

**ECONOMICS OF PRODUCTION AND MARKETING  
OF VEGETABLES IN CHITTUR TALUK (PALGHAT  
DISTRICT) WITH SPECIAL REFERENCE TO  
TOMATO (*Lycopersicon esculentum* L.) AND OKRA  
(*Abelmoschus esculentus* L.)**

**By  
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**THESIS**

**Submitted in partial fulfilment of the  
requirement for the degree of**

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## DECLARATION

I hereby declare that this thesis entitled "Economics of Production and Marketing of Vegetables in Chittur Taluk (Palghat district) with special reference to tomato (*Lycopersicon esculentum L.*) and okra (*Abelmoschus esculentus L.*) is a bonafide record of research work done by me during the course of research and that the thesis has not previously formed the basis for award to me of any degree, diploma, associateship, fellowship or other similar title, of any other University or Society.

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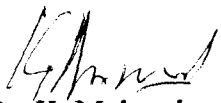
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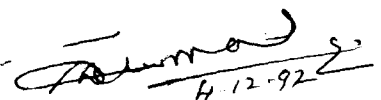
  
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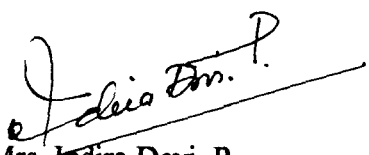
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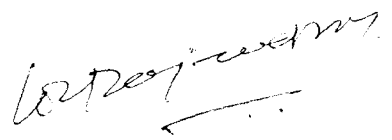
We, the undersigned members of the Advisory Committee of Mrs. Preeti Ramachandran, a candidate for the degree of Master of Science in Agricultural with major in Agricultural Economics, agree that the thesis entitled "Economics of Production and Marketing of Vegetables in Chittur Taluk (Palghat district) with special reference to tomato (*Lycopersicon esculentum L.*) and okra (*Abelmoschus esculentusL.*) may be submitted by Mrs. Preeti Ramachandran, in partial fulfilment of the requirement for the degree.

  
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# **INTRODUCTION**

## INTRODUCTION

India is the second largest vegetable producing country in the world next to China. Vegetables have a vital role to play in the food front in as much as they reduce the demand on cereals and are one of the cheapest sources of natural protective food contributing carbohydrates, vitamins and mineral salts in the human diet.

Vegetables provide a good source of income to the growers. They are quick growing and yield immediate returns to the growers. Their cultivation as such occupies an important place in the agricultural development and economy of the country. The yield from vegetables is three to four times more as compared to that obtained from cereal crops from a unit area because they are short duration crops and their yield is obtained in numerous pickings. Unlike cereals, they can be grown throughout the year in one form or the other and the sowing and harvesting operations are carried out simultaneously.

The estimated area under vegetables in India is about 5.24 million hectares with an annual production of 50 million tonnes. This level of production is inadequate to meet national requirements. The recommended requirement of vegetables for human consumption is 300 g, but at present the total intake is only 120 g per capita per day.

The yield per hectare is also very low as compared to that of developed countries. In recognition of its potential in sustaining a dynamic agricultural economy, horticulture has been assigned adequate priority in the national programme for agricultural development. The proposal is that by the turn of the century the area under vegetables is to be increased to 8 million hectares to produce 120 million tonnes, at an enhanced productivity level of 15 tonnes /ha.

The situation in Kerala is even less encouraging than the national scenario. With an annual production of 2.5 lakh tonnes of vegetables, Kerala has to depend heavily on the neighbouring states. By 2000 AD., the production in the State is to be increased to 31.1 lakh tonnes.

To improve the productivity of vegetables, it is imperative to adopt high yielding varieties and proven technologies. Hence, strategies to boost vegetable production have so far concentrated on farmer level production management aspects involving technological packages. The role of market forces in farmers decisions are often neglected. Hence, there is no dependable marketing network in the villages to support producers. The existing system does not protect their interest and hence there is no incentive to produce more and satisfy the quality requirements. So marketing has emerged as the crucial factor in establishing

equilibrium between production and consumption. Vegetable marketing in our country has not received the attention it needs, may be due to the peculiar features like perishability, bulkiness etc.

The problems of commercial vegetable growers do not end with the production of abundant and high quality vegetables. Considerable quantities of vegetables go waste due to lack of storage facilities and delayed marketing. In India, development of agricultural marketing is still in its infancy. The development of marketing facilities is a strong incentive for increasing production. Equal weightage has to be given both for production and marketing, so as to ensure that the growers sell their marketable surplus at a reasonable price.

The present marketing system is not at all conducive to intensive production. This is so because a large number of intermediaries reap the maximum share of consumer's price and the producers get only a marginal benefit over the cost incurred by them. Bulk of the consumers of vegetables buy virtually the same product that the farmer produces without any value addition. Yet the marketing margins are high. Farmers received only 50 to 54 per cent of the retail price of pumpkin and ashgourd in Malappuram district (**Selvin, 1983**) and 65 per cent in bittergourd and 50 per cent in ashgourd in Trichur district (**Sandhya, 1992**)

High perishability and inadequate infrastructural facilities to manage the peak production cause serious problems in marketing. At present there is no organised system of marketing which benefits both farmers and consumers.

Vegetable production and marketing has so far been a neglected area, particularly in Kerala. The Government of Kerala has initiated an intensive programme to boost vegetable production in the State. It is aimed at making the State self sufficient in vegetable production. Massive programmes of crop development including post harvest management are being organised in a big way. The past decade of this century has witnessed a spurt of activity in almost all the spheres of fruit and vegetable marketing in Kerala. At this juncture, the basic information on production and marketing aspects is of vital importance to planners and policy makers. The specific objectives of the study are

1. To estimate the cost of production and returns of okra and tomato.
2. To identify the major marketing channels in vegetable marketing
3. To estimate the marketing cost and margins.
4. To estimate the problem encountered in the cultivation of vegetables.

This thesis consists of six chapters including the present one. A review of the relevant literature is given in chapter two. A brief description of the area of study is given in chapter three. Chapter four deals with the materials and

methods used in this study, while chapter five deals with results and discussion.

The summary of the major findings of the study is given in the final chapter.

**Limitations of the study:**

Farmers in the area used to take the crop in two seasons. However, only the details regarding the summer crop was collected due to the limited time available for the study.

The respondents gave the information from their memory. Therefore information gathered is likely to be subject to recall bias.

# REVIEW OF LITERATURE

## REVIEW OF LITERATURE

In this chapter an attempt has been made to review important past studies relevant to the present study. The studies have been broadly grouped into two sections. The first section consists of studies on cost of production. The second section comprises of studies on marketing.

### **Cost of Production studies**

**Naidu and Rao (1977)** conducted a study on costs, returns and marketing of brinjal crop in Tenali area of Guntur district in Andhra Pradesh. Cost of cultivation of brinjal was, found to be Rs.1,136.60 per acre, income from brinjal was estimated at Rs.1,968 and net income at Rs.831.33.

**Madalia and Kukadia (1978)** studied the cost and returns, in the cultivation of four vegetables viz. Pointed gourd, lady's finger, bitter gourd and chilli. The average cost of production of pointed gourd worked out to Rs.5,947.96 per hectare which is highest, while that for bhindi worked out to Rs.3,230.50 per hectare, which is the lowest among the four vegetables under study.

**Raghubanshi and Kansal (1978)** studied the costs, returns and margins of 'off season' tomatoes of Saproon valley of Solan district in Himachal Pradesh. The total cost of cultivation was Rs.13,239 per hectare which signifies that tomato growing is capital intensive. It was also labour intensive and therefore the family labour



requirement was considerably large which accounts for 24.52 per cent of the total input cost. The output of 'off season' tomatoes was 221 quintals per hectare and the gross income was Rs.23,360, thus leaving a pretty high margin of net income of Rs.9,844 per hectare.

**Arunkumar *et al.* (1979)** analysed the cost and returns of potato under irrigated and rainfed conditions in Karnataka. The total operational cost, cost of production of potato per hectare under irrigated conditions in Bangalore district amounted to Rs.9,583.45 which was nearly three times more as compared to the total : operational cost under rainfed conditions at Rs.3,567 in Hassan district.

**Gupta and Ram (1979)** reported that vegetables accounted for more than 70 per cent of the total income of the farmers around Solan in Himachal Pradesh. Income on large farms was 3.5 and 1.7 times higher than that of small and medium size farms respectively. As much as 48 per cent of the total expenditure was on hired labour alone. Cost of production was smaller on large size farms making them economically more efficient.

**Nadda *et al.* (1981)** made a cost benefit appraisal of ginger cultivation in Sirmur district. Average cost of cultivation per hectare was Rs.13005 and the gross income was Rs.19,321. On an average, net profit per hectare was Rs.6,312.

**Subrahmanyam and Doss (1981)** estimated the cost of cultivation of vegetables in Molur and Chickhallapur taluks of Kolar district of Karnataka. It was found that the total cost of cultivation per hectare of tomato and brinjal were Rs.5,133.75 and Rs.5,141.25 respectively in Malur taluk and Rs.5,604.71 and Rs.5,456.17 respectively in Chickhallapur taluk. Manures accounted for nearly 70 to 75 per cent of total cost. Gross returns were Rs. 21,222.12 from tomato and Rs.13,990.29 from brinjal.

**Ramasamy (1981)** studied the problems in production and marketing of major vegetables in Coimbatore district and found that the realised yield of brinjal varied from 2.66 tonnes to 23.78 tonnes per hectare in the sample farms. The yield of bhindi varied from 1.80 tonnes to 14.56 tonnes, the average being 9.60 tonnes.

**Nahatkar and Pant (1984)** conducted a study on farm profitability and resource productivity in the cultivation of chillies in Madhya Pradesh. The cost of cultivation of chillies was found to be Rs.4,260.27 per hectare. Operational costs accounted for the highest percentage (60%) of the total cost of cultivation followed by rental value of land (30.32%).

**Saraf and Mishra (1987)** studied the cost and returns, labour employment and marketing of vegetables in Madhya Pradesh. The cultivation of tomato was shown to be quite remunerative as compared to the other three crops studied, namely potato,

cauliflower and brinjal. The net returns from tomato was Rs.2,037 per acre followed by brinjal with Rs.1,952, cauliflower with Rs.1,467, and potato with Rs.1,428.

According to **Bastine (1988)** in a study of economics of banana cultivation in Irinjalakuda block of Trichur district, cost of cultivation per hectare of banana was Rs.36,349.00. The returns worked out to Rs.45,068.

**Kiresur and Kumar (1988)** studied the impact of regulation on vegetable marketing in India, with special reference to Dharwad district of Karnataka. It was found that tomato was the most profitable crop enterprise with a net profit of Rs.3,195 per acre followed by brinjal and onion.

**Singh and Bhatia (1988)** have examined the role of vegetables in augmenting farm income and employment in Himachal Pradesh. Examining the area under vegetables, average yield and yield gap between experimental field and farmer's field, the authors have arrived at the conclusion that for some of the vegetables like pea, cabbage, cauliflower, tomato and potato, there is vast scope for increase in productivity through proper use of technology.

**Venkatanarayanan (1990)** analysed the economics of chilli cultivation in Khammam district of Andhra Pradesh. High input-output ratios revealed the profitability of chilli farming and break even analysis indicated that chilli cultivation was a highly paying proposition.

**Mahadeb et al. (1991)** found that onion was more profitable than summer rice in West Bengal. The study showed that while onion needs two or three light irrigations with less than 300 mm of water, the water demands of rice may be as high as 2,500 mm in summer. For every rupee invested, the farmer gets Rs.1.23 from summer rice and Rs.2.57 if he switches over to onion.

**Jadhav et al. (1992)** concluded that inter-cropping urd bean and okra in finger millet was remunerative in Konkan. The highest net return of Rs.3,537 per hectare was obtained from the sole cropping of urd bean and Rs.3277 from that of okra. Intercropping of finger millet with urd bean and okra in 4:2 row proportions gave a maximum net profit ratio of 2.21 and 1.45 respectively.

**Aggarwal (1993)** studied the cultivation of hybrid tomatoes in West Bengal. The cultivation of hybrid tomato and capsicum in Kulpi block, West Bengal, produced amazing results. In the very first year, farmers got yields as high as 65 tonnes for tomato and 13 tonnes for capsicum per acre. Due to such high yields and incomes, the farmers bought seeds at about Rs.15000 per kg and made total investment of about Rs.30000 per acre. Some enterprising farmers even grew tomatoes in the most unfavourable periods of heavy monsoon. Their argument was that their loss of production was more than *off set* by the very high prices which their off season produce fetched in Calcutta market.

**Brahmaiah and Naidu (1993)** in their studies on chillies reported that labour is one of the major constituents of total cost incurred and therefore has a direct impact on farm earnings. It showed that there was a direct relation between size of the farm and total labour cost. Cost components for small and large farms indicated that manures and fertilisers took the largest share in total expenditure followed by other inputs like rent on land, plant protection, human labour and bullock labour . Their findings indicated that chillies in general was a responsive and labour intensive crop. Productivity was highest on large farms with an average yield of 34.15 quintals per hectare and it decreased with decrease in farm size.

