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NON WOOD FOREST PRODUCE AN OPTION FOR ETHNIC FOOD AND NUTRITIONAL SECURITY IN INDIA

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ABSTRACT

Forests are the repository of diverse produce for all needs of mankind. Since ancient time forest products are used for diverse purposes by prehistoric and present aboriginals. The food and medicine are the two main forests produce which still in use by two thirds of population of the world for their primary heath and food security. In India too, fifty percent of tribal and rural mass dependent on forest produce for food and health besides fulfilling other needs. The ethno botanical studies shows that primitive tribes and rural folks explored the uses of almost all the area of plants from wild to cultivated field and depending upon the need, taste, availability and region they are in use by society. Previously these produce was used as a famine food but now they equally relish by urban masses in name of ethnic food in most of urban centers. There is upsurge in use of these products in ethnic cuisine with blend of ecotourism projects. So far these forest produce extracted from forest ruthlessly unscientifically and leading to erosion of genetic resources as well their extinction. The awareness about their use, domestication and rational sustainable harvesting from forest is the need of the present scenario for meeting demand of ethnic food in urban areas and nutritional security in rural areas.

Keywords: NWFP, ethnic food, nutritional security, India, forests, home garden, forest farming

INTRODUCTION

Forests are the repository of diverse produce for all needs of mankind. Since ancient time forest products are used for diverse purposes by prehistoric and present aboriginals. The food and medicine are the two main forests produce which still in use by two thirds of population of the world for their primary heath and food security. In India too, fifty percent of tribal and rural mass dependent on forest produce for food and health besides fulfilling other needs. Forest plays a vital role in providing the food and maintaining the environment worth living for man. Prehistoric nomads used to satisfy their food requirement from forest as organized agriculture was not developed that time. Many of the present day food plants like cereals, fruits, vegetables, etc. were result of man's selection process of the wild plants during the past centuries. Even today many primitive tribes use variety of wild plants in their diets. Forest provides food and fodder to millions of households in the developing world to supplement their own and their livestock's diets. Although forest foods do not usually provide a complete diet, they do make a critical contribution to the food supply. Forest foods increase the nutritional quality of rural diets; supplement other sources of food particularly agricultural crops that are only seasonally available;

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and are used as emergency food supplies during drought, famine and war. Forest foods are nutritionally important and are traditionally used as supplements to the staple grain-dominated diets. Forest foods are often collected and stored for later use. Forest foods can thus raise rural peoples' nutritional intake by providing a year-round supply of food. The most important and well documented use of forest foods is in meeting seasonal shortfalls at the beginning of the rainy season before crops are ready for harvest. During this period, the practices of digging for roots and tubers and gathering fruit and nuts are almost universal. In India, Malaysia and Thailand, about 150 plant species, representing nearly one-fifth of the wild species consumed as food in these countries, have been identified as sources of emergency food crops, among them bark, kernels and tubers (Jain, 1991).

One of the most common causes of dietary deficiencies is the decreasing diversity of diets. Wild leaves, either fresh or dried, are one of the most widely consumed forest foods. As the base for soups, stews and relishes they add flavour to otherwise bland staples such as rice or maize, making them more palatable and thus encouraging consumption. Leaves from wild and cultivated trees are often boiled fresh in stews. They can also be dried and powdered, or fermented, to preserve them; they can later be made into a paste which is used in stews and soups as a meat substitute. The carotene, vitamin C, calcium and iron content of leaves vary greatly. Roots and tubers provide carbohydrates an (some minerals, and are often important ingredients in traditional medicines. They used as drought and famine foods, not only because they survive low rainfall periods, because they can be an important source of water. However, they require time to find a dig up, and often involve extensive process such as soaking and prolonged cooking.

Mushrooms, eaten as meat substitutes and in flavouring, are good sources of protein and minerals. Many forest foods are higher in vitamins and other important nutrients than domesticated varieties. While the vitamin C content of an orange is famously high at 57 mg/100 g, the fruit of the baobab tree has 360 mg/100 g and *Ziziphus jujube* var. *spinosa* 1000 mg/100 g. Similarly, on a weight-for-weight basis, wild leaf vegetables contain more riboflavin-another vitamin necessary for good health -than eggs, milk, nuts and fish. Sap, high in sugars and minerals, is tapped beverages. Gum, used as a food supplement, good source of energy; and both saps and gum have many medicinal uses. Palm wines from fermented sap are an important cultural beverage in many areas. Honey is highly valued almost everywhere for its high energy content as 100 g of honey contain more than 280 calories. Tree blossoms provide a year round food supply for bees and, in turn, the fertilizing action of bees during their hunt for nectar can increase the yields of oilseed, pulses and fruit trees. Many will be surprised at the complex ways in which fruit, nuts, fungi, leaves and other tree products contribute to nutrition. In many societies, foods from forests and cultivated trees are an important, sometimes essential, part of the diet. This is particularly true at certain times of the year when food is scarce, or when the workloads of those whose role it is to feed the family-

usually women-are heavier than usual. In some societies, foods from trees provide substantial amounts of protein and carbohydrates; in others they provide essential vitamins and minerals. The importance of snack foods such as fruits, tubers, animals and insects particularly for children, is increasingly acknowledged. Fruit, plucked from the tree and eaten raw, is the most common snack food.

Table 1: List of NWFP use in ethnic food in India

Leaves and Young Shoots			
1.	*Abelmoschus manihot* (Jangali bhindi)	2.	*Abrus precatorius* (Rati/ Indian liquorice)
3.	*Acacia concinna* (Shikakai)	*4.*	*Alternanthera sessilis* (Giojhira)
5.	*Alocasia macrorrhiza*	*6.*	*Amaranthus caudatus* (Ramdana/ Tassel flower)
7.	*Amaranthus spinosus* (kantili chaulai/ Spiny amaranth)	*8.*	*Amaranthus tricolor* (Lal sag/ chualai sag)
9.	*Amaranthus viridis* (Tanduliya/ Wild amaranth)	*10.*	*Antidesma acidum*
11.	*Antidesma bunius*	*12.*	*Antidesma ghaesembilla* (Umtoa/ Black currant)
13.	*Ardisia polycephala*	*14.*	*Ardisia solanacea*
15.	*Areca triandra* (Jangali supari)	*16.*	*Arundinaria elegans*
17.	*Arundinaria wightiana*	*18.*	*Asparagus* spp
19.	*Atriplex hortensis* (Pahari palak/ Orache)	*20.*	*Atylosia scarabaeoides* (Jangali tur/ kulthi)
21.	*Bacopa monnieri* (Nir brahmi)	*22.*	*Baliospermum micranthum*
23.	*Bambusa balcooa, B. bambus* (Kanta bans/ Spiny bamboo)	*24.*	*Bambusa polymorpha* (Betwa)
25.	*Bambusa tulda, Barringtonia acutangula* (Hijjal/ Indian Oak)	*26.*	*Barringtonia racemosa*
27.	*Basella alba* (Poikivel/ Indian spinach)	*28.*	*Bauhinia malabarica* (Amli)
29.	*Bauhinia purpurea* (Butterfly/ orchid tree)	*30.*	*Begonia malabarica*
31.	*Begonia picta*	*32.*	*Bentinckia coddapanna* (Hill arecanut)
33.	*Bidens bipinnata* (Spanish needles)	*34.*	*Blepharis persica* (Shikhi)
35.	*Blumea balsamifera* (kakrondra)	*36.*	*Blumea lacera* (Jungali muli)

