

THE GINGER ECONOMY OF KERALA

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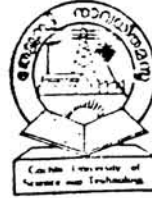
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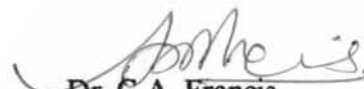
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CERTIFICATE

Certified that the thesis **The Ginger Economy of Kerala** is the record of bonafide research carried out by Smt. Leena George under my guidance. The thesis is worth submitting for the degree of Doctor of Philosophy in Social Sciences.




Dr. C.A. Francis,
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Chapter One
Introduction

Chapter One

Introduction

Ginger, the rhizome or the underground modified stem of the plant 'Zingiber Officinale Roscoe' of 'Zingiberaceae' family, is an important commercial spice crop grown from very ancient times in India. It is one of the earliest oriental spices known to Europe and is still in large demand. In U.S.A., Canada, U.K. and other western countries, ginger is widely used in baking industry, meat processing industry and soft drink manufacturing industry besides cooking. Ginger, preserved in brine is most popular in Japan. Drinking ginger coffee is a deep rooted social custom in many West Asian countries. Apart from the encouraging prospects of ginger demand, the demand for its products like ginger oil and oleoresin is building up day by day.

Kerala has a number of processing units producing ginger oil and oleoresin. A large portion of these products is used for export and the remaining portion goes to beverage and pharmaceutical industries.

1.1. A Brief History of Ginger

Ginger has been used as a spice and medicine in India and China since ancient times. Its place of origin has not been established with conformity but

Indo-China region is supposed to be the home of this unique spice. Excavations in the Indus Valley reveal that herbs and spices had been used even before about 1000 B.C. Various spices such as cardamom, ginger, black pepper and mustard seed were included in the ancient herbal medicines, prescribed to remove fat and to cure urinary complaints, piles and jaundice (Rosengarten 24). The antiquity of its use in India is suggested by the fact that the living plant and dried rhizome are known by different names.

According to the historical records of Hoffman, ginger was certainly known to and highly esteemed by, the ancient Greeks and Romans who obtained the spices from Arabian traders (Gunther 106). Greeks and Romans considered it as an Arabian product because they got it via Red Sea. Some historians have recorded that the Prophet Mohammed had once relished a piece of sweet meat flavoured with ginger and had explained that the gift came from India (Ummer 36). The name Zingiber seems to be derived from Sanskrit 'Sanjabil' through the Arabic 'Zanzabil' (Ridely 391).

Rosengarten records that ginger was mentioned by the Chinese philosopher Confucius (551-479 B.C.) in his *Analects*. The Greek physician and author Discorides frequently referred to ginger in *De Materia Medica*, and described its warming effect on the stomach and its efficiency as an aid to digestion and an antidote to poisons (Rosengarten 257). Ginger was mentioned in the Koran. Reference to its alleged aphrodisiac properties is made in the *Thousand and One Nights* (Purseglove et al. 448). Marco Polo during his travels, 1271-97, saw the plant in China, Sumatra and Malabar. The ginger

plant was described by John of Montecorvino in 1292 and by the traveler Nicolas Conti (Purseglove et al. 448).

In the second century A.D., ginger was included in the list of imports to Alexandria from Red Sea that were subject to Roman customs taxes (Rosengarten 257). Ginger was introduced to Germany and France in the ninth century and to England in the 10th century. The spice was well known in England before the Norman conquest - it is referred to in eleventh century Anglo Saxon leech books. During the fourth century it was, after pepper, the most common spice and is said to have cost about 1 shilling 7 pence a pound, just about the same price paid for a sheep (Rosengarten 258).

It was among the first of the oriental spices to be known in Europe, where it was prominent early in the Middle Ages. For many years, it was an important drug. It was the principal ingredient of a remedy for the plague, which was much used in England during the regime of Henry VIII (Hill 439).

It has been told that around 2400 B.C. a baker on the Isle of Rhodes near Greece, prepared the first ginger bread. Shortly thereafter, the recipe found its way to Egypt where the Egyptians savoured its excellent flavor and served it on ceremonial occasions (Farrell 121). Later, fancy ginger bread became popular and was a confection of Queen Elizabeth I and her court (Purseglove et al. 448). Cheap ginger bread was also available to common man in England during Shakespeare's time. In *Love's Labour's Lost*, Act V, Scene I, Costard informs Moth, "An I had but one penny in the world, thou shouldst have it to buy ginger bread" (Rosengarten 259).

As the rhizomes of ginger are very easily transported in a living state for considerable distances, it is not to be wondered at that the plant was introduced into America very soon after the first discovery of the New World, and before any other oriental spices (Ridely 392).

The Arabs took the plant from India to East Africa in the 13th Century. Zanzibar on the East Coast of Africa was the place where ginger obtained from the East was stocked for export to the Western countries (Mahindru 83). By the 14th century, it was second only to black pepper in popularity (Tainter and Grenis 83). The Portuguese took it to West Indies and to Mexico soon after the conquest. The Spaniards also introduced the crop into Jamaica and as early as 1547 the spice was exported from Jamaica to Spain (Gunther 107). Jamaica has continued exports of the crop up to the present day and is famous for the quality of its product. Ginger has been introduced into most tropical countries, but exports are limited to a comparative few.

1.2. Products and Uses

Ginger has numerous applications in the food, beverage and pharmaceutical industries. There are two primary products of the ginger rhizome, fresh ginger and dried ginger. Fresh ginger is consumed as a vegetable. The dried products are the major form in which ginger is internationally traded. Dried ginger is used directly as a spice and also for the manufacture of products like ginger powder, ginger oil and ginger oleoresin.

1.2.1. Ginger Powder

Ginger powder is made by grinding the dry ginger to a mesh size of 50-60. The use of ginger powder in pure form is limited but it is considered as an important ingredient of curry powder. It is also used in ginger beer, wine and baked goods.

1.2.2. Ginger Oil

The characteristic pleasant aromatic odour of the ginger is due to the presence of essential oil. Ginger oil is obtained by steam distillation of dry ginger. Formerly, the oil was produced exclusively in U.S.A. and Europe, but latterly commercial production has been undertaken by some of the spice producing countries, notably in China, India, Australia, Jamaica and Indonesia from their own forms of dried ginger. The essential oil obtained from ginger is greenish and yellowish in colour and possesses the characteristic odour and aroma of the produce. The oil is extensively used in the food and perfume industries.

1.2.3. Ginger Oleoresin

The spice flavour value of ginger is due to two factors, viz., the volatile

oil contributing the aroma and the resinous nonvolatile portion responsible for the pungency. Oleoresin is the total extract which contains both volatile oil and pungent extractions. This is prepared by extraction of powdered dry ginger with suitable solvents like alcohol, acetone or any other efficient solvent. The solvent is then distilled off to get the highly coloured concentrate.

Ginger oleoresin is a dark brown viscous liquid with a volatile oil content which can vary from 15 to 35%. The amount of essential oil is an important factor in evaluation of oleoresin. In the trade, it is known as 'gingerin.' Ginger oleoresin is manufactured on a commercial scale in India and abroad and is in great demand in various food industries. The oleoresin is used in many types of baked goods, sauces, sweets, soft drinks and alcoholic beverages.

1.2.4. Preserved Ginger

The major types of preserved ginger are ginger in brine, preserved in syrup and crystallized ginger and ginger candy. The ginger is used for above purpose should be less fibrous type, mild in pungency and harvested at a tender stage. Ginger preserve and ginger candy are favourite items in many countries in West as well as in Australia and Japan. In India, ginger murabba is a choice of many, especially in the northern parts of the country. However, the quantity of ginger used for preservation is very low as compared to the country's production.

1.2.5 Other Uses

Ginger is widely used for flavouring a great variety of foods. In Western countries, ginger is used for culinary purposes. In the West Asian countries like Saudi Arabia, ginger is used mainly in the preparation of ginger coffee. Again, in U.S.A., U.K. and Canada, ginger is widely used in meat processing industries. A number of alcoholic beverages are prepared from ginger, such as ginger brandy, ginger wine, ginger beer and ginger ale.

There is a saying that 'No kashayam without dry ginger.' In India, ginger is largely used in ayurvedic medicine preparation. Ginger is extensively used in winter for curing minor ailments like cough and cold. It is also prescribed as an adjunct of many tonic and stimulating remedies.

Veterinary uses of ginger are as stimulant and carminative, in indigestion of horses and cattle and in spasmodic colic of horses.

1.3. Ginger in India

India, the largest producer of ginger in the world, accounts for nearly a half of the world's output. The area and production for the year 1993-94 were 59,890 hectares and 1,99,390 tonnes. Other important producers are China, Jamaica, Indonesia and Nigeria.

Kerala is the leading producing state in the country accounting for about 25 % of area followed by Orissa, West Bengal and Meghalaya. The remaining areas are scattered over Himachal Pradesh and North Eastern states. The state-wise area and production of ginger in India in 1993-94 are shown in Table 1.1.

Table 1.1

State-wise Area and Production of Ginger in India (1993-94)*

States	Area (Hectares)	Production (Tonnes)
Andhra Pradesh	1,870	6,040
Arunachal Pradesh	2,500	16,500
Bihar	750	1,090
Gujarat	420	320
Haryana	50	60
Himachal Pradesh	1,460	470
Karnataka	2,040	2,690
Kerala	5,330	50,360
Madhya Pradesh	2,760	3,960

(Cont'd...)

States	Area (Hectares)	Production (Tonnes)
Maharashtra	1,060	1,020
Manipur	860	1,420
Meghalaya	6,640	40,800
Mizoram	940	7,910
Nagaland	20	30
Orissa	9,590	14,280
Rajasthan	190	690
Sikkim	3,540	19,140
Tamil Nadu	620	12,290
Tripura	980	1,870
Uttar Pradesh	720	3,720
West Bengal	7,180	1,3600
Andaman & Nicobar Islands	370	1,130
All India	59,890	1,99,390

* Provisional

Source : Directorate of Cocoa, Arecanut and Spices, Calicut.

Ginger is a traditional item of the foreign trade of India, 'the Home of Spices.' The export of ginger during 1995-96 was 18,190 tonnes valued at Rs.38.29 crores compared to 5,577 tonnes valued at Rs 0.83 crores in 1960-61. Indian ginger is popular in importing countries. The odour of Indian ginger is aromatic, the taste is strongly aromatic and pungent (Parry 46). Gingers produced in Kerala are considered to be the best in the country due to their superior qualities. Calicut and Cochin gingers have good demand in the world market. About 70% of ginger exported from India is produced in Kerala. The export potential of gingers produced in other states is very limited because of their higher fibre and moisture content.

The important properties of ginger are primarily its aroma and secondarily its pungency. The volatile oil present in ginger imparts a special aroma to it, while its pungent taste is due to the presence of a resin, found dissolved in the oil (Das 349) A number of factors have a significant influence on the quality of ginger. The appearance, the content of volatile oil and fibre, the pungency level and a subjective assessment of aroma and flavour are important in the quality evaluation of dry ginger. The relative importance of these quality aspects is dependent upon the end use of the spice. The decrease in fibre content increase the quality of dry ginger, apart from its use as a spice in food (Nair 78). For domestic culinary consumption, appearance is the primary quality determinant. In case of industrial extraction purposes, the aroma and flavour character, the content of volatile oil and the pungency level are the principal evaluation factors.

The district-wise area and production of ginger in Kerala during 1993-94 (Table 1.2) shows that Wynad district which is the leading producer accounts for about 50% of state output and about 39% of area. Ernakulam ranks second with a share of about 13% of state output and about 15% of area. Wynad also stands first in maintaining higher level of productivity.

Table 1.2

District wise Area and Production of Ginger in Kerala (1993-94)

District	Area (Hectares)	Production (Tonnes)
Trivandrum	37	111
Quilon	403	1,478
Pathanamthitta	632	1,514
Alleppey	86	235
Kottayam	393	1,069
Idukki	1,425	4,306
Ernakulam	1,676	4,789
Trichur	109	181
Palaghat	908	2,538

(Cont'd...)

District	Area (Hectares)	Production (Tonnes)
Malappuram	227	444
Kozhikode	209	449
Wynad	4,350	18,653
Cannanore	469	1,541
Kasargode	201	368
State	11,125	37,676

Source: Directorate of Economics and Statistics, Trivandrum.

1.4.Statement of the Problem

Ginger is one of the prominent crops in the spice economy of India. India is one of the largest producer and a major exporter of ginger in the world. Though grown all-over India, the finest quality ginger comes from Kerala. The produce of Kerala is very much in demand in foreign countries because it is considered to be the best in quality, is bold and is renowned for its characteristic aroma and pungency. Since Kerala accounts for about 25% of pro-

duction and about 70% of the export, the export of ginger from India depends on economic factors of Kerala as well. Apart from its export potential, it is a labour intensive crop and primarily an important crop of a large number of small and marginal farmers in Kerala. The share of ginger in the state income is about 0.12% during 1994-95. The ginger cultivation in Kerala during 1994-95, i.e., 14,018 hectares of land generates employment equivalent to about 17,634,644 mandays. The ginger economy of Kerala is facing several problems related to cultivation, marketing and export. Hence, it will be useful to analyse the problems and prospects of ginger cultivation in Kerala.

The major problems posed in the study are:

(i) What is the nature and extent of farmer's response to price and other related variables?

(ii) Whether the cost structure and profitability of ginger cultivation are the same in major ginger producing districts of Kerala?

(iii) How far is ginger marketing efficient in giving a reasonable share of terminal market price to farmers?

(iv) What are the determinants and problems of ginger export from India?

The present study is designed to analyse data on ginger production, marketing and export with particular reference to Kerala to find answer to the above questions.

1.5 Objectives of the Study

The major objectives of the study are:

(i) To study the growth and trends in area, production and productivity of ginger in Kerala and compare it with other major producing states of India.

(ii) To examine the impact of price and other related variables on the acreage response of ginger.

(iii) To estimate the cost and profitability of ginger cultivation in major producing districts of Kerala.

(iv) To determine the relationship between domestic and international prices of ginger.

(v) To examine the marketing and price spread of ginger and compare it with the price spread of substitute crops.

(vi) To investigate the factors determining the ginger export from India.

(vii) To explore the problems of ginger exports from India.

1.6. Methodology

Both primary and secondary data were used for the study. Trends in area, production and productivity of ginger in India, Kerala, other major producing states and major producing districts of Kerala, growth, composition and direction of India's ginger export, determinants of export, instability of ginger export, movements of domestic and international prices have been studied with

secondary data. The sources of secondary data were Spices Board, Kochi, Department of Economics and Statistics, Trivandrum. Directorate of Cocoa, Arecanut and Spices, Calicut, and published literature.

Cost of cultivation and profitability of ginger in major producing districts of Kerala, price spread of ginger and its substitute crops, problems of ginger cultivation and problems of ginger export have been studied with primary data. The main sources of primary data were farmers, traders and exporters. A sample survey was conducted to elicit information from the above sources.

The two major ginger producing districts of Kerala, viz., Wynad and Ernakulam which together account for about 54% of area under ginger in Kerala were selected for a detailed study. From these two districts, Sultans Battery and Kothamangalam were selected as the major ginger producing taluk. Then, three panchayats which have maximum area under ginger from each taluk were chosen. Thus Meenangadi, Ambalavayal and Pulpalli panchayats from Sultans Battery taluk and Kavalangad, Pothaniced and Paingottoor from Kothamangalam taluk were selected. Finally, ginger farmers were selected. Ginger farmers were defined as those who cultivate ginger for commercial purpose.

For the selection of farmers in each panchayat, a list of ginger farmers was prepared with the help of records available with local Krishi Bhavans. To have adequate representation of all groups, the holdings of the selected area were classified into three strata, ie., small (less than 0.4 hectares) medium (0.4 to 2 hectares) and large (above 2 hectares). From each panchayat a random

sample of 30 farmers were selected. The number of farmers selected from each strata was proportional to the total number of farmers in each strata. Thus, the total number of sample farmers for each district arrived at was 90 (3 x30) making the total sample size from two districts as 180. Of the 180 farmers interviewed, 59 were small farmers, 97 farmers having medium scale ginger holdings and 24 farmers having large scale holdings.

Besides, 2 village merchants from each selected village, 6 wholesalers and commission agents from each selected districts and 8 ginger exporters were randomly selected to have information on marketing of ginger.

To collect details in respect cost of cultivation, profitability, problems of cultivation and marketing, ginger farmers were directly contacted by the researcher with pretested schedules. Personal interviews were conducted with village merchants, wholesalers and commission agents to get details of mode of marketing, marketing cost, marketing margin, various trade practices in the study area. The researcher also contacted ginger exporters to get first hand information about problems and prospects of ginger export from India. In addition to this, officials of Spices Board, Kerala State Cooperative Marketing Federation, NAFED and Cooperative Marketing Societies were contacted to gather their views on ginger production and marketing.

The primary data collection was done during the year 1995- keeping the reference period of study as 1994-95.

1.6.1. Data Analysis

Data collected from various sources were analysed by means of statistical techniques such as averages, percentages, compound growth rate, regression and correlation.

Compound growth rates were worked out by fitting exponential function $Y = AB^t$ to the cropped acreage, production and productivity data for India, Kerala, other major producing states, Wynad and Ernakulam districts. Compound growth rates were also estimated for the export of ginger and spices from India. The exponential function was converted into the linear form using logarithms. That is:

$$\text{Log } Y = \text{Log } A + t \text{ Log } B$$

$$y = a + bt + e$$

Where log Y is of the log of dependent variable (acreage, production, productivity or export) and 't' is independent time variable.

Nerlovian model was used to analyse acreage response of ginger farmers. Nerlove defined a long run acreage response function in the following manner:

$$A_t = a_0 + a_1 p_{t-1} + V_t$$

Where A_t = desired long run acreage

P_{t-1} = lagged price, and

V_t = error term

a_0 and a_1 are the intercept and slope of the function.

