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Important plant-based non-timber forest products of west Godavari district, Andhra Pradesh, India

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ABSTRACT

The present study discus the NTFPs diversity and usage pattern of Eluru Forest Division, West Godavari district. Forest coverage area is 7742 Km^2 i.e. 10% of the total geographical area of the District. For data collection four forest ranges Eluru, Jangareddigudem, Kannapuram and Polavaram were covered. Mostly their primary occupation is agriculture, labour, cattle rearing and NTFPs collection is secondary occupation. Data was collected from 500 households in the 25 villages from Eluru, Kannapuram, Jangareddigudem and Polavaram forest Ranges. As per obtained data, 157 different plant species were mostly used as 18 different categories. They are Medicinal 74 (47%), marketable 61 (38.8%), edible 43 (27%), gum/resin/dye 23 (14.6%), vegetable 21 (13%), utensils 20 (12.7%), fodder 19 (12.7%), fibre 10 (6.3%), festivals and ceremonials 08 (5%), tannin 7 (4.4%), fuelwood 7 (4.4%), drinks and beverages 07 (4.4%), oil yielding 05 (3%), poisonous and fish poisonous 03 (1.9%), manure 03 (1.9%), decorative 03 (1.9%), pest control 02 (1.2%), varnish 01 (0.6%). NTFPs make an important contribution to rural livelihoods through the use and sale of products, so many forests poor people depend on NTFPs. NTFP as a development mechanism for poor communities.

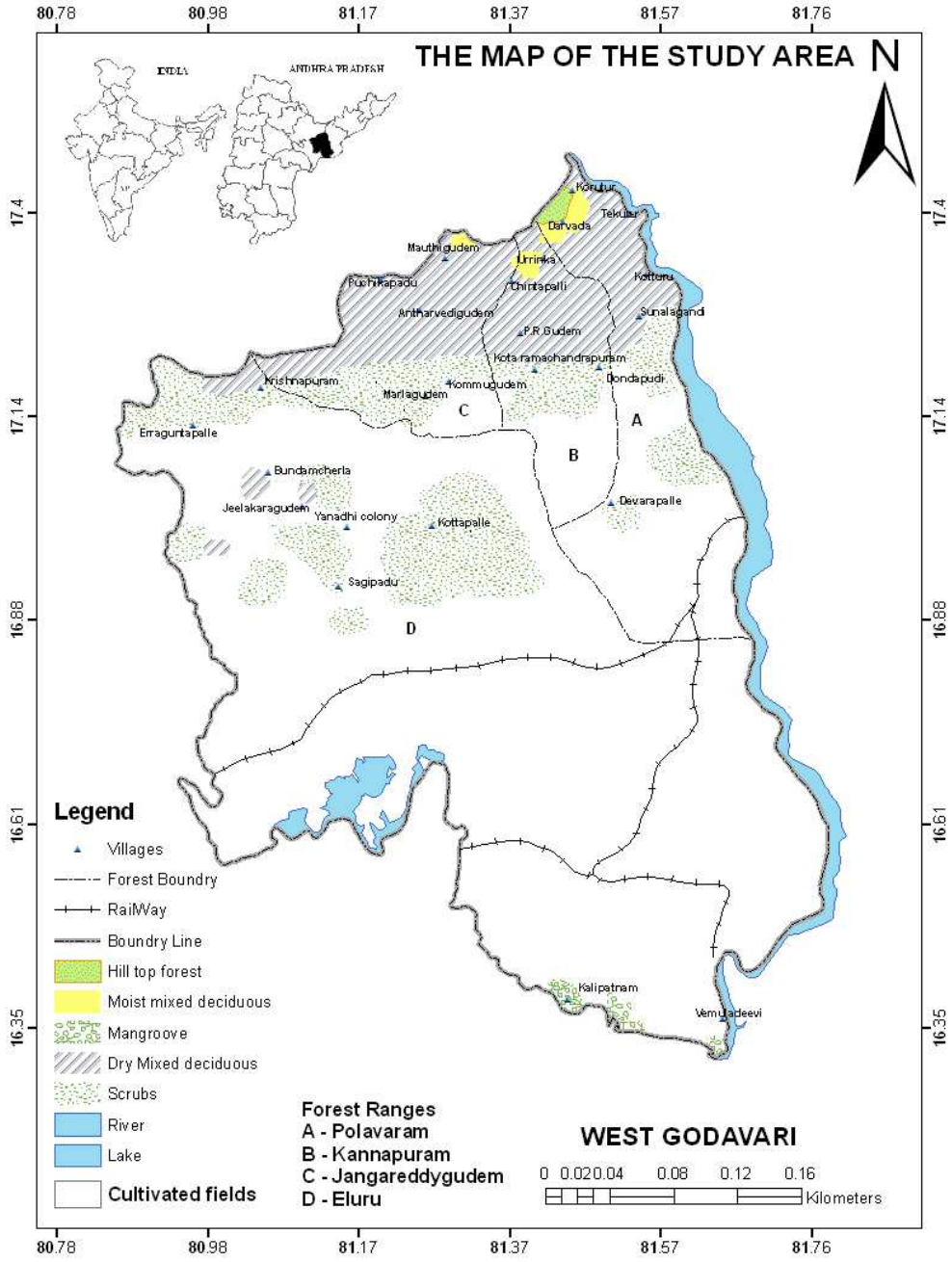
Key words: West Godavari, NTFP diversity, rural livelihood, utilization patterns, marketable.

