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G. X. Grew



Editors

M.N. Ramesh

Sathish B. N.

Hareesh T.S.

C.G. Kushalappa

P. C. Tripathi

G.M. Devagiri

Status of Wild Edible Fruits and their Ethno-Botanical Knowledge in Western Ghats

G.Karunakaran³, P. C. Tripathi¹ and V. Sankar²

¹ICAR - Indian Institute of Horticultural Research, Hessaraghatta Lake Post, Karnataka

²IIHR - Central Horticultural Experiment Station, Chettalli-571 248, Kodagu, Karnataka

³IIHR - Central Horticultural Experiment Station, Hirehalli-572 168, Karnataka

E-mail: karan@iihr.res.in

India is endowed with varied agro climatic conditions, which are congenial for a wide variability in wild fruits occurring naturally. Western Ghats region is very rich in diversified edible fruit yielding plant species. The Western Ghats hills lies in the east coast of Arabian seas and spread of border of Gujarat to Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala in southern tip of India. The region have several mountain peak which intercept monsoon winds which results in heavy rainfall in this region. The heavy rainfall and different type of temperature conditions makes it home of several plant species. Many of them yield edible fruits and vegetables. This plant wealth is being used in various forms only by tribal's and natives of the area. By an intensive survey of the area it is possible to identify and locate a few superior types cut of wide variation available in the region. In recent years rainfed orcharding has attracted the attention at national level. Identification of desired types among the wild edible fruit species will be of immense use for dry orcharding. These wild types gain further importance due to the fact that one or the other kind of fruit is available in ripe form during round the year and serve as a source of food and medicine to tribal's and also to animals throughout the year. There is no need to emphasis the importance of wild fruit as a source of minerals and vitamins in the diet of the rural under privileged class. For example karonda fruits are the richest source of iron among the edible fruits. This fruit is available all over the Western Ghats. This can be used as simple remedy for the often reported iron deficiency in rural areas of the country.

The potential productivity and floristic diversity of the area has attracted the experts. In recent years survey and studies on the wealth of utility plants has yielded good results. This knowledge has been made use to collect and also produce large quantities of materials useful in agriculture, medicine and industries. Among the edible wild fruits some are even superior to the presently cultivated ones. There are more than 50 wild edible fruit species are available in Western Ghats region (Table 1). It is interesting to note that at least six plant species will be in fruiting in each month of the year. The duration of fruiting period of different species ranged between two to six months. The largest number of species were in fruiting during the month of April - May. The availability of these fruits get reduced after October. Some of these fruits have been given emphasis in order to identify superior clones, production technologies. The efforts research work on some of the fruits such as Punarpuli (kokum), Kachampuli (*Garcinia*) have been started at various research institutes, agricultural universities and other organizations. It has been reported that these wild edible fruits of the Western Ghats region belong to 25 families, 38 genera and 50 species, but there may be more to be identified. Out of the 25 families the important ones as a source of food to tribal's and animals are Rutaceae, Apocynaceae, Anacardiaceae, Euphorbiaceae, Moraceae, Sapotaceae and Sapindaceae.

