

# **Production and Marketing of Vegetables in Malappuram District**

**BY**

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THESIS

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Faculty of Agriculture  
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Department of Agricultural Economics  
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**1982**

## DECLARATION

I, hereby declare that this thesis entitled "Production and Marketing of Vegetables in Malappuram district" 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 the award to me of any degree, diploma, associateship, fellowship or other similar title, of any other University or Society.

*T. Selvin Jebaraj Norman*

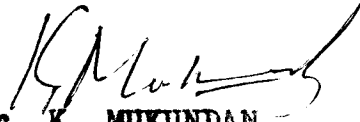
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Vellanikkara,

27<sup>th</sup> August 1982.

CERTIFICATE

Certified that this thesis entitled "Production and Marketing of Vegetables in Malappuram district" is a record of research work done independently by Mr. Selvin Jebaraj Norman, T., under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship to him.




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We, the undersigned members of the Advisory Committee of Mr. Selvin Jebaraj Norman, T. a candidate for the degree of Master of Science in Agriculture with major in Agricultural Economics, agree that the thesis entitled "Production and Marketing of Vegetables in Malappuram district" may be submitted by Mr. Selvin Jebaraj Norman, T. in partial fulfilment of the requirement for the degree.

  
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T. SELVIN JEBARAJ NORMAN

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# Introduction

## INTRODUCTION

Vegetables play a major role in human nutrition and are indispensable for maintaining good health. They reduce the demand on cereals and are one of the cheapest and richest sources of natural protective foods, contributing much needed proteins, carbohydrates, mineral salts and vitamins in human diet. "An adult requires 284 gms of vegetables per day, ie. about 20 per cent of the daily requirements of the total food of an adult. This requirement is more in the case of a vegetarian diet. The present consumption of vegetables in the country is very inadequate, being only one-fourth to one-third of the requirement" (ICAR, 1980). This is mainly due to the scarcity of vegetables and high costs. The low income group in India suffer from chronic undernutrition and malnutrition because of their unbalanced diet. "In order to improve the quality of the diet of the people, it is essential that the production of vegetables should be increased considerably. This object can be achieved by increasing the present area under vegetables and also by increasing the yield per unit of area by adopting better agricultural techniques" (ICAR, 1980).

Vegetables yield three or four times more than a cereal crop. However, vegetable production is not free from its limitations. Paucity of authentic literature on vegetable industry, availability of vegetable seeds, control of insect

pests, diseases and weeds, lack of proper manuring and lack of proper irrigation facilities are some of the drawbacks in production of vegetables.

Vegetable production has not received the attention that it deserves. A study on economics of vegetable cultivation would appear very relevant in this context.

Efforts to increase production may go waste unless the product is marketed efficiently. In agricultural economy an efficient marketing system for farm products is a sine qua non for economic development.

Marketing of agricultural produce is very complex. Lack of organisation among the producer seller, forced sale, superfluous middlemen, multiplicity of marketing charges, malpractices in the market, multiplicity of measures, adulteration of products, inadequate storage facilities, lack of proper transportation facilities, absence of grading and standardisation of agricultural produce, lack of information, inadequate facilities of credits, inadequacy of institutional market are the main defects from which the marketing of agricultural produce suffer in general in India (Mamoria and Joshi, 1979). Particularly seasonality, bulkiness, and perishability are the major restricting characteristics of fruits and vegetables. The bulkiness makes the storage and transportation difficult and costly. Perishability necessitates immediate consumption of the produce. Further seasonal character of agriculture is a

problem in itself and production cannot adjust quickly to the increased level of demand and vice versa. These characteristics along with market imperfection often deprives the producers of reasonable price for their products and the consumers of the products during the off seasons.

The present study was taken up in the Malappuram district since Malappuram is one of the major vegetable growing areas of Kerala. The major objectives of the study are indicated below.

1. To estimate the cost of cultivation and returns.
2. To identify the problems of vegetable cultivators.
3. To estimate the marketing cost and price spread.
4. To identify the marketing channels.

The results obtained from the study would be useful in locating weak-spots in the production and marketing of vegetables. The data on cost structure and marketing of vegetables would be of useful in formulating policies.

Since this study is confined to a smaller region and conducted within a short period of time for want of time, the conclusions are restricted to conditions prevailing there and any attempt at generalisation must be done with care. Farmers and traders do not maintain proper records and they give the data from their memory. Therefore information gathered is not free from their recall bias. And all the more the respondents in general are reluctant to reveal the extent of income



generation and the source of income. They have a tendency to present inflated figures for costs and deflated figures for returns. This has created problems in making accurate and reliable estimates during the study. However care has been taken to make the estimates as accurate as possible through cross checking.

This thesis is divided into eight chapters including the present one. A brief account of agricultural economy of Malappuram district is given in the chapter two. A review of the relevant literature is given in chapter three. Chapter four deals with the materials and methods used in this study. In chapter five the general socio-economic condition of the surveyed farmers are given while chapter six deals with results and discussion. The final chapter deals with the summary of the major findings of the study.

# A Brief Account of the Agricultural Economy of Malappuram District

**A BRIEF ACCOUNT OF THE AGRICULTURAL ECONOMY  
OF MALAPPURAM DISTRICT**

Malappuram is composed of the economically less developed portions of the Palghat and Kozhikode districts. It was carved out of Ernad Taluk and portions of Tirur taluk from Kozhikode district and portions of Perinthalmanna and Ponnani taluks of Palghat district. The district came into existence on June 16, 1969. The Nilgiris and Tamil Nadu in the east and the Arabian sea in the west provide natural boundaries for the district, while on the north it is bounded by Kozhikode district and on the south by Palghat district and portions of Trichur district.

The district has a total geographical area of 3638 sq. km., which is 9.4 per cent of the total geographical area of the state. It consists of four taluks, 13 blocks, 92 panchayats and 122 villages.

Literacy is a good index of the progresses of a district. As per 1971 census Malappuram district, with a population density of 510 per sq. km., and with population of 18,56,362 which was 8.69 per cent of the state population with a sex ratio of 1041 females for 1000 males has the percentage of literacy as 47.90 against the state average of 60.42 per cent.

Only 27 per cent of the population constitute the working class according to 1971 census. There are 5,01,082 workers of

which 4,04,618 are males and 96,464 are females. Among the total workers 38.8 per cent are agricultural labourers, 18.8 per cent are cultivators and 42.4 per cent other categories.

The district has more or less the same climate in the state, viz., dry season from December to February, hot season from March to May, the south-west monsoon from June to September and the north-east monsoon from October to November. The south-west monsoon is usually very heavy and about 75 per cent of annual precipitation is received during that period and flood is of common occurrence at this time causing severe damages and havoc to crops. North-east monsoon is scanty and insufficient and is dwindling over years causing drought for the second crops. The average rainfall in Malappuram district was 3405.35 m.m. in 1970-71. The distribution of normal rainfall for the district is given in Table 2.1. The maximum and minimum temperature of the district is 39°C and 20°C respectively. The humidity is high during rainy season.

Malappuram district has no major irrigation project. The district has eight rivers. The Chaliyar river which is 169 kms. long has a catchment area of 2434.60 sq.kms. in the district. The Kadalundi river which is 130 km. long has got a catchment area of 1113.70 sq.km. in the district. The Bharathapuzha, the longest river in the state also passes through the district. These and other minor rivers afford

Table 2.1. Distribution of normal rainfall in Malappuram district  
(Normal based on 1901 to 1950 data)

<u>Months</u>	<u>Total rainfall (in mm)</u>
July	787.0
August	405.0
September	198.8
October	290.0
November	163.8
December	30.9
January	6.7
February	6.5
March	19.3
April	78.7
May	211.0
June	702.4
	<hr/>
Total	2900.1 *****

Source : \* Bureau of Economics and Statistics, Kerala.

vent scope for irrigation projects. A large number of tanks and wells are also used for irrigation. Sourcewise irrigated area and cropwise irrigated area are given in Table 2.2 and Table 2.3 respectively.

The soil is essentially of laterite origin because of heavy rainfall with laterite loam in the central belt and gradually changing to sandy loam and pure sand towards the coastal belt and clay loam in the eastern forest areas bordering Nilgiries. The hill slopes are heavily eroded and requiring soil conservation measures.

Main crops grown here are paddy, coconut, cashewnut and rubber. Fruits and vegetables are also equally important. Land use pattern and cropping pattern for the district is given in Tables 2.4 and 2.5 respectively. The main food crop grown in the area is rice, covering an area of 81,462 hectares which constitutes 31.77 per cent of the total cropped area followed by vegetable covering an area of 28,430 hectares which occupies 11.09 per cent of the total cropped area. Malappuram ranks first in the area of production of cashewnuts and Betal leaves spreading to 16 per cent and 40 per cent of the total area of cashewnuts and Betal leaves respectively, of the state.

Animal husbandry has an important role in the rural economy of the district. Various measures are being taken to improve the livestock population.

Table 2.2. Sourcewise irrigated area

<u>Source</u>	<u>Area (in hectare)</u>
Government canals	1278
Lift irrigations	6212
Wells (approx.)	13500
Minor irrigation projects	2554
Other sources (Approx.)	15000
Total	<u>38544</u> *****

Table 2.3. Cropwise irrigated area

<u>Crop</u>	<u>Area (in hectares)</u>
Rice	23473
Vegetables	1188
Coconut	13795
Arecanut	9979
Banana	1465
Total	<u>49900</u> *****

Table 2.4. Land utilization in Malappuram district for the year 1978-79

Description	Area (in hectares)
Total geographical area	363230
Under forest	103417
Land put to non-agricultural uses	16867
Barren and uncultivable waste	7507
Permanent pastures and grazing lands	450
Land under miscellaneous tree crops	2508
Cultivable waste land	12976
Fallow other than current fallow	3987
Current fallow	7883
Net area sown	207635
Area sown more than once	48761
Total cropped area	256396

Source: \* Bureau of Economics and Statistics, Kerala.



Table 2.5. Cropping pattern in Malappuram district for the year 1978-79

Crop	Area (in hectares)	Percentage to total cropped area
Rice	81462	31.77
Other cereals	44	0.03
Pulses	2718	1.06
Coconut	61145	23.85
Other oil seeds	2334	0.91
Sugar crops	1508	0.59
Pepper	3652	1.42
Other spices and condiments	2085	0.81
Betel nuts	8182	3.19
Betel leaves	487	0.19
Drugs and other narcotics	622	0.24
Fruits	16771	6.54
Vegetables	23430	11.09
Cashewnuts	22221	8.67
Rubber	17648	6.88
Tea, Coffee, Cocoa	495	0.19
Green manure and Fodder	3332	1.30
Other crops	3250	1.27
Total cropped area	256396	100.00

Source: \*Bureau of Economics and Statistics, Kerala.

\* Originals not seen

Induetrially Malappuram is one of the backward districts in Kerala. There are five large and medium industries in the district, while 516 units are there in the small scale sector. Forest, which covers an area of 73683 hectares is the main source of raw materials for many wood based industrial units which are functioning in the district.

Malappuram district has a coastal line of 70 km and is rich in marine wealth. Ponnani, Kootayi, Tanur and Parappanangadi are the major fishing centres.