**Grewal and Sharma (1993)** concluded that potato based cropping system can be profitable. Studies conducted in the All India Co-ordinated Potato Improvement Project have shown that potato-tomato-okra at Hisar (Haryana), potato-mung bean-groundnut and potato-mung bean-rice at Jorhat, potato-pearl millet (fodder) - groundnut at Dessa (Gujarat) and Kanpur (Uttar Pradesh) and potato-okra-soybean at Chinaware (Madhya Pradesh) were the most remunerative cropping systems for these regions.

**Subrahmanyam and Sudha (1993)** studied the economics of linking tomato processing to production and marketing. It was observed that the cost of production per tonne of fresh hybrid tomatoes, based on the total cost of Rs.41000 per hectare worked out to Rs.917 per tonne, average yield level being 45 tonnes per hectare. For sustaining the production it is necessary that the price received should cover the cost

of production and also leave some profit margin. In order to attract cultivators to sell their produce the processing units may have to offer a price which is in line with the market price where the cultivators generally sell their produce after meeting their profit expectations.

**Jayesh (1994)** in his study on economics of production and marketing of ginger in Kerala with special reference to Idukki district reported that average yield of ginger was 13,783.08 kg per hectare and average cost of cultivation Rs.20,088.10 per hectare . Human labour was the largest single item of expenditure accounting for 34.46 per cent of total cost followed by fertilisers and manures .

**Yadav *et al.* (1995)** found that cultivation of vegetables under drip irrigation was remunerative. The vegetables (vegetable pea and okra-cowpea intercropping) were cultivated in the arid regions using drip system developed at the Central Arid Zone Research Institute, Jodhpur. In the system, all nutrients were utilised efficiently when applied with irrigation water under coarse soil conditions. The intercropping of crops having different growth habits may avoid the moisture loss through seepage or percolation, successfully.

## **Marketing**

Vegetables have received scant attention in marketing research programmes in India Vegetable crops hold a great promise for fostering economic growth and improving the diet of the people. The marketing of these commodities needs quick

transportation and storage facilities. Their marketing involves a large number of intermediaries for performing different activities which take away high margins from the price paid by the consumers.

Vegetable marketing due to its peculiar characteristics has gained the attention of researchers and several micro level studies have identified different aspects of the problem. Literature on marketing of fruits has also been included due to the similarity between fruit and vegetable marketing.

### **Studies on marketing**

**Prasad (1979)** analysed the price spread in the marketing of selected vegetables in Bangalore city. Price spread at producer's level amounted to Rs.0.55, Rs.0.51 and Rs.0.49 for every kilogram of beans, cabbage and brinjal respectively.

**Shete et al. (1980)** measured the price spread of tomatoes in Ahmednagar district in Maharashtra. The total cost of marketing worked out to Rs.20.97 and Rs.20.76 per quintal in case of irrigated and rainfed tomatoes respectively. The producers itinerant traders, commission agents and retailers incurred on an average 20.80, 40.05, 8.75 and 27.30 per cent of the total cost of marketing of tomatoes.

**Sivakumar (1981)** conducted a study on economics of production and marketing of brinjal and tomato in Tiruchirapalli. Comparative analysis of brinjal and tomato showed that the gross income and net income realised for brinjal was higher

than that of tomato.

A study was conducted to find out the problems in production and marketing of major vegetables in Coimbatore district by **Ramasamy (1981)**. The producer's share on consumer's rupee was 47.35% and 38% for brinjal and bhindi respectively.

**Ramamoorthy et al (1984)** conducted a study on structure, conduct and performance of tomato marketing in Coimbatore. Cost per kilogram among commission agents, wholesalers and retailers was 2.62 paise, 3.69 paise and 9.60 paise respectively.

**Vigneshwar (1986)** conducted study on dynamics of fruit and vegetable marketing in India. Out of the total production of about 20 million tonnes of fruits and 35 million tonnes of vegetable, nearly 30 to 40 per cent was accounted for post harvest losses. It was also estimated that about 10 to 25 per cent of the perishables and semi perishables were lost due to spoilage in the absence of adequate cold storage facilities.

According to **Sidhu (1988)** in a study on new thrusts in agricultural marketing in Punjab, there should be right type of marketing infrastructure, correct government policies and a sound network of input supply system for marketing of agricultural commodities. It was found that about 30 per cent of fruit and vegetable production was lost due to lack of processing and cold storage facilities.



**Chahal and Gill (1989)** attempted to consolidate various methods of measurement of marketing efficiency. The study showed that, price spread is the main parameter in judging the marketing efficiency in various channels or in assessing the comparative efficiency of various markets. The market integration is also a useful parameter in measuring marketing efficiency both for spatial and temporal analysis. The assessment of the type of competition must also be included in the measurement of marketing efficiency.

**Sidhu (1990)** studied some aspects of agricultural marketing and pricing policies in India. He suggested that there should be an integrated approach to the provision of support services in agricultural marketing. These services are performed by different agencies without proper co-ordination. The role of private trade in the marketing process needs to be understood and attention should be paid to development of private entrepreneurship.

**Koujalagi and Kunnal (1991)** identified different channels in marketing to estimate the costs and to assess the problems in marketing of pomegranate. Two channels were identified Channel 1: Producer - pre harvest contractor - commission agent cum wholesaler - retailer - consumer, channel 2: Producer - commission agent cum wholesaler - retailer - consumer. The commission formed the major item of marketing cost in both channels constituting about 44 per cent of the total marketing cost in both the channels.

**Nawadkar *et al.* (1991)** studied the cost of marketing of selected vegetables in western Maharashtra. The important items were packing, transport and commission charges. The per quintal cost of marketing of all items studied were more at Bombay market compared to Pune market. The relationship between arrivals and prices was negative in all the six vegetables. Trader's profit margin accounted for quite a large proportion of the price paid by the consumers.

**Raj *et al.* (1991)** made a case study of fresh fruits and vegetables in India, from the export perspective. The study was based on secondary data collected from various issues of FAO production and trade year books. India's export of vegetables and fruits as a percentage of total production showed erratic and static trend during the period under study. India's share as a percentage of total world export of potato, orange, lemon and banana during the period under review was negligible. Onion was an exception.

**Sahoo (1991)** made a similar study on export marketing of fresh fruits and vegetables. The study concluded that India has vast potential in enhancing the export of fresh fruits and vegetables. So far, these constituted only 5 per cent of the total value of exports of agricultural and allied products, which can readily be enhanced to a growth rate of 10 per cent per annum if concerted effort is made.

**Mohideen, (1991)** studied the role of institutional credit in the marketing of fruits in Coimbatore city. A total credit of Rs. 1.90 lakhs was provided by institutional and non institutional agencies. A lion's share of 63 per cent extended by non institutional agencies proved their dominant hold in the marketing of fruits in Coimbatore. Commercial banks provided as much as 27 per cent of the finance.

**Alteri (1992)** analysed the role of Himachal Pradesh Horticultural Produce Marketing Corporation (HPHPMC) in improving the efficiency and stability of apple wholesale prices of Delhi, Calcutta and Madras markets. The study concluded that there is need, for stabilising prices of apple by collecting more market demand and supply information and constructing cold storages.

**Sandhya (1992)** studied the economics of production and marketing of vegetables in Ollukkara block in Thrissur district. It was observed that the wholesaler's margin accounted for 16.45 per cent of the consumer's price of bitter gourd and 23.76 per cent of the consumer's price of ash gourd whereas marketing costs incurred by wholesalers accounted for 4.02 per cent and 7.26 per cent of the consumer's price respectively for bitter gourd and ash gourd. The producer's net share in consumer's rupee was Rs.3.24 per kilogram (59.23 per cent) for bitter gourd and Rs.1.16 per kilogram (38.28 per cent) for ash gourd.

**Soni and Ahmed (1992)** studied the marketing of tomato in the tribal areas of Madhya Pradesh. The producer's share in consumer's rupee was 74.40 per cent. The remaining 25.60 per cent went to intermediaries and others.

**Waskar and Roy (1993)** studied the harvesting handling, transportation and marketing of banana in Jalgaon district of Maharashtra. Marketing was done through agencies, viz, co-operative societies, group sale and private agencies. The above agencies provided interest free advance payment to the producers for banana cultivation.

**Alteri (1994)** estimated the physical and economic losses of two varieties of mangoes in Delhi market. The study identified three major channels in mango trade. The loss at trader's level included the loss at commission agent / wholesaler / mashakhor / landanis level.

The per kg average cost of bitter gourd was worked out to Rs. 1.48 in the Bombay market (**Kasar et al, 1994**) . The producer's share in consumer's rupee was only 41.49 per cent. The wholesaler and retailer could secure a share of 14.09 per cent and 16:2.5 per cent respectively.

**Parmar et al. (1994)** studied the marketing of vegetables in South Gujarat. Five major vegetable crops, namely, brinjal, tomato, cabbage. The results showed that marketing cost of these vegetables was nearly double at Surat market than that of Navasri market. The major cost components were transportation and commission charges.

**Singh *et al.* (1994)** analysed the economic aspects of production and marketing of chillies in Bihar in an agribusiness perspective. They identified three main channels of produce marketing. The producer's share in consumer's rupee was between 55 to 60 per cent. Amongst the various functionaries, the maximum share was absorbed by the retailers followed by primary wholesalers and local purchasers.

**Subrahmanyam *et al.* (1994)** studied the performance of Horticultural Produce Co-operative Marketing and Processing Society Ltd. (HOPCOMS) in Bangalore. HOPCOMS has moved from a position of a perpetual loss in the 70's to a position of profit in the 90's. The profits are attributed to the fact that overheads were kept at a reasonable level compared to the trade profits, though in absolute terms the overheads have increased over the years.

**Thakkur (1994)** studied the marketing system of important off season vegetables (tomato, cauliflower, cabbage, capsicum, peas) of Himachal Pradesh to assess the role of commercial banks in vegetable business. The marketing costs and margins were higher compared to the producer's share.

**Agarwal and Saini (1995)** studied the vegetable marketing in Rajasthan. The marketing channels identified in the study area in the marketing of cole crops were (1) Producer - commission agent - retailer - consumer (2) Producer - commission agent - mashakhories - retailer - consumer. Channel II is an important channel in sale of

vegetables for the farmer of the area inspite of more number of middlemen involved in this. This is an interesting phenomenon.

**Rajgopal (1995)** studied how agri - business co-operatives could be strengthened by the NGO intervention model. National Bank for Agriculture and Rural Development (NABARD), which is the apex bank for refinancing co-operatives has also recognised the role of NGOs in promoting managerial skills at the grass roots level. The major thrust of NGO's intervention rests in developing logistics in agri business among farmers. In doing so, the advantages of agri business in the successful co operatives need to be exhibited to the Neighbourhood Group of Farmers. (NHG's).

**Singh et al. (1995)** opined that the development of marketing infrastructure and post harvest facilities have not been able to keep pace with the increase in production of vegetables. It was suggested that the scheme of development of primary rural markets be linked with Jawahar Rozgar Yojana and other special component schemes. Revival of defunct market where huge investments have been made should be ensured. A study may be undertaken to analyse the factors which led to mal functioning of the markets.

**Talathi and Thakare (1995)** studied the temporal changes in arrivals and prices of vegetables in Bombay APMC. The study concluded that in 1992 - 93, the annual arrival of vegetables in. Bombay APMC was 1,80,318 tonnes in which tomato, cabbage, cauliflower and brinjal together shared about 80 percent of total arrivals. The

monthly average prices for capsicum, lady's finger, cluster beans, bitter gourd and green chillies were high whereas for tomato, cauliflower, cabbage and cucumber were at moderate levels. The real prices of most of the vegetables (except cluster bean) in the year 1992 - 93 decreased over the base period. The substantial decrease in wholesale prices was for tomato, green chillies, lady's finger, brinjal, cucumber and cabbage.

**Devi (1996)**, in a study on marketing of fruits and vegetables in Kerala estimated the producer's share in consumer's rupee to vary between 51 -57% in vegetables and 49 - 53% in fruits. The share of marketing margins in consumer's rupee was much higher than the share of cost incurred by them in the case of vegetables. However the situation was reverse in case of fruit marketing. Compared to margins, the costs were high for the intermediaries. This may be due to perishability and bulkiness of fruits when compared to vegetables.

**Marothia et al. (1996)** studied vegetable marketing in two markets of Chhattisgarh region of Madhya Pradesh. The following two marketing channels were identified channel I : Producer - commission agent - retailer - consumer, channel II: Producer - consumer.

While the small farmers usually preferred to sell their produce directly to the consumers, the medium and large farmers sold their produce to retailers, through

commission agents. In the comparison between the channels in the same market, channel II was estimated as more efficient than channel I in general.

