Tender coconut varieties for the benefit of coconut growers

V. Niral, Principal Scientist, Crop Improvement Division, ICAR-CPCRI, Kasaragod
Ranjini, T.N., Scientist, Crop Improvement Division, ICAR-CPCRI, Kasaragod

The Coconut palm (Cocos nucifera L.) in India is referred to as 'Kalpavriksha' which means "tree which gives all that is necessary for living". This palm continues to have hundreds of uses as a source of nutritious food, refreshing drink, oil (used in cooking, pharmaceuticals, industrial applications and biofuels), fibre of commercial value, charcoal, construction material and a variety of miscellaneous products for domestic and industrial use.

Global coconut production is widely dispersed in most of the tropical regions over an area of 12.47 million hectares. In India, coconut is grown in an area of 2.07 million hectares, across 18 states and three Union Territories. India ranks among the top three coconut producing countries in the world, with an annual production of 23,351 million nuts and productivity of 10,614 nuts/ha (Coconut Development Board, 2015-16). Traditional areas of coconut cultivation, accounting for 90% of the total area under coconut, are in the states of Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. Island territories like Lakshadweep Islands and Andaman and Nicobar islands have coconut as the major crop. Coconut cultivation has also spread to the non-traditional tracts like Bihar, Chhattisgarh, Gujarat, West Bengal and North Eastern states.

In recent years, coconut is being increasingly considered as a health food with tender coconut water, virgin coconut oil and inflorescence sap being promoted for consumption in addition to copra and oil. Tender coconut water is blooming increasingly popular as a refreshing health drink. Tender coconut water refers to the liquid endosperm obtained from 6-8 months old tender coconuts, the period before the solid endosperm or white kernel forms. It is a natural isotonic beverage with the same level of electrolytic balance as we have in our blood. Hence, during World War I and II, tender coconut water has been used as an intra-veinal fluid (IV fluid) for medical emergencies. In Ayurveda, tender nut water is believed to increase semen levels, promote digestion and clear the urinary path. Tender coconut water

Improved varieties for dual purpose - copra and tender nut

Variety	Important traits	Vol. of tender nut water (ml nut-1)	Copra yield (t ha-1 year-1)	Recommendation for cultivation	Agency responsible for release
Tall					
Kera Chandra	High yield	450	3.68	Kerala, Karnataka, Konkan region, Andhra Pradesh, West Bengal	ICAR-CPCRI, Kasaragod
Kalpa Pratibha	High yield	448	4.12	Kerala, Andhra Pradesh, Tamil Nadu, Maharashtra	ICAR-CPCRI, Kasaragod
Kalpa Haritha	Green fruits, Less eriophyid mite damage	440	3.72	Kerala, Karnataka	ICAR-CPCRI, Kasaragod
Kalpa Shatabdi	High yield, Lesser incidence of rhinoceros beetle	612	5.01	Kerala, Karnataka, Tamil Nadu	ICAR-CPCRI, Kasaragod
Kalyani Coconut 1	High yield	274	3.84	West Bengal	Bidhan Chandra Krishi Viswavidyalaya (BCKV), West Bengal
Dwarf/Semi-Tall					
Kalparaksha	Semi-tall, High yield, green fruits	290	2.11	Kerala	ICAR-CPCRI, Kasaragod
Kera Madhura	Semi-tall, high yield, green fruits	287	4.80	Kerala	Kerala Agricultural University, Kerala
Gouthami Ganga	Dwarf, Green fruits	467	1.80	Andhra Pradesh	AICRP on plams, Ambajipeta, Andra Pradesh
Kalpasree	Dwarf, green fruits	240	1.51	Kerala	ICAR-CPCRI, Kasaragod
CARI-C1 (Annapurna)	Dwarf, high copra content, green fruits	470	2.23	Andaman & Nicobar Islands	ICAR-Central Island Agricultural Research Institute (CIARI), Port Blair

Kalpa Samrudhi

contains sugars, minerals and minor amounts of nitrogenous compounds (proteins/amino acids). The primary nutrient in coconut water is potassium. This makes it a high electrolyte beverage and helps to maintain blood volume, heart health, prevent dehydration and stress. In recent years, health benefits of coconut water continued to be fine tuned, as many marketers call it "natures sports drink" and a "life enhancer". Worldwide awareness and popularity towards tender coconut water as a refreshing health drink, has resulted in many aerated drink manufactures venturing into this field. The global coconut market is expected to grow at a compound rate of 26.75% until 2020. Presently, Brazil is the world's largest market for packaged coconut water, accounting for 67% of juice volume sales in 2010 and reportedly growing at the expense of orange juice. The tender nut water products are also gaining rapid popularity in both traditional and nontraditional areas, thus opening new vistas for coconut entrepreneurs to capture the widening tender nut market.

