

## Coconut – History, Uses, and Folklore

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### Abstract

*Coconut palm is considered as a native of Malesia, a bio-geographical region that includes Southeast Asia, Indonesia, Australia, New Guinea, and several Pacific Island groups. Coconut has been recorded in archaeological excavations and epigraphic inscriptions, in Sanskrit scriptures of religious, agricultural, and Ayurvedic importance, and in historical records as well as travelogues of visitors from China, Arab, and Italy. Its usefulness and multiplicity of uses has earned it epithets like “Tree of life”, “Tree of heaven”, “Tree of abundance”, and “Kalpavriksha” (a tree that provides all necessities of life). In addition to its food value, it has health, medicinal, and cosmetic value. Coconut occupies a special and a higher place among the many articles used in religious offerings to Almighty God. In India no religious offer is acceptable without a coconut. It is used in religious and social ceremonies even in areas where it is not grown. Not an inch of the tree goes waste and all parts are put to some working use. Through its innumerable working utilities and direct uses as food, feed, and drink, coconut has penetrated into the cultural, social, religious, and lingual matrix of people of various countries. This paper deals with the history through archaeological, epigraphic, and historical records and its uses and related folklore.*

The term coconut refers to the seed or the fruit of coconut palm (*Cocos nucifera*). *Cocos* is a monotypic genus of the family *Arecaceae*. The epithet nut is a misnomer, as the fruit is a drupe botanically. Early Spanish explorers called it ‘*cocos*’ or ‘monkey face’ because the three indentations (eyes) on the hairy nut resemble the head and face of a monkey; ‘*nucifera*’ means ‘nut bearing’. The spelling ‘cocoanut’ is an old fashioned form of the word coconut (Pearsall, 1999).

Coconut palms grow throughout the tropics in a band around the world from 25° North and 25° South of the equator. The palm can be found in Southeast Asia, Indonesia, India, Australia, the Pacific Islands, South America, Africa, the Caribbean, and the southern extremes of North America. The ideal growing conditions for coconut palms include free-draining aerated soil often found on sandy beaches, a supply of fresh groundwater, humid atmosphere, and temperatures between 27°C and 30°C.

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The coconut palm is one of nature's wonder. In India, it is appropriately eulogized as '*Kalpavriksha*' (a mythological tree supposed to grant all desires – "the tree that provides all the necessities of life"). It is "*Pokok seribu guna*" (the tree of a thousand uses) to Malays, and "Tree of life" or "Tree of heaven" for a Filipino, "Tree of abundance" or "Three generations tree" to an Indonesian. The very names are reflective of its uses and essentiality in everyday life of people in the tropics. Each and every part of the palm is useful in one way or another and not even an inch of the tree goes waste. The coconut palm is intertwined with life itself, from the food they eat to the beverages they drink and derive almost everything necessary to sustain the life. All the daily needs as household utensils, baskets, cooking oil, furniture, and cosmetics are made from the coconut palm.

### Origin and history

The origin of coconut palm is the subject of controversy. Indian mythology credits the creation of palm with its crown of leafy fronds to the sage Vishwamitra, to prop up his friend King Trishanku when the latter was literally thrown out of heaven by Indra for his misdeeds (Gandhi and Singh, 1989; Gupta, 1991). In Vadakurungaduthurai, Lord Kulavanangeesar is believed to have taken the form of a coconut tree to help quench the thirst of a pregnant woman. In Kerala, Goddess Bhagavati is believed to be the soul of the coconut tree. One of the Goddess's common epithets is *Kurumba* which means 'tender coconut'. Folktales of all other areas narrate that coconut

originated from head of a dead man or from a dead eel (Johnson, 1921; Roosman, 1970; <http://www.hawaiicoconuts.com/coconut-folklore-history/>).

Botanists place the origin of coconut palm in Papua New Guinea area, in some very distant past, on basis of occurrence of the nearest botanical relatives (Child, 1974). Harries (1990) argues its origin in Malesia and stated that the distribution of *Cocos* spp. is a relic of Gondwanaland. The current theory suggests it to be native to Malesia, a bio-geographical region roughly defined as an area that includes Southeast Asia, Indonesia, Australia, New Guinea, and several Pacific Island groups. The Indian subcontinent and South Asia designated as Hindustani center, an important region of diversity of crop plants among the eight centers, has been identified as a secondary center of origin of *Cocos nucifera* (Randhawa, 1980).

In the Hawaiian Islands, the coconut is regarded as a Polynesian introduction, first brought to the islands by early Polynesian voyagers from their homelands in the South Pacific. One of the folk songs conveys the importance, indicating its introduction from Tahiti. The song runs as "*Niu-ola-hiki*" (O life-giving coconut of Tahiti) and "*Niu-loa-hiki*" (O far-traveling coconut). Human beings seem to have no role in the spread of coconut to various places as these can float for very long periods, and then sprout when they lodge on the shore. This was dramatically demonstrated when coconuts were found growing on an island created by volcanic activity in Krakatoa in 1929–30 (Child, 1974).

### Etymology

The Sanskrit term *narikela* for coconut is believed to be an aboriginal word, derived from two words of South Asian origin, *niyor* for oil and *kolai* for nut (Iyengar, 1913; Achaya, 1998). The Tamil word ‘*nai*’ is for a semisolid greasy fat and appears to be derived from words like *ngai* and *niu* used for coconut oil in Polynesia and Nicobar islands (Chattopadhyaya, 1970). The root for names for coconut in Tamil, Telugu, Malayalam, and Kannada languages is *ten*, which means south, and *tenaki*, the nut fruit belonging to south. Likewise *tennaimaram-tengimara* would be the tree that belongs to south. In Sri Lanka names for coconut are derived from *ten* again directing towards south. Therefore, one has to look for the islands of South Pacific – Malaysia and Polynesia. The local names for coconut in Polynesia, Melanesia (*niu*), the Philippines, and Guam (*niyog*) are derived from the Malay word *nyiur* or *nyior*. This fact is often cited as evidence that the species originated in the Malay-Indonesian region. Amarkosha (500–800 AD) records synonyms of coconut and refers as *nariker*, *narikel*, *narikela*, and *langalin*. Names of the nut in various languages are presented in Table 1.

### Archaeological records

The fossil remains indicate that the plant evolved as far as 20 million years ago, long before man appeared on earth (Menon and Pandalai, 1958; <http://cocos.arenaceae.com/index.html>). Fossil records from New Zealand indicate that small, coconut-like

plants grew there as long as 15 million years ago. Even older [Eocene (Cenozoic): 56.5–35.4 MYBP] fossil fruits have been uncovered in Kerala, Rajasthan, *Thennai* in Tamil Nadu at banks of River Palar, Then-pennai, Thamirabharani, Cauvery and mountain sides at Kerala borders, Konaseema (in Andhra Pradesh), Maharashtra (India) and Khulna in Bangladesh. In ancient India, Proto-asteroids (Nisada in Sanskrit literature) and Indus Valley people (3100–2800 BC) used coconut. Earthenware vases shaped like a pomegranate and a coconut suggest that these fruits were known to the people of Harappa (Prakash, 1961; Randhawa, 1980; Mehra, 2007).

### Epigraphic records

Coconut also appeared in epigraphic records in India during medieval centuries that refer to bequests of coconut gardens to temples. By 120 AD, Saka Ushavadata, son-in-law of the reigning king Nahapana of Ujjain (54 to 100 AD), gave whole plantations to Brahmins each containing several thousand coconut plants (Kosambi, 1972). In Sri Lanka, the first record appears to be that of King Aggabodhi I (575–608 AD) mentioned in Culawamasa, the ancient Sinhalese chronicle (<http://yumditty.com/about/coconut/e18d9b03-6636-4a07-a79f-30120bedb493>). Epigraphic inscriptions reveal that Ermanayaka, in-charge of treasury of Kulottunga Rajindra Coda donated a grove of coconut palms (229 of 1897) to Lord Bhavanarayanawamy of Bapatla (1163–1180). There are other instances of gifts of plantations of the same crop (Swamy, 1973).