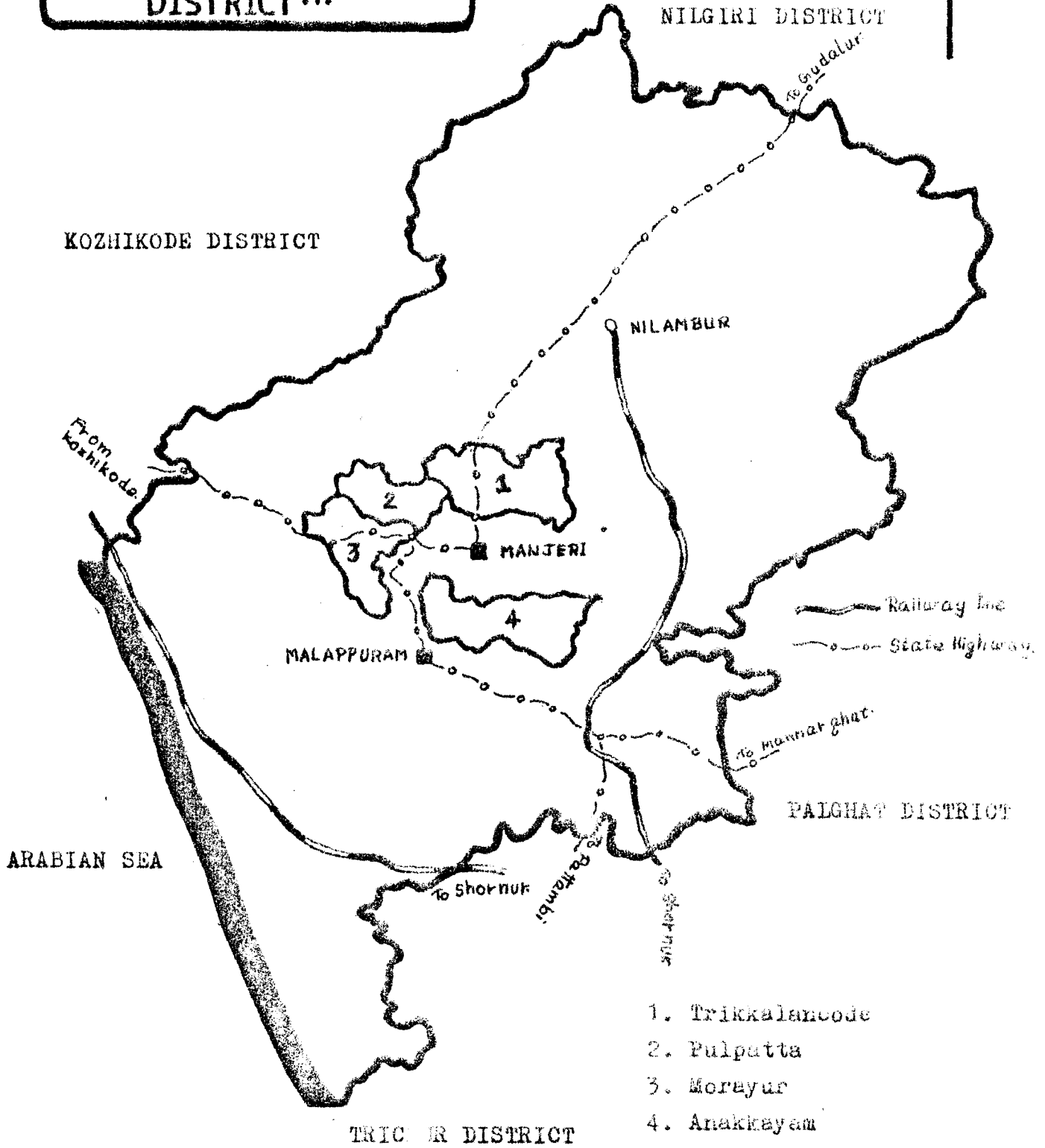
The district is well connected by roads and rails. The National Highway 47 passes through Tirur and Ponnani taluks of the district. The Kozhikode-Palghat road, Kozhikode-  
Nilambur-Gudalur road, Shoranur-Perinthalmanna road, are the important state Highways passing through the district. Mangalore-Cochin line, which passes through Tirur taluk and the Shoranur-  
Nilambur line, which passes through Perinthalmanna and Ernad taluks are the two broad gage rail roads here.

A map of Malappuram district indicating the study area is shown in Fig.1.

Fig.1



# MALAPPURAM DISTRICT...



- 1. Trikkalancode
- 2. Pulpatta
- 3. Morayur
- 4. Anakkayam

TRICHUR DISTRICT

# Review of Literature

## REVIEW OF LITERATURE

Review of studies on production and marketing relevant to the present study are presented in this chapter.

Since the references on vegetable cultivation are very scanty, references on other crops are also included in the review.

### Cost studies

Rao (1919) conducted a study on grape vine and found that a profitable vine crop could be get only upto 15 years of age.

Studies on the economics of production and resource use efficiency in the groundnut farms of Pollachi taluk in Coimbatore district, was conducted by Muniraj (1965), showed that the average cost of production per acre was Rs.190.00 with a range of Rs.120.00 to Rs.231.00. It was also noticed that the net profit per acre varied from Rs.17.44 to Rs.34.06 in different region of Pollachi taluk.

Gupta and George (1967) have worked out the profitability of orange cultivation in Nagpur. The study found that investment in orange cultivation had an average pay-back period of seven years, with a net present value of Rs.6438.00 per acre (at a discount rate of 12 per cent), an internal rate of return of 39 per cent and a benefit-cost ratio of 2.5. The optimum

size of the grove was observed to be between one and two acres.

Nirmal Singh and Bal (1967) made studies on the economics of commercial crops in Punjab, dealing with the shifts in the trend of area, production, yield and prices of four major commercial crops namely, Desi and American cotton, groundnut and sugarcane. The trends in the area under each crop, the operational costs per hectare and yields per hectare for each crop as well as the price trends had been dealt with. From this profitability of each crop was arrived at.

Mehta and Singh (1970) studied the average cost of establishing one hectare of apple orchard upto bearing period in Kulu and Parabate valleys and it worked out to be Rs.13495.45 and Rs.10,714.18 respectively.

Shankara Murthy and Chandrasekhar (1979) studied the costs and returns of production and curing of tobacco. It was revealed that production and curing costs together accounted for 98.74 per cent.

Arunkumar et al. (1979) analysed the costs and returns of potato under irrigated and rainfed conditions in Karnataka. It was found that the major item of expenditure was on inputs such as seeds, manures and fertilizers (35 per cent) while labour formed about 23 per cent. Considering labour alone, irrigation and preparatory cultivation accounted for major share.

Elsamma Job (1981) studied the economics of rubber cultivation by small holders in Kottayam district and arrived at the following conclusions. Total cost of cultivation per hectare for establishing rubber i.e., for seven years was estimated as Rs.11054.00 in terms of 1980-81 prices. More than one half of this was accounted for by labour. Net returns per hectare was Rs.3234.00 during the eighth year and Rs.7193.00 during the 12th year, the year of yield stabilization. Cost of production per quintal of sheet rubber was estimated as Rs.305.00 during stabilized yield period. Pay-back period was 9.51 years. Benefit-cost ratio was 2.04 and interval rate of return 24.20 per cent.

Ramasamy (1981) studied production aspects of major vegetables in Coimbatore district and reported that the realised yield of brinjal varied from 2.66 tonnes to 23.78 tonnes per hectare in the sample farms. The average realised yield was 67 per cent of expected yield in the study region. The results of cost function of the same crop showed that optimum level of output was 183.33 quintals. The estimated cost elasticity indicated increasing returns to scale in brinjal production. The yield of bhindi varied from 1.80 tonnes to 14.56 tonnes and the average being 9.60 tonnes. The coefficient of variation in yield was estimated to be 19.26 per cent for the same crop.

### Functional analysis

Heady (1946) derived production function for a random sample of 738 Iowa farms which was the first empirical estimates of production function for agricultural farms in United States. Functions were derived both for types of farmers and areas of the state. In all cases the inputs were land, labour, power, equipment, livestock, feed and operational expense all measured in dollars. Output was measured in dollar value of product.

James (1955) pointed out the marginal value productivity estimation derived from the Cobb-Douglas type function could be seriously biased by non-optimum aggregation of inputs or by non-optimum aggregation of outputs.

Agrawal (1958) conducted enquiries in Uttar Pradesh and analysed to ascertain the input-output ratio in farms. The input-output ratio even in one of the best agricultural tracts of India was quite low. The ratio became still more unfavourable during agriculturally bad years or during the period of low agricultural prices. The seriousness of the situation became all the more emphasised when the low ratio was judged against the background of small size of farms and low absolute value of output and input. The inputs on most of the farms studied varied between Re.1000.00 and Rs.2500.00.

Dasgupta (1961) reported that from the view point of minimum cost per acre and maximum profit the economic size of



rice farm would lie in between 16 to 24 acres at the existing level of labour and capital used in Bhubaneswar area.

Paulek (1963) analysed the economics of maize production in the state farms of Yugoslavia. He concluded that there was a negative correlation between yield per hectare and the cost of production per kilogram and positive correlation between yield and farm income.

Hjelm (1963) presented a short historical review on the doctrine of farm cost accounting in Sweden in the period from 1913 to 1962.

Shastri (1964) estimated the input and output analysis in Indian Agriculture. Agriculture, Plantations, animal husbandry including forestry and fishery were considered as individual sectors in the input-output table prepared. An increase of 10 per cent in factor payment of agriculture sector will cause an increase of 8.6 per cent in the price of output of the same sector, 3.2 per cent in the price of output of animal husbandry and 1.9 per cent in manufacturing sector. The prices of outputs in the other two sectors did not seem to change. On the other hand a 10 per cent increase in factor payments in the animal husbandry sector caused 5.9 per cent increase in the price of output of the same sector, causing little or no change in the prices of outputs of the other sectors.

Bagat Sing (1966) analysed the cost of cultivation of wheat in relation to size of holding and reported that there was an increasing trend in output per acre with increase in size. Human and bullock labour inputs decreased with increase in holding size and consequently the cost per acre decreased. These differences were non-significant. The cost per mound also declined with holding size and these differences were, significant.

Reddy (1967) examined the production efficiency in South Indian Agriculture. His conclusion indicated that a rapid development of agriculture in India could be achieved only by breaking through the traditional state and introducing technology in a package consisting of new inputs, agriculture education, special skills and techniques and competent guidance in farm planning.

Bourne (1968) conducted an economic survey of the cured tobacco production in Trinidad. In his study the returns appeared to vary directly with costs.

A study by Singarey and Waghmare (1968) indicated that T.N-1 yielded higher than the local varieties. Production function analysis indicated larger marginal returns to land and bullock labour when compared with their respective marginal costs. The marginal return to working capital was less than the marginal cost. The marginal return to human labour just approximated the prevailing wage rate.

Raghubansi (1969) examined the economics of cauliflower, tomato, capsicum and pear. It was found that the value of input-output was inversely proportional to the size of the holding for all crops.

Shetty (1970) studied on Agricultural Production trends at All India and regional levels. He measured the contribution of three important components namely, area, yield per acre and crop pattern to the growth of agricultural production. He revealed that the acreage expansion was the most important source of production at the All India level. The contribution from area and crop pattern accounting for nearly 90 per cent of the increase in the agricultural production.

Spoor (1970) compared the production costs, market prices, labour productivity, size of holding and variations in climate and planting in different years. It was found that profitability was considerably affected by the timing of planting which tended to get increased in years of high prices.

<sup>w</sup>  
<sub>R</sub> Leyer and Merce (1970) analysed the factors governing the profits on fruit farms. They found that the best method to estimate the factors influencing the financial results of enterprises was through correlation and regression analysis. Multiple regressions analysis was used to forecast the duration of work and what profit and sale of products should be expected of the works.

Studies were conducted by Prabhakaran and Venugopalan (1971) on selected paddy farm sizes in Kerala state to measure the efficiency of resource use, by fitting the Cobb-Douglas type of production function. The results indicated a greater emphasis on the use of fertilizers and manures in cultivators' field. In small farms labour was a significant ingredient with accelerated production. The gross output per acre was found to decrease with the increase in farm size.

### Marketing

Dantwala (1957) stressed reorganisation of the marketing structure on the basis of diagnosis of the maladies prevailing in the present structure of marketing and implementation of new policy. He concentrated on two issues, namely marketing margin and the nature of complementation in the primary markets. He concluded that both primary and terminal markets were imperfect and made a few suggestions for improving the present marketing system.

Rangachari (1957) emphasized on the aim of orderly marketing i.e., to ensure that the producer gets a reasonable prices for his produce by eliminating waste and reducing the cost of distribution.