In order to meet the market driven demands for the tender coconut, ICAR-Central Plantation Crops Research Institute is continuously evaluating coconut germplasm, accessions as well as experimental hybrids at the institute for the quantity and quality of tender

Improved hybrid varieties for dual purpose - copra and tender nut						
Hybrid Variety	Source population of parents	Important traits	Vol. of tender nut water (ml nut-1)	Copra yield (t ha-1 year-1)	Area recommended	Agency responsible for release
Chandra Sankara	COD x WCT	High yield	347	4.27	Kerala, Karnataka, Tamil Nadu	ICAR-CPCRI, Kasaragod
Chandra Laksha	LCT x COD	High yield, tolerant to moisture stress	339	3.76	Kerala, Karnataka	ICAR-CPCRI, Kasaragod
Kalpa Samrudhi	MYD x WCT	Tolerant to moisture stress, higher nutrient use efficiency	346	4.5	Kerala, Assam	ICAR- CPCRI, Kasaragod
Kalpa Sreshta	MYD x TPT	High yield	368	6.28	Kerala, Karnataka	ICAR-CPCRI, Kasaragod

nut water towards developing improved varieties for tender nut purpose, including dual purpose varieties suitable for tender nut as well as copra production for release and cultivation in different agro ecological regions in the country. The varieties developed in the country under the National Agricultural Research System is listed in the given tables.

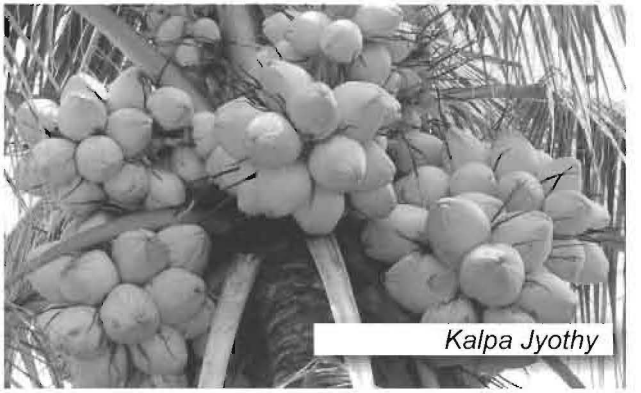
ICAR-CPCRI, ICAR-CIARI, various SAUs, State Department of Horticulture and the centres under AICRP on Palms as well as the Coconut Development Board – DSP farms supply seeds/seedlings of improved varieties/hybrids to farmers, NGOs, developmental agencies and research organizations also facilitate higher crop productivity and net returns. Farmers/ farmer's organizations and developmental agencies also encourage to establish seed gardens to promote supply of improved varieties and ensure higher productivity and remuneration to coconut growers.


Chandra Sankara

Improved dwarf varieties for tender nut and ornamental purpose					
Variety	Important traits	Vol. of tender nut water (ml nut-1)	Copra yield (t ha-1 year-1)	Recommended states/regions	Agency responsible for release
Chowghat Orange Dwarf	Orange fruits, less eriophyid mite damage	351	2.78	All coconut growing regions	ICAR- CPCRI, Kasaragod
Kalpa Jyothi	Yellow fruits, relatively tolerant to water deficit stress	380	2.83	Kerala, Karnataka, Assam	ICAR-CPCRI, Kasaragod
Kalpa Surya	Orange fruits	400	4.00	Kerala, Karnataka, Tamil Nadu	ICAR- CPCRI, Kasaragod
CARI-C2 (Surya)	Ornamental purpose, orange fruits	154	1.31	Andaman & Nicobar Islands	ICAR- CIARI, Port Blair
CARI-C3 (Omkar)	Ornamental purpose, yellow fruits	117	1.45	Andaman & Nicobar Islands	ICAR- CIARI, Port Blair
CARI-C4 (Chandan)	Ornamental purpose, orange fruits	198	1.74	Andaman & Nicobar Islands	ICAR- CIARI, Port Blair

To combat, the loss in remuneration due to lesser market price for mature coconuts and to tap the opportunity among the rising popularity of tender coconut water as a refreshing health drink, it is advised to establish gardens with tender nut varieties, dual purpose varieties for meeting the domestic demand for tender coconut water as well as to promote product diversification to avoid the ill effects of coconut price fall due to excess availability of copra in the market. Additionally, tender nuts are harvested at 6-8 months of maturity, so that it saves nutritional requirements for another 4-6 months of fruit development for production of copra and helps in the better fruit set and development in subsequent inflorescences, which in turn results in higher nut yield/palm. In Pollachi and Coimbatore districts of Tamil Nadu, wherein farmers have planted tender nut varieties in fairly large tracts of land to meet the local demand for tender coconut and also exploring avenues for tapping the export market. Now, this trend is drifting towards other states too namely, Kerala, Karnataka, Andhra Pradesh, Maharashtra and West Bengal. Hence, coconut farmers need to be motivated to plant improved varieties suitable for tender nut purpose including dwarf as well as dual purpose varieties and hybrids. Under irrigation and proper management practices, farmers can expect higher yield from hybrid coconut varieties compared to tall varieties. It is also advisable to plant these improved varieties not just for establishment of new plantations but also in the senile gardens where replanting and rejuvenation is recommended. This will help to boost the overall profitability of the coconut farming and promote coconut cultivation in the country. ■

Chandra Sankara



Kalpa Jyothy