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Documentation of traditional collection methods of different NTFPS in different seasons in Narayanpur forest area of Chhattisgarh

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Abstract

Documentation of traditional collection methods of different NTFPs in different seasons in Narayanpur forest area of Chhattisgarh. The study was carried out in two block namely Narayanpur block-Chhotedongar Benoor, Bharanda and Orchha block-Orchha, Gudadi, Basing site Narayanpur, district of Chhattisgarh. Tribals of this district are completely dependent on the forest for their daily needs. These area tribes are collecting and selling of NTFPs for income and food. The tribes living in remote forest areas often do very little cultivation they eat a variety of wild growing plant (NTFPs). The study reveals that the collected total 65 plants as NTFPs economically important species NTFPs utilized by the local people have been recorded from the Narayanpur District. In which 21 tree, 9 shrubs, 17 herbs, 6 grasses, 10 climbers and 5 bio-products are collected and sold in the market as well as their own use. All NTFP sepsis are not collected and harvested in study area a few NTFPs which have commercial and domestic value in the market, are collected by local people. The products, which are collected by people, are flower, fruit, rhizome, tuber, mushroom, leaves, bamboo shoots, seed, bio-product, etc.

Keywords: NTFPs, Bio-product, harvested, extracted, medicine, commercial purpose, remote forest, tribal, forest

Introduction

Non-timber forest products (NTFPs) are all forest product other than timber. This includes not only fruits and vegetables, honey or resin, and non-timber construction materials like bamboo, rattan, and certain grasses, but also fish and other wildlife. Many people in and around forest areas in Narayanpur depend on the collection of NTFPs for their livelihoods. When external influences decrease crop productivity, local communities resort to forest products as emergency sources to supplement their income.

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. Non-timber Forest Products (NTFPs) are important tools for addressing poverty issues for the marginalized, forest dependent communities, by contributing to livelihoods, including food security, income, health and sustainable human development Globally, about 350 million people mostly in developing countries depend on NTFPs as their primary source of income, food, nutrition, and medicine (UND, 2004; FAO, 2005) ^[4, 3].

Non-timber forest products (NTFPs) constitute an important source of livelihood for millions of people from forest fringe communities across the world. In India, NTFPs are associated with socio-economic and cultural life of forest dependent communities inhabiting in wide ecological and geo-climatic conditions throughout the country. It is estimated that 275 million poor rural people in India, depend on NTFPs for at least part of their subsistence and cash livelihoods. The NTFPs also serve as a vital livelihood safety net in times of hardship. Furthermore, the NTFP extraction has multiplier effects in the economy by generating employment and income in downstream processing and trading activities. However, depletion of NTFPs resources on account of indiscriminate exploitation, deforestation and forest degradation have a major issue of concern that may affect the NTFP based livelihood and economics.

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Narayanpur district have dense forests and are rich in Non-Timber Forest Produces (NTFPs). Because of having these NTFPs, the district is contributing a major revenue income to the state. The important NTFPs available in Narayanpur district are Chironji, Amchur, Vaybidang, Karanji, Marorphali, Mango Kernal, Tamarind, Kosa Cocoons, Peng seeds, Korkoti seeds, Nirmali seeds, Ambadi, Amla, Charota seeds, Hara, Kalmegh, Mahua, Tora, Harra, Bamboo, Boda, Mushroom, Dhavai Phool, Nilni flower, Bhelwa Seeds, Sal seed, Mahul (seed, leaf, rope), Maida Chal, Tikhur, different type of tubers, medicinal plants, Cane (Beth), etc.

Materials and Methods

The study was carried out in two blocks namely Narayanpur block- Chhotedongar Benoor, Bharanda and Orchha block- Orchha, Gudadi, Basing site Narayanpur, district of Chhattisgarh and data was collected on rainy, winter and summer season when the NTFPs are extracted from forests and sold in the market. The data was collected on the basis of questionnaire developed for this experiment regarding, processing of the harvested NTFP before storage and marketing of the produce. Out of total tribal families residing in each selected village, a representative sample of 20 percent respondents were selected by purposive sample. Conservation practices of tribal's was also observed and recorded during the study.