Vandensberg (1962) conducted studies on price spread in agricultural commodities in South Africa and stressed the necessity for regulating the marketing of agricultural products

from the farmers point of view to strengthen their bargaining power with a view to ensure satisfactory and stable prices for their products.

Bauer argued that economic aid given to India was used mainly in ways which less likely to promote development in practice than was envisaged. He emphasised that development of infrastructural facilities like transport, communication and educational facilities and multiplication of technical and managerial resources would overcome structural and human disabilities that hinder rural development. Abbott (1962) while agreeing with that observation highlighted that that was more applicable to the field of agricultural marketing than any other aspects of agricultural economy.

Angelson (1963) analysed supply and demand factors and marketing possibilities for individual products and mentioned three starting point of market research, namely, price formation, production plans and distribution methods.

Weber (1966) studied the market structure, price formation and trade margins for potatoes in the Federal Republic of Germany. The marketing of potatoes in West Germany was presented under the following main headings. i. supply position ii. trade channels iii. organization of productive price formation iv. margin and costs in the marketing of potato for human consumption and v. rationalisation and opinions of the internal parties.

Lavania et al. (1966) highlighted the existence of high price spread due to multiplicity of charges and market functions, distress sale of agricultural produce and the malpractices in the market. He also showed that some of the developments beneficial to producers such as confirmant of ownership of tenents, provision of cheaper institutional finance and storage facilities to the cultivators had adversely affected the flow of marketable surplus.

Mamoria and Joshi (1979) have mentioned that the grape growers sold the standing crop to contractors long before it was ready for harvesting. Some growers harvested their own produce and sold in the local or distant markets directly or through agents. When the fruit was sold through commission agent he paid for the transport, etc. and charges for his services a commission of 25 paise per kawara. Direct sales by growers brought in about 87 paise per mound more as compared with sales through a forwarding agent.

A study was conducted by Das (1979) on marketing efficiency and price spread in fruit and vegetable marketing in Papua New Guinea. The average total price spread was found to be 69.1 per cent and the producer received 30.8 per cent of the consumer dollar. The relatively wide price spread was due to high transport costs, substantial amount of spoilage and large profit margins, specially at the retail level.

An attempt was made by Prasad (1979) to find out the price spread and the producers' share in the consumer's rupee in the marketing of selected vegetables in Bangalore city. The price spread between the net price received by the producers of vegetables at the farm level was the order of Re.0.55, Re. 0.51 and Re. 0.49 for every kilogram of beans, cabbage and brinjal respectively.

Gupta and Ram (1979) studied the behaviour of marketing margins and costs of vegetables. The analysis revealed that the producer received a very low (38 per cent) share in the consumers price whereas the retailer's margin and marketing costs were quite substantial, each appropriating one-fourth of the consumer rupee. Location played an important role in influencing retail margin. Transport packing and labour expenses were the major components of marketing costs. Co-operative endeavour at both the producer and consumer level and also the facilities of cold storage and processing would probably go a long way in marketing performance.

Ramasamy (1981) conducted a study on problems in production and marketing of major vegetables in Coimbatore district. The main marketing channel identified for brinjal was producer-commission agent-wholesaler - retailer-consumer. Estimated price revealed that percentage share of producers in the consumers rupee varied from 36.81 to 57.40. The producer claimed that the prices that realised for brinjal were unremunerative.

The average price realised during the last season was Rs.51.00 per quintal as against the expectation of Rs.85.00 per quintal. The main marketing channel identified for bhindi was producer-commission agent-wholesaler-retailer-consumer. Farmers received about 38 per cent of consumers' rupee as their share. The respective shares to wholesalers and retailers were 25 and 13 per cent for bhindi.

Prasad (1982) has written a paper on price spread for paddy and wheat in Allahabad district. Identifying the marketing agencies and channels involved in the marketing costs and margins in the marketing of these two commodities and estimating the price paid by the consumer and the share of the producers in the consumers rupee were the main objective of the study. The study was based on data collected from one primary and one secondary market of Allahabad district, Uttar Pradesh, 1978-79. It revealed that the producer's share in the consumers rupee was very low due to the presence of a large number of middlemen between the producer and the ultimate consumer. Among different cost items transport was the highest.



# Materials and Methods

## MATERIALS AND METHODS

### Collection of data

The data for the present cost of cultivation study were collected from selected holdings of Malappuram district of Kerala state during the year 1981-82. The sampling design adopted for the study was stratified multistage random sampling. The NES blocks in the district were arranged in descending order in terms of area under vegetables and the first two, viz., Manjeri block and Malappuram block were selected. Two panchayats were selected from each block randomly. The list of panchayats selected from the two blocks is as given below.

Manjeri block	- Pulpetta, Thirukkalankodu.
Malappuram block	- Anakkayam, Morayur.

From each of these selected panchayats a sample of three wards were randomly selected. Sampling frame of vegetable growing farmers was prepared in each panchayat ward and a random sample of four farmers was selected from each ward for the study. Each of the farmers selected was found to grow vegetables in only single holdings. Thus the sampling frame of holdings and that of farmers was exactly identical. The data for marketing study were collected from five wholesalers,

three commission agents and eleven retailers. Data were collected from the selected farmers and the traders by the interview method as no written record for the vegetable growing was available with them.

A well structured questionnaire covering the various aspects of vegetable cultivation and their marketing was prepared and was administered directly to the sample respondent farmers and traders. Specimens of the schedules are attached as appendix I and appendix II. The information collected included are area under production, yield rate, cost of cultivation, marketing of produce, marketing channels, cost of marketing, price of the commodity at different levels. Among the various vegetable crops grown by the farmers of the area pumpkin, ashgourd, cucumber, bittergourd, snakegourd, pulses were the major crops. Of these only the first two were selected for the present study, because these two crops occupied a major share of area grown under vegetables.

#### Method of analysis

Conventional percentage methods and functional methods were used for analysing and interpreting the data.

Cost of cultivation was divided into different components according to factors of productions and farm operations. Percentages corresponding to different operations and inputs were worked out.

Cobb Douglas production functions of the form

$y = a x_1^{b_1} x_2^{b_2} x_3^{b_3} x_4^{b_4} x_5^{b_5} x_6^{b_6}$  were fitted based on the absolute values of production and per hectare values for both the crops. The variables included in the study were production ( $y$ ), land ( $x_1$ ), human labour ( $x_2$ ), manures and fertilizers ( $x_3$ ), seeds ( $x_4$ ), pesticides ( $x_5$ ) and irrigation ( $x_6$ ). Land was measured in cents, human labour in man days, while expenditure on manures and fertilizers, seeds and pesticides are recorded in rupees. The unit for last input namely irrigation was its frequency during the period of the crop.

Variation in price of marketing was analysed by taking the difference between the price paid by the consumer and the price received by the farmer by using the relation

$$P_s = P_c - P_f \text{ where } P_s = \text{price spread}$$

$$P_c = \text{price paid by the consumer}$$

$$P_f = \text{Price received by the farmer}$$

The absolute value of price spread was expressed as percentage relative to price received by the farmer and these indices of price spread were calculated for these two crops.

# General Economic and Social Conditions of the Sample

## GENERAL ECONOMIC AND SOCIAL CONDITIONS OF THE SAMPLE

To get a background knowledge of vegetable growers (pumpkin and ashgourd) family particulars of the sample cultivators were studied.

### Family size

An analysis of family size of respondents showed that 56.25 per cent of the total families came under the size group having four to six members. The families having seven to nine members were 29.17 per cent of the total. Classification of respondent family according to different size group is shown in Table 5.1. In both the blocks, the highest preparation of the family came under the size group with four to six members. Manjeri block had 70.83 per cent and Malappuram block had 41.67 per cent in this group. The respondent had an average family size of 5.94.

### Age and sex

The distribution of the sample families according to age showed that 35.79 per cent of the members were below 14 years of age and 2.80 per cent in the age group of 60 and above. The percentage of working members i.e. the members between 15 and 59 is 61.41. The proportion of male and female among total members was 54.74 and 45.26 per cent respectively. The distribution of family members of respondents according to age and sex is given in Table 5.2.

Table 5.1. Distribution of the respondents according to the size of family

Name of Block	Members				Total	Average size of family
	1 to 3	4 to 6	7 to 9	Above 9		
Manjeri	1 (4.17)	17 (70.83)	5 (20.83)	1 (4.17)	24 (100.00)	6.00
Malappuram	3 (12.50)	10 (41.67)	9 (37.50)	2 (8.33)	24 (100.00)	5.88
Total	4 (8.33)	27 (56.25)	14 (29.17)	3 (6.25)	48 (100.00)	5.94

(Figures in parenthesis show percentage to total)

Table 5.2. Classification of respondents' family according to age and sex

Name of Block	Age group (years)								Total members
	0-14		15-59		60 and above		Total		
	Male	Female	Male	Female	Male	Female	Male	Female	
Manjeri	31 (21.53)	19 (13.19)	48 (33.33)	44 (30.56)	2 (1.39)	0 (0.00)	81 (56.25)	63 (43.75)	144 (100.00)
Malappuram	26 (18.44)	26 (18.44)	49 (34.75)	34 (24.11)	0 (0.00)	6 (4.26)	75 (53.19)	66 (46.81)	141 (100.00)
Total	57 (20.00)	45 (15.79)	97 (34.04)	78 (27.37)	2 (0.70)	6 (2.10)	156 (54.74)	129 (45.26)	285 (100.00)

(Figures in parenthesis show percentages to total)



### Literacy

Almost 90 per cent of the heads of households were literate. Percentage of illiterate farmers was 10.41. Out of the total, 56.25 per cent was educated upto primary school, 16.67 per cent upto middle school and 16.67 per cent was educated in high school. A distribution of the respondents according to their educational status is given in Table 5.3.

The educational status of the respondent family members was analysed. Those educated upto the primary school were 37.70 per cent while 26.59 per cent were educated upto the middle school. Only 22.22 per cent and 1.19 per cent were educated in high schools and colleges respectively. 12.30 per cent were found to be illiterate. Among the 87.70 per cent literate 59.10 per cent were males and others female. Members below six years were not included in this classification. Table 5.4 and Table 5.5 present the detailed break up of the educational status of the families.

### Occupation

Most of the farmers in the sample were dependent on agriculture only. Classification of the respondents based on the occupation is given in Table 5.6. It was observed 70.84 per cent of the farmers of the total respondents depended on agriculture alone, while 14.58 per cent had agriculture as main occupation and the rest 14.58 per cent had agriculture as secondary occupation.

Table 5.3. Distribution of the farmers according to literacy

Name of Block	Primary school	Middle school	High school	Illiterate	Total
Manjeri	13 (54.16)	4 (16.67)	6 (25.00)	1 (4.17)	24 (100.00)
Malappuram	14 (58.33)	4 (16.67)	2 (8.33)	4 (16.67)	24 (100.00)
Total	27 (56.25)	8 (16.67)	8 (16.67)	5 (10.41)	48 (100.00)

(Figures in parenthesis show percentage to total)

Table 5.4. Distribution of the respondents family according to literacy

Name of Block	Illiterate	Primary school	Middle school	High school	College	Total
Manjeri	10 (7.75)	53 (41.09)	25 (19.38)	39 (30.23)	2 (1.55)	129 (100.00)
Malappuram	21 (17.07)	42 (34.14)	42 (34.14)	17 (13.82)	1 (0.13)	123 (100.00)
Total	31 (12.30)	95 (37.70)	67 (26.59)	56 (22.22)	3 (1.19)	252 (100.00)

(Figures in parenthesis show percentage to total)

Table 5.5. Distribution of literates of the respondents family according to sex

Name of Block	Male literate	Female literate	Total literate
Manjeri	71 (60.17)	47 (39.83)	118 (100.00)
Malappuram	59 (57.84)	43 (42.16)	102 (100.00)
<b>Total</b>	<b>130</b> <b>(59.10)</b>	<b>90</b> <b>(40.90)</b>	<b>220</b> <b>(100.00)</b>

(Figures in parenthesis show percentage to total)

Table 5.6. Classification of the respondents according to occupation

Name of Block	Agriculture as the only occupation	Agriculture as main occupation	Agriculture as sub occupation	Total
Manjeri	15 (62.50)	4 (16.67)	5 (20.83)	24 (100.00)
Malappuram	19 (79.17)	3 (12.50)	2 (8.33)	24 (100.00)
<b>Total</b>	<b>34</b> <b>(70.84)</b>	<b>7</b> <b>(14.58)</b>	<b>7</b> <b>(14.58)</b>	<b>48</b> <b>(100.00)</b>

(Figures in parenthesis show percentage to total)

### Land holding

Distribution of the selected farmers according to land owned is given in Table 5.7. Among total respondents 14.58 per cent had total area between one to fifty cents and 45.84 per cent between 50 to 150 cents and 25 per cent between 150 to 250 cents. Holdings above 250 cents were 14.58 per cent of the total.