**Table 1. Names of coconut and coconut palm in different languages in various countries.**

Country/ Language	Names
<b>India</b>	
Assamese	<i>Narikel, phalkeshav</i>
Bangla	<i>Nirikel, narakel, nariyal, dab, narikel</i>
Gujarati	<i>Jhada, naliyer, nariel, nariera, nariyeta, naryal, narel, nariel, nariyal</i>
Hindi	<i>Nnarel, nariel, nariyal, narikel, narial, khopra, nariyel</i>
Malayalam	<i>Tenga, thenna, thengu</i>
Malabar	<i>Temga</i>
Maithali	<i>Nariker</i>
Marathi	<i>Narel, nariel, nariyal, naral, mad, madda, mahad, mar, narial, naral cha jhada, naral mad, narela, narula, tenginmar, varala, naral shahle</i>
Oriya	<i>Nardiya</i>
Kannada	<i>Tengu, tengina-kayi, tengina-mara, tengina-chippu</i>
Punjabi	<i>Naarial, narial</i>
Sanskrit	<i>Jataphala, kalpavriksha, mahaphala</i>
Tamil	<i>Tenku, tenkay, tengai, tengu, thengu, tennai maram, thenga, thenkai, taynga, tenna, tenna-chedi, tenna maram, tingling</i>
Telugu	<i>Narikadam, narikelamu, kobari, tenkai, narikadam, naril, erra-bondala, goburri-koya, gujju-narekadam, kobbari-chetu, kobbarichullu, nari-kadam, tenkia, tenkaya-chettu, kobbarikaya, kobbera, narikelamu, tenkaya</i>
Urdu	<i>Naariyal kaa per, nariyel</i>
<b>Asia</b>	
Arabic	<i>Jadhirdah, shajratun-narjil, shajratul-jouze-hindi, narjil, jouze-hindi</i>
Azeri	<i>Kokos palmasi</i>
Burmese	<i>Makun, ong, ung, ung-bin, on, onsi, onti, ondi</i>
Chinese	<i>Ye-tsu, Yüe-wang-t'ou, Ke Ke Ye Zi (Taiwan), Ye Shu, Ye Zi</i>
Java	<i>Kalapa, Krambil</i>
Khmer	<i>Do:n</i>
Bali	<i>Niu or niuh</i>
Goram	<i>Niu</i>
Hebrew	<i>Kokus, qoqus, koko yashi, kokoyashi, natsume yashi, ko-ko-ya-si</i>
Korean	<i>K' o k' o neos, ko-ko-su, ko-ko-ya-ja, kokosu</i>

*continued*

Table 1. *continued*

Country/ Language	Names
Lao	<i>Phao, maldve, kurumba</i>
Malay	<i>Niu, niur, nyiur</i>
Nepalese	<i>Narival, nariwal</i>
Persian	<i>Darakhte-nargil, darakhte-bandinj, nargil, badinj</i>
Philippines	<i>Llubi (vasayan)</i>
Tagalog	<i>Boko, buko, niog, niyog, ubod (palm heart)</i>
Sinhalese	<i>Pol, pol-gass, pol-gah, pol-nawasi, tambili, polgaha</i>
Thai	<i>Ma phrao, ma phrao on, maak muu, maphrao, má-práao, maprao, maprow</i>
Vietnamese	<i>Cót dừa, cot dua, dĩa, dua</i>
<b>Europe</b>	
Armenian	<i>Hantkakan engouz, hendkakan enkoyz, hentgagan engouz</i>
Bulgarian	<i>Kokos</i>
Croatian	<i>Kokosova palma</i>
Czech	<i>Kokosovník ořechoplodý</i>
Danish	<i>Kokosnød, kokosnoed, kokospalme</i>
Dutch	<i>Klapperboom, kokos, kokosnoot, kokosnootpalm, kokospalm</i>
Estonian	<i>Kookospalm</i>
Esperanto	<i>Kokoso</i>
Finnish	<i>Kookosplamu</i>
French	<i>Coco, cocotier, cocoyer, coq au lait, noix de coco, coutie</i>
Galician	<i>Coco</i>
German	<i>Kokospalme</i>
Greek	<i>Argellia argellion, karida, karides, kokkofoinika, karýda, karida, kokofoínika, koix</i>
Hungarian	<i>Kókuszdió, kapampangan</i>
Dutch	<i>Coco, cocos, cocospalm, klapperboom</i>
Italian	<i>Cocco, noce di cocco, palma del cocco</i>
Lithuanian	<i>Riešutinė kokospalmė, riešutinis kokosas</i>
Norwegian (Bokmål)	<i>Kokospalme</i>
Portuguese	<i>Cairo (coconut fiber), coco, coco da bahia, coco da India, coco-da-Praia, coqueiro, coqueiro da Bahia (Brazil), coqueiro-da-Praia, noz de coco</i>
Romanian	<i>Cocotier, nucă de cocos</i>

*continued*

Table 1. *continued*

Country/ Language	Names
Russian	<i>Kokos, kokos orekhonosmi, kokosobaia pal'ma, kokosovyj oreh, kokosovyj orjekh</i>
Slovenian	<i>Kokos, kokosa, kokosova palma</i>
Spanish	<i>Coco, coco de agua, cocotero, nuez de coco, palma de coco, palmera de coco</i>
Catalan	<i>Cocoter</i>
Swedish	<i>Kokos, kokosnöt, kokospalm</i>
Turkish	<i>Hindistan cevizi</i>
Upper Sorbian	<i>Wšědna kokosowa palma</i>
Frisian	<i>Kokosnút</i>
Slovak	<i>Kokosový orech</i>
<b>Americas</b>	
Eniwetok	<i>Ni</i>
Nukuoro	<i>Nui</i>
Guarani	<i>Mbokaja'a</i>
New Caledonia	<i>Niu</i>
Palau	<i>Iru, yap</i>
Kosrae	<i>Lu</i>
Pohnhpei	<i>Ni</i>
Papua New Guinea	<i>Niu</i>
Fiji	<i>Niu</i>
Guam	<i>Niyog</i>
Banyak Island	<i>Nu</i>
Western New Guinea	<i>Nu</i>
Kiribati	<i>Te ni</i>
Quechua	<i>Pikwayu</i>
Truk	<i>Ny</i>
Tongan	<i>Niu</i>
Hawaii	<i>Niu</i>
<b>Africa</b>	
Amharic	<i>Ko-'o-ko-'o-ne-te, ko-ka-se, kokas, kokonet</i>
Lingala	<i>Kokoti</i>
Swahili	<i>Dafu, mnazi, nazi</i>
Sudanese	<i>Kalapa</i>

### Written records

There is no reference on coconut in Vedas; however, several references occur in post-Vedic works as epic of Mahabharata (3000 BC), Ramayana, Puranas, and Buddhist stories of Jataka. Other sources of information on coconut include Ayurvedic and agricultural treatises, historical accounts, travelogues, and Sanskrit literature. Coconut is mentioned in the 2<sup>nd</sup>–1<sup>st</sup> century BC in the Mahawamsa, the historical chronicle of Sri Lanka. It was probably in the earlier part of this period that the coconut milk began to be used as an article for the sacred bath of deities in temples and received *agamic* sanction for its role in ritualistic practices. The coconut also found entry into domestic rituals, attained sanctity as an offering to God and stabilized itself as an object of gift to guests on occasions like marriage and other ceremonies and festivals.