Cost of cultivation of ginger in Wynad and Ernakulam districts were worked out to find the comparable advantage a region enjoys in regard to the yield and net profit. For determining cost of cultivation, a method similar to one followed by the 'Farm Management Studies' was adopted. Cost components were divided into three categories, viz., Cost A, Cost B and Cost C.

All direct expenses incurred in the production of output in cash and kind were included in Cost 'A'. Cost 'B' was defined as Cost 'A' plus interest on fixed capital investment plus rental value of land. Cost 'C' was obtained by adding imputed value of family labour to cost 'B.'

In order to study the determinants of export of ginger and their relative importance the following linear function was estimated.

$$EIG = a_0 + a_1 PIN/PC + a_2 PI/PD + a_3 Q_t$$

Where EIG = Volume of ginger export from India.

PIN/PC = Ratio of Indian ginger price to Chinese price in international market.

PI/PD = Ratio of international price of Indian ginger to domestic price, and

Q_t = the output of ginger in India in the year 't'

In order to measure the instability of ginger export Mac Bean index was used. The index is defined as:

$$M B I = \frac{100}{n-4} \sum_{t=3}^{n-2} \frac{|X_t - MA_t|}{MA_t}$$

Where MA_t is a five year moving average of the X_t values centered on year 't' and 'n' is the number of observations.

1.7. Limitations of the study

The important limitations of the study were the following:

(i) Data on cultivation practices, cost of cultivation profitability, marketing and problems of ginger cultivation were collected from samples from only two districts for this study.

(ii) Literature available on the topic was limited.

(iii) Most of the farmers in the selected area didn't have the habit of keeping accounts. So information given by them might be from their memory and not on the basis of accounts.

1.8. Scheme of the Report

The study is presented in nine chapters. The introductory chapter which in the beginning, provides a brief description of ginger and ginger cultivation in

India and Kerala, presents the research problem and the objectives, methodology, and limitations of the study and the structure of the thesis. A brief survey of the previous studies relating to the topic is presented in the second chapter. The third chapter analyses the trends in area, production and productivity of ginger. The fourth chapter examines the acreage response of ginger farmers to price and other related variables. The next chapter deals with the cultivation practices, cost and profitability of ginger cultivation in major ginger producing districts of Kerala. Marketing and price spread of ginger are analysed in the sixth chapter. The seventh chapter examines the trends, direction and the factors determining ginger export from India. Problems faced by the ginger cultivators is the theme of the eighth chapter. The last chapter summarises the main findings and provides specific recommendations for the improvement of production, marketing and export of ginger.

Chapter Two
Review of Literature

Chapter Two

Review of Literature

The literature available on ginger includes papers, published and unpublished, and a few reports by individuals, institutions, and committees or commissions. Since the literature on ginger is scanty studies on other major spices and similar crops are also scanned to get an insight into certain aspects of this study.

Gunther identifies the important ginger producing region as Jamaica, South India, West Africa, Southern China and Japan. He is of the opinion that Jamaica produces the finest grade possessing the most delicate aroma and flavour. The Cochin quality exhibits a characteristic lemon like by-note, for which reason some experts prefer the Cochin ginger even to that from Jamaica. West African ginger is usually considered to rank third of all ginger grades, but it gives the highest yield of essential oil.

The *Report of the Spice Enquiry Committee* reveals that the village merchants who deal in ginger realise about 80% of the value of the market price. The produce changes hands at least three or four times and with each change the margin of the producer is reduced. The number of links in the chain could be reduced if the sale is attempted by the producers themselves on a

cooperative basis.

Rosengarten, a well known writer on spices, examines the history of spices. He finds that a number of spices have long been known in India even before 1000 B.C. Ginger is one of the first oriental spices known to Europe, having been obtained by the Greeks and Romans from Arab traders. During the Middle Ages ginger was usually delivered to Europe from the Far East in the form of living rhizomes, so that it is logical that ginger was the first of the oriental spices to be introduced in the New World.

Purthi identifies seven different types of ginger, namely, (i) Jamaican ginger, (ii) Indian ginger, (iii) West African or Nigerian ginger, (iv) Sierra Leone ginger, (v) Japanese ginger, (vi) Rio-de-janeiro ginger and (vii) Chinese ginger. The composition of ginger varies with type or variety, region, agro-climatic conditions, method of curing, drying, packaging and storage.

It is stated in *Wealth of India* that the crop is grown either pure or as an intercrop with coconut, young coffee and oranges. It is cultivated on highlands as a regular crop once in three years.

Das highlights the broad aspects of marketing as supply, demand and price trend of ginger in India for the period 1970-71 to 1979-80. The year to year variation in the export figures are very much pronounced and no single exporting country is found to be free from the problem of fluctuating trends in ginger. The wholesale prices of Indian ginger being dependent upon world market, the period of high prices of ginger in Calicut and Cochin market obviously coincides with the peak period of export.

George and Velappan throw light on the trends in ginger production in India for the period 1968-69 to 1978-79. They find that ginger production has shown an increasing trend during this period. Till 1977-78 Kerala accounted for about 70% of the country's production. But with the development of ginger cultivation in Meghalaya, Kerala's share came down to about 40% in 1978-79.

Lakshmanchar observes the marketing channels of ginger in India. It has been estimated that more than 70% of the produce is assembled by the village merchants and the rest is sold by the producers directly to the wholesalers at the assembling centres through commission agents.

Sivaraman Nair explains the cultivation practices of ginger. The better time of planting is found to affect the yield of ginger much. The application of leaf mulch during planting and six weeks later using a total of 20 tonnes of green leaves per hectare resulted in 200% increase in yield over non-mulched crops.

Tewari et al. make an analytical study of the various aspects of ginger cultivation in Himachal Pradesh. The study is confined to Sirmaur district as it is the largest ginger producing district. They observe that decline in the area, production and productivity of this crop in the district is due to lack of technical know-how, lack of irrigation facilities, non-availability of disease free seed material and weak financial condition. They also find that production efficiency is the highest on medium farms followed by small and marginal farms.

Devakaran is of the opinion that the price obtained for the produce is the deciding factor for planting in the next season. In International market

Indian ginger is facing stiff competition from China.

Thampi observes the competitive position of Indian ginger in world market. The cutting of price by the Chinese traders has resulted in principal buyers like the United States shifting to that country.

P. George examines the proposition that increased labour cost is responsible for reduced profitability of agriculture in Kerala. The findings reveal that the percentage increase in labour cost per hectare in 1984-85 over the 1980-81 cost is less than the percentage increase in output value per hectare during the same period for paddy, coconut, tapioca, arecanut and ginger.

Purseglove et al. examines history, cultivation practices, factors influencing quality and characteristics of ginger in different countries. Jamaican dried ginger is generally considered superior to those from other sources owing to its good appearance and to its delicate aroma and flavour. Nigerian dried ginger resembles Jamaican ginger in aroma and flavour but it is of a lower quality and it is in much demand for oil distillation and oleoresin extraction. Sierra Leone dried ginger bears more resemblance to the Indian spice than that from Jamaica. The quality of Australian dried ginger is generally considered to be intermediate between those of Jamaica and Sierra Leone. China is best known as a supplier of preserved ginger.

Bisen and Barholia suggest improved cultivation practices for ginger. The most suitable soil for ginger cultivation is sandy loams having good drainage and rich in humus content. Good tillage is essential for bumper harvest.

Paul observes that India, the 'home of spices' has established its su-

premacry in the manufacture and export of spices oils and oleoresins. Indian oleoresin industry is competing with manufactures in the developed countries.

Sharma, Oberoi and Moorti estimate the cost and returns of ginger production in Himachal Pradesh. They conducted the analysis for the two major vegetable growing blocks of Kangra district. They find that the gross return and net returns per hectare from ginger considerably decrease with the increase in the size of farms. It is due to better management and input use per hectare on small farms than large farms.

Andrews is of the opinion that the availability of exportable variety of ginger has always been a problem. On the other hand, domestic consumption is also rising because of its popularity in culinary preparations and increased applications in medicine, confectioneries and nonalcoholic beverages.

Balakrishnan reports that ginger from the states of North East faces a problem of high fibre content. This is mainly on account of the fact that this zone receives continuous rainfall and there is lack of enough sunshine which prevents the ginger from getting completely dried. This variety of ginger is normally not finding any markets either with in the country or outside both in the fresh form and dried form.

Khan in his study for the period 1970-71 to 1986-87 analyses the trends in area, production and productivity of ginger in the country as a whole and state-wise. Meghalaya stands first in maintaining higher level of productivity and the average yield per hectare is the lowest in Orissa.

Raveendran and Aiyaswamy attempt to study the factors influencing the

export of turmeric and to analyse the variation in the export prices of turmeric. They conclude that the flow of turmeric into the export market depends upon the export price relative to domestic price. The larger this ratio the more will be exported and vice-versa.

Narayana et al. highlight the trends and fluctuations in the price of small cardamom for the period 1971-72 to 1980-81 in India. They find that the cyclical fluctuations in prices are to a very large extent due to the very definite conditions of supply, viz., the increase in output through new planting and replanting becoming effective after a significant time lag. They relate the changes in output to upswing and downswing in prices.

Murthy and Naidu conduct the study in Guntur district of Andhra Pradesh with the objective to estimate the break-even output for marginal, small and large farms of turmeric. They find that the turmeric growers are able to cross the break-even point in the production.

Jeromi and Ramanatha throw light on the instability in world pepper market. Their study reveals that fluctuations in international price of pepper is mainly due to the change in the supply conditions rather than demand factor. The competitive power of pepper in the international market is closely related to the unit cost of production.

Oommen in his study of existing cropping pattern of Kerala, indicates the lines of some reallocation in order to optimise the agricultural income and output in the country. The climate, topography and soil structure of Kerala make it eminently suitable for the production of several commercial crops like

pepper, cardamom, coconut, arecanut, ginger and lemongrass. He is of the opinion that a specialisation strictly on the basis of comparative advantage would lead to the best utilisation of agricultural resources of the State.

Sankaranarayanan and Karunakaran outline the distinctive features of the agricultural sector of Kerala. In the first place, Kerala surpasses all the other states of India in respect of the high pressure of population on land. Secondly, on account of a large number of valuable cash crops, the agricultural sector is more commercialised in the state than elsewhere. Thirdly, food production has always fallen far short of Kerala's requirements.

Pillai brings out the two serious issues relating to agricultural development in Kerala. The first is the crisis faced by the two most important crops of the state, paddy and coconut particularly since 1975-76 manifested through the steep decline in the area under rice on one hand and steep decline in productivity of coconut on the other. The second and more disturbing is the tendency among the farmers for shifting the area under food crops in favour of cash or plantation crops.

Prakash also indicates that the area under paddy has fallen below the level that existed in 1961 and more than 80% of the food grain requirements of Kerala in 1991 was met through the imports from other parts of India. The major structural changes that have occurred in the Kerala economy are a decline in the sectoral share of the primary sector and an increase in the tertiary sector.

Sivanadan argues that Kerala has to devise its own strategy for agricul-

tural development keeping in view its topography, cropping pattern and relative advantages of the predominance of high value cash crops.

The supply response or acreage response of agricultural crop is one of the important procedural tools of crop production. A number of researchers assessed the farmer's response to price changes in allocating the area for different crops under different agro-climatic conditions in India. In most of the farmers' response studies Nerlovian model has been used either as such or with minor modification.

Beauer and Yamey analyse response to price of major agricultural commodities in Nigeria. Their findings show clearly the producers' awareness of economic opportunities and their readiness and eagerness to take advantage of them. Whenever higher prices are announced or even generally anticipated for the following season, producers and intermediaries withheld supplies in the closing months of the previous season, while supplies are rushed forward when a reduction is announced or anticipated.

Krishna in his study of Punjab region examines the widely prevalent notion that peasants in poor countries respond very little or negatively to price movements. He estimates short-run and long-run elasticities of supply of agricultural commodities derived from time series data. Nerlovian adjustment model is used for the study. The results reveal that relative price movements have systematic and significant marginal effects on crop patterns. He also finds that the rapidity of adjustments of the acreage of crops by the peasants in response to changing circumstances are not very different from that of the

United States.

H. Singh brings out the reasons for the introduction of groundnut crop in Madhya Pradesh. The information for the study is gathered through a field survey. Relative economic advantage is the most important factor leading to increase in groundnut acreage, availability of seed comes next in terms of importance.

The study of Falcon in West Pakistan provides a number of insights into farmer response to price changes in underdeveloped areas. The analysis reveals that while there have been significant short-run acreage shifts in response to changed relative prices there has been little responsiveness in the allocation of non-land factors. He is of the opinion that this limited price responsiveness does not imply automatically that farmers do not respond to economic incentives. For, they must be given opportunity to react, before they can be labeled as unresponsive. The policy conclusion is that unless there is a thorough going reforms in the services and facilities made available to farmers, higher prices alone can have little effect on increasing yield per acre.

Jakhade and Majumdar find that it is very difficult to isolate the impact of the price factor on production or acreage. In an economy like India where production is dependent to a considerable extent on climatic factors, response is reflected more directly on acreage. Their investigation shows that the area under jute is influenced by the relative prices of jute and rice. The price of rice may be considered largely to determine the opportunity cost of using land for jute production because normally rice production has to be forgone in order to

grow jute.

In an econometric study on acreage response to prices in respect of wheat in Uttar Pradesh during 1950-51 to 1962-63 Rao and Jaikrishna have employed twelve different price expectation models. Out of the various price expectation models, two models - one based on the average of prices in all preceding years and the other based on predicted price from the linear trend in the realised prices - are found to be consistently good.

M. George examines price structure and relative changes in acreage under different crops during 1952-53 to 1961-62. Six commodities, viz., paddy, coconut, sugarcane, tapioca, cashewnut and rubber which cover 73% of the cropped area of Kerala are selected. The study reveals that there is a close correspondence between changes in relative prices and acreages of competing crops. The policy conclusion is that it is necessary to stabilise the relative prices of food crops in terms of the other agricultural commodities produced in the State.

Devi and Rajagopalan in their study make an attempt to find out the relationship between the acreage under groundnut and the acreages under competing crops. The study is conducted in North Arcot district of Tamil Nadu. The year to year fluctuations in the acreage of these two has been worked out and it is seen that there is an inverse relationship between the two. They observe that the influence of relative prices on production is mainly through shifts in acreage between competing crops and not through changes in productivity. They also conclude that for accelerated growth in agricultural produc-

tion a price policy for an individual crop would not help, for, the prices of its competing crops do influence its production.

Mellor (*The Functions of Agricultural Prices in Economic Development*) discusses three main functions of agricultural prices. They are to serve (i) as an allocator of resources, signaling to both producers and consumers regarding the level of agricultural production and consumption (ii) as a distributor of income and (iii) as an influence on capital formation.

Kahlon and Lalitha have conducted the study in Punjab to gauge the impact of price changes on the farmers decision to allocate land to different crops. They find that the acreage allocation under wheat is affected considerably by wheat price. Since wheat and gram are competing crops, relatively higher wheat prices are bound to increase the acreage under wheat and decrease the area under gram.

Kaul and Sindu attempt to obtain the best estimates of the response of Punjab farmers to prices while making a decision about acreage allocation to major crops, viz., wheat, paddy, maize, groundnut and cotton. Harvest prices are taken for analysis and provides economic justification for such a selection. In Punjab 70 to 95% of the produce is sold in the market within two months after harvest. They are of the opinion that one of the important problems is to get an unbiased estimate of response of the farmers to risk elements involved in different crop enterprises. The study demonstrates that maize, groundnut and desi-cotton are relatively high risk crops where as paddy and wheat are relatively low risk crops mentioned in the descending order of risk.

Maji et al. are of the opinion that given a stable production technology, the acreage response functions may be used for projection of supply. But in times of changing technology the acreage elasticity estimates based upon time series may be widely different from the actual current estimates. In such situations the price elasticity of output rather than acreage should be more meaningful.

Madhavan makes an acreage response analysis with respect to relative price, yield per acre and rainfall for major cereal and commercial crops grown in Tamil Nadu. The results indicate that the farmer's response to variations in product price and yield per acre is almost equal to or greater than those acreage elasticities reported in earlier studies. However, there is no single variable which is equally important in all the crops.

Misra conducts the study in Gujarat for the period 1949-50 to 1968-69 with the objective to examine the average response to relative prices for cotton, groundnut and bajra crops. The study reveals that in most of the districts farmers are quite responsive to relative price changes in their acreage allocation under cotton whereas in the case of groundnut it is per acre gross return that differentiates its substitute crops.

R. Singh, D. Singh and Rao in their study examine three methodological issues, i.e., (i) whether the Nerlovian adjustment lag model can prove itself to be better than the traditional model as claimed by Nerlove and others; (ii) which of the prices enters the farmers' expectations most vitally in their resource allocation decisions and (iii) how can the effect of inter regional charac-

teristic be quantified and incorporated in the macro model to yield some meaningful results.

I. Singh and Kumar highlight the farmers' responsiveness to the changing price levels and other factors affecting the output supply for wheat, rice and bajara in Haryana state over the period of 1960-61 to 1972-73. The values of Nerlovian coefficient adjustment are found low which meant that although the farmers are adjusting to the changing levels of price, price variability and yield, yet the adjustment is not rapid.

D. Sidhu examines the impact of changes in wheat and fertilizer prices on wheat yields in Punjab. The results indicate that wheat fertilizer price ratio significantly influence the use of fertilizers. This in turn affects substantially the wheat yields.

In another study relating to response of sugarcane producers in Uttar Pradesh Jagadishlal emphasises that the prices of competing crops must be taken into account while evolving a suitable price structure for sugarcane.

Ninan analyses the growth behaviour and factors influencing supply of oil seed in India. He concludes that both technological and price factors are important variables influencing the supply response of edible oilseeds. Hence the strategy for boosting the country's edible oilseed output should lay emphasis on both technological and price factors.

J. Sidhu and R Sidhu outline the factors determining area under crops like cotton, sugarcane, oilseeds and potato in Punjab. They find that the introduction of new seed irrigation fertilizer technology supported by remunera-

tive price policy encouraged the farmers to put more area under the two most profitable cereal crops, i.e., paddy and wheat.