### Cropping pattern

Gross cropped area of the total respondent farmers was 98.38 hectares. The net area cropped was 90.78 hectares and area sown more than once were 7.60 hectares. Approximate gross area under irrigation was 43.90 hectares. Paddy, vegetables, and rubber were the most important crops grown. Table 5.8 shows the cropping pattern.

### Area under pumpkin

The distribution of the selected families according to area under pumpkin is given in Table 5.9. Among the total respondents 33.33 per cent had area between one to 10 cents. 39.58 per cent was between 10 to 20 cents. Holdings with 20 cents and above was 27.09 per cent.

### Area under ashgourd

The distribution of area of the selected families according to area under ashgourd was given in Table 5.10. Among the total respondents 31.25 per cent had area between

one to 10 cents and another 31.25 per cent had area between 10 to 20 cents. Holdings with 20 cents and above was 37.50 per cent.

Table 5.7. Distribution of the selected farmers according to land holding

Particulars	area between (in cents)				Total
	1-50	50-150	150-250	250 and above	
Number of farmers	7	22	12	7	48
Percentage to the total	14.58	45.84	25.00	14.58	100.00

Table 5.8. Cropping pattern

Crop	area (in hectares)
Paddy	11.87
Vegetables	19.33
Other seasonal crops	1.88
Annual crops	10.82
Perennial crops	54.48
<b>Total</b>	<b>98.38</b>

Table 5.9. Distribution of the selected farmers according to area under Pumpkin (in cents)

Name of Block	1 to 10	10 to 20	20 and above	Total
Manjeri	11 (45.83)	7 (29.17)	6 (25.00)	24 (100.00)
Malappuram	5 (20.83)	12 (50.00)	7 (29.17)	24 (100.00)
<b>Total</b>	<b>16</b> <b>(33.53)</b>	<b>19</b> <b>(39.58)</b>	<b>13</b> <b>(27.09)</b>	<b>48</b> <b>(100.00)</b>

(Figures in parenthesis show percentage to total)

Table 5.10. Distribution of the selected farmers according to area under ashgourd (in cents)

Name of Block	1 to 10	10 to 20	20 and above	Total
Manjeri	11 (45.83)	6 (25.00)	7 (29.17)	24 (100.00)
Malappuram	4 (16.67)	9 (37.50)	11 (45.83)	24 (100.00)
<b>Total</b>	<b>15</b> <b>(31.25)</b>	<b>15</b> <b>(31.25)</b>	<b>18</b> <b>(37.50)</b>	<b>48</b> <b>(100.00)</b>

(Figures in parenthesis show percentage to total)

# Results and Discussion



## RESULTS AND DISCUSSION

The observations and the collection of data were made during the year 1981-82 to study the production and marketing of pumpkin and ashgourd. The observations on production aspects are presented and discussed in Part I and those on marketing in Part II.

### Part I: Costs and Returns

#### Cost concepts

There are many cost concepts used in cost of cultivation, studies, viz., Cost  $A_1$ , Cost  $A_2$ , Cost B and Cost C. A brief discussion of these cost concepts follows:

- i) Cost  $A_1$ : It includes the following item of costs.
  1. Value of hired human labour (permanent and casual)
  2. Value of manures and fertilizers (owned and purchased)
  3. Value of seeds (both farm produced and purchased)
  4. Value of pesticides
  5. Depreciation on farm implements
  6. Interest on working capital
  7. Miscellaneous expenses
- ii) Cost  $A_2$ : It is cost  $A_1$  plus
  8. Rent paid for leased in land
- iii) Cost B: It is cost  $A_2$  plus
  9. Imputed rental value of owned land
  10. Imputed interest on fixed capital

iv) Cost C: It is cost B plus

#### 11. Imputed value of family labour

In this study an attempt is made to estimate costs and returns and costs have been worked out on the basis of the above four cost concepts. In the case of purchased inputs/paid out costs, costs actually incurred by the sample farms were taken into account. In the case of inputs used from within the farm or farm home appropriate imputations of costs have been made. The cost of family labour was imputed at the rates prevailed in the area during this period. An interest rate of 12.5 per cent was charged for the working capital and it was worked out only for a period of two months. Wherever the land was leased in the actual rent paid was taken into account and in the case of owned land rent was imputed. An amount of Rs.1500.00 per hectare was imputed as rent for owned land, based on the prevailing rent in this area. There were no farm buildings mainly or exclusively used for agricultural purpose in the sample. Hence in the item 'Fixed Cost' only depreciation on machineries, implements and temporary deadstocks was included. Depreciation rates of five per cent for machineries, 15 per cent for implements and 20 per cent for temporary deadstock were used for the computation of cost. Depreciation on such items were worked out and allocated to pumpkin and ashgourd cultivation on the basis of relative position of area under these vegetables to total area cropped.

### Itemwise cost per hectare

Itemwise break up of the cost of cultivation of pumpkin and ashgourd is given in Table 6.1. The table revealed a good deal of variation in costs between the crops. The total cost incurred on pumpkin was more than on ashgourd. Costs  $A_1$ , Costs  $A_2$ , Cost B and Cost C per hectare of pumpkin were Rs.3457.39, Rs.4439.65, Rs.4984.89 and Rs.7898.16 respectively. For ashgourd the costs were Rs.3075.75, Rs.4072.80, Rs.4603.25 and Rs.7324.97 in the same order. Cultivation of pumpkin resulted in 12 per cent (Rs.381.64) more of Cost  $A_1$ , nine per cent (Rs.366.85) more of cost  $A_2$ , eight per cent (Rs.381.64) more of Cost B and again eight per cent (Rs.573.19) more of Cost C, than ashgourd. The variation in the total cost could be explained better by analysing each of the cost components separately.

### Inputwise cost per hectare

Information on inputwise costs is given in Table 6.2 (Fig.2). It can be seen from the table that the largest single item of input was human labour. For pumpkin this item constituted 57.80 per cent (Rs.4565.35) of the total cost and for ashgourd this was 57.60 per cent (Rs.4219.50). Among the labour cost 63.81 per cent (Rs.2913.21) constituted family labour and 36.19 per cent (Rs.1652.08) formed the hired labour for pumpkin. In the case of ashgourd 64.50 per cent (Rs.2721.72) was accounted by family labour and 35.5 per cent (Rs.1497.78) by hired labour

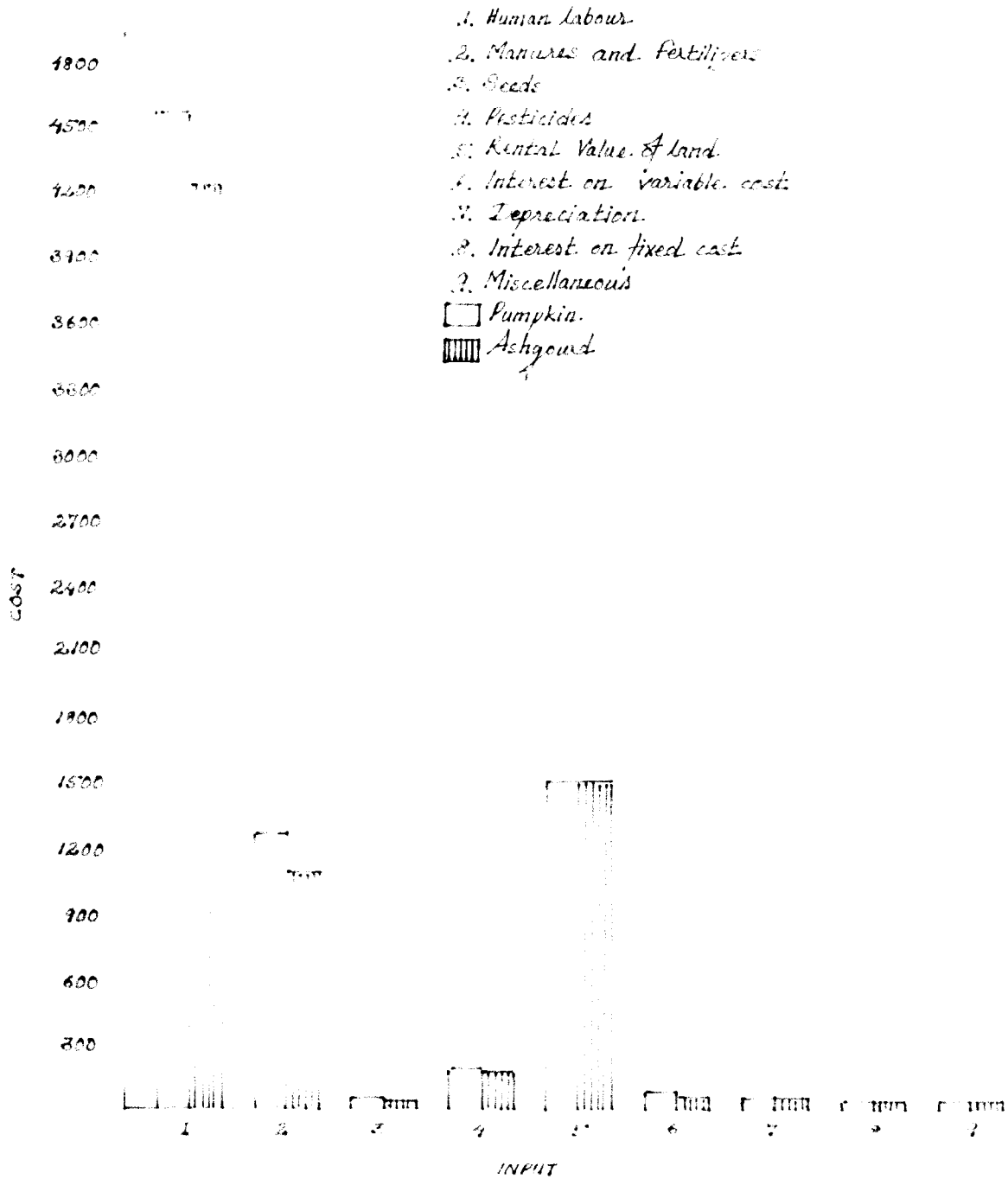
Table 6.1. Itemwise break up of the cost of cultivation of pumpkin and ashgourd

Sl. No.	Particulars	Pumpkin (Rs./ha)	Ashgourd (Rs./ha)
1	Hired human labour	1652.08	1497.78
2	Manures and fertilizers	1279.07	1092.01
3	Seeds	42.19	40.99
4	Pesticides	344.04	312.90
5	Depreciation on farm implements	63.17	63.17
6	Interest on working capital	71.84	63.90
7	Miscellaneous	5.00	5.00
	i. Cost A <sub>1</sub>	3457.39	3075.75
8	Rent paid for leased in land	982.26	997.05
	ii. Cost A <sub>2</sub>	4439.65	4072.80
9	Imputed rental value of owned land	517.74	502.95
10	Imputed interest on fixed capital	27.50	27.50
	iii. Cost B	4984.89	4603.25
11	Imputed value on family labour	2913.27	2721.72
	iv. Cost C	7898.16	7324.97

Table 6.2. Inputwise cost of cultivation of pumpkin and ashgourd

Sl. No.	Particulars	Pumpkin (Rs/ha)	Percentage	Ashgourd (Rs./ha)	Percentage
1	Human labour	4565.35	57.80	4219.50	57.60
2	Manures and fertilizers	1279.07	16.19	1092.01	14.91
3	Seeds	42.19	0.53	40.99	0.56
4	Pesticides	344.04	4.36	312.90	4.27
5	Rental value of land (owned and hired)	1500.00	19.00	1500.00	20.48
6	Interest on working capital	71.84	0.91	63.90	0.87
7	Deprciation	63.17	0.80	63.17	0.86
8	Interest on fixed capital	27.50	0.35	27.50	0.38
9	Miscellaneous	5.00	0.06	5.00	0.07
Total cost		7898.16	100.00	7324.97	100.00

FIG. 2. INPUTWISE TOTAL COST OF CULTIVATION PER HECTARE OF PUMPKIN AND ASHGOURD FOR THE DISTRICT (IN RS.)



out of the labour cost. This particulars are presented in Table 6.3.