INTRODUCTION

Human beings right from their origin depend directly or indirectly on plants. Without plants there is no life for humans and animals. Plants have influenced human culture through ages. Forests are multi-functional: as they provide an often complex array of goods and services. The whole world benefits from forests in various successional stages and contribute resources such as food products, medicinal plants, timber, fuel wood, livestock fodder, and provide environmental services such as erosion control, soil fertility replenishment, improved nutrient and hydrological cycles, boundary delineation, watershed stability, biodiversity and carbon sequestration [1,10,12,16,18].

The estimated world forest area is 4.03 billion hectares and more than 800 million people worldwide live in or near tropical forests and savannas, and rely on these ecosystems for fuel, food and income [15]. At global level, more than two billion people are dwelling in forest, depending on NTFPs for subsistence, income and livelihood security [19, 21]. About 80% of the population of developing countries uses non timer forest products (NTFPs) to meet some of their health and nutritional needs [14].

In India alone, it is estimated that over 50 million people are dependent on NTFPs for their subsistence and cash income [4, 19, 22]. In almost all tropical countries, the collection of NTFPs is a major economic activity [2, 4, 20, 23].



Diversity of the forest bio-mass ensures food security and protects the 'safety net' [5-6] of the people, especially the forest dwellers. It is estimated that of the 6.2 bil1ion world population, about 25 percent are dependent on forest resources including plant and animal products [4].

About 4000-6000 commercially important NTFP's are reported worldwide. In India, there are about 15,000 plant species out of which nearly 3000 species (20%) yield NTFPs. However, only about 126 species (0.8%) have been commercially developed [9, 19]. In India 50 millions of forest dwellers, most of them tribals, harvest substantial quantities of NTFPs for their subsistence and low-volume trade [22]. Moreover 200 to 300 million non-tribals are also dependent on NTFP to a lesser degree [4].

Definition

Non-timber forest products (NTFPs) are wild plant and animal products harvested from forests, such as wild fruits, vegetables, nuts, edible roots, honey, palm and medicinal plants, poisons snails and bush meat [17,25].

The type, number and nature of NTFPs vary from one geographical area to another based on the local geo-physical conditions. NTFPs are highly variable in components, quantities and locations [8]. NTFP harvesting is generally a seasonal activity, with only a few species available most of the year.

Study Area:

Eluru Forest Division lies in the North eastern part of Andhra Pradesh, between latitude $16^0$18'05" and $17^0$28'52"N and longitude $80^0$52'04" and $81^0$51'31". The Geographical Area of the Division is 7742 Km^2, which constitutes 100% of the total forest area of the District. The Division has two physiographic zones, the plains and hills. The total notified forest area of the Division is 773.03Km^2, which is 10% of the total geographical area. Reserved and Protected forests constitute 732.11Km^2 (95%), 40.9 Km^2 (5%) of the total forest area respectively. The forest cover in the Division is 693.82, which is 9% of the total Geographical area. In terms of the forest canopy density classes, the Division has 519.62 Km^2 of Moderately Dense Forests, and 174.20 Km^2 Open Forests. The area of the Scrub is 45.53 Km^2, which of Non-Forest is 33.08 Km^2 and Water bodies are 0.59 Km^2.

The normal maximum and minimum temperatures recorded in the District were 48^0C to 19^0C respectively. The district receives rainfall mostly and predominantly from South West as well as North East monsoons, whose normal rainfall is 784 mm and 246 mm respectively. The total population of the Division and District is 39 lakhs (2011 census) and per capita forest is 0.02Ha.

Regarding the hill tribes, Konda Reddis are the dominant tribe, commonly seen in the villages, in the Polavaram, Kanaapuram, and Jangareddigudem Forest Range areas. Besdes Konda Reddis, Koyadoras, Yerukulas, Yenadis, Kondakapus also live in these areas. And OC, BC, SC and other ST tribes also depends on forest products.

MATERIALS AND METHODS

Methodology

The present study was taken up on NTFP analysis in four forest ranges-Polavarm, Kannapuram, Jangareddigudem, and Eluru of Eluru forest division of West Godavari district. The study included all the majority tribal villages with natural forests around where the ethnic and other people subsist on NTFPs. This survey was conducted for two years (2011-2013). The study draws both primary and secondary sources of data. The primary data (Tables 1) were collected interacting through field surveys and with people in person (interviews), questionnaires, household surveys and vegetation studies and secondary data from District forest working plans, reports, etc.

For data collection villages with different types of forests were selected i.e. Dry mixed deciduous forest (09 villages), Moist mixed deciduous forest (03 villages), Thorny scrub forest (09 villages), Tropical dry evergreen scrub forest (01 village), Hill top forest (01 village) and Mangrove forest (02 villages) in the district. Questionnaires were used in 25 villages, eight from Polavaram Forest Range, seven from Eluru Forest Range, five each from Kannapuram and Jangareddigudem Forest Ranges. In each village, depending on the number of households 20-40 households were surveyed (In each village at least the 10% of the total households were covered). In total five hundred households were selected for this purpose. Households were selected based on their forest dependence. Households included scheduled castes, scheduled tribes and other people who live within forest area.

RESULTS AND DISCUSSION

Data was collected from 500 households in the 25 villages from Eluru, Kannapuram, Jangareddigudem and Polavaram forest Ranges (Table 1). The major households of the survey belong to the Tribal communities, chiefly dependent on NTFP collection.

