

## Coconut Agriculture in Tumkur District- Economic Analysis

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### Abstract

Coconut is a prominent crop that is cultivated in more than ninety nations. India, which produces 13 billion coconuts annually, is a market leader in the coconut industry. Coconut is a versatile product with numerous applications. Almost all of the edible and non-edible portions of a newly grown coconut are utilized in some way or another. India is one of the world's primary producers of coconuts, producing 13 billion nuts annually. Coconut is primarily cultivated in the country's littoral regions. Andhra Pradesh, Assam, Goa, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu, Tripura, West Bengal, Andaman and Nicobar Islands, Lakshadweep, and Pondicherry all have abundant coconut growth. The present study discusses the importance of coconut agriculture in Tumkur district based on both primary and secondary sources of data collection.

**Keywords:** Coconut Cultivation, Economic Analysis, Tumkur District

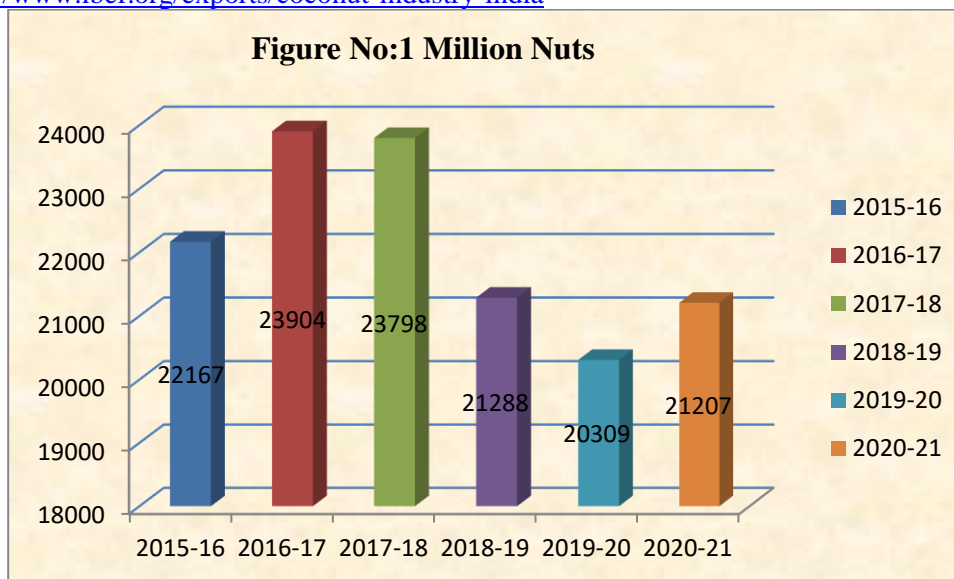
### Introduction

Since time immemorial, coconut has played an essential role in Indian culture and has been produced here. India currently ranks third on the list of the world's main coconut-producing nations. In 2005, India produced 95,000,000 metric tons of coconuts, or 12,832.9 million kernels. There are approximately 1.78 million hectares of plantation cultivation in the country. The states that are significant producers of this fruit and their average annual yields are listed below. 1. Kerala (5727 million nuts) 2. Tamil Nadu (3243.5 million almonds) 3. Karnataka (1209.6 million nuts) 4. Andhra Pradesh (1199.3 million nuts) 5. West Bengal (310.9 million almonds) 6. Orissa (274.8 million nuts) 7. Maharashtra (273.4 million nuts) 8. Assam (154.3 million nuts) Kerala, India's greatest coconut producer, accounts for approximately 45 percent of the country's total production. Coconut oil is extracted from the copra of the fruit at a rate of 65 to 70 percent. In terms of the area devoted to coconut production, Kerala ranks first among the leading coconut-producing states. India is the third largest coconut-growing nation in the globe, but its contribution to the international market is negligible. In spite of the slow growth in coconut industry, all round efforts made for integrated development of coconut sector in the areas of production, processing and marketing after establishment of a statutory body, the Coconut Development Board, by the Government of India in the year 1981, are appreciable. During the past two decades, the coconut plantation commodity has received a great deal of research and development attention in the country, the results of which can be seen in the increased area, production, and productivity of coconut in the country. In light of the altered state of the coconut industry, it was deemed necessary to revise the report on the production and marketing of coconut and to conduct a new evaluation of the shifting pattern of coconut production, trade, and its ancillary industries. Creation of basic infrastructure is one of the most significant aspects of coconut cultivation. Given that it is a long-term crop requiring substantial initial investment, coconut cultivation typically involves a specific group of producers. In the study area, the cost of establishing a coconut farm per hectare is Rs. 2,924,26.39, and the cost of production per year during the study period is displayed in the table below. Establishment costs are computed from the time of land preparation to the time of commercial yield, with all labour, irrigation, and other expenses incurred during that time period being accounted for. Establishment expenses include: Initial Establishment Cost, Preparatory Cultivation, Plants, Planting, Irrigation, Fertilizer and Manufacturing, Young Plant Care, Labour, Rental Value of Land, and Other Fixed Costs. It includes the cost of labour, irrigation, fertilizer, plant protection, manure, interest on working capital, watch and ward harvesting and handling fees, as well as the repair and maintenance of farm equipment. Coconut is a prominent crop that is cultivated in more than ninety countries worldwide. Once a coconut plantation has been established, it proves to be quite profitable, as coconuts can be harvested throughout the entire year.