37.	*Blumea riparia*	*38*	*Borreria articularis* (Ghatyiaghass/ shaggy button weed)
39.	*Cadaba farinosa* (kodhab)	*40.*	*Calamus flagellum* (Nagbet)
41.	*Canthium parviflorum*	*42.*	*Capparis spinosa*
43.	*Carallia brachiata*	*44.*	*Caralluma fimbriata* (Makadsinghi)
45.	*Casearia esculenta*	*46.*	*Casearia glomerata*
47.	*Cassia tora* (Chakunda)	*48.*	*Cayratia auriculata* (Amar lata)
49.	*Cayratia auriculata* (Fox grape)	*50.*	*Celosia argentea* (Sawari/ quail grass)
51.	*Centaurea iberica*	*52.*	*Centella asiatica*
53.	*Cicer microphyllum*	*54.*	*Cissus adnata* (kolezan)
55.	*Cissus quadrangularis* (Hadjora/ Edible stemmed vine)	*56.*	*Cissus repens*
57.	*Clausena excavata*	*58.*	*Cleome gynandra* (Gandhuli)
59.	*Cleome viscosa* (Huhul)	*60.*	*Clerodendrum colebrookianam* (Nankar)
61.	*Clerodendrum indicum*	*62.*	*Clerodendrum serratum* (Barangi)
63.	*Cocculus hirsutus* (Jamtikibel)	*64.*	*Codonopsis parviflora*
65.	*Colocasia esculenta* (Arvi/ cocoyam)	*66.*	*Commelina benghalensis* (Kandhara)
67.	*Corchorus olitorius* (Sanpat/ Jews' mallow)	*68.*	*Cousinia minuta*
69.	*Crateva nurvala* (Barna)	*70.*	*Cryptocoryne spirilis*
71.	*Cycas pectinata*	*72.*	*Dendrocalamus giganteus* (Giant bamboo)
73.	*Dendrocalamus hamiltonii* (Kagzi bans)	*74.*	*Dendrocalamus membranaceous*
75.	*Dendrocalamus strictus* (Lathi bans/ male bamboo)	*76.*	*Dendrocnide sinuata* (Utigun/ devil or fever nettle)
77.	*Digera muricata*	*78.*	*Digera pentaphylla* (Bhusa or gezariya/ kanta alu)
79.	*Diplazium asperum* (Lingura)	*80.*	*Diplazium esculentum*
81.	*Dipsacus inermis*	*82.*	*Elatostema platyphyllum*
83.	*Embelia subcoriacea*	*84.*	*Embelia undulata*
85.	*Enhydra fluctuans* (Jal brahmi)	*86.*	*Erythroxylum monogynum*

			(Bsandal/ red cedar)
87.	*Euphorbia caducifolia* (Thor)	*88.*	*Euphorbia elegans*
89.	*Euphorbia hirta*	*90.*	*Euphorbia prostrata*
91.	*Eryngium foetidum*	*92.*	*Fagopyrum cymosum*
93.	*Ficus geniculata*	*94.*	*Ficus hirta*
95.	*Ficus hispida* (Daduri)	*96.*	*Ficus virens*
97.	*Gardenia diversifolia*	*98.*	*Gnetum gnemone*
99.	*Heritiera littoralis* (Sundari)	*100.*	*Hibiscus cannabinus* (Patsan/ ambar hemp/ deccan hemp/mesta)
101.	*Hibiscus surattensis*	*102.*	*Houttuynia cordata*
103.	*Hypodematium crenatum*	*104.*	*Hyptis suaveolens* (Bilayati tulsi)
105.	*Impatiens balsamina* (Gulmehndi/ garden balsameriocarpa)	*106.*	*Ipomoea aquatica* (Karmi/ swamp cabbage)
107.	*Ipomoea carnea*	*108.*	*Ipomoea maxima* (Bankalmai)
109.	*Lactuca serriola* (Prickly lettuice)	*110.*	*Lasia spinosa*
111.	*Leea asiatica* (Kumoli)	*112.*	*Leea indica* (kukurjiwa)
113.	*Leea macrophylla* (Dholsamudra)	*114.*	*Lepidium latifolium*
115.	*Lepyrodictis holosteoides*	*116.*	*Leucas aspera*
117.	*Lippia javanica* (Basula/ wild sage)	*118.*	*Livistona jenkinsiana* (Assam fan) palm/ tokopat
119.	*Maclura cohinchinensis*	*120.*	*Malva rotundifolia* (Khubasi)
121.	*Malva sylvestris* (Gulkhair)	*122.*	*Malva verticillata*
123.	*Medicago lupulina* (Ban methi/ Black medick)	*124.*	*Medinalla erythrophylla*
125.	*Megacarpaea polyandra* (Rooki)	*126.*	*Melastoma malabathricum*
127.	*Memecylon caeruleum*	*128.*	*Meyna laxiflora*
129.	*Monochoria hastata*	*130.*	*Morinda citrifolia*
131.	*Mussaenda roxburghi*	*132.*	*Natsiatum herpeticum*
133.	*Nyctanthes arbortristis* (Harsinghar)	*134.*	*Nypa fruticans* (Nipa palm)
135.	*Oenanthe javanica*	*136.*	*Olax acuminata*
137.	*Ophioglossum reticulatum*	*138.*	*Ophioglossum vulgatum*
139.	*Oxalis corniculata* (Tripati/ Indian sorrel)	*140.*	*Oxyria digyna*
141.	*Paederia scandens*	*142.*	*Paeonia emodi*