The diversity of available NTFP species and their products in the natural forests were studied in West Godavari district during the years 2011-2013. In the study area, there are 155 species of *Magnoliophyta* (Angiosperms) and 2 fungi species are provide minor forest produce. These species are arranged alphabetically under the respective families and genera with the scientific (botanical) name, followed by local (vernacular) names (Telugu) and use/s (Table 1). The growth forms, trees predominate (76; 48%), followed by shrubs (35; 22%), herbs (25; 14%), climbers (06; 3.8%), twinners (05; 3%), lianas (1: 0.6%) stragglers (1; 0.6%), grass (6; 3.8%) and fungal species (2; 1.2%) (Fig.1). This indicates that the floral elements are primarily woody (trees, phanerophytic) from the forest. The predominance of the *tree species* (48%) in the study area indicates the fact that they all constitute the tropical dry deciduous forest ecosystem and provide *goods* and render other ecosystem *services* to the local people at no costs.

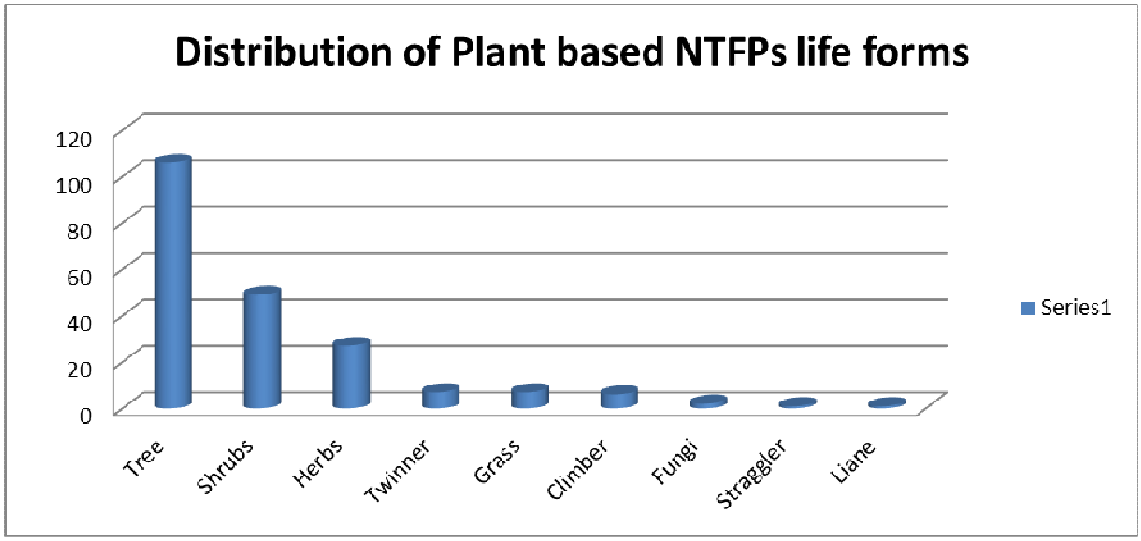


Fig.1 Distribution of Plant based NTFPs life forms in the forest division of Eluru, West Godavari District

All 157 species were categorized into 18 major categories. Edible , vegetable, fodder, medicinal, decorative, utensils, marketable, gum/resin/dye, varnish, tanning, fuel wood, poisonous and fish poisonous, fibre, manure, Oil yielding, Pest control, Drinks and beverages, Festivals and ceremonials.

Medicinal 74 (47%), marketable 61 (38.8%), edible 43 (27%), gum/resin/dye 23 (14.6%), vegetable 21 (13%), utensils 20 (12.7%), fodder 19 (12.7%), fibre 10 (6.3%), festivals and ceremonials 08 (5%), tannin 7 (4.4%), fuelwood 7 (4.4%), drinks and beverages 07 (4.4%), oil yielding 05 (3%), poisonous and fish poisonous 03 (1.9%), manure 03 (1.9%), decorative 03 (1.9%), pest control 02 (1.2%), varnish 01 (0.6%) (Fig.2). NTFPs make an important contribution to rural livelihoods through the use and sale of products, so many forests poor people depend on NTFPs. NTFP as a development mechanism for poor communities.

As mentioned above utilization categories of NTFPs out of 157 species only one species was used for six ways, four species used in five categories, 8 species used in four categories, 29 species used in three categories, 57 species used in two categories and 58 species used in one way.