To study the collection method techniques of NTFPs

Information was collected with the help of questionnaire developed for present study. Information recorded with oral interview from the respondents selected for the study. The data recorded regarding NTFPs availability and collection methods. There were total 65 plant species and their traditional collection techniques methods were documented

Results and Discussion

Traditional collection methods of NTFPs

The collected 65 plants as NTFPs in which 21 tree, 9 shrubs, 17 herbs, 6 grasses, 10 climbers and 5 bio-products are collected and sold in the market as well as their own use. As evident from Table 02 mostly fruits were collected by using crude method like cutting of branches or shaking of tree. The fruit of *Terminalia bellirica*, *Semecarpus anacardium*, *Syzygium cumuni*, *Diospyros melanoxylon*, *Aegle marmelos*, *Tamarindus indica*, *Schleichera oleosa*, *Emblica officinalis*, *Buchanania lanzan*, *Mangifera indica*, *Terminalia chebula*, *Strychnos potatorum*, *Litsea sebifera* and *Azadirachta indica* were collected by the people. The medicinal plant Kalmegh was uprooted before maturity of seed thus next year production declines. The most of the trees, shrubs, herbs and grasses were used for medicinal purposes. Tribal people use the roots of many trees, shrubs, herbs and grasses as medicine. The fresh leaves of plants were also used as vegetable and climber medicine such as *Bauhinia variegata* (Kachanar) *Cassia tora* (Charota) leaves. The people used to cut the branches of *Bauhinia variegata* for collecting its leaves and pods. The leaves of *Cassia tora* were also collected

maximum before maturity of plants for the use of vegetable purpose thus seed production affected. Lac and cocoons were also collected by the tribals from the forest from two major source tree species *Shorea robusta* and *Terminalia tomentosa* found in study area for rearing Cocoon (Kosa), and another source tree species *Schleichera oleosa* was found in study area for lac production for Kusumi lac. The bio-product honey was also collected by the people in the study area but the collection of honey was high in rates/kg Narayanpur site but low price in Orchha site this may be due to high production of honey.

The collection has been done by traditional crude method, which may call as destructive harvesting of NTFPs. The material like leaves, flowers, seeds, fruits, and rhizomes of different NTFPs is collected for their livelihood in unscientific manner and because of this the regeneration of species is badly affected. The quality of produce is also not good as demanded in the market therefore, the produce do not fetch good price in the market. The collection of produce and its post harvest technique is playing a positive role to preserve quality of the material for longer duration and fetching good price in market.

Similar study carried out by Sinha *et al.* (2016) ^[14] reported that total 44 plants producing NTFP were collected by tribals in 20 villages of Bastar district. Plant and plant produce collected by the tribals from the plants were seeds of 11 plants, fruits of 11, roots 3, rhizomes 4, flowers 4, and secretory products from 3 plants, whereas, 4 whole plants. Lac and Cocoons were also collected by the tribal's from the forest. The destructive harvesting method and unscientific processing methods deteriorate the quality of price and lowering the price in market.

Rout and Panda (2011) ^[10] reported that the NTFPs are a major source of subsistence production, income, employment and great socio-economic significance especially for the weaker section of the society. They reported that the 54 important NTFP species have been collected by the Gandigadha villagers for consumption. However, a few new species like 'Sal' (*Shorea robusta*) leaves, tooth stick and seeds, Mahua (*Madhuca indica*) flower and fruit, char (*Buchanania lanzan*) fruits, seeds and mushroom are collected and sold to local traders. They reported the 54 NTFP species from the Gandigadha villagers 49 numbers of are sold and 5 numbers of NTFP like fruits of *Barringtonia acutangula*, *Cassia fistula*, *Catunonegam spinosa* etc. are used for self consumption.