143.	*Pedalium murex*	*144.*	*Pegia nitida*
145.	*Phoenix acaulis*	*146.*	*Physalis minima* (Tulati)
147.	*Phytolacca acinosa* (Matazor/ Indian poke)	*148.*	*Pilea glaberrima*
149.	*Pisonia umbellifera*	*150.*	*Plantago major*
151.	*Plesmonium margaritiferum*	*152.*	*Poikilospermum suaveolens*
153.	*Polygala arvensis*	*154.*	*Polygonatum cirrhifolium*
155.	*Polygonum glabrum*	*156.*	*Polygonum molle*
157.	*Polygonum nepalense*	*158.*	*Polygonum perfoliatum*
159.	*Polygonum plebejum*	*160.*	*Polygonum polystachyum*
161.	*Polygonum runcinatum*	*162.*	*Polygonum viviparum*
163.	*Portulaca oleracea* (Common purslane)	*164.*	*Pouzolzia hirta*
165.	*Premna latifolia* (Basota)	*166.*	*Ranunculus sceleratus* (Jhal dhania)
167.	*Rheum emodi* (Indian rhubarb)	*168.*	*Rheum webbianum*
169.	*Rhizophora mucronata*	*170.*	*Rhodiola imbricata* (Shrolo/ rose root)
171.	*Rhodiola tibetica*	*172.*	*Rothia indica*
173.	*Rumex acetosa* (Khatta patta/ garden sorrel)	*174.*	*R. maritimus* (Jangali palak/ golden dock)
175.	*Salsola baryosma* (Lani/ saltwort)	*176.*	*S. kali* (Sajibuti/ glasswort/ prickly saltwort)
177.	*Sambucus javanica* (Galeni/ Himalayan elder)	*178.*	*Sarcochlamys pulcherrima* (Dogal tree)
179.	*Sauropus androgynus* (Star goosebeery)	*180.*	*Sauropus auriculata* (Nurisag)
181.	*Smithia conferta*	*182.*	*Smithia purpurea*
183.	*Smithia sensitiva*	*184.*	*Solanum nigrum* (Makoi/ black nightshade)
185.	*Sphaeranthus indicus* (Gorakh mundi)	*186.*	*Taraxacum officinale*
187.	*Tectaria codunata*	*188.*	*Tetrastigma thomsonianum*
189.	*Thespesia populnea* (Paras papal/Indian tulip tree/ umbrella tree)	*190.*	*Thrysostachys oliveri*
191.	*Trianthema portulacastrum* (Shanti)	*192.*	*Tribulus terrestris* (Gokharu/ land caltrops/ puncture vine)

193.	*Urtica hyperborea*	*194.*	*Urtica parviflora* (Bichubuti)
195.	*Vaccinium sprengelii*	*196.*	*Wrightia arborea*
Flowers and Young Buds			
1.	*Alpinia galanga* (Kulanjain/ greater galangal)	2.	*Amorphophallus bulbifer*
3.	*Amorphophallus commutatus*	*4.*	*Diploneme butyracia* (Hill mahua/ Chewra/ Phllwara)
5.	*Ardisia griffthii*	*6.*	*Ardisia solanacea* (Aringudi/ bisi)
7.	*Arenga saccharifera*	*8.*	*Bauhinia purpurea*
9.	*Bauhinia variegata* (Kachnar/ Buddhist bauhinia)	*10.*	*Boswellia serrata*
11.	*Bombax ceiba* (Semul/silk cotton tree)	*12.*	*Borassus flabellifer* (Tar/ palmyra palm)
13.	*Buddleja asiatica* (Neemda)	*14.*	*Capparis decidua* (kair)
15.	*Capparis spinosa*	*16.*	*Callicarpa arborea*
17.	*Calligonum polygonoides* (lassan)	*18.*	*Capparis decidua*
19.	*Careya arborea*	*20.*	*Catunaregam spinosa*
21.	*Celastrus paniculatus* (malkangni bel)	*22.*	*Champeriea grifithiana*
23.	*Chenopodium album* (Bethu/ Lamb's quarters)	*24.*	*Chlorophytum arundinaceum* (Bis kandari)
25.	*Chlorophytum tuberosum*	*26.*	*Clerodendrum serratum*
27.	*Corypha utan* (Bajoon/ Buri or Gebang or Agel palm)	*28.*	*Costus speciosus* (Keukand)
29.	*Cymbidium longifolium*	*30.*	*Corypha utan*
31.	*Dendrobium hookerianum*	*32.*	*Dillenia pentagyna*
33.	*Dolichandrone spathacea*	*34.*	*Equisetum arvense* (Horse tail)
35.	*Gentum gnemone*	*36.*	*Hobenia acerba*
37.	*Holarrhena antidysenterica* (Indraju)	*38*	*Holostemma ada-kodien* (Chhirvel)
39.	*Hovenia acebra* (Sicka/ coral tree/ Japanese raisin tree)	*40.*	*Hydrolea zeylanica*
41.	*Hygrophila erecta*	*42.*	*H. salicifolia*
43.	*Indigofera cassioides* (Neel)	*44.*	*Indigofera pulchella* (Sakena)
45.	*Madhuca longifolia* (South Indian mahua)	*46.*	*Manilkara littoralis*
47.	*Moringa oleifera*	*48.*	*Musa ornata*
49.	*Mussaenda roxburghii*	*50.*	*Nyctanthes arbortristis* (Harsinghar/coral jasmine)

51.	*Oroxylum indicum*	*52.*	*Ougeinia oojeinensis* (Sandan)
53.	*Pandanus odoratissimus* (Keora/ screw pine)	*54.*	*Pavetta indica*
55.	*Perilla frutescens*	*56.*	*Periploca aphylla*
57.	*Phlogacanthus thrysiformi*	*58.*	*Rhododendron arboreum* (Burans/ Rose tree)
59.	*Rhodomyrtus tomentosa* var. *parviflora*	*60.*	*Schleichera oleosa* (kusum/ Ceylon oak/ Macassar oil tree)
61.	*Syzygium formosum*	*62.*	*Thespesia populnea*
63.	*Vaccinium serratum*	*64.*	*Woodfordia fruticosa* (Dhau/ fire flame bush)
65.	*Xanthoxylum rhetsa*		

Fruits

1.	*Abelmoschus manihot* (Jangali bhindi)	2.	*Actinidia callosa* (Tekphal)
3.	*Actinidia strigosa*	*4.*	*Cassia absus*
5.	*Aegle marmelos* (Bael)	*6.*	*Aesculus indica* (Pangar/ Indian Horse chestnut)
7.	*Aglaia edulis*	*8.*	*Aglaia elaeagnoidea*
9.	*Alphonsea lutea* (Noga kala)	*10.*	*Alphonsea vertcosa*
11.	*Ampelocissus barbata*	*12.*	*Ampelocissus rugosa* (Asanjiya)
13.	*Anacardium occidentale* (Cashew)	*14.*	*Diploknema butyraceae* (Chewra/ phulwara/ Hill mahua)
15.	*Annona reticulata* (Ramphal/ west Indian custard apple)	*16.*	*Annona squamosa* (Sarifa/ custard apple)
17.	*Antidesma acidum*	*18.*	*Antidesma bunius*
19.	*Antidesma ghaesembilla* (Umtoa/ Black currant)	*20.*	*Ardisia ploycephala*
21.	*Artocarpus gomezianus* (Kala lakuch)	*22.*	*Artocarpus heterophyllus* (Kathal/ Jackfruit)
23.	*Artocarpus lacucha* (Lakoocha/ monkey jack)	*24.*	*Artocarpus nitidus*
25.	*Averrhoa carambola* (Kamrakh)	*26.*	*Baccaurea courtallensis*
27.	*Baccaurea ramiflora* (Kalaphal)	*28.*	*Balanites aegyptiaca* (Hingota/desert date)
29.	*Barringtonia asiatica* (Queens of shores)	*30.*	*Berberis asiatica* (Kilmora/ berberry)
31.	*Berberis lycium*	*32.*	*Betula cylindrostachys* (Saur/ sunli)
33.	*Bhesa paniculata* (Kadpala)	*34.*	*Bischofia javanica* (Bhillar/Bishop wood)
35.	*Bombax insigne*	*36.*	*Bouea oppositifolia* (Jangali aam/ marian tree)
37.	*Bridelia monoica*	*38*	*Bridelia retusa* (Ekdania)