Table 6.3. Cost of family labour and hired labour used per hectare

Sl. No.	Particulars	Pumpkin (in Rs)	Percentage	Ashgourd (in Rs)	Percentage
1	Family labour	2913.27	63.81	2721.72	64.50
2	Hired labour	1652.08	36.19	1497.78	35.50
	Total	4565.35	100.00	4219.50	100.00

Actual days of labour employed was 215 man days per hectare for pumpkin and 200 man days per hectare for ashgourd.

The second major item included was the rental value of the land (both paid and imputed). This amounted to Rs.1500.00 per hectare in both the cases and constituted 19 per cent for pumpkin and 20.48 per cent for ashgourd. The third item of input in terms of relative importance in total cost was manures and fertilizers. Manures and fertilizers constituted 16.19 per cent (Rs.1279.07) and 14.91 per cent (Rs.1092.01) respectively for pumpkin and ashgourd. Pesticides formed the next important item. This constituted 4.36 per cent (Rs.344.04) for pumpkin and 4.27 per cent (Rs.312.90) for ashgourd. All the other items individually constituted less than one per cent of the total cost, for both the crops.

### Operationwise cost per hectare

Operationwise cost per hectare is given in Table 6.4 (Fig. 3). In both the cases irrigation was the most important item in terms of cost. It accounted for 37.64 per cent of the total cost (Rs.2973.23) for pumpkin and 37.58 per cent (Rs.2752.79) for ashgourd. The next major item for pumpkin was manures and manuring which accounted for 21.94 per cent (Rs.1732.99). But for ashgourd the second largest item was the rental value of the land (both owned and hired). It constituted 20.48 per cent (Rs.1500.00). The third largest item was rental value in the case of pumpkin and manures and manuring for ashgourd. Rental value for pumpkin constituted 19.00 per cent (Rs.1500.00) and manures and manuring for ashgourd constituted 20.21 per cent (Rs.1480.67). Plant protection was the fourth major item of operation. Expenditure on this item formed 7.51 per cent of the total cost in both the cases (Rs.593.23 for pumpkin and Rs.549.87 for ashgourd). After cultivation operation was the next important factor which constituted 4.39 per cent (Rs.346.60) for pumpkin and 4.52 per cent (Rs.330.99) for ashgourd. All the other items individually constituted less than four per cent of the total cost for both the crops.

### Output and value of pumpkin and ashgourd per hectare

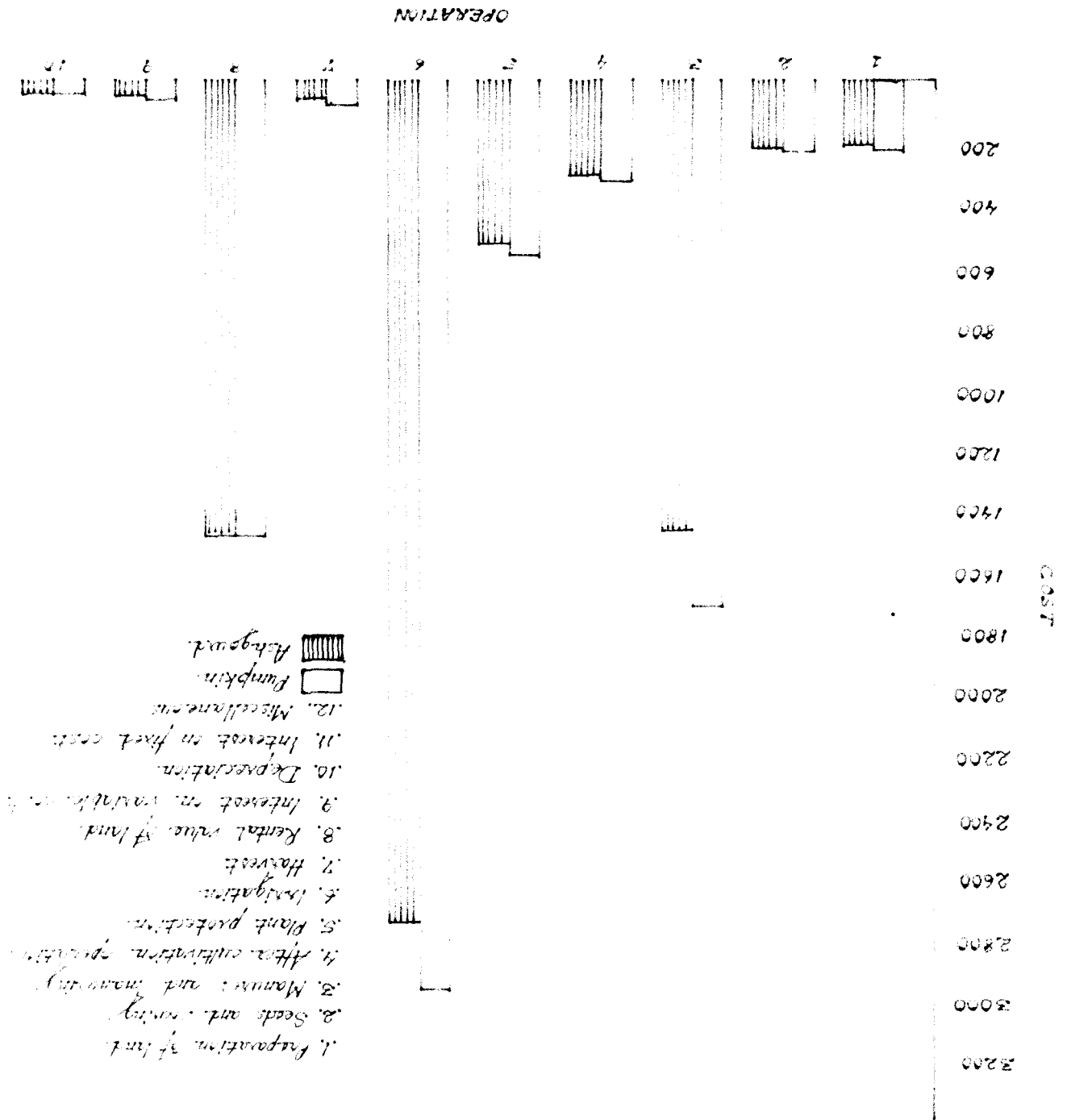
Output and value of pumpkin and ashgourd per hectare are presented in Table 6.5. The table shows that the output of



**Table 6.4. Operationwise cost of cultivation of pumpkin and ashgourd**

Sl. No.	Operation	Pumpkin	Percentage	Ashgourd	Percentage
1	Preparation of land	247.88	3.14	230.91	3.15
2	Seeds and sowing	250.76	3.17	240.68	3.28
3	Manures and manuring	1732.99	21.94	1480.67	20.21
4	After cultivation operation	346.60	4.39	330.99	4.52
5	Plant protection	593.23	7.51	549.87	7.51
6	Irrigation	2973.23	37.64	2752.79	37.58
7	Harvesting	85.96	1.09	79.49	1.09
8	Rental value of land (owned and hired)	1500.00	19.00	1500.00	20.48
9	Interest on working capital	71.84	0.91	63.90	0.87
10	Depreciation	63.17	0.80	63.17	0.86
11	Interest on fixed capital	27.50	0.35	27.50	0.38
12	Miscellaneous	5.00	0.06	5.00	0.07
<b>Total cost</b>		<b>7898.16</b>	<b>100.00</b>	<b>7324.97</b>	<b>100.00</b>

FIG. 3. OPERATIONWISE TOTAL COST OF CULTIVATION FOR HERBAGE OF PUMPKIN AND ASHQOLKD IN THE DISTRICT (in ksf)



pumpkin was 14227.61 kg per hectare and ashgourd 17201.03 kg per hectare. In terms of economic units, per hectare value of the products were Rs.9796.66 and Rs.11362.13 for pumpkin and ashgourd respectively. Output of ashgourd was 21 per cent (2973.42 kg per hectare) more than that of pumpkin. Value per hectare was also high in the case of ashgourd. It was 16 per cent (Rs.1565.47 per hectare) more than pumpkin. It is evident from the table that production of ashgourd was more profitable than pumpkin.

#### Cost of production per kilogram of vegetables

Cost comparison on the basis of per hectare costs is strictly not relevant and meaningful. What is more relevant is cost per unit of output. The table 6.6 gives the particulars on cost of production per kilogram of vegetables. Cost of production per kilogram of pumpkin based on Cost  $A_1$ , Cost  $A_2$ , Cost B and Cost C were Re.0.24, Re. 0.31, Re. 0.35 and Re.0.56 respectively. For ashgourd they were Re.0.17, Re.0.24, Re.0.27 and Re.0.43 in the same order. Cultivation of pumpkin involved 33 per cent (Re.0.06) more of cost  $A_1$ , 29 per cent (Re.0.07) more of cost  $A_2$ , 30 per cent (Re.0.08) more of cost B, 30 per cent (Re.0.13) more of cost C than ashgourd to produce one kilogram of the product. So ashgourd was more profitable than pumpkin.

Table 6.5. Output and value of pumpkin and ashgourd

Vegetables	Output/ha (kg)	Value/ha (Rs)
Pumpkin	14227.61	9796.66
Ashgourd	17201.03	11362.13

Table 6.6. Cost of production of pumpkin and ashgourd

Particulars	Pumpkin (Re./kg)	Ashgourd (Re./kg)
Cost A <sub>1</sub>	0.24	0.18
Cost A <sub>2</sub>	0.31	0.24
Cost B	0.35	0.27
Cost C	0.56	0.43

### Benefit-cost ratio

Benefit-cost ratio is a measure which would indicate as to whether the cost incurred is commensurate with the return obtained. Benefit-cost ratios based on cost  $A_1$ , Cost  $A_2$ , Cost B and Cost C are presented in Table 6.7. Though a good deal of variation could be seen for the return on a rupee invested, returns were positive in all the cases for both the crops. Benefit-cost ratios based on Cost  $A_1$ , Cost  $A_2$ , Cost B, Cost C were 2.83, 2.21, 1.97 and 1.24 for pumpkin and 3.69, 2.79, 2.47 and 1.55 for ashgourd respectively. In all the cases benefit-cost ratios for ashgourd were high. Cost  $A_1$  of ashgourd gave more than 300 per cent return, cost  $A_1$  and Cost  $A_2$  of pumpkin and cost  $A_2$  and cost B of ashgourd gave more than 200 per cent return while cost B and cost C of pumpkin and cost C of ashgourd returned more than 100 per cent.

The above analysis on economics of vegetable cultivation has shown that there was considerable difference, in the cultivation costs per hectare, between pumpkin and ashgourd. Great difference also existed in cost per unit of output. In both the cases, vegetable cultivation resulted in net benefit to the farmers, though the extent of net benefit differed for the two crops.

