Chapter – 1

Introduction
Coconut is one of the important commercial crop in the world. Nucifera the member of Arecaceae family. The term coconut refers to entire coconut palm or the fruit which botanically a drupe but not a nut. The word coconut derived in 16th century Portuguese and Spanish cocos means "grinning face" it includes three small holes on the coconut shell. Coconut plays very significant role in agrarian economy of India. Apart from the importance of copra and coconut oil which widely used in the manufacture of products it includes soaps, hair oil, cosmetics and other industrial products.

Coconut is a horticultural crop small and marginal farmers since 98 five million coconut holdings in the country hold less than two hectares. The palm is an very essential component in the west coast of India.

A fresh survey on marketing and production of coconut and coconut product in India was undertaken. Coconut water and coconut nutrition are numerous due to the amount of essential nutrients which included vitamins, minerals, amino acids. Because coconuts grows near the sea and they have mineral-rich salt water supplies. which absorb the water through their root systems. It makes coconut water a taste source of major minerals, such as potassium calcium and magnesium one of the main coconut health benefits comes from its coconut water, Coconut water is better than juice.

Coconut is grown in more than 86 countries of the world. The production accounts to 54 billion nuts per annum. India occupies the 13 billion nuts, and Indonesia and the Philippines are the major coconut growing countries. The coconut palm is a versatile tree crop it provides nutritious food and a refreshing drink oil for edible and non-edible uses fiber of commercial value shell for fuel and industrial uses that chin alcoholic beverage timber and a variety of miscellaneous products. Coconut is cultivated mainly in the coastal areas of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Orissa, West Bengal, Pondicherry, and Maharastra and in the Islands of Lakshadweep, Andaman and Nicobar of coconut cultivation has been introduced to
suitable locations in nontraditional states including Assam, Gujarat, Madhya Pradesh Rajasthan, Bihar, Tripura, Manipur, and hinterland regions of the coconut states.

Kerala is the main coconut growing state followed by Tamil Nadu. Karnataka constitutes 2.87 lakh hectares and 1493 million nuts. Mainly there are two varieties of coconut Tall and Dwarf. In addition hybrids of various combinations have also evolved. The tall cultivar is especially grown throughout India, while the dwarf is grown mainly for parent material in hybrid seed production and for tender coconuts. The tall cultivar generally growing along the west coast area is called West Coast Tall, and the cultivar growing along the east coast area is called East Coast tall.

In India there are different varieties of coconut 1. Chowghat Dwarf Orange 2. Chowghat Dwarf Green 3. Malayan Yellow Dwarf and 4. Malayan orange Dwarf are popular in India. Apart from Gangabondam is a dwarf type coconut in Andhrapradesh. The research on coconut in India is being carried out by the institutions under the Indian Council of Agricultural Research and the State Agricultural Universities located in different coconut growing states.

India, the palm is an useful component in the homestead system of farming. There is a concentration of coconut plantations in the coastal regions of the country. It is also grown in the hinter lands where the agro climatic condition of coconut cultivation is good.

1.1 HISTORICAL BACKGROUND OF COCONUT

The name of coconut first mentioned by Spanish and Portuguese word coco means monkey face. Coconut is the fruit of palm botanically called as cocos nucifera. The fruit-bearing palms are native to Malaysia, Polynesia and Southern Asia, and are now also prolific in South America, India, the Pacific Islands, Hawaii and Florida. The light, fibrous husk allowed it to easily drift on the oceans to other areas. Tropics and sub tropics are the common habitats of the plant. The coconut is a plant which favourably grows on the shorelines. It develop on sandy soils. The fruit depends on rainy and sunny weather it cannot resist low temperature.

For a perfect growth coconuts also require an area of high humidity. Many researchers suggest Malaysia to be the likeliest place others consider the north-west of South America. The fruit has spread worldwide mostly with the help of seafarers. The
coconut fruit is light and water resistant it can keep itself afloat on the surface of the water.

1.2 MAJOR GROWING STATES

Major coconut growing states in India are Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, West Bengal, Maharashtra, Orissa, Assam, Goa, Daman and Diu, Lakshadweep, Gujarat. Kerala tops in production accounting to 39 percent of total production in the country.

1.3 TYPES OF COCONUT

Mainly two groups of coconut Tall and the Dwarf. VHC3 is the recently developed hybrid coconut in variety. India is the first country to exploit hybrid vigor in coconut there are four varieties have been released for commercial cultivation.