39.	*Bridelia stipularis* (Kangiabel)	*40.*	*Bouea oppositifolia*
41.	*Broussonetia papyrifera* (Jangali toot/ paper mulberry)	*42.*	*Bruguiera gymnorrhiza*
43.	*Bruinsmia polysperma*	*44.*	*Buchanania lanzan* (Chirongi/ almondette tree)
45.	*Bursera serrata*	*46.*	*Calamus longisetus*
47.	*Capparis decidua* (kair)	*48.*	*Capparis brevispina*
49.	*Capparis spinosa* (Caper bush)	*50.*	*Capparis zeylanica*
51.	*Carallia brachiata*	*52.*	*Carissa carandus* (karunda)
53.	*Carissa opaca*	*54.*	*Caryota mitis* (Mari supari)
55.	*Catunaregam spinosa* (Mainphal / common emetic nut)	*56.*	*Catunaregam uliginosa* (Gangati)
57.	*Cayratia auriculata*	*58.*	*Ceriops tagal*
59.	*Chrysophyllum lanceolatum* (Star apple)	*60.*	*Cicer microphyllum*
61.	*Citrus hystrix*	*62.*	*Clausena dentata*
63.	*Coccinia grandis* (kundari/ Ivy gourd)	*64.*	*Commiphora caudata* (Hill Mango)
65.	*Cordia dichotoma* (Lasora)	*66.*	*Cordia gharaf* (Gundi)
67.	*Crataegus oxyacantha* (Ban sinjli/ English hawthorn)	*68.*	*Crataeva nurvala* (Barna)
69.	*Cydonia oblonga* (Bihi/quince)	*70.*	*Cynometra cauliflora*
71.	*Debregeasia longifolia* (Sansaru/ wild rhea)	*72.*	*Decaisnea insignie*
73.	*Desmos longiflorus*	*74.*	*Dillenia indica* (Chalta)
75.	*Dillenia pentagyna* (Aggai kallai)	*76.*	*Dillenia scabrella*
77.	*Diospyros ferrea*	*78.*	*Diospyros kaki* (Halwa tendu),
79.	*Diospyros lotus* (Amlok/ date plum/ persimmon)	*80.*	*Diospyros malabarica* (Gab/ gaub persimmon)
81.	*Diospyros melanoxylon* (Tendu)	*82.*	*Docynia hookeriana*
83.	*Docynia indica* (Mehel)	*84.*	*Dolichandrone spathacea*
85.	*Dracontomelun mangiferum*	*86.*	*Duabanga grandiflora* (Lampati)
87.	*Duchesnea indica*	*88.*	*Ehretia acuminata* (Koda)
89.	*Elaeagnus latifolia* (loharu/ bastard oleaster)	*90.*	*Elaeagnus parviflora*
91.	*Elaeocarpus floribundus*	*92.*	*Elaeocarpus lanceaefolius* (Bhadras)
93.	*Elaeocarpus serratus*	*94.*	*Embelia undulata*
95.	*Erythroxylum monogynum* (Bastard	*96.*	*Emblica officinalis*

	sandal/ red cedar)		
97.	*Feronia limonia* (Elephant apple / wood apple)	*98.*	*Ficus auriculata* (Timla)
99.	*Ficus infectoria* (Pakar)	*100.*	*Ficus nerifolia* (Parphuta)
101.	*Ficus oligodon*	*102.*	*Ficus palmata* (Bedu)
103.	*Ficus glomerata* (Gular)	*104.*	*Fissistigma polyanthum*
105.	*Fissistigma verrucosum*	*106.*	*Flacourtia indica* (Kanju/ Governer's or Madagascar plum)
107.	*Flacourtia jangomas* (Talisha/ punela plum)	*108.*	*Fragaria vesca* (Pahari rashberi)
109.	*Garcinia antroviridis*	*110.*	*Garcinia cowa*
111.	*Garcinia indica* (kokum butter tree/ mangosteen oil tree/ Brindonia tallow tree)	*112.*	*Garcinia lancaefolia*
113.	*Garcinia morella* (Tamal/ Indian gamboge tree)	*114.*	*Garcinia pedunculata*
115.	*Garcinia xanthochymus*	*116.*	*Gardenia campanulata*
117.	*Gardenia turgida* (Thanella)	*118.*	*Gironniera cuspidata*
119.	*Glochidion zeylanicum*	*120.*	*Gnetum gnemone*
121.	*Gnetum latifolium*	*122.*	*Gnetum montanum*
123.	*Grewia asiatica* (Phalsa)	*124.*	*Grewia elastica* (Dhaman)
125.	*Grewia sapida*	*126.*	*Grewia tenax* (Gondni)
127.	*Grewia villosa*	*128.*	*Gynocardia odorata*
129.	*Haematocarpus validus*	*130.*	*Hippophae rhamnoides* (Seabuckthorn)
131.	*Hippophae salicifolia*	*132.*	*Horsifieldia amygdalina*
133.	*Ixora arborea* (Torch wood ixora)	*134.*	*Ixora* coccinea (Rookmini/ Jungle flame ixora)
135.	*Juglans regia* (Akhrot/ walnut)	*136.*	*Leea asiatica* (Kumoli)
137.	*Leea indica* (kukurjiwa)	*138.*	*Leea macrophylla* (Dholsamudra)
139.	*Lepisanthes rubiginosa* (Ritha)	*140.*	*Lepisanthes senegalensis*
141.	*Lepisanthes tetraphylla*	*142.*	*Litsea salicifolia*
143.	*Maclura cochinchinensis*	*144.*	*Madhuca latifolia* (South Indian Mahua)
145.	*Mahonia acanthifolia*	*146.*	*Mahonia leschenaultia* (Holy leaf berberis of Nilgiri)
147.	*Mahonia nepaulensis*	*148.*	*Malus baccata* (Ban mehel /