Maikhuri (2003) also concluded that the basic causes of unsustainable harvesting are ignorance, poverty and lack of alternative livelihood support system accompanied by encroachments by outsider. Sustainable harvest with proper buy back guarantee will provide better employment opportunities to the local inhabitants. The similar result regarding unscientific collection methods were recorded by the above workers showed conformation with the present investigation. NTFPs collectors need to be trained for sustainable harvesting method so that the natural regeneration of these species is promoted for conservation.

Table 1: Family wise NTFPs collection in different study site during (2016-17)

Village	Tendu leaves (<i>Diospyros meloanoxylon</i>) (bundle/year)	Mahul leaves (<i>Bauhinia vahiti</i>) (bundle/year)	Mahua flower (<i>Madhuca longifolia</i>) (kg/year)	Chironji (<i>Buchanania lanzan</i>) (kg/year)	Korkoti <i>Ipomoea nil</i> (kg/year)	Imli (<i>Tamarindus indica</i>) (kg/year)	Mango dry (<i>Mangifera indica</i>) (kg/year)	Boda (<i>Astraeus hygromericus</i>) (kg/year)	Mushroom (<i>Termitomyces spp.</i>) (kg/year)	Sal Seed <i>Soreia robusta</i> (kg/year)	Haraa <i>Terminalia chebula</i> (kg./year)
Narayanpur Block											
Chhotedongar	180500	2500	3600	300	250	1800	160	130	140	430	200
Benoor	252000	1200	4800	350	210	1600	150	110	150	350	160
Bharanda	116000	0	3200	120	150	1100	100	130	160	280	120
Average	182833.33	1233.33	3866.67	256.67	203.33	1500.00	136.67	123.33	150.00	353.33	160.00
Orchha Block											
Orchha	0	2800	2500	350	250	3600	160	110	110	570	280
Gudadi	0	1200	1800	250	150	2600	250	120	90	520	320
Basing	20000	2000	900	100	90	1200	120	80	50	470	180
Average	20000.00	2000.00	1733.33	233.33	163.33	2466.67	176.67	103.33	83.33	520.00	260.00
Total average	94750	1616.66	2800	245	183.33	1983.33	156.66	113.33	116.66	436.66	210

