Diversity of NTFPs and Their Utilization in Adilabad District of Andhra Pradesh, India

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Abstract

Adilabad in Andhra Pradesh is a backward district, with 37.72% of geographic area under forest cover and inhabited by 17.08% ethnic people who use the local tropical dry deciduous forests to extract Non-Timber Forest Products (NTFPs) for self-consumption and economic subsistence. The analysis of NTFPs in *six* forest divisions of Adilabad district, viz. Adilabad, Bellampalli, Jannaram, Kagaznagar, Mancherial and Nirmal reveals the use of consumptive category of goods like wild food plants, honey, oils, fodder, etc. on one hand and the non-consumptive items like gums, resins, gum-resins, dyes, wax, lac, fibers, fuel wood, charcoal, fencing material, brooms, wildlife products, raw materials like bamboo and cane for handicrafts, etc. besides the medicinal plants. The NTFP diversity shows the cognitive ability of the people while the products extracted belong to 183 flowering plant species which represent 149 genera of 64 families (164 Magnoliopsida; 19 Liliopsida). The Legumes dominate the list with 31 taxa, followed by Rubiaceae (11) and Euphorbiaceae (7). Most of the NTFP species are phanerophytes (61% trees) and indigenous. The government of Andhra Pradesh has a procurement policy and price index for select NTFPs by which the stakeholders get reasonable seasonal

income through the collection and sale of beedi leaf, gums (*karaya, thiruman, konda gogu*), stem bark (*narra mamidi*), fleshy corolla (*ippa*), fruits (*karakkaya, kunkudu*), seeds (*chilla, mushti, morli*), etc.

Keywords: India, Adilabad, NTFP diversity, Rural economy

1. Introduction

Forest is a natural ecosystem constituting an important, non-renewable living resource. Forest ecosystems of the world make up the Forest Biome, a vital terrestrial biomass producer and repository of biological diversity. Forests have the potential for improving human well-being through supplementing income while functioning as safety nets (Angelsen & Wunder, 2003). Since forests play an important role in the sustainability of life on land, humans rightly resorted to reserve one third of the natural terrestrial plant cover. In view of the global forest decline, the UN has named 2011 as the 'International Year of Forests' in the 'Decade for Biodiversity'. Therefore, there is a need to study the local forests from the standpoints of nature and extent of their resource utilization.

India is the seventh largest country in the world though it owns 1.8% of the global forests on the 2.5% of the global land area. To serve Gross Domestic Product (GDP) as a measure of nation's wealth, not as mere measure of economic growth, India has initiated green accounting (Gundimeda *et al.*, 2007). Three parameters are used to value the environmental resource wealth, namely (i) Timber, non-timber forest products (NTFPs) and carbon, (ii) Biodiversity, and (iii) Ecological services. With changing political economy of forest resources around the world, the benefits of NTFPs are increasingly discussed in valuing tropical forests (Tewari, 2000). In this regard, the diversity of NTFPs and their role in the sustenance of local people constitutes a prime concern.

All biological materials that are found in the forests, excluding the timber, are called NTFPs. These include consumptive category of goods like wild food plants, spices, honey, oils, fodder, etc. on one hand and the non-consumptive items like gums, resins, gum-resins, dyes, wax, lac, brooms, fibers, fuel wood, charcoal, fencing, wildlife products, raw materials like bamboo, cane, etc. The forests in India, once known for their valuable timbers, are now looked at for their NTFPs, with a clear shift in the paradigm. The rural people (largely the scheduled tribe category) inhabiting the forests areas carry a very long history of extraction of NTFPs, for subsistence and/or sale. NTFPs have been identified as one of key income sources for rural households, with live examples indicating an income share greater than that from cash crops or informal cash incomes (Dovie, 2003).

Forest is a living resource while extraction of its produce is a dynamic aspect, with spatial and temporal implications. Forest management policies are increasingly spatial while making the forest land towards resource protection (reserves, sanctuaries, parks, etc.) and extraction (buffer zones), recreation (ecotourism) opportunities, etc. (Robinson *et al.*, 2008). Since NTFPs constitute the only natural resource that provides free access and subsistence to the poorest of the poor, they should really assume greater importance and receive priority for their development and management. In this regard, there is a need to document the NTFP diversity and availability for utilization per habitat. The present study aims at providing a glimpse of NTFP diversity and how it is utilized in the forests of Adilabad district of Andhra Pradesh, India.

2. Study Area

2.1 Biophysical environment

Adilabad district is located between longitudes 77^{0} 47[°] and 80^{0} 0[°] E and latitudes 18^{0} 40[°] and 19^{0} 56[°] N. It has a long boundary with Maharashtra (north by Yeotmal and Chanda districts, on the east Chanda district, on the west Nanded district) and on the south by Karimnagar and Nizamabad districts of Andhra Pradesh. The district occupies the second position in the State in regard to the area under forests. The ethnic population of the district is 17.08%, with prominent indigenous tribal groups such as Gonds, Kolams, Naikpods, Pardhans, Koyas, Mannewars, Andhs, Thoties and Yerukalas (Anonymous, 2011). Of the ethnic people, Gonds constitute the dominant group (52.16%). Geographically, these people are responsible for the name Gondwanaland, the southern of the two super continents believed to have constituted super continent 'the Pangea'. The study site enjoys typical tropical climate with four seasons, with average rainfall of 742 mm and temperature varying from 28-41[°]C in the hot season (Anonymous, 1975).

2.2 Socio-economic environment

Although these forests provide multiple benefits and cover 21% of the geographical area, this sector contributes only 1.5% to the official GDP in India. Andhra Pradesh has 63,821 sq km of area under forests (unreserved 50,479, protected 12,365 and unclassified 977 sq km). It is equal to 23.2% of the geographic area of the State as per Forest Survey of India Report (FSI, 2009). When it is to be maintained at 33%, the actual forest cover is 16.1%, spread in 44,419 sq km with 62.7 m^3 /ha growth stock (volume). The GDP contribution to the national

account by the state of Andhra Pradesh is 17,902 through timber and 1,063.2 million rupees by NTFPs (Gundimeda *et al.*, 2007). Adilabad is a backward district with greater area under forests (6084 sq km, i.e. 37.72% of geographic area - FSI, 2009) and 16.54% ethnic people when the state average is 6.59%. The Kolams, Mannewars and Thoties in the district are the most backward and poorest of the ethnic people. They are classified as Primitive Tribal Group (PTG), to draw special attention (Rao, 1993). The economic empowerment of tribal women in Adilabad district, using the NTFPs, was discussed by Omkar *et al.* (2008).

3. Methodology

The present study has taken up NTFP analysis in *six* forest divisions of Adilabad district, viz. Adilabad, Bellampalli, Jannaram, Kagaznagar, Mancherial and Nirmal. The study included all the majority tribal villages with natural forests around where the ethnic people subsist on NTFP products. Ethnobotanical survey was conducted for two years and the economic survey for one year. The study has to draw both primary and secondary sources of data. The *primary* data (Tables 1 and 2) were collected through field surveys and interacting with people (stakeholders) in person (interviews), questionnaires, household surveys and vegetation studies whilst the *secondary* data (Tables 3 and 4) were gathered from Girijan Co-operative Corporation (GCC), District forest working plans, reports, etc.