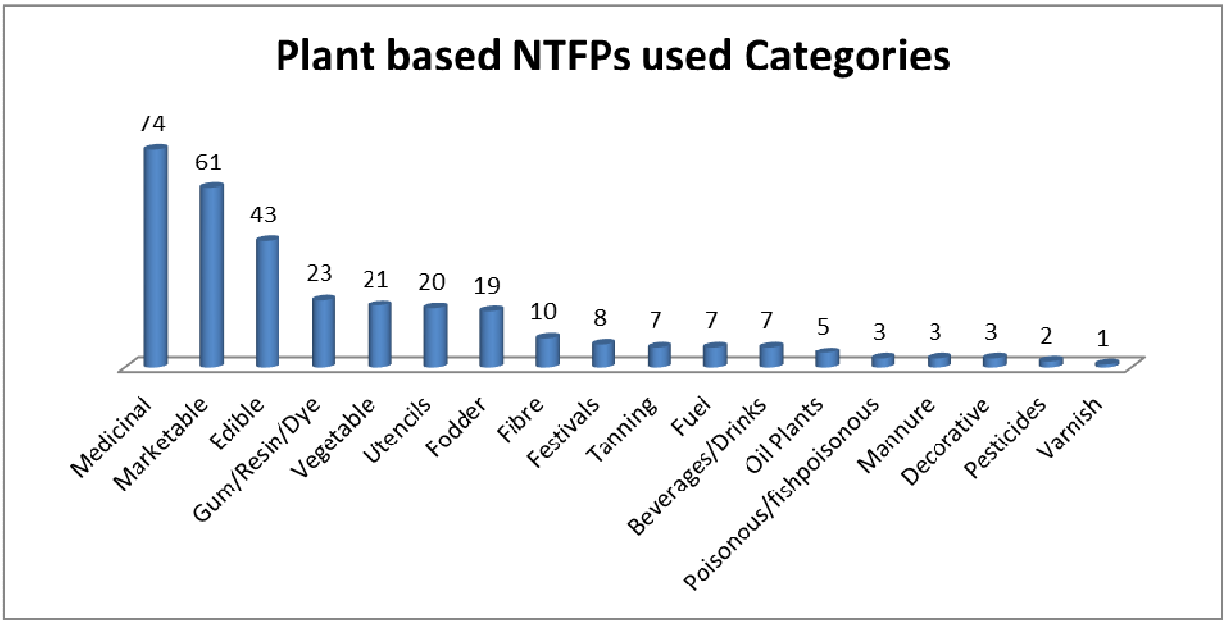


Fig.2 Distribution of Plant based NTFPs Use Categories in the forest division of Eluru, West Godavari

The different Plant parts are used as NTFPs. They are Leaves-58; Fruit-44; Bark-34; Shoot/Twig-26;; Seed-21; Root-19; Flower-10; Tuber-8; Total plant body-9; Rhizome-3; 2 fungal fruiting bodies; Needle-1; Endosperm-1;; and Aril-1(Fig.3).

As mentioned above among 157 species collected five parts are used as NTFPs in one species, four parts are used in one species, three parts are in used fourteen species, two parts are used in forty two species and one part is used in ninety nine species.

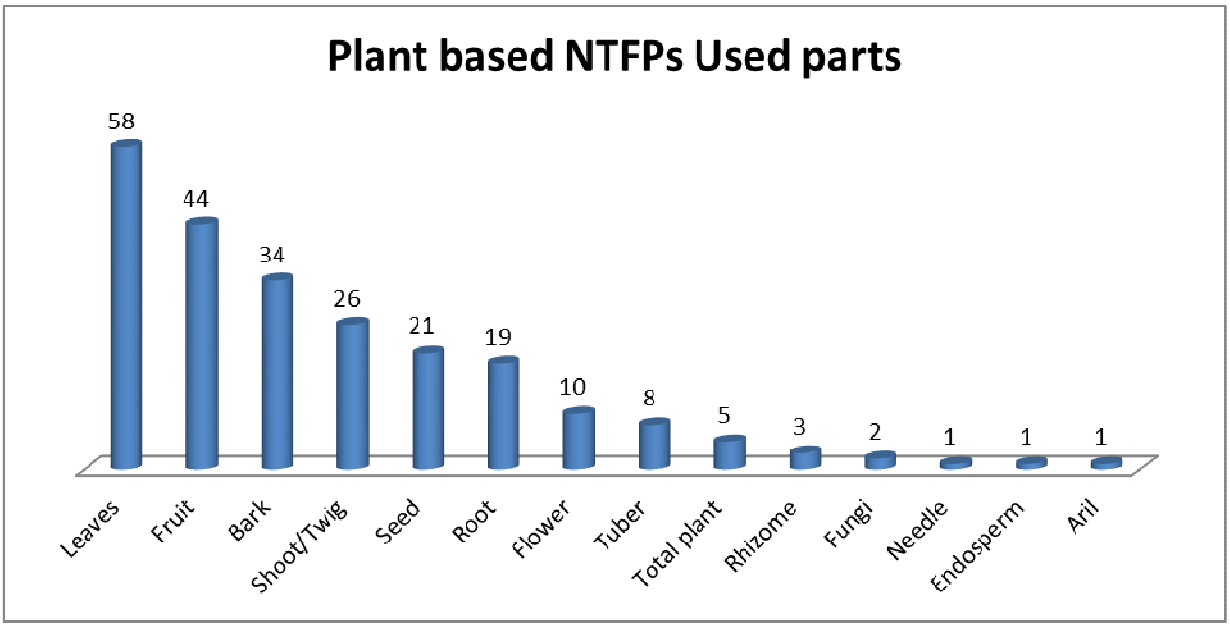


Fig.3 Distribution of Plant based NTFPs Used Parts in the forest division of Eluru, West Godavari

Forest dwellers mainly tribal's and some non tribal's are dependent on NTFPs. Most plant based NTFPs are collected for both family consumption and sale. The collectors are usually poor and live in remote, hilly areas. NTFPs help tribal's as safety nets or as a food and fodder source and enables people to survive during the periods of shortage of agricultural production, and rainy seasons. During rainy season some areas are flooded by water and Polavaram is cut off from other areas in hilly villages. Fuelwood, the basic NTFP was collected from forest areas in all the sampled households, was generally used for cooking.

Cattle fodder was also collected from these forests. Some NTFPs are useful for household purposes and they also provide some income. Gums, resins and dye products used mostly in medicine and marketable. They were sold in local markets or to GCC. Some NTFP species are poisonous to humans and fishes. Fibres obtained are used in thread making and are marketable. Some NTFPs are used in agriculture as manure and some yields oils. Drinks and beverages also are obtained from the NTFPs. Some NTFP species were utilized in their religious functions and ceremonials. In addition, medicinal plants and wild edible fruits were also found playing important role in day-to-day life of the local people.