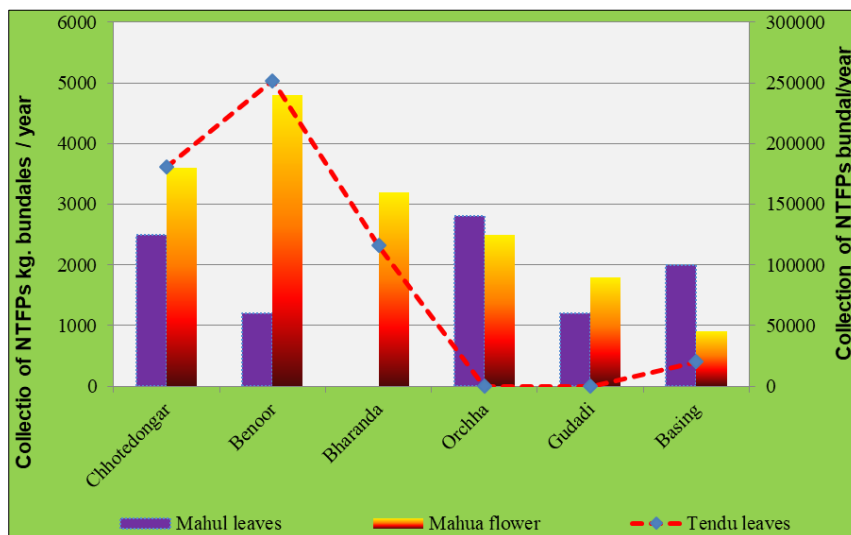


Fig 1: Village wise collection of various NTFPs in Bunda/ kg per year

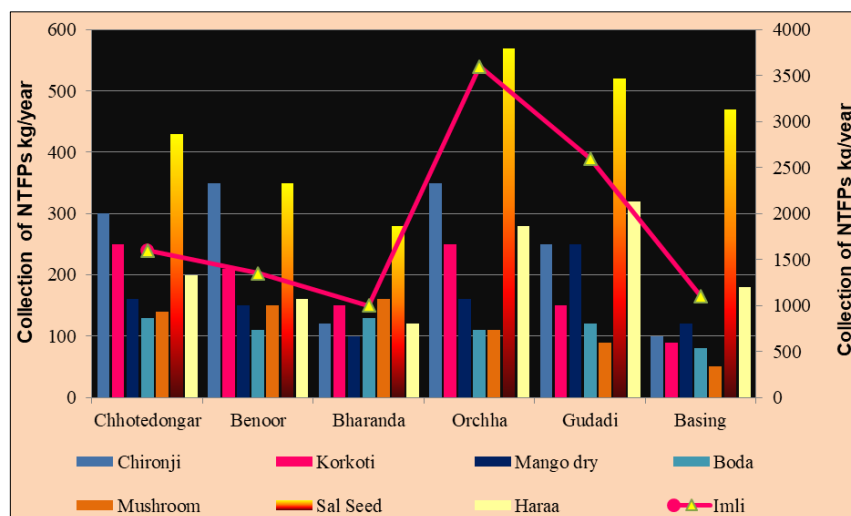


Fig 2: Village wise collection of various NTFPs in kg per year

Table 2: Collection techniques of NTFPs used by local inhabitants and scientific methods for sustainable utilization Trees