**Murthy and Reddy (1996)** made some observation about the changing environment of agricultural marketing in India . They suggested various measures for improving the marketing system. They included suitable pricing policies, active participation of public procurement agencies, strengthening of co operatives, scientific grading, credit linked storage, cold storage facilities at reasonable cost and improvement of market intelligence. Besides, demand for various agricultural products need to be systematically and continually estimated.

**Pandiaraj and Manoharan (1996)** studied marketing behaviour of farmers in six villages of Madurai Market Committee in Tamil Nadu. They found that 93.33 per cent of the regulated market participant farmers graded their produce before marketing. Thus the grading behaviour was found to be influenced by institutional participation.

The studies in general, reveal a market characterised by lengthy marketing channels, high marketing cost and low marketing efficiency and dominated by pre harvest contractors and traders who reap the major share of consumer's rupee.

A large price spread is observed in almost all the studies. It can be justified only when quality services are rendered and low net margins are realised by the



intermediaries. Earlier studies by **Selvin (1987)** and **Sandhya (1992)** have also highlighted the inefficiencies existing in fruit and vegetable marketing in Kerala.

Structural character of the market also influence the margins. Marketing infrastructure and institutional arrangements decide the market structure. Regulated markets could play a significant role in ensuring marketing efficiency. Kerala is one of the very few states in the country which does not have regulated markets.

# **AREA OF STUDY**

## AREA OF STUDY

The present study is based on vegetable cultivation in Chittur taluk of Palghat district. Palghat district is bounded on the north by the Nilgris, on the east by Coimbatore district of Tamil Nadu, on the south by Thrissur district and on the west by Malappuram district. The district lies between latitude  $10^{\circ} 20'$  and  $11^{\circ} 14'$  and east longitude  $76^{\circ} 02'$  and  $76^{\circ} 54'$ . The district is divided into five taluks, viz., Mannarghat, Ottapalam, Palghat, Alathur and Chittur comprising of 12 blocks, 3 municipalities, 91 panchayats and 894 wards.

### Population

Palghat district ranks seventh in population in Kerala. According to 1991 census report, Palghat supports a total population of 23.82 lakhs of which 11.56 lakhs are males and 12.26 lakhs are females. Density of population is 532 persons per square kilometer. Sex ratio shows that there are 1061 females for every 1000 males. Literacy according to 1991 census report is 81.27 per cent. Literacy was more among males (87.24 per cent) than females (77.09 per cent).

Total working population of the district is 7,86,363 of which 12.37 per cent are cultivators and 44.29 per cent are agricultural labourers. Percentage of household industry workers and other workers are 2.79 per cent and 40.55 per cent respectively.

Table 3.1. Average monthly rainfall in Palghat district for the year 1995

Month	Rainfall (in mm)
January	01.6
February	00.4
March	11.3
April	61.8
May	166.7
June	357.2
July	588.6
August	277.6
September	242.3
October	103.2
November	156.5
December	0.0

Source: Farm Guide, 1997, Farm Information Bureau, Government of Kerala

Table 3.2 Land utilization pattern in Palghat district (1994 - 95)

Classification	Area (in hectares)
Geographical area	438980
Forest	136257
Land put to non - agricultural uses	37563
Barren and uncultivable land	7296
Permanent pastural and other grazing land	84
Land under tree crops	6035
Cultivable waste	23607
Fallow other than current fallow	8573
Current fallows	10087
Net area sown	209478
Area sown more than once	135774
Total cropped area	345252

Source: Farm Guide, 1997. Farm Information Bureau, Government of Kerala

## **Climate and soil**

Palghat district experiences tropical hot summer from mid February to May end, South - West monsoon from June to August, North - East monsoon in November and cool climate from December to February. Annual rainfall is 187 cm. The average monthly distribution of rainfall for the district during 1995 is given in Table 3.1

The district is surrounded by rocky hillocks on all the four sides and a major portion of the area is plain. Three types of soil are seen viz., laterite types in the south and west, virgin forest type in the north and central regions and black type in the eastern part of the district.

## **Land utilization pattern**

The total geographical area of the district is 43,8980 hectares which is 11.3 per cent of the area of the state. Land utilization pattern of the district given in Table 3.2 revealed that area under forest constituted 31.03 per cent while land put to non - agricultural use occupied 8.55 per cent and cultivable waste accounted for 1.66 per cent of the total geographical area. The net area sown was 209478 hectares which constituted 47.71 per cent. Out of the total cropped area of 34,5252 hectares, area sown more than once accounted for 39.33 per cent.

## **Water resource**

The district has many water resources such as canals, tanks, minor and lift irrigation projects. Important rivers flowing through the district are Bharathapuzha and

Table 3.3 Area under irrigation in Palghat district (source wise 1994 - 95)

Source	Area (in hectares)
Government canals	51107
Private canals	190
Government tanks	278
Private tanks	4247
Government wells	89
Private wells	18581
Minor and life irrigation	1584
Other sources	6570
Total	82536

Source: Farm Guide, 1997. Farm Information Bureau, Government of Kerala

its tributaries, Malampuzha, Walayar, Mangalam, Meenkara, Gayathri, Pothundi and Kanjirapuzha flowing to the Arabian sea. Two tributaries of Cauvery viz., Bhavani and Siruvani are also flowing through the district. There are two major, five medium and a number of minor lift irrigation projects in the district. Major irrigation projects operating in the district are Malampuzha, Mangalam, Pothundi, Meenkara (Gayathri project), Chaliyar, Chittoorpuzha, Walayar and Kanjirapuzha. Source wise and crop wise irrigated area in the district is shown in Table 3.3 and 3.4 respectively.

### **Cropping pattern**

Major crops grown in the district are rice, coconut, rubber spices and condiments, fruit trees and tuber crops. The cropping pattern of Palakkad district is shown in Table 3.5. Rice is cultivated in 89769 hectares of land which is 29.63 per cent of the total and is an important food grain crop of the district. Coconut is grown in 4370-3 hectares of land which is 14.43 per cent of the total cropped area under coconut in the state. Vegetables occupy 86.34 hectares which is 2.85 per cent of the total cropped area.

### **Study area**

Of the five taluks of Palghat district, Chittur taluk has been chosen for the present study. Chittur taluk supports 4.07 lakhs in population of which 1.99 lakhs are males and 2.08 lakhs are females (Table 3.6). Of the total, 1.43 lakh males are literates while 1.19 lakh females are literates (Table 3.7).



Table 3.4 Area under irrigation in Palghat district (crop wise 1994 - 95)

Crop	Area (in hectare)
Paddy	62830
Tubers	14
Vegetables	774
Coconut	15637
Arecanut	2026
Clove and nutmeg	24
Other spices and condiments	415
Banana	1704
Betelvine	--
Sugarcane	1412
Others	1973
Total	86809

Source: Farm Guide, 1997. Farm Information Bureau, Government of Kerala

The distribution of working population as given in Table 3.8 shows that 12.53 per cent of people are cultivators while 44.60 per cent are agricultural labourers. People engaged in household industry and other works are 3.83 per cent and 39.04 per cent respectively. In Chittur taluk, 12.26 per cent cultivators and 51.26 per cent are agricultural labourers. Household industry workers and other workers are 3.91 per cent and 32.57 per cent respectively. (Table 3.8 ).

On the basis of topography, Muthalamada the largest panchayat in Palghat district can be classified into four categories, (1) uplands, (2) low lands, (3) valley, (4) plains. Forest soil, black soil, laterite soil and alkaline soil are the major soil types in this region. Maximum rainfall is received during the months of June to July. Inter state river water projects namely, Parambikulam, Aliyar, Chulliyar and Meenkara are located in this panchayat. There are about 150 ponds and streams with length ranging from 3 to 100 kilometers. Besides these, there are numerous waterfalls in this panchayat. Neelamkachi, Chukkariyar and Gayathri are the main rivers flowing through this panchayat. Ground water availability shows variation from region to region. The populace mainly depends on wells for drinking water.

Two Krishi Bhavans in Chittur taluk, namely Muthalamada and Perumatti, each with the highest area under the crops was selected. Muthalamada Panchayat in Kollengode block of Chittur taluk has an area of 66.76 square kilometers. It is bounded by Tamil Nadu, Pottancherry, Vadavannur, Thenmala and Kollengode. It has a population of 33935 of which males account for 16957 and females 16978. The

Table 3.5 Cropping pattern in Palghat district for the year 1994 - 95

Crop	Area (in hectare)	Percentage to total cropped area
Paddy	89769	29.63
Other cereals and millets	20200	6.66
Pulses	6862	2.27
Sugar crop	8297	2.74
Spices and condiments	26396	8.71
Fruits	21635	7.14
Vegetables	8634	2.85
Coconut	43703	14.43
Tubers	14665	4.84
Oil seed crops	18170	5.99
Drugs and nariolics	60	0.03
Tea	825	0.27
Coffee	2291	0.76
Rubber	24773	8.18
Cocoa	62	0.02
Fodder grass	200	0.07
Green manure crops	1648	0.54
Other non food crops	14750	4.87
<b>Total cropped area</b>	<b>302940</b>	<b>100.00</b>

Source: Farm guide 1994, Farm Information Bureau, Government of Kerala

Table 3.6 Population Distribution in Palghat and Chittur 1991

Palakkad	Total	Males	Females
Total population	2376561	1152253	1224308
Rural population	2002337	969363	1032974
Urban population	374224	182890	191334
<b>Chittur taluk</b>			
Total population	407362	199476	207886
Rural population	341966	167437	174529
Urban population	65396	32039	33357

Source: Census of India, 1991, series. 12, Kerala

percentage of literacy is 62. Then number of wards in this panchayat is 13.

Muthalamada is primarily an agricultural area. In earlier times, paddy, vegetables, sugarcane, groundnut and cotton were the main crops in this region. Gradually, the acreage under groundnut is increasing and that under cereals is decreasing. Recent trends shows an increasing area under ground nut at the expense of cereals. In the plains, the main crops grown are paddy, groundnut, coconut and mango. In the uplands and lowlands, coconut and mango are cultivated.

Perumatti panchayat in Chittur block of Chittur taluk has a population of 29658 of which 14918 are men and 14740 are women. Literacy status is very low in this panchayat. The panchayat is bounded by Shokanasini river, Tamil Nadu and Pattencherry.

On the basis of topography, Perumatti panchayat can be classified into three categories (1) plains, (2) lowlands, (3) poonthal area. Laterite soil, black soil, acidic soil and clayey soil are the main soil types in this region.

Paddy cultivation, which has so far been the major source of income for the people in this region, is on the decline. With no other avenues open to them, the number of unemployed is steadily on the rise. A small segment of the population is employed in textile manufacturing sector in neighbouring Tamil Nadu. Some of them are engaged in house construction, road construction, dredging and brick manufacture

Table. 3.7 Literacy status in Palghat district and Chittur taluk 1991

Palakkad	Total	Males	Females
Total literates	1658630	856590	80204
Rural	1375057	710610	664447
Urban	283573	145980	137593
Chittur taluk			
Total literates	261711	142535	119176
Rural	214191	117402	96789
Urban	47520	25133	22387

Source: Census of India, series 12, Kerala.

Table 3.8. Workers and their distribution in Palghat District and Chittur Taluk 1991

Palghat	Total	Cultivation	Agricultural labour	Household industry workers	Other workers
<b>Total</b>	779682	97737	347702	29888	304355
<b>Males</b>	531171	78688	173319	21040	258124
<b>Females</b>	248511	19049	174383	8848	46231
<b>Chittur taluk</b>					
<b>Total</b>	163185	20011	83655	6372	53147
<b>Males</b>	101699	15649	37122	4383	44545
<b>Females</b>	61486	44362	46533	1989	8602

Source: Census of India, 1991, series 12, Kerala

in other districts. The unattractive and unremunerative nature of the agricultural sector is primarily responsible for this state of affairs.

With regard to the availability of water, maximum rainfall is received during the months of June and July. Rainfall is scanty during the months of January and February.

All the streams in this panchayat empty into the Shokanasini river. March, April and May are the months in which maximum water scarcity is experienced. Severe shortage of drinking water is a regular feature in Moolathara and Vandithavalam villages.

Agriculture is the main occupation in this panchayat. The main crops in this region are paddy, coconut, groundnut, sugarcane, cotton, banana, tapioca and vegetables. The entire land in this panchayat was in the hands of landlords till the Land Reforms Act came into force.

As far as irrigation is concerned, cultivation is mainly dependent on the Chittur river water project. But, this does not provide the required quantum of water at the appropriate time. As a result, agricultural operations get delayed and production is drastically reduced.



# **METHODOLOGY**

## METHODOLOGY

### 4.1 Collection of data

Chittur taluk in Palghat district was purposively selected for conducting the present study. Taluk wise area under cultivation showed that Chittur taluk was a prominent vegetable growing area in the district. The list of panchayats in this taluk in the descending order of area under each of these two crops were prepared. Thus the panchayat with the largest area under okra was Muthalamada and that with tomato was Perumatti.