**Table: 1 India's Coconut Production Trends (million nuts)**

Year	Million Nuts
2015-16	22167
2016-17	23904
2017-18	23798
2018-19	21288
2019-20	20309
2020-21	21207

Source: <https://www.ibef.org/exports/coconut-industry-india>

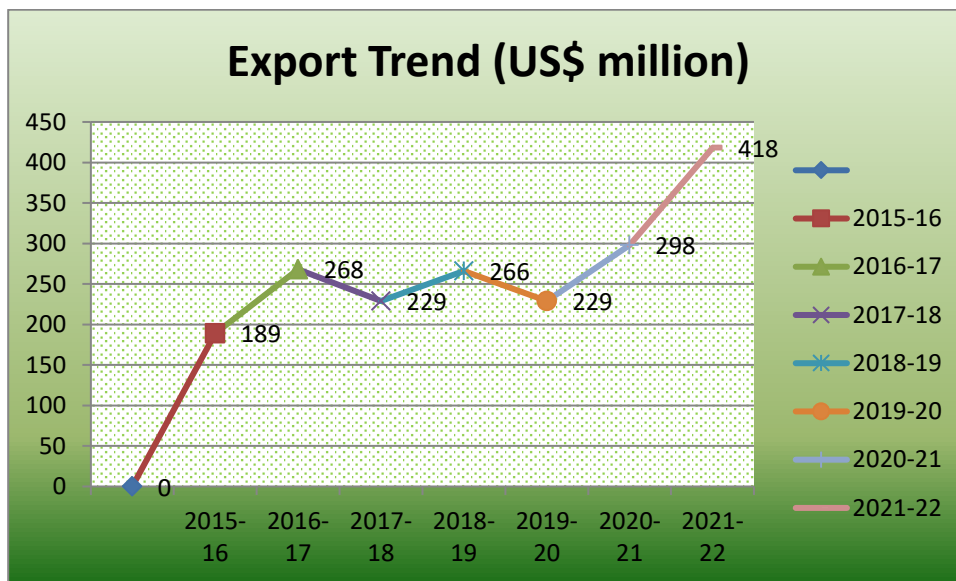


India produced 19,247 million coconuts in 2021-22, 31.45% of the global total. The crop adds Rs. 307,498 million (US\$ 3.88 billion) to India's GDP. (GDP). 12 million Indians depend on coconuts for fuel and income. It provides fiber for over 15,000 coir-based businesses, employing nearly 6 lakh people. The 2021-22 national coconut productivity was 9,123 nuts per hectare, one of the highest in the globe. Coconut-based industries in the nation include copra processing, coconut oil extraction, and coir production. Kerala, Karnataka, Tamil Nadu, and Andhra Pradesh make for 89.13% of India's coconut area and 90.04% of its production. West Bengal, Orissa, and Gujarat produce coconuts. During the year 2021-22, the Government of India has provided financial assistance to the tune of Rs. 801 million (US\$ 10 million, released as on 31st Dec 2021) for covering a fresh area of 4,078 hectare under the expansion of area under coconut initiative and 91-hectare demonstration plots for productivity improvement. This includes six new coconut nurseries, a coconut nucleus seed farm, and six new coconut processing units for value-added products like virgin coconut oil (VCO), activated carbon, ball copra, and spray-dried coconut milk powder.