4. Results

4.1 NTFP diversity

The diversity of available NTFP species and their products in the natural forests were studied in Adilabad district during the years 2008-2010. In the study area, there are 183 species of *Magnoliophyta* (Angiosperms) which provide minor forest produce. These species are arranged alphabetically under the respective families and genera with the local (vernacular) names (Telugu), followed by scientific (botanical) name and use/s (Table 1). The NTFPs belong to 149 genera representing 64 families (Dicots/Magnoliopsida - 164 and Monocots/Liliopsida - 19). As regards the growth forms, trees predominate (111; 60.66%), followed by shrubs (29; 15.85%), herbs (21; 11.48%), climbers (19; 10.37%) and lianas/stragglers (3; 1.64%), indicating that the floral elements are primarily woody (trees, phanerophytic) and are from the forest. Furthermore, these species are predominantly (89.07%) indigenous and the rest (10.93%) cultivated/planted/naturalized.

The predominance of the *tree species* (61%) in the study area indicates the fact that they all *construct* the tropical dry deciduous forest ecosystem and provide *goods* and render other ecosystem *services* to the local people at no costs.

4.2 The use of NTFPs

The various NTFP-yielding species found in the Adilabad district forests, as per the consumptive and non-consumptive use-categories, are:

4.2.1 Consumptive (Edible)

4.2.1.1 Fruits

Maredu (Aegle marmelos), Morli (Buchanania lanzan), Tumiki (Diospyros melanoxylon), Velaga (Limonia acidissima), Nalla jeedi (Semicarpus anacardium), Mamidi (Mangifera indica), Naguru (Radermachera xylocarpa), Garugu (Garuga pinnata), Banka nakkiri (Cordia dichotoma), Illintha (Diospyros chloroxylon), Tella alli (Maba buxifolia), Korra maddi (Bridelia retusa), Narra mamidi (Litsea glutinosa), Dudippa (Careya arborea), Bikki (Gardenia gummifera), Alli (Memecylon edule), Tada (Grewia tiliifolia), Pusuku (Schleichera oleosa), Adavi draksha (Cissus vitiginea), Neredu (Syzygium cumini), Pedda bikki (Gardenia latifolia) and Chilla (fruit pulp of Strychnos potatorum) besides those of the exotics planted: *Chinta (Tamarindus indica), *Jeedi mamidi (Anacardium occidentale), *Thati (Borassus flabellifer), *Regu (Ziziphus mauritiana), *Chinthaphal kaya (Annona squamosa), *Rama phal (Annona reticulata), etc.

4.2.1.2 Tubers/Rhizomes/Roots

Pilli teegalu (*Asparagus racemosus*), Pamu donda (*Corallocarpus epigaeus*), Kevu kanda (*Cheilocostus speciosus*), Nela thadi (*Curculigo orchioides*), Tella nelathadi (*Chlorophytum arundinaceum*), Bellam gadda (*Dioscorea alata*), Chenna gadda (*Dioscorea bulbifera*) and Govinda gadda (*Dioscorea pentaphylla*).

4.2.1.3 Other parts

Tender/young leaves (vegetable): Konda pindi - Aerva lanata, Alli - Memecylon edule; Fleshy corolla: Ippa (Madhuca indica); Seed kernel: Pedda morli (Buchanania axillaris), Chinna morli (Buchanania lanzan); Seeds:

Bojja (*Xylia xylocarpa*); Seed oil: Ippa (*Madhuca indica*), Pusuku (*Schleichera oleosa*) and purgative *Amudam (*Ricinus communis*).

4.2.2 Non-Consumptive

4.2.2.1 Leaves

Beedi (for smoking) - *Diospyros melanoxylon*, Adda leaves (meal plates) - *Bauhinia vahlii*, Mothuku - *Butea monosperma*, Teega mothuku – *Butea superba* and Barrenka - *Streblus asper*. Of these, beedi leaf brings good income to the local people during the season in view of procurement policy and established procedure for its trade in the study area or elsewhere in the district (Table 2). The income from beedi leaf gathering is reasonably good for the people who incur no expenses in the workout.

4.2.2.2 Gums, resins and gum-resins

Tapsi (Kavalama urens), Thiruman (Anogeissus latifolia), Gumpena (Lannea coromandelica), Peddegi (Pterocarpus marsupium), Somi (Soymida febrifuga), Konda gogu (Cocholospermum religiosum), Tella tumma (Acacia leucophloea), Dirisena (Albizia lebbeck), Jammi (Prosopis cineraria), Velaga (Limonia acidissima), Erra buruga (Bombax ceiba), Chinduga (Albizia odoratissima), and gum-resin Anduku (Boswellia serrata), Bikki (Gardenia gummifera), Pedda bikki (Gardenia latifolia) and Chinna karinga (Gardenia resinifera).

4.2.2.3 Barks

Rela (Cassia fistula), Narra mamidi (Litsea glutinosa), Nalla maddi (Terminalia alata), Tangedu (Senna auriculata), etc.

4.2.2.4 Fibre

Yepi (Hardwickia binata), Nul thada (Helicteres isora), Aare (Bauhinia racemosa), Nara botku (Eriolaena hookeriana), etc.

4.2.2.5 Bamboo

Mulla veduru (*Bambusa arundinacea*), Veduru (*Dendrocalamus strictus*). The district has 12,214 ha (1.37%) area under bamboo, with an annual yield of 700 tons, of 35% which is used for pulp and 20% for rural consumption.

4.2.2.6 Brooms

Konda cheepuru (*Thysanolaena maxima*), Thatching grass (*Imperata cylindrica*), Chiluka parre (*Sida acuta*), bulrush (*Typha* species), Eatha (*Phoenix sylvestris*), etc.

4.2.2.7 Toys

Pala (Wrightia tinctoria), Tella poliki (Givotia moluccana) and Kummari poliki (Gyrocarpus americanus).

4.2.3 Medicinal (Ethno-human medicine; Ethnoveterinary)

Roots/rhizomes- Nabhi (*Gloriosa superba*), whole plant or leaf - Nimma gaddi (*Cymbopogon flexuosus*), Adavi munaga (*Moringa concanensis*), Maredu (*Aegle marmelos*), Gara (*Balanites roxburghii*), Mushti (*Strychnos nux-vomica*), Tanikkaya (*Terminalia bellirica*), Karakkaya (*Terminalia chebula*), Usiri (*Phyllanthus emblica*), Nela vemu (*Andrographis paniculata*) and Poda patri (*Gymnema sylvestre*). The opportunity for gathering and sale of medicinal plants from the district is immense since Swamy (2009) recorded as many as 366 taxa which are used in 1378 ethnomedicinal practices. The global sales of non-timber based herbal medicine were around US\$30 billion in 2000; this market is growing roughly at the rate of 15% per annum (Anonymous, 2002).

