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Plantation Crops as Pillars of Human Nutrition: The Food Value of Coconut, Arecanut, Palmyrah, Cashew, Tea, Coffee and Oil Palm

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Introduction

Plantation crops such as coconut, arecanut, palmyrah palm, cashew, tea, coffee, and oil palm occupy a significant position in tropical agriculture. They are not only major export commodities but also essential contributors to human food and nutrition. These crops supply edible oils, nuts, beverages, and natural sweeteners, enriching diets with energy, essential fatty acids, proteins, minerals, and antioxidants. Their multifaceted role in food, nutrition, and livelihood security makes them vital for sustainable tropical economies (Nampoothiri *et al*., 2022).

Coconut (Cocos nucifera L.)

Coconut, known as the "Tree of Life," provides multiple food products. The kernel is consumed fresh or dried as copra and yields coconut oil, rich in mediumchain triglycerides that enhance energy metabolism. Tender coconut water is a natural isotonic beverage rich in electrolytes, while coconut milk and cream are widely used in traditional and modern cuisines (Perera & Rajapakse, 2021). The sap (neera) is processed into jaggery, sugar, and vinegar, providing a low-glycaemic natural sweetener (George *et al*., 2023). Thus, coconut serves both nutritional and medicinal roles in human diets.

Arecanut (*Areca catechu* L.)

Arecanut, popularly chewed with betel leaf, holds a distinctive cultural and dietary place in many Asian societies. In small quantities, it acts as a mild stimulant and digestive aid. It contains polyphenols, alkaloids, and carbohydrates that contribute to its flavor and stimulant properties (Prakash *et al*., 2020). Although overuse has health risks, processed arecanut products and derivatives continue to sustain rural employment and cultural traditions in plantation regions.

Palmyrah Palm (Borassus flabellifer L.)

Palmyrah is a hardy, drought-resistant palm that provides multiple edible products. Its tender fruit (nungu or ice-apple) is rich in minerals, sugars, and water, offering instant energy and hydration (Selvaraj *et al*., 2022). The sap collected from inflorescences is a vital source of natural sugar, processed into neera, jaggery, and palm sugar. The fruit pulp is used in traditional sweets, and the flour from its tuberous roots provides starch and nutrients during lean seasons. Palmyrah thus contributes to both food and livelihood security in dry and coastal areas.

Cashew (Anacardium occidentale L.)

Cashew is a dual-purpose crop valued for both its kernel and apple. The cashew kernel is a nutrient-dense food rich in proteins (18–20 %), healthy monounsaturated fats, and essential minerals like magnesium, zinc, and iron (Eradasappa *et al*., 2021). The cashew apple, though perishable, is rich in vitamin C, sugars, and polyphenols. It is processed into juices, jams, wines and feni a traditional fermented beverage (Sreenivas *et al*., 2022). Through both nut and apple utilization, cashew enhances dietary diversity and rural economy.

Tea (Camellia sinensis L.)

Tea is one of the most widely consumed beverages worldwide, second only to water. It is an excellent source of antioxidants, mainly catechins and polyphenols, which have beneficial effects on cardiovascular health, metabolism, and stress reduction (Kumar *et al*., 2023). Green and black teas differ in fermentation levels but are both valued for their flavor and health-promoting properties. Daily tea consumption improves mental alertness and provides bioactive compounds that combat oxidative stress.

Coffee (Coffea arabica & C. canephora)

Coffee is another major beverage crop contributing to global diets. It contains caffeine and chlorogenic acid, which stimulate alertness and may reduce the risk of diabetes and neurodegenerative diseases (da Silva *et al*., 2020). Beyond the beverage, by-products such as coffee cherry pulp (cascara) are now being valorized for use in infusions and bakery products, promoting circular food systems and waste reduction (Araujo *et al*., 2022).

Oil Palm (Elaeis guineensis Jacq.)

Oil palm produces the highest edible oil yield per hectare among oil crops. Palm oil and palm kernel oil are vital dietary fats used in cooking, bakery, confectionery, and processed foods (Singh *et al*., 2024). They are rich in β-carotene and tocopherols, important antioxidants supporting vitamin A and E intake. Palm oil's stability and nutritional value make it indispensable for food industries and household diets across tropical regions.

Conclusion

Plantation crops such as coconut, arecanut, palmyrah palm, cashew, tea, coffee and oil palm are more than economic resources, they are pillars of food and nutrition security. Each contributes uniquely: coconut and oil palm as energy and fat sources; cashew and arecanut as nutrient-rich nuts; palmyrah as a natural sweetener; and tea and coffee as antioxidant beverages. Together, they strengthen the foundation of tropical food systems and sustain rural livelihoods. Integrating their value-added products into diets promotes health, income, and sustainability for millions of people worldwide.

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