The study of Reddy brings out the fact that favourable price alone may not induce the farmers to increase paddy output in order to attain a desired target. In addition to price incentives non-price incentives like provision of assured irrigation on high yielding variety seeds are equally important in achieving the targets of paddy output.

Raju and Sreekumar in their study for the period 1970-71 to 1987-88 analyse supply response and trends in area, production and productivity of ginger in India. The study reveals that area, production and productivity of ginger in the country have increased considerably during the period under study. The farmers are comparatively less responsive to price in making their planting decisions.

Choudhary, K. Singh and R. Singh examine the growth rates and the factors affecting area, production and productivity of important pulse crops in Bihar. The study shows that area and production of pulse crops is a function of various factors such as annual rainfall, area under irrigation, current and lagged year prices of the crop and its various substitutes and consumption of fertilizers.

The study of Ram and Kumar in Gujarat reveals that cotton has contributed towards the increase of area under groundnut. They find that the area under cotton has decreased with an increase in area under groundnut.

Shetti et al. evaluate the supply behaviour of Jowar in Karnataka. The

study reveals that the higher expected yield generally stimulates the farmers to allocate smaller portion of land, than before to the crop, with the farmers' anticipation that their own farm consumption requirements generally fixed would not be disrupted. They conclude that with the favourable yield expectations, farmers sought to divert some area from jowar to some other crop that would fetch higher monetary returns.

Janaiah et al. analyse the farmers' response to price changes in allocating area for major commercial crops in Andhra Pradesh for the period 1956-57 to 1985-86. They find that the area allocating decision of the farmers for commercial crops is predominantly influenced by changes in farm harvest prices of selected crops and their competing crops.

Goyal examines the effect of farm prices on resource allocation, income and poverty on Haryana farms. The study reveals that the average income from all the crops taken together declined due to relatively more increase in input prices.

Marketing is essential to complete the process of production. An efficient marketing system is one of the key components of enhancing agricultural productivity which encourages the farmers by giving them fair return for their produce. The agricultural producer in India is said to suffer by way of not getting the due prices for his produce. Studies on price spread of various crops indicate that the difference between the price paid by the consumer and that received by the producer consists of marketing cost and marketing margin.

Merh examines the cost of marketing the cotton crop in Karnataka. He

is of the opinion that the growers of cotton realise a better share than those of any other agricultural commodity in India. Cotton growers secure a better percentage of the consumers' price due to (i) keen competition in cotton trade, (ii) regulated markets and (iii) cooperative marketing.

Pavaskar and Radhakrishnan examine the performance of the marketing system of cotton in Maharashtra with reference to the cost of marketing. The study is confined to only two years, viz., 1962-63 and 1967-68. The results reveal that in the marketing of raw cotton, the farmers' share in market price is as high as 90%. The evidence suggests that the existing system of cotton marketing is by far more economical than is often believed by its critics.

Patel tries to find out how the rising groundnut oil prices have been divided among farmer, miller, wholesaler and retailer during 1965-66 to 1967-68. The study reveals that within the price spread, while the percentage shares of retailer and wholesaler have fallen, the miller has taken a larger and larger slice of the price spread. Thus the miller has gained continuously at the cost of the farmer and other intermediaries.

Thakur (*Pricing Efficiency of the Indian Apple Market*) analyses the pricing efficiency of the Indian apples. The study shows that the cost of marketing apple is high enough and the apple grower gets generally less than 50% of the consumers' price. It is more profitable to sell apple in the distant markets in the country than in markets situated near the production area.

Joshi and Sharma attempt to measure the retail farm price spread of rice for the period 1960-61 to 1973-74. The study is conducted in six major rice

growing states, namely, Andhra Pradesh, Bihar, Karnataka, Orissa, Tamil Nadu and West Bengal. The results indicate that there exists wide seasonal as well as spatial variabilities in the price spread. They suggest that the magnitude and direction of these factors must be kept in view while formulating a sound price policy that will take care of the welfare of the farmers and the consumers.

Sinha et al. make an attempt to survey the two markets in Bihar to determine the costs and margins and the consequent price spread of important food grains, namely, rice, wheat and maize. The study indicates higher marketing costs and large price spread are largely on account of handling and storage losses, high transport charges, higher costs of weighing, loading and unloading and high commission charges charged by intermediaries.

Suryaprakash et al. demonstrated the number of intermediaries for selected agricultural commodities in Karnataka and estimate the margins realised by various intermediaries. They find that there is no unique channel in the marketing of agricultural commodities. The price spread varied from commodity to commodity and again for each commodity according to the number of intermediaries or the type of marketing channel involved.

Swarup et al. estimate the price spread and marketing margins of Himachal apples in North India. It is hypothesised that the producers' share is not increasing despite the sharp increase in the price of apples. The rise or fall in the producer's share is not proportional to the rate of rise or fall in the price level.

C. Singh and Vasisht examine the changes in producers' share in the

consumer's rupee of agricultural commodity in India. There exists wide regional disparities in the producer's share in consumer's rupee. They find that marketing margins are inversely related to market arrivals of agricultural products.

In the study of marketing efficiency Rajagopal identifies different paddy marketing channels in Madhya Pradesh. The results reveal that the farmers get the highest benefit if they sell their produce through the cooperatives marketing and processing units. He suggests that the cooperative should be given more incentives by the Government to enable them to perform the marketing activities in the village more efficiently giving the farmers their highest share.

Sreekumar, Haridasan and Rajashekharan use concurrent margin method for the computation of price spread of natural rubber for 1985-86. They conducted the study in Kottayam district of Kerala. It is found that the share of producer in the consumer's price is 88% of the price paid by the consumer. It is suggested that efforts should be made by the cooperative societies to give financial and other assistance to growers so that they may be attracted to sell their produce through the societies.

Saini et al. examine the efficiency of various ginger marketing channels in Himachal Pradesh and identify different constraints in the marketing of ginger. The study reveals that the marketing channel comprising those of the producer, primary wholesaler, secondary wholesaler, retailer and consumer is the most efficient one both from the view point of the producers and the consumers. The main bottlenecks of marketing as identified by the study are

nonpayment of sale proceeds at the time of sale, non-availability of scientific storage facilities, inadequate information relating to market prices and market arrivals.

Bhusan discusses the structural weakness of agricultural marketing in India. Agricultural markets in India are dominated by brokers, commission agents, and middlemen. As a result of in-built chain of these functionaries, there exists big gap between the farm gate price and consumer price. The market mechanism of agriculture is not in perfect competitive order due to complicated marketing channels which benefit neither the growers nor the consumers. It is therefore suggested that creation of basic infrastructure for the development of modern marketing system is very crucial for strengthening the competitiveness of Indian agriculture in the global market.

From the literature reviewed above, it is clear that no study has been conducted to provide a detailed information about all the aspects of ginger cultivation in Kerala.

Chapter Three
Trends in Area, Production and Productivity

Chapter Three

Trends in Area, Production and Productivity

An analysis of the components of increase in production of ginger is done in this chapter to know the respective contribution of area and yield in the production of ginger.

Trend is a component of variation which reveals the general direction of change over a period of time. Compound growth rate has been worked out by fitting exponential function $Y = AB^t$ to the area, production and yield per hectare of ginger in India, Kerala, other major producing states in India and Ernakulam and Wynad districts of Kerala, using the linear form:

$$\text{Log } Y = \text{Log } A + t \text{ Log } B$$

$$y = a + bt + e$$

Where Log Y is the log of dependent variable (acreage, production or yield per hectare) and 't' is independent time variable.

3.1. Trends in Area, Production and Yield per Hectare of Ginger in India

The area, production and yield per hectare of ginger in India during 1957-58 to 93-94 are presented in Table 3.1. Production of ginger in India has increased substantially during 1957-58 to 1993-94.

Table 3.1**Area, Production and Yield per Hectare of Ginger in India**

Year	Area (hectares)	Production (tonnes)	Yield (Kgs.)
1957-58	17,000	16,000	941
1958-59	15,000	14,000	933
1959-60	18,000	16,000	889
1960-61	19,000	18,000	947
1961-62	21,000	19,000	905
1962-63	21,000	20,000	952
1963-64	23,000	21,000	913
1964-65	23,000	21,000	913
1965-66	23,000	22,000	957
1966-67	23,000	21,000	913
1967-68	21,000	20,000	952
1968-69	20,000	18,000	900
1969-70	21,000	21,000	1,000
1970-71	21,600	29,290	1,356
1971-72	24,600	34,710	1,411

(Cont'd...)

Year	Area (hectares)	Production (tonnes)	Yield (Kgs.)
1972-73	22,900	33,630	1,469
1973-74	24,900	38,460	1,545
1974-75	24,100	37,910	1,573
1975-76	27,200	45,150	1,660
1976-77	25,700	43,390	1,688
1977-78	36,000	71,700	1,992
1978-79	40,800	75,720	1,856
1979-80	41,400	71,140	1,718
1980-81	40,500	82,440	2,036
1981-82	41,100	89,710	2,183
1982-83	43,800	94,170	2,150
1983-84	49,000	1,21,310	2,476
1984-85	51,500	1,33,860	2,600
1985-86	53,500	1,38,020	2,580
1986-87	52,630	1,36,010	2,584
1987-88	54,240	1,42,840	2,633
1988-89	51,870	1,52,120	2,933
1989-90	53,560	1,56,120	2,915

(Cont'd...)

Year	Area (hectares)	Production (tonnes)	Yield (Kgs.)
1990-91	53,930	1,53,450	2,845
1991-92	59,830	1,82,650	3,053
1992-93	59,870	2,01,630	3,368
1993-94 (P)	59,890	1,99,390	3,329

(P) : Provisional

Source: Directorate of Cocoa, Arecanut and Spices, Calicut.

The production of ginger has increased from 16,000 tonnes in 1957-58 to 43,390 tonnes in 1976-77. The increase in production is due to an increase in area by 51% and yield per hectare by 79% over 1957-58.

A substantial increase in ginger production is noticed in 1977-78 when Meghalaya entered in the ginger production. In 1977-78, 71,700 tonnes of ginger was produced in India, ie., 65% increase over the previous year. In 1992-93, India produced the highest quantity of 2,01,630 tonnes.

Compound growth rates are estimated for the overall period (1957-58 to 93-94) and the two sub-period, ie., 1957-58 to 1976-77 and 1977-78 to 1993-94. As table 3.2 reveals the coefficients of trends in all periods are found to be positive.

Table 3.2**Compound Growth Rates of Area, Production and Yield per Hectare of Ginger in Kerala and India.**

Period	Kerala			India		
	A	P	Y	A	P	Y
1957-58 to 1976-77	0.62	6.31	5.69	2.02	5.61	3.59
1977-78 to 1993-94	1.23	3.41	2.18	2.99	6.81	3.83
1957-58 to 1993-94	1.04	5.47	4.43	3.91	8.13	4.20

Note: A - Area, P - Production, Y - Yield.

Source: Computed from the data published by:

1. Directorate of Economics and Statistics, Trivandrum
2. Directorate of Cocoa, Arecanut and Spices, Calicut

The compound growth rates of area, production and yield per hectare of ginger in India during 1957-58 to 1993-94 were 3.91%, 8.13% and 4.2% respectively. The corresponding figures were 2.02%, 5.61% and 3.59% for the first sub-period and 2.99%, 6.81% and 3.83% for the second sub-period. The growth rates for the second sub-period were higher than the first sub-

period. Increase in output in all the periods has influenced both by area and yield. Yield seems to have been the main source of growth in output; area being of secondary importance.

3.2. Growth Trends in Kerala

Area, production and yield per hectare of ginger in Kerala have shown in increasing trend during 1957-58 to 1993-94 (Table 3.3). Production of ginger increased from 9,950 tonnes in 1957-58 to 25,450 tonnes in 1976-77, further to 47,650 tonnes in 1986-87 and it reached the maximum level of 50,309 tonnes in 1991-92. The significant increase in production was mostly due to a substantial increase in yield per hectare. However, during 1993-94 production declined to 37,676 tonnes with a decline in area from 15,400 hectares in 1991-92 to 11,125 hectares in 1993-94. During 1994-95 area and production again increased to 14,018 hectares and 47,673 tonnes.

Table 3.3

Area, Production and Yield per Hectare of Ginger in Kerala

Year	Area (hectares)	Production (tonnes)	Yield (Kgs.)
1957-58	9,270	9,950	1,073
1958-59	8,970	7,780	867
1959-60	11,060	9,980	902
1960-61	12,000	11,270	939
1961-62	12,050	11,370	944
1962-63	12,070	11,430	947
1963-64	11,960	11,290	944
1964-65	11,970	11,330	947
1965-66	11,850	11,190	944
1966-67	11,790	11,050	937
1967-68	11,800	11,120	942
1968-69	11,420	10,840	949
1969-70	11,520	12,000	1,042
1970-71	12,170	19,680	1,617
1971-72	11,870	23,210	1,955

(Cont'd...)

Year	Area (hectares)	Production (tonnes)	Yield (Kgs.)
1972-73	11,800	23,490	1,991
1973-74	12,040	26,680	2,216
1974-75	12,200	26,000	2,131
1975-76	12,100	28,500	2,355
1976-77	10,350	25,450	2,459
1977-78	11,450	29,030	2,535
1978-79	12,710	32,910	2,589
1979-80	13,260	32,220	2,430
1980-81	12,660	32,040	2,531
1981-82	13,450	34,380	2,556
1982-83	13,180	32,800	2,489
1983-84	14,880	36,710	2,467
1984-85	14,540	41,250	2,837
1985-86	15,670	44,470	2,838
1986-87	16,590	47,650	2,872
1987-88	14,440	45,510	3,152
1988-89	14,160	45,020	3,179
1989-90	14,430	47,270	3,276

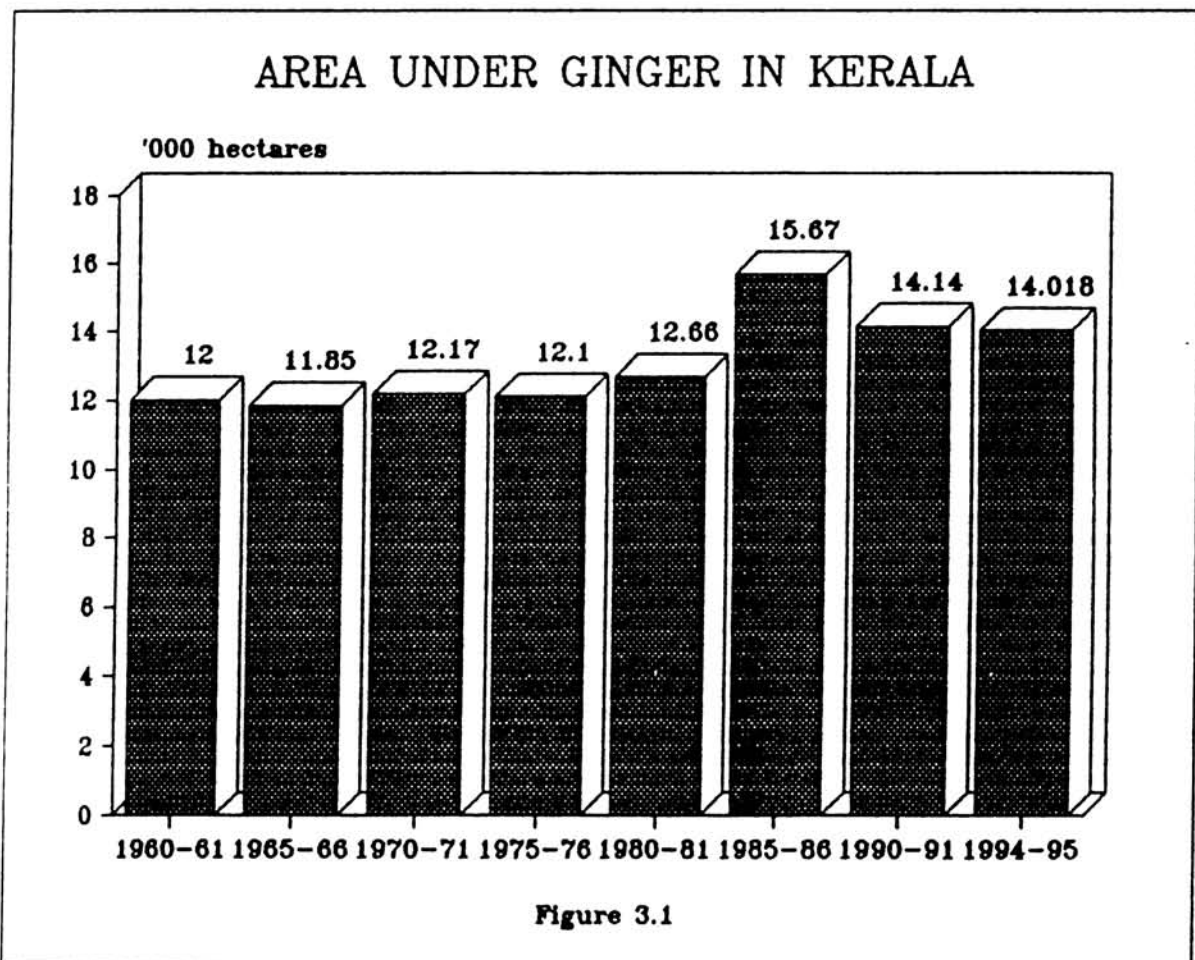
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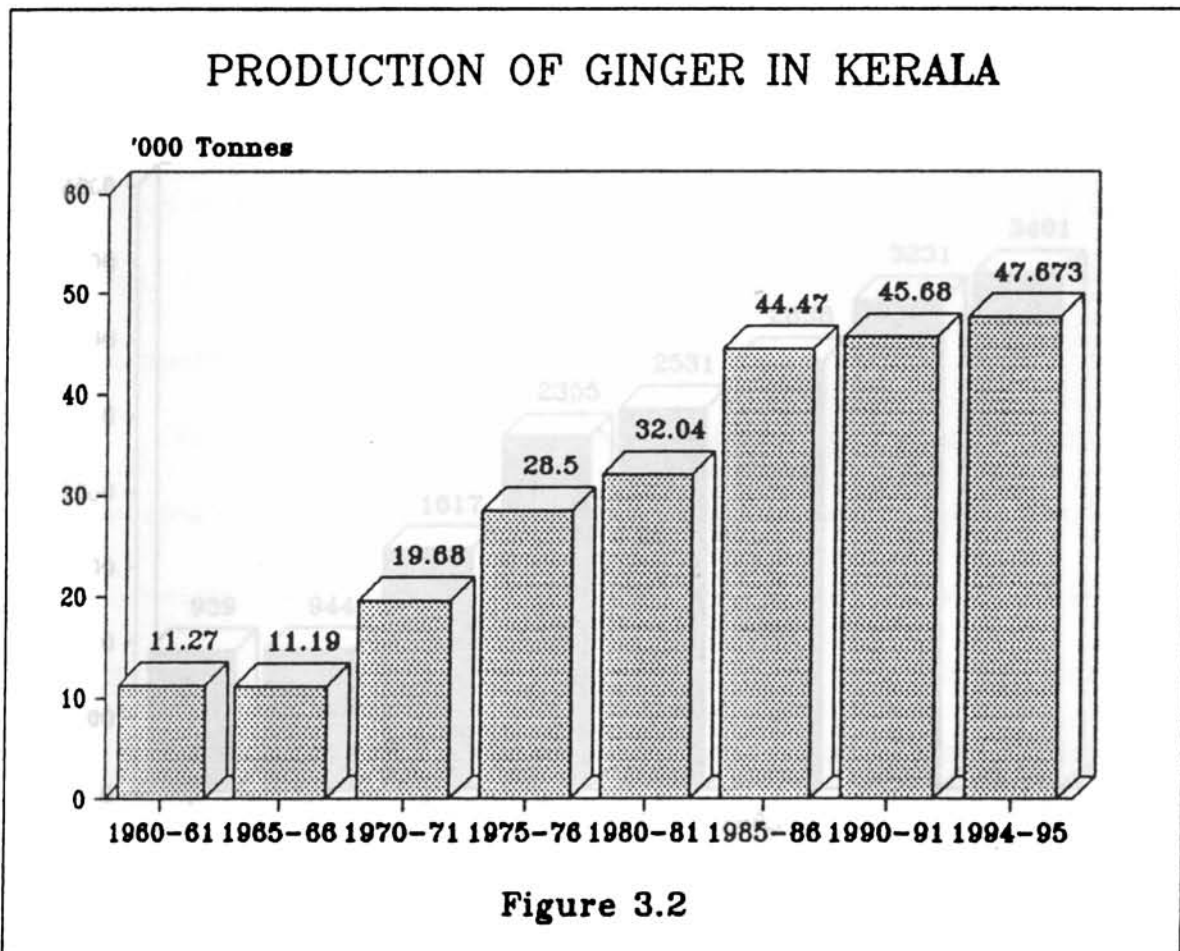
Year	Area (hectares)	Production (tonnes)	Yield (Kgs.)
1990-91	14,140	45,680	3,231
1991-92	15,400	50,309	3,267
1992-93	13,937	45,403	3,258
1993-94	11,125	37,676	3,387
1994-95 (P)	14,018	47,673	3,401

