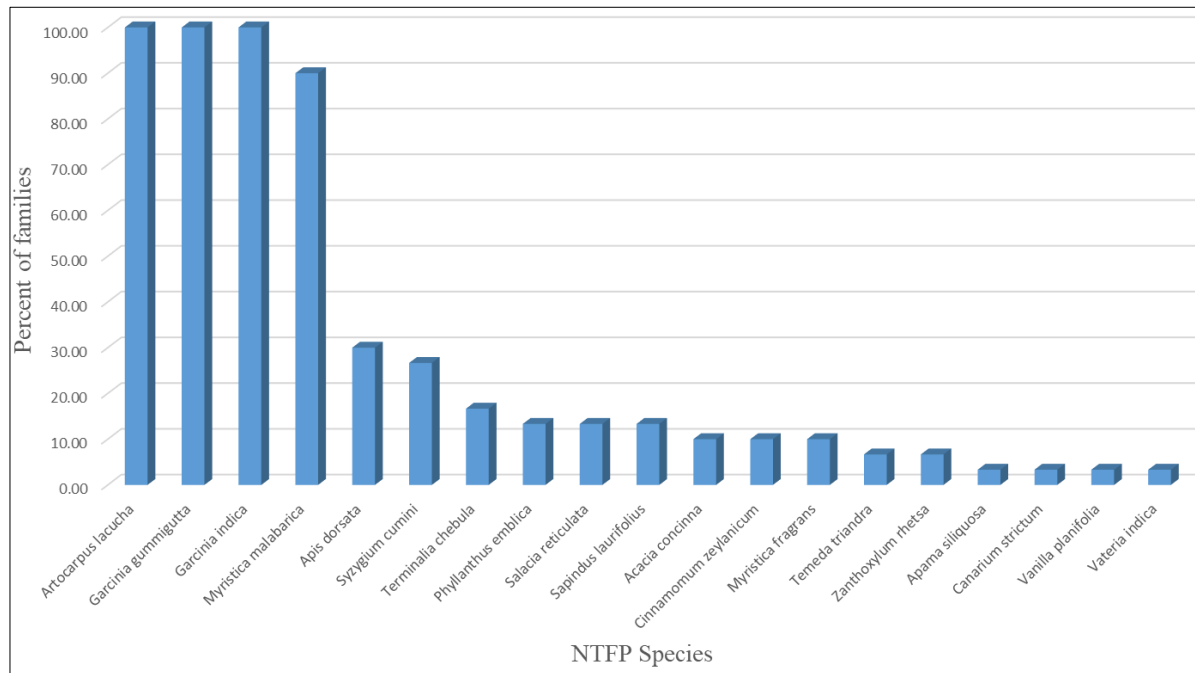


Fig 5: Percent of families using different NTFPs in the selected villages of Siddapur Taluk

