Utilisation of Fishtail Palm (Caryota urens L.) in tribal area of Andhra Pradesh – Present status and scope

Abstract

Fishtail palm (Caryota urens) are well known landscaping plants today and is widespread in peninsular India and Sri Lanka. They are multipurpose species with a variety of applications and thus very heavily utilized. Caryota urens, known as Jirika in Andhra Pradesh and Giraka in Telangana states, is a native rainforest species of tropical Asia. It is also one of the most common trees in the perennial forest gardens of high altitude areas of southern India. Also called as fishtail palm or sago palm and is traditionally tapped for sap from which alcoholic beverages are prepared. Tapping palms is the domain of tribal people in local area of Andhra Pradesh who are traditionally involved in tapping and utilisation. This paper focuses on the traditional knowledge from tappers pertaining to management of palm, its uses and tapping activities. The potential economic value of fishtail palm is assessed. The ecological and economic importance of developing markets for fishtail or sago palm.

Fishtail palm will yield throughout the year like coconut palms, but during periods of high humidity and rain, the supply of sap increases noticeably. Tribal men used to climb the palms for tapping, and women process for cleaning and transfer into vessels for transport and sells the toddy at nearby huts and road side. Each tribal family gets an income of 30000 to 50000 per year from each palm which is considered as family tree for tribal community in agency area

Keywords: Caryota urens, Tapping, Toddy, Inflorescence sap, Jaggery:

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Introduction

“Jaggary Palm, Caryota urens, is a flowering tree up to 12 m tall and 30 cm wide. It has bipinnate green leaves, white unisexual flowers that form into pendent clusters, and red round fruits. It is oftentimes cultivated as an ornamental tree in tropical and sub-tropical climates. The pulp is edible when powdered after sun drying and the leaves when cooked. Sugar and alcoholic beverages can be made using the sap obtained from the palms inflorescence, and sago using starch from the stems”(1,2). “However, the fruit may irritate the skin due to its oxalic acid content. Seed flour is made into porridge which can then be used to treat gastric ulcers, severe headaches, poisoning by snakebites, and rheumatic swelling. The root is used against tooth discomforts and the bark and seeds against boils. Dried, branchless leaves are used as fishing rods. Leaf bases, on the other hand, are sources of a very strong, fine, soft, and durable fibre used in brooms, brushes, ropes, etc. Other common names include solitary fishtail palm, toddy palm, and wine palm. Found In: Africa, Asia, Australia, Bangladesh, Burma, Cambodia, China, East Africa, Fiji, Hawaii, Himalayas, India, Indochina, Indonesia, Laos, Madagascar, Malaysia, Mozambique, Myanmar, Nauru, Nepal, North America, Northeastern India, Pacific, Pakistan, SE Asia, Senegal, Sikkim, Sri Lanka, Thailand, USA, Vietnam, West Africa and Zimbabwe”(5, 10).

“The fresh toddy is sweet, but in the course of a few hours it begins to ferment and becomes cloudy, going completely sour in 24 hours. Alternatively, when alcoholic beverages are the desired end product, the nectar may be allowed to ferment to the mildly alcoholic "toddy" or further additional left over toddy, by this time fermenting rapidly, to control the poisonous fermentation, distilling the same and the production and sale of homemade liquor without license called arrack, the well known commercial palmliquor. Further unfermented sap can be converted to jaggery, nector, jaggery powder etc. to get additional income for caryota urens which will boost palm jaggery industry at rural areas”(3,4,5).

In India it covers mainly area of high altitude areas of south Indian states mainly forest area of Chattishgarh, Orissa and Andhra Pradesh. Triabl people of forest area depend on fishtail palm for their own consumption and selling of Toddy. Palms are naturally available throughout area of high altitude area of maredimilli. Almost each and every tribal people uses the fishtailplam for toddy purpose. Hence the basic study was taken up for present utilisation of fishtail palm in the agency area of Andhra Pradesh.

Place of information collection

Fishtail palm grown areas of maredimilli, Devipatnam and Rajvommangi mandals and covered 16 villages. Interacted with more than 100 members of tribal people for primary information and collected neera samples for analysis.

Present status in agency area of Andhra Pradesh

Fish tail palm is the main income source for rural area of agency belt in Alluri Setharma Raju district (formerly East Godavari distract). The area of 12 sq.km area of 9 lakh people in 3000 villages having literacy of less than 50%. More than 70% of villages having fishtail population which will give regular income to tribal people.

Fig.1 : Map showing study location

A primary product of the plant in rural communities is the toddy in agency area and in some areas sugar substitute called jaggary obtained from the juice from the flowers. Sap collected from the inflorescence is fermented with a crude, mixed inoculum of yeast to obtain toddy. This beverage can be distilled, as is coconut toddy, to prepare a more concentrated spirit.

“A monocarpic species, living for several years without flowering, but then dying once it has flowered. It attains full size in about 10 - 15 years, and flowers when 15 - 30 years old. It flowers from the top down, and once the last fruit on the bottom inflorescence matures, the plant dies. The daily yield per tree of sap for wine and sugar is 30 - 40 litres. When flowering begins, the inflorescence is stimulated to produce juice; the inflorescence is then bound into a

'candle' form and tapped for its sweet juice by repeatedly slicing off the end of the candle. A tapping period may last for 10 - 15 years before the tree dies. Harvest for sago and other purposes is mainly from wild and semi-wild populations". (5,10)

"Tappers suggest that fishtail palm will yield throughout the year, but the best quality sap flows in the dry season. During periods of high humidity and rain, the supply of sap increases noticeably. Informants said that sap flow can be a weather indicator. However, the rainy season nectar is watery. There are other influences which affect toddy yields. Lightning strikes and strong winds can break the flowers. In or near natural forests, monkeys can compete with tappers for the sweet nectar. Tappers sometimes hang traps below their toddy pots to snare monkeys"(6). "Local tappers also take certain precautions to avert the influence of supernatural forces from their palms. Many believe that a greedy look at a flowering tree can stop the toddy flow. Puja water by local prist is sprinkled on the flower and recitations are made to preclude this problem. Another believe that the use of additive in pot stop the flow of sap and making products from sap also not preferred. Before climbing a palm, the tappers may invoke the locally worshipped gods. Tappers bless and chant over the knife with which they make incisions in the flower"(7, 12).