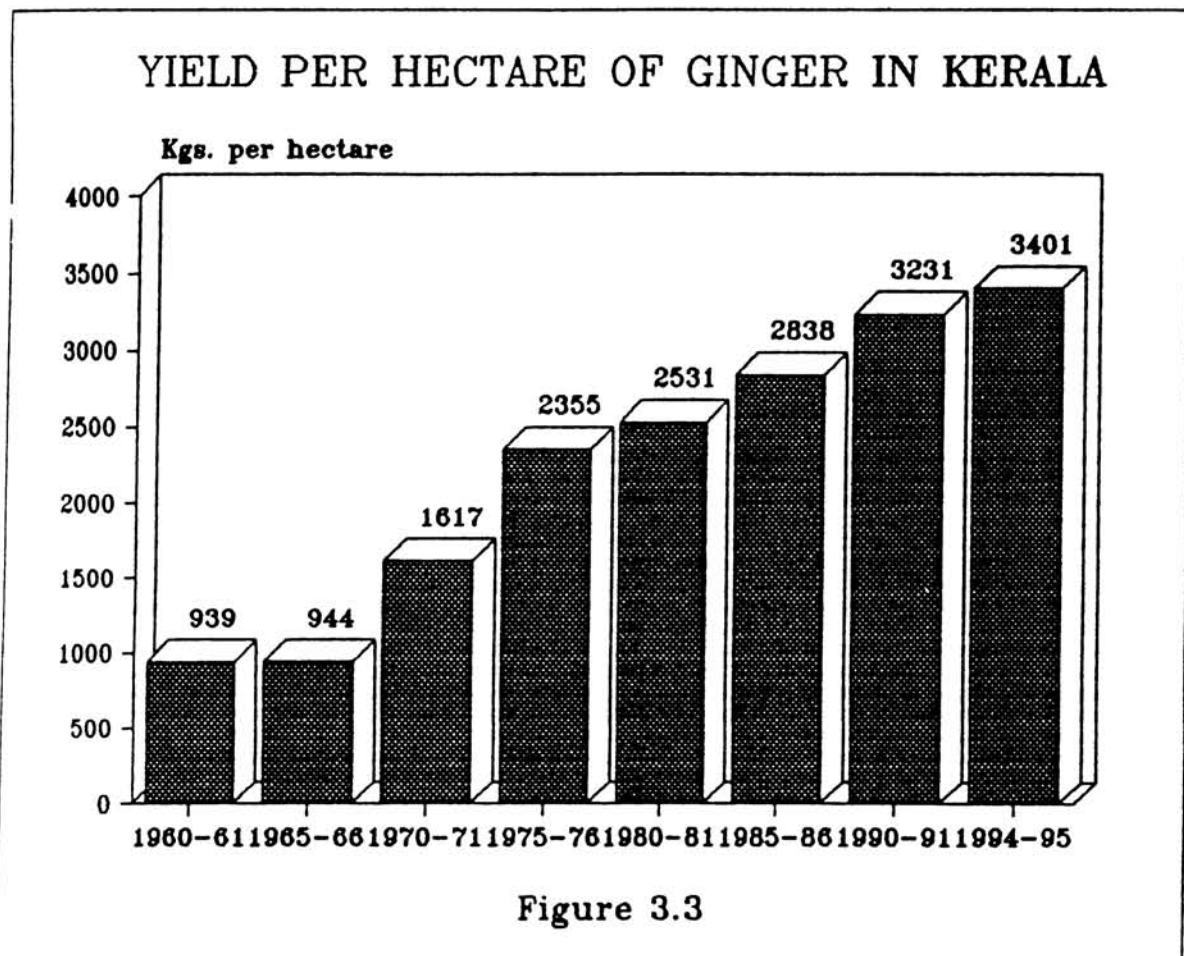
(P): Provisional

Source: Directorate of Economics and Statistics, Trivandrum.

Table 3.2 reveals that the compound growth rate of production has been lower during the second sub-period (1977-78 to 93-94) as compared to the first sub-period (1957-58 to 1976-77). The fall in the growth rate of yield from 5.69% during 1957-58 to 1976-77 to 2.18% during 1977-78 to 1993-94 is the reason for the low growth rate of production. The growth rates of area in both the periods are substantially lower than the all India growth rates which is due to remarkable increase in ginger area in other major producing states. During 1957-58 to 1976-77, there has been a marginal increase in area (0.62%).







Despite the slow growth of area during these periods, the output of the state recorded a significant growth rate. It implies that yield increase has played a major role in the growth of ginger production in Kerala.

3.3. State-wise Analysis

Although ginger is cultivated in almost all over the country, four states, namely, Kerala, Meghalaya, West Bengal and Orissa together account for about 65% of its area under cultivation and 60% of the total ginger production in India. Among them Kerala and Meghalaya together contribute about 45% of the country's output.

Till 1977-78 Kerala's contribution in the country's production was more than 60% but with the development of ginger cultivation in Meghalaya, Kerala's share come down to about one-fourth now. Although Meghalaya ranks only third in area, it ranks second in production because of higher yield per hectare.

Table 3.4, 3.5 and 3.6 show the data on area, production and yield per hectare of ginger in Kerala, Meghalaya, Orissa and West Bengal, which are the major ginger producing states in India.

Table 3.4

Area Under Ginger in Major Producing States of India (hectares)

Year	Kerala	Meghalaya	Orissa	W. Bengal	India
1970-71	12,170	—	1,510	1,500	21,600
1971-72	11,870	—	2,310	1,600	24,600
1972-73	11,800	—	1,860	1,500	22,900
1973-74	12,040	—	2,300	1,900	24,900
1974-75	12,200	—	1,710	1,800	24,100
1975-76	12,100	—	2,660	1,690	27,200
1976-77	10,350	—	2,920	1,850	25,700
1977-78	11,450	4,270	3,220	2,370	36,000
1978-79	12,710	4,270	3,430	2,390	40,800
1979-80	13,260	5,270	4,070	2,520	41,400
1980-81	12,660	5,450	4,900	2,870	40,500
1981-82	13,450	5,650	3,480	3,100	41,100
1982-83	13,180	5,820	5,440	3,150	43,800
1983-84	14,880	6,800	5,520	3,480	49,000
1984-85	14,540	7,000	5,730	3,770	51,500

(Cont'd...)

Year	Kerala	Meghalaya	Orissa	W. Bengal	India
1985-86	15,670	5,350	6,290	4,300	53,500
1986-87	16,590	5,500	6,660	4,620	52,630
1987-88	14,440	6,300	7,250	4,690	54,240
1988-89	14,160	6,300	8,290	4,930	51,870
1989-90	14,430	6,300	8,810	5,230	53,560
1990-91	14,140	6,400	8,670	5,380	53,930
1991-92	15,400	6,590	9,670	9,810	59,830
1992-93	13,937	6,640	9,590	6,860	59,870
1993-94(P)	11,125	6,640	9,590	7,180	59,890

(P) : Provisional

Source: Directorate of Cocoa, Arecanut and Spices, Calicut.

Table 3.5**Production of Ginger in Major Producing States in India (tonnes)**

Year	Kerala	Meghalaya	Orissa	W. Bengal	India
1970-71	19,680	---	1,970	2,200	29,290
1971-72	23,210	---	1,280	2,500	34,710
1972-73	23,490	---	1,900	1,840	33,630
1973-74	26,680	---	2,190	1,900	38,460
1974-75	26,000	---	730	2,410	37,910
1975-76	28,500	---	2,960	2,670	45,150
1976-77	25,450	---	2,290	2,680	43,390
1977-78	29,030	16,800	2,470	3,610	71,700
1978-79	32,910	16,800	2,910	3,450	75,720
1979-80	32,220	12,910	4,230	3,550	71,140
1980-81	32,040	21,850	5,310	4,420	82,440
1981-82	34,380	24,190	3,340	5,060	89,710
1982-83	32,800	24,050	5,410	4,970	94,170
1983-84	36,710	27,750	12,670	5,600	1,21,310
1984-85	41,250	28,560	12,820	5,890	1,33,860
1985-86	44,470	23,350	14,650	6,820	1,38,020

(Cont'd...)

Year	Kerala	Meghalaya	Orissa	W. Bengal	India
1986-87	47,650	26,000	11,040	7,020	1,36,010
1987-88	45,510	30,100	10,110	7,460	1,42,840
1988-89	45,020	29,000	12,420	8,650	1,52,120
1989-90	47,270	29,300	15,640	9,060	1,56,120
1990-91	45,680	29,590	13,820	9,040	1,53,450
1991-92	50,309	38,520	14,740	12,760	1,82,650
1992-93	45,403	40,800	14,280	12,760	2,01,630
1993-94(P)	37,676	40,800	14,280	13,600	1,99,390

(P) : Provisional

Source: Directorate of Cocoa, Arecanut and Spices, Calicut.

Table 3.6

Yield per hectare of Ginger in Major Producing States of India (Kgs.)

Year	Kerala	Meghalaya	Orissa	W. Bengal	India
1970-71	1,617	---	1,305	1,467	1,356
1971-72	1,955	---	554	1,563	1,411
1972-73	1,991	---	1,022	1,226	1,469
1973-74	2,216	---	952	1,000	1,545
1974-75	2,131	---	427	1,339	1,573
1975-76	2,355	---	1,113	1,580	1,660
1976-77	2,459	---	784	1,449	1,688
1977-78	2,535	3,934	767	1,523	1,992
1978-79	2,589	3,934	848	1,443	1,856
1979-80	2,430	2,450	1,039	1,409	1,718
1980-81	2,531	4,009	1,084	1,540	2,036
1981-82	2,556	4,281	960	1,632	2,183
1982-83	2,489	4,132	994	1,578	2,150
1983-84	2,467	4,080	2,295	1,609	2,476
1984-85	2,837	4,080	2,237	1,562	2,600
1985-86	2,838	4,364	2,329	1,586	2,580

(Cont'd...)

Year	Kerala	Meghalaya	Orissa	W. Bengal	India
1986-87	2,872	4,727	1,658	1,519	2,584
1987-88	3,152	4,778	1,394	1,594	2,633
1988-89	3,179	4,603	1,498	1,795	2,933
1989-90	3,276	4,651	1,775	1,716	2,915
1990-91	3 231	4,623	1,594	1,696	2,845
1991-92	3,267	5,845	1,524	1,301	3,053
1992-93	3,258	6,144	1,489	1,860	3,368
1993-94(P)	3,387	6,144	1,489	1,894	3,329

(P) : Provisional

Source: Directorate of Cocoa, Arecanut and Spices, Calicut.

For comparison, the compound growth rates are estimated for the period 1970-71 to 1993-94 and the sub-period 1977-78 to 93-94 (till 1977-78 data for Meghalaya is not available).

As given in the Table 3.7, the compound growth rates of all states are positive during the period 1977-78 to 1993-94, of them, Orissa, and West Bengal recorded spectacular growth rates in area and output which were substantially higher than all-India growth rates.

Orissa also shows the highest growth rate in yield per hectare among the major ginger producing states. Thus higher output growth rate in Orissa was contributed by both area and yield.

The growth rates of yield was found to be the lowest in West Bengal where the output growth was mostly due to increase in area.

In Meghalaya, growth rates of area and yield are equally important for the higher growth rate of output.

The compound growth rates of area, production and yield per hectare of ginger in Kerala during all the periods are not impressive in comparison with that of all-India growth rates and of other major producing states.

Table 3.7

Compound Growth Rates of Area, Production and Yield per Hectare in Different States.

Period	Kerala		Orissa		Meghalaya		West Bengal		India						
	A	Y	A	Y	A	Y	A	Y	A	Y					
1970-71 to 1993-94	1.32	3.86	2.54	8.22	12.21	3.99	---	7.52	8.69	1.19	4.75	8.75	4.00		
1977-78 to 1993-94	1.23	3.41	2.18	7.27	11.16	3.89	3.92	5.58	3.37	7.79	8.77	1.00	2.99	6.81	3.83

Note: A - Area, P - Production, Y - Yield

Source: Computed from the data published by :

1. Directorate of Economics and Statistics, Trivandrum.
2. Directorate of Cocoa, Arecanut and Spices, Calicut.

3.4. Growth Trends of Ginger in Wynad and Ernakulam Districts

The average growth rate of Kerala does not reveal the real growth pattern. The two top ranking districts of Kerala, Wynad and Ernakulam together account for about 54% of area and about 63% of state's output. In Ernakulam district both area and output of ginger were declining during 1977-78 to 1993-94 (Table 3.8) whereas Wynad recorded spectacular growth in area as well as output during 1981-82 to 1993-94 (Table 3.9).

Table 3.8

Area, Production and Yield per hectare of Ginger in Ernakulam District

Year	Area (hectares)	Production (tonnes)	Yield (Kgs.)
1977-78	2,387	5,905	2,474
1978-79	2,496	6,682	2,677
1979-80	3,077	7,714	2,506
1980-81	2,162	5,474	2,532
1981-82	2,425	6,140	2,532

(Cont'd...)

Year	Area (hectares)	Production (tonnes)	Yield (Kgs.)
1982-83	1,945	4,876	2,507
1983-84	2,177	5,403	2,482
1984-85	2,282	7,385	3,236
1985-86	2,431	8,024	3,301
1986-87	2,767	9,134	3,301
1987-88	2,242	6,896	3,076
1988-89	1,985	4,964	2,501
1989-90	2,142	5,357	2,501
1990-91	1,943	5,459	2,810
1991-92	1,945	5,465	2,810
1992-93	1,761	4,948	2,810
1993-94	1,676	4,789	2,857

Source: Directorate of Economics and Statistics, Trivandrum.

Table 3.9**Area, Production and Yield per hectare of Ginger in Wynad District**

Year	Area (hectares)	Production (tonnes)	Yield (Kgs.)
1981-82	1,065	2,641	2,480
1982-83	1,158	2,786	2,406
1983-84	2,207	5,204	2,358
1984-85	2,757	10,554	3,828
1985-86	3,050	11,208	3,675
1986-87	3,324	12,216	3,675
1987-88	3,787	17,875	4,720
1988-89	4,272	19,528	4,571
1989-90	4,990	22,810	4,571
1990-91	6,397	23,019	3,598
1991-92	8,053	28,978	3,599
1992-93	7,198	25,901	3,598
1993-94	4,350	18,653	4,288

Source: Directorate of Economics and Statistics, Trivandrum.

The compound growth rate of output in Ernakulam during 1977-78 to 1993-94 was -1.39% (Table 3.10). The positive growth rate of yield per hectare in Ernakulam (0.76%) was quite insufficient to overcome the negative growth rate of area (-2.14%).

Table 3.10

Compound Growth Rates of Area, Production and Yield per Hectare of Ginger in Ernakulam and Wynad District.

Period	Ernakulam			Wynad		
	A	P	Y	A	P	Y
1977-78 to 1993-94	-2.14	-1.39	0.76	—	—	—
1981-82 to 1993-94	—	—	—	14.57	18.67	4.10

Note: A - Area, P - Production, Y - Yield.