4.3 The procurement and sale of NTFPs

The main players who market the NTFPs in the district are Girijan Co-operative Corporation (GCC), Andhra Pradesh Forest Department (APFD) and the private traders. The GCC trades with 17 notified NTFPs (Table 3) and it also purchases non-notified Garugu (*Garuga pinnata*), Karakkaya (*Terminalia chebula*) and Lakka/Lac (*Schleichera oleosa*) (Omkar, 2011). APFD deals with the collection of beedi leaf (*Diospyros melanoxylon*) while its trade is made by Andhra Pradesh Forest Development Corporation (APFDC). The private traders are involved in the trade with 15 of the notified NTFPs, namely Adda leaf (*Bauhinia vahlii*), kernel of Sarapappu (*Buchanania lanzan*), gum-resinof Karinga (*Gardenia gummifera*), gum of Tapsi (*Kavalama urens*), seeds (Nalla jeedi - *Semicarpus anacardium*; Visha mushti - *Strychnos nux-vomica*; Kanuga - *Pongamia pinnata*; Ippa - *Madhuca indica*), stem bark of Narra mamidi (*Litsea glutinosa*), fruits of Vaalugapalla chettu (*Acacia sinuata*), *Kunkudu (*Sapindus trifoliatus*), Chinta (*Tamarindus indica*), Usiri (*Phyllanthus emblica*) and Karakkaya (*Terminalia bellirica*), and hill broom (*Thysanolaena maxima*).

5. Discussion and Conclusions

About 70 million ethnic people all over the globe primarily depend on forests for their livelihood. NTFPs play a vital role in the economic subsistence of ethnic people who depend on the forest ecosystems. Currently, the tropical forested areas and their biodiversity are subjected to over exploitation and degradation due to heavy extraction and grazing livestock pressures. Despite the fact that 50 million people in India over the past 150 years obtained part of their livelihood from forests, the nation's forest policy continued to focus primarily on the commercial aspects. However, the New Forest Policy 1988 had envisaged the need and means for involving forest-dependent communities as partners in the management of the forest resources. Local people (Gonds and Naikpods) managing local forests in Behroonguda (Jannaram Forest Division) of Adilabad district (D'Silva and Nagnath, 1999) showed the way in Andhra Pradesh through Vana Samrakshana Samithis (VSSs) and Joint Forest Management (JFM) initiatives. The income (gain) from nine NTFPs in the year 1998 for their own consumption and sale was estimated to be ₹ 144,959 with 347 people involved in the hamlet.

The Dry deciduous forests in India were estimated to have more economic value than had been assumed previously, and it is compared favourably against the potential timber revenue (Mahapatra & Tewari, 2005). The present study endorses this observation.

Through the initiative of Government of Andhra Pradesh, the people of Kanchanbari and Pedumpet were involved in basket making with bamboo, a group of women from Pavarguda VSS located in Jainoor Mandal extract biodiesel from *Pongamia* seeds while the local villagers from Pittabangaram VSS in Indravalli Mandal are party to the collection and processing of Lac with the help of the Velugu Project and Andhra Pradesh Forest Department (TERI, 2004). It is estimated that the household income for the ethnic people of Adilabad (TERI, 2004) comes largely from labour (51%), followed by agriculture (35%) and NTFPs (15%); the last-mentioned does not include self-consumption.

Of the NTFPs available, the procurement of Gum karaya has been important for the revenue in Adilabad district. The procurement data of Gum karaya for the district by GCC Limited at Utnoor are available for seven consecutive years, i.e. from 2001-2002 to 2008-2009 (Table 4). The data indicate that the procurement of the Gum karaya was on the average of six quintals per year. The procurement was highest in 2004-05 when the production reached 968.34 kg, providing an all time record income of ₹ 74.92 lakhs. The quantity of gum produced has gone down to the minimum (192.79 kg) during the year 2008-09 with an income of about 15 lakhs, which is less than the 1/3 of the average procurement for the study area and lowest in recent times.

Next in importance is beed leaf gathering in the district. The income generation data were gathered for six villages in the study area (Table 2). The income through it was highest per household per season (₹ 2201) for Bombaiguda and lowest (₹ 1575) for Peddabanda, whilst the average was ₹ 1818.

There is an increasing focus on the potential role of forests and NTFPs in the economic development and poverty reduction strategies (Shackleton *et al.*, 2007). The present study finds that there is: (i) a great diversity of NTFPs in the district though they are gathered from a fairly uniform and preponderant teak forest ecosystem; (ii) NTFP diversity in the district helped the ethnic people to exploit the forest resource for livelihood by self-employment; they gather the forest produce (because of kinds and their seasonal availability) throughout the year, under no preoccupation; (iii) keeping in view the forest community aspect, the procurement policy of forest produce by Government of Andhra Pradesh was based on the principle to ensure the buying of the select forest products through local purchase points. The gums *(karaya, thiruman* and *konda gogu)*, seeds *(visha mushti, chilla, Pongamia, chinta)*, roots (sarpagandhi) and leaves (*tumiki*) provide the bulk of the income; and (iv) A considerable proportion of the poor households use NTFPs for self-consumption than their wealthier counterparts in the district, thereby saving part of the expenditure on these items.

In the poverty alleviation schemes of the ethnic people, the policy and practices of the Government of Andhra Pradesh and Andhra Pradesh Forest Development Corporation Limited must include and conceive the diversity of NTFPs on one hand and the cognitive ability of the ethnic people on the other, for mutual benefits. Central to these twin objectives shall be the sustainable use of NTFPs.