Among Puranas references on *narikera* occur as a forest plant in Matsya Purana (MP) (1000 AD), Brahmavaivarta Purana (BVP) (8<sup>th</sup> century AD), and Brahma Purana (1000–1200 AD). It is referred as a medicinal plant and as a requirement in religious rites [Agni Purana (800–900 AD) and Brahma Purana]; and an essential plant for beauty, atmospheric purity, and

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quietude (MP). Matsya Purana prescribes planting of coconut among other auspicious trees in a garden attached with a house and considers it as a tree that brings prosperity and increases riches (Sensarma, 1989; Pandey, 1996).

Various agricultural treatises such as Kashyapiyakrishisukti (c. 800 AD), Lokapakara of Chavundaraya (c. 1025 AD), Vrikshayurveda of Surapala (c. 1000 AD), Vishvavallabha of Chakrapani Mishra (c. 1577 AD), Krishi Gita (15<sup>th</sup> century) in Malayalam, and Vrkshayurveda of Sarangadhara show a number of references on this useful palm (Ramachandra Rao, 1993; Sadhale, 1996, 2004; Ayachit, 2002; Ayangarya, 2006; Kumar, 2008). Charaka Samhita (c. 700 BC) refers to bunches of coconut among the presents brought to the king and Sushruta Samhita (c. 400 BC) refers to *narikera* in *madhura varga* and *asavas* (Aiyer, 1956; Sharma, 1996; Mehendale, 2007).

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References are frequent in Sanskrit literature. Early records of coconut in Sanskrit literature are available in *Abhijana Shakuntala* and *Raghuvamsa* of Kalidasa (380–413 AD) and *Harsacarita* (606 AD) of Bana and Varahamihira (Banerji, 1968; Sharma, 1979). Bana, a courtier of the king, gives detailed description of excellence of good soil of Srikantha Janpada having *Sthaneshwara* (modern Kurukshetra) as a part. Strangely enough, Bana mentions “Wood rangers tasted the coconut juice” and that the traveling folk “plundered the date palm”.

The people of South India were familiar with the coconut from antiquity and early Tamil (Sangam literature) has numerous references to it. The earliest of these poems, *Tholkappiyam* written by Tholkappier during 200 BC refers to crop rotation and intercrops ginger and turmeric in coconut and jackfruit plantations (Jeyarajan, 2007). Later Sangam (100 BC–400 AD) literature also refers to coconut (Aiyer, 1956).

### Historical records

The nuts remained unknown outside their tropical habitats until 1831 when JW Bennett, an Englishman, wrote “A Treatise on the Coco-nut Tree” and many valuable properties of this splendid palm. Revelations such as applying charcoal from the shell as a tooth cleanser, removing wrinkles with coconut water, and using the root for medicinal purposes spurred European interest in the nut. In the West, the first written reference on the coconut palm is that in the Sallier papyrus stating about the specimen of this plant in the botanical

collection of Tothmes I (around 1650 BC) (Chioventa, 1921, 1923).

The Greek physician Ctesias (415 BC) mentioned coconut fruits in India (Chioventa 1921, 1923). Reference on occurrence of coconut in Assam is available in travelogue of Yuan Chwang, the Chinese pilgrim, who visited India (640 AD) during the reign of King Harshavardhana of Thanesar and Kanauj (Watters, 1905; Sharma, 1970). Ibn Khurdadhbih, Abu'l-Qasim ‘Ubayd Allah ‘Abd Allah (885 AD) in his book *Kitab al-Masalik wa'l-Mamalik* (The Book of Roads and Kingdoms) mentions about commodities imported from India including coconut (Ahmad, 1989). *Babarnama* (Memoirs of Babur, 1483–1530) refers it as Hindinut and the plant’s general resemblance with date palm with more glistening leaves and also to walnut in having green outer husk made of fiber (Beveridge, 1921; Randhawa, 1982). Manucci, an Italian traveler who reached India in 1656 during reign of Shah Jahan and served under Prince Dara Shikoh, refers to coco or palm as a curios tree (Irvine, 1907–08).

Reference on coconut (*kambar*) appeared as early as 1030 AD in Al-Birhuni. Ibn Batutta (1333) mentions that “It makes an excellent honey and the merchants

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of India, Yemen, and China buy it and take it to their own countries where they manufacture sweetmeats from it” (Gibbs, 1929; Randhawa, 1982).

Coconuts made a strong impression on Venetian explorer Marco Polo, 1254 to 1324 CE, when he encountered them in Sumatra, India, and the Nicobar Islands, and called them “Pharaoh’s nut”. The reference to the Egyptian ruler indicated Polo was aware that during the 6<sup>th</sup> century Arab merchants brought coconuts back to Egypt probably from East Africa where the nuts were flourishing.

Ain-i-Akbari (1590 AD) lists coconut under dried fruits and provides rates prevailing at the time of Akbar, the great Mughal Emperor, as one piece to cost 4 dams and dry dates at the rate of 6 dams per seer (Blochman, 1989) while Jawalia *et al.* (2001) lists rates of coconut kernel in 1688 in Rajasthan as nine seers per rupee.

#### Varieties in medieval India

Coconut palms are raised either for kernel, water, liquor or for coir only. The plants tapped for liquor fail to produce quality coir. In Mysore, coconut is rarely used for extraction of wine, as this destroys the fruit, and ripe fruits are considered as valuable part of the produce (Watt, 1889).

Krishi Gita (Agricultural Verses) in Malayalam (c. 15<sup>th</sup> century), mentions three varieties of coconut in Kerala called *Cheruthenga* with small nuts, an exotic cultivar, *Dhruvam* with more nut water, and *Gowripathra* type coconut rarely seen outside Kerala with two variants, *Kannikkooran* and

*Kumbhakudwan* (Kumar, 2008). Shortt mentioned 30 varieties grown in Travancore during 1880s. Varieties planted for different purposes were known. Spon highlighted the Laccadive small fruited form with soft, fine but strong coir, and considered it worthy of special mention being cultivated for the production of fiber (Watt, 1889). In Mysore four varieties of coconut were known, i.e., red, red mixed with green, light green, and dark green. The red variety is reckoned as somewhat better than others and is sold promiscuously (Watt, 1889).

#### Uses

Coconut is considered as one of the ten most useful trees in the world, and one among the five *Devavrikshas* (God’s trees) known in India, providing food for millions, especially in the tropics.

The multiplicity and versatility of uses of coconut tree can be best judged by an Indonesian saying: “There are as many uses for the coconut as there are days in the year.” Around 83 functional uses of various parts of palm listed range from food to stuffing of coir in pillows, preparation of beds, ropes, mats, utensils of daily use such as spoons, drainers, brooms, chains, toddy drawers, door mats, floor mats, musical instruments, furniture, cots, rosary boxes, brush, fuel, scoops, containers, oil bottles, toothbrushes, hooka-bases, neck belts and blinds for bulls used for plowing and oil crushing, cricket bats, and various types of children’s toys (Watt, 1889).

Coconut palm is put to innumerable uses in Sri Lanka. In Dickens’ words borrowed from

Watt (1889): “To an average Sri Lankan coconut palm calls up a wide range of ideas. It associates itself with nearly every want and convenience of his life. It might tempt him to assert that if he was placed upon earth with nothing else whatever to minister to his necessities than the cocoa-nut tree, he could pass his existence in happiness and content.”

### As food

Coconut provides five types of food products: coconut water, coconut milk, sugar, oil, and meat. The cavity of the immature nut is filled with “water” containing sugars; the water has been used as a refreshing drink since ancient times as mentioned by Kalidasa (380–413 AD) (Aiyer, 1956; Banerji, 1968). Coconut water is sterile until the coconut is opened (unless the coconut is spoiled). As the nut matures, the volume of liquid is reduced considerably and the taste turns brackish. In ancient Tamil country, a drink called *munir* relished by women was made up equally of green coconut water, sugarcane juice, and fresh *neera* (Arokiasami, 1972). Coconut water is used in the making of the gelatinous dessert ‘*Nata de coco*’ that became popular in Japan and earned for Filipinos a number of jobs. BVP records an interesting observation that the coconut water stored in a brass container turns alcoholic (Sensarma, 1989).