Western Ghats of India is one of the eight biodiversity hotspots of the world. Genetic resources of native fruits of Western Ghats have not been given desired attention due to their comparatively less commercial importance and limited research. These crops are well adapted to the stressed, arid and semi-arid ecosystems having high potential for mitigating inevitable climate change scenario, and hence need immediate attention. In view of the great importance of these native fruit species and urgent need to strengthened. Uthaiiah (1995) reported 50 species wild edible fruits of the Coorg region of Western Ghats. These belong to 25 families, 38 genera but there may be more to be identified. Khaple *et al.* (2012) studies status of wild edible fruit tree species was carried out in two vegetation types of Kodagu and found that species richness, diversity of wild edible tree species and families was more in evergreen vegetation. Deshmukh and Ahilya (2011) reported 11 fruit plant species were investigated for their nutritional food value and medicine from Western Ghats region of Maharashtra. The fruits are rich in sodium, potassium, magnesium, iron, calcium, phosphorus etc. Sasi, and Rajendran (2012) reported 70- species wild and less- known plants belonging to 48 genera of 27 families of the Nilgiri region which have ethno botanical importance. Sathyavathi and Janardhanan (2014) listed 30 wild edible fruits used by the Badagas tribe of Nilgiri District for their conservation and cultivation purpose. Yesodhoran and Sujana (2007) reported 71 species used by the tribal's of Parambikulam wild life sanctuary, Kerala, Out of these 30 species are used as leafy vegetables, 31 species as fruits. The seeds of 16 species are used for edibles purpose while 10 spices roots tubes are used. Studies the nutritional compositions of six fruits of Western Ghats revealed that higher level of anthocyanin, ascorbic acid total phenols and flavonoids were found in methanol extracts of *Mahonia leschenaultii*, *Gaultheria fragrantissima* and *Rubus ellipticus* (Karuppuswamy *et al.*, 2011).

Most fruits were consumed fresh when ripe. The tender fruits used for pickling, salting and other culinary

preparations were from *Artocarpus hirsutus*, *Artocarpus heterophyllus*, *Carissa carandas*, *Carissa spinarum*, *Phyllanthus emblica*, *Garcinia gummi-gutta*, *Mangifera indica*, *Margaritaria indica* and *Spondias pinnata*. Wine was made from *Syzygium cuminii*, *Carissa carandas*, *Carissa spinarum* and *Phyllanthus emblica*. Fruits of medicinal importance were from *Chrysophyllum roxburghii*, *Carissa carandas*, *Carissa spinarum*, *Phyllanthus emblica*, *Garcinia gummi-gutta*, *Syzygium cuminii* and *Solanum americanum*. *Garcinia gummi-gutta*, locally called Ponpuli, yielded commercial quantities of fruits used for production of high value vinegar and also for extraction of Hydroxy Citric Acid (HCA) for manufacture of anti cholesterol medicines (Namera, et.al, 2015).

The collection, conservation and utilization on some of the fruits, such as *Garcinia indica* and *Garcinia gummigutta* have started at various research organizations. Some other fruits, namely *Chrysophyllum roxburghii* (Sapotaceae), *Canthium parviflora* Lamk syn. *Plectronia parviflora* (Lam.) Bedd. (Rubiaceae), *Elaeagnus conferta* Roxbsyn, *Elaeagnus latifolia* L. (Elaeagnaceae), *Securina leucopyrus* syn. *Flueggea leucopyrus* (Euphorbiaceae), *Elaeocarpus tuberculatus* Roxb. (Elaeocarpaceae), *Nephelium stipulacum* Bedd. syn. *Doratoxylon stipulatum* (Sapindaceae) have potential for commercial cultivation. Thus, attempts were made with the objective of recording availability of these species, proximate analysis (Table 2) and their on farm and off farm conservation at Central Horticultural Experiment Station (CHES). Few plants were also provided to local growers on farm conservation. The continuous depletion of forest and the increasing human disturbance resulted in losses of these species. There is need to conserve these fruits for future. The detail of some of these fruits is as follows,

Lavate pan (*Allophylus serratus*)

It is a shrub of family Sapindaceae. The fruits ripe in the month of February - March. The outer pulp and some time seeds are consumed in fresh state. It is frequently notice in degraded forest areas in Western Ghats. It is known to possess various therapeutic properties for ulcer curing.