### Measures of efficiency

Income measures in relation to different cost concepts:

Different income measures are associated with different cost concepts 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
4. Net income = Gross income minus cost C
5. Farm investment income = Net income plus rental value of owned land plus interest on owned fixed capital.
6. Return over variable cost = Gross income minus variable costs.

Table 6.8 presents the income measures in relation to different cost concepts. Farm business income for pumpkin was Rs.6339.27 and for ashgourd Rs.8286.38. It was 31 per cent (Rs.1947.11 per hectare) more for ashgourd than pumpkin. Owned farm business incomes were Rs.5357.01 and Rs.7289.33 for pumpkin and ashgourd respectively. Owned farm business income of ashgourd was 36 per cent (Rs.1932.32 per hectare) more than pumpkin. Family labour income for the production of pumpkin and ashgourd was Rs.4811.77 and Rs.6758.88 respectively. It was 40 per cent (Rs.1947.11 per hectare) more for ashgourd than pumpkin. Net income for pumpkin was Rs.1898.50 and for ashgourd Rs.4037.16. It was 113 per cent (Rs.2138.66 per hectare) more for ashgourd than pumpkin. Farm investment incomes for pumpkin and ashgourd were Rs.2443.74 and Rs.4567.61 respectively. This was found to be 87 per cent (Rs.2123.87 per hectare) more for ashgourd than pumpkin. Returns over variable costs were Rs.3566.01 and Rs.5696.73 for pumpkin and ashgourd respectively.

Table 6.7. Benefit-cost ratio of pumpkin and ashgourd

Benefit-cost ratio based on	Pumpkin	Ashgourd
Cost A <sub>1</sub>	2.83	3.69
Cost A <sub>2</sub>	2.21	2.79
Cost B	1.97	2.47
Cost C	1.24	1.55

Table 6.8. Income measures in relation to different cost concepts (per hectare)

Sl. No.	Particulars	Pumpkin (Rs)	Ashgourd (Rs)
1	Farm business income	6339.27	8286.38
2	Owned farm business income	5357.01	7289.33
3	Family labour income	4811.77	6758.88
4	Net income	1898.50	4037.16
5	Farm investment income	2443.74	4567.61
6	Return over variable costs	3566.01	5696.73

Return over variable cost of ashgourd was 60 per cent (Rs.2130.72 per hectare) more than pumpkin. From these we can infer that cultivation of ashgourd was more profitable than pumpkin.

The salient results of the economics of pumpkin and ashgourd are summed up in Table 6.9.

#### Problems in vegetable cultivation

The study was also aimed at identifying the problems of vegetable growers. Attack of the pest and disease, high input costs were the main problems reported by the farmers. Farmers also stated that they experience serious transportation problems in marketing their products.

#### Functional analysis

Cobb-Douglas production functions were fitted for the collected data. Cobb-Douglas production function is used since it is the best method of measuring the nature of resources used in agriculture and it allows diminishing marginal productivity and increasing or decreasing returns to scale. It assumes a constant elasticity of production over the entire range of inputs. The function is logarithmically linear and can be fitted by the method of least squares (Heady 1946, Heady and Dillan, 1961).





Table 6.9. Economics of pumpkin and ashgourd cultivation

Sl. No.	Particulars	Pumpkin	Ashgourd
1	Output (kg/ha)	14,227.61	17,201.03
2.	Cost of cultivation (Rs/ha)		
	i) Cost A <sub>1</sub>	3,457.39	3,075.75
	ii) Cost A <sub>2</sub>	4,439.65	4,072.80
	iii) Cost B	4,984.89	4,603.25
	iv) Cost C	7,898.16	7,324.97
3	Cost of production (Rs/kg)		
	i) Cost A <sub>1</sub>	0.24	0.18
	ii) Cost A <sub>2</sub>	0.31	0.24
	iii) Cost B	0.35	0.27
	iv) Cost C	0.56	0.43
4	Gross income (in Rs)	9,796.66	11,362.13
5	Net income (in Rs)	1,898.50	4,037.16
6	Benefit cost ratio		
	i) Cost A <sub>1</sub>	2.83	3.69
	ii) Cost A <sub>2</sub>	2.21	2.79
	iii) Cost B	1.97	2.47
	iv) Cost C	1.24	1.55

The inputs taken into consideration were area ( $x_1$ ), human labour ( $x_2$ ), cost of manures and fertilizers ( $x_3$ ), cost of seeds ( $x_4$ ), cost of pesticides ( $x_5$ ) and number of irrigation ( $x_6$ ). The partial regression coefficients and their standard errors, t values, multiple correlation coefficients (R), coefficients of determination ( $R^2$ ) and the F ratios for the two crops namely pumpkin and ashgourd were determined.

The production functions for pumpkin and ashgourd based on absolute values together with the partial regression the multiple correlation coefficient (R), coefficient of determination ( $R^2$ ) and F values are given below.

Pumpkin

$$y = 6.8480 \quad x_1^{0.8234} \quad x_2^{0.1034} \quad x_3^{-0.0930} \quad x_4^{0.0041} \quad x_5^{-0.0645} \\ x_6^{0.6124}$$

$$(F^{**} = 9.6832; R = 0.7658; R^2 = 0.5864)$$

\*\* Significant at 1% level

Ashgourd

$$y = 2.6570 \quad x_1^{0.9270} \quad x_2^{0.0820} \quad x_3^{-0.0726} \quad x_4^{0.0001} \quad x_5^{-0.2621} \\ x_6^{0.9520}$$

$$(F = 8.0086^{**}; R = 0.7346; R^2 = 0.5396)$$

\*\* Significant at 1% level

where

$y$  = Production

$x_1$  = Area in cents

$x_2$  = Human labour days

$x_3$  = Cost of manures and fertilizers

$x_4$  = Cost of seeds

$x_5$  = Cost of pesticides

$x_6$  = Number of irrigation

The elasticities of production with respect to different inputs, their standard errors and  $t$  values based on absolute values are given in Tables 6.10 and 6.11.

Table 6.10. Elasticities of pumpkin production in relation to different resources (absolute values)

Resources	$x_1$	$x_2$	$x_3$	$x_4$	$x_5$	$x_6$
$b_1$	0.8234 <sup>**</sup>	0.1034	-0.0930	0.0041	-0.0645	0.6124
SE of $b_1$	0.2929	0.2687	0.1817	0.3072	0.1266	0.5008
$t$	2.8112	0.3738	0.5118	0.0133	0.5095	1.2228

\*\* Significant at 1% level

Table 6.11. Elasticities of ashgourd production in relation to different resources (absolute values)

Resources	$x_1$	$x_2$	$x_3$	$x_4$	$x_5$	$x_6$
$b_1$	0.9270**	0.0820	-0.0726	0.0001	-0.2621	0.9520
SE of $b_1$	0.1729	0.1548	0.1636	0.0001	0.1643	0.5388
t	5.3615	0.5297	0.4401	1.0000	1.5953	1.7669

\*\* Significant at 1% level

The coefficient of determination  $R^2$  explains the proportion of variation in the dependent variable ( $y$ ), explained by the different independent variables included in the functional model. Fifty-nine per cent of variations in pumpkin production and 54 per cent of variations in ashgourd production could be explained by the fitted regression function.

The values of  $b_1$  indicate the expected percentage change in the product in response to a one per cent change in the input  $x_1$ . In other words  $b_1$  indicates the percentage by which the output  $y$  would change if input  $x_1$  changes by one unit while all other factors remain constant at their geometric mean levels. If  $b_1$  is less than one decreasing returns to scale is anticipated by varying  $x_1$  alone. If sum of  $b_1$  is less than one then diminishing returns to scale is anticipated. Increasing returns to scale is anticipated if sum of  $b_1$  is more than one. In the present study based on absolute values for both the crops and on per hectare value for pumpkin  $b_1$  values were found to be

less than one indicating decreasing returns to scale by varying  $x_1$  alone. But  $b_6$  (partial regression coefficient for the input irrigation) based on per hectare value for ashgourd was more than one showing increasing returns to scale by varying that input alone, but for all the other inputs  $b_1$  was less than one. Sum of  $b_1$  based on absolute values was more than one for both the crops indicating increasing returns to scale and sum of  $b_1$  based on per hectare values was less than one for both the crops indicating decreasing returns to scale.

None of the partial regression coefficients except area was found to be significant for the two crops inspite of a highly significant F value. This could be due to the presence of multicollinearity in the data. The simple correlation coefficients between output and area were found to be 0.74 for pumpkin and 0.69 for ashgourd. This means that about 55 per cent of variation in output in pumpkin and 48 per cent of variation in output in ashgourd could be explained by fluctuation in area alone. Such a major contribution by area could be explained as 'output increases in proportion to the area' if other factors remain constant.

In these circumstances, regression of yield on the six inputs on a per hectare basis was attempted. The corresponding partial regression coefficients, standard errors, t values, multiple correlation coefficients, coefficients of determination and F values were determined.

The production function for pumpkin and ashgourd based on per hectare basis is given below.

Pumpkin

$$y = 403.2000 x_1^{-0.1922} x_2^{0.1644} x_3^{0.0616} x_4^{-0.2977} x_5^{-0.1133} x_6^{0.4993}$$

(F=1.4186; R = 0.4146; R<sup>2</sup>=0.1719)

Ashgourd

$$y = 872.6000 x_1^{-0.2652} x_2^{0.0433} x_3^{0.1217} x_4^{-0.1641} x_5^{-0.2108} x_6^{1.0245}$$

(F = 1.5874; R = 0.4342; R<sup>2</sup>=0.1885)

where:

y = Production per hectare

x<sub>1</sub> = Area in cents

x<sub>2</sub> = Human labour hours per hectare

x<sub>3</sub> = Cost of manures and fertilizers per hectare

x<sub>4</sub> = Cost of seeds per hectare

x<sub>5</sub> = Cost of pesticides per hectare

x<sub>6</sub> = Number of irrigation

The elasticities of production with respect to different inputs, their standard errors and t values based on per hectare values are given in Tables 6.12 and 6.13.

Table 6.12. Elasticities of pumpkin production in relation to different resources (per hectare values)

Resources	$x_1$	$x_2$	$x_3$	$x_4$	$x_5$	$x_6$
$b_1$	-0.1922	0.1644	0.0616	-0.2977	-0.1133	0.4993
SE of $b_1$	0.1392	0.1584	0.1335	0.1644	0.0980	0.4663
t	1.3007	1.0379	0.4614	1.8108	1.1561	1.0708

Table 6.13. Elasticities of ashgourd production in relation to different resources (per hectare values)

Resources	$x_1$	$x_2$	$x_3$	$x_4$	$x_5$	$x_6$
$b_1$	-0.2652	0.0433	0.1217	-0.1641	-0.2108	1.0245
SE of $b_1$	0.1554	0.1721	0.1660	0.1712	0.1133	0.5395
t	1.7066	0.2516	0.7331	0.9585	1.8605	1.8990

Here influences of other factors through area is eliminated. In pumpkin and ashgourd only 17 per cent and 18 per cent respectively of the variations in yield were explained by the independent variables.

The F ratios for pumpkin and ashgourd were not significant. This may be due to lack of considerable variability among the levels of inputs used by farmers of the sample area so as to generate appreciable variability in productivity for identifying

the important factors of production. The variation in yield could also be attributed to many other factors not considered here such as texture, structure and reaction of soil, micro-climate, etc.

Linear model production functions were fitted for the crops since the F ratios for the Cobb-Douglas production functions based on per hectare values were not significant. The linear model production functions explained about 11 per cent variation in pumpkin and eight per cent in ashgourd respectively and the F ratios were also not significant. Therefore the utility of linear models for predicting the response was limited. Other complicated models could not be tried due to lack of computation facilities.