Source: Computed from the data published by Directorate of Economics and Statistics, Trivandrum.

The crop shifting to pineapple, as reported by the farmers, was found to be the main reason for negative growth rate in area and output in Ernakulam

district. The area under pineapple in Ernakulam has been increasing during the last few years. Besides, the yield per hectare of ginger in Ernakulam is substantially lower than the average yield of Kerala. Thus crop shifting and low yield per hectare have resulted in negative growth rate of area, and output.

The compound growth rate of ginger output in Wynad during 1981-82 to 1993-94 (for which data is available) was as high as 18.67%. This remarkable growth rate in Wynad was mainly due to a significant growth in area (14.57%). Besides, the yield per hectare in Wynad is substantially higher than the yield per hectare of Kerala and India. However, production and area under ginger in Wynad have shown a declining trend during the last two years.

In Wynad ginger has been mostly cultivated as an intercrop in pepper gardens. Increasing area under pepper till 1991-92 was the main reason for higher growth rate of area. During the last two years, the area under ginger has declined with a decline in pepper area.

3.5. Conclusion

The analysis indicates that the growth performance of ginger has varied from state to state in India and from district to district in Kerala. The major contributor to increase in production in Kerala has been yield. While area under ginger increased in all other major producing states, it has declined in Kerala.

Three factors are responsible for the decelerated growth of ginger pro-

duction in Kerala. Firstly, there is only limited scope for increasing ginger cultivation as a monocrop-crop due to the general crop shifting in Kerala, ie., from annual crops to perennial crops. Secondly, emergence of substitute crop like pineapple has influenced the area under ginger in Ernakulam, one of the major ginger producing districts of Kerala. Thirdly, the yield per hectare in Kerala is substantially lower than the average yield.

Thus, the prospects for attaining growth through extension of cultivated area are diminishing fast. The wide difference in current yield rates among the states indicate the scope for increasing yield rates. Institutional arrangements should be made to provide quality seeds and other package of inputs to the farmers to boost the output of ginger.

Chapter Four
Acreage Response

Chapter Four

Acreage Response

For proper planning and policy formulation in the agricultural sector, it is of paramount importance to understand the behaviour of farmer's supply responsiveness. To consider adequately the role of agricultural sector in the development of an economy, of course, the responsiveness of that sector to various incentives must be known. Only with knowledge of this responsiveness can effects of various specific policies on agriculture and on over all growth responsibly be examined (Behrman 10).

Heady has noted that:

the subject of farmers' responsiveness to economic variables has gained importance during the past few decades in both underdeveloped and developed economies. Developing economies need to understand the supply phenomena in order to implement policies for raising the output to a level which can provide for adequate human nutrition for the increasing population and also to promote general economic development. Even in developed countries, understanding of the supply phenomena is of crucial importance for controlling surplus, for raising farm incomes and resource productivity (Bhagat 2).

Since the response of farmers differ from state to state and even within the state, the knowledge of farmer's behaviour to different price changes is essential to make the price policy an effective instrument for inducing the desired changes in resource allocation to various crop enterprises in the different producing states and in different regions within the state.

Fluctuations in production or, in other words, area under different crops is a common phenomenon in the case of developing economies. These fluctuations in area could be due to the interplay of a host of factors - endogenous as well as exogenous. The problems, however remain as to which of these factors are and to what extent responsible for such sizable shifts in area allocation.

Agricultural producers must not only estimate what demand will be a year or more in the future but also predict what other farmers' reactions to the market are likely to be and they must respond as individuals rather than a coordinated group (Branson and Norvell 139).

Variations in soil, climatic and in human resources are of such importance that many aspects of agricultural development are specific to a particular country, region, district and ultimately, to an individual farm. Changes overtime in the availability and relative prices of productive factors are of great importance in influencing decisions concerning the choice of techniques of production and the combination of farm enterprises (Johnston and Mellor 582).

In fact, the supply responses of an individual farmer involve the attitudes and decision criteria of the farmer in chalking out his production in the light of

the anticipated returns from different crops. Normally, for a farmer, the crucial decisions relating to what crop and how much to grow on how much land with what inputs are essentially based on the expected relative profitability of each crop under different sets of inputs, ignoring for the moment the uncertainty element involved. Thus, the composition and structure of the farm output keep changing overtime as prices change.

Economic theory suggests that prices are important determinants of economic behaviour and rational farmer should sufficiently react to changes in prices of output (Narain 1). In an economist's view, prices are important determinants of economic behaviour (Dean 1).

In the short run, however, individual agricultural commodities respond very differently to price changes than does agricultural output as a whole (Cohen 116). It has been generally observed that output of a crop responds in the short-run to price incentives and in the long-run to technological improvements (Gulati 65).

Increased use of inputs allows agricultural sector to move up along production by increasing yield per unit area. Their utilisation also induces an upward shift in the production function to the extent the technological change is embodied in them (Ramesh 181).

Profits and prices give him a guideline as to what type of crop is to be grown, how much area is to be reserved for it and how much out of the total produce is to be brought to the market for sale at one time (Jat 31). These considerations are equally important for all farmers, whether big, medium or

small. It should also be noted that the role of the price mechanism in meeting the objective of allocation efficiency may be limited to a great extent by the physical, financial and institutional constraints prevailing in the backward economies (Bhagat 5).

A considerable body of literature has been developed in this field and at present, different opinions on supply response prevail. One view is that the farmers in underdeveloped countries are not responsive to the changes in relative prices, while the other view is that they are less responsive than those in the developed countries.

Mellor observes "there is little or no evidence that farmers in low income countries operate according to different set of guiding principles in making their managerial decisions than do farmers in high income countries" (*Increasing Agricultural Production in Early Stages of Economic Development* 39).

Falcon in his study concluded that:

unless there is a thorough going reform in the services and facilities made available to farmers, higher prices alone can have little effect on increasing yield per acre. On the other hand, the acreage evidence suggests that farmers of the area will respond to economic incentives if given opportunities to do so (590).

In empirical research, the question as to how farmers respond to price incentives have been widely investigated. In a country like India, where the cropping patterns, types of soil and climatic conditions vary widely from one

region to another, no unique hypothesis could be formulated for the country as a whole. This emphasises the need for regional studies on supply response of different crops. The farmers may not respond to price alone. The farmers' decision to raise a crop in any season may be influenced by a complex group of factors like prices of competing crops, weather conditions, price rise and yield risk. It is, therefore, rather difficult to isolate the impact of the price factor on production or acreage.

Attempts to examine the effects of price on acreage change under a particular crop with reference to the price of only that crop are inadequate. The significance of a price change when other prices remain constant is different from what it would be when other prices also change (Narain 11). Farmers' sowing decisions are not influenced only by the post harvest prices of that crop in the preceding year, but also by the post harvest prices of crops which he can substitute for that particular crop (Gupta 67).

A high degree of year to year variability in the price of a commodity has a direct impact on the producer's income. Besides, there might occur acreage shifts in response to changes in relative prices of different products (Kainth 46).

Empirical works based on Indian agricultural data provide ample evidence of the rationality of Indian farmers in allocating resources to competing crops according to their changing relative prices (Swant 5-6).

In agriculture, it is very difficult to forecast the volume and quality of output. A cultivator may only plan the production of certain crop but the final

output considerably depend upon weather, disease, pests, flood and storm over which he has no control.

Besides, all production takes time. In agriculture, in particular the biological nature of production process makes for a considerable lag between production of inputs and outputs.

Thus, many different types of incentives might influence the farmer's decision to change his existing allocation pattern. Among the various incentives, increase in the prices of output may be the foremost to the extent that the production is market oriented. The analysis of growth trend of ginger in Kerala indicates that growth of area under ginger has been uneven among the districts. Whereas in Wynad area under ginger expanded significantly, in Ernakulam, it declined significantly and in Kerala as a whole area is more or less stagnant. Therefore, it is interesting to analyse the factors which have influenced the growth of area under ginger in Kerala and major producing districts.

Nerlovian adjustment lag model is used to analyse acreage response of ginger farmers and is based on the relation:

$$A_t = a_0 + a_1 p_{t-1} + V_t \dots\dots(1)$$

Where A_t = Area under ginger

P_{t-1} = Lagged price

V_t = Error term.

a_0 and a_1 are the intercept and the slope of the function. Again, it is related with the actual average by assuming that in each period the actual area under crop is adjusted in proportion to the difference between the desired level

of area and actual area under the crop in question.

$$A_t - A_{t-1} = \gamma (A_t^* - A_{t-1}) \dots (2)$$

Where A_{t-1} = Area under the crop in year t-1

A_t^* = Desired area under the crop in year t-1

γ = Adjustment coefficient

Substituting the value of equation (1) into equation (2) and solving for A_t we get:

$$A_t = b_0 + b_1 p_{t-1} + b_2 A_{t-1} + U_t \dots (3)$$

Where $b_0 = a_0 \gamma$, $b_1 = a_1 \gamma$, $b_2 = 1 - \gamma$ and $U_t = \gamma V_t$

Equation (3) is the reduced form and its parameters can be estimated by the use of ordinary least squares.

Here, the output decisions of farmers are approximated in terms of planted area rather than yield. It is the discrepancy between planned and realised output and non availability of any kind of data about planned output except the acreage sown under a particular crop that led previous researchers to approximate planned output, to which the supply function actually refers, by acreage (Tyagi 19-20). Approximation of planned output in a production period by acreage is the only possible approximation within the limits prescribed by existing knowledge, the conditions of production and the available data (Nerlove *The Dynamics of Supply* 67). This is because the area planted is a better barometer of the farmer's planting and land allocation decisions. Further, area is subject to endogenous factors (ie., within the farmer's control) whereas yield

is influenced by several exogenous factors (ie., beyond the farmer's control like weather). It is, of course, true that a farmer can keep area constant and increase output by varying yield levels. Apart from exogenous factors which influence yield, time series data on inputs used by individual crops (ie., secondary data) are not available and hence area is taken as a proxy for output.

4.1. Acreage Response in Kerala

For estimation purpose, secondary time series data for different variables for the period 1973-74 to 1993-94 are used (Table B-1 in Appendix B). Turmeric is selected as a competing crop on the basis of the sample survey conducted as a part of the study. The functional form used in the present study is given below:

$$A_t = f(p_{t-1}, A_{t-1}, Y_{t-1}, TP_{t-1}, R_t)$$

Where A_t = Area under ginger in the year 't'

P_{t-1} = Price of ginger in the year t-1

A_{t-1} = Area under ginger in the year t-1

Y_{t-1} = Yield of ginger in the year t-1

TP_{t-1} = Price of turmeric in the year t-1

R_t = Rainfall in the year t

The most widely used form of the equation in supply response studies is the linear form either in absolute terms or in logarithmic form. In the present study the linear form in absolute term is used.

Table 4.1
Results of Acreage Response Function of Ginger in Kerala (1973-74 to 1993-94)

Dependent Variable	Independent Variables							R ²	F
	Constant	P _{t-1}	A _{t-1}	Y _{t-1}	R _t	TP _{t-1}			
A _t	** 5011.9781 (2.630)	** 0.6797 (2.454)	* 0.5664 (3.676)	---	---	---	0.69	20.10	
A _t	** 4864.1297 (2.280)	*** 0.6434 (1.827)	* 0.5516 (3.075)	0.1485 (0.175)	---	---	0.69	12.69	
A _t	*** 5152.8436 (1.977)	*** 0.6650 (1.762)	** 0.5440 (2.888)	0.1431 (0.164)	-0.0810 (-0.206)	---	0.69	08.10	
A _t	**** 5409.6548 (1.719)	**** 0.6404 (1.525)	** 0.5375 (2.705)	0.0826 (0.084)	-0.0986 (-0.232)	0.0663 (0.157)	0.69	06.76	

Note: * - Significant at 1% level

*** - Significant at 10% level

** - Significant at 5% level

**** - Significant at 20% level

Source: Computed from the data published by: 1) Spices Board, Kochi. 2) Directorate of Economics and Statistics, Trivandrum.
3) State Planning Board, Trivandrum.

The estimated equations are presented in Table 4.1. In all the acreage response equations of Kerala, the coefficient of determination is quite high (0.69). 'F' values are also significant in all the equations. Based on the compound growth rate, it is observed that the area under ginger has increased at a slow rate.

Among the variables used for the analysis, lagged values of price and area are significantly related to current area under ginger in all the four estimated equations.

The positive relationship between the area allocation and price movements shows the price consciousness and economic rationality on the part of the farmers.

The significant positive relationship between the current area and the lagged area indicates the gradual increase in area under ginger in Kerala.

The lagged yield has the expected sign though these coefficients are not statistically significant. The positive bearing of lagged yield on the area allocation supports the hypothesis that the higher yield received in the last year would induce the growers to increase area under ginger in the current year.

Rainfall and lagged turmeric price do not have the expected sign but their coefficients are not statistically significant.

The price of ginger is generally higher than the price of turmeric. Also with the availability of land, farmers tend to put more land under ginger. It may be the main reason for the insignificant relation between turmeric price and area under ginger.

Lagged values of price and area thus appear to be the major factors favouring ginger cultivation in Kerala.

4.2. Acreage Response in major producing districts

Acreage response analysis is conducted at state and district level and hence can throw light on the role of different factors in different regions which may not be possible if the analysis is at the state level only.

Two types of growth in ginger area are identified in selected districts - Wynad reporting positive and significant trend and Ernakulam with negative and nonsignificant trend.

4.2.1. Wynad District

For estimating acreage response in Wynad district, secondary time series data for different variables in Wynad for the period 1981-82 to 1993-94 (the period for which data is available) are used (Table B-2 in Appendix B).

The functional form used is given below:

$$A_t = f(P_{t-1}, A_{t-1}, Y_{t-1}, TP_{t-1}, R_t)$$

All the variables used for analysing the acreage response of ginger with respect to Kerala state are also used for analysing the data with respect to Wynad district.

The equations showing the farmers' response for allocation of land to

Table 4.2
Results of the Acreage Response Function of Ginger in Wynad District (1984-85 to 1993-94)

Dependent Variable	Constant	Independent Variables						R ²	F
		P _{t-1}	A _{t-1}	Y _{t-1}	R _t	TP _{t-1}			
A _t	1,554.5281 (0.963)	-0.0108 (-0.015)	0.7137 (3.165) **	---	---	---	0.61	5.53	
A _t	-1,182.5069 (-0.321)	0.3214 (0.377)	0.6574 (2.735) ****	0.6036 (0.832)	---	---	0.65	3.76	
A _t	-1,598.4889 (-0.461)	-0.4927 (-0.491)	0.4265 (1.505) **	0.3674 (0.523)	1.7099 (1.347)	---	0.75	3.65	
A _t	1,094.3387 (0.463)	0.0781 (0.118)	1.1533 (3.787)	-0.0951 (-0.203)	0.6180 (0.702)	-1.5894 (-2.942) **	0.92	9.13	

Note: * - Significant at 1% level

** - Significant at 5% level

*** - Significant at 10% level

**** - Significant at 20% level

Source: Computed from the data published by: 1) Directorate of Economics and Statistics, Trivandrum. 2) Directorate of Cocoa, Arecanut and Spices, Calicut. 3) State Planning Board, Trivandrum.

ginger in Wynad district are presented in Table 4.2.

The R^2 ranges between 0.61 and 0.92. 'F' values are also significant in all the equations.

The positive and significant relation between lagged area and current area explains the steady growth of area under ginger in Wynad.

The negative and significant relation between lagged turmeric price and current area under ginger indicates that a fall in turmeric price in the last year would induce the farmers to increase area under ginger in the current year.

Lagged price of ginger is negative in two equations, however the coefficient is not statistically significant.

Lagged yield has the expected sign in two equations, but their influence is not statistically significant.

The positive relation between rainfall and current area indicates that increased rainfall in Wynad is favouring ginger cultivation.

In general, lagged area and lagged turmeric price are the important variables influencing current area under ginger in Wynad district.

4.2.2. Ernakulam District

The acreage response in Ernakulam is estimated to the data for the period 1976-77 to 1993-94 and for a sub-period 1981-82 to 1993-94 (Table B-3 in Appendix B). This is in order to capture the influence of substitute crop, pineapple (data of pineapple is not available till 1981-82). In Ernakulam

district two crops are reported as substitute crop of ginger, ie., turmeric and pineapple.

Since the secondary time series data on pineapple price is not available, current area under pineapple is taken as a proxy of lagged price.

The functional form used is given below:

$$A_t = f (P_{t-1}, A_{t-1}, Y_{t-1}, Tp_{t-1}, Ap_t, R_t)$$

All the independent variable except AP_t are the same as those used to analyse the all Kerala data and data with respect to Wynad. AP_t measures the current area under pineapple in Ernakulam district. The inclusion of AP_t in the equation fitted for Ernakulam district increases the explanatory power of the function.

Among these variables used for the analysis current area under pineapple is the only significant variable which is negatively related with current area under ginger (Table 4.3).

The lagged area is positively associated with current area in all equations except one but it is not statistically significant.

The lagged yield variable has the expected sign in all equations though these coefficients are not statistically significant.

The lagged price of ginger and rainfall do not have the expected sign but they have only an insignificant influence on current area under ginger.

The lagged price of turmeric has the negative sign in one equation but it is not statistically significant.

Table 4.3

Results of the Acreage Response Function of Ginger in Ernakulam District (1976-77 to 1993-94)

Dependent Variable	Independent Variables								
	Constant	P_{t-1}	A_{t-1}	Y_{t-1}	R_t	TP_{t-1}	PA_t	R^2	F
A_t	** 1,419.1702 (2.204) ****	-0.0487 (-0.426)	**** 0.3905 (1.578)	---	---	---	---	0.20	1.86
A_t	1,155.7043 (1.381) ****	-0.0780 (-0.598)	0.3239 (1.136)	0.1685 (0.512)	---	---	---	0.21	1.27
A_t	1,412.5142 (1.486)	-0.0452 (-0.315)	0.3523 (1.194)	0.1367 (0.402)	-0.1065 (-0.621)	---	---	0.23	1.01
A_t	859.9748 (0.812) ****	0.0476 (0.291)	0.2628 (0.869)	0.3620 (0.926)	-0.0317 (-0.174)	-0.1791 (-1.134)	---	0.31	1.08
@ A_t	2,233.3523 (1.931)	-0.0361 (-0.323)	-0.1693 (-0.295)	0.2689 (0.658)	0.0122 (0.074)	0.1510 (0.765)	*** -0.7128 (-2.375)	0.73	2.72

Note: * - Significant at 1% level

*** - Significant at 10% level

**** - Significant at 20% level

@ - Estimated for the period 1981-82 to 1993-94.