Yechi pan (*Aporos alindleyana* Wt Baill)

It is tree which grow up to 15 m height of Euphorbiaceae family. Tree bark is smooth to shallowly fissured, brownish; blaze pink. Leaves are simple, alternate, oblong-lanceolate, acute, 7.5-17 cm long. Flowers unisexual, dioecious; blaze pink. Leaves are simple, alternate, oblong-lanceolate, acute, 7.5-17 cm long. Flowers unisexual, dioecious; male flowers in axillary catkins; female flowers in condensed cymes. Fruits are smooth, globose, 1. to 1.3 cm size with, 2-4 seeds. Usually in open evergreen to semi-evergreen forests up to 950 m. The fruits ripe in the month of May- July. The aril is consumed in fresh state. It is frequently notice in all over the area in Western Ghats. Extract of *A. Lindleyana* is widely used in Ayurveda medicines. *A. Lindleyana* is commonly seen in Western Ghats, Sri Lanka and in some rain forests of Kerala. In Ayurveda *A. Lindleyana* is named as Kodali. The extract of root is very useful medicine.

Pale pan (*Chrysophyllum roxburghii*)

Pale pan is a plant of Sapotaceae family. It grows as a tree up to 30 metres tall, with a trunk diameter of up to 40 cm. The bark is grey to dark brown. Inflorescences bear up to 45 flowers. The fruit are greenish, ripening yellow, round, up to 4 cm in diameter. Fruit matures in the month of March-May. Ripe fruits are consumed when fresh. It is rarely found that too only in reserve forest area up to 700 metres altitude.

Karmanji (*Carissa gangetica* Stapf)

It is an indigenous fruit of India. Karmanji is a shrub of in the family Apocynaceae. It grows as a multi-stemmed shrub, 0.5 to 3 metres in height. The leaves are glossy green, opposite, narrow ovate to lanceolate and 1-5 cm in length. The branches bear thorns of 1-3 cm length. White, star-shaped flowers ~1 cm across are followed by ovate green berries, 1-2 cm in length, which turn black or dark purple when ripe. It flowers in the month of January - March and fruit mature in the month of June-August. Fruits are reddish purple berries. Fruits that are commonly used as a fresh fruits. Immature fruits are used in pickle and processed products like cherry. The ripe fruits are used in jams, preserved in syrup and candy. It is found at in jungles and higher elevation. Fruits are round dark coloured & sweet & sour taste. The crop is well adapted to varying climatic condition from an altitude in the Himalayas.

More pan (*Securina leucopyrus* syn. *Flueggea leucopyrus*)

More pan (Bush weed) is an erect shrub of family Euphorbiaceae. The plant grows up to 4 m tall with branches cylindrical or obtusely angular when young, gray. Final branchlets are spine-tipped, cylindrical and rigid. Leaf stalks are 2-8 mm, grooved. Leaf blade is elliptic, obovate, or round, 1.3-2.5 × 1-1.5 cm, papery to thinly leathery. Leaf margin is not toothed and the tip is rounded. Flower cymes arise in leaf axils or at leafless nodes. Flowers are tiny, yellowish. Male flowers have 5 petals, 5 stamens. Female flowers have 5 sepals, elliptic or ovate, 0.6-0.8 mm; disk annular. Fruit is a nearly spherical berry, about 4 mm in diameter, whitish when ripe. It flowers in April-July and fruits ripe in June- July. The whole fruit except the rind and seed is consumed at ripe stage. It is rarely found in this region.

Nera pann (*Syzygium cumini*)

Nera pann (jamun) is a slow growing tree. It may reach heights of up to 30 m and can live more than 100 years. The bark is rough and dark grey, becoming lighter grey and smoother higher up. The leaves are pinkish when young, changing to a leathery, glossy dark green with a yellow midrib as they mature. The trees flower from March to April. The flowers are fragrant and small. The fruits mature April- June. The fruit is oblong, ovoid, starts green and turns pink to shining crimson black as it matures. Whole fruit except the seed is consumed at ripe stage. It is found in entire of Western Ghats.

Karepann (*Xeromphis spinosa*)

Karepann is a plant of family Rubiaceae. The fruits mature in the month of June-July. The whole fruit except the seed is consumed at ripe stage. It is found in entire of Western Ghats.