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Note

Note. *exotics

	Family/Local Name/Scientific Name	Use	
	Alangiaceae		
1	Oodugu - <i>Alangium salvifolium</i> (L.f.) Wang.	Bark used as purgative, for skin diseases; fruits laxative, refrigerant.	
	Anacardiaceae		
2	Jeedi mamidi - *Anacardium occidentale L.	Pseudocarp edible, pericarp yields oil; seed kernal edible.	
3	Pedda morli - <i>Buchanania axillaris</i> (Desr.) Ramamoorthy	Seed kernel edible; used in the preparation of sweets.	
4	Chinna morli, Sarapappu - <i>Buchanania lanzan</i> Spreng.	Seed kernal edible.	
5	Dumpena, Oddi - <i>Lannea coromandelica</i> (Houtt.) Merr.	Bark used to heal wounds.	
6	Mamidi - Mangifera indica L.	Fruit edible.	
7	Nalla jeedi - Semecarpus anacardium L.	Pseudocarp edible; fruit juice used as marker (marking nut); medicinal.	
	Annonaceae		
8	Chinthaphal kaya - * <i>Annona squamosa</i> L.	Fruit edible; seed powder used as insecticides; root purgative.	
9	Rama phal - *Annona reticulata L.	Fruit edible.	
10	Barre duddi, Chiluka dudduga - <i>Miliusa</i> tomentosa (Roxb.) Sinclair	Bark powder a veterinary medicine; wood used for building huts.	
11	Gutti duddugu - <i>Polyalthia cerasoides</i> (Roxb.) Bedd.	Fodder; wood used for houseposts and carpentary.	
	Amaranthaceae		
12	Uttareni - Achyranthes aspera L.	Tender leaves edible; roots used as tooth brush.	
13	Pindi kura - <i>Aerva lanata</i> (L.) Juss.	Leafy vegetable; kidney stones.	
14	Ponnaganti kura - <i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Leafy vegetable.	
15	Gunugu - <i>Celosia argentea</i> L.	Leafy vegetable.	
	Apiaceae		
16	Bokkudu - <i>Centella asiatica</i> (L.) Urban	Leaves hair tonic; brain tonic.	
1.5	Apocynaceae		
17	Kalımı - Carissa spinarum L.	Young fruits edible, made curry or chetney.	
18	Kodisa pala, Tedla pala - <i>Holarrhena</i> <i>pubescens</i> (BuchHam.) Wall. ex Don	Stem and root bark used in dysentery; wood useful in carving toys; floss used for stuffing pillows.	
19	Pala - Wrightia arborea (Dennst.) Mabb.	Flowers used as ornamental.	
20	Pala - Wrightia tinctoria R.Br.	Flowers used as vegetable; leaves source of blue dye.	
21	Sarpagandhi - <i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Ethnomedicinal, snakebite.	
	Aristolochiaceae		
22	Nalleswari - Aristolochia indica L.	Roots extract antidote for snakebite.	
22	Asclepiadaceae	There and district	
23	Poda patri - <i>Gymnema sylvestre</i> (Retz.) R.Br.	Leaves anti-diabetic.	
24	R.Br.	Dried root powder used to cure diarrhoea.	
25	Barre sugandha pala - <i>H. indicus</i> var. <i>pubescens</i> (Wight & Arn.) Hook.f.	Ethnoveterinary: galactogogue.	
	Asteraceae		
26	Dogorolisi - Pentanema indicum (L.) Ling	Scorpion sting.	
27	Balanitaceae		
27	Gara - Balanites roxburghii Planch.	Magico-religious use; fruits fish poison, antidiabetic.	
	Dignomiaceae		
28	Seem.	Bark used as fish poison.	

Table 1. NTFP species and their use category

29	Dundilam - Oroxylum indicum (L.) Benth. ex Kurz	Seeds purgative; bark used for tanning, dyeing; medicinal.	
30	Naguru - <i>Radermachera xylocarpa</i> (Roxb.) Schum.	Young fruits edible; bark antisceptic.	
31	Kala goru - <i>Stereospermum suaveolens</i> (Roxb.) DC.	Leaves fodder; wood used for making charcoal.	
	Bixaceae		
32	Tabra kaya, Jaffra, Annato - * <i>Bixa orellana</i> L.	Dye extracted from seed coat, used for colouring food stuffs.	
	Bombacaceae		
33	Enugu thondamu - * <i>Adansonia digitata</i> L.	Fruits edible.	
34	Erra buruga - <i>Bombax ceiba</i> L.	Gum used as medicine; wood light, used for making plywood, boxes, match sticks, etc.	
35	Buruga - *Ceiba pentandra (L.) Gaertn.	Fibre/cotton from fruit used to stult pillows.	
	Burseraceae		
36	Andugu - Boswellia serrata Roxb.	Bark yields gum-resin, used in treating skin diseases, rheumatism.	
37	Garugu - Garuga pinnata Roxb.	Fruits pickled; gum medicinal.	
	Caesalpiniaceae		
38	Are - Bauhinia racemosa Lam.	Bark yields good fibre; wood used for fuel; bark astringent in dysentery.	
39	Addaku - Bauhinia vahlii Wight & Arn.	Leaf plate making.	
40	Are - Bauhinia variegata L.	Fodder tree, bark yields fibre, used in tanning and dying.	
41	Rela - Cassia fistula L.	Pulp of ripen fruit a strong purgative.	
42	Gatchikayi - Caesalpinia bonduc (L.) Roxb.	Used as live fence; seeds medicinal, used to play games.	
43	Narepa - Hardwickia binata Roxb.	Bark yields fibre; fodder tree.	
44	Chinta - *Tamarindus indica L.	Ripen fruits used as refrigerant, digestive, carminative and laxative: young leaves eaten fried	
45	Tangedu - Senna auriculata L	Tannins extracted.	
	Capparaceae		
46	Aadonda - <i>Capparis aphylla</i> Roth	Bark anthelmintic, used as aphrodisiac.	
47	Nalla uppi - Capparis grandis L.	Bark used for healing wounds.	
48	Aadonda - Capparis zeylanica L.	Unripe fruits as vegetable; pickled.	
49	Vulimiri chettu - Crateva magna (Lour.) DC.	Tender leaves chewed to cure tooth-ache.	
	Celastraceae		
50	Neridi, Butankus - <i>Cassine glauca</i> (Rottb.) Kuntze	Leaf powder used for headaches; bark decoction administered for cholera.	
51	Dantha – Maytenus emarginata (Ruiz & Pav.) Loes.	Leaf paste used to cure ulcers and sores.	
	Cochlospermaceae		
52	Konda gogu - Cochlospermum religiosum (L.)	Bark yields 'Katara' gum, used for cough and	
52	Alston	gonorrhoea.	
	Combretaceae		
53	Thiruman - <i>Anogeissus latifolia</i> (Roxb. ex DC.) Wall. ex Guill & Perr.	Fodder, timber useful in making charcoal, fuel.	
54	Bontha – Calycapteris floribunda Lam.	Leaves purgative; baskets made with shoots.	
55	Nalla maddi - Terminalia alata Heyne ex Roth	Bark yields tannin, used as purgative and adhesive.	
56	Tella maddi - <i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	Bark acrid; febrifuge and diuretic.	
57	Tanikaya - <i>Terminalia bellirica</i> (Gaertn.) Roxb.	Fruits important constituent of ayurvedic drugs (i.e. Triphala churna; for asthma, bronchitis); fruits also used for dyeing.	
58	Karakkaya - Terminalia chebula Retz.	Fruits important source of tannin; dye; used in Triphala churna.	
59	Are teega - Combretum albidum G.Don	Pegs used to tie cattle; shoots woven into basket.	