S. No	Local name	Traditional Collection method	Scientific Collection method
1.	Char (<i>Buchanania lanzan</i>)	i. People collected seed from March-April when it is immature. ii. People used to cut its branches and tree cut from ground surface for collection of seeds. iii. Cut the branches, Ripped fruits are edible and sold in the market.	i. Completely ripen black colour seed should be selected for collection. ii. Sickled bamboo stick should be used for collection of fruits.
2.	Kachnar (<i>Bauhinia variegata</i>)	i. Pods and leaves were collected after cutting the branches. And pinching the top of leaf	i. Collection should be done by hand plucking.
	Bahera (<i>Terminalia bellirica</i>)	i. Unripe green fruits were also collected and Sometimes cut the branches for collection. The ripped fruit collected from ground.	i. Completely ripen brown collared fruits selected for collection. ii. Sickled bamboo sticks should be used to collect the fruits from trees.
	Aonla (<i>Embllica officinalis</i>)	i. Immature green fruits were also collected with ripen fruits. ii. People used to cut branches & tree for collecting fruits and sometimes fruits are also damaged. The damage fruit is not sold in the market.	i. Completely ripen yellow fruits should be selected for collection. ii. Fruits should be collected with the help of sickled bamboo stick.
	Tendu leaves (<i>Diospyros melanoxylon</i>) Tendu fruit	i. During collection of tendu leaves branches were also cut which affects the leaves production of next year. ii. Leaves, which are not suitable for the purpose, were also collected. iii. Branches were cut to collect fruits. and collect the fruits fallen on the ground	i. Only undamaged and disease free leaves should be collected. ii. All diseased and damaged leaves should be removed before drying. iii. Fruits should be collected without cutting the branches with the help of sickled bamboo stick.
	Bhelwa (<i>Semecarpus anacardium</i>)	i. People collect complete ripening fruit and seed. Collection by cut the branches.	i. Collection should be done with bamboo sticks when tree has maximum ripen fruits.
	Mahua Flower (<i>Madhuca indica</i>)	i. People put fire to clean floor below. When the fire burn in below when flower fall fast then collect flower fallen on the ground.	i. Brooms should be used to clean floor. It is very easy practice.
	Jamun (<i>Syzygium cumuni</i>)	i. During collection, unripe fruits also collected. The shaking of tree to fall the fruits mostly fruits were damaged.	i. Shake only selected branches to collect fruits or use bamboo stick and net go the fruits not damaged.
	Kusum (<i>Schleichera oleosa</i>)	i. Collection of fruits start early even unripe fruits also collected result low oil percentage in seed. ii. During collection of fruits they also cut the branches therefore next production is affected.	i. Fruits should be collected when its colour becomes light yellowish. ii. Sickled bamboo stick should be used to collect the fruits from tree.
	Imli (<i>Tamarindus indica</i>)	i. Fruits are not collected properly even unripe and diseased fruits also collected and put together. The destructive fruit collection methods were used like they cut the big branches during collection of fruits.	i. Collection should be done with sickled bamboo stick and ripen fruits may be collected with care. ii. Use of net below the tree is best option to collection undamaged fruits.
	Mango (<i>Mangifera indica</i>)	i. Fruits not collected properly people used bamboo stick for breaking the fruit. ii. During fruit collection they damaged the plant by cutting the branches.	i. Well mature fruits are collect for preparation of pickle. ii. Sickled bamboo sticks should be used for collection of selected fruits so that fruit may not damage.
	Sal (<i>Shorea robusta</i>)	i. Green leaves are collected directly from the trees and sapling plant. ii. Gums are collected by scraping it from the tree bark.	i. Sharp knife is used for collecting leaves. ii. Clean gums free from dirt are collected. iii. Deep cut / wound may not be made to ooze out the gum.
	Harra (<i>Terminalia chebula</i>)	i. Unripe green fruits were collected and sometimes cut the branches for collection.	i. Completely ripen brown collared fruits selected for collection. ii. Sickled bamboo sticks should be used to collect the fruits from trees.
	Neem (<i>Azadirachta indica</i>)	i. Fallen Unripe green fruits are collected from ground; leaves are collected directly from stem.	i. Ripen; sound fruits need to be collected. Leaves are collected without harming the branches and twinge.
	Chind (<i>Phoenix aculis</i>)	i. Unripe fruits are collected.	i. Ripen and dried fruits are collected.
	Kuwe phal (<i>Randia dumetorum</i>)	i. Unripe fruits are collected.	i. Ripen and dried fruits are collected.
	Nirmali (<i>Strychnos potatorum</i>)	i. Unripe green fruits were also collected and sometimes cut the branches for collection.	i. Completely ripen brown collared fruits selected for collection. ii. Sickled bamboo sticks should be used to collect the fruits from trees.
	Salfi (<i>Caryota urens</i>)	i. Inflorescence is removed and liquor beverage is collected.	i. Some part of inflorescence must be kept remained in the tree for seed production
	Maida (<i>Litsea glutinosa</i>)	i. Tree is felled and bark is extracted	i. Tree is not felled and bark is extracted from the mature portion of the tree. ii. After extraction the tree is given time for healing
	Kullu gum	i. The gum extraction process is destructive the deep cut is	i. The scientific method of gum extraction is to be

	(<i>Sterculia urens</i>)	made to ooze out more gum	applied which may not harm the tree and more amount of green will be collected.
	Gular/ Dumar (<i>Ficus glomerata</i>)	i. Branch is removed and fruits are collected. Latex is also collected	i. Bamboo made instrument should be used for collecting fruits. Only ripen fruits should be collected.