Kotte pan (*Zizyphus rugosa* Lamk)

Kotte pann belongs to family Rhamnaceae. It is a tree found on hills and mountains below 1400 m altitude. It is a small tree or shrub, spines. The leaves are simple, 5-12 cm long and are broadly elliptic and short tips. It flowers in December-January. The fruits mature in February- March. Fruit are 5-8 mm in diameter, globose or pyriform, white when ripe. Whole fruit except the seed is consumed at ripe stage. It is found in degraded forest areas of entire of Western Ghats.

Thadachi pann (*Grewia tiliifolia*)

Thadachi pann is a moderate-sized to large tree of family Tiliaceae. It is a very close relative of Phalsa. Tree trunk is grey or dark brown. Leaves are stipulate, ovate with oblique base and acuminate. It flowers in April- May. The flowers are small, borne on thick axillary peduncles. Fruits ripe in May-June. Fruit are globose with 1-1.5 cm diameter, black and edible. Whole fruit except seed are consumed at ripe stage. It is found throughout Western Ghats.

Uppali pann (*Margaritaria indica* (Dalz.)

Uppali pann is a deciduous tree of family Euphorbiaceae. The tree may grow up to 25m height. The tree trunk is reddish brown. The leaves are simple, alternate, lanceolate, 5-13 cm long and with entire margin. Flowers are unisexual, dioecious, green. Fruits are small (1.0cm diameter) and globose. The fruits mature in the month of September- November. Whole fruit except the seed is consumed at ripe stage. It is found in South and Central Sahyadris of Western Ghats.

Male Koomathi (*Nephelium stipulacum* Bedd) syn *Dorato xylonstipulatum*)

Male Koomathi is plant of family sapindaceae. Fruits mature in the month of July-September. The arils of the fruit is consumed only in ripe stage. It is rarely noticed occur at higher elevation

Kooge pan (*Elaeocarpus tuberculatus* Roxb)

Kooge pan is tall tree of family Elaeocarpaceae which may grow up to 40 m tall The trunk is smooth with grey and white colour. Leaves are simple, alternate, spiral, clustered at twig ends 9-30 cm long obovate, apex round. Inflorescence is axillary and flowers are white. Fruits mature in September- November. Outer pulp and kernel is edible and Consumed only as ripe fruit. It is not common in this region.

Idanji pann (*Elaeocarpus smunronii* (Wt.) mast)

It is plant in the Elaeocarpaceae family. It is found only in India. Trees grows up to 15 m tall. Trunk is greyish, smooth and blaze cream. Leaves are simple, alternate, 4-9 cm long, ovate Flowers axillary in racemes, white. Fruit is Drupe, elliptic and 2 cm long, smooth with single seed. Fruits mature in March-April. Whole fruit except the seed is edible and Consumed only as ripe fruit .It is not common in this region.

Naikulli pann (*Epiprinus mallotiformis* (Mueller) syn *Symphyllia mallotiformis* Muell)

Naikulli pan is a tree of Euphorbiaceae family. The tree grows up to 12 m height. Leaves are simple, alternate, 6-17 cm long, usually elliptic, apex acute, and margin is entire. Flowers are unisexual. The male flowers produced numerous in clusters with few female few at the base of the inflorescence. Fruits mature in April-June .Whole fruit except the seed is edible and consumed as ripe fruit. It is common in this region at higher elevation.

Kakkade pann (*Flacourtia indica* syn. *Flacourtia ramontchi*) Governor's plum

It is a flowering plant of family flacourtiaceae. This is a bushy shrub or tree with a spiny trunk and branches. In shrub form it grows up to 8 m The branches are drooping type and leaves are oval .Fruits mature in August- October .

Whole fruit except the seed is edible and consumed as ripe fruit. The pulp is yellow or white and sweet with an acidic tang. It is eaten raw or made in to jelly or jam. It can be fermented to make wine. The leaves and roots are used in herbal medicine. It is scattered all over the region.

Male kakkade (*Flacourtia Montana Graham*)

Male kakkade is also belongs to family Flacourtiaceae which is endemic to the western Ghats. This is a bushy shrub or tree which grows up to 8 metre. Trunk is branched thorny, brownish and smooth. Leaves are simple, alternate, 7-18 cm long. Fruits mature in December-February. Whole fruit except the seed is edible and consumed as ripe fruit. It is not coon but scattered all over the region.