From the list of growers in each of the selected panchayats, 80 vegetable farmers were randomly selected. Thus the total numbers of respondents from both the panchayats together came to one hundred and sixty. The 160 selected farmers were post - stratified into two classes based on area under vegetable cultivated by them.

Class	Area (in hectares)
I	0 - 04
II	Above 0.4

The data on marketing aspects were collected from 20 intermediaries, 5 wholesalers and 15 retailers for each crop. Information was generated using well structured questionnaire. Reference period of the study was the year 1996 - 97. Since the farmers and traders did not maintain proper records, they gave the information from their memory. Therefore information gathered is likely to be subject to recall bias. However, every effort was made to get the data as accurate as possible.

Information collected included area under selected vegetables, the level of various inputs used, cost of production and returns, mode of marketing, costs associated etc.

## **4.2 Analytical framework**

### **4.2.1 Costs and Returns**

The profitability of a crop enterprise can be estimated by finding the relationship between the costs incurred and the returns from the crop.

#### **Cost concepts**

In the farm management studies various concepts of costs viz. Cost A<sub>1</sub>, Cost A<sub>2</sub>, Cost B<sub>1</sub>, Cost B<sub>2</sub>, Cost C<sub>1</sub> and Cost C<sub>2</sub> have been used<sup>1</sup>.

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1. Dhondyal, S.P. (1989). **Farm management An economic analysis**. Friends publications. 385.

(i). **Cost A<sub>1</sub>**, approximates the actual expenditure incurred in cash and kind and it includes the following items of costs.

**1. Value of hired human labour (permanent and casual)**

The actual paid wage labour engaged in crop production was considered as value of hired labour. This included the labour employed in land preparation, sowing, application of manures and fertilisers and crop protection chemicals, irrigation and harvesting and post harvest handling.

**2. Value of seed (both farm produced and purchased)**

Purchased seeds were evaluated on the basis of their purchase price. The same price was also used for evaluating farm produced seeds.

**3. Value of manures and fertilisers (farm produced and purchased)**

Expenditure on purchased manures and fertilisers has been evaluated by multiplying the physical quantities of different manures and fertilisers used with their respective prices. Farm produced items were also evaluated at the market prices.

#### **4. Value of crop protection chemicals**

Expenditure on fungicides and insecticides has been calculated by multiplying the physical quantities of different fungicides and insecticides used by their respective prices.

#### **5. Depreciation of farm implements**

Depreciation rates of 10 per cent for implements and 20 per cent for temporary dead stock such as iron wire and rope were used for the computation of cost. Depreciation on such items were worked out and allocated to okra and tomato cultivation on the basis of relative area under these vegetables out of the total cropped area, if these items were used for the whole farm.

#### **6. Interest on working capital**

Interest on working capital was charged at the rate of 12 per cent per annum. This was the rate of interest charged by State Bank of Travancore for short term agricultural loans. Interest was charged for only half the duration of the crops, as all the costs are not incurred at the beginning itself.

#### **7. Land revenue**

This was taken as the actual rate paid to the revenue department which was Rs.12 per acre in the area.

## 8. Miscellaneous expenses

This includes all other items which have not been accounted for under 1 to 7 above.

**(ii) Cost A<sub>2</sub>:** Cost A<sub>2</sub> is equal to Cost A<sub>1</sub> plus rent paid for leased in land. Based on the prevailing rent in the area, an amount of Rs.2000 per acre per season was accounted for as rent for leased in land.

**(iii) Cost B<sub>1</sub>:** It is equal to Cost A<sub>1</sub> plus interest on own fixed capital. The item fixed capital included iron and wooden implements, machinery such as diesel and electric motors and temporary dead stocks. There were no farm buildings used for agricultural purpose in the sample.

**(iv) Cost B<sub>2</sub>:** It is equal to Cost B<sub>1</sub> plus rent paid for leased in land plus rental value of owned land. Rent was imputed, in the case of owned land based on the prevailing rent of Rs.2000 per acre.

**(v) Cost C<sub>1</sub>:** It is equal to Cost B<sub>1</sub> plus imputed value of family labour

**(vi) Cost C<sub>2</sub>:** It is equal to Cost B<sub>2</sub> plus imputed value of family labour

The cost of family labour was imputed based on the prevailing wage rates paid to hired labour in the area during the period. The wage rate were Rs.60 per day for men and Rs. 30 per day for women.

Per hectare cost of cultivation was worked out for the two vegetables separately for the two size classes and for the sample as a whole cost of production and input output ratio were also worked out.

#### **4.2.2. Measures of efficiency in production**

Efficiency is defined as the capacity or ability of any person, process or thing to reach whatever end that may be desired. Average yield per hectare or average cost in different size groups of farms can be used to measure their efficiency.<sup>2</sup>

Income measures are used as one of the measures of efficiency in the present study. Different income measures are associated with different cost concepts. They are as follows.

1. Farm business income . Gross income minus Cost  $A_1$
2. Owned farm business income. Gross income minus cost  $A_2$
3. Family labour income. Gross income minus Cost  $B_2$ .
4. Net income. Gross income minus cost  $C_2$ .
5. Farm investment income: Farm business income minus imputed value of family labour.

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2. Rajkrishna (1974). Some production functions for the Punjab. *Indian Journal of Agricultural Economics*, **19** (3 & 4):87 - 97.

### 4.2.3 Marketing costs and margins

Marketing connotes a series of activities involved in moving the goods from the point of production to the point of consumption. In the present study, important marketing channels in marketing of okra and tomato were identified. Marketing efficiency was measured in terms of marketing costs and margins. Marketing margin is the difference between the price paid by consumer and the price received by the producer for an equivalent quantity of farm produce. The method of 'Concurrent Margin' is used in the present study for estimating marketing margin. Concurrent margin refers to the difference between the prices prevailing at successive stages of marketing at a given point of time. Economic efficiency of marketing is measured as follows.

$$ME = \frac{V}{I} - 1 \text{ where 'ME is marketing efficiency, 'V' is the total value of}$$

goods marketed i.e. marketing costs including the marketing margins.



## **RESULTS AND DISCUSSION**

## **RESULTS AND DISCUSSION**

In this chapter, the results obtained from the study are presented and an attempt is made to interpret the results. As stated in chapter 4, the data for the present study on economics of production and marketing of two vegetables, namely okra and tomato were collected from selected vegetable farmers in Muthalamada and Perumatti panchayat respectively. The chapter is divided into three parts, part I contains a brief description of general economic and social conditions of the sample farmers. An idea about the factors like family size, age and sex, educational status and occupation of the respondents will serve as background information for the present study. Part II deals with production aspects and part III deals with marketing aspects.

### **PART I**

#### **5.1 GENERAL ECONOMIC AND SOCIAL CONDITIONS OF THE SAMPLE**

##### **5.1.1 Size of the family**

Respondents in the two panchayats from where samples were drawn viz. Muthalamada and Perumatti, were classified based on their family size. Analysis showed that 82 per cent of the total sample farmers came under the family size group having four to six members . In both panchayats, the size group having four to six members had the highest concentration of sample

**Table: 5.1 Classification of the respondents according to the size of the family**

Name of panchayat	Family size				Average size of family
	1 to 3	4 - 6	6 and above	Total	
Muthalamada	11 (13.75)	59 (73.75)	10 (12.5)	80 (100.00)	5.05
Perumatti	2 (2.5)	72 (90)	6 (7.5)	80 (100.00)	5.02
Total	13 (8.00)	131 (82.00)	16 (10.00)	160 (100.00)	5.04

(Figures in parenthesis show percentages to total)

**Table: 5.2 Distribution of respondent's family members according to age and sex**

Name of panchayat	0 - 17		18 - 59		60 and above		Total		Total members
	Male	Female	Male	Female	Male	Female	Male	Female	
<b>Muthalamada</b>	60 (14.85)	71 (17.57)	80 (19.80)	78 (19.30)	65 (16.08)	50 (12.37)	205 (50.74)	199 (49.26)	404 (100.00)
<b>Perumatti</b>	70 (17.41)	79 (19.65)	101 (25.12)	78 (19.40)	46 (11.44)	28 (6.96)	217 (53.98)	185 (46.02)	402 (100.00)
<b>Total</b>	130 (16.13)	150 (18.61)	181 (22.45)	156 (19.35)	111 (13.77)	78 (9.67)	422 (52.36)	384 (47.64)	806 (100.00)

(Figures in parenthesis show percentage to total)

farmers, 74 percentage in Muthalamada and 90 percentage in Perumatti panchayat. Average size of the family of respondent farmers was 5.04. Distribution of respondents according to their family size is given in Table 5.1. Classification of respondent's family according to age and sex is given in Table 5.2. As much as 34.74 per cent of the total members came under the age group of eighteen to fifty nine, 22.20 per cent in the age group of 60 and above. Out of the total family members 35.98 per cent was minors, that is, below 18 years of age. 52.35 per cent of the total members was male and 47.64 per cent females. Thus sex ratio was 1.1.

### **5.1.2 Literacy**

Analysis of the educational status of the respondents showed that 94 per cent of the sample farmers were literate. Percentage of illiterate farmers was only six. Out of the total respondents, 27 per cent was educated upto primary level, 65 per cent up to secondary level and 2 per cent up to higher secondary level. Classification of respondents according to their educational status is given in Table 5.3. Members of the respondent's family were also studied based on their educational status. About 38 per cent of the total members were educated up to primary level, 28 per cent up to secondary level, 16.5 per cent up to higher secondary level, 3.48 per cent up to graduation and 0.24 per cent up to post graduation level. Distribution of family members of the respondents according to educational status is given in Table 5.4.

**Table 5.3 Classification of respondents according to literacy**

Name of panchayat	Literate	Primary	Secondary	Higher secondary	Graduation and above	Total
Muthalamada	2 (3.00)	19 (24.00)	56 (70.00)	3 (3.00)	—	80.00 (100.00)
Perumatti	8 (10.00)	23 (9.00)	48 (60.00)	1 (1.00)	—	80.00 (100.00)
Total	10 (6.00)	42 (27.00)	104 (65.00)	4 (2.00)		160.00 (100.00)

(Figures in parenthesis show percentage to total)

**Table 5.4 Distribution of family members of the respondents according to educational status**

Name of panchayat	Literate	Primary	Secondary	Higher secondary	Graduation and above	Total
Muthalamada	36 (8.91)	140 (34.65)	119 (29.46)	89 (22.03)	20 (4.95)	404 (100.00)
Perumatti	69 (17.16)	167 (41.55)	107 (26.62)	46 (11.44)	13 (3.23)	402 (100.00)
Total	105 (13.03)	307 (38.09)	226 (28.04)	135 (16.75)	33 (4.09)	806 (100.00)

(Figures in parenthesis show percentage to total)

### **5.1.3 Occupation**

Agriculture was the sole occupation of 54 per cent of the sample farmers. Agriculture was the main occupation of 24 per cent of respondents and it served as a sub occupation for another 22 per cent of total respondents. Distribution of respondents according to occupation is shown in Table 5.5.

### **5.1.4 Land holding**

The respondent were classified based on their holding size. It was found that 43.12 per cent of respondents were having an area between 0.4 hectares and 0.8 hectares. The average size of holding in this group was 0.49 hectares. Out of the total respondents, 5.63 per cent were having an area below 0.4 hectares and the average size of holding was 0.25 hectares. Another 35.62 per cent of farmers were having an area above 0.8 hectares and below 1.2 hectares. The percentage of respondents who were having an area above 1.2 hectares of land was found to be 15.63. Distribution of respondents according to their land holding is given in Table 5.6.

### **5.1.5 Cropping pattern**

The major crops grown in the area are paddy, coconut, vegetables, groundnut, cowpea, tapioca and sugarcane. Gross cropped area of the total



**Table 5.5 Classification of the respondents according to their occupation**

Name of panchayat	Agriculture as the only occupation	Agriculture as Main occupation	Agriculture as sub occupation	Total
Muthalamada	46 (58.00)	22 (28.00)	12 (14.00)	80 (100.00)
Pcrumatti	40 (50.00)	17 (21.00)	23 (29.00)	80 (100.00)
Total	86 (54.00)	39 (24.00)	35 (22.00)	160 (100.00)

(Figures in parenthesis show percentage to total)

**Table 5.6 Distribution of respondents according to ownership holding**

Name of panchayat	Area in hectares				Total
	0 - 0.4	0.4 - 0.8	0.8 - 1.2	Above 1.2	
Muthalamada	6 (7.50)	46 (57.50)	21 (26.25)	7 (8.75)	80 (100.00)
Perumatti	3 (3.75)	23 (28.75)	36 (45.00)	18 (22.50)	80 (100.00)
Total	9 (5.63)	69 (43.12)	57 (35.62)	25 (15.63)	160 (100.00)
Average size of holding in Area	0.24	0.49	0.96	1.28	

(Figures in parenthesis show percentages to total)

respondent farmers was 263.26 hectares. Paddy was grown in 82.48 hectares which accounts for 31.33 per cent of the gross cropped area and is the most important food grain crop in the area. Vegetables occupied 23.13 per cent of the gross cropped area. Banana and coconut were grown in 9.01 and 7.99 per cent respectively of the gross cropped area. Cropping pattern of the respondent farmers is given in Table 5.7.