1.4 VARIETIES OF COCONUT

1. Dwarf Coconut

Kalpa Raksha:
This is semi tall variety with sweet nut water it comes to flowering by fifty four months from coconut planting. Annually the yield is more than 80 nuts the quantity of tender nut is 290ml.

Chowghat orange Dwarf :
Chowghat orange dwarf tree takes about 3-4 years for flowering. The annual yield is sixty three nuts it is suited for tender nut water.

Kalpa Sree:
Kalpa Sree is the superior quality of coconut oil and it is very taste it is the earliest flowering cultivar and it takes duration about 2 to 3 years for flowering. The annual yield is 90 nuts.

Kalpa Jyothi:
Kalpa Jyothi Coconut tree is constitutes yellow fruits and it gives more yield of 114 nuts per palm per year under the rain fed conditions. especially it is very Popular in Kerala and Karnataka.
Introduction

Kalpa Surya:
Kalpa Surya Coconut tree gives orange coconut in Kerala and Karnataka, Tamilnadu for tender purpose the average nuts per year is 123 nuts.

2. Hybrid Coconut

Chandra Sankara:
Chandra Sankara palm is a heavy yielder and produces 116 nuts with a range of 100-150 nuts. The irrigation is required during summer months

Kera Sankara:
It is another popular coconut in Kerala state the annual yield of nuts is 108 with range of 70-130 nuts. Large scale cultivation in Kerala, coastal Andhra Pradesh and coastal Maharashtra.

Chandra Laksha:
The palm comes about 4-5 years after planting the annual yield is 109 nuts and the copra content of 150-210g/nuts.

Kalpa Samrudhi:
Kalpa Samrudhi is very popular and the yield is 117 nuts per palm. It is suitable for tender nut purpose this hybrid was recommended for cultivation in Kerala and Assam.

Kalpa Sankara:
Kalpa Sankara is the famous coconut plant and the annual yield is 85 nuts per palm. This hybrid was recommended for cultivation in root disease prevalent tracts of Kerala.

3. Tall Coconut

Kalpa Pratibha:
Kalpa Pratibha is another important coconut and the potential to produce 23,275 nuts per hectare and per year in West Bengal state. It is recommended for cultivation in Kerala, Maharashtra, interior zone of Tamil Nadu and coastal zone of Andhra Pradesh
Kalpa Mitra
This variety has the potential to produce 80 nuts/palm/year. The quantity of tender nut water is 495 ml. It is recommended for cultivation in Kerala and West Bengal.

Chandra Kalpa
Chandra Kalpa is very popular coconut and the palm grows in all types of soil and it can withstand moisture. This crops grows in Kerala Karnataka Andrapradesh and Maharastra.

Kera Chandra
Kera Chandra annual yield of nuts varies from 99 to 200 with an average of 110 nuts.This including Konkan Region, coastal Andhra Pradesh and West Bengal.

Kalpa Tharu
This variety is recommended for ball copra production. It yields around 116 nuts per year with copra content of 176 gm under rainfed situations. Its is recommended for cultivation in Karnataka Kerala and Tamil Nadu.

Kalpa Haritha
Kalpa Haritha recommended for Kerala and Karnataka it is only suitable for copra and tender nut purpose .The annual yield is 118 nuts per year under rainfed conditions.

1.5 USES OF COCONUT

1. Coconut water or milk is an excellent natural soft drink for all. It is useful for diabetics and heart patients. It is very useful to people who suffering from diarrhea and vomiting. It helps in increasing blood circulation in the kidneys.

2. Oil is extracted from dry copra. Copra contains about 65 to 75 percent oil. Copra is also used in the preparation and decoration of cakes.

3. Kernel (wet meat) is mainly used in making curries, chutney, sweet and other cooking purposes.

4. Coir the fibrous husk of the coconut is used in a surprisingly large number of ways. Ropes and yarns, aquarium filters, car seat covers, flower pots, brushes, bristles, door mats and carpets.

5. Coconut shell is used for making fancy item etc.
1.6 WORLD SCENARIO OF COCONUT

Coconut is the large hard fruit the coconut palm tree, brown in colour which includes husk like fiber surrounding a large seed. The fruit is known as the name of Cocos nucifera. The name suggests coconut is actually a fibrous drupe and not a nut. The inner seed has coconut meat inside it that is consumed as an important ingredient in various cuisines of the world. The fluid in the seed is drunk throughout the world as it is considered to be a healthy drink. As a mentioned of fact coconut is the largest seed. The coconut palm is very popular and it belongs to the palm family of Arecaceae it is the only tree comes under in genus cocos.