Punarpuli- kokum (*Garcinia Indica*)

Commonly known as kokum, is a fruit-bearing tree that has culinary, pharmaceutical, and industrial uses. Ripe fruits is fresh state used in preparing soft drinks and as souring agent in culinary. Edible fat is extracted from seed kernel. Immature fruit is cut, dried and used in culinary. It is found in western side of Ghats at low elevation. Kokum is a small slender evergreen tree reaching to a height of 10-15 metres with spreading branches. Mature leaves are dark green, ovate 6.3-9.0 cm long. The tree flowers in November- February and fruits ripen in April-May or June. The fruit is a berry, 2.5-3.8 cm in diameter. Spherical or globose in shape but not furrowed and purple or red when ripe and encases 5 to 8 seeds that are compressed and embedded in pulp. It is found in western side of Ghats at low elevation.

Kacham pulli (*Garcinia gummigutta* (L) Roxb)

Kadumpuli or Malabar tamarind is medium tree found in Western Ghats, The fruit rind is used as spice in curries and its juice is used for reducing fat and also prevents blood clotting by reducing triglycerides. The rind of ripe fruits are processed and used as a condiment in fish and prawn preparation to impart flavour and taste and to improve keeping quality. It has immense value in drugs production for reducing the obesity and rinsing mouth. The tree has upright growth, medium sized. The fruits ripe in the months of July- August. The fruit weight ranges between 75 to 85g. Fruits are dull yellow colored, 6-7 seeds/fruit, rind yellow, flesh white, 8 segments, juicy and acid, seeds are not attached to flesh. Whole fruit except seed is consumed. It is found at higher elevation of the Western Ghats.

Beenakepuli (*Garcinia xanthochymus* Hook)

Beenakepuli, Yelllow mangosteen (*Garcinia xanthochymus* Hook)is evergreen tall tree. The fruit rind is used as spice in curries and its juice is used for reducing fat and also prevents stomach disorders. The tree has upright growth, medium sized. The leaves are big and drooping type. The fruits ripe in the months of November -December. The fruit weight ranges between 100-150g. Fruits are bright yellow colored, 1 seeds/fruit, rind yellow, flesh yellow, juicy and acid, seeds are not attached to flesh. Whole fruit except seed is consumed. It is found at higher elevation of the Western Ghats.

Kurmana pann- Orangeberry (*Glycosmis mauritiana*)

Orange berry is a large shrub to small tree of rutaceae family .It grow up to up to 4 m tall. Tree is trunk is brown and smooth. Leaves are compound, pinnate, alternate, spiral. Leaflets are 3-5, alternate, 9-16 cm long, oblong or elliptic. Base is pointed, margin toothed. Flowers are born in velvety panicles in leaf axils. Flowers are small, white and stalk less. Fruits mature in December-February. Whole fruit except the seed is edible and consumed as ripe fruit. Fruits are round, pinkish, up to 2 cm diameter with 2-3 seeds. It is found in degraded forest at higher elevation throughout the Western Ghats

Amme pan (*Canthiumdicocum* var. *umbellatum* syn. *Pelectronia parviflora*)

Tree belong to the family Rubiaceae which may attain up to 12 m height. The trunk is grey, smooth, irregularly fissured and flaky. Leaves are simple, opposite, decussate; stipules interpetiolar linear with broad base, to 0.9 cm long; petiole 0.6-1 cm long, glabrous; acuminate with entire margin. Flowers are borne axillary cymes inflorescence. Fruit is drupe, ovoid, 1.5 cm long. The fruits ripe in the month of April - June. Whole fruit except seed are consumed as fresh fruits are consumed in ripe stage. It commonly found at higher elevation.