Shrubs

S. No.	Local name	Traditional Collection method	Scientific Collection method
1.	Marorphalli (<i>Helicteres isora</i>)	i. During collection of fruit, twig and branches are also cut.	i. Leaves should be collected by hand plucking ii. Fruit is medicinal value will be collection fully ripen pod and properly dried.
2.	Ber (<i>Zizyphus mauritiana</i>)	i. The collection started before complete ripens the fruits. ii. They shake all branches thus unripe fruit also fall down.	i. Shake only selected branches for collection of fruits or use bamboo sticks. ii. The only ripe good quality fruit will be collected and sold in the market or sun dried fruits properly stored.
3.	Chhind (<i>Phoenix acaulis</i>)	i. At the time of cutting leaves people also cut new or young branches. ii. For their convenience they prune some branches then cut selected branches. iii. During collection of leaves the stem portion also destroyed.	i. Choose only useful mature branch before cutting. ii. Branches which has matures leaves should be selected for harvesting. iii. Selected branches should be cut without disturbing other branches with sharp knife.
4.	Karonda (<i>Carissa halics</i>)	i. Fruit collection starts before complete maturity. ii. The branches also cut during collection of fruit this is destructive method.	i. Only ripen fruits should be selected for collection. ii. Hand pricking is the best option for this species.
5.	Jangli chameli (<i>Jasminum arborescens</i>)	i. During collection of leaves and flowers the branches also cut.	i. Collection should be done by hand plucking and post harvest drying or oil extraction will be done within week.
6.	Katakuli (<i>Zizyphus rugoisa</i>)	i. The collection started before complete ripens the fruits. ii. They shake all branches thus unripe fruit also fall down.	i. Shake only selected branches for collection of fruits or use bamboo sticks.
7.	Nilni (<i>Indigo feratinctoria</i>)	i. Flower and Pods were collected after cutting the branches and pinching the top of leaf	i. Collection should be done by hand plucking.
8.	Duling (<i>Embeli aribes</i>)	i. Fruits were collected after cutting the branches and unripe fruits collected.	i. Collection should be done by hand plucking.
9.	Amti (<i>Antidesma diandrum</i>)	i. Unripped Fruit and leaves were collected after cutting the branches. And pinching the top of leaf	i. Only ripen fruits and leaves should be selected for collection by hand plucking.

Herbs

S. No.	Local name	Traditional Collection method	Scientific Collection method
1.	Charota (<i>Cassia tora</i>)	i. Before maturity leaf collection started resulted that seed production affected. ii. The whole plants were also harvested before seed maturity.	i. When plant has 70 percent leaves that time its collection should be done. ii. The seed should be collected when seed colour turns green to light brown.
2.	Mushroom/Boda	i. People put fire to clean forest floor for collection of mushroom, which may cause forest fire	i. Forest floor should be clean with Bamboo sticks or Broom for collecting mushroom.
3.	Kalmegh (<i>Andrographis paniculata</i>)	i. Leaves and fruits were harvested sometimes before maturity also.	i. Harvesting should be carried out at maturity of plants and seed.
4.	Tikhur (<i>Curcuma angustifolia</i>)	i. Immature rhizomes are collected. ii. Whole parts of rhizomes are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature rhizomes are collected. ii. Some part of rhizome is left in the soil for future regeneration.
5.	Safed musli (<i>Chlorophytum tuberosum</i>)	i. Immature roots and tuber are collected. ii. Whole parts of roots and tuber are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature roots and tuber are collected. ii. Some part of tuber or roots and tuber is left in the soil for future regeneration.
6.	Kali musli (<i>Curculigo orchioides</i>)	i. Immature roots and tuber are collected. ii. Whole parts of roots and tuber are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature roots and tuber are collected. ii. Some part of tuber or rhizome is left in the soil for future regeneration.
7.	Gengi (<i>Curcuma zedoaria</i>)	i. Immature rhizomes are collected. ii. Whole parts of rhizomes are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature rhizomes are collected. ii. Some part of rhizome is left in the soil for future regeneration.

Grasses

S. No	Local name	Traditional Collection method	Scientific Collection method
1.	Munsel (<i>Iseilema nervosum</i>)	i. For collecting whole plants were dug-outs with root.	i. Some plants should be left. ii. Uprooting should be avoided.
2.	Kans (<i>Saceharum spoutaneum</i>)	i. The whole spikes of Kans cut from the base.	i. Only those spikes should be harvest, which are suitable for broom making.
3.	Sukul	i. Continuous grazing is used.	i. Compartment grazing should be allowed.