#### **5.1.6 Area under okra**

Respondents in Muthalamada were classified according to their area under okra cultivation. Out of the total respondents, 60 per cent were having an area less than 0.4 hectares and 40 per cent of the respondents were having an area above 0.4 hectares. Distribution of respondents according to area under okra cultivation is given in Table 5.8.

#### **5.1.7 Area under tomato**

Total number of sample farmers cultivating tomato in Perumatti panchayat was 80. Out of this, 31.25 per cent were having an area less than 0.4 hectares and 68.75 per cent were having an area above 0.4 hectares. Classification of respondents based on their area under tomato is given in Table 5.9. Distribution of respondents according to their area under okra and tomato is given in Table 5.10

**Table 5.7 Cropping pattern of total respondent farmers in the study area**

Crops	Area (in hectares)	Percentage to gross cropped area
Paddy	82.48	31.33
Vegetables	60.91	23.13
Banana	23.72	9.01
Tapioca	11.54	4.38
Groundnut	6.66	2.53
Sugarcane	6.50	2.47
Cowpea	3.94	1.50
Coconut	21.06	7.99
Other perennial crops	46.45	17.66
Gross cropped area	263.26	100.00

**Table 5.8 Cropping pattern of respondent farmers in Muthalamada panchayat**

Crops	Area (in hectare)	Percentage of gross cropped area
Paddy	40.40	30.61
Vegetables	29.70	22.50
Banana	12.12	9.18
Tapioca	5.04	3.82
Groundnut	3.42	2.59
Suger cane	3.00	2.27
Cowpea	3.40	2.60
Coconut	10.50	7.95
Other perennial crops	24.40	18.48
Gross cropped area	131.98	100.00

**Table 5.9 Cropping pattern of respondent farmers in Perumatti panchayat**

Crops	Area ( in hectares)	Percentage to gross cropped area
Paddy	42.08	31.34
Vegetables	31.2	23.24
Banana	11.6	8.64
Tapioca	6.50	4.84
Ground nut	3.24	2.41
Suger cane	3.50	2.61
Cowpea	3.54	2.64
Coconut	10.56	7.86
Other perennial crops	22.05	16.42
Gross cropped area	134.27	100.00

**Table 5.10 Distribution of respondents according to area under okra and tomato**

Name of Panchayat	Area (in hectares)		Total
	Less than 0.4 hectares	Above 0.4 hectares	
Muthalamada	48 (60.00)	32 (40.00)	80 (100.00)
Perumatti	25 (31.25)	55 (68.75)	80 (100.00)

(Figures in parenthesis represent percentage to total)

## **PART II**

### **5.2 Economics of production**

The data on cost of production and returns are of special interest since they reveal the input-output relationships of their enterprises and bring out the difference in unit cost between the less efficient and more efficient farm enterprises. Such information would also enable him to make choice among alternative enterprises open to him in deciding the manner and proportion in which he should spread his resources on the various enterprises in which he is engaged. Adoption of technical innovation by farmers also increasingly demand precise and detailed information on costs and returns.

An account of the cultivation practices of both okra and tomato will be helpful while studying the costs and returns incurred in the cultivation of these crops.

#### **5.2.1 Cultivation practices of okra**

There are three main planting seasons for okra namely, February to March, June to July and October to November. Generally it was found that farmers in the area used to take the crop in two seasons. However, only the details regarding the summer crop was collected for the study. Irrigation during summer season is mainly dependent on Meenkara and Chulliyar dams, besides the numerous streams and ponds in this area.



Farm produced or purchased seeds of local varieties are generally used in the area. Seeds are sown at a closer spacing than the recommendation. Basal dose of farm year manure and fertilizers are mixed with top soil and seeds are sown at the rate of 2 - 3 per hole with regard to plant protection the commonly used insecticide in the study area was Carbaryl 0.15% and Dimethoate 0.05%.

### **5.2.2 Cost concepts**

The first step in attempting to study costs is to define cost concepts precisely. This has already been done in chapter four. As indicated there the cost concepts used in this study are Cost A<sub>1</sub> , Cost A<sub>2</sub>, Cost B<sub>1</sub>, Cost B<sub>2</sub>, Cost C<sub>1</sub> and Cost C<sub>2</sub>.

Costs and returns have been worked out on per hectare basis for both okra and tomato. For each crop costs and returns have been worked out separately for the two size classes and for the sample as a whole. However only the results obtained for the entire sample have been used for making comparisons of returns of the two crops.

### **5.2.3 Operation wise cost of cultivation of Okra**

#### **Land preparation**

The expenditure incurred on land preparation worked out to 5.98 per cent (Rs.1779.62) of the total cost of cultivation. Hired human labour

accounted for the major portion of the expenditure incurred in both the size classes, the contribution of bullock labour and machine labour being less than two per cent for both the size classes. The labour requirement for this operation worked out to around 30 man days.

### **Seeds and Sowing**

Farm produced or purchased seeds of local varieties were generally used in the area. Seeds of high yielding varieties, such as Arka Anamika, supplied by the seed Processing Plant (KHDP) at Alathur were also found to be popular to some extent.

Seeds were sown at a closer spacing of about  $50 \times 20$  cm as against the recommended spacing of  $60 \times 30$  cms. Seeds accounted for nearly 6.75 per cent of total expenditure which should have been more if high yielding variety of seeds were popular. The investment was nearly the same for both the size classes the labour requirement for the operation worked out to around 11 man days for one hectare.

### **Manures and Manuring**

Farmers in the study area were found to apply the basal dose of farm yard manure and fertilizers after mixing with top soil. Application of Ammonium sulphate at the rate of 125 kg per hectare, Super phosphate at 50 kg

per hectare and Muriate of Potash at 50 kg per hectare is the recommended practice. In terms of nutrient requirement, it works out to 25 kg N, 40 kg P and 80 kg K per hectare. (Package of Practices Recommendation, KAU, 1996).

On an average, Urea at the rate of 100 kg per hectare and Factomphos at 50 kg per hectare and Muriate of Potash at 20 kg per hectare were applied as basal dose. Top dressing with Urea at the rate of 25 kg per hectare about one month after sowing was the usual practice. Use of complex fertilizers like Vijay 17:17:17 was also popular in the study area. The fertilizer application in terms of NPK works out to 68 kg N, 10 kg P and 12 kg K per hectare.

With regard to farm yard manure, the application at the rate of 10 tonnes per hectare was lower than the recommendation of 12 tonnes per hectare. Considering the positive effect of organic manures on soil health as well as the keeping quality of produce, efforts to boost organic manure application must be initiated.

Manures and manuring accounted for 28.45 per cent of the total cost. The inputs, namely manures and fertilizers accounted for 15.92 and 5.19 per cent respectively. The expenditure on this operation was found to decline with increase in size of holding. The labour requirement for this operation worked out to around 36 man days for one hectare.

**Table 5.11 Operation - wise cost of cultivation okra (in Rs. / hectare)**

Sl.No.	Operation	Size class I	Size class II	Aggregate
1.	Land preparation	1750 (5.75)	1806.82 (6.21)	1779.62 (5.98)
2.	Seeds and sowing	2007.43 (6.59)	2006.82 (6.96)	2007.35 (6.75)
3.	Manures and manuring	8809.40 (28.96)	8136.36 (27.98)	8458.41 (28.45)
4.	Plant protection	824.25 (2.70)	850 (2.92)	837.67 (2.82)
5.	After cultivation	1131.18 (3.72)	1100 (3.78)	1114.93 (3.75)
6.	Irrigation	937.13 (3.08)	852.27 (2.93)	892.89 (3.00)
7.	Harvesting	8597.03 (28.26)	8027.27 (27.61)	8312.15 (27.98)
8.	Rental value of own land	5000 (16.43)	5000 (17.20)	5000 (16.82)
9.	Interest on working capital	615.14 (2.02)	589.59 (2.02)	600.81 (2.02)
10.	Depreciation	117.25 (0.38)	78.91 (0.27)	101.91 (0.34)
11.	Interest on fixed capital	397 (1.37)	391 (1.34)	395 (1.32)
12.	Land revenue	30.00 (0.09)	30.00 (0.10)	30.00 (0.10)
13.	Miscellaneous	200 (0.65)	200 (0.68)	200 (0.67)
	<b>Total</b>	<b>30,415.81</b>	<b>29,069.04</b>	<b>29,730.74</b>

(Figures in parenthesis indicate percentages to total)

### **Plant protection**

The important pests of okra in the study area were jassids and fruit and shoot borers. The commonly used insecticides were Carbaryl 0.15% and Dimethoate 0.05%. The labour requirement for this operation worked out to two man days per hectare.

### **After cultivation**

Weeding and earthing up are the major intercultural operations. After cultivation operations accounted for 3.75 per cent of the total cost. The expenditure on this operation was nearly the same for both the size classes. The labour requirement worked out to 18 man days for one hectare.

### **Irrigation**

Irrigation accounted for 3.00 per cent of the total cost of cultivation. The total expenditure on irrigation was found to decline with increase in size of holding.

### **Harvesting**

The crop is harvested about 45 days after sowing. Upto 75 pickings are possible from one hectare and the total yield works out to 11 tonnes per hectare.

Harvesting accounted for nearly 27.98 per cent of the total expenditure. The labour requirement was estimated as 138 man days for one hectare.

Table 5.12 Input - wise cost of cultivation of okra (in Rs. / hectare)

Sl.No.	Particulars	Size class I	Size class II	Aggregate
1.	Hired human labour	12306.93 (40.46)	12045.46 (41.44)	12182.77 (40.97)
2.	Hired bullock labour	44.55 (0.15)	---	21.33 (0.07)
3.	Machine labour	326.73 (1.07)	300 (1.03)	312.80 (1.05)
4.	Seeds	1425.74 (4.68)	1245.45 (4.26)	1331.80 (4.47)
5.	Manures	4594.06 (15.10)	4863.64 (16.73)	4734.60 (15.92)
6.	Fertilizers	1794.55 (5.94)	1295.45 (4.48)	1534.40 (5.19)
7.	Plant protection	712.87 (2.34)	695.45 (2.39)	703.80 (2.37)
8.	Land revenue	30.00 (0.09)	30.00 (0.10)	30.00 (0.10)
9.	Depreciation, repairs and hiring of implements	117.25 (0.38)	78.91 (0.27)	101.91 (0.34)
10.	Interest on working capital	615.14 (2.02)	589.59 (2.02)	600.81 (2.02)
	<b>Cost A<sub>1</sub></b>	<b>21967.82</b>	<b>21143.94</b>	<b>21554.22</b>
11.	Rent on leased in land	---	---	---
	<b>Cost A<sub>2</sub></b>	<b>21967.82</b>	<b>21143.94</b>	<b>21554.22</b>
12.	Interest on own fixed capital	397 (1.30)	391 (1.34)	395 (1.33)
	<b>Cost B<sub>1</sub></b>	<b>22364.82</b>	<b>21534.94</b>	<b>21949.22</b>
13.	Rental value of own land	5000 (16.44)	5000 (17.20)	5000 (16.82)
	<b>Cost B<sub>2</sub></b>	<b>27364.82</b>	<b>26534.94</b>	<b>26949.22</b>
14.	Imputed value of family labour	3050.99 (10.03)	2534.09 (8.72)	2781.52 (9.35)
	<b>Cost C<sub>1</sub></b>	<b>25415.81</b>	<b>24069.03</b>	<b>24730.74</b>
	<b>Cost C<sub>2</sub></b>	<b>30,415.81</b>	<b>29069.03</b>	<b>29,730.74</b>

(Figures in parenthesis indicate percentage to total)

#### 5.2.4 Input - wise cost of cultivation of Okra

Expenses on human labour was the single largest item of input for both the size classes. The percentage share of human labour to total cost steadily declined with increase in size of holding. Out of the total labour cost, the percentage shares of family labour were 19.86 and 17.38 respectively for the first and second size classes. The share of hired labour was 40.46 and 41.44 respectively for first and second size classes. The inverse relation between size of holding and total cost observed was mainly due to the higher levels of use of family labour in the small sized class.

The second largest single item of expenditure was rental value of own land. The percentage shares in total cost were 16.44 and 17.20 respectively for the first and second size classes, while it was 16.82 for the sample as a whole.

The third largest single item of expenditure was manures. The percentage shares were 15.10 and 16.73 respectively for the first and second size classes. The fourth largest item of expenditure was fertilizers. The percentage share of fertilizers in total cost were 5.94 and 4.48 respectively for the first and second size classes.