Source: Computed from the data published by: 1) Directorate of Economics and Statistics, Trivandrum. 2) Spices Board, Kochi.

3) State Planning Board, Trivandrum.

Thus, in Ernakulam district current year pineapple area may be the most important factor influencing area under ginger. This explains the negative growth rate of area under ginger.

4.3. Conclusion.

The factors influencing area under ginger are different in different districts. Supply response analysis of Kerala reveals that lagged values of price and area are the key variables favouring the growth of ginger area. In Ernakulam where the area under ginger is declining, current area under pineapple is found to have affected ginger cultivation. It shows the comparative economic advantage of pineapple over ginger in Ernakulam district. In Wynad where there has been a significant expansion of area under ginger, the lagged values of area and turmeric price are the major factors favouring ginger cultivation. Thus price of ginger and comparative advantage of substitute crops are important variables, influencing the acreage responses of ginger. Therefore, measures for encouraging ginger cultivation should be oriented in the context of regional disparities.

Chapter Five
Cost of Cultivation

Chapter Five

Cost of Cultivation

Data on cost of production is of great importance to producers, economists and planners. Information about cost of cultivation is useful to know the areas where it is most economical to produce various commodities and the regions which would accordingly be most suitable for development of industries based on agricultural raw materials. The data gap in the cost aspect is seriously felt in formulating agricultural development schemes and to fix support prices in the case of important crops (Kerala, Dept. of Economics and Statistics 1).

In the organised industry, regular accounts are maintained and, hence, the actual cost of production can be determined with great ease. In agricultural sector on the other hand, book keeping is an exception rather than the rule. A realistic assessment of the cost of cultivation and value of products of important crops of the state is necessary for the formulation and implementation of schemes in agricultural sector, fixation of support prices and provision of incentives to cultivators.

At the farm level the relative profitability, which is determined by the value of output and cost of cultivation is one of the important factors influencing the farmers' allocation of resources among alternative crops. At the micro levels it enables the farm management experts to study the efficiency

of the various cultivation practices to make practical recommendations for farm planning aimed at better allocation of existing resources and introduction of improved agronomic practices which would increase the efficiency of production of crops.

This chapter deals with the cost structure and profitability of ginger crops in Wynad and Ernakulam districts.

5.1. Prevailing Cultivation Practices

Ginger is derived from the rhizomes of 'Zingiber Officinale Roscoe' which is grown as an annual crop. Leaves are light green alternatively arranged linear with 15-25 cm. long and with a prominent midrib. Flowers are small, yellowish, speckled, each with a purple speckled lip and borne on a spike. There is no seed set in ginger probably due to low pollen fertility.

Ginger requires a warm and humid climate. It is mainly cultivated in the tropics from the sea level to an altitude of 1,500 metres and it can be grown over more diverse conditions than most other spices. In Kerala, it is grown purely as a rainfed crop.

For successful cultivation of the crop, a moderate rainfall at the sowing time till the rhizomes sprout, fairly heavy and well distributed showers during the growing period, a dry weather with a temperature of 28 to 30° C for about a month before harvesting are necessary (India, Ministry of Commerce, Spice India 3). Prevalence of high humidity throughout the crop period is desirable.

Table 5.1
Nature of Ginger Cultivation

Nature of Crop	Wynad District		Ernakulam District						
	Pullpalli	Ambalavayal	Meenangadi	Total Percentage					
	Number of farmers	Total Percentage	Paingottoor	Pothenicad					
			Total	Percentage					
Mono Crop	4	4	7	15	16.67	2	3	8	8.89
Inter-Crop	26	26	23	75	83.33	28	27	82	91.11
Total	30	30	30	90	100.00	30	30	90	100.00

Source : Primary data.

Table 5.2
Main Crops of Ginger

Main Crop	Wynad District			Ernakulam District				Total	Percentage	
	Number of farmers			Number of farmers						
	Pullpalli	Ambalavayal	Meenangadi	Total Percentage	Paingottoor	Kavalangad	Pothanicaad			Total
Rubber	---	1	4	5	5.55	20	22	17	59	65.55
Pepper	22	16	15	53	58.89	---	---	---	---	---
Coconut	4	3	---	7	7.78	5	4	6	15	16.67
Coffee	---	6	4	10	11.11	---	---	---	---	---
Arecanut	---	---	---	---	---	3	1	4	8	8.89
Total	26	26	23	75	83.33	28	27	27	82	91.11

Source: Primary Data.

Ginger requires a well drained soil as water logging retards the growth and promotes the development of diseases caused by fungus. It thrives best in well drained soil like sandy or clay loams, red loams or laterite loams having good drainage and rich in humus content. Ginger being an exhausting crop, it should not be planted in the same site year after year. It will lead to infestation of disease especially soft rot which tends to decrease the yield. Therefore, it is commonly rotated with other crops. The rotating crops of ginger are tapioca, banana, sesame, yam and lemon grass. Crop rotation aids in controlling many plant insects and diseases and keeping fields free of weeds (Hughes and Metcalfe 213).

Ginger is grown both as a monocrop and as an intercrop. Table 5.1 shows that about 83.33% of sample farmers in Wynad and about 91.11% in Ernakulam are cultivating it as an intercrop. In Wynad, about 58.89% of farmers are cultivating it in pepper gardens while in Ernakulam, about 65.55% of ginger farms are in rubber plantations (Table 5.2). Ginger is grown in the rubber plantations during the first two or three years. Since the cultivation is advantageous to rubber, the rent to be paid is comparatively low.

The best time for planting ginger is during the first fortnight of April, after the pre-monsoon showers. Many cultivators report that early planting with the receipt of good summer showers consistently gives higher yield.

Ginger is propagated by portion of the rhizomes known as seed rhizomes. The seed used is generally the rhizomes kept from the previous crop. For seed material, big and healthy rhizomes from disease free plants are sel-

ected immediately after harvest. For this purpose, healthy and disease free clumps are marked in the field when the crop is 6-9 months old.

The seed rate differs widely from region to region. In the National Seminar held at Calicut on Ginger in April, 1980, it was recommended that the seed rate for ginger should be between 1200 to 1800 kgs. per hectare. (India, Ministry of Rural Development, 14-15). But in many cases, growers follow conventions as prevalent in the areas which may be at variance with the optimum seed rate. The seed rate depends on factors like variety, climate and method of planting. It has been reported that the seed rate per hectare varies from 1500 to 1800 kgs. and 800 to 900 kgs. in Wynad and Ernakulam district respectively.

The seed rhizomes are treated with 0.3% Dithane m 45 for 30 minutes, drained and planted at a spacing of 15-20 cm. along the rows and 20-25 cm. between the rows. The seed rhizomes are put in shallow planting pits prepared with a hand hoe and covered with well rotten farmyard manure and a thin layer of soil and levelled.

5.1.1. Mulching

Mulching the beds with green leaves is an important operation for ginger. The rainfed cultivation of ginger necessitates heavy mulching. The beneficial effects of mulching have been reported by several cultivators in the study area. Mulching the ginger beds with green leaves is essential to enhance germi-

nation and to prevent washing off soil due to heavy rains. It also helps to control weed growth, provides organic matter and improves the physical properties of the soil. The first mulching is done at the time of planting with green leaves at the rate of about 12 tonnes per hectare. Mulching is to be repeated at the rate of 5 tonnes of green leaves six weeks later.

5.1.2. Manuring

Ginger is an exhausting crop and requires heavy manuring. Well decomposed and dried cattle manure at the rate of 5-7 tonnes per hectare is applied by spreading over the beds prior to planting. Application of neem cake at the rate of two tonnes per hectare helps in reducing the incidence of rhizome rot of ginger to an extent and increases the yield. In addition to this basal application, most of the farmers apply chemical fertilizers 4-6 times.

5.1.3. Weeding

Inter-culturing is a major component in the cost of cultivation of ginger. It is important that unwanted plants are removed from the field for proper growth of ginger. The crop is very conducive to weed growth. Weeding is done just before fertilizer application and mulching. Two or three weeding are required depending on the intensity of weed growth. Earthing-up is done generally once but rarely twice. Proper drainage channels are to be provided when there is

stagnation of water.

Ginger is affected by a number of diseases leading to varying degrees of crop damage and yield reduction. No one among the sampled farmers is free from this fear. All farmers report the use of plant protection chemicals at different stages of cultivation.

5.1.4. Harvesting

The crop is ready for harvest in about eight months time when the leaves turn yellow and start gradually drying up. The clumps are dugout carefully with hoes, and the rhizomes are separated from the leaves. Harvesting is done from 6th month onwards for marketing the produce as fresh ginger. For dry ginger, the harvesting should be carried out after the optimum period of growth.

In Wynad, harvesting is delayed and the crop is allowed to remain in the field, especially when the market is not favourable. It has been reported that the crop may be left unharvested even for a period of one year. Experts are of the opinion that this practice is not found in other parts of Kerala.

The field survey shows that more than 50% of farmers in both the districts come under medium farms. (Table 5.3).

It is seen from the Table 5.4 that about 83.3% of the sampled farmers in Ernakulam district cultivates ginger on leased in land while in Wynad only 60% of them are cultivating ginger on leased land.

Table 5.5 shows the source of funds of sampled farmers. More than

Table 5.3
Distribution of Ginger Farmers among Different Size Groups

Size Group	Wynad District			Emakulam District						
	Number of farmers			Number of farmers						
	Pullpalli	Ambalavayal	Meenangadi	Total	Percentage	Paingottoor	Kavalangad	Pothanicad	Total	Percentage
Small Farmers	8	11	11	30	33.33	7	12	10	29	32.22
Medium Farms	19	14	13	46	51.11	20	15	16	51	56.67
Large Farms	3	5	6	14	15.56	3	3	4	10	11.11
Total	30	30	30	90	100.00	30	30	30	90	100.00

Source: Primary data.

Table 5.4
Nature of Land Ownership

Land Ownership	Wynad District				Ernakulam District					
	Number of farmers		Total	Percentage	Number of farmers		Total	Percentage		
	Pullpalli	Ambalavayal			Meenangadi	Paingottoor			Kavalangad	Pothanicaad
Own Land	14	10	12	36	40.00	3	4	8	15	16.67
Leased -in Land	16	20	18	54	60.00	27	26	22	75	83.33
Total	30	30	30	90	100.00	30	30	30	90	100.00

Source: Primary data.

Table 5.5
Source of Funds of Ginger Farmers

Sources of funds	Wynad District				Ernakulam District					
	Number of farmers				Number of farmers					
	Pullpalli	Ambalavayal	Meenangadi	Total	Percentage	Paingottoor	Kavalangad	Pothanicad	Total	Percentage
Own Fund	10	6	8	24	26.67	3	7	5	15	16.67
Commercial Banks	3	4	5	12	13.33	---	2	1	3	3.33
Co-operative Society	17	20	17	54	60.00	27	21	24	72	80.00
Money Lenders	16	19	14	49	54.44	10	18	14	42	46.67

Source: Primary data

60% of farmers in both districts depend upon cooperative societies. But the amount of loans given by these societies are inadequate for their needs. So most of them also depend on money lenders.

5.2. Cost of Cultivation of Ginger

For determining the cost of cultivation, a method similar to one followed by the 'Farm Management Studies' is adopted. Cost components are divided into three categories, viz., Cost A, Cost B, and Cost C.

All direct expenses incurred in production of output in cash and kind are included in Cost 'A'. Cost 'B' is defined as Cost 'A' plus interest on fixed capital investment plus rental value of land. Cost 'C' is obtained by adding imputed value of family labour to Cost 'B'.

5.2.1. Evaluation of Inputs

Different inputs used by the cultivators are evaluated as follows:

5.2.1.1. Human Labour

Labour both family and hired are evaluated on the basis of daily wage rate prevalent in the locality.

5.2.1.2. Materials

Cost of materials like seed, green leaves, manures, fertilizers and plant protection chemicals are calculated at the village site prices.

5.2.1.3. Rental Value of Land

Rent is estimated on the basis of the amount paid by those farmers who leased in land for ginger cultivation.

5.2.1.4. Interest on Working Capital

It is calculated at 12% per annum, i.e., the rate of interest charged by cooperative societies and commercial banks on agricultural loans.

5.2.1.5. Depreciation

Depreciation is calculated as the expenditure on repair and maintenance of farm implements.

5.2.1.6. Land Revenue

It is not included in the cost of cultivation because most of the farmers

are cultivating ginger as an intercrop.

The expenditure per hectare of ginger cultivation on different cost basis for different size groups in both the districts are given in Table 5.6. The total cost of cultivation (Cost 'C') per hectare of ginger varies from Rs.71,245 (small farms) to Rs. 80,285 (large farms) in Wynad. On an average, the total cost of cultivation in Ernakulam district is about Rs.57,112.50 (small farms) to Rs.66,462.50 (large farms). Thus the cost of cultivation varies among different farm sizes and between the districts.

It is observed that the small farmers are not able to take full care of their holdings because they are not financially sound whereas the medium and large farmers are able to apply more manures and fertilizers. Higher cost of cultivation in Wynad district is due to larger use of inputs. The cost of cultivation on large farms in Wynad district is about 24% higher than the similar category farms in Ernakulam district.

5.2.2. Cost of Cultivation per Quintal

On an average, cost of cultivation per quintal is about Rs.452 in Wynad whereas the corresponding figure is Rs. 677 in Ernakulam district. (Table 5.7)

The higher cost of cultivation per quintal is incurred by small farms in both the districts. But in both these cases the costs per hectare are low and the higher cost per quintal indicates the lower yield per unit of land.

In both the districts, the lowest cost of cultivation per quintal of ginger

Table 5.6
Cost of Cultivation of Ginger for various cost concepts (Rs. per hectare)

Size Group	Wynad District			Emakulam District		
	Cost `A'	Cost `B'	Cost `C'	Cost `A'	Cost `B'	Cost `C'
Small	48,417.50	58,417.50	71,245.00	37,277.50	44,777.50	57,112.50
Medium	60,357.50	70,357.50	76,325.00	49,387.50	56,887.50	63,445.00
Large	67,265.00	77,265.00	80,285.00	55,650.00	63,150.00	66,462.50
Average	58,680.00	68,680.00	75,952.00	47,438.00	54,938.00	62,340.00

Source: Primary data.

Table 5.7
Cost of Cultivation of Ginger for Various Cost Concepts (Rs. per quintal)

Size Group	Wynad District			Ernakulam District		
	Cost 'A'	Cost 'B'	Cost 'C'	Cost 'A'	Cost 'B'	Cost 'C'
Small	342.00	412.00	503.00	489.00	587.00	749.00
Medium	351.00	410.00	444.00	509.00	586.00	654.00
Large	342.00	392.00	408.00	527.00	598.00	629.00
Average	345.00	405.00	452.00	508.00	590.00	677.00

Source: Primary data.

is observed in the case of large farms wherein the cost per hectare is higher than others. This indicates that higher investment per hectare has resulted in higher yield.

5.2.3. Components of Cost of Cultivation

The various items that constitute the cost of cultivation of the crop can be broadly classified into labour cost (human) and non-labour cost (manure, fertilizer, seed, pesticides and overhead cost). Analysis of components of cost (Table 5.8) indicates that total labour cost accounts for single largest cost item.

On an average the hired labour cost per hectare of ginger in Wynad and Ernakulam are Rs. 15,642 and Rs.13,680 respectively. The corresponding figures of imputed value of family labour are Rs. 7,272 and Rs.7,402. Thus, the total labour cost in Wynad is about Rs. 22,914 which constitutes 30.17% of the total cost of cultivation. In Ernakulam district, the total labour cost (Rs.21,082) accounts for 33.82% of total cost. The difference in the share of labour cost is attributed to larger use of all inputs other than land and difference in scale of cultivation.

The labour cost is calculated at the rate of Rs.50 per male and Rs.35 per female which is the average wage rate in both the districts during 1994-95.

The survey shows that on an average, ginger cultivation per hectare in Wynad district generates employment to about 938 males and 320 females. The corresponding figures in Ernakulam district are 645 males and 613 females.

Table 5.8
Components of Cost of Cultivation of Ginger (Rs. per Hectare)

Sl.No.	Items	Wynad	Percentage	Emakulam	Percentage
1.	Labour cost (Hired)	15,642.00	20.60	13,680.00	21.95
2.	Seed	17,500.00	23.04	15,000.00	24.06
3.	Manures	12,477.50	16.42	6,737.50	10.80
4.	Chemical fertilizers	8,185.00	10.78	7,815.00	12.54
5.	Plant protection	487.50	0.64	595.00	0.95
6.	Repair and maintenance of implements	250.00	0.33	250.00	0.40

(Cont'd...)

Sl.No.	Items	Wynad	Percentage	Emakulam	Percentage
7.	Interest on working capital	3,887.50	5.12	3,110.00	5.00
8.	Other expenses	250.00	0.33	250.00	0.40
	Cost `A'	58,679.50	77.26	47,437.50	76.10
9.	Rental value of land	10,000.00	13.17	7,500.00	12.03
	Cost `B'	68,679.50	90.43	54,937.50	88.13
10.	Imputed value of family labour	7,272.00	9.57	7,402.00	11.87
	Cost `C'	75,951.50	100.00	62,339.50	100.00

Source: Primary data.