			Siberian crab apple)
150.	*Mangifera indica*	*151.*	*Mangifera sylvatica*
152.	*Manilkara hexandra* (Khirni)	*153.*	*Manilkara littoralis* (Andman bullet wood)
154.	*Memecylon caeruleum*	*155.*	*Meyna laxiflora*
156.	*Miliusa velutina* (Dom sal)	*157.*	*Mimusops elengi* (Molsari/ bullet wood)
158.	*Momordica cochinchinensis* (Gangreua)	*159.*	*Momordica dioica* (Ban karela)
160.	*Moringa oleifera* (Shajan/ drumstick/ horse radish tree)	*161.*	*Morus alba* (White mulberry)
162.	*Morus laevigata* (Toot)	*163.*	*Morus serrata* (Kimu/Himalyan mulberry)
164.	*Murraya paniculata* (Kamini/ China box tree/ orange jasmine)	*165.*	*Myrsine semiserrata*
166.	*Osbeckia nutans*	*167.*	*Osbeckia stellata*
168.	*Myrica esculenta* (Kaphal)	*169.*	*Nanorrhops ritchieana*
170.	*Nypa fruticans*	*171.*	*Pandanus andamanensium* (Keora)
172.	*Pandanus leram* (Nicobar breadfruit tree)	*173.*	*Parkia timoriana*
174.	*Pavetta indica*	*175.*	*Pegia nitida*
176.	*Phoenix pusilla*	*177.*	*Phoenix sylvestris* (Jangali Khajoor/ wild date palm)
178.	*Physalis minima* (Tulati)	*179.*	*Pithecellobium dulce* (Jangali jalabi/ Madras thorn/ manila tamrind)
180.	*Prosopis cineraria* (Khejiri/ sangiri)	*181.*	*Prunus armeniaca* (Khubani/ Apricot)
182.	*Prunus cerasoides* (Padam/ himalyan wild cherry)	*183.*	*Prunus cornuta* (Himalayn bird cherry)
184.	*Prunus persica* (Peach)	*185.*	*Prunus salicina* (Japanese plum)
186.	*Pueraria peduncularis*	*187.*	*Pyrus aucuparia* (Mountain ash)
188.	*Pyrus pashia* (Mahal)	*189.*	*Pyrus vestita* (Mauli/ himalayn white beam)
190.	*Rhamnus pentapomica* (Chetulo)	*191.*	*Rhizophora mucronata*
192.	*Roodomyrtus tomentosa* var. *parviflora* (Hill gooseberry)	*193.*	*Rhus mysorensis*
194.	*Rhus parviflora*	*195.*	*Ribes alpestre*
196.	*Ribes himalense* (Kinkola/ red currant)	*197.*	*Rosa sericea*

198.	*Rosa webbiana*	*199.*	*Rourea minor* (Vidhara)
200.	*Rubus assamensis*	*201.*	*Rubus ellipticus* (Hinsalu)
202.	*Rubus fruticosus*	*203.*	*Rubus moluccanus*
204.	*Rubus treutleri*	*205.*	*Sageretia brandrethiana*
206.	*Salacia chinensis* (Saptrangi)	*207.*	*Salacia macrosperma*
208.	*Salacia reticulata*	*209.*	*Salacia salacioides*
210.	*Salvodora oleoides* (Pilu/ Jhal)	*211.*	*Sarcochlamys pulcherrima* (Dogal tree)
212.	*Saurauia cerea*	*213.*	*Saurauia napaulensis*
214.	*Saurauia punduana*	*215.*	*Saurauia roxburghii*
216.	*Sauropus androgynus* (Star goosebeery)	*217.*	*Schleichera oleosa* (kusum/ Ceylon oak/ Macassar oil tree)
218.	*Scolopia crenata*	*219.*	*Securinega virosa*
220.	*Solanum nigrum* (Makoi/ black nightshade)	*221.*	*Solena amplexicaulis* (Tarali)
222.	*Spondias pinnata* (Jangali aam/ hog plum)	*223.*	*Sterculia hamiltonii*
224.	*Stixis suaveolens*	*225.*	*Streptopus simplex*
226.	*Syzygium caryophyllatum*	*227.*	*Syzygium cuminii* (Jamun)
228.	*Syzygium jambos* (Gulab jamun/ rose apple)	*229.*	*Syzygium kurzii* (Jamawa)
230.	*Tamarindus indica* (Imili)	*231.*	*Terminalia bellerica* (Bahera/ Beelleric myrobalan)
232.	*Terminalia catappa* (Indian almond tree)	*233.*	*Terminalia chebula* (Harad/ Chebullic mayrobalan)
234.	*Tetrastigma lanceolarium*	*235.*	*Tetrastigma rumicispermum*
236.	*Trapa natans* var. *bispinosa* (Sighara/ water chestnut)	*237.*	*Trevesia palmata*
238.	*Uvaria cordata*	*239.*	*Vaccinium sprengelii*
240.	*Vaccinium symplocifolium*	*241.*	*Viburnum cotinifolium*
242.	*Viburnum foetens*	*243.*	*Viburnum nervosum*
244.	*Vitis parviflora*	*245.*	*Willughbeia edulis*
246.	*Xantolis tomentosa*	*247.*	*Xemenia americana*
248.	*Xylia xylocarpa* (Irul)	*249.*	*Zizyphus mauritiana*
250.	*Zizyphus* nummularia (Jhadiber/ wild jujube)	*251.*	*Zizyphus oenoplia*

252.	*Zizyphus rugosa*		
Pods, Seeds and Nuts			
1.	*Abrus precatorius* (Rati/ Indian liquorice)	2.	*Acacia leucophloea* (safed babool)
3.	*Acacia nilotica* (Babool)	*4.*	*Acacia senegal* (Kumta)
5.	*Acacia concinna* (Shikakai)	*6.*	*Alysicarpus rugosus* (Sheora)
7.	*Diploknema butyracae* (Chewra/ phulwara/ Hill mahua)	*8.*	*Amaranthus caudatus* (Ramdana/ Tassel flower)
9.	*Anacardium occidentale*	*10.*	*Areca triandra* (Jangali supari)
11.	*Arenga saccharifera*	*12.*	*Artocarpus heterophyllus* (kathal/ Jackfruit)
13.	*Artocarpus hirsutus* (wild jackfruit/Aini)	*14.*	*Atylosia scarabaeoides* (Jangali tur/ kulthi)
15.	*Atylosia volubilis*	*16.*	*Balanites aegyptiaca* (Hingota)
17.	*Barringtonia asiatica*	*18.*	*Barringtonia racemosa*
19.	*Bauhinia malabarica* (Amli)	*20.*	*Bauhinia purpurea* (Butterfly/ orchid tree)
21.	*Bauhinia roxburghiana* (Semla)	*22.*	*Bauhinia vahlii* (Maljan)
23.	*Blepharis persica* (shikhi)	*24.*	*Bruguirea cylindrica*
25.	*Bruguirea parviflora*	*26.*	*Bruguirea sexangula*
27.	*Bombax ceiba*	*28.*	*Boswellia serrata*
29.	*Buchanania axillaris* (Piyala/ cuddapah almond)	*30.*	*Buchanania lanceolata* (koshamrom)
31.	*Buchanania lanzan* (Chirongi/ almondette tree)	*32.*	*Bunium persicum* (Kala zira/ Balck caraway)
33.	*Carallia brachiata*	*34.*	*Carthamus lanatus* (Saffron thistle)
35.	*Carthamus oxyacantha* (Wild safflower)	*36.*	*Cassia absus* (Chaksu)
37.	*Cassia tora* (Chakunda)	*38*	*Castonopsis indica* (Indian chestnut)
39.	*Castonopsis purpurella*	*40.*	*Castonopsis tribuloides*
41.	*Cenchrus biflorus*	*42.*	*Cicer microphyllum*
43.	*Cirsium arvense* (creeping thistle)	*44.*	*Cleome gynandra* (Gandhuli)
45.	*Cleome viscosa* (Huhul)	*46.*	*Cochlospermum religiosum* (Galgal)
47.	*Codonopsis parviflora*	*48.*	*Coix lacrymaljobi* (Shankru)
49.	*Corylus colurna* (Bhotia badam/	*50.*	*Corypha utan*