Input-wise cost of cultivation per hectare of okra based on different cost concepts was worked out and is given in Table 5.12. Costs  $A_1$ ,  $A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$  and  $C_2$  per hectare were Rs.21,967.82, Rs.21,967.82, Rs.22,364.82, Rs.27,364.82, Rs. 25,415.81 and Rs.30,415.81 for class I, for class II the costs

**Table 5.13 Output and value of okra**

Size group	Output / ha (kg.)	Value / ha (Rs.)
I	11,260	45,940.80
II	10,900	44,472
Aggregate	11,070	45,165.60



**Table 5.14 Cost of production of okra (in Rs./ quintal)**

Particulars	Size group		
	Class I	Class II	Aggregate
Cost A <sub>1</sub>	195.09	193.98	194.70
Cost A <sub>2</sub>	195.09	193.98	194.70
Cost B <sub>1</sub>	198.62	197.56	198.27
Cost B <sub>2</sub>	243.03	243.44	243.44
Cost C <sub>1</sub>	225.71	220.82	223.40
Cost C <sub>2</sub>	270.12	266.68	268.57

were Rs.21,143.94, Rs.21,143.94, Rs.21,534.94, Rs.26,534.94 Rs. 24,069.03 and Rs.29,069.03 respectively in the same order. For the sample as a whole, the corresponding figures were Rs.21,554.22, Rs. 21,554.22 Rs.21,949.22, Rs.26,949.22, Rs.24,730.74, and Rs.29,730.74. From the table it is evident that per hectare cost of cultivation of okra was highest for class I on Cost C<sub>2</sub> basis. This could be explained by the economies of scale in the operations.

### **5.2.5 Production and value of output**

The output and value of okra on per hectare basis is given in Table. 5.13. The out put in kg per hectare was 11,260 10,900 and 11,070 for class I, II and the aggregate sample respectively. Value of unit output for okra was Rs.4.08. An inverse relation was found to exist between the size of holding and yield per hectare.

### **5.2.6 Cost of production**

Cost of production of okra is given in Table. 5.14. Cost of production in relation to different cost concepts showed that cost of production per quintal on cost C<sub>2</sub> basis for the two size classes were Rs.270.12 and Rs.266.68. Cost of production per quintal for the aggregate sample based on costs A<sub>1</sub>, A<sub>2</sub>, B<sub>1</sub>, B<sub>2</sub>, C<sub>1</sub> and C<sub>2</sub> were Rs.194.70, Rs.194.70, Rs.198.27, Rs.243.44, Rs.223.40 and Rs.268.57.

### 5.2.7 Input - output ratio

Input - output ratio indicates value of output per rupee of input cost. This ratio serve as a measure which would indicate as to whether the costs incurred are commensurate with the returns obtained. Input - output ratio of okra is given in Table. 5.15. A rupee invested returned Rs.2.09, Rs.2.09, Rs.2.05, Rs.1.67, Rs.1.83 and Rs.1.52 based on costs  $A_1$ ,  $A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$  and  $C_2$  respectively.

**Table 5.15 Input output ratio of okra based on different cost concepts**

Input output ratio based on	Size class I	Size class II	Aggregate
Cost A <sub>1</sub>	2.09	2.10	2.09
Cost A <sub>2</sub>	2.09	2.10	2.09
Cost B <sub>1</sub>	2.05	2.06	2.05
Cost B <sub>2</sub>	1.67	1.67	1.67
Cost C <sub>1</sub>	1.80	1.85	1.83
Cost C <sub>2</sub>	1.51	1.53	1.52

**Table 5.16. Income measures in relation to different cost concepts for okra (Rs./ hectare)**

Sl. No.	Particulars	Size Group		
		Class I	Class II	Aggeragate
1	Farm business income	23972.98	23328.06	23611.38
2	Own farm business income	23972.98	23328.06	23611.38
3	Family labour income	18575.98	17937.06	18216.38
4	Net income	15524.99	15402.97	15434.86
5	Farm investment income	20921.99	20,793.16	20829.86

### 5.2.8 Measures of efficiency

Income measures in relation to various cost concepts were worked out. The profitability of crop production can be judged better from the income measures, which include farm business income, own farm business income, family labour income, net income and farm investment income. Results are given in Table 5.16.

Farm business income or profit at cost  $A_2$  of okra for the two size classes were Rs.23,972.98 and Rs.23,328.06 respectively for one hectare. The income for class I was 2.69 percent (Rs.6,44.92) more than the income for class II.

Family labour income was worked out as gross income minus total expenses of production, excluding imputed wages of unpaid family labour. Family labour income for class I was 3.44 percent (Rs.638.92) more than the same for class II. The net income or profit at cost  $C_2$  is calculated as the gross income minus total expenses of production. The net income was highest for class I and was 0.78 per cent (Rs.122.03) more than the net income for class II.

The farm income depends not only on natural and human factors but also on qualitative and quantitative nature of farm investments. Capital can be invested in farm assets such as land, land improvement farm implements and machinery etc. which have long standing effect. In farm investment income,

items such as interest on owned and fixed capital, rental value etc. have been considered. The farm investment income is calculated by deducting the wages of the family labour from the farm business income. The farm investment income was highest (Rs.20921.99) for class I.

### **5.2.9 Cultivation practices of tomato**

Tomato can be successfully grown during September to December and January to March. The former is a rainfed crop and the latter is irrigated. Farmers in the area, in general were found to take the crop in both the seasons. However, only the details regarding the crop raised during January to March was collected for the study.

Farm produced or purchased seeds of local and high yielding varieties are generally used in the area. Basal dose of farm yard manure and fertilizers are mixed with top soil and seeds are sown at the rate of 1 - 2 per pit. Weeding and earthing up are the major intercultural operations. The commonly used plant protection chemicals were Carbaryl 0.15% and Dimethoate 0.05%.

### **5.2.10 Operation-wise cost of cultivation of tomato**

#### **Land preparation**

The expenditure incurred on land preparation worked out to 5.85 per cent (Rs.1571.20) of the total cost of cultivation on per hectare basis. Hired human labour accounted for the major portion of the expenditure incurred in both the size classes, the contribution of bullock labour and machine labour being less than 2 per cent for size classes.

The labour requirement for this operation worked out to 26 man days. The contribution of family labour in this operation was nil for both the size classes. The lower labour requirement for size class II when compared to size class I may be explained by the advantage of operating on large sized holdings.

#### **Seeds and Sowing**

Farm produced or purchased seeds of local and high yielding varieties are generally used in the area. Seeds are sown at a closer spacing of about 50 × 40 cm, as against the recommended spacing of 60 × 60 cm. Planting was done in furrows. Seeds accounted for only 0.92 per cent of total expenditure, which indicated that high yielding varieties of seeds were not popular. Rs.300.77 per hectare was invested for purchase of seeds and sowing operations. The



**Table 5.17 Operation wise cost of cultivation of tomato (in Rs. / hectare)**

Sl.No.	Operation	Size class I	Size Class II	Aggregate
1	Land preparation	1776.04 (6.55)	1366.60 (5.19)	1571.20 (5.85)
2	Seeds and sowing	300.88 (1.11)	300.66 (1.11)	300.77 (1.11)
3	Transplanting	180 (0.66)	200 (0.75)	190 (0.70)
4	Manures and manuring	9380.20 (34.63)	8199.72 (31.15)	9189.05 (33.97)
5	Plant protection	600.92 (2.22)	625.67 (2.37)	613.29 (2.26)
6	After cultivation	1200.27 (4.43)	1000.68 (3.86)	1100.47 (4.06)
7	Irrigation	1273.44 (4.73)	1700 (6.45)	1450 (5.36)
8	Harvesting	6138.83 (22.67)	6580 (25.00)	6367.73 (23.55)
9	Rental value of own land	5000 (18.45)	5000 (18.99)	5000 (18.48)
10	Interest on working capital	539.79 (1.99)	708 (2.68)	604.48 (2.23)
11	Depreciation	101.66 (0.37)	60.00 (0.22)	73.02 (0.26)
12	Interest on fixed capital	376 (1.38)	360 (1.36)	365 (1.35)
13	Land revenue	30.00 (0.11)	30.00 (0.11)	30.00 (0.11)
14	Miscellaneous	191 (0.70)	191.67 (0.73)	191.34 (0.71)
	<b>Total</b>	<b>27089.03</b>	<b>26323</b>	<b>27046.35</b>

(Figures in parenthesis indicate percentages to total)

investment was nearly the same for the both the size classes. The labour requirement for this operation worked out to 1 man day.

### **Transplanting**

Seedlings are first raised in the nursery and transplanted to the main field 30 - 45 days after sowing. The labour requirement for this operation worked out to 3 man days per hectare.

### **Manures and manuring**

Basal dose of farm yard manure and fertilizers were mixed with top soil before sowing the seeds at the rate of 1 - 2 per pit. Farm yard manure is recommended at the rate of 20 - 25 tonnes per hectare. The application of farm yard manure at the rate of around 11 tonnes per hectare falls far short of the recommendation.

The fertiliser recommendation for tomato is 75 kg N, 40 kg P and 25 kg K per hectare. Half of nitrogen, full phosphorous and half of potash may be applied as basal dose first before transplanting. One - fourth of N and half of potash may be applied 20 to 25 days after transplanting. The remaining quantities may be applied one month after the first application (Package of Practices Recommendation, KAU, 1996).

The farmers in the study area applied around 100 kg of Urea, 100 kg of Factomphos and 20 kg of Muriate of Potash as basal dose. Use of complex fertilizers like Vijay 17 : 17 : 17 was also popular. Top dressing was usually done in two split doses, first application of 50 kg. Urea about three weeks after transplanting and another 50 kg about one month after first application. Thus the application of urea and nearly 1.22 times the recommendation, while that of phosphatic and potassic fertilizers fell short of the requirement. The fertilizer application in terms of NPK worked out to 92 kg N, 20 kg P and 12 kg K per hectare.

Manures and manuring accounted for 33.97 per cent of the total cost. The inputs, namely manures and fertiliser accounted for 24.08 per cent. The labour requirement for this operation worked out to 30 man days.

### **Plant protection**

With regard to plant protection chemicals, the commonly used insecticides were Carbaryl 0.15% and Dimethoate 0.05%.

Plant protection accounted for 2.26 per cent of the total cost. The labour requirement worked out to 6 man days.

### **After cultivation**

Weeding and earthing up are the major intercultural operations. After cultivation operations accounted for 4.06 per cent of the total cost. The expenditure on this operation was marginally higher for size class I, the contribution being 4.43 per cent and 3.86 per cent respectively. The labour requirement worked out to 18 man days per hectare.

### **Irrigation**

Irrigation accounted for 5.36 per cent of the total cost of cultivation. The labour requirement for this operation was 24 man days.

### **Harvesting**

Harvesting accounts for nearly 23.55 per cent of the total cost. The labour requirement is about 106 man days.

Manuring constituted the largest item of expenditure accounting for 33.97 per cent of the total cost. This was followed by harvesting which accounted for 23.55 per cent of the total cost. Rental value of own land constituted the third largest item of expenditure.

**Table 5.18 Input - wise cost of cultivation of tomato (in Rs./ hectare)**

Sl.No.	Particulars	Size class I	Size Class II	Aggregate
1	Hired human labour	10875.59 (40.14)	10860.65 (41.26)	10848.41 (40.11)
2	Hired bullock labour	31.25 (0.11)	---	19.23 (0.07)
3	Machine labour	338.55 (1.25)	384.04 (1.45)	355.70 (1.35)
4	Seeds	249.10 (0.92)	249.66 (0.95)	249.38 (0.92)
5	Manures	5830 (21.52)	4300.03 (16.39)	5341.03 (19.74)
6	Fertilizers	1598.96 (5.90)	2147.63 (8.15)	2013.46 (7.45)
7	Plant protection	240 (0.80)	265 (1.00)	253 (0.93)
8	Land revenue	30.00 (0.11)	30.00 (0.11)	30.00 (0.11)
9	Depreciation, repairs and hiring of implements	101.66 (0.37)	60.00 (0.22)	73.02 (0.26)
10	Interest on working capital	539.79 (1.99)	708 (2.68)	604.48 (2.23)
	<b>Cost A<sub>1</sub></b>	19834.90	19005.01	19787.77
11	Rent on leased in land	---	---	---
	<b>Cost A<sub>2</sub></b>	19834.90	19005.01	19787.77
12	Interest on own fixed capital	376 (1.38)	360 (1.36)	365 (1.35)
	<b>Cost B<sub>1</sub></b>	20210.90	19365.01	20152.77
13	Rental value of own land	5000 (18.45)	5000 (18.90)	5000 (18.48)
	<b>Cost B<sub>2</sub></b>	25210.90	24365.01	25152.77
14	Imputed value of family labour	1878.13 (6.98)	1958.33 (7.44)	1893.58 (7.00)
	<b>Cost C<sub>1</sub></b>	22089.03	21323.34	22146.35
	<b>Cost C<sub>2</sub></b>	27089.03	26323	27046.35

### 5.2.11 Input - wise cost of cultivation of tomato

Input-wise cost of cultivation per hectare of tomato based on different cost concepts was worked out and is given in Table 5.18. Costs  $A_1$ ,  $A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$  and  $C_2$  per hectare were Rs.19,834.90, Rs.19,834.90, Rs.20,210.90, Rs.25,210.90, Rs.22,089.03 and Rs.27,089.03 for class I. For class II, the costs were Rs.19,005.01, Rs.19,005.01, Rs.19,365.01, Rs.24,365.01, Rs.21,323.34 and Rs.26,323 respectively in the same order. From the table it is evident that per hectare cost of cultivation was highest for class I on cost  $C_2$  basis. This could be explained by the economies of scale in the operations on large sized farms.