The scope of boosting incomes through commercialization of NTFPs has been found very high but most of the forest-dwelling people of the district still depend on NTFPs for subsistence use. Several studies conducted on the socio-economic development of rural people in developing countries have highlighted that the extraction of NTFPs from the natural forests has limited potential for improving household economies [7, 11, 24]. It is striking in this context that in all the cases included in the analysis, the traded NTFP contributes only a portion of household income and in the majority of cases, and it is a small proportion [3].

The findings of this study suggest NTFPs make an important contribution to rural livelihoods through the use and sale of products, so many forests poor people depend on NTFPs. NTFP as a development mechanism for poor communities. The collectors most in need of food and income support from NTFPs.

Table1: Plant based NTFP species, Life forms, used parts and their importance

NTFPs Botanical Name	Local Name	Family	Habit	Importance/ Utilization pattern
Abrus precatorius L.	Gurivinda	Fabaceae	Twi.	Roots and leaves increase sperm count; seeds medicinal, poisonous, and anti-pregnant; seeds insecticide.
Abutilon indicum (L.) Sweet.	Thuthurabenda	Malvaceae	S	Shoots used as tooth brush; leaves used as medicine for skin diseases.
Acacia caesia (L.) Willd.	Korintha	Mimosaceae	Cli.	Flowers used for irregular menses by tribal women.
Acacia chundra (Roxb.ex Rottl.) Willd.	Sandra	Mimosaceae	T	Stem bark used for skin diseases; gum used for wounds.
Acacia leucophloea (Roxb.) Willd.	Tella thumma	Mimosaceae	T	Tree yields gum; bark yields fibre; bark used in country liquor preparation.
Acacia nilotica (L.) Willd. Ex Del.	Nalla thumma	Mimosaceae	T	Bark yields gum; leaves edible, fodder; needles used for pinning of ear and nose making incision; firewood.
Acacia sinuata (Lour.) Merr.	Shikakai	Mimosaceae	T	Tender leaves used as vegetable; pods used for hair growth and bath; marketable.
Achyranthus aspera L.	Uttareni	Amaranthaceae	H	Root used as brush; leaves used for medicine; seeds used for Obesity and sold in market.
Acorus colamus	Vasa	Araceae	H	Rhizome used as medicine; to clear hoarseness of voice, marketable.
Adansonia digitata L.	Enugu thondam	Bombacaceae	T	Fruits edible.
Adhatoda zeylanica Midic.	Adda saramu	Acanthaceae	S	Leaves medicinal; marketable.
Adiantum lunulatum	Gatumandu	Adiantaceae	H	Rhizome used for scorpion sting.
Aegle marmelos (L.) Cor.	Maredu	Rutaceae	T	Bark and leaves medicinal; leaves & fruits used in religious ceremonies; fruit pulp edible; marketable.
Aerva lanata (L.) Juss.	Pindi kura	Amaranthaceae	H	Leaves used as curry, medicine.
Agaricus sps.	Puttakokkulu	Agaricaceae	F	Vegetable, marketable.
Ailanthus excelsa Roxb.	Peda manu	Simaroubaceae	T	Fodder tree; bark yields gum.
Alangium salvifolium (L.f.) Wang.	Oodugu	Alangiaceae (Cornaceae)	T	Fruits are edible.
Albizia amara (Roxb.) Boiv.	Nalla regu	Mimosaceae	T	Leaves used for hair wash; fodder tree.
Albizia lebbeck (L.) Benth.	Dirisena	Mimosaceae	T	Bark yields gum; fodder tree.
Albizia odoratissima(L.f.) Benth.	Chinduga	Mimosaceae	T	Bark yields gum; fodder tree.
Alternanthera sessilis (L.) R.Br. Ex DC.	Ponnaganti kura	Amaranthaceae	H	Leaves used in curry, medicine.
Amorphophallus paeoniifolius (Dannst.)	Adavi kanda	Araceae	H	Tubers edible.
Anacardium occidentale L.	Jeedi mamidi	Anacardiaceae	T	Fruits edible, used for alcoholic drink; seed kernel edible, income generation; Shell oil used in varnishes.
Andrographis paniculata (Burm.f.) Nees	Nela vemu	Acanthaceae	H	Leaves used for diabetes, marketable.