	<i>(Heteropogon cantortus)</i>		
4.	Phulbahari <i>(Thysanolacns maxima)</i>	i. The whole spikes of Phulbahari cut from the base to obtain more material.	i. Only those spikes should be harvest, which are suitable for broom making.
5.	Bans <i>(Dendrocalamus strictus)</i>	i. During bamboo extraction young culms destroyed. ii. For their convenience in cutting of Bamboo they cut immature other culms.	i. Only mature old culms select for harvesting ii. Culms should be cut in inverted u shape (∩) so that old culms cut at first.
6.	Motha <i>(Cyprush rotandus)</i>	i. The rhizome of plant uprooted directly due to this the normal regeneration affected.	i. The plants cut and collect in sustainable manner so the regeneration will take place properly

Climbers

S. No.	Local name	Traditional Collection method	Scientific Collection method
1.	Mahul <i>(Bauhinia vahlii)</i>	i. Immature leaves are also collected to obtain more material. ii. They cut the climbers from the base to obtain large quantity and save time. iii. Immature fruits are collected and where the fruit is roasted on fire. It bursts loudly exposing the seed which may cause forest fire.	i. Only mature leaves should be selected for collection ii. Sharp knife should be use to harvest leaves. iii. Branches should be cut from those places which give more new branches for further leaf collection. iv. Open roots should be covered with soil. v. The leaves should not be collected from damaged climbers at least one year. vi. Bukles should be used for tying mahul leaves.
2.	Baichandi <i>(Dioscorea hispida)</i>	i. Immature Tubers are collected. ii. Whole parts of Tubers are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature Tubers are collected. ii. Some part of tubers is left in the soil for future regeneration.
3.	Ramdatun <i>(Smilax macrophylla)</i>	i. Immature climbers also collected with the mature material. ii. Poor quality instrument used to cut climbers.	i. Only those climbers should be cut with sharp knife, which can give good fiber.
4.	Karukand <i>(Dioscorea bulbifera)</i>	i. Immature leaves, tuber and roots are collected. ii. Whole parts of tuber and roots are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature leaves, tuber and roots are collected. ii. Some part of tuber or roots is left in the soil for future regeneration.
5.	Kosa kanda <i>(Dioscorea esculenta)</i>	i. Immature leaves, tuber and roots are collected. ii. Whole parts of tuber and roots are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature leaves, tuber and roots are collected. ii. Some part of tuber or roots is left in the soil for future regeneration.
6.	Kargaya kanda <i>(Dioscorea opposita)</i>	i. Immature leaves, tuber and roots are collected. ii. Whole parts of tuber and roots are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature leaves, tuber and roots are collected. ii. Some part of tuber or roots is left in the soil for future regeneration.
7.	Rsana jari <i>(Blepharispernum subsessil)</i>	i. Immature roots are collected. ii. Whole parts of tuber and roots are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature roots are collected. ii. Some part of tuber or roots is left in the soil for future regeneration.
8.	Palas bel <i>(Butea superb)</i>	i. Immature climbers and leaves are collected. ii. Trees are felled for collecting flower.	i. Mature leaves and climbers should be collected. Flowers must be collected without felling the tree.
9.	Satawar <i>(Asparagus racemosus)</i>	i. Immature rhizome is collected. ii. Whole parts of tuber and roots are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature rhizome is collected. ii. Some part of tuber or roots is left in the soil for future regeneration.
10.	Peng <i>(Celastrus paniculatatus)</i>	i. Cut the plant and immature seed is collected.	i. Mature seed is collected. ii. Sickled bamboo sticks should be used to collect the fruits from climber.
11.	Korkoti <i>(Ipomea nil)</i>	i. Immature seed are collected.	i. Mature seed are collected.
12.	Khekhsi <i>(Momordica dioica)</i>	i. Immature fruit and tuber are collected. ii. Whole parts of tuber and roots are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature leaves, tuber and roots are collected. ii. Some part of tuber or roots is left in the soil for future regeneration.
13.	Kalihari <i>(Gloriasa superb)</i>	i. Immature leaves, tuber and roots are collected. ii. Whole parts of tuber and roots are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature leaves, tuber and roots are collected. ii. Some part of tuber or roots is left in the soil for future regeneration.
14.	Lal bel <i>(ventilago madaraspatnam)</i>	i. Cut the climber and immature seed are collected.	i. Mature seed are collected.
15.	Anantmool <i>(Hemidesmus Indicus)</i>	i. Immature leaves and roots are collected. ii. Whole parts of tuber and roots are collected by digging the soil without leaving any part of it for future regeneration.	i. Mature leaves, tuber and roots are collected. ii. Some part of tuber or roots is left in the soil for future regeneration.
16.	Bodal <i>(Cucumis melo agrestis)</i>	i. Continuous cutting of climbers for fodder purpose. ii. Immature fruits are collected.	i. Climbers should be cut in fixed interval. ii. Only mature fruits are collected.