COMPONENTS OF COST OF CULTIVATION OF GINGER (Rs. PER HECTARE)

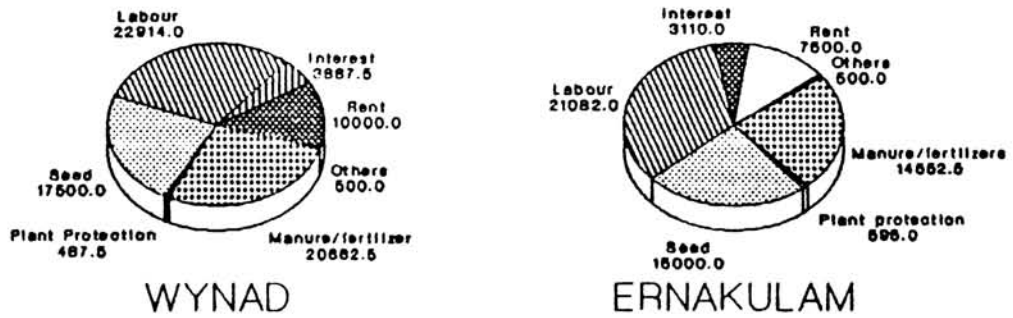


Figure 5.1

The second major component of cost of cultivation is manures and fertilizers. The share of manures and fertilizers towards total cost of cultivation in Wynad and Ernakulam are about 27.2% and 23.34% respectively. Farmers of both the districts report that yield per hectare of ginger (disease-free crop) increases with increase in expenditure on this item.

The contribution of seed towards the total cost of cultivation of Wynad and Ernakulam are about 23.04% and 24.06% respectively. The farmers of Wynad are planting 1500 kgs. of rhizomes per hectare while the corresponding figure in Ernakulam is 750 kgs.

The seed rate remains more or less constant among different farm sizes in each district. The seed requirement per hectare depends on cultivating variety which varies from region to region. The rental value of land in Wynad is Rs. 10,000 which accounts for 13.17% of the total cost. The average rental value per hectare in Ernakulam district is about Rs. 7,500 which constitutes 12.03% of the total cost.

5.3. Average Yield

The average yield per hectare depends on a number of factors like variety, agro-climatic conditions and cultural practices. The field survey shows that the average yield of ginger in Wynad ranges between 14,165 kgs. and 19,680 kgs. per hectare in terms of fresh ginger. The average yield in Ernakulam district varies from 7,628 kgs. to 10,555 kgs. per hectare (Table 5.9).

Table 5.9**Estimated Yield per hectare (Kgs.)**

	Wynad	Ernakulam
Size	(Kgs)	(Kgs)
Small	14,165	7,628
Medium	17,173	9,705
Large	19,680	10,555
Average	17,006	9,296

Source: Primary data.

5.4. Inter-district variations in Cost of Cultivation

Cost of cultivation of all categories of farmers in Wynad district are substantially higher than the cost incurred by the respective categories in Ernakulam district. On an average, cost of cultivation per hectare in Wynad is about 21% higher than that of Ernakulam district. Item-wise breakup of cost of cultivation (Table 5.8) shows that although the proportion of each item to total cost is

more or less same in two districts, farmers in Wynad invest more on all major inputs including seed.

There is considerable variations in the characteristics and qualities of the varieties grown in these districts. The common varieties grown in Wynad are 'Himachal' and 'Rio-de-janeiro' while 'Kuruppampady', 'Chalu' and 'Maran' are the important varieties of Ernakulam district. In case of 'Himachal' and 'Rio-de-janeiro', larger quantities are required for seed purpose for a given unit of land compared to other varieties.

Besides, more manures and fertilizers are required for high yielding varieties like 'Rio-de-janeiro' for better results.

Again, the rent on land is about 33% higher in Wynad compared to Ernakulam.

These are the main reasons for substantial variations in cost of cultivation between these two districts.

5.5. Profitability of Ginger Cultivation

The net profit per hectare of ginger for various cost concepts are summarised in Table 5.10. It is observed that on an average, the farmers of Wynad earn a profit of about Rs.51,593 per hectare while farmers of Ernakulam district earn only Rs.25,971. The large farms of both the districts earn the higher profit among all categories.

Table 5.10

Net Profit of Ginger for Various Cost Concepts (Rs. per hectare)

Size Group	Wynad District			Emakulam District		
	Gross Income	Cost 'A'	Cost 'B'	Gross Income	Cost 'A'	Cost 'B'
Small	1,06,237.50	57,820.00	47,820.00	72,462.50	35,185.00	27,685.00
Medium	1,28,795.00	68,437.50	58,437.50	92,197.50	42,810.00	35,310.00
Large	1,47,600.00	80,335.00	70,335.00	1,00,272.50	44,622.50	37,122.50
Average	1,27,545.00	68,865.00	58,865.00	88,311.00	40,873.00	33,373.00
						Cost 'C'
						15,350.00
						28,752.50
						33,810.00

Source: Primary data.

Table 5.11
Number of Sampled Farmers Incurred Losses in Ginger Cultivation

Wynad District		Ernakulam District	
Village	No. of farmers	Village	No. of farmers
Pulpalli	10	Paingottoor	7
Ambalavayal	7	Kavalangad	5
Meenangadi	6	Pothanicad	7
Total	23 (26%)	Total	19 (21%)

Source: Primary data.

The analysis clearly indicates that the higher profit is on account of disease free crop and application of larger quantities of manures and fertilizers. The lower profit is mainly due to low investment per hectare and plant diseases. Therefore, it is in the interest of cultivators to invest more to earn more profit.

Table 5.11 shows that about 26% of sampled farmers in Wynad and about 21% in Ernakulam district incur loss from ginger cultivation during 1994-95. The main reason for the negative profit on these farms is attributed to the partial attack of rhizome rot.

5.6. Conclusion

The study shows that more than 80% of farmers in both the districts have grown ginger as an intercrop in coconut, arecanut, pepper and rubber plantations. Ginger is a soil exhaustive crop and it should not be grown in the same field year after year. Therefore, it is commonly rotated with other crops like tapioca, paddy, banana, yam and sesame.

The analysis of cost structure of the farmers reveal that labour cost is the largest item which accounts for more than 30% of the total cost of cultivation. Seed, manures and fertilizers and rental value of land are the other major components of cost of cultivation.

The cost of cultivation, yield and net profit per hectare vary from district to district. It throws light on the comparative advantage enjoyed by one dis-

tract over another on all these aspects.

Although the cost of cultivation per hectare is higher in Wynad, net profit is about 50% higher due to higher yield per hectare. Agro-climatic conditions and use of high yielding variety seeds are the main reasons for higher yield per hectare in Wynad.

However, the importance of ginger produced in Ernakulam district can't be ignored. At present, about 80% of dry ginger exported from India is Cochin ginger which has been one of the best quality in international market. So it is imperative to reduce the cost of production per unit of ginger by introducing high yielding variety which is suitable for drying purpose.

Thus, there should be a regional approach to boost the ginger output of Kerala taking into account the regional disparity in cost of cultivation, yield and net profit per hectare.

Chapter Six
Marketing

Chapter Six

Marketing

The development of marketing is an integral part of agricultural development in a developing country. The role of an efficient agricultural marketing system as a key component for accelerating agricultural production and thereby promoting economic growth in developing nations is now widely accepted (Saini et al. 260). The growth of market economy is the result of the evolution of money as a medium of exchange which has transformed our society from subsistence economy to exchange economy. The gradual process of evolution of money economy has also separated the consumers and producers in two different groups and here the marketing machinery provides a link between the two ends.

Marketing has developed in importance and complexity as economic development and specialisation have increased our productive capacity and separated food producers from consumers (Kohls and Ull 14). Whatever development that took place in the sphere of marketing was due to the gradual progress made towards the commercialisation of agriculture. Increased commercialisation arises in part because farmers become more specialised in production as they enter the market economy (Mellor *The Economics of Agricultural Development* 331). The extent of specialisation depends, inter alia, upon the

performance of its marketing system. Agricultural marketing, thus, is intimately bound-up with the process of economic development which rests on the specialisation of production for sale to others (Jha and Singh 662).

Kohls defines marketing as "the performance of all business activities involved in the flow of goods and services from the point of initial agricultural production until they are in the hands of the ultimate consumer" (6).

Agricultural marketing, in its widest sense comprises all operations involved in the movement of products and raw materials from the field to the ultimate consumer. Thus the process of marketing includes activities such as assembling, processing, grading, transporting, storing, risk bearing and advancing credit.

An efficiently organised market system not only facilitates the proper and smooth disposal of what the farmer produces but also acts as a catalyst to stimulate increased production. In fact, any plan of agricultural development will remain half executed if agriculturists do not feel enthusiastic in viewing agriculture as a gainful occupation. An efficient and reliable marketing system by itself can stimulate increase in agricultural production while lack of it can lessen, subdue and shrink the impact of any number of production programmes, administrative efforts and volume of investment (Jha and Singh 662).

Agricultural marketing is not only the vehicle of exchange but it performs also the productive, distributive and allocation functions and thereby influences income, employment, pattern of distribution and agricultural and farmers development in general and economic development in particular (Jha 85).

For a greatly populous developing country like India where an enormously big chunk of population is yet to be freed from the grip of hunger, the importance of an efficient system of agricultural marketing can hardly be emphasised. The growth of non-agricultural sector is not impeded but actively encouraged through the availability of sufficient food in the urban centres.

In short, agricultural marketing buildup and creates required environment and conditions for rapid economic growth. Any plan of economic development that aims at diminishing the poverty of agricultural population, reducing consumer food prices, earning more foreign exchange or eliminating economic waste, has therefore, to pay special attention to the development of efficient marketing for food and agricultural products (Jha and Singh 664).

The study of marketing is important to both the individual and society:

To the individual, an understanding of marketing is important primarily because of the economic gains that understanding can bring.

To society, benefits accruing to a better informed public include lower costs, more output per dollar of expenditure or a better quality product (Purcell 5).

The State of Kerala is one of the most commercialised regional economies in India. Marketing of agricultural produce is of special significance in Kerala where high value cash crops dominate the agricultural sector.

This chapter discusses the marketing of fresh and dry ginger in the study area.

6.1. Utilization Pattern

Ginger is a cash crop which is propagated vegetatively. Produce stored for this purpose varies from region to region depending upon the seed rate, variety, soil, cultural practices and the cropping plan of the farmers for the next year. Some farmers are retaining larger quantities for future sales. On an average, about 15% of the produce is kept for seed in Ernakulam district while in Wynad, farmers kept about 18% for this purpose. Generally it can't be stored for long due to its perishable character. The practice of payment of wage in kind is not prevalent in Kerala.

6.2. Season for Marketing

The crop is ready for harvest by December to January. The dry ginger arrives in the market from January onwards. The peak arrivals of dry ginger are from January to April, when major portion of the harvested crop move into the assembling markets. For the sale of ginger as vegetable, harvesting is done from September onwards.

6.3. Marketing System

The marketing system for ginger in Kerala consists of ginger growers,

merchants and other intermediaries.

In Kerala, the major ginger growing state, there are no regulated markets while in some other states like Karnataka and Himachal Pradesh there are a few regulated markets transacting ginger (Lakshmanachar and Velappan 217).

Fresh ginger contains lot of moisture and is, therefore, perishable in nature, unless stored properly. In view of its perishability the farmers are interested to sell the same as early as possible. However, dry ginger has much lesser moisture and therefore, less perishable, but that too is mostly sold immediately after processing.

About 90% of the marketable surplus of ginger produced in Ernakulam district is marketed as dry ginger while in Wynad the crop is marketed mostly in fresh form. One of the best quality ginger in international market, viz., 'Kuruppampady ginger' is grown in Kuruppampady areas of Ernakulam district. The common variety of ginger cultivated in Wynad is 'Rio-de-janeiro' which is best suited for sale as fresh ginger. The rhizomes of 'Rio-de-janeiro' are bold in size and has higher moisture content. They are not suitable for drying purpose.

6.4. Mode of Marketing in Ernakulam District (Dry Ginger)

Since the ginger cultivators are mostly small and marginal farmers with limited surplus, they find it convenient to sell the produce to the itinerant or village merchants. Besides, most of them are not generally familiar with the

marketing practices followed in the upstream market.

In the villages or at the farms, the prices are decided by negotiations. Prices of dry ginger are settled on the basis of quality and moisture content of the produce. The price prevailing in the Cochin market is taken into account for fixing the procuring price of dry ginger.

The processing of the ginger is carried out by the cultivators as well as by the traders. Some of the village merchants make the purchase of green ginger from the growers and get them converted into dry ginger at their own place. Then the product reaches to the assembling markets or collection centres.

The assembling of ginger generally takes place in two ways. Firstly, the growers themselves take the produce to the nearby markets for sales. Secondly, the village merchants purchase ginger from growers in the villages and take the same to the assembling markets. Village merchants have a major role in assembling the product.

In Kerala, there are about 17 assembling markets or collection centres. They are Cochin, Calicut, Tellichery, Alleppy, Adoor, Konni, Ponkunnam, Palai, Thodupuzha, Muvattupuzha, Perambra, Valapattanam, Kattapana, Adimali, Nedumkandam, Kothamangalam and Perumbavoor (India, Ministry of Commerce, *Report on the Domestic Survey of Spices 19*).

From the assembling markets the product reaches the terminal markets. Terminal markets are the chief distributing centres or centres for export. Supplies to such market reach mainly from the assembling centres. The important

terminal markets of dry ginger in India are Cochin, Calicut, Bombay, Calcutta and Patna. Cochin is the most important assembling market for dry ginger in the country.

Ginger received at Cochin is mostly from Muvattupuzha, Thodupuzha, Kothamangalam, Kuruppampady, Perumbavoor and other neighbouring areas. Cochin is a major point of distribution. Dry ginger is supplied from there throughout the country. Wynad is a major source of supply of dry ginger to Calicut. The arrivals of dry ginger to Calicut are reported to be small compared to Cochin.

From this distributing centres dry ginger is dispatched to consuming centres in other states. Cochin is an important point of export of dry ginger from India. The dry ginger is graded by the exporters before exporting.

6.5. Mode of Marketing in Wynad (Fresh Ginger)

In Wynad district, a very small quantity of the produce is converted into dry ginger. The survey conducted as part of this study has found that about 90 % of the farmers sell the product in fresh form. The cultivators sell fresh ginger either to the village merchants or small traders in nearby towns. These towns, viz., Kalpetta, Meenangadi, Pulpalli, Sultan's Battery and Manantody act as collection centres. Local consumption is not significant. The wholesale traders of these markets dispatch the product to consuming centres in other states like Madras, Coimbatore, Trichy, Bangalore and Hyderabad.

6.6. Processing of Ginger

Processing is a very important function in the marketing process of product. The conversion of farm produce into more tradable and consumable form is known as processing. The Central Food Technological Research Institute has developed know-how for mechanical processing of dry ginger. But this method of processing is not popular in Kerala. The traditional process of preparing dry ginger involves the following steps.

The plant materials are removed after harvesting by using a knife or a sharp instrument. After cleaning, the outer skin is removed with sickle or knife. Carelessness and excessive scrapping may remove epidermis cells containing essential oils affecting the quality of the dry ginger adversely. Peeled fresh ginger is spread out uniformly on a clean floor and allowed to dry for 8 - 10 days. When the rhizomes break easily, drying is considered as complete. This is called unbleached dry ginger. The presence of excess moisture is harmful for the quality of the produce. The whole processing method takes about 15 - 20 days.

To get good appearance, peeled rhizomes are soaked in 2% quicklime water for six hours and then dried and this is known as bleached ginger. But the practice of making bleached ginger is not prevalent at farmers' level.

The sampled farmers report that the yield of dry ginger is 20 to 28% of the fresh ginger depending on variety and location where the crop is grown. The cost of processing of one quintal of ginger is about Rs.400 (Table 6.1).

Table 6.1.**Cost of Processing Ginger (Rs per quintal)**

Particulars	Cost.(Rs.)	Percentage
Peeling	320.00	80
Sun-drying	80.00	20
Total Cost	400.00	100

Source: Primary data

6.7. Storing

Agricultural production has a number of peculiarities which influence the marketing of the produce. Most farm products are seasonal and hence require their preservation. In fact the need for storage arises fundamentally out of the lack of adjustment between the time of production and the time of consumption of goods. Storage enables the producer to realise a better price for his produce. Storage provides a distinct benefit to the producers and traders.

6.7.1. Storage of Seed Rhizome

Ginger is always propagated by portions of the rhizomes, known as seed rhizomes. There is a gap of 4 to 5 months between harvesting and planting of ginger. The rhizomes are required to be preserved during this period. The rhizomes to be stored for seed are given a coating of cow-dung by dipping it in cow-dung solution and is allowed to dry in a shady place. These are kept in a clean dry room and a layer of dry leaves is spread over it. The room is periodically subjected to smoking to avoid insect infestation. It is carried out twice in a week till the rhizomes are taken out for planting.

6.7.2. Fresh Ginger

Supply of ginger is limited to only a few months immediately after harvest whereas the demand for the commodity is throughout the year. Fresh ginger is highly perishable and the producers do not store it more than the minimum period required for disposal. No elaborate arrangement is made for the storage of fresh ginger. Till the ginger is sold, it is kept in ordinary rooms. In case they are to be stored for longer period, a clean dry place is selected. Under ordinary conditions fresh ginger can be stored for 2 to 3 months depending upon season and maturity of the produce. Occasionally, water is sprinkled to maintain the freshness of the produce and avoid drying. The qual-

ity deterioration is quicker in immature ginger as compared to matured ginger. The retailers generally get the stock which they are able to dispose of within a reasonable period.

6.7.3. Dry Ginger

The dry ginger can be stored for a longer period without much quality deterioration. The dry ginger can be kept in storage for about 6 months. It is kept in godowns or in ordinary rooms in gunny bags. In storage, during rainy season, the dry ginger often get infested by weevils. The infested product fetches a lower price. The cooperative marketing societies in the study area are not providing storage facilities to farmers. They are handling only a small quantity of total ginger production. Traders and few big farmers store the product in godowns in Cochin through commission agents. Carefully cleaned, dried bagged dry ginger is stored in large quantities mainly in Cochin market.