Annona squamosa L.	Seethaphalam	Annonaceae	T	Fruits edible, income generation.
Anogeissus latifolia(Roxb.exDc.)Wall.ex bedd.	Chiru manu	Combretaceae	T	Fodder, bark gum used in calico printing and income generation.
Argemone mexicana L.	Balu rakkisa	Papavaraceae	H	Latex as medicine.
Aristida funiculata Trin. & Rupr.	Cheepuru gaddi	Poaceae	G	Grass used for broom; marketable.
Aristolochia bracteolata Lam.	Gadida gadapa	Aristolochiaceae	Twi.	Leaves medicinal.
Aristolochia indica L.	Nallaeswari	Aristolochiaceae	Twi.	Root medicine for snakebite.
Artocarpus heterophyllum Lam.	Panasa	Moraceae	T	Fruits edible, curry, liquor preparation, marketable; seeds edible.
Asparagus racemosus Willd.	Pilli tegalu	Asparagaceae	Str.	Root tubers edible, medicine and marketable. Cladodes used for eczema, roots used for body pains, vegetable.
Atalantia monophylla (L.) Corri.	Adavi nimma	Rutaceae	S	Seed oil used as medicine.
Avicennia marina (Forsk.) Vierh.	Tella mada	Avicenniaceae	T	Branches used for fodder, fuel.
Avicennia officinalis L.	Nalla mada	Avicenniaceae	T	Branches used for fodder, fuel.
Azadirachta indica Juss.	Vepa	Meliaceae	T	Twigs used in Hindu festivals, tooth brush; bark medicinal, leaves & fruit paste used for skin diseases, soap making; medicinal; seeds marketable; pest control, manure.
Bambusa arundinacea (Retz.) Roxb.	Mulla veduru	Poaceae	G	Stems used for baskets, fencing.
Barleria prionitis L.	Mulla gorinta	Acanthaceae	S	Flowers used for decorations of ladies; leaves medicine for children eye problems, dried stem in cough.
Barringtonia acutangula (L.) Gaertn.	Tarepu	Barringtoniaceae	T	Bark yields tannin; bark used as fish poison.
Bauhinia racemosa Lam.	Are	Caesalpiniaceae	T	Bark yields fibre.
Bauhinia vahlii Wightr & Arn.	Addaku	Caesalpiniaceae	Lia.	Leaves used for plate making, income generation; nuts edible; bark yields fibre.
Boerhavia diffusa L.	Punarnava	Nyctaginaceae	H	Leaves medicinal.
Bombax ceiba L.	Erra buruga	Bombacaceae	T	Gum used as medicine.
Borassus flabellifer L.	Thadi chettu	Arecaceae	T	Leaves thatching material, baskets, threads and marketable; leaf axis yields fibre, marketable; young fruits edible and marketable; fruits edible, used in sweets preparation; endosperm edible; cotyledon edible and marketable.
Boswellia serrata Roxb.	Andugu	Burseraceae	T	Gum-resin medicinal.
Bruguiera gymnorrhiza (L.)	Kandiga	Rhizophoraceae	T	Plant for fuel.
Buchanaria lanzan Spreng.	Chinna morli	Anacardiaceae	T	Bark in tanning; seed kernel edible.
Butea monosperma (Lam.) Taub.	Moduga	Fabaceae	T	Tree used for Lac culture, leaves used for meal plates; bark and flowers used in kidney problems, yellow dye from flowers; seeds pest control; bark yields gum.
Butea superba Roxb.	Teega moduga	Fabaceae	Cli.	Flowers yield dye; roots powder used for sex stimulant.
Caesalpinia bonduc (L.) Roxb.	Gatchakaya	Caesalpiniaceae	S	Seeds medicinal used to play games; leaves medicinal.
Calotropis gigentea (L.) R.Br.	Jilledu	Asclepiadaceae	S	Leaves used for eye treatment; root bark used for dysentery, elephantiasis.
Capparis zeylonica L.	Aari donda	Capparidaceae	S	Bark medicinal.
Carissa carandas L.	Pedda vaka	Apocynaceae	S	Fruits edible, vegetable and marketable.
Caryota urens L.	Jeeluga	Arecaceae	T	Inflorescence sap used as drink and income generation.
Cassia auriculata L.	Tangedu	Caesalpiniaceae	S	Bark used for tanning; leaves manure.
Cassia fistula L.	Rela	Caesalpiniaceae	T	Bark used for tanning; leaves medicinal; fruit pulp medicinal.
Cassia occidentalis L.	Kasintha	Caesalpiniaceae	H	Leaves medicinal, plant used as manure.
Ceiba pentandra (L.) Gaertn.	Buruga	Bombacaceae	T	Fruit fibre used in pillows and beds.
Celosia argentea L.	Gunugu	Amaranthaceae	H	Leafy vegetable, sold in market; seeds used as medicine.
Centella asiatica (L.) Urban	Bokkudu,saraswathi	Apiaceae	H	Leaves used for memory increase, Ayureveda and income generation.
Cissus quadrangularis L.	Nalleru	Vitaceae	Cli.	Stem and leaves used as vegetable, medicinal.
Cleome gynandra L.	Vaminta	Capparidaceae	H	Seeds used for food additives; marketable.
Cocculus hirsutus (L.) Diels	Dusara teega	Menispermaceae	S	Root & leaves used for medicine; basket making.
Cochlospermum religiosum (L.) Alston	Kondagogu	Cochlospermaceae	T	Bark yields gum, marketable.
Colocasia esculenta (L.) Schott & Endl.	Chedha dumpa	Araceae	H	Tubers edible.
Cordia dichotoma Forst.f.	Banka nakkiri	Boraginaceae	T	Fruits edible; leaves used as fodder; Fruits medicinal.
Curculigo orchiodes Gaertn.	Nela thadi	Hypoxidaceae	H	Roots used for sex potential, marketable; good food for wild pigs.
Curcuma pseudomontana Graham.	Adavi pasupu	Zingiberaceae	H	Rhizome used as medicine.
Dalbergia latifolia Roxb.	Jitregi	Fabaceae	T	Fodder tree.
Dendrocalamus strictus (Roxb.) Nees	Veduru	Poaceae	G	Stems used for baskets, fencing, leaders; young shoots are edible; rice edible.
Dioscorea bulbefera L.	Chenna gadda, Adavi dumpa	Dioscoriaceae	S	Tubers edible.
Dioscorea oppositifolia L.	Tella gadda	Dioscoriaceae	S	Tubers edible.
Dioscorea pentaphylla L.	Govinda gadda, Dukka pendalam	Dioscoriaceae	S	Tubers edible.
Dioscorea tomentosa Koenig ex Spr.	Teega dumpa	Dioscoriaceae	S	Tubers edible.

