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Economically and traditionally important non-timber forest products (NTFPs) of Chhattisgarh

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Abstract
The present study has been conducted in sampled districts of three agro-climatic zone of Chhattisgarh state. Two hundred farmers (NTFPs collectors) were selected randomly from twelve villages of three development block of three districts of different zones of Chhattisgarh. The identified economically advantageous trees (28) such as Tendu (*Diospyros melanoxylon*), Mahua (*Madhuca latifolia*), Sal (*Shorea robusta),* Harra (*Terminalia chebula)* etc., economically advantageous shrubs (7) such as Chhind (*Phoenix acaulis),* Ber (*Ziziphus mauritiana*), Korea (*Holarrhena antidysenterica*), Kurru (*Gardenia resinifera)* etc. Some economically advantageous climbers are (9) such as Siari (*Bauhinia vahlii*), Ramdatun (*Smilax macrophylla*), Dangkanda (*Dioscorea bulbifera*) and herbs (8) identified in the study area such as Tikhur (*Curcuma angustifolia*), Kalmegh (*Andrographis paniculata),* Charota (*Cassia tora*), Gengai (*Curcuma zedoaria*) etc.

Keywords: Tree, shrubs, climbers, herbs, agro-climatic zone

Introduction
Chhattisgarh state is one of the top most forests developing state of India, with 44.21 per cent total forest area to the total geographical area of the state (economic survey, 2017). It is also the densest forest of India and known as green state with huge bio- diversity habitats in it. Due to a well potential state with a tremendous wildlife and more than 200 types of NTFPs collections, it has a great scope for value addition for the same. The different organizations include with activities for arranging creation, assortment, handling and showcasing of non-nationalized NTFPs consider so as to offering additional work openings and vocations by Chhattisgarh State Minor Forest Produce Federation Limited (CGMFP Federation). Legislature of Chhattisgarh has reported distinctive NTFPs, for example, tendu leaves (*Diosyros melanoxylon*), sal seed (*Shorea robusta*), harra (*Terminalia chebula*), gum (khair, dhawara, kullu and babool), tamarind, chironji, mahuha seed (*Madhulika indika*) and lac as nationalized and set up the CGMFP Federation for goal to empower exchange and development of these MFPs in light of a legitimate concern for MFP authorities, generally trials. The leftover different MFPs were sans left for exchange in light of the fact that their appropriation and creation changed regarding reality. As a result, residents would get guaranteed least costs of nationalized NTFPs, yet low assortment costs and frequently misuse by go between for the non-nationalized NTFPs because of deficient market office advancement in the provincial territories.
The major population group which is involves in NTFPs collection are the primitive or tribal of the nearer forest area. The tribal population is the biggest population group has 78.22 lakhs (30.62 per cent) of total population of Chhattisgarh state (Gupta *et. al.*, 2015), and collection of minor forest product contribute a big share to their income basket. In Chhattisgarh state consider 34 Forest divisions under 901 Primary Minor Forest Products Co-operative Society for collection of NTFPs. Division of Commerce and Industries, Government of Chhattisgarh has changed Food Processing Policy 2012-2019, which planned unique bundle conspire for ventures of more than Rs. 500 Crore. The assortment of NTFPs by tribal was fundamentally for meeting their subsistence needs.

Materials and Methods
The study was conducted in all three agro-climatic sub zones of Chhattisgarh *i.e.*, Chhattisgarh plains (Zone - I), Bastar plateau (Zone - II) and Northern hills (Zone - III). For the present study one district from each agro climatic sub zones *viz*. Kabirdham from Zone - I, Kondagaon from Zone – II and Surguja from Zone - III were selected on the basis of maximum quantity of NTFPs collected in the districts of agro- climatic sub zones of Chhattisgarh similar criteria were be used for selection of block in each of the selected districts.

In Kabirdham district, Bodla block, from Kondagaon district Kondagaon block and from Surguja district Ambikapur Surguja block was selected for the study. Out of these blocks from each district one blocks were selected randomly for the present study and presented in Table 1.

Results and Discussion

Availability of NTFPs tress

Table 2 presented the availability of NTFPs tress that identified were 28 tresses in the study area and it's enlisted following bellow. There are some descriptions of the availability of NTFPs in study areas: -

Leaves: the leaves are popularly known as in study area tendu, are a high economic value because of their use in rolling bidi. Tendu leaves are a slow-growing plant habit and easy for collection and semi-mature leaves are collected from the last week of April to the first week may. Sal tree is a special poison in the socio-economic life of trebles in the study area as each part of the tree (wood, seed, leaves, and young shoots) is used every day by forest-dwelling peoples. Sal leaf is used for eating food on some occasions. This forest production distinctive in that it is extracted throughout the year for both domestic consumption and sale. Siari leave is much in demand for making good quality leaf plates and use for eating to food for some occasion, but these are used domestically rather than by industries which prefer plates.