17.	Amarbel (<i>Cuscuta reflexa</i>)	i. Collect whole climbers.	i. During collection some climbers should be left.
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Bio-product

S. No.	Local name	Traditional Collection method	Scientific Collection method
1.	Honey (<i>Apis dorsata</i>)	i. Smoke used for collection of honey. In the process of putting smoke to protect them -self from honeybees attack, some honey bees also die.	i. A special dress should be worn during collection honey and apply water on honeycomb. ii. All the honeybees should be carefully separated from honey comb then cut the upper portion of the comb with sharp knife. Collected honeycomb should be squeezing for honey collection.
2.	Kosha (cocoon) (<i>Antheraea mylitta</i>)	i. Trees are felled and Cocoons are collected and sold in the market.	i. Cocoons are boiled in water; then, Kosa fibbers are extracted by rupturing the cocoon
3.	Lac (<i>Laccifer lacca</i>)	i. The branches are felled unsustainabale manner due to this the host tree die.	i. The sustainable harvesting method is used to collect the lac from branches of host tree.
4.	Chind kira (<i>Rhynchophorus ferrugineus</i>)	i. Weevil are collected by dissecting the plant	i. Weevils should be reared for sustainable production.
5.	Chapora (<i>Solenopsis invicta</i>)	i. Trees are shacker the branches for collecting the ant.	i. Trees should not be shackers the ant will be collected through climbing on trees.



Plate 1: Collection and processing of NTFPs in the study area





Chhind (*Phoenix acaulis*)



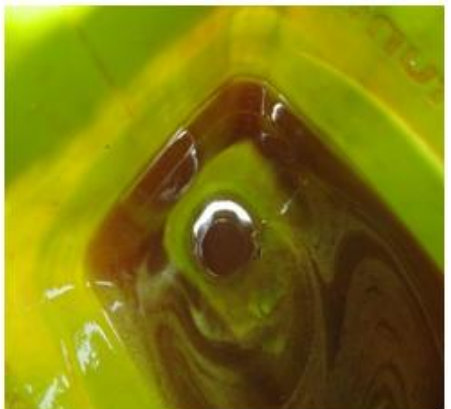
Safi (*Caryota urens*)



Mahua flower (*Madhuca longifolia*) collection process



Plate 2: Collection and processing of NTFPs in the study area



Honey sells in the market



Collection of wood and Bamboo



Plate 3: Collection of Boda and Nilni flower by local people

Conclusion

It concluded that collection has been done by traditional crude method, which may call as destructive harvesting of NTFPs. The collected material like leaves, flower, seed, fruits and rhizomes of different NTFPs for their livelihood in unscientific manner because of this the regeneration of species badly affected. The quality of produce would not good as demanded in the market therefore, the produce dose not fetch good price in the market. The collection of produce and its post harvest technique is playing a significant role to preserve quality material for longer duration and fetching good price in market.

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