Diospyros chloroxylon Roxb.	Ellinda	Ebenaceae	T	Firewood.
Diospyros melanoxylon Roxb.	Tumiki	Ebenaceae	T	Leaves used in making beedis, marketable; fruits edible.
Echinochloa colana (L.) Link, Hort.	Soma gaddi	Poaceae	G	Grass used for fodder.
Eclipta prostrata (L.) L. Mant.	Guntakalagara	Asteraceae	H	Leaves used as medicine.
Ehretia microphylla Lam.	Puchika chettu	Boraginaceae	S	Fruits edible; leaves used for mouth colour.
Euphorbia hirta L.	Paccha botlu	Euphorbiaceae	H	Leaves medicinal.
Ficus benghalensis L.	Marri	Moraceae	T	Fruits medicinal, twigs fodder, latex medicinal.
Ficus religiosa L.	Raavi	Moraceae	T	Bark, leaves, fruits are medicinal.
Gardenia latifolia Aiton	Tharipi chettu	Rubiaceae	T	Fruits edible; shoot tips exude yellow gum resin; medicinal.
Gardenia gummifera L.f.	Bikki	Rubiaceae	T	Young fruits edible; shoot tips exude yellow gum resin; medicinal.
Gloriosa superba L.	Nabhi	Liliaceae	Twi.	Twigs used in Hindu festivals; seeds medicinal, marketable.
Glycosmis mauritiana (Lam.)	Golugu	Rutaceae	S	Root used for snakebite; fruits edible; stems for fencing.
Gmelina asiatica L.	Chiru gummadi	Verbenaceae	S	Medicinal.
Grewia abutifolia Vent.ex Juss.	Pedda tada	Tiliaceae	S	Bark yields fibre.
Gymnema sylvestre (Retz.) R.Br.	Podapatri	Asclepiadaceae	Cli.	Leaves used as medicine for diabetes, marketable.
Gyrocarpus americanus Jacq.	Kummara poliki	Hernandiaceae	T	Seeds yields oil; children play with seeds.
Hardwickia binata Roxb.	Yepi	Caesalpiniaceae	T	Bark yields gum.
Helicteres isora L.	Chemali nara	Sterculiaceae	S	Fodder tree; bark yields fibre.
Hemidesmus indicus (L.) R.Br.	Sugandha pala	Periplocaceae	Cli.	Roots used for tonics, drinks, medicine and marketable.
Hemidesmus indicus var.pubescens (Wight & Arn.) Hook.f.	Barri sugandha pala	Periplocaceae	Cli.	Roots used for fever, skin diseases.
Ichnocarpus frutescens	Nallateega	Apocynaceae	S	Roots used for blood purification; twigs are used fishing instruments; marketable.
Ixora pavetta Andrews	Puttapala/ Korivi chettu	Rubiaceae	T	Fodder tree.
Jasminium multiflorum (Burm.f.)	Adavi malli	Oleaceae	Twi.	Roots used as medicine for Cobra-venom.
Jatropha curcas L.	Adavi nepalamu	Euphorbiaceae	S	Seeds yield oil, used as bio-diesel.
Lannea coromandelica (Houtt.) Merr.	Dumpena, Oddi	Anacardiaceae	T	Bark yields gum; leaves as fodder.
Leptadenia reticulata (Ratz.) Wt. & Arn.	Pala teega	Asclepiadaceae	Cli	Plant extract used as a tonic and stimulant.
Limonia elephantum (Correa) Panigrahi	Velaga	Rutaceae	T	Leaves & fruits used in festivals; fruit pulp edible; bark yields gum; marketable.
Listea glutinosa(Lour.) C.B. Robinson	Narra mamidi	Lauraceae	T	Bark used in Agarbathi making, marketable; medicinal.
Lumnitzera racemosa Willd.	Thanduga	Combretaceae	T	Stem used as fuel.
Madhuca india J.Gmel.	Ippa	Sapotaceae	T	Fleshy corolla edible; flower used for 'Ippasara'; used in sweets; marketable.
Mallotus philippensis(Lam.) Muell.-Arg.	Kunkuma, Hanumanthu bottu	Euphorbiaceae	T	Fruit glands yields orange colour dye 'kamala' used for silk, kunkuma; fodder tree.
Marcaranga pellata (Roxb.) Muel.-Arg.	Ala manda	Euphorbiaceae	T	Bark yields gum.
Memecylon edule Roxb.	Alli	Melastomataceae	T	Fruits edible, marketable.
Morinda tometosa Heyne ex Roth.	Thogaru	Rubiaceae	T	Root bark yields yellow dye.
Murraya koenigii (L.) Spreng.	Karivepa	Rutaceae	S	Leaves used as flavoring agent in dishes and chutney; fruits medicinal; leaves and fruits marketable.
Nelumbo nucifera Gaertn. Fruct.	Thamara	Nelumbonaceae	H	Leaves used for covering of meat and flowers; flowers used in festivals; marketable.
Nymphea nouchali Burm.f. In Fl.	Kaluva	Nymphaeaceae	H	Leaves used for covering of meat; flowers used in festivals; marketable.
Oroxylum indicum (L.) Vent.	Pampini	Bignoniaceae	T	Bark & fruits used for tanning, dyeing, medicine.
Pandanus tectorius Soland.ex Parkinson, Journ.	Mogali	Pandanaceae	S	Flowers used in festivals; marketable. Decoration purpose for ladies; perfumery.
Phoenix loureirii Kunth, Enum.	Chitti etha	Arecaceae	S	Fruits edible
Phoenix sylvestris Roxb.	Eetha	Arecaceae	T	Fruits edible and marketable; inflorescence sap for cheap liquor, marketable; leaflets used for mats making, marketable; leaf axis also used in basket making and marketable.
Phyllanthus emblica L.	Usiri	Euphorbiaceae	T	Fruits edible, pickled, medicinal (Thriphala churna) and marketable.
Physalis minima L.	Budama	Solanaceae	H	Fruits edible.
Piothecellobium dulce (Roxb.)	Sima chinta	Mimosaceae	T	Aril edible, fruits are marketable.
Pleurotus sps.	Mamidi kokkulu	Pleurotaceae	F	Vegetable. .
Plumbago zeylanica L.	Chitra mulamu	Plumbaginaceae	S	Roots used as medicine; marketable.
Pongamia pinnata (L.) Pierre	Kanuga	Fabaceae	T	Shoots used as tooth brush; seed oil yields bio-diesel, marketable.
Premna latifolia Roxb.	Nelli	Verbenaceae	T	Leaves used as vegetable; medicinal.
Prosopis cinerea(L.) Druce	Jammi	Mimosaceae	T	Bark yields gum; fodder tree; shoots used in ceremonials.
Psydrax dicoccos Gaertn.	Baluchu	Rubiaceae	S	Fodder tree; leaves used as vegetable. Fruits edible.
Pterocarpus marsupium Roxb.	Peddegi	Fabaceae	T	Gum Kino used as medicine.
Randia dumetorum (Retz.)	Manga chettu	Rubiaceae	S	Bark used as fish poison.
Rauvolfia serpentina(L.) Benth. Ex Kurz	Sarpagandhi	Apocynaceae	S	Roots used for blood pressure, snakebite and marketable.

