

Palmyrah - Potential Crop for Waste Land

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The palmyrah palm (*Borassus flabellifer*) belongs to the family Palmae, which is a very ancient family of trees, perhaps older than any other flowering plants. Fossils of members of the palm family has been recorded dating back to 120 million years. This very ancient ancestor would mean that the form and structure of the present palm trees, is a result of natural selection pressure lasting over millions of years. Palmyrah palm has been mentioned in the historical writings viz., Manuneechi Sastra dating back to 4000 years.

The palmyrah is believed to be a native of Tropical Africa and grows extensively in the Arid parts of India, Sri Lanka, Burma, Thailand, Vietnam, Malaysia and in some parts of Indonesia. The palm belt in the world roughly extends from 44° South latitude to 45° North Latitude.

The Chinese traveler Magestanes first recorded the tapping of padaneer and making of sugar candy which he took back to his country. As all the parts of the palm are useful, it is known as 'Kalpagatharu'. It was stated that there are over 800 uses of the palmyrah palm. Palmyrah is aptly called 'Tree of life' and has contributed immensely to the people both as food and shelter. Most of the products are made by the traditional methods are known to us from time immemorial. The Government of Tamil Nadu recognized it is the state tree of Tamil Nadu, since 1978.

Palmyrah palm is an important multipurpose tree of great utility, grows extensively in North and Eastern part of Sri Lanka, Southern parts of India and in most of the tropical countries. The Palmyrah palm is described as the single most useful plant in the Northern regions of Sri Lanka and engages human labour in the industries around it irrespective of gender or age. It is easily cultivated, drought resistant and also found to grow wild. Cultivation requires little labour in planting the nuts and protecting them from cattle till they grow above reach. The growth of the tree is very slow and it takes from 15 to 30 years to bear.

It is estimated that there are about 8.59 crores of palmyrah palms existing in India of which about 5.02 crores of palms are spread over Tamil Nadu and the remaining 3.57 crores palms are in Andhra Pradesh, West Coast of India stretching from Kerala to Saurashtra and in North East India covering Orissa, West Bengal and Bihar. It is essential that about 3.16 crores of palms are tappable, but only 1.16 crores of trees alone are tapped every year. In Tamil Nadu, palmyrah spread over an area of about 22,555 ha in all districts except Nilgris. In Tamil Nadu, Tirunelveli (Nellai) district has the maximum area under palmyrah. In Sri Lanka, it thrives on an average of 24,000 ha. The total population of palms is about 10.6 million out of which 2-3 million palm bear fruits.

The palmyrah palm is a large tree growing up to 30 m height and the trunk may have a circumference of over 1.5 m at the base. The trunk is black in colour and looks like cylinders. It is also corrugated by the semi circular scars of fallen leaves. The tree can be easily recognized by its gigantic fan shaped leaves. There may be 25-40 fresh leaves and they are leathery, gray green, fan-shaped, 1-3 m wide and folded along the midrib and they spring at the top in a clump. They are usually very tough and have thick stalks.

There are two kinds of the palmyrah - the male and the female. The male and female flowers are held by two different trees, never in one tree. Both male and female trees produce spikes of flowers but only the female plant bears fruits. However, both trees are used to tap toddy. The flowers are small and appear in densely clustered spikes, developing into large, brown, roundish fruits. The male flowers are smaller than the female flowers.

Each female palm may bear 6-12 bunches of about 50 fruits per year. When the fruit is very young and the top of the fruit is cut off, three sockets are found inside and these contain the kernel which is soft as jelly and translucent like ice and is accompanied by a watery sweetish liquid. This is called in Tamil as 'Nungu'. The British named this ice apple as it resembled ice. This fruit is loaded with minerals and absolutely no fat and protein.

In India there is no recognized variety except SVPR1 regional palmyrah variety released by Srivilliputhur, Regional Research Station, TANU. But the palmyrah palms growing in Sri Lanka can be broadly classified into two varieties based on pigmentation of the fruit skin namely, black skinned fruit and red skinned fruit.

Black skinned fruit has comparatively less red pigment on the fruit skin. It yields lesser but marginally superior seedlings containing more starch and less fibre. The pulp extraction is easier and contains sugar and protein at 77, 10 and 2.5 % of the pulp respectively. The alkaloids, mineral matter and free amino acid are lesser in black skinned varieties than the red skinned fruits.

Red skinned fruit has large amounts of black pigments along with liberal distribution of red pigment on the fruit skin. Fruit and nut number per tree are significantly greater in this variety. But pulp weight per nut is less; sugar, starch and protein constitute 77, 10 and 2.5 % of the pulp, respectively. The alkaloids, aminoacids and mineral matter are in higher amounts in red skinned varieties. The essential aminoacids, lysine and methionine are found in both the varieties. The other favourable fruit features along with the sap yielding characteristics of these varieties seemed to favour the selection of red skinned fruit variety for commercial exploitation.