## Part II. Marketing

In recent years the consumers have complained about high prices for agricultural as well as other commodities and the agriculturists have also complained about receiving low prices as well as lower share in the consumers' rupee. One of the main reasons advanced for the low prices received by the agriculturists and the relatively high prices paid by the consumers is the existence of more market intermediaries for agricultural commodities. The reasons for the existence of a wider price spread can be traced in a large measure to the nature of agricultural marketing which is most disorganised in India. The



existence of intermediaries is an inevitable feature in any marketing processes as the producers cannot have direct contact with the ultimate consumers. However, the share of the consumers rupee realised by the intermediaries for the role played by them is a debatable issue (Suryaprakash et al., 1979).

In the present study an attempt is made to identify the marketing practices and channels as also to evaluate the efficiency of marketing of pumpkin and ashgourd.

#### Preparation for marketing

After harvest, some steps are necessary for the preparation of fresh vegetables for the market. Usually cleaning and packing are the two steps for pumpkin and ashgourd. Cleaning involves the removal of soil, dust, adhering debris, insects and spray residues. A dry brushing with old cloths or torn gunny bags are also given. The vegetables are packed in gunny bags. They use the fertilizer sacks for this purpose.

#### Transportation

Farmers in general took their products to the vegetable markets. The traders generally do not come to collect the vegetables in villages. Vegetables were transported in bus, lorry, jeep, autoriksha or bullock cart. If the market was within four or five KM range the vegetables were transported by headload. Transportation cost varied according to the mode of transportation and distance of market place from farm gate.

Transportation cost per kilogram was eight paise for Manjeri block and six paise for Malappuram block and averaged seven paise for the district.

### Market structure

There are four wholesale dealers for vegetables at Manjeri block, three wholesale dealers at Malappuram block and several retail shops in the Malappuram district. There are no commission agents for vegetables in the district. Some farmers took their vegetables to Calicut market also, where they sold their products through commission agents.

### Method of sale

Farmers sold their products to wholesalers, retailers or directly to the consumers. The different marketing channels are indicated below.

1. Producer-consumer
2. Producer-retailer-consumer
3. Producer-wholesaler-consumer
4. Producer-wholesaler-retailer-consumer
5. Producer-commission agent-wholesaler-consumer
6. Producer-commission agent-wholesaler-retailer-consumer

About fifty per cent of the total sample farmers sold their vegetables exclusively to wholesalers, 12.50 per cent exclusively to the retailers, 6.25 per cent to trades-cum-commission agents, another 12.50 per cent to both wholesalers

and retailers and 8.33 per cent to both retailers and consumers. About 71 per cent of the sample farmers of Manjeri and 25 per cent of the sample farmers of Malappuram district sold their vegetables exclusively to wholesalers. None of the farmers at Manjeri sold their products to commission agents. Distribution of the respondents according to type of buyers are given in Table 6.14.

### Marketing efficiency

There are various methods to study economic efficiency of agricultural markets such as the price spread and marketing costs, temporal price differences and storage costs and the degree of market integration. For want of resources, in the present study efficiency is assessed on the basis of price spread and marketing costs only.

The relationship between the producers' and consumers' price is manifested by what is known as the price spread. In fact, the price spread is a broad spectrum which disclose the proportions of various components of the marketing cost of the produce, and thus explains the difference between the price received by the producers and price paid by consumers. In other words, the magnitude of the difference represents the marketing costs and margins which in turn, determines the producers' share in the consumers' price. In order to secure a sizeable share to the producer, it would be imperative to minimise the costs and margins, constitute with the performance of the

Table 6.14. Distribution of the respondents according to the type of buyers

Product sold to	Manjeri	Malappuram	Total
Wholesalers	17 (70.83)	6 (25.00)	23 (47.92)
Retailers	1 (4.17)	5 (20.83)	6 (12.50)
Trader-cum-commission agents	-	3 (12.50)	3 (6.25)
Wholesalers and Retailers	-	6 (25.00)	6 (12.50)
Wholesalers and Commission agents	-	1 (4.17)	1 (2.08)
Wholesalers and Consumers	1 (4.17)	1 (4.17)	2 (4.17)
Retailers and Consumers	2 (8.33)	2 (8.33)	4 (8.33)
Wholesalers, retailers and consumers	2 (8.33)	-	2 (4.17)
None	1 (4.17)	-	1 (2.08)
<b>Total</b>	<b>24</b> <b>(100.00)</b>	<b>24</b> <b>(100.00)</b>	<b>48</b> <b>(100.00)</b>

Figures in parenthesis show the percentage to the total

deserved marketing functions. Macro level studies of price spread do not appear to be relevant in pricing decisions. They conceal more than what they are expected to reveal. Spatially confined micro studies in price spreads of various agricultural commodities, which are lacking in the country at present, undeniably provide a few surrogates useful in price fixation (Desai, 1979).

Price spread can be worked out by either 'concurrent margins' method or 'lagged margins' method. 'Concurrent margins' refer to the difference between the prices prevailing at successive stages of marketing on the same date, while 'lagged margins' is the difference between the price of farm produce obtainable at a particular stage of marketing and the price paid for it at the preceding stage of marketing during an earlier period, the length of time between the two dates being the average period for which the marketing agency holds the product. 'Concurrent margins' do not take into account the time that elapses between purchases and sale of the produce by the same party either due to processing or stock holding for price consideration. 'Lagged margins' take into account the time that elapses between purchase and sale by a party and for that matter between sale by the farmer and purchase by the consumer and this allows for the choice of time which the trader exercises while carrying out his business. This method of calculating 'lagged margins' is based on the same principle

which is involved in the 'first in first out' method of accounting. The method generally adopted is that selecting specific lots and tracing them back to the source of origin (Sinha et al., 1979).

In the present study, price spread has been studied by comparing the price prevailing at successive stage of marketing. Since price used for comparison relate to the same period, the price spread and marketing margin so worked out is 'concurrent' and not 'lagged margin'. For this purpose, the average prices received by farmers are compared with prices which prevailed in retail markets in Manjeri and Malappuram. Table 6.15 explains the price spread for the crops.

In the case of pumpkin out of Rs.1.28 per kilogram paid by consumer only Re.0.64 (50 per cent) went to the producer seller and in the case of ashgourd it was Re.0.63 per kilogram (53.85 per cent) out of Rs.1.17 per kilogram paid by the consumer. The wholesaler's margin was Re.0.34 per kilogram (26.56 per cent) for pumpkin and Re.0.23 per kilogram (19.66 per cent) for ashgourd. The retailer's margin was Re.0.19 (14.85 per cent) and Re.0.20 (17.10 per cent) for pumpkin and ashgourd respectively. The wholesaler's margin was higher than the retailer's margin in both the cases. The marketing charges other than marketing margins for the intermediaries were very low. So it was evident that the middlemen snatched a substantial share from consumers' rupee.

Table 6.15. Spread over the consumer price (paise per kg)

Sl. No.	Shares	Pumpkin	Percentage	Ashgourd	Percentage
1	Price received by producer or price paid by wholesaler	64	50.00	63	53.85
2	Fixed cost on investment for wholesaler	4	3.13	4	3.42
3	Working cost for wholesaler	2	1.56	2	1.71
4	Wholesalers' margin	34	26.56	23	19.66
5	Price received by wholesaler or price paid by retailer	104	81.25	92	78.64
6	Fixed cost on investment for retailer	3	2.34	3	2.56
7	Transport cost incurred by retailer	1	0.78	1	0.85
8	Other cost incurred by retailer	1	0.78	1	0.85
9	Retailers' margin	19	14.85	20	17.10
10	Retailers' sale price or customers' price	128	100.00	117	100.00

Price spread for Malappuram and Manjeri blocks separately for pumpkin and ashgourd are given in Table 6.16.

Table 6.16. Price spread for pumpkin and ashgourd  
(for individual blocks)

Sl. No.	Blocks	Crop	Price spread paise/kg
1	Malappuram	Pumpkin	60 (88.23)
		Ashgourd	50 (74.62)
2	Manjeri	Pumpkin	69 (116.95)
		Ashgourd	58 (98.31)

Figures in parenthesis represent the percentage price spread to the price received by the farmer

The table reveals that the extent of price spread was different for the two crops. The price spread was found to be high for pumpkin in both the blocks.

The combined data shown in Table 6.15 as well as the data for individual blocks clearly indicate incidence of high price spread. High price spread in itself may be justified if it is commensurate with the services rendered and the margins of intermediaries are not unduly high. In the present case the margins particularly of wholesalers are very high. It is therefore legitimate to conclude on the basis of the above study on price spread that efficiency of marketing of the two agricultural products studied was rather low.



# Summery

### SUMMARY

The present investigation on the production and marketing of vegetables (pumpkin and ashgourd) in Malappuram district was undertaken during the year 1981-82. to estimate the cost of cultivation, cost of production, benefit-cost ratio, price spread and to identify the marketing channels. The study was also aimed at identifying the problems of the farmers.

Stratified multistage random sampling was adopted for the study.

The total cost incurred on pumpkin was more than that of ashgourd. Costs  $A_1$ , Costs  $A_2$ , Cost B and Cost C per hectare of pumpkin were Rs.3457.39, Rs.4439.65, Rs.4984.89 and Rs.7898.16 respectively. For ashgourd the costs were Rs.3075.75, Rs.4072.80, Rs.4603.25 and Rs.7324.97 in the same order. Cultivation of pumpkin resulted in 12 per cent (Rs.381.64) more of cost  $A_1$ , nine per cent (366.85) more of cost  $A_2$ , eight per cent (Rs.381.24) more of cost B and again eight per cent (Rs.578.19) more of cost C than ashgourd.

The largest single item of input was human labour. For pumpkin this items constituted 57.80 per cent (Rs.4565.35) of the total cost and for ashgourd this was 57.60 per cent (Rs.4219.50). Among the labour cost 63.81 per cent (Rs.2913.27) constituted family labour and 36.19 per cent (Rs.1652.08)

formed the hired labour in the case of pumpkin. In the case of ashgourd 64.50 per cent (Rs.2721.72) was accounted by family labour and 35.5 per cent (Rs.1497.70) by hired labour out of the labour cost. Actual days of labour employed was 215 mandays per hectare for pumpkin and 200 mandays per hectare for ashgourd. The second major item included was the rental value of the land (both paid and imputed). This was amounted to Rs.1500/- per hectare in both the cases and constituted 19 per cent for pumpkin and 20.48 per cent for ashgourd. The third item of input in terms of relative importance in total cost was manures and fertilizers. Manures and fertilizers constituted 16.19 per cent (Rs.1279.07) and 14.91 per cent (Rs.1092.01) respectively for pumpkin and ashgourd. Pesticide formed the next important item. This constituted 4.36 per cent (Rs.344.04) for pumpkin and 4.27 per cent (Rs.312.90) for ashgourd. All the other items individually constituted less than one per cent of the total cost for both the crops.

In both the cases irrigation was the most important operation in terms of cost. It accounted for 37.64 per cent of the total cost (Rs.2973.23) for pumpkin and 37.58 per cent (Rs.2752.79) for ashgourd. The next major item in pumpkin was manures and manuring which accounted for 21.94 per cent (Rs.1732.99). But for ashgourd the second largest item was the rental value of the land (both owned and hired). It

constituted 20.48 per cent (Rs.1500.00). The third largest item was rental value in the case of pumpkin and manures and manuring for ashgourd. Rental value for pumpkin constituted 19 per cent (Rs.1500.00) and manures and manuring for ashgourd constituted 20.21 per cent (Rs.1480.67). Plant protection was the fourth major item of operation. Expenditure on this item formed 7.51 per cent of the total cost in both the cases (Rs.593.23 for pumpkin and Rs.549.87 for ashgourd). After cultivation operation was the next important factor which constituted 4.39 per cent (Rs.346.60) for pumpkin and 4.52 per cent (Rs.330.99) for ashgourd. All the other items individually constituted less than four per cent of the total cost for both the crops.