Flower: Mahua flower collection done in large quantity in the study area. Mahua tree has a very important place in the socio-economic and cultural life of trial's and each part of the tree (wood, seed, leave, food, liquor and shade) is used every day by forest-dwelling peoples. Their main use, however, is for making liquor and many people prefer to sell the flowers rather than storing them for home consumption.

Fruits: one of the most important fruit tamarind, chironji, harra, baheda and aonla. There is also a lot of market demand for both the fruit and seed of the tamarind tree. The sale of fruits is the major source of income in collectors.

Oil seed: the main NTFPs of oil seed in the study area are mahua seed, sal, kusum, karanja and kewati etc.

Medicinal plant: A large number of commonly occurring medicinal plants that are marketed in the study area. Examples include Baibiding (*Embeliatsjeriam-cottam)* Safed musli. Kalmegh, Charota, Kali musali, Van tulsinand Kali musali etc.

Myrobalans: myrobalan is the commercial name for the harra fruit (*terminalia chebula*) which is used for tanning. Two other myrobalan, namely Aonla (*Emblicaofficialis*) and Baheda (*Terminalia bellerica*) are also valuable NTFPs.

Gums and Resins: The major gums produced from the study area forest are Sal (*Shorearobusta*) Babul (*Acacia nilotica*) Dhawra (*Anogeissus latifolia*) Saja (*Terminalia tomentosa*) etc. Some gum is the most widely collected by hand.

Tassar: sericulture is an important economic activity and four type of silk are commercially produced in India, namely mulberry, munga, eri and tassar. Tassar silk-producing insects are wilds, so tassar cultivation is considered to be a forest activity.

Lac: lac is the resinous protective secretion of lac insects. The commonest lac insect species occuring on forest tree is *Laccifer lacca* and it produces two types of lac: namely kusumi and ragini. The kusumi strain is of better quality and is commonly cultivated on Kusum tree (*Scleicheria oleoresa*). The ragini strain is grown on Ber (*Zizphus jjuba*) or Palas (*Butea monosperma*).

Mushroom: Mushroom is an important economic activity and its collects rainy season in study areas.

In this study area identified economic trees were enlisted and identified some are the source of their income such as like Tendu (*Diospyros melanoxylon),* Mahua *(Madhuca latifolia),* Sal (*Shorea robusta),* Harra (*Terminalia chebula),* etc.

Availability of economically useful NTFPs

Table 3. coined that the availability of NTFPs Shrubs in the study area were 7 Shrubs identified economically are enlisted and identified some are the source of their income such as Chhind (*Phoenix acaulis),* Ber (*Ziziphus mauritiana*), Korea (*Holarrhena antidysenterica*), Kurru (*Gardenia resinifera),* etc. Table 4. presented the availability of NTFPs climber identified were 9 climbers in the study area economically climber enlisted and identified some are the source of their income such as like Siari (*Bauhinia vahlii*), Ramdatun (*Smilax macrophylla*), Karukanda (*Dioscorea bulbifera*) etc.

Table 5. presented the availability of NTFPs Herbs in the study area were 8 Herbs identified economically are enlisted and identified some are the source of their income such as Tikhur (*Curcuma angustifolia*), Kalmegh (*Andrographis paniculata),* Charota (*Cassia tora*), Gengai (*Curcuma zedoaria*), etc. Table 6. presented the availability of NTFPs trees were 05 other product in the identified economically other product enlisted and identified some are the source of their income such as Futu (Mushroom), Boda, Honey (*Apis dorsata*), Lac (*Kerria lacca*) and Kosa etc.

These shrubs, climbers, herbs and other products are the economically and social-economic parameters of the collators.

Table 1: Sampled districts, blocks and villages for study

S. No.	Districts	Blocks	Villages
1.	Kondagaon	Kondagaon	Bhiragaon, Umargaon, Badekanera and Bunagaon
2.	Kabeerdham	Bodla	Bairakh, Nevaratola, Ranidargah and Dholbajja
3.	Surguja	Surguja	Lamidad, Bafoli, Bardih and Ajabnagar

Table 2: Availability of economically useful NTFPs tress in Chhattisgarh state

S. No.	Local Name	Botanical name	Status	NTFPs parts used
1.	Tendu	*Diospyros melanoxylon*	Tree	Leaves and Fruits
2.	Mahua	*Madhuca latifolia*	Tree	Flower, seed and whole plant
3.	Sal	*Shorea robusta*	Tree	Seed, leaves and gum
4.	Harra	*Terminalia chebula*	Tree	Flower, fruit and bark
5.	Behada	*Terminalia bellirica*	Tree	Bark, fruit, seed and whole plant
6.	Char	*Buchanania lanzan*	Tree	Seed, bark and Gum
7.	Tamarind	*Tamarindus indica*	Tree	Leaves, flower fruit, seed, bark, stem and root
8.	Aonla	*Emblica officinalis*	Tree	Leaves, fruit, bark, root and stem