The coconut-like fruits are three-sided when young, becoming rounded or more or less oval, 12-15 cm wide and capped at the base with overlapping sepals. The outer covering is smooth, thin, leathery, and brown turning nearly black after harvest. Inside is a juicy mass of long, tough, coarse, white fibres coated with yellow or orange pulp. Within each mature seed is a solid white kernel which resembles coconut meat but is much harder.

The mature fruit is usually tossed over low burning fire or embers to cook them mildly and the skin is peeled off to expose the juicy fruit. This is squeezed and the pulp removed. The pulp in itself is sweet and creamy and is delicious to eat. The pulp is usually sucked directly from the fibers of the fruit. The fresh pulp is reportedly rich in vitamins A and C. The jelly like pulp/endosperm at the immature stage is relished during summer months as a source of food.

Each fruit will have usually three seeds and these seeds are planted in specially made soil nursery beds to grow. After 3 to 4 months the seeds start to grow. These seedlings below the surface are lifted out and the outer sheath cover is removed. The peeled seedlings are eaten fresh or sun-dried, raw or cooked in various ways.

The chief product of the palmyrah palm is the sweet sap (toddy) obtained by tapping the tip of the inflorescence, as is done with the other sugar palms and the coconut palm. Toddy can be obtained from the young inflorescence of either male or female trees. The palmyrah toddy is sweet when quite fresh, but bitter when fermentation sets in. The toddy season is from January to August. The spathes of the palmyrah trees appear in January and the toddy-drawer commences his operations straightaway. He climbs these trees with the help of a loop made of strips of palmyrah stalk. He binds the spathes tightly with strips of palmyrah stalk to prevent them from further expansion and descends, after having thoroughly bruised the embryo flowers within to facilitate the exit of juice.

For several mornings this operation of crushing is repeated and each time a slice is taken off the end of the spathes to facilitate the flow of the sap. In about a week the sap begins to flow freely. When this occurs, an earthen pot is inserted at the tip end of the spathe and this pot is tied to the spathe to collect the juice that flows from this spathe. Every morning and evening these vessels are emptied and for a period of six months the palmyrah will continue to pour its sap at the rate of four to seven liters a day. The juice if allowed to ferment is slightly intoxicating and become alcoholic.

In the toddy taverns, this toddy is served in 'ola' (leaf) dishes which the vendor prepares to distribute the beverage using a young light green palmyrah leaf. The toddy ferments naturally within a few hours after sunrise and is locally popular as a beverage. This is also distilled to produce the alcoholic liquor called palm wine, arrack or arak.

To sweeten the toddy, the inside of the pot is lined with little lime before it is tied to the spathe. The lime prevents the fermentation of toddy and results in a sweet drink. The sweetened toddy is called Karuppany. This Karuppany can be drunk and is very sweet and delicious and is reportedly a good source of vitamin B complex. It is also used to make jaggery. The Karuppany is boiled down to the consistency of syrup and this syrup is poured into small baskets made of palmyrah leaf called 'Kuddan', where it is allowed to cool and partially crystallizes.

Among the four sugar yielding palms viz., Palmyrah, Date Palm, Sago and Coconut, Palmyrah ranks first in yielding sugar as well as edible and non-edible products. The fully ripened fruits can be consumed as such or it can be roasted in open fire to feel the typical pleasant aroma which tasting.

This palmyrah palm jaggery is much more nutritious than crude cane sugar, containing mainly sucrose, glucose, proteins and minerals like calcium, phosphorus, iron and copper. This jaggery is also used as a sweetener in many sweet dishes, to flavour hot milk, chopped into small flakes and combined with coconut scrapings and used to accompany pancakes or porridge of unpolished rice and in Vattalappam - a sweet dish. This jaggery can be stored and used over a long period.

The leaves are used for thatching roofs, screening as fence, as mats, baskets, fans, hats, umbrellas, buckets, sandals and as writing material. In ancient times, the mature leaves were seasoned by boiling in water and turmeric, as a preservative, and sun dried. These were then cut into sizes and written on with a stylus. They formed great Ola leaf books and some of these are still preserved in India. The sacred writings of Hindus were inscribed in the olden times in these leaves. The leaves after using for thatching and fencing when replaced are sold to the farmers who use them as organic fertilizer in their farms and field.

The wood of a fairly old tree is hard, strong and durable and is generally used for roofing. The vacant stem of the tree is best for making water pipes. The fibre from the stalk is used for making brushes and ropes.

The ridge of the leaf called Eekku and this is used in conjunction with leaves to weave baskets and also as brushes. The leaf stalk is stronger and used as basket bands and the when the stalk is stripped into thin strips it is called 'naar' and used in different ways to tie things. The seeds, stalks and most part of the wood are dried and used as firewood.

Conclusion

In summary no parts of the palmyrah palm is unused at homes. Even the net like material at the base of the young leaf stalk is used for straining the toddy. The bunch of fruits is hung in the doorways at ceremonial occasions. It is very usual to find Panang kaddy, Panangai Pinaddu, Pulukodiyal and Odiyal and odiyal flour in most homes in areas where palmyrah palm is grown in plenty. The palmyrah palm like coconut palm, banana tree and bamboo all possess a great value to the people.

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