The tree grows to a height of around 30 meters and has feather shaped leaves the coconut palm is multipurpose tree like many other palm trees as every part of the tree is used in vast number of products. Coconut is the fruit that has high economic value. The word production of coconut currently is 35 million tonnes Indonesia constituting the highest production accounting up to around 30 percent in world figures. The nut is cultivated on around 26 million acres of land throughout the world.

1.7 MAJOR COCONUT PRODUCING COUNTRIES

Coconut is a popular plantation and, it is quite hard to establish a coconut plantation but once it is done it proves to be more beneficial to farmers. Coconuts are harvested throughout the year the world production of coconut sums up to around 55 million tons annually. Indonesia and Philippines are the leading countries that produce the maximum coconut fruits in the world. The leading producers of the crop in the year with their production has increased.

1.8 INDIAN SCENARIO OF COCONUT

Coconut plays a significant role in India and the area of 12.29 million hectares with a total production in terms of copra equivalent of 11.04 million MT. Indonesia 25.63 percent Philippines 23.91 percent India 19.20 percent are the major coconut producing countries of the world. India occupies a predominant position in respect of production of coconut in the world. Coconut is grown in 1.94 million hectares in nineteen states and three Union Territories of the country producing 15730 million nuts with average productivity of 8303 nuts per hectares.
Traditional areas of coconut in India are the states of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Orissa, Goa, West Bengal, Pondicherry, Maharashtra and Islands of Lakshadweep and Andaman and Nicobar. Non-traditional areas are the states of Assam, Gujarat, Madhya Pradesh, Bihar, Tripura, Manipur, Nagaland and Arunachal Pradesh. The four southern states put together account for more than 90 percent of the total production in the country Kerala 36.88 percent Tamil Nadu 34.11 percent Karnataka 13.83 percent Andhra Pradesh 6.16 percent and other states 9.0 percent.

Coconut is a crop of small and marginal farmers since 98 five million coconut holdings in the country are less than two hectares. In the west coast of India, the palm is an essential component. Generates more income to the producers. Coconut has been a part of the Indian culture and has been produced in India since a very long time. Many of coconut producers depend upon coconut cultivation. Currently India stands third in the list of the maximum coconut producing countries of the world. The coconut produce in India was 14811.1 million nuts in the year 2006. The area under the plantation cultivation up to 1.78 million hectares in the country.

1.9 COCONUT SCENARIO IN KARNATAKA

Karnataka accounts for 15 percent of area under coconut cultivation and 10 percent of total production of coconut in the country. Coconut is the second largest and important horticultural crop of Karnataka state occupying 31 percent of the total area under horticultural crop. The crop is grown in all the districts of the state the total area under coconut in the state is around 3.33 lakh hectares. The annual production of coconut is 1754 million nuts. The productivity of coconut in the state is considered as lowest when compared to other neighboring states. Nearly 60 percent of the coconut produced in the state is utilized as raw nuts for domestic culinary purpose social cultural and religious purposes. About 25 percent of the nuts are converted into edible ball copra desiccated coconut powder and the remaining 15 per cent is utilized as tender coconut for drinking purpose. Prominently, 60–70 percent of the arrival of coconut is exported to other states. Uttar Pradesh, Punjab, Maharashtra, Rajasthan, Madhya Pradesh, Jammu and Kashmir, etc. About 60 percent of coconut production in Karnataka is used in domestic items and remaining is dried as copra, most of the
copra arriving to the markets is dispatched to other state where the Karnataka copra is in great demand. The coconut utilized for commercial product preparation is only to the extent of 35-40 percent while 55-60 percent is consumed for food and beverage purposes. Milling copra continues to be the major coconut product in Mangalore market. Whereas Arisikere and Tiptur markets are cater to the ball copra and which is exported to North India. Maddur market is mainly trading the tender coconuts which are sent to other states for consumption of tender coconut water.