**India's Coconut Export Trend (US\$ million)**

Year	Export million	Trend(US\$)
2015-16	189	
2016-17	268	
2017-18	229	
2018-19	266	
2019-20	229	
2020-21	298	
2021-22	418	

Source: Coconut Board of India



India provides coconut and related products worldwide. India exported 13% more coconuts from 2015-16 to 2021-22. Coconut exports rose 41% to Rs. 3,236.83 crore (US\$ 393 million) in 2021-22. This strong export growth is helping create more employment required in the production of various coconut-based products such as coconut chips, coconut milk, coconut sugar, coconut water, tender coconut water, coconut honey, coconut jaggery, coconut milkshake, coconut snacks, virgin coconut oil, coconut natural cream, etc. that are seeing high export demand. India exports coconut and related goods from sixty-three top ports. Cochin port ships 30% of Indian coconuts, followed by Tuticorin port with 19.0%. India was the 13th-largest coconut oil producer in 2020, earning US\$31.8 million. 0.031% of global trade is coconut oil. Coconut oil exports rose 7.16% from US\$ 4.78 billion to US\$ 5.12 billion in 2020.

### Coconut Plantations in India

Kerala, Tamil Nadu, Karnataka, Puducherry, Andhra Pradesh, Telangana, Goa, Maharashtra, Odisha, West Bengal, and the islands of Lakshadweep and Andaman and Nicobar are traditional coconut-growing regions in India. Five southern states account for nearly 90 percent of the nation's total output. Assam, Gujarat, Madhya Pradesh, Rajasthan, Bihar, Tripura, Manipur, and Arunachal Pradesh are the states with non-traditional coconut plantations.

### Coconut Scenario in Indian Perspective: Supply And Demand

The coconut is important for sociocultural needs and the national economy as a plantation crop that can generate rural jobs and income. The countrywide demand for coconuts both for edible and non-edible purpose, the adaptability of coconut palm to grow under varying soil and climatic conditions has generated keen interest among the people of even non-traditional zones in the country to plant a few saplings in their homestead gardens. Coconut palms need a warm climate with little diurnal change. The ideal mean temperature is 27°C and the typical diurnal variation 5°C–7°C. The palm thrives in a well-distributed annual rainfall of 1,300–2,300 mm. With good soil drainage, 3,800 mm of precipitation is allowed. The palm thrives in sunny climates. During rebuilding, young palms grow under old palms but need space and light. Thus, old palms should be removed after eight years. Beach farms show palms' heliotropism. Coconut trees grow well on sandy soils along the seacoast, but they can also grow on alluvial soils (Godavari delta) and lateritic soils (Red loam) in West Coast. India has 20 agro-eco regions and 60 eco subregions based on climate, soil, physical and chemical characteristics, and growing time. 19 states and 3 union territories grow coconut palms, except subtropical and temperate places. However, they are well adapted to coastal Agro ecosystems, with 8129 km of coastline and a peninsular area bordered by the Arabian Sea, Bay of Bengal, and Indian Ocean. Coconut plantations are widespread on the Andaman and Nicobar Islands in the Bay of Bengal and Lakshadweep Islands in the Arabian Sea, rare inland eco-systems. The Western plains and Ghat areas of Kerala, Karnataka, and Maharashtra produce the most coconuts in India, followed by the Eastern coast plain and hills Andhra Pradesh, Orissa, Tamil Nadu Other coconut-growing regions include Nicobar, Lakshadweep, and Gujarat. Coconut cultivation has spread quickly in non-traditional areas of Tamil Nadu, Karnataka, Assam, Tripura, West Bengal, Bihar, and Madhya Pradesh.

Mizoram, Manipur, Nagaland, and Arunachal Pradesh are also effectively growing coconuts. However, the triennium average for the year (2013-14 to 2014-15) showed that Kerala's contribution to total area under

coconut was 48.79 per cent, followed by Karnataka 18.90 per cent, Tamil Nadu 17.70 per cent and Andhra Pradesh 5.50 per cent, which together accounted for 91 per cent of the total area in the country. Table 3.2 shows Indian coconut area, output, and productivity by state. From 2013-14 to 2014-15, Indian coconut farming area, production, and productivity rose.

### **Strengths of Indian coconut industry**

- One of the leading producers of coconut in the world producing 13 billion nuts per annum.
- Coconut area distributed in 18 states and three union territories under different agro-climatic conditions.
- 3000 years tradition in coconut cultivation.
- Premier coir producing country in the world.
- Producer of best grade milling copra in the world yielding high grade coconut oil known for its aroma and flavour.
- A large number of farmers' cooperative societies in primary processing and marketing.
- Government agencies such as Kerafed, State Trading Corporation, Kerala State Marketing Federation and Karnataka State Marketing Federation in manufacturing and marketing of branded coconut oil in small packs
- Hundreds of reputed and established private firms in manufacturing and marketing of various coconut products including branded coconut oil in small packs.
- Wide range of coconut products, both edible and non-edible, available for export.
- Technical know-how and trained manpower for the manufacture of various coconut based products. 11. Availability of research support by reputed research organizations such as CSIR, ICAR and DRDO.