Aajini chakke (*Artocarpus hirsutus* Lamk)

It is a tropical evergreen tree of Moraceae which is native to western Ghats. It prefers moist, deciduous to partially evergreen forests and grows an altitude up to 1000 m msl with an annual rainfall of 1500 mm or more. The tree may reach a height of up to 35 m. The fruits ripe in the month of May- June. The mature carpels, seeds are consumed fresh. Tender fruit used in pickle. It commonly occur all over the area. Pulp is eaten as fresh, the seeds are roasted and eaten. Wild jack is native of India, ever green tree. Leaves are bigger than jackfruit tree, lower surface of leaves are leathery hairy structure. Flower are yellow - green in colour. Fruit resembles jack fruit but small size like coconut.

Sweet pulp with seeds. It is found in western Ghats. It can be propagated by seeds & vegetative propagation methods also suitable tree on with stand to water logging, termite and fungal attack. Wood of the tree is used for house hold implements and mainly for railway reaper.

In recent years the available of these fruits has decreased due to change in land use pattern, human encroachment and unscientific exploitation. Thus efforts was made to record the availability of these species and conserved them. The wild edible fruit species of the Western Ghats region serves as important component of the ecosystem of the area. Some of these have potential to commercial cultivation. Studies on their nutraceutical values, efforts towards multiplication for distribution to farmers and value addition of the products will help in bringing these trees to cultivation. There is need for more works on these plant species.

REFERENCE

- Deshmukh, B. S. and Ahilya, Waghmode. 2011. Role of wild edible fruits as a food resource: Traditional knowledge. International Journal of Pharmacy & Life Sciences, 2(7): 919-925.
- Karuppuswamy, S., Muthuraja, G. and Rajsekaran, K.M. 2011. Antioxidant activity of selected lesser known edible fruits from Western Ghats of India. Indian Journal of natural products and resources 2(2):174-178.
- Khaple, Anil Kumar, Maruti, Gurav and Hubballi, Santosh. 2012. Population studies of wild edible fruit tree species in Kodagu. International Journal of Life Sciences. 1(3): 48-55 .
- Namera C. Karun, Vaast, P. and C. G. Kushalappa.2014. Bioinventory and documentation of traditional ecological knowledge of wild edible fruits of Kodagu-Western Ghats, India. Journal of Forestry Research, 25(3): 717-721
- Sasi, R. and Rajendran, A. 2012. Diversity of wild fruits in Nilgiri Hills of the Southern Western Ghats-ethnobotanical aspects. International Journal of Applied Biology and Pharmaceutical Technology . 3(1): 81-87
- Sathyavathi, R. and Janardhanan, K. 2014. Wild edible fruits used by Badagas of Nilgiri District, Western Ghats, Tamilnadu. J. of Medicinal Plants Research. 8(2):128-132.
- Tripathi, P. C., Karunakaran, G., Sankar, V. and R. Senthil Kumar. 2015. Survey and Conservation of Indigenous Fruits of Western Ghats. J. of Agricultural Science and Technology A 5: 608-615
- Uthaiiah, B.C. 1995. Wild edible fruits of Western Ghats – A survey. Higher plants of Indian subcontinent (Additional series of Indian journal of Forestry. Dehra Dun, Uttar Pradesh, India: Bishen Singh Mahendra Pal Singh (Volume-III), p. 87-98.
- Yesodharan, K. and Sujana, K.A. 2007. Wild edible plants traditionally used by tribes in the Parambikulam wild life sanctuary, Kerala, India .Natural Products Radiance 6(1): 74-80.