Nutmeat of immature coconuts is like custard in flavor and consistency, and is eaten or scraped and squeezed through cloth to yield a ‘cream’ or ‘milk’ used on various foods. It is cooked with rice to make Panama’s famous ‘*arroz con coco*’; it is also cooked with taro leaves or used in coffee as cream.

Coconut milk (which is approximately 17% fat) made by processing grated coconut with hot water or hot milk extracts the oil; and aromatic compounds from the fiber. Coconut cream rises to the top when coconut milk is refrigerated and left to set. It is used in preparing many vegetables and meat dishes, imparting a distinct flavor, and as an accompaniment to rice items like *appam* (Achaya, 1998). The white, fleshy part of the nut is edible and used fresh or dried (desiccated) in cooking. Copra, the dried meat of the seed is the source of coconut oil. Shredded copra is used in cakes, pies, candies, and in curries and sweets. When the nut is allowed to germinate, the cavity fills with spongy mass called ‘bread’ which is eaten raw or toasted in shell over fire. Sprouting seeds may be eaten like celery.

The diverse uses of coconut are best exemplified in cuisine of Kerala. It is used in vegetable dishes such as *aviyal*, *kalan*, *olan*, and *pulisseri*. *Aviyal* is a dish of soft vegetables like green bananas, drumsticks, various beans and even green cashew nut cooked in coconut milk and then tossed with some fresh coconut oil in sour curd. *Kalan* is a similar preparation in which green bananas are used while white pumpkin and dried beans are used in *olan* (Prakash, 1961).

Coconut chutney forms an essential accompaniment of many snack foods such as *idli*, *dosai*, *pessarattu*, and *vadai*. A number of sweet confections are prepared with coconut milk and copra. Goa has two confections: *Biblinica*, a dessert of egg yolk flour and coconut milk and *Dos de Grao*, prepared with *besan* (gram flour), ground coconut, and sugar baked together.

In Sri Lanka, coconut is used to prepare special dishes. *Kiribath*, rice cooked in coconut milk, is part of nearly every ceremonial occasion. *Kawum* (sweet oil cakes) and other special snacks are also popular at special events.

Apical buds of adult plants are edible and are known as “palm-cabbage” (though harvest of this kills the tree); the interior of the growing tip is called “heart-of-palm” and is considered a rare delicacy. Harvesting this also kills the tree. Hearts-of-palm are normally eaten in salads; such a salad is sometimes called “millionaire’s salad”. In addition to the above delicacies, coconut is used widely in cuisine of various countries for preparation of vegetarian dishes (<http://www.vegparadise.com/highestperch58.html>).

### Cooking oil

Dried meat of coconut becomes copra and is processed for oil. In India, people make a vegetarian butter called ‘ghee’ from coconut oil; it is also used in infant formulations. Coconut oil has been used as a cooking medium in South India and Southeast Asia since ancient times. It is of course primary culinary fat in Kerala. Coconut oil is extensively used as a hair oil and body oil, for burning wickered oil lamps, and as lubricant. It has medicinal properties and is used in cosmetics.

### Cosmetics

Coconut oil has been used for centuries in hair care and skin products. Its moisturizing and softening properties are exploited in

many kinds of creams and lotions today. The oil is also used extensively in the production of detergents and soaps. It is rich in glycerin and used in making soaps, shampoos, shaving creams, toothpaste lotions, lubricants, hydraulic fluid, paints, synthetic rubber, plastics, margarine, and in ice cream. The industrial process for making soap was patented in 1841 that required a cheap source of oil as coconut oil (Harries, 1978). From 19<sup>th</sup> century until 1960, copra, the dried kernel of coconut, became the most important source of vegetable oil in international markets as oil was used in manufacture of soaps, candles, and explosives.

The cosmetic industry incorporates coconut oil in the manufacture of lipstick, suntan lotion, and moisture creams. Coconut oil is included in shampoo and shaving creams for its excellent moisturizing ability as well as its ability to produce abundant lather.

### Drinks and liquor

Pulastya, an ancient sage and author of one of the original *smritis* (Hindu canons) has enumerated 12 kinds of liquors of which *narikelaja* or coconut liquor is prepared from toddy or milk mixed with plantains, ripe Indian gooseberry (*Emblica officinalis*), and the drug *Indrajiva*. Kalidasa refers in his poems about the coconut liquor and its profuse use by men and women during Gupta period (Datta, 2000). The Hindu scripture, *Vishnudharam Sutra* (100–300 AD) refers to *narikelasava* prepared from juice of coconut and also to prohibition against usage by Brahmans of ten kinds of intoxicating drinks prepared from various

*The diverse uses of coconut are best exemplified in cuisine of Kerala.*

plant parts including that from coconut (Prakash, 1961; Sensarma, 1989).

Coconut flower cluster, on incision provides a sweet juice which when fresh and not fermented is used for breakfast and dinner in Kiribati, an island nation in central tropical Pacific Ocean. Left standing, it ferments quickly into a beer with alcohol content up to 8%, called toddy in India and Sri Lanka; *tuba* in Philippines and Mexico; and *tuwak* in Indonesia and Malaysia. In Kerala, toddy is also called *kallu*, *madhu*, *neera* or just coconut palm wine. After a few weeks, it becomes vinegar. Coconut fenny is a distilled product from coconut toddy (Sekar and Mariappan, 2007). ‘*Arrack*’ is the product after distilling fermented toddy and is a common spirituous liquor consumed in the East. *Ruku raa* is an extract from the young bud and a very rare type of nectar collected. It is used as morning break drink in the islands of Maldives and reputed for its energetic power thus keeping the “*raamen*” (nectar collector) healthy and fit for more than 80 or 90 years of age. Palm wine has a special place in traditional celebrations and ceremonies such as marriage, burial, and settlements.

Alcoholic beverages do not play a role in the formal rituals of Sri Lanka, being condemned by Islam, Buddhism, and Hinduism alike. Alcohol is, however, a ubiquitous part of men’s social gatherings, where beer, toddy (fermented palm nectar), *arrack* (distilled palm nectar), and *kassipu* (an illegally

distilled beverage) are consumed in great quantities (<http://www.everyculture.com/Sa-Th/Sri-Lanka.html>).

### Coconut sugar

The cloudy liquid is easily boiled down to syrup, called jaggery, coconut molasses, or *dhiyaa hakuru* and then crystallized into a rich dark sugar, almost exactly like maple sugar. Sometimes it is mixed with grated coconut for candy as *te kamamai* in Kiribati and ‘*addu bondi*’, in the southernmost atoll, Addu Atoll. Boiled toddy, known as jaggery, with lime makes a good cement (Mittre, 1991).

### Medicinal uses

Medicinal value of coconut has been known in India since ancient times (Chioyenda, 1921, 1923). Sushruta Samhita (c. 400 BC) mentions *narikera* in *madhura varga* and *asavas* (Sharma, 1979). Coconut is used in Ayurveda in the following afflictions: in chronic fever [Vaidyamanorama – VD, 800–1000 AD]; acid gastritis [(Cakradatta – CD, 1055 AD); VD]; *parinam sula* (CD); cracks in feet (Vrndamadhava – VM); in hemicrania (VM); gravels (Bhavaprakasa); worms (VD); wound (VD); and vomiting (Charaka Samhita, 700 BC) (Sharma, 1996).