### **Major Findings of the Study**

- Out of the 300 respondents in the study, 120 respondents (40 percent) are older than 45, 80 respondents (26.67 percent) are between the ages of 35 and 45, 60 respondents (20 percent) are between the ages of 18 and 25, and 40 respondents (13.33 percent) are between the ages of 25 and 35. It is noteworthy that none of the sample respondents are younger than 18 years old. It indicates that the preponderance of coconut industry workers are over the age of 40.
- It is clear from this study that out of 300 respondents under study 150 respondents (50 percent) have middle school education, 75 respondents (25 percent) have primary education, and about 50 respondents (16.67) have high school education and only 25 respondents (8.33 percent) are illiterate. In the subject area, there are no degree-holding respondents in the sample.
- Out of 300 respondents, the majority, or 50 percent, belonged to the minor category, while 33.33 percent belonged to the marginal category; only 50 respondents had more than five acres of land and belonged to the large land holding category. This may be due to the fragmentation of land, which has left most farmers with tiny land holdings.
- It is clear that out of 300 respondents under study 50.00% of the respondents have planted queen palm variety, 33.33% of the respondents have planted tall coconut variety, 10.00% of the respondents have planted dwarf coconut variety and 6.67% of the respondents have planted hybrid coconut variety. The majority of respondents (50%) have planted queen palm varieties.
- It is clear from the study that out of 300 respondents for 50% of the respondents yielding time duration of coconut trees is 5 years, for 33.33% of the respondents yielding time duration of coconut trees is 4 years, for 16.67% of the respondents yielding time duration of coconut trees is 3 years. According to the majority of respondents (50%), the yielding period of coconut trees is five years.
- It is found from the study that out of 300 respondents in the study area 70.00% of the respondents have planted between 51 to 76 trees in one acre, 20% of the respondents have planted below 50 trees in one acre, 10.00% of the respondents have planted between 76 to 100 trees in one acre and none of the respondents have planted trees above 100 trees in one acre. The majority of respondents (70%) have planted between 51 and 76 trees per acre.
- Approximately 66.67 percent of the irrigation systems of 300 respondents are drip irrigation systems, 20 percent are basin irrigation systems, and 13.33 percent are sprinkler systems. The irrigation system of the majority of respondents (66.67%) is trickle irrigation.
- It is clear from this study 50 respondents (16.67 percent) have monthly income waving between Rs.9000 to Rs.12,000, and 75 respondents (20 percent) have monthly income at the range of less than Rs.9000, and about 100 respondents (33.33 percent) have monthly income at the range of Rs.15,000 to

Rs.18,000 and 75 respondents (25 percent) have monthly income at the range of Rs.18,000 to Rs.21,000. It indicates that the majority of laborers in the coconut industry earn between Rs 15,000 and Rs 18,000.

- The economic status of a population is determined by their pattern of consumption spending. The study reveals the monthly expenditure pattern of employees in the coconut industry. The majority of respondents, 100 (33.34 percent), spend their income on food, followed by 20 percent on clothing, 15 percent on education, 13.33 percent on medicine, and 18.33 percent on electrical appliances. It demonstrates that a significant portion of income is spent on food.
- This study reveals that out of 300 respondents, approximately 100 respondents (33.33 percent) sell coconuts to only one party, 50 respondents (16.67 percent) sell coconuts to multiple parties, and only 150 respondents (50.28 percent) sell coconut to the local market. It indicates that the majority of respondents only sell their coconuts locally.
- This study reveals that out of 300 respondents, 120 respondents (40%) sell their coconut through wholesalers, 100 respondents (33.33%) sell their coconut through retailers, and 80 respondents (26.67%) sell their coconut through agents. It is evident that the majority of coconut producers sell their products through wholesalers.
- It is clear from this study 110 respondents (36.67 percent) feel that the fluctuations in price is normal, 90 respondents (30 percent) feel that the fluctuations in price is high, 30 respondents (10 percent) feel that the fluctuations in price is very high, 30 respondents (10 percent) feel that the fluctuations in price is low and 40 respondents (13.33 percent) feel that the fluctuations in price is very low. Clearly, the majority of respondents consider price fluctuations to be normal.
- It is clear from this study 190 respondents (63.33 percent) feel that coconut market competition is normal, 55 respondents (18.33 percent) feel that coconut market competition is high, 25 respondents (8.33 percent) feel that competition is very high and 30 respondents (10.00 percent) feel that competition is low. Clearly, the majority of respondents consider competition to be normal.
- Of the 300 respondents studied, 25% are affected by the high cost of labor, followed by 21.67% who are affected by financial problems and 16.66% of the farmers who are affected by loss due to climatic conditions and absence of production problems, respectively. And only 8.34% of respondents in the study area are affected by the lack of availability of bulky organic manure.
- Prior to training, participants in the training program had a lower level of knowledge regarding all aspects of agricultural management in coconut, according to the study. As a result of the training, the participants' knowledge of all aspects of coconut farming increased. 98.00 percent of the participants gained knowledge and skill in regards to using the coconut climbing machine. The increase in knowledge is primarily the result of a six-day training program that has made them more technically sound; previously, they had not been exposed to this type of crop-specific training program.