	Cordiaceae		
60	Botuku, Banka nakkiri - <i>Cordia dichotoma</i> Forst.f.	Fruits edible, bark astringent; leaves used as fodder.	
61	Pedda iriki, Iriki - Cordia wallichii G. Don	Fruits edible, pickled.	
	Cucurbitaceae		
62	Pamu donda - <i>Corallocarpus epigaeus</i> (Rottl. & Willd.) C.B.Clarke	Tubers used for snakebite.	
63	Aagudu -Trichosanthes tricuspidata Lour.	Ethnoveterinary: root decoction for dysentery in cattle.	
	Ebenaceae		
64	Illintha - Diospyros chloroxylon Roxb.	Fruits edible; wood used as fuel; fodder tree.	
65	Tumiki - <i>Diospyros melanoxylon</i> Roxb.	Leaves used in making beedis; leaves diuretic, carminative, laxative; astringent, bark decoction used in diarrhoea; fruits edible; wood good for fuel.	
66	Muchi tumiki - Diospyros montana Roxb.	Fruit bitter; wood used to make agricultural implements; fuel wood.	
67	Tella alli - Maba buxifolia (Rottb.) Pers.	Wood used for rafters; fruits edible.	
	Erythroxylaceae		
68	Deva daru - Erythroxylon monogynum Roxb.	Leaves diaphoretic, diuretic.	
	Euphorbiaceae		
69	Korra maddi - Bridelia retusa (L.) Spreng.	Fruits edible; bark used in tanning.	
70	Nalla kodisha - <i>Cleistanthus collinus</i> (Roxb.) Hook.f.	Fruit/bark crushed and mixed in water to stupify fish.	
71	Tella poliki - Givotia moluccana (L.) Sreem.	Wood soft, used for carving images, toys; seed yields oil.	
72	Adavi nepalamu - *Jatropha curcas L.	Seeds yield oil, used as bio-diesel; seeds anthelmintic; leaf juice useful to relieve pains from piles, inflammation.	
73	Kunkuma - <i>Mallotus philippensis</i> (Lam.) MuellArg.	Red dye 'kamala' obtained from fruits, used as kumkum; fruits bitter, anthelmintic, fodder tree.	
74	Usiri - Phyllanthus emblica L.	Fruits edible, pickled, medicinal.	
75	Amudamu - *Ricinus communis L.	Seed oil lubricant; purgative.	
	Flindersiaceae		
76	Bilugu - Chloroxylon swietenia DC.	Wood hard, valuable in agricultural implements, serves as good fuel.	
	Hernandiaceae		
77	Kummari poliki - <i>Gyrocarpus americanus</i> Jacq.	Wood soft, used for carving images, toys; seed yields oil.	
	Hypoxidaceae		
78	Nela thadi - Curculigo orchioides Gaertn.	Roots aphrodisiac; good food for wild pigs.	
	Lauraceae		
79	Narra mamidi - <i>Litsea glutinosa</i> (Lour.) C.B. Robinson	Leaves emotient and antispasmodic; fruit edible; root bitter, astringent, tonic; bark demulcent, astringent, used to set bone fractures.	
	Lecythidaceae		
80	Dudippa, Budda dharmi - <i>Careya arborea</i> Roxb.	A good coppicer, bark yields fibre; wood hard, used in agriculutural implements; leaves used in beedi making; fruits edible; seeds poisonous.	
81	Batta kanapa - <i>Barringtonia acutangula</i> (L.) Gaertn.	Wood soft, used for furniture; bark used for fish-poisoning.	
	Loganiaceae		
82	Visha mushti - <i>Strychnos nux-vomica</i> L.	Strychnine, brucine obtained from the seeds; fodder tree; wood largely used to make agricultural implements.	
83	Chilla - Strychnos potatorum L.	Fruit pulp edible; wood hard, durable; good for agricultural implements.	
	Lythraceae		

84	Chennangi - Lagerstroemia parviflora Roxb.	<i>viflora</i> Roxb. Wood used as timber, fencing, agricultural implements.	
85	Maidaku chettu - * <i>Lawsonia inermis</i> I	Leaves paste used for dyeing hands, finger nails and feet	
86	Jaaji - Woodfordia fruticosa (L.) Kurz	Dried flowers powder used to cure diarrhoea	
00	Malvaceae	Died nowers powder used to eare diarmoed.	
87	Thuthuru benda - <i>Abutilon indicum</i> (L.) Sweet	Tender branches used as tooth brush	
88	Ganga raavi - * <i>Thespesia populnea</i> (L.)	Ornamental.	
89	Konda patti - <i>Thespesia lampas</i> (Cav.) Dalzell	Yields good fibre.	
	& A.Gibson		
	Melastomataceae		
90	Alli - Memecylon edule Roxb.	Fruits edible; wood makes excellent charcoal.	
	Meliaceae		
91	Vepa - *Azadirachta indica Juss.	Ripe fruits yield oil used in parasitic skin diseases; leaves used to cure chicken pox; wood yields good timber.	
92	Somi - Soymida febrifuga (Roxb.) Juss.	Bark yields gum; wood hard.	
	Menispermaceae		
93	Farid-butti, Dusara teega - <i>Cocculus hirsutus</i> (L.) Diels	Baskets.	
94	Bankka teega - <i>Cissampelos pareira</i> L. var. <i>hirsuta</i> (BuchHam. ex DC.) Forman	Root extract administered for stomach/chest pains.	
95	Tippa teega - <i>Tinospora cordifolia</i> (Willd.) Miers ex Hook.f. & Thoms.	Aerial root paste applied on insect stings.	
	Mimosaceae		
96	Sandra – <i>Acacia chundra</i> (Roxb. ex Rottl.) Willd.	Stem bark used to cure skin diseases.	
97	Tella thumma - <i>Acacia leucophloea</i> (Roxb.) Willd.	Tree yields gum; used in indigenous medicine; bark yields fibre.	
98	Nalla tumma – * <i>Acacia nilotica</i> (L.) Willd. ex Del.	Fruits eaten by sheep and goats; trunk yields gum.	
99	Vaalugapalla chettu – <i>Acacia sinuata</i> (Lour.) Merr.	Tender leaves used as vegetable.	
100	Narlinga - Albizia amara (Roxb.) Boiv.	Fodder tree; flowers useful in skin treatment; useful for afforestation.	
101	Dirisena - *Albizia lebbeck (L.) Benth.	Fodder tree; bark exudes gum, substitute for Gum Arabic.	
102	Chinduga - Albizia odoratissima (L.f.) Benth.	Fodder tree; bark yields gum, dye.	
103	Choppari, Tella chinduga - <i>Albizia procera</i> (Roxb.) Benth.	Bark decoction used in rheumatism and haemorrhage, also used as fish poison.	
104	Veluthuru - <i>Dichrostachys cinerea</i> (L.)Wight & Arn.	Wood used as fuel.	
105	Jammi - Prosopis cineraria (L.) Druce	Fodder tree; pods as feed for cattle and goats; bark yields gum; shoots used in ceremonials.	
106	Bojja - Xylia xylocarpa (Roxb.) Taub.	Seeds edible.	
	Moraceae		
107	Panasa - *Artocarpus heterophyllum Lam.	Fruit edible.	
108	Marri - Ficus benghalensis L.	Fruit eaten by birds, animals; fodder tree; one of the host for lac insects.	
109	Bomma medi - Ficus hispida L.f.	Fruit used in curries; ripe fruits edible; fodder tree; bark yields fibre.	
110	Raavi - Ficus religiosa L.	Fruits eaten by animals, birds, fodder tree.	
111	Barrenka - Streblus asper Lour.	Wood hard, tough shoots used as tooth brush; medicinal and used for making agricultural implements; leaves used to polish wood.	
<u> </u>	Moringaceae		