Coconut water, flowers, oil, milk, and ash of coir have medicinal uses. At present, coconut is used in folk medicine, Ayurveda, Siddha, Tibetan, and Unani systems of medicine. It possesses anthelmintic, antidotal, antiseptic, aperient, aphrodisiac, astringent, bactericidal, depurative, diuretic, hemostat, pediculicide,

purgative, refrigerant, stomachic, styptic, suppurative, and vermifuge properties. It is used as a folk remedy for abscesses, alopecia, amenorrhea, asthma, blenorrhagia, bronchitis, bruises, burns, cachexia, calculus, colds, constipation, cough, debility, dropsy, dysentery, dysmenorrhea, earache, erysipelas, fever, flu, gingivitis, gonorrhoea, hematemesis, hemoptysis, jaundice, menorrhagia, nausea, phthisis, pregnancy, rash, scabies, scurvy, sore throat, stomachache, swelling, syphilis, toothache, tuberculosis, tumors, typhoid, venereal diseases, and wounds (Duke and Wain, 1981; Udayan and Balachandran, 2009). It is also believed to be anti-blenorrhagic, anti-bronchitis, febrifugal, and anti-gingivitic.

Coconut flowers are edible; they are mixed with curd for consumption by diabetics, and are given to newly weds as aphrodisiac (Khanna, 1985). Ibn Batutta mentioned that inhabitants of Maldives gain incomparable erotic potency from fish and coconut and confirmed it from his own experience (Gibbs, 1929; Randhawa, 1982). However, ancient literature (BVP) prohibits use of coconut plant along with nine other plants for brushing teeth (Sensarma, 1989). Manucci in 1694 writes that “Little coconuts (coquinhos) are used for many infantile complaints as diarrhea and mouth sores. The 71–76-cm size nuts called *lanha* are full of sweet and refreshing water, used in inflammation of liver, kidneys, and the bladder and increases urination. It is also good for excessive heat of the liver, pain in the bowels or discharge of mucus and blood. It refreshes in the season of great heat” (Irvine, 1907–08; Randhawa, 1982).

### Nutraceutical coconut water

In Indian medical system coconut water is specific cure of derangement of *pitta* (biliousness) (Sushruta Samhita) and BVP (Sensarma, 1989; Sharma, 1996).

Young coconut juice is literally a well-supplied medicine chest and is used in folk healing for a number of ailments: relieving fevers, headaches, stomach disorders, diarrhea, and dysentery. The juice is also given to strengthen the heart and restore energy to the ill. Pregnant women in the tropics eagerly drink large quantities of young coconut juice because they believe it will give their babies strength and vitality.

The water and flesh from young coconuts contains the full range of B vitamins, with the exception of B<sub>6</sub> and B<sub>12</sub>. Young coconut water is also high in minerals, particularly calcium (for bones), magnesium (for the heart), and potassium (for muscles). An average young coconut provides 3 grams of dietary fiber which helps proper digestion and elimination. Fresh coconut water is very high in electrolytes much higher than most sports drinks. This makes it a great choice for athletes and children who exercise a lot. Finally, the water of young coconuts is completely sterile and so close to the structure of human blood that it can be transfused directly. In fact, it was regularly used during World War II for wounded soldiers when blood plasma was low. Coconut water with sandalwood paste is used for bathing (Mittre, 1991).

Coconut milk is used in Kerala and parts of Tamil Nadu as an effective cure for prickly heat (Khanna, 1985). Coconut oil is also

used in medication, for example, in eczema (with garlic segments crushed in the oil) or anointing burns [with *hariali* grass (*Cynodon dactylon*) infused in it]. Coconut oil mixed with dry powdered leaves of *santha buthi* (found in Jammu region) cures burnt body part (Khanna, 1985). A paste made with powdered *ratan jot* leaves is also very effective in curing burns. Curry leaves boiled in coconut oil make an excellent hair tonic to stimulate hair growth and bring back hair pigmentation (Khanna, 1985). In Karnataka, coconut oil and milk are used in pre- and post-delivery care. The indigenous practice uses coconut oil during pre-delivery edema and rice cooked in milk with sugar or jaggery for increasing milk secretion (Nagnur *et al.*, 2006).

Studies have indicated that the people who used the coconut oil on a daily basis have a higher metabolic rate and retained a lean body mass and the women do not suffer the typical symptoms of menopause. Studies have shown that populations in Polynesia and Sri Lanka, where coconuts are a diet staple, do not suffer from high serum cholesterol or high rates of heart disease. Coconut toddy is believed to be good for health particularly for eyesight and also serves as a sedative. It is also a mild laxative relieving constipation. It is prescribed as a

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tonic for those recovering from diseases such as chicken pox.

The extra virgin coconut oil and coconut milk are easily and quickly assimilated by the body because of the short- and medium-chain fatty acids, and are not stored as fat in the body like that of the long-chain triglycerides of animal products.

Ash from the mature shell of the fruit is mixed with lime and applied on ringworm (Chaudhuri and Pal, 1991). The husk fiber ash of coconut fruit is used to cure old cases of piles. The patient has to take this ash first thing in the morning along with curd. One teaspoon is taken for the number of days equal to the years of affliction.

Coconut sugar is classified as a low glycemic index food and is considered to be healthier than traditional white and brown sugar. It can be used as a 1:1 sugar substitute for coffee, tea, baking, and cooking. Coconut sugar has high mineral content and is a rich source of potassium, magnesium, zinc, and iron. In addition to this it contains vitamins B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, and B<sub>6</sub>. Compared to brown sugar, coconut sugar has twice the iron, four times the magnesium, and over 10 times the amount of zinc.

#### **Agricultural uses**

Various parts of coconut are used in agricultural work. Coconut oil is mixed with pulses to control insect attack on pulses during storage. Coconut water is a novel culture medium for the biotechnological production of *Schizophyllan*. Caplins and Steward (1948) recognized the value of water from the immature coconut as a

growth promoter in in-vitro tissue culture. In Sri Lanka, the robes discarded by monks are made into wicks, which are soaked in coconut lye before they are lit. These burn bright light and emit strong smell that repels rice pests (Pereira, 1993; Ahuja and Ahuja, 2008).

The coco peat (coir) traditionally was used as a fertilizer for the gardens of indigenous peoples. Coir dust (coco peat) has been used commercially as a renewable resource to save wetlands (Hume, 1949). Today, this fertilizer is mainly used on golf courses. As a fertilizer for indigenous populations, coco peat is not used much. The vascular strands have been used for weaving into ropes and dry individual strands for brooms; yarns are woven together to make fishing nets, bags, and mats. Nowadays, because of the decreasing availability of coconuts and the increasing availability of western goods, many indigenous peoples are turning to industrial materials.

Coir pith waste thrown by the coir industry can be converted into good manure by spreading it in the cattle shed and removed everyday and filled in compost pit. Coir pith soaks urine and dung keeping cattle clean and overcomes menace of lice. Coir pith gets converted into good manure within 90 days (Prakash, 2000). It is also used for horticultural purposes and has replaced the peat moss.

#### **Feed**

The leftover fiber from coconut milk production is used as livestock feed. Cake residue is used as cattle fodder as it is rich

in proteins and sugar; not more than 4–5 lbs/animal/day should be given, as butter from milk will have a tallow flavor. Cake being deficient in calcium, should be fed together with calcium-rich foods.

#### **Water divination**

During ancient times a number of plants including various palms growing in specific type of areas have been used as indicators of occurrence or presence of a water source around. Coconut plant also serves this purpose. Kalidasa mentions besides coconut palm all other palms such as palmyra, date palm, talipot palm, and the areca nut palm (Aiyer, 1956). Later on various agricultural treatises – Lokopakara by Chavundaraya (c. 1025 AD) and Vishvavallabha (c. 1577 AD) – also have mentioned about water divination with similar indications stating the presence of well grown palmyra palm and coconut tree along an anthill as an indicator of availability of groundwater at a depth of twenty cubits below at a distance of six cubits to the north of such trees (Sadhale, 2004; Ayangarya, 2006). Similar views are also expressed in Vrکشayurveda of Sarangadhara Samhita (Ramachandra Rao, 1993)

#### **Role in industry**

In 1840, on the occasion of Her Majesty Queen Victoria's marriage for the general illumination, Price's Candle Company introduced a cheap candle that required no snuffing and was composed of a mixture of stearic acid and cocoa-nut stearine. These candles were comparatively cheap, and people received the new composite candles

with great favor, resulting in rapid growth of the manufacture (Jackson, 1890).