### **Suggestions**

- Tumkur has many uncultivable areas. By explaining coconut output and marketing, the government can inspire coconut growers. Liberal export policy can make coconut and coconut products famous abroad. Agriculture camps should help rural coconut growers understand fertilizer properties.
- The government can provide crop-appropriate fertilizers and pesticides at affordable prices with guidance. Crop insurance should cover illness losses. Coconut delivery should be cheaper. Most farmers are ignorant. They need current and future coconut marketing advice. To give farmers accurate information when they need it, an office can be opened. Coconut output can be increased by government factories. It will boost our foreign currency. Government procurement sites should be located strategically. This organization must quickly distribute purchased goods to consumer markets or processing hubs. After receiving goods, organization must pay farmers quickly. Pricing each mark requires proper grading. Avoiding unnecessary marketing costs requires sufficient steps. Sellers must be paid a fair sum.
- The state and federal government may provide soft loans and other financial assistance to various societies. The government could control the coconut market.
- Without brokers and low coconut prices, coconut yielding takes more than 60 days.
- Only foreign palm and soyabean oils dominate the edible oils market. To level the playing field for all edible oils, including coconut oil, the subsidy PDS plan may be expanded to include all edible oils, including domestically produced ones. Domestic suppliers would benefit and consumers could choose edible oils. However, giving PDS customers edible oil vouchers equal to the subsidy and letting them choose their oil from the market would be best. This fits their values and oil-neutral incentives.

- State governments must permanently pick procuring primary societies to establish permanent procurement channels. Farmers would profit from PSS procurement without government orders. Primary societies need government funding to build driers and storing facilities.
- Most respondents prioritize long-term coconut yield when choosing a tree. The study also shows that coconut tree pests and diseases impact most respondents.
- State-produced traditional and non-traditional coconut products need marketing help. Some products can be effectively exported as well as domestically.
- Coconut sugar, tender coconut, coconut skim milk and water-based products, coconut kernel-based convenience foods, and others have quality potential to draw consumers domestically and abroad. Community-based organizations must procure, screen for quality, package, label, and market most of these goods because they can be purchased by households. Organized producers need domestic and export marketing help.
- Marketing help should include new coconut-based enterprise evaluation and promotion, market information and consultancy, market research and surveys, and market promotion.
- Partial defatted coconut flour and special grade coconut oil can also be sold. Partially defatted coconut flour lasts longer and performs better than dried coconut. Because of its benefits and the potential of selling it for less than desiccated coconut, the organized food industry will accept it.
- Partial beating produces high-quality coconut oil with high moisture and fatty acid content. It works well in cosmetics and food. Karnataka may export Orange Dwarf tender coconuts. Many states demand fresh soft coconut. To ensure tender coconut supply, farmers must be persuaded to grow Orange Dwarf palms and devise effective marketing strategies. In conclusion, tender coconut marketing will increase farmers' on-farm income and job possibilities.

### Conclusion

Generally, India is a signatory to the W.T.O. agreement, which requires a liberalized E.X.I.M. policy in which trade barriers are eliminated. Since the international price of coconut and coconut products is significantly less, it would be impossible to halt coconut imports, and this would have a negative effect on the coconut industry in the country if production costs were not reduced to make them competitive. Thus, product diversification, the adoption of stringent quality standards for coconut products, and increased productivity are methods to increase the competitiveness of this industry. It is important to note that coconut has a promising future in India, provided we are prepared to meet the challenges. The country's infrastructure, trained workforce, and broad range of climatic conditions are indicative of its superior capabilities. At the same time, these resources must be optimally utilized in order to make the coconut industry more dynamic and competitive. It can be said that there is ample scope for further research studies, particularly in areas like role of co-operatives in new coconut product development and marketing, extent and problems associated with women labourers engaged in the coconut industry, problems relating to technology upgradation and adoption level in coconut sector and so on.

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