112	Adavi munaga - <i>Moringa concanensis</i> Nimmo ex Dalzell & A. Gibson	Stem bark as abortifacient.	
	Myrtaceae		
113	Jamu, Neredu - Syzygium cumini (L.) Skeels	fruits edible, wood moderately hard; ripe fruits eaten for stomach ache.	
	Olacaceae		
114	Muriki malle - <i>Olax scandens</i> Roxb.	Fruits eaten, made sherbet.	
115	Oleaceae Malilaren Sakuakarre arriatarraidar Dark	Wood used on fuel	
115	Mokkam - <i>Schrebera Swieleholdes</i> Koxb.	w ood used as fuel.	
116	Guruyinda Abmus presestarius I	Soods used as ememories: madiainal	
117	Ulla teega - Atvlosia scarabagoidas (L.) Benth	Seeds as vegetable	
118	Moduga - Butea monoserpma (Lam.) Taub.	Flowers yield dye; host tree for lac insect; leaves	
119	Teega moduga – <i>Butea superba</i> Roxh	Flowers vield dve	
117		Fodder tree: seed oil used as antidote: wood hard	
120	Jitregi - Dalbergia latifolia Roxb.	durable.	
121	Patchari - Dalbergia paniculata Roxb.	Wood used for musical instruments.	
122	Nalla teega - Derris scandens (Roxb.) Benth.	Bark yields coarse rope fibre.	
123	Seema kanuga - * <i>Gliricidia sepium</i> (Jacq.) Kunth ex Walp.	Fodder and green manure.	
124	Vandanamu - <i>Ougeinia oojeinensis</i> (Roxb.) Hochr.	Bark used as fish poison.	
125	Duldundi,Theta kokila - <i>Mucuna pruriens</i> (L.) DC.	Vermifuse to cattle.	
126	Kanuga - Pongamia pinnata (L.) Pierre	Seed yields oil, biodiesel; shoots used as tooth brush.	
127	Peddegi - Pterocarpus marsupium Roxb.	Medicinal; gum as adhesive; wood agricultural implements.	
	DI		
	Rhamnaceae		
128	Rhamnaceae Regu - *Ziziphus mauritiana Lam.	Fruits edible.	
128 129	Rhamnaceae Regu - *Ziziphus mauritiana Lam. Pariki - Ziziphus oenoplia (L.) Mill.	Fruits edible. Fruits edible.	
128 129 130	RhamnaceaeRegu - *Ziziphus mauritiana Lam.Pariki - Ziziphus oenoplia (L.) Mill.Gotte - Ziziphus xylopyrus (Retz.) Willd.	Fruits edible. Fruits edible. Excellent fodder for sheep, goats.	
128 129 130	Rhamnaceae Regu - *Ziziphus mauritiana Lam. Pariki - Ziziphus oenoplia (L.) Mill. Gotte - Ziziphus xylopyrus (Retz.) Willd. Rubiaceae Parkum Brackum diagona Coorte	Fruits edible. Fruits edible. Excellent fodder for sheep, goats.	
128 129 130 131	Rhamnaceae Regu - *Ziziphus mauritiana Lam. Pariki - Ziziphus oenoplia (L.) Mill. Gotte - Ziziphus xylopyrus (Retz.) Willd. Rubiaceae Baluchu - Psydrax dicoccos Gaertn. Mongo, Catungangan aninosa (Thump)	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder.	
128 129 130 131 132	RhamnaceaeRegu - *Ziziphus mauritiana Lam.Pariki - Ziziphus oenoplia (L.) Mill.Gotte - Ziziphus xylopyrus (Retz.) Willd.RubiaceaeBaluchu - Psydrax dicoccos Gaertn.Manga - Catunaregum spinosa (Thunb.)Tirveng.	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder. Fruit paste used as fish poison.	
128 129 130 131 132 133	RhamnaceaeRegu - *Ziziphus mauritiana Lam.Pariki - Ziziphus oenoplia (L.) Mill.Gotte - Ziziphus xylopyrus (Retz.) Willd.RubiaceaeBaluchu - Psydrax dicoccos Gaertn.Manga - Catunaregum spinosa (Thunb.)Tirveng.Bikki - Gardenia gummifera L.f.	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder. Fruit paste used as fish poison. Leaf buds and young shoots yield yellow resinous gum used in medicine: young fruits edible	
128 129 130 131 132 133 134	RhamnaceaeRegu - *Ziziphus mauritiana Lam.Pariki - Ziziphus oenoplia (L.) Mill.Gotte - Ziziphus xylopyrus (Retz.) Willd.RubiaceaeBaluchu - Psydrax dicoccos Gaertn.Manga - Catunaregum spinosa (Thunb.)Tirveng.Bikki - Gardenia gummifera L.f.Pedda bikki - Gardenia latifolia Aiton	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder. Fruit paste used as fish poison. Leaf buds and young shoots yield yellow resinous gum, used in medicine; young fruits edible. Shoot tips exude yellow gum resin; medicinal; fruits edible.	
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128 129 130 131 132 133 134 135 136 137 138	RhamnaceaeRegu - *Ziziphus mauritiana Lam.Pariki - Ziziphus oenoplia (L.) Mill.Gotte - Ziziphus xylopyrus (Retz.) Willd.RubiaceaeBaluchu - Psydrax dicoccos Gaertn.Manga - Catunaregum spinosa (Thunb.)Tirveng.Bikki - Gardenia gummifera L.f.Pedda bikki - Gardenia latifolia AitonChinna karinga - Gardenia resinifera RothBandari - Haldina cordifolia (Roxb.) RidsdaleKorivi - Ixora arborea Roxb.Puttapala, korivi - Ixora pavetta Andrews	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder. Fruit paste used as fish poison. Leaf buds and young shoots yield yellow resinous gum, used in medicine; young fruits edible. Shoot tips exude yellow gum resin; medicinal; fruits edible. Shoot tips exude yellow gum resin; medicinal. Ethnomedicinal (antifertility, body pains), wood used for agricultural implements. Branches used as torches. Fodder tree.	
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128 129 130 131 132 133 134 135 136 137 138 139 140	RhamnaceaeRegu - *Ziziphus mauritiana Lam.Pariki - Ziziphus oenoplia (L.) Mill.Gotte - Ziziphus xylopyrus (Retz.) Willd.RubiaceaeBaluchu - Psydrax dicoccos Gaertn.Manga - Catunaregum spinosa (Thunb.)Tirveng.Bikki - Gardenia gummifera L.f.Pedda bikki - Gardenia latifolia AitonChinna karinga - Gardenia resinifera RothBandari - Haldina cordifolia (Roxb.) RidsdaleKorivi - Ixora arborea Roxb.Puttapala, korivi - Ixora pavetta AndrewsBatta kanapa - Mitragyna parviflora (Roxb.)Korth.Thogara maddi - Morinda pubescens J.E.Smith	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder. Fruit paste used as fish poison. Leaf buds and young shoots yield yellow resinous gum, used in medicine; young fruits edible. Shoot tips exude yellow gum resin; medicinal; fruits edible. Shoot tips exude yellow gum resin; medicinal. Ethnomedicinal (antifertility, body pains), wood used for agricultural implements. Branches used as torches. Fodder tree. Wood strong, used for furniture, agricultural implements; bark used in fever; bark yields fibre, fodder tree. Root yields yellow dye.	
128 129 130 131 132 133 134 135 136 137 138 139 140 141	Rhamnaceae Regu - *Ziziphus mauritiana Lam. Pariki - Ziziphus oenoplia (L.) Mill. Gotte - Ziziphus xylopyrus (Retz.) Willd. Rubiaceae Baluchu - Psydrax dicoccos Gaertn. Manga - Catunaregum spinosa (Thunb.) Tirveng. Bikki - Gardenia gummifera L.f. Pedda bikki - Gardenia latifolia Aiton Chinna karinga - Gardenia resinifera Roth Bandari - Haldina cordifolia (Roxb.) Ridsdale Korivi - Ixora arborea Roxb. Puttapala, korivi - Ixora pavetta Andrews Batta kanapa - Mitragyna parviflora (Roxb.) Korth. Thogara maddi - Morinda pubescens J.E. Smith Komi - Tarenna asiatica (L.) Kuntze ex K. Schum.	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder. Fruit paste used as fish poison. Leaf buds and young shoots yield yellow resinous gum, used in medicine; young fruits edible. Shoot tips exude yellow gum resin; medicinal; fruits edible. Shoot tips exude yellow gum resin; medicinal. Ethnomedicinal (antifertility, body pains), wood used for agricultural implements. Branches used as torches. Fodder tree. Wood strong, used for furniture, agricultural implements; bark used in fever; bark yields fibre, fodder tree. Root yields yellow dye. Fruits vermicide.	
128 129 130 131 132 133 134 135 136 137 138 139 140 141	RhamnaceaeRegu - *Ziziphus mauritiana Lam.Pariki - Ziziphus oenoplia (L.) Mill.Gotte - Ziziphus xylopyrus (Retz.) Willd.RubiaceaeBaluchu - Psydrax dicoccos Gaertn.Manga - Catunaregum spinosa (Thunb.)Tirveng.Bikki - Gardenia gummifera L.f.Pedda bikki - Gardenia latifolia AitonChinna karinga - Gardenia resinifera RothBandari - Haldina cordifolia (Roxb.) RidsdaleKorivi - Ixora arborea Roxb.Puttapala, korivi - Ixora pavetta AndrewsBatta kanapa - Mitragyna parviflora (Roxb.)Korth.Thogara maddi - Morinda pubescens J.E.SmithKomi - Tarenna asiatica (L.) Kuntze ex K.Schum.Rutaceae	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder. Fruit paste used as fish poison. Leaf buds and young shoots yield yellow resinous gum, used in medicine; young fruits edible. Shoot tips exude yellow gum resin; medicinal; fruits edible. Shoot tips exude yellow gum resin; medicinal. Ethnomedicinal (antifertility, body pains), wood used for agricultural implements. Branches used as torches. Fodder tree. Wood strong, used for furniture, agricultural implements; bark used in fever; bark yields fibre, fodder tree. Root yields yellow dye. Fruits vermicide.	
128 129 130 131 132 133 134 135 136 137 138 139 140 141	RhamnaceaeRegu - *Ziziphus mauritiana Lam.Pariki - Ziziphus oenoplia (L.) Mill.Gotte - Ziziphus xylopyrus (Retz.) Willd.RubiaceaeBaluchu - Psydrax dicoccos Gaertn.Manga - Catunaregum spinosa (Thunb.) Tirveng.Bikki - Gardenia gummifera L.f.Pedda bikki - Gardenia latifolia AitonChinna karinga - Gardenia resinifera RothBandari - Haldina cordifolia (Roxb.) RidsdaleKorivi - Ixora arborea Roxb.Puttapala, korivi - Ixora pavetta AndrewsBatta kanapa - Mitragyna parviflora (Roxb.) Korth.Thogara maddi - Morinda pubescens J.E. SmithKomi - Tarenna asiatica (L.) Kuntze ex K. Schum.RutaceaeMaredu - Aegle marmelos (L.) Cor.	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder. Fruit paste used as fish poison. Leaf buds and young shoots yield yellow resinous gum, used in medicine; young fruits edible. Shoot tips exude yellow gum resin; medicinal; fruits edible. Shoot tips exude yellow gum resin; medicinal. Ethnomedicinal (antifertility, body pains), wood used for agricultural implements. Branches used as torches. Fodder tree. Wood strong, used for furniture, agricultural implements; bark used in fever; bark yields fibre, fodder tree. Root yields yellow dye. Fruits vermicide. Sacred tree; bark and leaves medicinal; fruits edible.	
128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143	RhamnaceaeRegu - *Ziziphus mauritiana Lam.Pariki - Ziziphus oenoplia (L.) Mill.Gotte - Ziziphus xylopyrus (Retz.) Willd.RubiaceaeBaluchu - Psydrax dicoccos Gaertn.Manga - Catunaregum spinosa (Thunb.)Tirveng.Bikki - Gardenia gummifera L.f.Pedda bikki - Gardenia latifolia AitonChinna karinga - Gardenia resinifera RothBandari - Haldina cordifolia (Roxb.) RidsdaleKorivi - Ixora arborea Roxb.Puttapala, korivi - Ixora pavetta AndrewsBatta kanapa - Mitragyna parviflora (Roxb.)Korth.Thogara maddi - Morinda pubescens J.E.SmithKomi - Tarenna asiatica (L.) Kuntze ex K.Schum.RutaceaeMaredu - Aegle marmelos (L.) Cor.Thorri velaga - Naringi crenulata (Roxb.)Nicolson	Fruits edible. Fruits edible. Excellent fodder for sheep, goats. Fodder. Fruit paste used as fish poison. Leaf buds and young shoots yield yellow resinous gum, used in medicine; young fruits edible. Shoot tips exude yellow gum resin; medicinal; fruits edible. Shoot tips exude yellow gum resin; medicinal. Ethnomedicinal (antifertility, body pains), wood used for agricultural implements. Branches used as torches. Fodder tree. Wood strong, used for furniture, agricultural implements; bark used in fever; bark yields fibre, fodder tree. Root yields yellow dye. Fruits vermicide. Sacred tree; bark and leaves medicinal; fruits edible. Fodder tree.	