Human labour was the largest single item of expenditure and the percentage shares of this input in total cost were 40.14 and 41.26 respectively for the first and second size classes and it was 40.11 per cent for the aggregate sample. The second largest single item of expenditure was manures accounting for 19.74 per cent of the total cost. The third largest item of expenditure was rental value of own land and its share in total cost was 18.48 per cent for the aggregate sample.

**Table 5.19 Output and value of tomato**

Size Group	Output / ha (kg.)	Value / ha (Rs.)
I	13670	48665.20
II	13790	49092.40
Aggregate	13970	49733.20

**Table 5.20. Cost of production of tomato (in Rs. / quintal)**

Particulars	Size group		
	Class I	Class II	Aggregate
Cost A <sub>1</sub>	145.09	137.82	141.64
Cost A <sub>2</sub>	145.09	137.82	141.64
Cost B <sub>1</sub>	147.85	140.43	144.25
Cost B <sub>2</sub>	184.42	176.68	180.05
Cost C <sub>1</sub>	161.58	154.63	157.81
Cost C <sub>2</sub>	198.16	190.88	193.60



### **5. 2.12 Production and value of output**

The output and value of tomato on per hectare basis is given in Table 5.19. The per hectare output of tomato for the two size classes were 13,670 kg and 13,790 kg, while for the aggregate sample it was 13,970 kg. Corresponding values were Rs.48,665.20, Rs.49,092.40 and Rs.49,733.20 for class I, class II and the aggregate sample respectively.

### **5.2.13 Cost of production**

Cost of production of tomato is given in Table 5.20. Cost of production in relation to various cost concepts showed that cost of production per quintal was highest for class I. Cost of production per quintal on cost  $C_2$  basis for the two size classes were Rs.198.16 and Rs.190.88. Cost of production per quintal for the aggregate sample based on costs  $A_1$ ,  $A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$  and  $C_2$  were Rs.141.64, Rs.141.64, Rs.144.25, Rs.180.05, Rs.157.81, Rs.157.81 and Rs.193.60.

### **5.2.14 Input - output ratio**

Input output ratio of tomato is given in Table 5.21. For the sample as a whole, a rupee invested returned Rs.2.51, Rs.2.51, Rs.2.46, Rs.1.97, Rs.2.25 and Rs.1.84 based on costs  $A_1$ ,  $A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$  and  $C_2$  respectively.

**Table 5.21. Input - output ratio of tomato based on different cost concepts**

Input output ratio based on	Size class I	Size class II	Aggregate
Cost A <sub>1</sub>	2.45	2.58	2.51
Cost A <sub>2</sub>	2.45	2.58	2.51
Cost B <sub>1</sub>	2.40	2.53	2.46
Cost B <sub>2</sub>	1.93	2.01	1.97
Cost C <sub>1</sub>	2.20	2.30	2.25
Cost C <sub>2</sub>	1.79	1.86	1.84

**Table 5.22. Income measures in relation to different cost concepts for tomato (Rs. / hectare)**

Sl. No.	Particulars	Size Group		
		Class I	Class II	Aggeragate
1	Farm business income	28830.30	30087.39	29945.43
2	Own farm business income	28830.30	30087.39	29945.43
3	Family labour income	23454.30	24727.39	24580.43
4	Net income	21576.17	22769.40	22686.85
5	Farm investment income	26952.17	28129.06	28051.85

### **5.2.15 Measures of efficiency**

Various income measures for tomato showed that farm business income, family labour income, net income and farm investment income were higher for class II than for class I. The net income which is the most suitable income measure to judge the profitability of crop production was Rs.21,576.17 and Rs.22,769.40 for class I and II respectively. Income measures in relation to different cost concepts for tomato is given in Table 5.22.

### **5.2.16 A comparison of the economics of production of okra and tomato.**

Economic analysis of production of okra and tomato showed that cost of production per quintal was higher for okra than for tomato. Input - output ratios were higher for tomato than for okra. Hence we can conclude that tomato is more profitable than okra. A comparison of the profits derived at different costs showed that tomato derived more profit per hectare than okra at different cost concepts. It could be explained by the lower cost of production for tomato when compared to okra. A comparison of cost of cultivation of okra and tomato based on costs of the aggregate sample was done and is given in Table 5.23. The total per hectare cost incurred on okra was more and was 1.09 times the costs incurred on tomato. Though the extent of net benefit differed for okra and tomato cultivation, both the crops resulted in net benefit to the farmers. The salient results of the economics of okra and tomato cultivation are summed up in Table 5.24.

**Table 5.23. Item wise average cost of cultivation of okra and tomato (in Rs. / hectare)**

Particulars	Okra	Tomato
Cost A <sub>1</sub>	21554.22	19787.77
Cost A <sub>2</sub>	21554.22	19787.77
Cost B <sub>1</sub>	21949.22	20152.77
Cost B <sub>2</sub>	26949.22	25152.77
Cost C <sub>1</sub>	24730.74	22146.35
Cost C <sub>2</sub>	29730.74	27046.35

**Table 5.24 Economics of okra and tomato cultivation**

Sl.No.	Particulars	Okra	Tomato
1	<b>Out put Kg/ha</b>	11070	13970
2	<b>Cost of cultivation (Rs./ha)</b>		
i	Cost A <sub>1</sub>	21554.22	19787.77
ii	Cost A <sub>2</sub>	21554.22	19787.77
iii	Cost B <sub>1</sub>	21949.22	20152.77
iv	Cost B <sub>2</sub>	26949.22	25152.77
v	Cost C <sub>1</sub>	24730.74	22146.35
vi	Cost C <sub>2</sub>	29730.74	27046.35
3	<b>Cost of Production (Rs./Quintal)</b>		
i	Cost A <sub>1</sub>	194.70	141.64
ii	Cost A <sub>2</sub>	194.70	141.64
iii	Cost B <sub>1</sub>	198.27	144.25
iv	Cost B <sub>2</sub>	243.44	180.05
v	Cost C <sub>1</sub>	223.40	157.81
vi	Cost C <sub>2</sub>	268.57	193.60
4	<b>Gross income (Rs./ha.)</b>	45165.60	49733.20
5	<b>Net income (Rs./ha.)</b>	15434.86	22686.85
6	<b>Input - output ratio</b>		
i	Cost A <sub>1</sub>	2.09	2.51
ii	Cost A <sub>2</sub>	2.09	2.51
iii	Cost B <sub>1</sub>	2.05	2.46
iv	Cost B <sub>2</sub>	1.67	1.97
v	Cost C <sub>1</sub>	1.83	2.25
vi	Cost C <sub>2</sub>	1.52	1.84

Though tomato cultivation was more profitable than okra, the cultivators did not show any distinct preference for the former crop when compared to the latter. This may be attributed to the fact that the output and returns accruing to the cultivators was relatively more stable in case of okra than in the case of tomato.

## **PART III**

### **5.3 Marketing**

Marketing is as critical to better performance in agriculture as farming itself. (Acharya and Agarwal, 1987). An efficient marketing system is an efficient marketing agent of change and an important means for raising the income levels of the farmers and the levels of satisfaction of the consumer. It can be harnessed to improve the quality of life of the masses. Quite often than not, it is observed that the growers, particularly the vegetable growers, do not get remunerative prices for their produce while consumers have to pay higher prices for the same. This is partly attributed to the large number of intermediaries who reap the maximum share of consumers price and the producers get only a marginal benefit over the costs incurred by them in producing these commodities. High marketing costs and frequent price variations in vegetable marketing due to the seasonal nature of production and variations in quality and size further accentuate the problem.

In the present study an attempt has been made to identify the important marketing channels and also to analyse the marketing efficiency of okra and tomato, as indicated by marketing costs and margins.

Any single activity performed in carrying a product from the point of its production to the ultimate consumer may be termed as a marketing function.



The marketing functions involved in the movement of goods from the producer to its ultimate consumer vary from commodity to commodity, the level of economic development of the country or region, and the final form of the consumption. In the case of vegetables, the harvested produce should be cleaned, in order to remove soil, dust or spray residues on them. After cleaning, they should be packed in gunny bags. Usually gunny bags which can hold 60 or 70 kg were used for packing purpose in case of okra, while boxes were used in case of tomato. The produce was then transported to the market.

Immediately after harvest vegetables have to be transported either to the wholesale market or to the retail market. Transportation of vegetables in the study area was usually done in bus, jeep, tempo van or lorry. When only small quantities of vegetables were to be transported, transportation was done in bus, whenever large quantities were to be transported farmers in nearby areas hired a jeep or tempo van and vegetables were transported in this. Transportation cost varied according to the mode of transportation and distance to the market from farm gate. Sample farmers generally sold their vegetables at the Palghat wholesale vegetable market.

### **5.3.1 Market structure**

The term 'market structure' refers to those organisational characteristics of the market which influence the nature of competition and pricing, and affect

the conduct of business firms (**George and Singh, 1970**). It also includes the manner of the operations of the market. (**Acharya and Agarwal, 1987**).

Vegetables farmers of Muthalamada and Perumatti panchayats, in general take their produce to Palghat vegetable market. There are no village buyers or pre-harvest contractors for vegetables in these panchayats, but there are several retail vegetable shops in both the panchayats. The method of direct selling of vegetables to consumers is found to be very rare in the study area. Consumers in general can buy vegetables either from the wholesale dealers in Palghat vegetable market or from the retailers in the area.

### **5.3.2 Marketing channels**

Marketing channels are the routes through which products move from producers to consumers. The different marketing channels identified in the marketing of okra and tomato in the study are given below.

1. Producer - Consumer.
2. Producer - Retailer - Consumer
3. Producer - Wholesaler - Consumer
4. Producer - Wholesaler - Retailer - Consumer.

The most important marketing channel identified for both okra and tomato was Producer - Wholesaler - Retailer - Consumer. Distribution of the farmer respondents according to the type of buyers is given in Table 5.25.

### **5.3.3 Marketing efficiency**

These are two aspects to marketing efficiency. One is technical efficiency and the other is economic efficiency. The latter can be assessed by different methods such as marketing costs and marketing margins, degree of market integration and temporal and spatial price differences. In the present study marketing efficiency is assessed on the basis of marketing costs and margins. In the marketing of agricultural commodities the difference between the price paid by the consumer and the price received by the producer for an equivalent quantity of farm produce is often known as farm retail spread or price spread (Acharya and Agarwal, 1983).

There are two concepts of marketing margins such as concurrent margin and lagged margin. The concept of 'Concurrent margins' is used in the present study in which the prices prevailing at successive stages of marketing at a given point of time are compared. In this study, average prices received by the vegetable farmers are compared with prices which prevailed in Palghat wholesale and retail vegetable markets . Marketing margins for okra and tomato is given in table 5.26.

**Table 5.25 Distribution of the farmer respondents according to the type of the buyers**

Sl. No.	Product sold to	Muthalamada (Bhindi)	Perumatti (Tomato)	Total
1.	Wholesalers through commission agents	67 (83.75)	65 (81.25)	132
2.	Wholsaler and retailers	2 (2.50)	3 (3.75)	5
3.	Wholesalers and Consumers	2 (2.50)	3 (3.75)	5
4.	Retailers and Consumers	2 (2.50)	3 (3.75)	5
5.	Retailers	2 (2.50)	2 (2.50)	4
6.	Wholesalers, Retailers and Consumers	3 (3.75)	2 (3.75)	6
7.	None	2 (2.50)	1 (1.25)	3
8.	Total	80 (100.00)	80 (100.00)	160

(Figures in parantheses show the percentages to the total )

In the case of okra out of the Rs.6.78 per kilogram paid by consumer Rs.4.08 (60.17 per cent) went to the producer seller and in the case of tomato producers' share was Rs.3.56 per kilogram (60.75 per cent) out of Rs.5.86 per kilogram paid by the consumer. The wholesalers reaped a net margin of Rs.0.93 per kilogram (13.71 per cent) for okra and Rs.0.75 (12.79 per cent) for tomato. The retailers' net margin was Rs.0.65 per kilogram (9.58 per cent) for okra and Rs.0.47 per kilogram (8.02 per cent) for tomato.

Both in the case of okra and tomato wholesalers' margins were higher than the retailers' margins. Marketing costs incurred by the intermediaries were very low. The wholesalers' margin accounted for 13.71 per cent of the consumers' price of okra and 12.79 per cent of the consumers' price of tomato whereas marketing costs incurred by wholesalers accounted for 4.42 per cent and 3.75 per cent of the consumers' price respectively for okra and tomato. So it was evident that the middlemen took away a substantial share from consumers' rupee.