	Turkish hazel)		
51.	*Cyca pectinata*	*52.*	*Dalbergia rimosa*
53.	*Decaspermum parviflorum*	*54.*	*Dumasia cordifolia*
55.	*Ephedra gerardiana*	*56.*	*Echinochloa frumentacea*
57.	*Euryale ferox* (Makhana/ foxnut)	*58.*	*Firmiana colorata*
59.	*Garcinia morella* (Tamal/ Indian gamboge tree)	*60.*	*Garcinia indica*
61.	*Heritiera littoralis* (Sundari)	*62.*	*Hodgsonia macrocarpa* (Darshini)
63.	*Holoptelea integrifolia* (Kanju)	*64.*	*Hygroryza aristata* (Jungalidal/ Bengal wild rice)
65.	*Hyptis suaveolens* (Vilyati tulsi)	*66.*	*Impatiens balsamina* (Gulmehndi/ garden balsam)
67.	*Impatiens gigantean* (Groove balsam)	*68.*	*Impatiens glandulifera* (Royal's / Himalayan balsam)
69.	*Indigofera cassioides* (Neel)	*70.*	*Indigofera cordifolia*
71.	*Indigofera glandulosa*	*72.*	*Indigofera linifolia* (Shankahuli)
73.	*Ipomoea eriocarpa*	*74.*	*Juglans regia*
75.	*Lactuea serriola* (Prickly lettuice)	*76.*	*Lasiurus hirsutus* (Shiwan grass)
77.	*Lithocarpus xylocarpus*	*78.*	*Madhuca longifolia*
79.	*Manilkara littoralis*	*80.*	*Melocanna baccifera* (Muli bamboo)
81.	*Mimosops elengi* (Molsari)	*82.*	*Mucana monosperma*
83.	*Nypa fruticans*	*84.*	*Parkia timoriana*
85.	*Perilla frutescens* (Bhanjira)	*86.*	*Pinus gerardiana* (Chilgoza pine)
87.	*Pithecellobium dulce*	*88.*	*Prinsepia utilis* (Karanga)
89.	*Prosopis cineraria* (Khejri/ sangiri)	*90.*	*Pterygota alata* (Khamari/ Narikel)
91.	*Quercus leucotrichophora* (Ban oak/ grey oak)	*92.*	*Rothia indica*
93.	*Schizostachyum fuchsianum*	*94.*	*Schleichera oleosa* (kusum/ Ceylon oak/ Macassar oil tree)
95.	*Setaria pumilla*	*96.*	*Shorea robusta* (Sal)
97.	*Sterculia urens* (Kadaya)	*98.*	*Sterculia villosa* (Udal)
99.	*Tamarindus indica* (Imli)	*100.*	*Terminalia catappa*
101.	*Vigna khandalensis*	*102.*	*Xylia xylocarpa*
103.	*Ziziphus mauritiana*	*104.*	*Ziziphus xylopyra*
Bark and Pith			
1.	*Acacia leucophloea* (safed babool)	2.	*Arenga pinnata*
3.	*Betula alnoides* (Indian birch/ Bhojpatra)	*4.*	*Careya arbora* (Kumbhi)

5.	*Caryota mitis* (mari supari)	*6.*	*Caryota urens* (Sago palm / Toddy palm)
7.	*Corypha umbraculifera* (Sritalam/ talipot or fan palm)	*8.*	*Corypha utan* (Bajoon/ Buri or Gebang or Agel palm)
9.	*Cycas circinalis*	*10.*	*Cycas pectinata*
11.	*Phoenix acaulis*	*12.*	*Phoenix humilis* (Dwarf/ hill date palm)
13.	*Grewia asiatica*	*14.*	*Musa ornata*
15.	*Nypa fruticans*	*16.*	*Wallichia disticha*
Edible Gums			
1.	*Acacia farnesiana* (Vilyati kikar/Cassie flower)	2.	*Acacia leucophloea* (safed babool)
3.	*Acacia nilotica* (Babool)	*4.*	*Acacia senegal* (Kumta)
5.	*Bauhinia roxburghiana* (Semla)	*6.*	*Boswellia serrata* (Salai/ Indian olibanun tree)
7.	*Feronia limonia*	*8.*	*Periploca aphylla*
9.	*Prosopis cineraria*	*10.*	*Spondias pinnata*
11.	*Sterculia urens* (Kadaya)	*12.*	
Tubers, Rhizomes and Corms			
1.	*Alisma plantago-aquatica* (Water plantain)	2.	*Alocasia macrorrhiza* (Mankanda)
3.	*Alpinia galanga* (Kulanjain/ greater galangal)	*4.*	*Alpinia speciosa* (Punnag champa/ Light galangal)
5.	*Amorphphallus debius*	*6.*	*Amorphphallus paeoniifolius* (Zamikand/ Elephant foot yam)
7.	*Amorphphallus sylvaticus*	*8.*	*Angiopteris erecta*
9.	*Aponogeton natans* (Ghechu)	*10.*	*Aponogeton undulates*
11.	*Arisaema tortuosum* (Samp ki kumbh/ Cobra flower)	*12.*	*Asparagus adscendens* (Hazarmuli/ satavar)
13.	*Asparagus filicinus*	*14.*	*Asparagus racemosus* (satavar)
15.	*Bunium persicum* (Kala zira/ Balck caraway)	*16.*	*Ceropegia bulbosa* (Khappar kadu)
17.	*Ceropegia candelabrum*	*18.*	*Ceropegia pusilla,*
19.	*Chlorophytum tuberosum* (Safed musali)	*20.*	*Chlorophytum arundinaceum*
21.	*Codonopsis ovata*	*22.*	*Colocasia esculenta* (Arvi/ cocoyam)
23.	*Commelina benghalensis* (Kandhara)	*24.*	*Costus speciosus* (Keukand)
25.	*Curcuma angustifolia* (Tikhur/ east Indian arrow root)	*26.*	*Curcuma montana*