The development of dynamite from nitroglycerine between 1846 and 1867 had the remarkable effect of turning a once discarded by-product of soap manufacture, glycerin, into the more profitable side of the business and expanded the demand for copra at the time of World War I (Anonymous 1912). The importance of coconut was highlighted in World War II when Japan took control of all major coconut-producing countries (Janick and Paull, 2008).

#### Other uses

The coconut is widely used in the Maldives and the “Dhivehi Odi” built of coconut timber was used for inter island transport. Dried half coconut shells are used as the bodies of musical instruments, including the Chinese *yehu* and *banhu*, along with the Vietnamese *dan gao* and Arabo-Turkic *rebab*. Babarnama refers to ‘Hindinut’ being used for making black spoons, guitar bodies, husk ropes for ships and boats, and chords for sewing boat seams and compares the taste of coconut water with that of date palm cheese and considers or treats its taste as acceptable (Beveridge, 1921; Randhawa,

*The extra virgin coconut oil and coconut milk are easily and quickly assimilated by the body because of the short- and medium-chain fatty acids, and are not stored as fat in the body like that of the long-chain triglycerides of animal products.*

1982). Unopened flowers protected by sheath were often used to fashion shoes and caps, and even as a kind of pressed helmet for soldiers. Opened flowers provide a good honey for bees.

In the Philippines, rice is wrapped in coconut palm leaves for cooking and subsequent storage called *puso*. Milk of immature coconut was used in the traditional mural paintings. It is mixed with calcium carbonate and obtained to consistency of cow’s milk and is used to coat walls that serve as bright white background and also as the white pigment in murals (Nayar *et al.*, 1999).

Coconut itself has been used as currency and also in heraldry. Until the early 1900s, a whole coconut was the accepted form of currency in the Nicobar Islands, just North of Sumatra in the Indian Ocean. In the South Pacific, pieces of coconut shell carved into coin-like spheres served as currency. At present there is a coconut currency in Kauai in Hawaiian Islands. Kauai Alternative Resource Management Agency (KARMA) issues an account number credited with an initial 40 CCs (the equivalent of 40 coconuts or approximately 4 hours of labor) which one can keep on account or receive in paper currency. In addition, coconut appears on the currency notes of Maldives.

The coconut tree occupies a central place in the present-day Maldives national emblem. Coconut appeared in heraldry after the explorations of the 16<sup>th</sup> century. It occurs on shield of Glasgow of Montegrennan (Kank, 1963). In Fijian National Flag, in the coat-of-arms are three sugarcanes, a coconut palm, a dove with an olive branch, and a

bunch of bananas. The lion in the emblem is holding a peeled coconut.

## Cultural significance

### Type of coconut used in ceremonies

Coconut of various stages is used in different religious and social ceremonies. A whole green coconut with stalk is an essential item in Hindu religious ceremonies. In wedding and other ceremonies green coconut is placed on earthen pitch with water in front of the *pandal*, while a dried coconut is used in several social and religious ceremonies; a de-husked dry coconut is offered as a symbol of human head during *Bhadra Kali Puja*.

### Rites and rituals (*rites de passage*)

Coconut is used in *rites de passage*; rituals; in family, social, and religious ceremonies; and is associated with the fertility, folk culture, taboos, totems, and beliefs. Thus coconut palm has earned a higher status than the family cow to one-third of the world's population. Its special significance is evident from the epithet *Sriphala* meaning God's fruit. In itself it is an independent object of worship so much so in Gujarat, Kanara, and Mysore it represents the house spirit, and is worshiped as a family God (Gupta, 1991).

The coconut now to be found in every Indian ceremony and ritual was rather poorly known in many parts of India before sixth century AD (Kosambi, 1972). Later, during times of Agni Purana (800–900 AD) and Brahma Purana it became a requirement in religious rites (Sensarma, 1989).

### Birth

In India astrologers advise people born in a specific *nakshatra* to plant some prescribed plant; for example, those born in *Chitra* are asked to plant coconut. Coconut is also used to propitiate the *Rahu* planet (Ahuja *et al.*, 2001b).

In parts of Africa, Asia, and the Pacific, the coconut palm represents birth, and a tree is planted for every newborn. The first solid food eaten by a Thai baby is three spoonfuls of the custard-like flesh of young coconut fed to him or her by a Buddhist priest. The Dayaks of Borneo transfer the souls of their newborns to coconut shells to protect them for the first year of life. Coconut shells are used to bury the afterbirth in the Philippines.

In Africa the coconut palm symbolizes birth. It is the custom of many people to plant a tree of life when a child is born. The Swahili bury the placenta and umbilical cord of the newborn nearby, and after seven days they plant a coconut in the same spot, together with the first nail cuttings and tufts of hair of the child. The fruit represents the child's navel, thus linking it to the life and prosperity of the plant. In Asia and the Pacific also, for example, in Bali, Java, and in Celebes, a coconut is planted for every newborn. When a child is born in Borneo, the witch-doctor is called to perform a magic rite which extracts the soul from the child's body and transports it into the coconut. With its extremely hard husk, the coconut guards the soul until the child becomes strong and able enough to defend himself from life's perils. At that point, the soul returns to its proper place, leaving the "nut safe".

### Marriage

The association of human fertility cult with coconut is prominently manifested during wedding rituals across India. The fruit is often placed in a pot which is a metaphor for the womb, while the nut itself, a symbol of life, confers fertility on the bridal couple. It symbolizes the goddess of fertility, and is bestowed upon women wishing to bear children and given as memento by the life partner, as proposal of marriage, betrothal sign, welcoming of a bride, and to ward off evil.

In tribal communities also the coconut features in many of the marriage rituals and funeral rites of Gonds and the Bhils of Rajasthan, Gujarat, and Madhya Pradesh. The Kunbis of Konkan region in Maharashtra worship the coconut and preserve it in the memory of their ancestors (Crooke, 1896; Ahuja *et al.*, 2001b).

### Death

In Deccan, in cremation in absence of dead body, head is represented by a coconut, teeth by seeds of pomegranate, and 360 leaves of *Butea monosperma* (*palas*) represent the image of the dead. Similarly in Bombay, a rite of *Palasvidhi* is followed in case the corpse is burnt by a low caste, death at hand of an executioner or on bed or drowned and body is not found. An effigy of the deceased is made; twigs of *palas* represent the bones, a coconut or *bel* fruit the head, pearls or cowries as eyes, and a piece of birch bark or skin of deer as cuticle, filled with *urad dal* (black gram) instead of flesh and blood.

### Remembering and propitiating the ancestors

Betel quid, rice, and coconut are typical offerings for the rites associated with ancestors. Such rites are performed in Malaysia, India, and among Hindus of Surinam. A folksong entitled ‘five betel leaves and nine coconuts’ are repeatedly used to invoke all ancestors (Arya, 1968; Ahuja and Ahuja, 2011).

### Religious and social ceremonies

In South India, it is must for every household to plant a coconut tree. Planting is regarded as a *punnyakarma* (good deed) all over Odisha and usually done on the first and last day of *Ratha Yatra* (Chariot Festival).

While worshiping any deity, a coconut is normally an item to be offered along with flowers, incense sticks, etc. *Purnakumbha*, a “full pitcher”, with mango tree leaves and a coconut is an object symbolizing God and is an essential item used during different religious rites.