The coir Industry is an important cottage industry in the rural areas of the states providing gainful employment opportunities to many villagers. There are 330 units registered with coir board manufacturing coir products in Karnataka, which are located in Tuymken, Chitoradnya, Bangalore, Hassan, and Mandya, out of these 330 units, 50 units are fiber extraction units, 30 units make curved ropes and 30 units make yarn, remaining units are manufacturing coir products. The mainly coconut grown Districts of Karnataka are Tumkur, Hassan, Dakshina Kannada, Chikkmagalur, Chitradurga etc.

**1.10 SUPPLY CHAIN MANAGEMENT**

Supply chain management is the management of a network of interconnected businesses and involved in activities the provision of an coconut industries product and service packages required by the end customers in a chain.

The second idea is that while supply chains have existed for a long time most organizations have only paid attention to what was happening within their four walls. Few businesses understood much less managed the entire chain of activities that ultimately delivered the products to the final consumers for daily needs. The result was disjointed and often ineffective supply chain link.

Supply chain management acknowledges all of traditional logistics and includes other activities such as marketing, new product development finance and customer service.
1.11 DEFINITION OF SUPPLY CHAIN MANAGEMENT

Supply chain management as the “design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, builders a competitive infrastructure etc.

1.12 THE SUPPLY CHAIN UMBRELLA

A large set of activities besides purchasing is part of supply chain management network and provide information across the supply chain planning.

i. Purchasing: Most organizations include purchasing as a major supply chain activity since purchasing is the central focus.

ii. Quality control: Almost all organizations recognize the importance of supplier quality and the need to prevent rather than simply detect quality problems. Progressive organizations work directly with suppliers to develop proper quality control procedures and processes.

iii. Demand and supply planning: Demand planning identifies forecasts of anticipated demand, inventory adjustments, orders taken but not filled and spare part and after-market requirements. Supply planning is the process of taking demand data and developing a supply, production, and logistics network capable of satisfying demand requirements.

1.13 SIGNIFICANCE OF THE STUDY

India is one of the progressive country which has export potential of Horticultural crops. India is the second largest producer of horticultural crops in the world .Here is a need to study the growth of the production and exports of fruits and vegetables, particularly most of the potential fruit like coconut. The role of intermediating companies for export is very essential. In view of this, the present study makes a modest attempt at understanding the input supply and resources use pattern in coconut production. The coconut provides more and more foreign exchange and it helps increasing the social-economic status of the coconut growers.
1.14 OBJECTIVES OF THE STUDY

1. To study the trend in area, production and productivity of coconut in Tumkur District.

2. To study the supply chain management of coconut in Tumkur District.

3. To examine the value addition of coconut in Tumkur District.

4. To study the problems faced by coconut producers and processors and to suggest the remedies thereof.

1.15 HYPOTHESIS

1. There is a significant growth in area and production of coconut in Tumkur District over the period of time.

2. Value addition of Coconut generates more income to the processing industries in the study.

3. There is a significant relationship between Supply Chain Management and value addition of coconut products in the study.

1.16 ORGANIZATION OF THE STUDY

<table>
<thead>
<tr>
<th>Chapter 1</th>
<th>INTRODUCTION includes the Supply chain management of coconut industry in Karnataka World scenario of coconut, Major markets of coconut in the world, Coconut producing countries, Scenario of coconut in India, Scenario of coconut in Karnataka, Importance of the study Objectives of the study Hypothesis, Limitation of the study and at the end the Organization of the study.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 2</td>
<td>REVIEW OF LITERATURE, with three-sub heading such as Production and Marketing of Coconut and Coconut Products, studies related to Supply Chain Management, Issues related to Production and Marketing of Coconut and Coconut Products.</td>
</tr>
</tbody>
</table>
### Introduction

<table>
<thead>
<tr>
<th>Chapter 3</th>
<th>METHODOLOGY, adopted in the study, consists of PROFILE OF THE STUDY AREA, Sample Design and Statistical Tools and techniques adopted in the study such as Growth models, (CAGR) SPSS Multivariate Analysis, ANOVA Variance and other suitable Techniques.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 4</td>
<td>Production and Processing of Coconut.</td>
</tr>
<tr>
<td>Chapter 5</td>
<td>Marketing and Export of coconut in Tumkur District.</td>
</tr>
<tr>
<td>Chapter 6</td>
<td>Result and Discussion.</td>
</tr>
<tr>
<td>Chapter 7</td>
<td>Summary of the study, Recommendations and Conclusions Bibliography, Annexure.</td>
</tr>
</tbody>
</table>