27.	*Cyperus bulbosus*	*28.*	*Cyperus rotundus* (Motha)
29.	*Cypreus montana*	*30.*	*Dactylorhiza hatagirea* (Salampanja)
31.	*Dioscorea alata* (Greater yam/ Asiatic yam)	*32.*	*Dioscorea belophylla*
33.	*Dioscorea bulbifera* (Ratalu/ Suralu , Potato yam/ air potato)	*34.*	*Dioscorea esculenta* (Kangar/ Lesser yam/ Karen potato
35.	*Dioscorea hamiltonii*	*36.*	*Dioscorea hispida* (Karkandu)
37.	*Dioscorea melanophyma*	*38*	*Dioscorea oppositifolia*
39.	*Dioscorea pentaphylla* (Bhusa or gezariya/ kanta alu)	*40.*	*Dioscorea puber* (kasa alu)
41.	*Dioscorea wallichi* (Man-alu)	*42.*	*Eriosema Chinense*
43.	*Flemingia vestita*	*44.*	*Hedychium coronarium* (Karchura/ Ginger lily/ garland flower)
45.	*Hemidesmus indicus* (Anantamool)	*46.*	*Hitchenia caulina* (Tikhur)
47.	*Houttuynia cordata*	*48.*	*Lasia spinosa*
49.	*Nelumbo nucifera* (Lotus)	*50.*	*Nymphaea* alba (European white lily)
51.	*Nymphaea nouchali* (Red water lily)	*52.*	*Nymphaea stellata* (Blue water lily)
53.	*Nymphoides indica*	*54.*	*Polygonatum multiflorum* (Solomon's seal)
55.	*Polygonatum oppositifolium*	*56.*	*Polygonatum verticillatum*
57.	*Polygonum bistorta*	*58.*	*Pouzolzia zeylanica*
59.	*Pteridium aquilinum* (Bracken fern)	*60.*	*Pueraria tuberose* (Bidarikand/ Indian kudzu)
61.	*Sagittaria trifolia* (Chotakut/ arrowhead)	*62.*	*Tacca leontopetaloides* (Surna/ Fiji arrowroot)
63.	*Triglochin palustre*	*64.*	*Zingiber zerumbet*
Roots			
1.	*Abelmoschus crinitus* (Bankapas)	2.	*Brasenia schreberi*
3.	*Codonopsis ovata*	*4.*	*Decalepis hamiltonii*
5.	*Dracocephalum heterophyllum*	*6.*	*Peucedanum dhana*
7.	*Rhodiola imbricata* (Shrolo/ rose root)	*8.*	*Solena amplexicaulis* (Tarali)
9.	*Sterculia villosa* (Udal)	*10.*	*taraxacum officinale* (Dulal/ Common dandelion)
11.	*Vigna adenantha*	*12.*	*Vigna exillata*

(Bannet *et al.*, 1991, Annon, 1988, Bhandrai, 1977, Jain, 1991 & Nayar *et al.*, 1989)

The above mention list is indicative and includes the common used Indian subcontinent plants but there are any more plants in the world used for food and survival. The proper screening of prioritized plants for their domestication / introduction and utilization for future food security of the nation is very important. Many of the listed plants are derived as wild harvests and used by tribals and rural people but are not under cultivation. Around the globe many institutes are working on these underutilized millets, fruits, vegetables and medicinal plants to make them cultivable and incorporate in cropping system. Already there are some of the models established for cultivation of such plats by wilding and establishment of forest gardens, agroforestry, homegardens, permaculture etc under different names.

Homegardens are producing an increasingly important supply of food in many countries, as population pressures reduce the amount of land available to each household for food crops. Homegardens support the cultivation of multi- purpose trees and shrubs, often in association with annual and perennial agricultural crops and livestock, within the household compound. Such gardens are found in most regions of the tropics and sub-tropics, particularly in lowland areas with high population densities. Many homegardens resemble those of Java or southeastern Nigeria, with an intensive combination of trees, crops and livestock. The average size of a homegarden is usually much less than one hectare, yet in many parts of the world the fruit, nuts, edible leaves and other foodstuffs grown in homegardens provide a substantial part of the household food requirement. In some areas of Java, homegardens provide more than 40 percent of the total calorific intake of farming communities. Gardens within a household compound can produce food all year round with a relatively low labour input. When intensively managed, the yield from a compound, in monetary terms, can be five to ten times as much per hectare as that from traditional field cropping systems, and returns on labour are typically four to eight times higher. Many homegardens support very large numbers of different species. In southeastern Nigeria permanently cultivated compounds around the household contain trees including the oil palm, coconut, banana and plantain, intercropped with cassava, gums and other arable crops. Studies have shown that households with homegardens have higher than average nutrition levels. In Puerto Rico, for instance, food from gardens tended by women significantly contributes to the total food supply and is an important source of both betacarotene (converted to Vitamin A in the body) and Vitamin C, especially for children.

Trees are also part of traditional shifting cultivation systems practiced within forest areas by more than 300 million people world-wide. Shifting cultivation can involve clearing forest areas to develop agroforestry systems similar to those found in homegardens. Trees are maintained or grown to provide a range of fruits, seeds, nuts and leaves for food as well as to maintain suitable soil conditions for food production. An adequate supply of livestock fodder is a crucial part of food production for millions of people. Good fodder increases livestock productivity,

making more milk and meat available for rural families; it helps maintain animals used in working the land; and it provides manure for fertilizer. These pastoralists manage to keep their herds alive on arid and semi-arid land by supplying them with twigs, leaves, small branches, seed pods and fruit from trees and shrubs. The management of fodder resources on farms, in rangelands and in forest areas can help reduces over-browsing and provide a sustainable source of animal fodder. A ready supply of fodder means that women, often the principal fodder providers, do not have to travel so far to find this necessity. Many Nepalese farmers have now started to grow fodder trees on their farms, and they are popular on farm and fallow land in southeast Nigeria. Cattle, sheep and goats are not the only animals to benefit. In western Java, trees provide up to 15 percent of the fodder used to feed small stall-fed ruminants (FAO, 1989).

The ways in which the rural poor in developing countries benefit from forests and farm trees have rarely been spelt out in detail. Yet research shows that those without access to land and deprived of employment opportunities depend heavily on access to forests and to trees growing on common land. The food security of other rural dwellers is improved by growing trees in homegardens and on farms. The indirect ways in which forests and farm trees strengthen food security are no less important. First, many forest products-such as leaves, rattan, honey, saps and gums-form the basis of small-scale industries that are important sources of income. The money, particularly that earned by women, is often used either to buy food or agricultural inputs that poor families could not otherwise afford. Both contribute to food security. Forests also provide medicines that, by improving health, help to increase the nutritional intake of many rural people. Finally, forests and farm trees augment food security by contributing to agriculture itself: they help prevent soil erosion, improve soil fertility, enhance the quality and reliability of water supplies, and help ameliorate microclimates.