Coconuts are extensively used in Hindu religious rites and form an essential element of rituals and festivities. Coconuts are usually offered to the gods, and a coconut is smashed on the ground or on some object as part of an initiation or inauguration of building projects, facility, ship, the use of a new vehicle, bridge, etc. Even in areas where the coconut palm does not grow, no prayer or offering is complete till a coconut is offered. If a son, brother, or husband is going on a long journey, the mother, sister, or wife applies *tilak* on his forehead, wishing him well and offers

him a coconut. In South Indian temples the priests will not accept offerings of a devotee, without a coconut. Coconut is one of the most common offerings in temples; it is broken and placed before the Lord and later distributed as *prasad*. Similarly at weddings and other auspicious occasions a coconut is placed at the *pandal* erected for the ceremony (Gupta, 1991).

Its resemblance to human head suggests its substitution for human sacrifice to mother Goddess as for Ambhabhavani. During the annual Adi festival of Sri Mahalakshmi Amman temple at Mettumahadanapuram in Karur district, coconuts are broken on the heads of the devotees by the temple priests. In the Temple Town Palani, before going for the worship of God Murugan, at the foothills of Palani Hills, a coconut is broken for Lord Ganesha. Coconut is used at the time of Kaveri River worship at Tiruchirappalli.

The Kols of Madhya Pradesh universally offer coconut as it symbolically represents the human skull. They offer coconut to Goddesses and Gods such as Kalimai, Kheramai (most frequently worshiped by Kols), Maridevi (Goddess of epidemics), Shardamai (chief of pantheons), Baghdeo, and Hardul Baba, and all worships at the village shrine. Coconut is the chief offering to Shardamai at her temple at Maihar (Griffith, 1946). In tantric practices, coconuts are sometimes used as substitutes for human skulls.

### Symbolism

A coconut alone is also used to symbolize 'God'. It is believed to be symbolic of

good fortune and prosperity. Lakshmi, the Goddess of prosperity is often depicted holding a coconut. In most parts of India, coconut is worshiped as goddess of learning (Saraswati) (Gupta, 1991; Ahuja *et al.*, 2001a). It is also associated with Lord Shiva, Ganesha, and Bhadrakali.

Coconut symbolizes Saraswati, the Goddess of learning and in Odisha, learning process of children is initiated after the religious ritual called *Khadichhuana* held on *Ganesh Chaturthi* (in August/September). Children carry a painted coconut door to door, singing prayer songs of Saraswati; they collect money and give to their teachers as a mark of respect and devotion (Ghose *et al.*, 2000). Coconut is considered as a symbol of Shiva because of its three black spots; Shiva (Trayambaka-Rudra) has three eyes (Gupta, 1991).

At the beginning of any auspicious task or a journey, people smash coconuts to propitiate Ganesha – the remover of all obstacles. They also break coconuts in temples or in front of idols in fulfillment of their vows. The breaking of coconut symbolizes the breaking of one's ego (evil force). The juice within, representing the inner tendencies (*vaasanas*, lust) is offered along with the white kernel – the mind, to the Lord (<http://in.answers.yahoo.com/question/index?qid=20091230053909AA5z7n>).

The coconut also symbolizes selfless service. Every part of the tree – the trunk, leaves, fruit, etc. – is used in innumerable ways like thatches, mats, tasty dishes,

oil, soap, etc. It takes in even salty water from the earth and converts it into sweet nutritive water that is especially beneficial to sick people.

### Taboos and beliefs

Coconut is religiously so significant that the Hindus neither cut this tree nor do they use its wood for fuel. In Tamil Nadu, the uprooting of coconut sapling is considered equivalent to killing one's own son (Chettiar, 1973; Ahuja *et al.*, 2001b).

“If crack appears on the trunk within ten years, the planter would die.” Possibly due to this belief it became a custom in Odisha to get coconuts planted by the oldest member of the family (Ghose *et al.*, 2000).

For the eastern African tribe Wanika, cutting down a coconut tree is equivalent to murdering a parent. These taboos and beliefs prevailing in far and near places indirectly enforce and teach conservation of this economically important plant.

Balinese women are not allowed to touch the plant. Often the plant is perceived as a masculine plant, and it is believed that if the women touch the palm they will lose their fertility.

Irrespective of their religious affiliation, fishermen of India often offer it to the rivers and seas in the hope of having bountiful catches. Fishing communities along the peninsular coasts believe in appeasing the sea God (Lord Varuna) with offerings of coconut during the monsoon.

### Festivals associated with coconut

The coconut, an ever-popular fruit of the tropics is celebrated in a special festival *Pesta Kelapa* at Tomborungus in the northern district of Kudat. The festival highlights the coconut industry and recognition of its significant contribution to the social and economic welfare of the rural folks. Its launching date coincides with World Coconut Day and a host of exciting activities are lined up for visitors including the highly entertaining coconut shoe race, squeezing coconut milk competition, food and drink exhibition, and handicraft displays.

The Zulu Social Aid and Pleasure Club of New Orleans traditionally throw hand decorated coconuts – the most valuable of all Mardi Gras souvenirs – to parade revelers. The “Tramps” began the tradition in ca. 1901. In 1987 a “coconut law” was signed by Governor Edwards exempting from insurance liability any decorated coconut handed from a Zulu float.

### Coconut in festivals

In Manipur, on the day of *Idd* festival women take at least one fruit of coconut along with other eatables to their parents' home (Ahmed and Singh, 2007). In the tribal festival in Madhya Pradesh, the Gonds celebrate the festival of Meghnath, believed to be supreme God. Coconut along with lemon and turmeric are offered to Meghnath through the priest. Similarly Gonds celebrate the festival of Bidri in the beginning of the calendar year. Bhimsen is the presiding deity of the festival. Coconut is offered to the deity (Kurup, 1970).

In some places in Gujarat, on *Dhuleti* day, a game is played with a coconut. The players form two parties and stand opposite to one another with a coconut midway between them. Each party tries to take away the coconut, and prevents the other from doing so by throwing stones and cow-dung cakes. The party which succeeds in taking away the coconut wins the game (Enthoven, 1914).

In the Philippines the Ifugoes perform the Mumbago ritual for good weather and a good crop. Three priests lead the ritual and pour *baya*, a kind of rice wine into a wooden basin. The wine is passed around in small cups made of coconut shells and everybody present drinks it (Ahuja *et al.*, 2001a).

## Folklore

### Coconut and language

Coconut is equally pervasive as rice, betel nut, and betel leaf and through its usefulness has penetrated the vocabulary of a number of languages such as Hindi, Punjabi, Sanskrit, Oriya, Tagalong, Hawaiian, Sinhalese, and Swahili in the form of proverbs and riddles (Percival, 1874; Johnson, 1921; Kapp, 1994; Brower, 2001; Pradhan, 2008). Traditional oral literature abounds with proverbs, fables, myths, and legends associated with this nut. A large number of folk stories, tales, myths, and legends have been associated with the origin of the plant in Malaysia, Hawaii, India, Myanmar, Maldives, Philippines, Indonesia, and Polynesian countries (Roosman, 1970; Watts, 2007).

### Names after coconut

Names of some places, a palace, and a state, a number of video games and songs owe derivation to the coconut. The Coconut Palace in Manila, Philippines is made of almost 70% of coconut lumber. The Indian state of Kerala means the 'land of coconuts'. The name derives from "Kera" (the coconut tree) and "Alam" (place or earth), *nalikerathinte naadu* in the native language. Kovalam, one of the important beaches in Kerala means a grove of coconut trees. *Niyog* is the Filipino word for coconut, and so *agamaniyog* means land of coconuts and makes its appearance in many folktales, and refers to a land of splendor and glory.

Coconut is also used as a derogatory slang word referring to a person of Latino descent who emulates a Caucasian (brown on the outside, white on the inside) (<http://www.spiritus-temporis.com/coconut/coconuts-in-folklore.html>).