Table 1: Wild Edible Fruits of Western Ghats region

Vernacular Name	Botanical Name	Family	Fruiting Season	Uses
Lavate pan	<i>Allophylus serratus</i>	Sapindaceae	Feb - Apr	Consumed in fresh stage
Yechi pan	<i>Aporosa lindleyana</i>	Euphorbiaceae	May - Jul	Consumed in fresh stage
Aajini chakke	<i>Artocarpus hirsutus</i> Lamk	Moraceae	May - Jun	Ripe carpels are consumed fresh, Tender fruit pickling, Seed roasted and consumed
Puli chakke	<i>Artocarpus lakoocha</i>	Moraceae	Nov - Jan	Picking ,Souring agent Pulp is consumed in fresh state
Mukkanna	<i>Borassus flabellifer</i> L.	Palmae	Dec - Apr	Consumed in fresh form
Amme pan	<i>Canthium dicoccum</i> var. <i>umbellatum</i> syn. <i>Plectronia parviflora</i>	Rubiaceae	Apr - Jun	Fresh fruits are consumed in ripe stage
Kare pan	<i>Canthium parviflora</i> Lamk syn. <i>Plectronia parviflora</i> (Lam.) Bedd	Rubiaceae	Apr - Jun	Fresh fruits are consumed in ripe stage
Pale pan	<i>Chrysophyllum roxburghii</i>	Sapotaceae	Mar - May	Ripe fruits are consumed when fresh
Kirkarmanji	<i>Carissa carandas</i> L.	Apocynaceae	Apr - May	fruits are used as fresh, pickling, jams, sun dried and preserved
Karmanji	<i>Carissa gangetica</i> Stapt.	Apocynaceae	Jun - Aug	fruits are used as fresh, pickling, jams, sun dried and preserved
Cheslle pan	<i>Cordia dichotoma</i>	Cordiaceae	Dec - Feb	Ripe fruits are eaten

Vermicular Name	Botanical Name	Family	Fruiting Season	Uses
Tholiar pan	<i>Elaeagnus conferta</i>	Elaeagnaceae	Jan - Mar	Ripe fruits are consumed
Kooge pan	<i>Elaeocarpus tuberculatus</i> Roxb.	Elaeocarpaceae	Sep - Nov	ripe fruit , kernels
Idanji pan	<i>Elaeocarpus munronii</i> (Wt.) mast.	Elaeocarpaceae	Mar - Apr	Ripe fruits are consumed
Naikulli pan	<i>Epiprinus mallotiformis</i> (Mueller)	Euphorbiaceae	Apr - Jun	Ripe fruits are consumed
Kakkade pan	<i>Flacourtia indica</i> (Burm.) Merr.	Flacourtiaceae	Aug - Oct	Ripe fruits are consumed
Male kakkade	<i>Flacourtia Montana</i> Graham	Flacourtiaceae	Dec - Feb	Ripe fruits are consumed
Punarpuli	<i>Garcinia Indica</i> (Dupetit-Thou) Choiss.	Clusiaceae	Mar — May	used in preparing soft drinks & souring agent
Panapulli	<i>Garcinia gummigutta</i> (L) Roxb.	Clusiaceae	Aug - Oct	Dried rind & concentrated juice used as souring agent.
Beenake puli	<i>Garcinia xanthochymus</i> Hook .T. Anders	Clusiaceae	Dec - Mar	Consumed when ripe
Kurmana pan	<i>Glycosmis mauritiana</i> (Lamk) Tanaka	Rutaceae	Dec - Feb	Consumed at ripe stage
Thadachi pann	<i>Grewia tiliifolia</i>	Tiliaceae	May - Jun	Consumed at ripe stage
Uppalipan	<i>Margaritaria indica</i>	Euphorbiaceae	Sep - Nov	Consumed at ripe stage
Koomathi	<i>Dimocarpus longan</i> Lour. (<i>Nephalium longan</i> (Lamk) Camb.)	Sapindaceae	Aug - Nov	Aril only consumed
Male Koomathi	<i>Nephalium stipulacum</i> (Bedd.)	Sapindaceae	Jul - Sep	Arils of the fruit only eaten
Pulipan	<i>Rourea minor</i> (Gaertn.)	Connaraceae	Jun - Aug	Consumed at ripe stage
Vale pan	<i>Rubus ellipticus</i> J.E. Sm.	Rosaceae	Feb - Apr	Consumed at ripe stage
Moir pan	<i>Salacia malabarica</i> Gamb	Hippocrateaceae	Jun - Jul	Consumed at ripe stage
Kokkarchi pann	<i>Scutia circumscissa</i>	Rhamnaceae	Jun - Aug	Consumed at ripe stage
More pan	<i>Securina leucopyrus</i> syn. <i>Flueggea leucopyrus</i>	Euphorbiaceae	Jun - Jul	Consumed at ripe stage
Padachi pan	<i>Symplocos cochinchinensis</i> ssp. <i>Laurina</i> (Retz.)	Symplocaceae	Sep - Nov	Consumed at ripe stage
Nerapan	<i>Syzygium cumini</i>	Myrtaceae	Apr — Jun	Consumed at ripe stage
Bollurupan	<i>Syzygium gardneri</i>	Myrtaceae	Jan - Mar	Consumed at ripe stage
Jamnaripan	<i>Syzygium jambos</i>	Myrtaceae	Nov — Jan	Consumed at ripe stage
Kemandikai	<i>Terminalia bellerica</i> (Gaertn.)Roxb	Combretaceae	Jan — Apr	Matured kernel is consumed
Karepann	<i>Xeromphis spinosa</i>	Rubiaceae	Jun - Jul	Consumed at ripe stage
Bellathapan	<i>Zizyphus oenoplia</i> L.	Rhamnaceae	Dec - Jan	Consumed at ripe stage
Kottepan	<i>Zizyphus rugosa</i> Lamk.	Rhamnaceae	Feb - Mar	Consumed at ripe stage