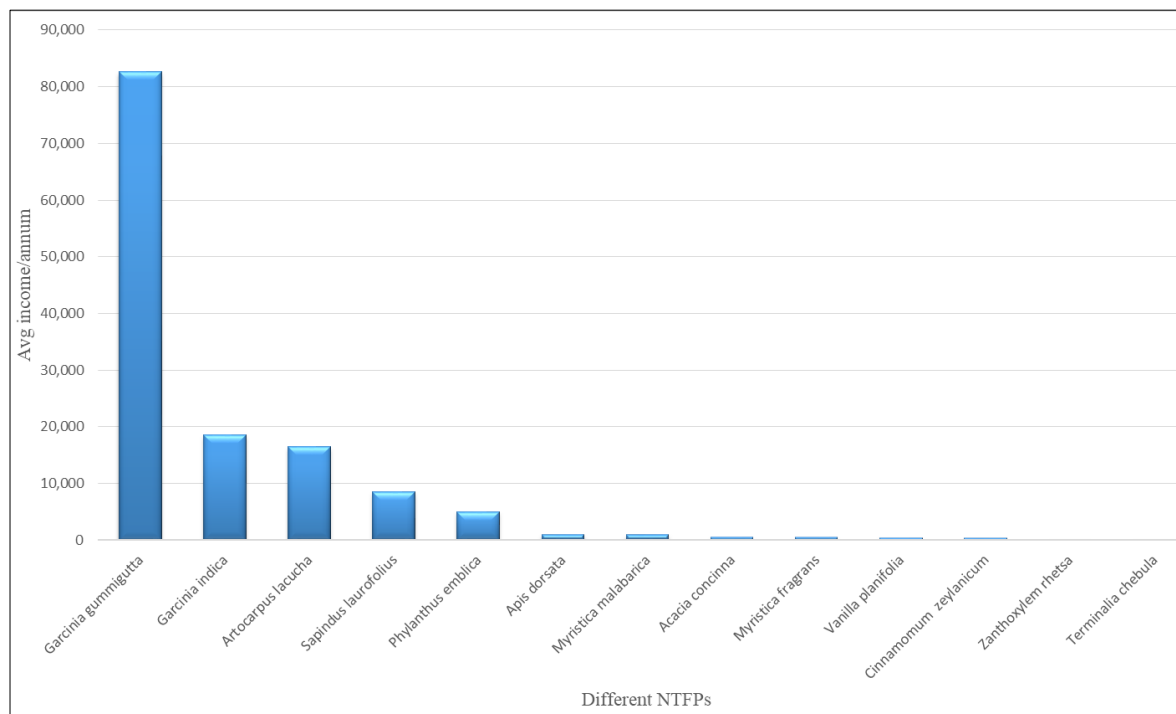


Fig 6: Income obtained from different NTFPs

Results and discussion

The indigenous knowledge on the use of NTFPs is unique to a given culture of a human society around the world. NTFPs are generally medicinal plants, wild edible plants, small wood used for household purposes and etc. In this study, a total of 19 species of NTFP producing plants belonging to 17 families are documented and which are used for various purposes by the local people of the region for their livelihood (Table 1). These results are in line with the studies conducted by [5]. They documented 26 different edible plant species, 19 medicinal plants in Bilaspur Forest Division of Chhattisgarh. NTFP and fuel wood utilization pattern by Rongmei tribe in Manipur was documented. They reported that about 54 wild edible species, 27 medicinal plants and 7 fuel wood species are widely used by the tribal people [6].

The people of these regions are mainly dependent on agriculture for their food and economy, they use NTFPs as edible food, as medicinal plants, insect repellents *etc.* The NTFPs used for medicinal purposes generally are used to cure diseases like fever, pain, stomach problem etc. Sometimes the people use the whole plant while sometimes only leaves, roots, fruits, stem and aril according to their needs and use. In this study the highest use of NTFPs recorded is as edible like fruits (41%) followed by bark (14%), seed (14%), leaves (9%), aril (9%), roots (9%) and flower (5%) (Fig 3). Studies on Non-Timber Forest Products (NTFPs) and their Role in Livelihood Economy of the Tribal People in Upper Brahmaputra Valley, Assam, India indicated that highest use of NTFPs recorded is as edible like fruits (32.65%), followed by leaves (30.62%), whole plant (18.37%), stem (12.24%),

roots (4.08%) and latex (2.04%) [7]. Hence, among village people awareness regarding sustainable harvesting of fruits, bark, leaves, roots, and flower is essential to avoid the problems of unsustainable harvesting and its effect on regeneration and growth and development of NTFP trees.

The increasing demand for medicinal plant and other NTFPs threatens the natural resource management for sustainable utilization. Mainly, extraction of medicinal plants from the wild sources *i.e.*, using sticks, uprooting of whole plant scrapping of bark *etc.* and destruction of forest for human settlement causes ecosystem imbalance and extinction of many important plant species. In this study, majority of the villagers collected the NTFPs from Ground (27.77%), followed by Stick (16.66%), both ground and stick (27.77%), bark scrapping (16.66) and uprooting of plants (11.11%) (Fig 4). Even though damage caused due to different collection methods on regeneration and growth of the species is less due to collection from ground and use of stick, but awareness regarding sustainable harvesting of NTFP products is essential to avoid damage due to bark scraping and harvesting of roots.