The producers' net share in consumers' rupee was Rs.0.60 for okra and Rs. 0.61 for tomato. Marketing margins accounted for the rest.

**Table 5.26 Marketing margins and costs (in paise per kiologram) for okra and tomato in Palghat district**

Sl. No.	Shares	Okra	Percentage	Tomato	Percentage
1	Producer,s sale price or price paid by wholesaler	450	66.37	400	68.25
2	Transportation cost incurred by the producer	12	1.76	14	2.38
3	Commission charges paid by the producers to the commission agents	30	4.42	30	5.12
4	Net price received by the producer	408	60.17	356	60.75
5	Fixed cost on investment for wholesaler	16	2.35	12	2.05
6	Working cost of wholesaler	14	2.06	10	1.70
7	Wholesaler's net margin	93	13.71	75	12.79
8	Price received by wholesaler or price paid by retailer	573	84.51	497	84.81
9	Fixed cost on investment for retailer	12	1.76	12	2.04
10	Transport cost incurred by retailer	8	1.17	10	1.70
11	Other cost incurred by retailer	20	2.95	20	3.41
12	Retailer's net margin	65	9.58	47	8.02
	Retailer's sale price or consumers' price	678	100.00	586	100.00

The economic efficiency of marketing system can be measured as the ratio of the total value of goods marketed (V) to the total marketing cost (I). The efficiency is expressed as index of marketing efficiency (ME).

$$ME = \frac{V}{I} - 1$$

The index of marketing efficiency was 1.51 for okra and 1.55 for tomato. The higher the ratio, the higher the efficiency of the marketing system. The ratio which was higher for tomato indicated that the economic efficiency of marketing of tomato was more when compared to okra.

A high marketing margin could be justified only when good services are rendered and low net margins were realised by the intermediaries. But in the present study it was evident that the net margins realised by the intermediaries were unduly high, and the marketing cost incurred were low. Thus we can concluded that the efficiency of marketing of the two vegetables namely okra and tomato in Chittur taluk of Palghat district was low. This is the reason why the producers do not get remunerative prices for their produce while consumers have to pay higher price for the vegetables. The wide fluctuation in prices for both okra and tomato during the study period also deserves special mention.

## **Problems encountered in vegetable cultivation in Chittur Taluk of Palghat District.**

Rising cost of production without a corresponding increase in the returns is the major problem facing vegetable cultivators in the study area. The increase in cost of production may be attributed to heavy expenditure on inputs such as fertilizers and plant protection chemicals. The indiscriminate use of pesticides and imbalance in the application of chemical fertilizers is chiefly responsible for this state of affair.

Returns from vegetable cultivation are unsatisfactory due to low productivity and low unit price realisation by the farmers. Low productivity may be attributed to a multitude of factors such as inadequacy of good quality seeds, lack of proper irrigation facilities and losses incurred due to heavy incidence of pest and diseases. Lack of adequate and timely credit is another contributing factor.

Low unit price realisation is mainly due to the inefficiency of the marketing system. Failure to synchronise supply with demand and presence of a number of market intermediaries are the main lacunae in the marketing of vegetables. Heavy arrivals during the peak season creates a market glut which



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weakens the bargaining power of the cultivars. Lack of adequate storage and processing facilities leads to considerable losses thereby further aggravating the already dismal situation.

Moreover, the intermediaries in the marketing channel pocket a sizeable portion of the price paid by the consumer, thereby drastically reducing the producers' share of consumer's rupee.

### **Suggested remedial measures**

A two pronged strategy aimed at scaling down the cost of production and enhancing the returns would go a long way in overcoming the problems faced by vegetable cultivators in the area. Balanced use of inputs such as fertilizers and plant protection chemicals would help to avoid unnecessary and wasteful expenditure. The resources thus saved can be fruitfully employed for other purposes such as purchase of good quality seeds. Provision of proper irrigation facilities and supply of adequate and timely credit are other remedial measures that may be adopted.

Enhancing the returns accruing from vegetable cultivation calls for raising productivity and ensuring higher unit price realisation by the farmers. Productivity can be improved by use of modern inputs and the adoption of scientific methods of cultivation. Better price realisation can be achieved

through an efficient marketing system characterised by shorter marketing channels of fewer intermediaries and better infrastructural facilities.

Remedies can also be sought at the institutional level by organising farmers into Self Help Groups (or SHG's) with the objective of ensuring a stable and sustainable income to the cultivators. The concept of SHG's, though a novel one, is still in its infancy. However, it is already beginning to yield positive results, thereby giving us cause for optimism.

Marketing of produce through co-operative societies is also a step in the right direction. Each society can have its own 'collection points', where the produce brought by the members can be pooled. Pooling of produce increases the volume of output available for sale, thereby ensuring better grading, storage and processing facilities. The raw produce can be converted into 'ready to use' form and made available to consumers in attractive packages of convenient size. The raw or processed produce can be sold through retail outlets owned by the society itself. Co-operative marketing holds a lot of promise and has immense potential that is just waiting to be tapped.

The remedial measures suggested above are by no means all encompassing. They are merely guidelines. A concerted effort on the part of farmers, scientists, planners and policy makers is the need of the hour.



# **SUMMARY**

## SUMMARY

The present study on the production and marketing of two vegetables, namely okra and tomato in Chittur taluk of Palghat district was undertaken during the year 1996 - 97. The study aimed at estimation of cost of cultivation, cost of production, marketing cost and margins and to identify the marketing channels.

The study is based on a sample of farmers and traders. Single stage random sampling was adopted for selection of farmers and data were collected by personal interview method with the aid of a well structured interview schedule same procedure was followed to collect data from traders.

The total cost of cultivation on per hectare basis was calculated on various cost concepts. For okra, cost  $A_1$ ,  $A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$  and  $C_2$  per hectare were Rs.21,554.22, Rs.21,554.22, Rs.21,949.22, Rs.26,949.22, Rs.24,730.74 and Rs.29,730.74.

Expenses on human labour was the single largest item of expenditure. The percentage share of hired human labour and family labour in the total cost of cultivation were 40.97 per cent and 9.35 per cent respectively. The second largest single item of expenditure was rental value of own land, the percentage

share in total cost being 16.82 for the sample as a whole.

The output and value of okra on per hectare basis was also estimated. The output in kg. per hectare worked out to 11,070 for the aggregate sample. The corresponding value per hectare was Rs.45,165.60.

Cost of production per quintal for the aggregate sample based on costs A<sub>1</sub>, A<sub>2</sub>, B<sub>1</sub>, B<sub>2</sub>, C<sub>1</sub> and C<sub>2</sub> were Rs.194.70, Rs. 194.70, Rs. 198.27, Rs. 243.44, Rs. 223.40 and Rs. 268.57. Input - output ratio for okra worked out to 2.09, 2.09, 2.05, 1.67, 1.83, 1.52 and ~~1.34~~ based on costs A<sub>1</sub>, A<sub>2</sub>, B<sub>1</sub>, B<sub>2</sub>, C<sub>1</sub> and C<sub>2</sub> respectively.

Income measures in relation to various cost concepts were also worked out. Farm business income amounted to Rs. 23,611.38. Family labour income worked out to Rs. 18,216.38, while net income was Rs.15,343.86

In the case of tomato, costs A<sub>1</sub>, A<sub>2</sub>, B<sub>1</sub>, B<sub>2</sub>, C<sub>1</sub> and C<sub>2</sub> per hectare were Rs.19,787.77, Rs. 19,787.77, Rs. 20,152.77, Rs. 25,152.77, Rs.22,146.35 and Rs. 27,046.35

Manuring constituted the largest item of expenditure accounting for 33.97 per cent of the total cost. This was followed by harvesting which accounted for 23.55 per cent of the total cost.

The output in kg. per hectare worked out to 13970 kg. for the aggregate sample. The corresponding value per hectare was Rs. 49,733.20

Cost of production per quintal for the aggregate sample based on costs  $A_1$ ,  $A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$  and  $C_2$  were Rs. 141.64, Rs.141.64, Rs. 144.25, Rs. 180.05, Rs. 157.81 and Rs. 193.60. Input - output ratio for tomato worked out to 2.51, 2.51, 2.46, 1.97, 2.25 and 1.84 based on costs  $A_1$ ,  $A_2$ ,  $B_1$ ,  $B_2$ ,  $C_1$  and  $C_2$  respectively.

Income measures in relation to various cost concepts revealed that farm business income was Rs.29,945.43, for the sample as a whole. Family labour income worked out to Rs.24,580.43, while net income amounted to Rs.22,686.85.

Though not strictly comparable, the economics of production of the two vegetables, namely okra and tomato revealed some common features. For both the crops, the cost of cultivation per hectare was found to decrease with increase in size of holding. This inverse relation between cost of cultivation and

size of holding may be probably due to the economies of scale in the operations.

Vegetable farmers of Muthalamada and Perumatti panchayats in general sell their produce in Palghat vegetable market. Out of the total sample farmers, 82.50 per cent of farmers sold their produce to wholesalers through commission agents, 3.12 per cent sold their produce to both wholesalers and consumers and 2.50 per cent exclusively to retailers.

In the case of okra, out of Rs.6.78 per kilogram paid by consumer, Rs.4.08 (60.17 per cent) went to the producer seller and in the case of tomato, producer's share was Rs.3.56 per kilogram (60.75 per cent) out of Rs.5.86 per kilogram paid by the consumer. The producer's net share in consumer's rupee was Rs.0.60 for okra and Rs. 0.61 for tomato.

The index of marketing efficiency ( $V/I - 1$ ) was 1.51 for okra and 1.55 for tomato. The higher the ratio, higher is the economic efficiency of marketing. Thus the marketing efficiency was more for tomato when compared to okra.

The major constraint in vegetable cultivation in Chittur taluk was the ever increasing cost of production without a corresponding increase in the

returns accruing to the cultivators. Rising cost of production may be attributed to heavy expenditure on inputs such as fertilizers and plant protection chemicals. Low returns are the consequence of low productivity and low unit price realisation by the farmers. A two pronged strategy aimed at reducing the cost of production and increasing the returns will go a long way in overcoming the problems confronting vegetable cultivators in the area. Effort must also be made to avoid violent price fluctuations which characterise vegetable markets.



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**ECONOMICS OF PRODUCTION AND MARKETING  
OF VEGETABLES IN CHITTUR TALUK (PALGHAT  
DISTRICT) WITH SPECIAL REFERENCE TO  
TOMATO (*Lycopersicon esculentum* L.) AND OKRA  
(*Abelmoschus esculentus* L.)**

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**ABSTRACT OF A THESIS**

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## ABSTRACT

The present investigation on the production and marketing of vegetables (okra and tomato) in Chittur taluk of Palghat district was undertaken during the year 1996 - '97. The study aimed at estimating the cost of cultivation, cost of production, input-output ratio and marketing efficiency of the two vegetables. The study also aimed at identifying the important marketing channels. Single stage random sampling was adopted for the study.

Cost  $A_1$ , Cost  $A_2$ , Cost  $B_1$ , Cost  $B_2$ , Cost  $C_1$ , and Cost  $C_2$  per hectare were Rs. 21,554.22, Rs. 21,554.22, Rs. 21,949.22, Rs.26,949.22, Rs. 24,730.74 and Rs. 29,730.74 respectively for okra and Rs. 19,787.77, Rs. 19,787.77, Rs. 20,152.77, Rs.25,152.77, Rs. 22,146.35 and Rs. 27,046.35 respectively for tomato.

Cost of production per quintal of okra based on cost  $A_1$ , Cost  $A_2$ , Cost  $B_1$ , Cost  $B_2$ , Cost  $C_1$ , and Cost  $C_2$  were Rs. 194.70, Rs. 194.70, Rs. 198.27, Rs. 243.44, Rs. 223.40 and Rs. 268.57 respectively. For tomato they were Rs. 141.64, Rs. 141.64, Rs. 144.25, Rs. 180.05, Rs. 157.81 and Rs. 193.60 in the same order.

Farm business income for okra and tomato were Rs. 23,611.38 and Rs. 29,945.43 respectively for the aggregate sample. Family labour income was Rs. 18,216.38 and Rs. 24,580.43 for okra and tomato respectively. Farm investment income was Rs. 20,829.86 and Rs. 28,051.85 for okra and tomato respectively. Net income for okra and tomato were Rs. 15,434.86 and Rs. 22,685.85 respectively.

The major marketing channel in Palghat market for marketing of okra and tomato were Producer - Commission agent - whole saler - retailer -

Consumer. The producer's net share on consumer's rupee was Rs. 0.60 for okra and 0.61 for tomato. The index of marketing efficiency was 1.51 for okra and 1.55 for tomato. The analysis of marketing efficiency revealed that the efficiency of marketing of tomato was higher when compared to okra.

The major constraint faced by vegetable cultivators in the area was the rising cost of production without a corresponding increase in the returns. A two pronged strategy aimed at reducing the cost of production and increasing the returns is the suggested remedial measure. Efforts aimed at smoothening violent price fluctuations is also called for.

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