The output of pumpkin was 14227.61 kg per hectare and ashgourd 17201.03 kg per hectare. In terms of economic units, per hectare value of the products were Rs.9796.66 and Rs. Rs.11362.13 for pumpkin and ashgourd respectively. Output of ashgourd was 21 per cent (2973.42 kg per hectare) more than that of pumpkin. Value per hectare was also high in the case of ashgourd. It was 16 per cent (Rs.1565.47 per hectare) more than pumpkin.

Costs of production per kilogram of pumpkin based on Cost A<sub>1</sub>, Cost A<sub>2</sub>, Cost B and Cost C were Re.0.21, Re.0.31, Re.0.35 and Re.0.56 respectively. For ashgourd they were

Re.0.17, Re.0.24, Re.0.27 and Re.0.43 in the same order.

Cultivation of pumpkin involved 33 per cent (Re.0.06) more of cost  $A_1$ , 29 per cent (Re.0.07) more of cost  $A_2$ , 30 per cent (Re.0.08) more of cost B, 30 per cent (Re.0.13) more of cost C than ashgourd to produce one kilogram of the product.

Benefit-cost ratios based on Cost  $A_1$ , Cost  $A_2$ , Cost B and Cost C were 2.83, 2.21, 1.97 and 1.24 for pumpkin and 3.69, 2.79, 2.47, and 1.55 for ashgourd respectively. In all the cases benefit-cost ratios for ashgourd were high. Cost  $A_1$  of ashgourd gave more than 300 per cent return, cost  $A_1$  and Cost  $A_2$  of pumpkin and Cost  $A_2$  and cost B of ashgourd gave more than 200 per cent return while cost B and Cost C of pumpkin and cost C of ashgourd returned more than 100 per cent.

Farm business income for pumpkin was Rs.6339.27 and for ashgourd Rs.8286.38. It was 31 per cent (Rs.1947.11 per hectare) more for ashgourd than pumpkin. Owned farm business incomes were Rs.5367.01 and Rs.7289.33 for pumpkin and ashgourd respectively. Owned farm business income of ashgourd was 36 per cent (Rs.1932.32 per hectare) more than pumpkin. Family labour income for the production of pumpkin and ashgourd were Rs.4811.17 and Rs.6758.88 respectively. It was 40 per cent (1947.71 per hectare) more for ashgourd than pumpkin. Net income for pumpkin was Re.1898.50 and for ashgourd Rs.4037.16. It was more for ashgourd than pumpkin

by 113 per cent (Rs.2138.66 per hectare). Farm investment incomes for pumpkin and ashgourd were Rs.2443.74 and Rs.4567.61 respectively. This was found to be 87 per cent (Rs.212.97 per hectare) more for ashgourd than pumpkin. Returns over variable costs were Rs.3566.01 and Rs.5696.73 for pumpkin and ashgourd, respectively. Return over variable costs of ashgourd was 60 per cent (Rs.2130.72 per hectare) more than pumpkin. So cultivation of ashgourd was more profitable than pumpkin.

Area in cents, human labour days, cost of manures and fertilizers, cost of seeds, cost of pesticides, number of irrigation were the independent variables considered for regression analysis. Fifty-nine per cent of variation in pumpkin production and 54 per cent variation in ashgourd production could be explained by the fitted regression function. None of the partial regression coefficients except area was found to be significant for the two crops inspite of a highly significant F value. This could be due to the presence of a highly multicollinearity in the data. Regression of yield on the six inputs on a per hectare basis was also attempted. But F ratios for the functions and  $R^2$  values were not significant.

Transportation cost per kilogram was eight paise for Manjeri block and 6 paise for Malappuram block and averaged seven paise for the district.

About 50 per cent of the total sample farmers sold their vegetables exclusively to wholesalers, 12.50 per cent exclusively to retailers, 6.25 per cent to trader-cum-commission agents, another 12.50 per cent to both wholesalers and retailers and 8.33 per cent to both retailers and consumers. About 71 per cent of the sample farmers of Manjeri and 25.00 per cent of the sample farmers of Malappuram district sold their vegetables exclusively to wholesalers. None of the farmers at Manjeri sold their products to commission agents.

In the case of pumpkin out of Rs.1.28 per kg paid by the consumer only Re.0.64 (50 per cent) went to the producer and in the case of ashgourd it was still less, i.e., only Re.0.63 per kg (53.85 per cent) out of Rs.1.17 per kg paid by the consumer. The wholesalers margin was Re.0.34 per kilogram (26.56 per cent) for pumpkin and Re.0.23 per kilogram (19.66 per cent) for ashgourd. The retailers margin was Re.0.19 (14.85 per cent) and Re.0.20 (17.10 per cent) for pumpkin and ashgourd respectively. It was evident that the middleman snatched a substantial share from consumers' rupee. The extent of price spread was different for the two crops. The price spread was found to be high for pumpkin in both the blocks.

Attack of pest and disease and high input costs were the main problems reported by the farmers. Farmers also stated that they experience serious transportation problems in marketing their products.

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# Appendices

**APPENDIX I**

**COPY OF THE SCHEDULE**

**PRODUCTION AND MARKETING OF VEGETABLES IN  
MALAPPURAM DISTRICT**

**VEGETABLE PRODUCER**

**Date of interview**

-----

**IDENTIFICATION**

1. Name of the village:
2. Name of the Panchayat:
3. Name of the block:
4. Name of the farmer:
5. Address of the farmer:

-----

**Code No:**

**FAMILY SIZE AND COMPOSITION**

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Name	Sex	Age	Literacy	Occupation			Income		
				Main	Sub	Others	Main	Sub	Others

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**FIXED CAPITAL: Land**

S.No.	Particulars	Wet	Garden	Dry	Others
1.i.	Area owned				
ii.	Area leased in				
iii.	Area leased out				
iv.	Operational area				
2.i.	Value of the own land				
ii.	Rental value of the leased out land				
iii.	Rental value of the leased in land				
3.i.	Land tax				
ii.	Water tax				
iii.	Other charges				

**FIXED CAPITAL: Buildings and Other Structures**

S.No.	Particulars	No	Value in Rs.	Expected life	Mainte- nance
1	Farm house				
2	Implement Shed				
3	Storage godown				
4	Irrigation Struct.				
i.	Open well				
ii.	Tube well				
iii	U.G. Pipe line				
iv	Others (Specify)				
5	Cattle Shed				
6	Others (Specify)				

**Fixed capital : Implements and Machineries**

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S.No.	Particulars	No.	Value in Rs.	Expected life	Maintenance cost
-------	-------------	-----	-----------------	------------------	---------------------

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**IMPLEMENTS:**

1	Ploughs : Wooden Iron				
2	Sprayers				
3	Dusters				
4	Mammutties				
5	Crow bars				
6	Sickles				
7	Spades				
8	Pick Axe				
9	Carts				
10	Others				

**MACHINERIES:**

1	Electric Motor and Pumpset				
2	Oil Engine				
3	Tractor				
4	Power Sprayer				
5	Others				

**TEMPORARY DEAD STOCK:**

1	Coir ropes				
2	Baskets				
3	Bamboo Sticks				
4	Bags				
5	Muram				
6	Others				

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**CHOPPING PATTERN:**

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Type of crop	Season	Area	No. of fragments
Seasonal			
Annual			
Perennial			

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## MARKETING ASPECTS AT THE PRODUCERS LEVEL

1. Total quantity produced:
2. Quantity retained for home consumption
3. Quantity spoiled
  - a. During physical handling
  - b. Due to perishability
4. Net quantity marketed
5. Method of sale:
  - a. Pre-harvest contract
  - b. Commission agent
  - c. Village merchant
  - d. Direct sale
  - e. to whole sale market
  - f. Others. specify
6. Total price received  
Price per unit
7. Cost of marketing:
  - A. Cost incurred by the farmer from farm to market.
    - a. Preparation for market
    - b. Loading and unloading
    - c. Transport
      - i. Mode of transport
      - ii. Distance from the market
      - iii. Transport per unit per trip
      - iv. Total charges
    - d. Cleaning and grading charges
    - e. Packaging charges
    - f. Weighing charges
  - B. Cost incurred by the farmer at the market:
    - a. Gate fee
    - b. Stall fee
    - c. Commission
    - d. Brokerage
    - e. Taxes

APPENDIX II

INTERMEDIARIES

1. Type of Intermediary
2. Name and address:
3. Variety dealing with:
4. Fixed Investment:

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S.No.	Particulars	Present value in Rs.	Deprecia- tion remarks
1	Building value/rent paid per month		
2	Furniture used		
3	Storage structure (if any)		
4	Processing units (if any)		
5	Permanent staff		
6	Machineries (if any)		
7	Vehicles (owned-hired if any)		
8	Other items		

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5. Working expenditure:

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S.No.	Particulars	Expenditure	Remarks
1	Labour charges: a. Wages paid b. Perquisites if any		
2	Electricity charges/month		
3	Water charges/month		
4	Communication charges/month i. Trunk calls ii. Local calls iii. Travelling expenses iv. Postage		
5	Taxes paid: i. Sales tax ii. Income tax iii. Local cess iv. Professional tax v. Other local taxes		
6	Packing materials and concluding processing materials)		
7	Incidentals		

---

Volume of business per year (monthwise)

Months	Variety	Total purchases			Total sales		
		Quantity in kgs	Price/ unit in Rs	Value in Rs	Quantity in kgs	Price/ unit in Rs	Value
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							

# Production and Marketing of Vegetables in Malappuram District

BY

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ABSTRACT OF THESIS

submitted in partial fulfilment of the  
requirement for the degree

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## ABSTRACT

The present investigation on the production and marketing of vegetables (pumpkin and ashgourd) in Malappuram district was undertaken during the year 1981-82 to estimate the cost of cultivation, cost of production, benefit-cost ratio, price spread and to identify the marketing channels. The study was also aimed at identifying the problems of the farmers.

Stratified multistage random sampling was adopted for the study.

Costs  $A_1$ , Costs  $A_2$ , Cost B and Cost C per hectare were Rs.3457.39, Rs.4439.65, Rs.4984.49 and Rs.7898.16 respectively for pumpkin and Rs.3075.75, Rs.4072.80, Rs.4603.25 and Rs.7324.97 respectively for ashgourd. The largest single item of input was human labour for pumpkin and ashgourd. In both the cases in terms of costs of operation irrigation was the most important item.

The output of pumpkin was 14227.61 kg per hectare and it was 17201.03 kg per hectare for ashgourd. At the prices at which farmers sold these products, gross value of output was Rs.9796.66 for pumpkin and Rs.11362.13 for ashgourd, respectively.

Cost of production per kilogram of pumpkin based on

Cost A<sub>1</sub>, Cost A<sub>2</sub>, Cost B and Cost C were Re.0.21, Re.0.31, Re.0.35 and Re.0.56 respectively. For ashgourd they were Re.0.17, Re.0.24, Re.0.27 and Re.0.43 in the same order.

Benefit-cost ratios based on Cost A<sub>1</sub>, Cost A<sub>2</sub>, Cost B and Cost C were 2.83, 2.21, 1.97 and 1.24 for pumpkin and 3.69, 2.79, 2.47 and 1.55 for ashgourd respectively.

Farm business income for pumpkin was Rs.6339.27 per hectare and for ashgourd it was Rs.8286.38. Owned farm business incomes were Rs.5367.01 and Rs.7289.33 for pumpkin and ashgourd respectively. Family labour income for the production of pumpkin and ashgourd were Rs.4812.17 and Rs.6758.88 respectively. Net income for pumpkin was Rs.1898.50 and for ashgourd Rs.4037.16. Farm investment income for pumpkin and ashgourd were Rs.2443.74 and Rs.4567.61 respectively. Return over variable cost of ashgourd were Rs.3566.01 and Rs.5696.73 respectively.

The predominant marketing channel was producer-wholesaler-retailer-consumer. About 50 per cent of the consumers' rupees went to the middlemen in the marketing of both of pumpkin and ashgourd and hence the price spread was high. It was also found that the profit margin of intermediaries were very high, indicative of marketing inefficiency.