Harvesting of different NTFP's mainly varies with family and location. In this study, *Garcinia gummigutta* (100%),

Garcinia indica (100%), *Artocarpus lakoocha* (100%) are the major NTFP's species harvested in high percent (all 30 families are using) followed by *Myristica malabarica* (90%) and *Apama siliquosa* (3.33%), *Vateria indica* (3.33%), *Canarium strictum* (3.33%) were least. (Table 4 and Fig 5). Percent of income obtained from NTFP's varies with major influencing factors such as demand, supply, quality and market price. The highest income per family obtained from collection and sale of NTFPs is from *Garcinia gummi-gutta* (Rs. 82666) followed by *Garcinia indica* (Rs. 18540) and *Artocarpus lacucha* (Rs. 14440) and least was from *Terminalia chebula* (Rs. 118) and *Zanthoxylum rhetsa* (Rs. 150) (Table 5 and Fig 6). Information on "Financial valuation of non-timber forest product flows in Uttara Kannada district, Western Ghats, Karnataka" was documented. The estimated value of NTFPs realized per household varies between Rs. 3445/household in the evergreen zone and Rs. 1233/household in the dry deciduous zone. Among the different NTFPs *Garcinia gummi-gutta* and *Garcinia indica* species helps to gain more income and improve the economic status of local people in Siddapur Taluk. Hence, domestication and establishment of plantations of such species has to be encouraged among local people [8].

Table 1: Non-Timber forest products (NTFPs) used by villagers

S. No.	Scientific Name	Common Name	Family	Part used	Purpose of use
1.	<i>Acacia concinna</i>	Sheegegai	Mimosaceae	Fruit	Shampoo, Detergent
2.	<i>Apama siliquosa</i>	Neerateberu	Aristolochiaceae	Root	To cure cold and fever
3.	<i>Artocarpus lakoocha</i>	Vatehuli	Moreceae	Fruit	Spices
4.	<i>Canarium strictum</i>	Maddidhup	Burseraceae	Bark	Traditional, Insect repellent
5.	<i>Cinnamomum zeylanicum</i>	Dalchinni	Lauraceae	Bark	Spices, Cardiac disease
6.	<i>Garcinia gummigutta</i>	Uppage	Clusiaceae	Fruit, Seed	Ghee, Spices, Butter
7.	<i>Garcinia indica</i>	Murugalu	Clusiaceae	Fruit	Fat reducing, Cooling, Agent, Butter
8.	<i>Apis dorsata</i>	Jenu	Apidae	Nectar, Wax	Edible, Medicine
9.	<i>Myristica fragrans</i>	Jaikai	Myristicaceae	Seed, Aril	Sweet flavouring agent
10.	<i>Myristica malabarica</i>	Rampatre	Myristicaceae	Aril, Seed	Coloring agent, Spice
11.	<i>Phyllanthus emblica</i>	Nelli	Euphorbiaceae	Fruit	Pickle, Medicine
12.	<i>Salacia reticulata</i>	Ekanayaka	Celastraceae	Root	To cure fever
13.	<i>Sapindus laurifolius</i>	Antuvala	Sapindaceae	Fruit	Detergent, Medicine
14.	<i>Syzygium cumini</i>	Nerale	Myrtaceae	Fruit	Edible, Diabetes
15.	<i>Terminalia chebula</i>	Anale	Combretaceae	Fruit	Gas trouble, Tooth pain
16.	<i>Themeda triandra</i>	Karada	Poaceae	Leaves	Fodder
17.	<i>Vanilla planifolia</i>	Vanilla	Orchidaceae	Pods, Leaves, Flower	Sweets and Spice
18.	<i>Vateria indica</i>	Saldhup	Dipterocarpaceae	Bark	Traditional, Insect repellent
19.	<i>Zanthoxylum rhetsa</i>	Juminkai	Rutaceae	Fruit	Spice

Table 2: Percent of families using different NTFPs in the selected villages of Siddapur Taluk