Forest gardening is a low-maintenance sustainable plant-based food production and agroforestry system based on woodland ecosystems, incorporating fruit and nut trees, shrubs, herbs, vines and perennial vegetables which have yields directly useful to humans. Making use of companion planting, these can be intermixed to grow in a succession of layers, to replicate a woodland habitat. Forest gardens are probably the world's oldest form of land use and most resilient agroecosystem. They originated in prehistoric times along jungle-clad river banks and in the wet foothills of monsoon regions. In the gradual process of families improving their immediate environment, useful tree and vine species were identified, protected and improved whilst undesirable species were eliminated. Eventually superior foreign species were selected and incorporated into the gardens. Forest gardens are still common in the tropics and known by various names such as: *home gardens* in Kerala in South India, Nepal, Zambia, Zimbabwe and Tanzania; *Kandyan forest gardens* in Sri Lanka; *huertos familiares*, the "family orchards" of Mexico; and *pekarangan*, the gardens of "complete design", in Java. These are also called agroforests and, where the wood components are short statured, the

term shrub garden is employed. Forest gardens have been shown to be a significant source of income and food security for local populations. Forest gardens, or home gardens, are common in the tropics, using inter-cropping to cultivate trees, crops, and livestock on the same land. In Kerala in south India as well as in northeastern India, the home garden is the most common form of land use and is also found in Indonesia. One example combines coconut, black pepper, cocoa and pineapple. These gardens exemplify polyculture, and conserve much crop genetic diversity and heirloom plants that are not found in monocultures. Forest gardens are loosely connected to the religious concept of the Garden of Eden. Robert Hart, forest gardening pioneer in modern era. Forest gardening is an idea whose time has come. We can consciously apply the principles of ecology to the design of home scale gardens that mimic forest ecosystem structure and function, but grow food, fuel, fiber, fodder, fertilizer, "farmaceuticals," and fun. Indeed, we must begin learning to apply ecological principles to the design of our food production systems now—we are rapidly approaching or are already at the peak of planetary oil production, and the world of energy descent is upon us. This sea change in our culture will require that we learn to live within our energetic means and begin to rebuild ecosystems that support human and humane lives without diminishing the ability of the ecosystem to support our children and grandchildren (Hoskins, 1990).

They are typically cultivated with a mixture of annual and perennial plants that can be harvested on a daily or seasonal basis. Biodiversity that has an immediate value is maintained in home gardens as women and children have easy access to preferred food, and for this reason alone we should promote home gardens as a key element for a healthy way of life. Home gardens, with their intensive and multiple uses, provide a safety net for households when food is scarce. These gardens are not only important sources of food, fodder, fuel, medicines, spices, herbs, flowers, construction materials and income in many countries, they are also important for the in situ conservation of a wide range of unique genetic resources for food and agriculture. Many uncultivated, as well as neglected and underutilised species could make an important contribution to the dietary diversity of local communities. From the agroforestry point of view, perhaps the world's most advanced country is the Indian state of Kerala, which boasts no fewer than three and a half million forest gardens...As an example of the extraordinary intensivity of cultivation of some forest gardens, one plot of only 0.12 hectares (0.30 acres) was found by a study group to have twenty-three young coconut palms, twelve cloves, fifty-six bananas, and forty-nine pineapples, with thirty pepper vines trained up its trees. In addition, the small holder grew fodder for his house-cow.

Edible forest gardening is the art and science of putting plants together in woodland like patterns that forge mutually beneficial relationships, creating a garden ecosystem that is more than the sum of its parts. Masanobu Fukuoka once said, "The ultimate goal of farming is not the growing of crops, but the cultivation and perfection of human beings." Edible

forest gardening is not necessarily gardening in the forest, it is gardening like the forest. Forest gardeners use the forest as a design metaphor, a model of structure and function, while adapting the design to focus on meeting human needs in a small space. Edible forest gardening is about expanding the horizons of our food gardening across the full range of the successional sequence, from field to forest, and everything in between. Edible forest gardens mimic the structure and function of forest ecosystems—this is how we create the high, diverse yields, self-maintenance, and healthy ecosystem we seek for our garden. Four aspects of forest ecology are key: community architecture, ecosystem social structure, the structures of the underground economy, and how the community changes through time, also known as succession.

Forests and trees make an essential contribution to food security by helping to maintain the environmental conditions needed for agricultural production. They stabilize the soil, prevent erosion, enhance the land's capacity to store water, and moderate air and soil temperatures. The importance of these effects has often been ignored in the past, with the clearance of tree vegetation and the subsequent loss of millions of hectares of productive land. Furthermore, as forests continue to be cleared-exposing the land to direct attack from wind and rain-soil erosion and land degradation are still undermining agriculture's resource base.

CONCLUSION

There are vast numbers of edible plant products garnered from forests, including seeds and nuts, leaves, fruits, roots and tubers, fungi, and salt. Collectively they add diversity and flavour to the diet while providing protein, energy, vitamins and essential minerals. The contribution of forest foods to diets varies considerably from region to region. Forest foods, especially leaves and nuts, supplement rural diets by contributing to sauces that accompany carbohydrate staples. Some forest fruits are often consumed throughout the day as snacks. They also supply buffer food sources during emergency periods. In some regions, forest species that are valued for their food products are protected in farm and fallow fields. There is a great deal of descriptive information available on edible forest foods. However, few studies have attempted to examine the frequency with which foods are consumed, the nutritional value of various foods, the prevalence of foods' use, or how resident populations value foods. A considerable number of historic and present day botanical studies point out the multitude of food resources found in the region's forests. It is clear that the consumption of at least some forest foods is still extremely common throughout the region. The significance of forest foods should not be understated.

The ethno botanical studies shows that primitive tribes and rural folks explored the uses of almost all the area of plants from wild to cultivated field and depending upon the need, taste, availability and region they are in use by society. Previously these produce was used as a famine food but now they equally relish by urban masses in name of ethnic food in most of urban centers. There is upsurge in use of these

products in ethnic cuisine with blend of ecotourism projects. So far these forest produce extracted from forest ruthlessly unscientifically and leading to erosion of genetic resources as well their extinction. The awareness about their use, domestication and rational sustainable harvesting from forest is the need of the present scenario for meeting demand of ethnic food in urban areas and nutritional security in rural areas. It is time that the forestry sector itself took the implications of these findings to heart. This will require considerable effort in terms of rewriting forest legislation and adapting forestry institutions to work for the benefit of local communities. These aims can be achieved by educating policy makers and forestry professionals for their new role, accelerating research and designing forestry projects that involve local people, particularly women. In a world where many still go hungry, these issues are of great importance. The attention to be drawn to this undervalued natural resource which can make a bigger contribution to the fight against malnutrition.

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