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145	Adavi nimma - <i>Atalantia monophylla</i> (L.) Corri.	Fruits pickled.	
146	Karivepa - *Murraya koenigii (L.) Spreng.	Flavouring agent.	
	Salvadoraceae		
147	Uppi - Azima tetracantha Lam.	Dried leaves fumigated as insect repellent.	
	Sapindaceae		
148	Kunkudu - Sapindus emarginatus Vahl	Fruit juice a detergent (soap, shampoo); used in treatment of asthma.	
149	Pusuku - Schleichera oleosa (Lour.) Oken	Suitable for lac rearing; fruits edible; flowers yield dye; bark used in inflammation and ulcers; seed oil used as hair oil.	
150	Puli veli - Dodonaea viscosa (L.) Jacq.	Wood used for, turning, tool handle, walking sticks, etc.	
	Sapotaceae		
151	Ippa - Madhuca indica J. Gmel.	Fleshy corolla edible; flowers used for distillation of spirit (ippa sara); seeds yield oil, used for skin diseases.	
152	Manchi pala, Pala - <i>Manilkara hexandra</i> (Roxb.) Dubard.	Fruits edible; shoots used in religious functions.	
	Scrophulariaceae		
153	Brahmi - Bacopa monnieri Wettst.	Medicinal, brain tonic.	
	Simaroubaceae		
154	Peda manu - **Ailanthus excelsa Roxb.	Bark astringent, febrifuge and anthelmintic, yields gum; leaves suitable for fodder.	
	Sterculiaceae		
155	Nulthada - Helicteres isora L.	Bark yields fibre; wood is used in charcoal; leaves used as fodder.	
156	Tapsi - Kavalama urens (Roxb.) Raf.	Bark yields gum (used in pharmaceutical preparations, tanneries, garbarti making, etc.) and yields fibre; leaves fodder; seeds edible.	
	Tamaricaceae		
157	Jhau - <i>Tamarix dioica</i> Roxb.	Wood makes good fuel; basket making.	
	Tiliaceae		
158	Guvva tada, Pedda tada - <i>Grewia abutilifolia</i> Vent. ex Juss.	Bark yields fibre.	
159	Tada, boddi - Grewia tiliifolia Vahl	Bark yields fibre; tender leaves, fruits edible.	
	Ulmaceae		
160	Nemali nara - <i>Holoptelia integrifolia</i> (Roxb.) Planch.	Fodder tree; twigs used as fire wood.	
L	Verbenaceae		
161	Gummer teku - Gmelina arborea Roxb.	Bark used as antidote for snakebite; wood used in agricultural implements, furniture.	
162	Teku - Tectona grandis L.	Seeds used in the treatment of bladder stones; inflorescence for worship.	
163	Vaili - Vitex negundo L.	Leaves used in chronic fevers; hot water bath with leaves relieves body pains.	
<u> </u>	Vitaceae		
164	Adavi draksha - Cissus vitiginea L.	Fruits edible; ripe fruits eaten for stomach-ache.	
	Araceae		
165	*Kanda - Amorphophallus paeoniifolius (Dennst.) Nicoloson	Corms a vegetable.	
	Arecaceae		
166	Thadi chettu - *Borassus flabellifer L.	Leaves used for thatching cottages, making hand fans, umbrellas; fruits, seeds edible, toddy tapping.	
167	Eetha - <i>Phoenix sylvestris</i> Roxb.	Leaves used for thatching and making mats, baskets, bags, brooms; tree yields durable wood, used as poles; toddy tapped from the tree, fruits edible.	