Scientific name	No. of Families used	Percentage
<i>Acacia concinna</i>	3	10
<i>Apama siliquosa</i>	1	3.33
<i>Apis dorsata</i>	9	30
<i>Artocarpus lakoocha</i>	30	100
<i>Canarium strictum</i>	1	3.33
<i>Cinnamomum zeylanicum</i>	3	10
<i>Garcinia gummigutta</i>	30	100
<i>Garcinia indica</i>	30	100
<i>Myristica fragrans</i>	3	10
<i>Myristica malabarica</i>	27	90
<i>Phyllanthus emblica</i>	4	13.33
<i>Salacia reticulata</i>	4	13.33
<i>Sapindus laurifolius</i>	4	13.33
<i>Syzygium cumini</i>	8	26.67
<i>Terminalia chebula</i>	5	16.67
<i>Themeda triandra</i>	2	6.67
<i>Vanilla planifolia</i>	1	3.33
<i>Vateria indica</i>	1	3.33
<i>Zanthoxylum rhetsa</i>	2	6.67

Table 3: Income obtained from different NTFPs

Species	Quantity in (Kgs)	Rate/kg (Rs.)	Gross Income (Rs.)	No. of families	Avg. Income/ family (Rs.)
<i>Acacia concinna</i>	50	30	1500	3	500
<i>Apis dorsata</i>	44	200	8800	9	980
<i>Artocarpus lakoocha</i>	12330	40	493200	30	16,440
<i>Cinnamomum zeylanicum</i>	21	50	1050	3	350
<i>Garcinia gummigutta</i>	31000	80	2480000	30	82,666
<i>Garcinia indica</i>	9270	60	556200	30	18,540
<i>Myristica fragrans</i>	12	120	1440	3	480
<i>Myristica malabarica</i>	65	400	26000	27	963
<i>Phyllanthus emblica</i>	1008	20	20160	4	5,040
<i>Sapindus laurifolius</i>	5500	20	34000	4	8,500
<i>Terminalia chebula</i>	295	20	592	5	118
<i>Vanilla planifolia</i>	2	200	400	1	400
<i>Zanthoxylum rhetsa</i>	2	150	300	2	150
Total			Rs. 3623642	Rs. 135127	

Conclusion

The present investigation on “Utilization pattern of Non-Timber Forest Products (NTFPs) in Siddapur taluk” was conducted at Heggara, Hutgar and Hukli villages of Siddapur Taluk, Uttara Kannada District, Karnataka (State). In the present study, a total of 19 species of NTFP species belonging to 17 families are documented and which are used for various purposes by the local people. *Garcinia gummigutta* (100%), *Garcinia indica* (100%), *Artocarpus lakoocha* (100%) are the major NTFP's species harvesting in high quantity followed by *Myristica malabarica* (90%); *Apama siliquosa* (3.33%), *Vateria indica* (3.33%), *Canarium strictum* (3.33%) and *Vanilla planifolia* (3.33%) harvested in small quantities.

The edible fruits (41%) are the major NTFP products harvested by the local people followed by bark (14%), seed (14%), leaves (9%), aril (9%), roots (9%) and flower (4%). Major NTFP part harvested is fruit and it is essential for natural regeneration of the species. Hence, creation of awareness regarding sustainable harvesting of fruits, bark and other parts among the local people is very essential. NTFPs play an important role in improving economic status and livelihood of local people. In this study income obtained from collection and sale of NTFPs varies with different species. Maximum revenue is obtained from *Garcinia gummigutta* (Rs. 82,666/annum) followed by *Garcinia indica* (Rs. 18,540/annum), *Artocarpus lakoocha* (Rs. 16,440/annum). Hence it is essential to raise seedlings of these species in large quantity for promoting cultivation of these species in farm lands and ultimately to reduce the pressure on natural forests.

Implementation of conservation measures is essential for the less diversified species such as *Acacia concinna*, *Zanthoxylum rhetsa*, *Terminalia chebula*, etc. in order to increase the biological diversity. Survey endows with the insight into commercial potential and marketing aspects of NTFPs. The overall findings from the study help in the development of strategies for the *insitu* conservation and domestication of the species which intern help in restoration and sustainable management of endangered species especially *Myristica malabarica* and *Myristica fragrans*. To improve marketing facilities for the sale of NTFPs, cooperatives societies should be established.

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