Rhinacanthus nasutus (L.) Kurzin Lorun.	Nagamalli	Acanthaceae	S	Roots, seeds and leaves used for ringworm and skin diseases.
Rhizophora aiculata Bl., Enum.	Uppu ponna	Rhizophoraceae	T	Root bark used for fodder; tanning.
Sapindus emargintus Vahl	Kunkudu	Sapindaceae	T	Fruits used for hair washing agent; marketable.
Semicarpus anacardium L.	Nalla Jeedi	Anacardiaceae	T	Pseudo carp edible; fruit juice as a marking ink, medicinal; nuts income generation.
Sida acuta Burm.f.Fl.	Nela benda	Malvaceae	H	Bark yields fibre.
Solanum surattense Burm.f.Fl.	Erri vanga	Solanaceae	H	Fruit paste mixed with sesame oil used for paralysis.
Solanum torvum Sw.	Vusti	Solanaceae	S	Fruits used as vegetable.
Sonneratia apetala Buch.-Ham.	Kalinga	Sonneratiaceae	T	Plant used for fuel.
Spondias pinnata (L.f.) Kurz.	Adavi mamidi	Anacardiaceae	T	Fruit edible, vegetable and pickled.
Sterculia urens Roxb.	Tapasi	Sterculiaceae	T	Bark yields gum, fibre; leaves fodder; seeds edible; marketable.
Streblus asper Lour.	Barrenka	Moraceae	T	Twigs used for tooth brushes; leaves wood polishing, fruit juice medicinal; latex as mumps.
Strychnos nux-vomica L.	Visha mushti	Loganiaceae	T	Seeds medicinal, marketable; fodder tree.
Strychnos potatorum L.	Chilla	Loganiaceae	T	Fruit pulp edible; seeds for water purification, marketable.
Syzygium cumini (L.) Skeels	Neredu	Myrtaceae	T	Fruits edible; marketable; seeds medicinal.
Tamarindus indica L.	Chinta	Caesalpiniaceae	T	Young leaves used in curries, chutney, marketable and fodder; young fruits in curries, chutney and marketable; ripen fruits used in curries, chutney, marketable; , seeds used for glue, joint pains, marketable.
Terminalia alata Heyne ex Roth	Nalla maddi	Combretaceae	T	Bark used for tanning.
Terminalia bellirica (Gaertn.) Roxb.	Tanikaya	Combretaceae	T	Fruits used for medicine, Ayurvedic drugs (Thriphala churna), and marketable.
Terminalia chebula Retz.	Karakkaya	Combretaceae	T	Fruits used for cough,Ayurvedic drugs (Thriphala churna), and marketable.
Thypha angustata Bory et Chaub.	Jammu gaddi	Typhaceae	G	Grass used for thatching; marketable.
Thysanolaena maxima (Roxb.) O. Ktze.	Konda cheepuru	Poaceae	G	Panicles are used for brooms; marketable.
Tinospora cordifolia (Wild.) Miers ex Hook.f. & Thoms.	Tippa teega	Menispermaceae	S	Leaves medicinal.
Tridax procumbens L.	Gaddi chamanti	Asteraceae	H	Leaves used as medicine.
Trimufetta rhombiodea Jacq.	Chiru sitrika	Tiliaceae	S	Medicinal, fibre yielding plant.
Urginea indica (Roxb.) Kunth, Enum.	Adavi ulli	Liliaceae	H	Tubers edible, medicinal.
Vitex altissima L.	Nemali adugu	Verbenaceae	T	Roots used for snakebite.
Vitex negundo L.	Vaili	Verbenaceae	S	Leaves, roots and fruits are medicinal.
Writhania tinctoria R.Br.	Ankudu	Apocynaceae	T	Roots medicinal.
Xylia xylocarpa(Roxb.) Taub.	Konda tangedu	Mimosaceae	T	Seeds edible.
Ziziphus mauritiana Lam.	Regu	Rhamnaceae	T	Leaves medicinal; fruits edible, papads making and marketable.
Ziziphus oenoplia (L.) Mill.	Pariki	Rhamnaceae	S	Fruits edible.

Cli.-Climber,F-Fungi, G-Grass, H-Herb, Lia.-Liane, S-Shrub, Str.-Stragler, T-Tree, Twi.-Twinner.

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