9.	Bel	*Aegle marmelos*	Tree	Leaves, fruits, root and whole plants
10.	Bhelwa	*Semecarpus anacardium*	Tree	Seed, fruit, gum and oil
11.	Mango	*Mangifera indica*	Tree	Seed, fruit, stem, bark and root
12.	Kusum	*Schleichera oleosa*	Tree	Seed and bark
13.	Dhawra	*Anogeissus latifolia*	Tree	Leaves bark and stem
14.	Neem	*Azadirachta indica*	Tree	Seed and leaves
15.	Saja	*Terminalia tomentosa*	Tree	Bark and gum
16.	Senha	*Lagerstroemia parviflora*	Tree	Bark and gum
17.	Amaltas	*Cassia fistula*	Tree	Seed, leaves, flower, fruit, bark and root
18.	Kachanar	*Bauhinia variegate*	Tree	Seed, leaves, flower, fruit, bark, gum and root
19.	Moyan	*Lannea coromandelica*	Tree	Bark and leaves
20.	Kumbhi	*Careya arborea*	Tree	Seed, flower, fruit, bark, juice and root
21.	kakai	*Flacourtia indica*	Tree	Bark, leaves and root
22.	Haldu	*Adina cordifolia*	Tree	Bark and root
23.	karra	*Cleistanthus collinus*	Tree	Leaves bark and stem
24.	Karanj seed	*Pongamia pinnata*	Tree	Seed
25.	Salfi	*Caryota urens*	Tree	Plant extract
26.	Palas	*Butea monosperma*	Tree	Leaves, flower and root
27.	Jamun	*Syzygium cumini*	Tree	Leaves, fruit and bark
28.	Babul	(*Acacia nilotica*)	Tree	Gum, fruit and bark

Table 3: Availability of economically useful NTFPs Shrubs in study area

S. No.	Local name	Botanical name	status	NTFPs parts used
1.	Chhind	*Phoenix acaulis*	Shrubs	Leaves, fruit and juice
2.	Ber	*Ziziphus mauritiana*	Shrubs	Leaves, fruit and bark
3.	Korea	*Holarrhena antidysenterica*	Shrubs	Seed, leaves, bark and juice
4.	Kurru	*Gardenia resinifera*	Shrubs	Stem, bud and gum
5.	Ghothia	*Ziziphus xyloppyra*	Shrubs	Fruit, bark, seed and root
6.	Lantana	*Lantana camara*	Shrubs	Flower and stem
7.	Satwar	*Asparagus racemosus*	Shrubs	Rhizome and shoot

Table 4: Availability of economically useful NTFPs Climber in study area

S. No.	Local Name	Botanical name	Status	NTFPs parts used
1.	Ramdatun	*Smilax macrophylla*	Climber	Root
2.	Dangkanda	*Dioscorea bulbifera*	Climber	Leaves, tuber and roots
3.	Bodal	*Cucumis meloagrestis*	Climber	Seed, flower, root and fruit
4.	Keoti	*Ventilago calyculata*	Climber	Flower, seed, bark and root
5.	Siari	*Bauhinia vahlii*	Climber	Leaves, seed and stem
6.	Anantmool	*Hemidesmus indica*	Climber	Whole plant
7.	Kewkanda	*Costus igneus*	Climber	Leaves and rhizome
8.	Giloy	*Tinospora cordifolia*	Climber	Stem
9.	Baichandi	*Dioscorea hispida*	Climber	Tubers, roots and rhizomes

Table 5: Availability of NTFPs Herbs in the study area

S. No.	Local Name	Botanical name	Status	NTFPs parts used
1.	Tikhur	*Curcuma angustifolia*	Herbs	Rhizome powder
2.	Kalmegh	*Andrographis paniculata*	Herbs	Whole plants
3.	Charota	*Cassia tora*	Herbs	Seed and leaves
4.	Gengai	*Curcuma zedoaria*	Herbs	Rhizome
5.	Dashmul	*Daedalacanthus roseus*	Herbs	Root
6.	Van tulsi	*Ocimum gratissimum*	Herbs	Seed
7.	Van jeera	*Vernonia anthelmintica*	Herbs	Seed
8.	Makoy	*Solanum nigrum*	Herbs	Leaves, plant and fruit

Table 6: Availability of NTFPs others product in the study area

S. No.	Local Name	Botanical name	NTFPs parts used
1.	Futu (Mushroom)	*Termitomyces heimmii*	Whole
2.	Boda	*Astraeus hygrometricus*	Whole
3.	Honey	*Apis dorsata*	Insect extract
4.	Lac	*Kerria lacca*	Insect extract
5.	Kosa	*Erythroxylum coca*	Silk

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