	Asparagaceae		
168	Pilli teegalu - Asparagus racemosus Willd.	Roots aphodisiac.	
	Dioscoriaceae		
169	Bellam gadda - Dioscorea alata L.	Tubers edible.	
170	Chenna gadda - Dioscorea bulbifera L.	Aerial bulbs, tubers edible.	
171	Govinda gadda - Dioscorea pentaphylla L.	Tubers edible.	
	Liliaceae		
172	Kalabanda - * <i>Aloe vera</i> (L.) Burm.f.	Leaves medicinal; used to cure piles and eye infections.	
173	Nabhi - Gloriosa superba L.	Tubers paste is used to cure leprosy.	
	Poaceae		
174	Makka teega - Apluda mutica L.	Fodder; thatching.	
175	Mulla veduru, Veduru - <i>Bambusa arundinacea</i> (Retz.) Roxb.	Making baskets, roofs and incense sticks.	
176	Nimma gaddi - <i>Cymbopogon flexuosus</i> (Nees ex Steud.) W.Watson	Oil medicinal.	
177	Darba gaddi - <i>Imperata cylindrica</i> (L.) Raeusch.	Thatching huts.	
178	Konda cheepuru - <i>Thysanolaena latifolia</i> (Roxb. ex Hornem.) Honda.	Brooms.	
179	Jammu gaddi - Typha angustifolia L.	Roofing material; seeds for stuffing pillows.	
180	Jammu gaddi - Typha domingensis Pers.	Roofing material.	
181	Veduru - <i>Dendrocalamus strictus</i> (Roxb.) Nees	Making baskets; household articles.	
	Smilacaceae		
182	Phirangi mokka - Smilax zeylanica L.	Roots aphrodisiac.	
	Zingiberaceae		
183	Kevu kanda - <i>Cheilocostus speciosus</i> (J.Koenig) C. Specht	Tubers ethnomedicinal; chicken-pox; vegetable.	

* Cultivated/Planted or running wild. ** Road side tree, not a forest element.

	Name of the	No. of	No. of	Rate per	Income	per season (₹)
	Village	surveyed	day	oundie (₹)	Village	Per household
1	Kommuguda	80	16500	0.56	9240	1732
2	Dhongapally	30	7200	0.56	4032	2016
3	Bombaiguda	78	15200	0.56	8512	2201
4	Peddabanda	120	22500	0.56	12600	1575
5	Pochampally	60	12700	0.56	7112	1778
6	Rebbana	80	15300	0.56	8568	1605
Total		448	89400		50064	10907
Average		76.66	14900	0.56	8344	1818

Table 2. Income generation from Beedi leaf collection in Adilabad district

*Average household income in the study area ₹ 1818 per season (15 days).

	Scientific Name	Vernacular Name	NTFP	Grade	Price (per kg)
				Ι	140
1	Kavalama urens	Gum karaya	Gum	II	100
				III	75
				Ι	80
2	Anogeissus latifolia	Thiruman	Gum	II	60
				III	50
	a 11			Ι	120
3	Cochlospermum	Konda gogu	Gum	II	80
	rengiosum			III	60
4	Rauvolfia serpentina	Sarpagandhi roots	Root		60
5	Litsea glutinosa	Narra mamidi	Stem bark		23
6	Strychnos nux-vomica	Visha mushti	Seed		16
7	Strychnos potatorum	Chilla	Seed		9
8	Pongamia pinnata	Kanuga	Seed		10
9	Tamarindus indica	Chinta	Fruit with seed		15
10	Sapindus emarginatus	Kunkudu	Fruit		20
11	Madhuca indica	Ірра риvvu, Ірра поопе	Corolla, seed		11
13	Thysanolaena maxima	Cheepuru gaddi	Shoots		12
14	Terminalia chebula	Karakkaya	Fruit		03
15	Gardenia latifolia	Karengu gum	Gun-resin		12
16	Honey	Thene	Honey		80
17	Honey bees wax	Minam	Wax		100

Table 3. List of NTFPs available in Adilabad district under	procurement policy with price index
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Source: Omkar (2011).

Table 4. Year-wise procurement of Gum Karaya in Adilabad district

	Year	Quantity (Kg)	Value (₹ Lakhs)
1	2001-02	660.45	49.48
2	2002-03	665.63	43.81
3	2003-04	679.25	49.86
4	2004-05	968.34	74.92
5	2005-06	714.36	55.46
6	2006-07	853.67	65.75
7	2008-09	192.79	14.92
	Average	590.64	50.60

Source: GCC Limited, Utnoor.