In addition to the names, coconut is associated with a number of phrases and adds to the vocabularies of various languages. *Niu* in Hawaii means coconut, coconut oil, or coconut meat. *E niu, e kololo o coconut o* – 'coconut pudding' refers to one who talks too much. *Niu kahiki* means a foreign coconut (date palm), *niu kololo* is to convey to someone to stop talking, and *niu okaka* is a rolling coconut. *Khopdi* (human skull) is a popular Hindi slang in Mumbai and has its origin in the Hindi word *copra* for dried coconut. It is used to describe one's head or to refer to someone to be foolish.

### Coconut proverbs

The relative number of proverbs and riddles attributed to coconut is exceptionally higher than any other plant or any other single entity. “Coconuts do not grow upon pumpkin vine” reminds that “Children turn out like their parents”. An unpredictable or doubtful situation in coconut metaphoric terms is: “*Nariyal mein paani, nahin janate khatta ki meetha*”; also “*Bander ke hath mein nariyal*” – “A fool cannot understand the importance of found thing”; “A fool does not know the value or importance of a found thing” (Fellen, 1998). A terse, emphatic, clear, and effective speech is “Hitting of coconut on a stone” or “He speaks as effectively as the hitting of a stone on a coconut” or “His speech is like the breaking of cocoanuts”, i.e., like the hard blows which break a coconut (Percival, 1874).

### Coconut riddles

Riddles not only test the wit and wisdom of a person but also convey the ingenuity of the people involved in their development. A number of riddles have been woven around coconut. A common riddle is prevalent in most Indian languages including Sanskrit: “He has three eyes but not Shiva, he has long tresses but not a hermit, perches at the top of a tree but not a bird, gives milk but not a cow.” From Odisha to Rajasthan and from Kashmir to Kerala and Tamil Nadu, throughout the length and breadth of the Indian subcontinent, this riddle and its variants prevail. Coconut riddles are also equally popular and common in areas where coconuts are not grown. In Rajasthan, a non-coconut growing state has a variant of this

riddle: “*Birakh basai, panchhi nahin, dudh det, nahin gai; Teen nain, Sankar nahin, deejai vasthu batai*”, along with eight other riddles prevalent on the nut (Samsakarta, 2010). Another riddle common in many Indian languages runs as: “*Katore mein katora beta bap se bhi gora.*” In Hawaii a coconut riddle is: “A man with three eyes, he can cry out of only one.”

### Sayings on coconut cultivation

A Tamil proverb says: “Plant coconut trees, they feed you and your children.” Thus coconut palm is an earning son to a poor retired man (Ghose *et al.*, 2000). Planting coconut is like a life insurance policy that helps in old age. As it is said: “Providence is more reliable than affection of a son” and “If the child they have reared gives them no food, the child they have planted (i.e., the coconut palm) will feed them” (Percival, 1874). An Odissi proverb states about late bearing in coconut: “A planter would never see his coconut palm at its full bearing stage.”

A number of sayings on coconut cultivation mention selection of variety, selection of seed, spacing, disturbing roots before planting, and fruit setting (Mohanty *et al.*, 2008; Sen, 2008; Ahuja and Ahuja, 2012). Some of these are presented in this article.

*Hate hate chhoy na, moar jati soy na; Khana bale jakhan jay, takhan keno loy na* (While planting coconut adequate spacing should be maintained).

“*Go narkel nere po, aam tutube kathal bho*” – Areca nut and coconut should be planted after slightly disturbing the basal part of

saplings but in case of mango and jackfruit it is otherwise.

Drury (1873) also recorded that some of the fibrous roots are cut away. Cutting of roots is considered to cure sterility in coconut (Mohanty *et al.*, 2008). Cutting of some fibrous roots at the time of transplanting and placing manure, together with little salt, in the pit has been practiced (Watt, 1889).

Agni Purana (800–900 AD) and Lokopakara (c. 1025 AD) mention ordinary salt as the best manure for date palm and coconut trees (*khajuranarikela-vanadhirvivadardhnam*) (Chaudhuri and Pal, 1991; Ayangarya, 2006). Krishi Gita recommends transplanting on saline soils as in salt affected lands, and definitely termite incidence is not substantial (Kumar, 2008). The relevance of this practice is corroborated in *Khanar vachan* as “*Narkel gache nun mati, shigro shigro bandhe anti.*” Vishvavallabha (c. 1577 AD) also recommends use of salt and plain water everyday (Sadhale, 2004).

A Tamil proverb, “*Oru kurumabaiyai kollarudhu, onpathu thennai nattathirku camam*” – The killing of a *kurumbai* (an insect that feeds on coconut flowers) is equivalent to planting of nine coconut trees – conveys the local knowledge about the extent of damage caused due to insect attack.

### Disadvantages

Coconuts can be very damaging when they fall on people, automobiles, and houses. They have been known to cause fatalities.

Coconut can be a food allergen. It is a top five food allergy in India where coconut is

a common food source. On the other hand, food allergies to coconut are considered rare in Australia, UK, and USA. As a result, commercial extracts of coconut are not currently available for skin prick testing in Australia or New Zealand. Despite a low prevalence of allergies to coconut in USA, the US Food and Drug Administration (FDA) began identifying coconut as a tree nut in October 2006. Based on FDA guidance and federal US law, coconut must be disclosed as an ingredient.

Coconut-derived products can cause contact dermatitis. They can be present in cosmetics including some hair shampoos, moisturizers, soaps, cleansers, and hand washing liquids (<http://www.allergy.org.au/conten/view/171/137>).

### Discussion

An Arab proverb epitomizes coconut’s usefulness: “If humans were to appear on the Earth with no more than a coconut palm, they could live quite happily and contented for all eternity.”

Coconut originated in Southeast Asia – Melanesia. The greater number of coconut types in this region with their numerous local names, uses, and unique insect and crab associations attest a long presence, making this region the center of diversity and also assumed as the center of origin. The archaeological remains and philological evidences also corroborate this region as center of origin.

Coconut has played an important role in the development and economy of coastal areas in India. Kosambi (1972)

attributes the development of these areas to the introduction of coconut. It was being propagated on the east coast in mid 1<sup>st</sup> century BC and reached the west coast a century later. He further elaborates the role in economy: “The western coastal strip could not have been so profitably cleared of its dense forest, let alone settled with its present crowded population, without this tree and heavy commodity production based on its exploitation in full.”

Coconuts and their edible products, such as oil and milk, have suffered from the repeated misinformation because of a study conducted in the 1950s using hydrogenated coconut oil. Science has also come to the fore to explain the role of coconut in health of people. Though coconut oil is very high in saturated fat (87 percent) in its unrefined, virgin state, it is actually beneficial, largely because of its high content of lauric acid (almost 50 percent) which has potent anti-viral and anti-bacterial properties. Recent studies have considered coconut oil as a possible method of lowering viral levels in HIV-AIDS patients. The lauric acid may also be effective in fighting yeast, fungi, and other viruses such as measles, herpes simplex, influenza, and cytomegalovirus. JJ Kabara, Professor Emeritus from Michigan State University writes, “Never before in the history of man is it so important to emphasize the value of lauric oils. The medium-chain fats in coconut oil are similar to fats in mother’s milk and have similar nutraceutical effects.”

A switch to ‘modern’ products is reducing the utility of coconut products in daily utility life and traditional means of production

and work that went hand in hand with it is being lost. However new means are being developed to utilize by-products as in production of energy, fuel, etc.

In 2008, another use was added to numerous uses of coconut. Virgin Atlantic, a long-haul airline, flew a Boeing 747 jumbo jet from London to Amsterdam using renewable bio-fuel composed of babassu (palm) oil and coconut oil. No modifications were made to either the aircraft or its engines to enable the flight to take place (<http://cocos. arecaceae.com/index.html>).

The coconut plant seems to be a God given gift in the shape of a long-term distillation plant that stands in the sun like a hermit and distils salt water from its roots to remove salts and imparts its own sweetness in the water, accumulated drop by drop in the hard chest, which is sterile, can be and has been used as intravenous application in times of emergency and will remain as the *Kalpavriksha* as was termed by sages.

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