Men climb palms and tap flowers, while women process sells the toddy nearby huts and road side. The fresh toddy is sweet, but in the course of a few hours it begins to ferment and becomes cloudy, going completely sour in 24 hours. Alternatively, when alcoholic beverages are the desired end product, the nectar may be allowed to ferment to the mildly alcoholic "toddy" or be further distilled. Women are usually less involved in processing for alcohol, as social norms against women drinking or even being exposed to alcohol production and consumption are strong in many rural communities.

Trials for syrup and jaggery: scientist from HRS pandirimamidi and the Sun NGO have taken trials at Kirabu and M.Bimavaram village for syrup and jaggery with help of local tribal people. Then they filter the fresh toddy and pours it into G I pan with hot flame. When foam begins to appear on the surface of the liquid, it is skimmed off with a spoon. Once the foam has been removed, then they blend that toddy with any remaining sweet toddy supply. From then on keeps a low fire going and stirs the pot about every 20 minutes as the nectar boils down. The exact proportions of nectar to syrup vary with the quality of nectar and the individual family's assessment of syrup. It is came to know that, 6-8 litres of nectar produced one litre of syrup. In general, the boiling process takes 3 to 4 hours. It is observed that a properly sealed bottle of syrup will keep for three months. Alternatively, the syrup may be

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further boiled down to create "jaggery," or crystallized palmsugar. In this case, once the syrup stage is reached, the fire is reduced to a low flame and the syrup is stirred every five minutes or so. Once it approaches the desired viscosity, the syrup is pulled off the fire and continuously stirred. As it cools, the syrup thickens and is finally poured into molds for hardening. The lower the moisture content of the sugar, the longer it will keep. Additional left over toddy, by this time fermenting rapidly, to control the poisonous fermentation, distilling the same and the production and sale of homemade liquor without license called arrack, the well known commercial palmliquor. It is similar to controlled fermentation and distillation process, most commonly from coconut palm toddy.

Economic potential of fish tail palm products.

The major factors to be taken into account in assessing the economic potential of fishtail palm for local producers are the average yield of salable product for a given climate, and production and marketing costs. Average yield per palm per day is about 13-28 litres in different regions. An average palm has three flowers that each produce for an average of three months, about 270 days of yield per palm. The average number of palms was 5-10 of varying age classes per household. If the palms are distributed evenly across age classes, with mature palms bearing between the ages of 9-14 years, each household would have an average of one mature palm per year. These calculations are based on rough estimates and are intended only to convey the palms' high potential value when economic analyses are applied. Each tribal family gets an income of 30000 to 50000 per year from each palm which is considered as family tree for tribal community in agency area

Uses of fish tail palm

The fresh sap or toddy used to give kids and babies in the tribal families and believes that it works as medicine called as “Tallipalachettu” which means Mother milk tree. It is also considered as sources of income for family for their livelihood and used to give as dowry for their daughters. “The value of each palm for as season or year is about Rs.30000/- . also useful for products like, mixed with chilies and spices, toddy turns into a very good vinegar in 2-3 weeks' time”(8, 9). “Palm wood is, very dense and hard, making excellent tool handles, plows, and mortars for pounding rice. Leaves are used for roof thatching. The nearly one meter long black bristle fibers from the leaf base produce better quality string and brooms. They scrape out its heartwood pulp and pound it very thoroughly in a mortar.

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Fishtail palm products have medicinal properties, and are used in treatments in the ayurvedic medical system practice"(11, 12).

Nutritional values of fishtail palm neera (per 100 ml)

Basic studies was conducted at HRS Pandirimamidi and compared with other existing pal sap. Although it was not explored and processed, it has excellent vales as compared to palmyrah and coconut sap. So there is need to explore fishtail palm sap for further value addition.

Table 1 : Nutritional values of fishtail palm neera (per 100 ml)

	Coconut Sap	Palmyrah sap	Fishtail palm sap
pH	7.18	6.275	6.06
Brix	16.0	11.64	13.58
Acidity (% MAE)	0.245	0.26	0.32
Total sugar (g)	15.18	10.375	12.13
Reducing sugar (g)	0.554	2.225	3.08
Protein (mg)	165	208.5	243.25
Vitamin C (mg)	--	20.625	21.25
Phenolics (mg GAE)	510	15.125	319.66
AOA (mg TE)	321	61.955	269.47
Average values of three replications			

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Scope for research and development:

As it had many uses, and naturally available in specific areas, due to increase in demand for natural products i.e palm jaggery, palm sugar, palm wine etc, there is need of research on propagation for development of plant population and value added products to create value chain and entrepreneurship development in utilisation of fishtail palm or sago palm.

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Fig.2 : Plant natural products use for the study

Conclusions

The development of marketing structures with the small scale and dispersed farms is vital as access to national and international markets depends upon supplies of adequate quantity and quality of fishtail palm products. Co- operative or FPO based collection and marketing is one approach developed by department of horticulture for syrup and jaggery production from fishtail palm. The market potential for fishtail palm products seems assured, if reliable quality and supply can be achieved. In many countries, importing quantities for fishtail palm products, hence there is tremendous scope for develop value chain for fishtail products for health and wealth of tribal people in agency area of Andhra Pradesh.

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