Table 2 : Fruit characteristics of some wild fruits

Vermicular Name	Botanical Name	Fruit Weight (g)	Fruit Volume (CC)	Fruit Length (cm)	Fruit Breadth (cm)	Rind Colour	Flesh Colour	TSS (°Brix)	Acidity (%)	No. of Seeds
Bean Puli	<i>Averhoa sp.</i>	15.6	16.0	5.60	2.20	Green	white	5.25	-	-
Undehuli	<i>Artocarpus lakoocha</i>	113.5	115.20	5.99	6.05	Green	white	6.70	-	-
Ajan chakke	<i>Artocarpus hirsutus</i>	93.55	95.0	6.45	5.30	Dull Yellow	Light yellow		-	125.0
Majjige hannu/ More pan	<i>Securina leucopyrus</i>	9.33	9.51	2.34	2.47	Whitish Green	white	15.65	-	2.17
Gonne Hannu		3.11	3.2	1.27	1.61	-	-	16.35	-	31
Pale pan	<i>Chrysophyllum roxburghii</i>	34.528	34.8	13.24	12.86	Green	white	22.0	-	3
Karmanee	<i>Carrissa carendus</i>	9.04	9.15	2.53	2.46	Violet	white	15.20	-	2.3
Nar pan	<i>Syzygium cumini</i>	2.12	2.20	1.51	1.10	Violet	Reddish	11.20	-	1
Punarpuli	<i>Garcinia indica</i>	52.63	51.80	4.15	4.86	Dull Red	Red rind & white pulp	14.78	4.16	5.13
Kachampuli	<i>Garcinia gummigata</i>	60.30	56.10	5.20	5.10	Dull yellow	Yellow rind & white pulp	8.90	-	5.20
Beenakepuli	<i>Garcinia xanthochymus</i>	127.78	127.83	6.64	6.15	Bright Yellow	Yellow	12.70	7.20	1.40
Baduvapuli	<i>Citrus penninvesiculata</i>	554	545	16.5	17.0	Dull yellow	Greenish white	8.1	2.75	8.30
Ballichorangi	<i>Citrus aurantifolia</i>	28.2	29.0	-	-	Yellow	white	7.2	-	-
Kodakithuli	<i>Citrus reshni var kodakithuli</i>	18.37	18.2	2.64	3.49	Bright orange	orange	11.2	0.46	8.00
Belladakithuli	<i>Citrus maderaspatna Tanaka</i>	15.20	15.5	2.63	3.51	Bright orange	orange	13.2	0.21	9.00

(Tripathi et.al., 2015)