6.7.4. Wastage in Storage.

The important factors responsible for losses in storage of ginger are dehydration, rhizome rot and damage by insects. The extent of storage losses depends upon the nature of storage facilities, conditions of the product stored, weather conditions and the storage period.

The wastage in storage of fresh ginger may be high unless adequate precautions are taken. The rhizome rot is a very serious disease and spreads quickly under congenial conditions. The wastage in storage can be as high as 20% of the stock especially for seed rhizomes. It is important that the stock preserved for the purpose of seed is often inspected to remove the affected rhizomes. Aeration is the other important consideration.

The loss in storage of fresh ginger at the level of traders may be to the extent of 5 to 10%. The loss increases with the period of disposal. There is also certain loss due to dehydration of the stock.

In the case of dry ginger, wastage is less compared to green ginger. The loss on account of dehydration is negligible in well dried stock. The wastage can be 1.5 to 2% of the stock, depending upon the period of storage and weather conditions.

6.8. Packing

Producers generally use gunny bags to take ginger to the markets. The capacity of the bag varies from region to region. In Ernakulam district, growers and traders generally pack 50 to 60 kilograms of ginger in a gunny bag. In Wynad, however, pack 60 kilograms in the same type of container. The cost of a new gunny bag is about Rs.15. In view of lower cost, use of second hand gunny bag is common. In certain cases, village merchants purchase fresh ginger directly from the field or residence and no packing material is used.

Green ginger is highly perishable and aeration is an important consideration. The containers used for packing of fresh ginger should have adequate space for aeration and compact packing should be avoided.

6.9. Transportation

Transportation is an important link in the process of marketing of agricultural produce. For improved and orderly marketing, the existence of quick, reliable and cheaper means of transportation system is essential. A well developed and efficient system of transport helps in expanding the size of the market, reduce transit time and economises cost of transportation.

In the case of fresh ginger, delay in transit results in considerable losses. Normally, the produce is to be moved from the farm to assembling centres, from there to distributing centres and then to the consuming centres. The assembling markets are located within a short distance and the farmers or village merchants make use of tempo, jeep and auto-ricksha according to the saleable quantity. The cost of transport depends on the mode of transport and distance. The mode of transport is same in Ernakulam and Wynad district. On an average, the cost of transporting one bag (50 kgs.) of ginger to assembling market within a distance of 15 kilometers is estimated as Rs. 7/-

6.10. Grading

In order to gain the consumers' confidence and establish a rational relationship between the quality of a produce and its price it is necessary to devote some attention to the proper preparation, sifting and sorting of a material according to certain attributes before it is taken to the market. This is sought to be achieved by grading the produce in conformity with certain accepted quality standards, viz., shape, form, weight and other physical and technical characteristics.

In producing areas, practically no grading is followed by the producers. At traders level also, the grading is very limited. In trade, the quality of dry ginger is assessed on the basis of the factors like maturity, colour, size, weight of the rhizome, aroma, pungency, fibre content, moisture and cleanliness. For green ginger, besides aroma and pungency, maturity, freshness, colour, shape, size, weight, cleanliness, and wetness are considered as important over other. The grading and inspection of ginger is done by the exporters.

6.11. Marketing Channels

The study of marketing channels is essential for evaluating the market structure, conduct and performance. The marketing channel means the passage or channel through which a commodity travels from the producer to the final consumer.

Ginger is grown in certain areas having favourable agroclimatic conditions but consumed throughout the country. Many of the consuming centres are located far away from the producing centres adding to the problem of distribution. In the distribution system of ginger, generally, producers do not have any significant role. The distribution is mainly in the hands of the traders. There are a number of intermediaries like village merchants, small traders, commission agents, exporters, wholesalers and retail merchants between the producer and the ultimate consumer.

The role of cooperative societies in marketing of ginger in the country as a whole is insignificant. In Kerala, the State Cooperative Marketing Federation Limited, NAFED and a few cooperative marketing societies occasionally deal with ginger. But their share in the total ginger trade is small.

Due to the existence of various agencies working between producer and consumer there are different channels for the same commodity. Various marketing channels are summarized below. Since the mode of marketing in Ernakulam district differs from that in Wynad, marketing channels in the two districts are analysed. The important channels are described below:

6.11.1. Farmer → Village Merchant → Wholesaler/Town Merchant → Commission Agent → Secondary Wholesaler → Retailer → Consumer

This is the most commonly used method of sale among the ginger growers. It has been found that about 42% of farmers of Wynad district and about

Table 6.2
Method of Sale

Inter- mediaries	Wynad District			Ernakulam District			Total	Percentage		
	Number of farmers			Number of farmers						
	Pullpalli	Ambalayayal	Meenangadi	Paingottoor	Kavalangad	Pothanicad				
Village Merchant	13	15	10	38	42	20	14	10	44	49
Town merchants	10	10	17	37	41	---	---	---	---	---
Wholesalers	---	---	---	---	---	8	13	14	35	39
Commission Agents	7	5	3	15	17	2	3	6	11	12
Total	30	30	30	90	100	30	30	30	90	100.00

Source: Primary data.

49% of farmers of Ernakulam district disposed of their produce through this channel (Table 6.2).

This channel is more popular with the marginal and small farmers. Due to poor holding capacity and inadequate facilities the farmers do not generally hold the produce for a very long period. Secondly, the quantity of produce also happens to be meagre. Prices are settled by negotiations between the producers and the merchants on the basis of quality and moisture content of the produce. These merchants in turn sell the produce to traders in nearby towns or assembling market.

6.11.2. Farmer → Wholesaler / Town Merchant → Commission Agent → Secondary Wholesaler → Retailer → Consumer

About 39% of the farmers in Ernakulam district market their produce through this agency. These merchants in town sell dry ginger to wholesalers/exporters through commission agents.

In Wynad district, town merchants sell the fresh ginger to the agents of wholesalers. They dispatch the product to the consuming centres of other states on behalf of wholesalers. The commission per bag (60 kgs.) of fresh ginger is reported to be 10 rupees. The wholesale merchants have collection centres all over India.

6.11.3. Farmer → Commission Agent → Wholesaler → Retailer → Consumer

About 12% of the sampled farmers of Ernakulam district and 17% of farmers in Wynad district adopt this channel for the sale. Conditions of sale are negotiable between the two parties. Commission agents sell the produce to industrial users/wholesalers/exporters. The wholesalers dispatch the dry ginger to consuming centres in other states.

6.11.4. Farmer → Cooperative Marketing Society → Kerala State Co-operative Marketing Federation / NAFED → Wholesaler → Retailer → Consumer

No one among the sampled farmers reported marketing of the produce through this channel. Only a few cooperative marketing societies deal in dry ginger. In Kerala, these societies deal in ginger along with other hill produce and the total quantity handled is very small. Societies in turn sell either to Kerala State Cooperative Marketing Federation or to NAFED.

The State Cooperative Marketing Federation procured ginger in 1978-79 when over production and the consequent fall in price even below the economical level caused crisis in ginger trade. So also during 1985-86, they had to enter the field to make procurements at economic price and regularise its supply. But the KSCMF and NAFED are not regularly procuring ginger every year. So this channel may not be found in all the years.

Marketing Channels of Dry Ginger.

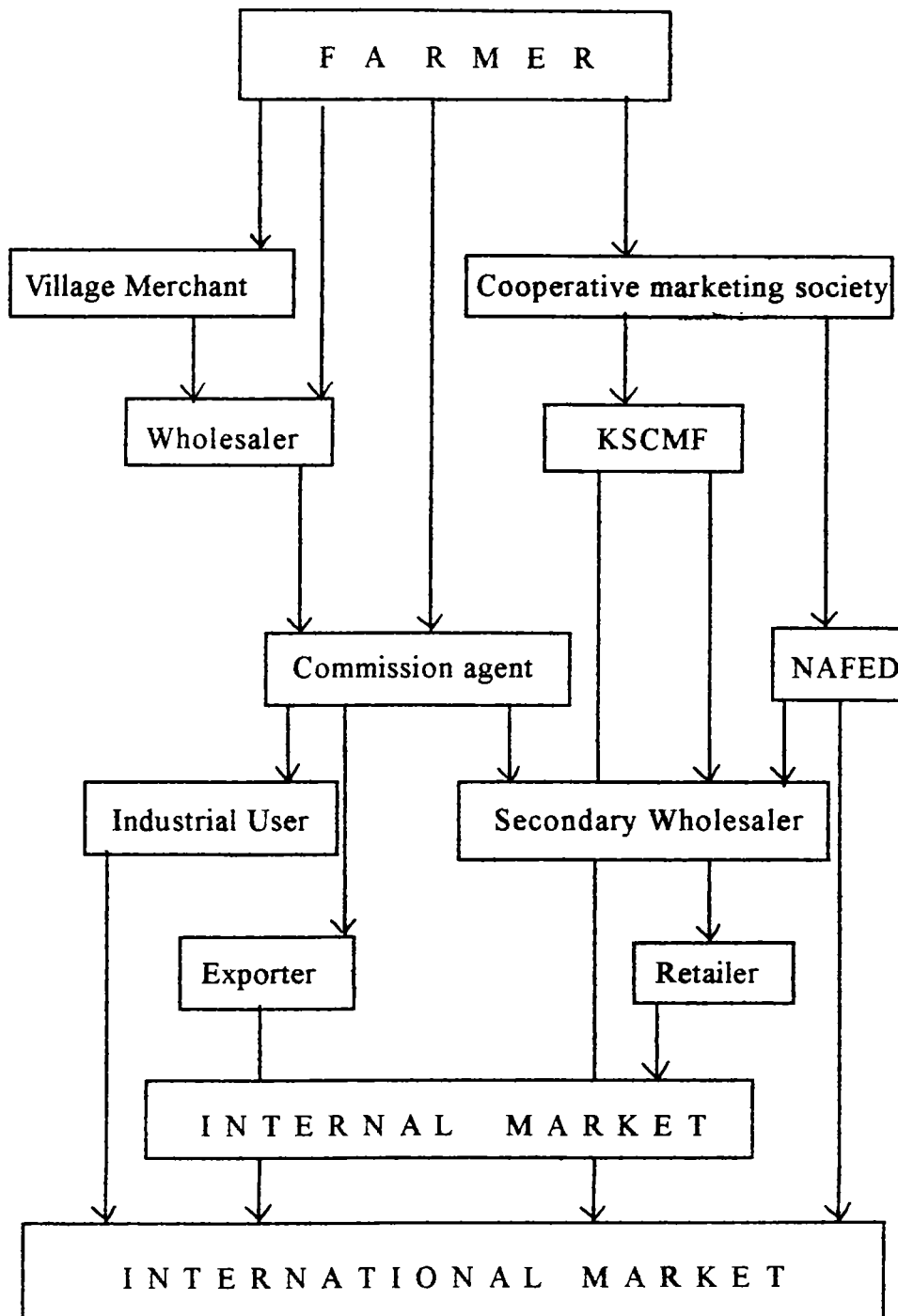
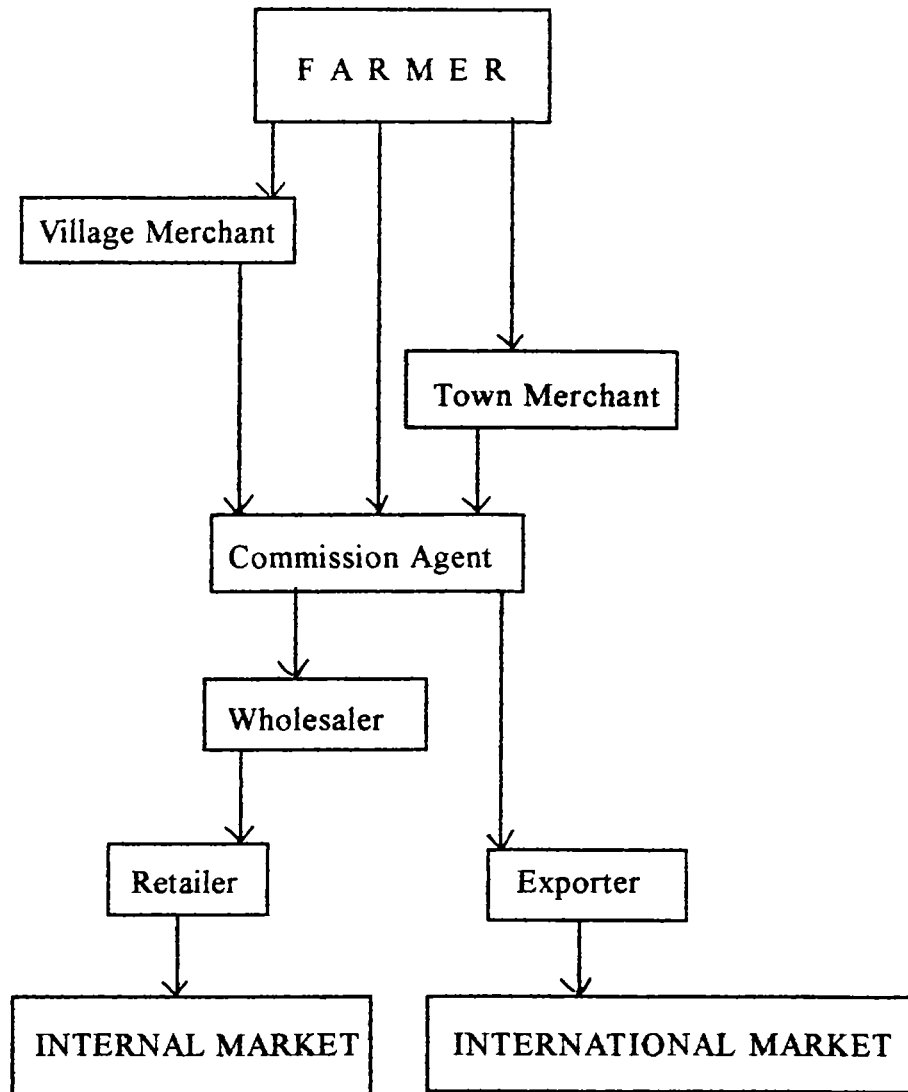


Figure 6.1

Marketing Channels of Fresh Ginger.**Figure 6.2**

6.12. Seasonal Price Behaviour of Ginger

Agricultural price analysis is one of the most important and well-developed parts of price analysis. It is well-known that agricultural prices have a tendency to display wider inter and intra year fluctuations. The three main factors responsible for such wide fluctuations are relatively low price elasticity of demand for agricultural commodities; biological nature of agricultural production and seasonal nature of agricultural industry, i.e., the output becomes available at particular time or times in a year (Kahlon and Tyagi 1). The year to year fluctuations in production give rise to large fluctuations in farm prices because of the low elasticity of demand for most farm produce (Kaur 1).

Farmers do not have a full control over the output and yield of the crop. The volume of production in the agricultural sector varies unpredictably from year to year, depending upon the weather conditions. It has been a well-known dictum in the text on Indian economic problems that vagaries of monsoon and other factors cause great fluctuations in the production and prices of agricultural commodities (Nadkarni 51).

Monthly Average Domestic Price of Ginger

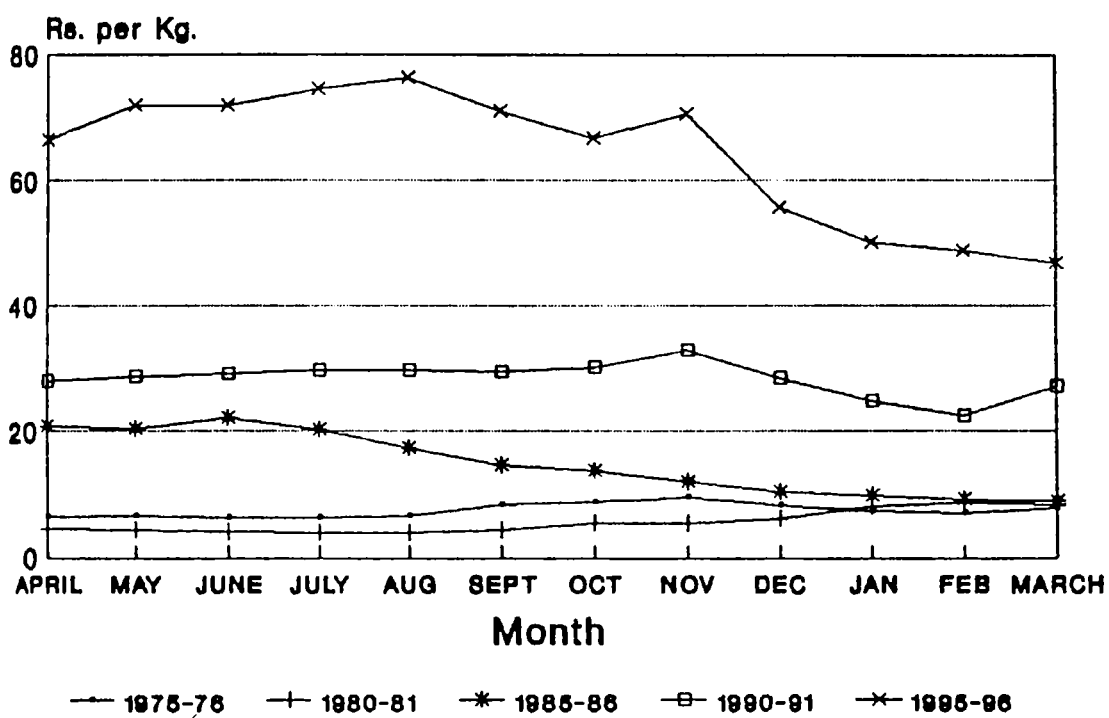


Figure 6.3

Again, the production in agriculture, unlike the production in industries, is not a continuous one. In other words, the seasonal nature of agricultural production results in uneven distribution of supplies in any year while the consumption of most of the agricultural commodities is evenly spread over the entire period.

Perishable or semi-perishable commodities that are difficult to store must move into consumption at harvest time. The increased quantity is moved to consumers at lower prices. Then when market receipts diminish as the commodity goes out of season, higher prices can be obtained (Snodgrass and Wallace *Agriculture, Economics and Resource Management* 306).

Ginger like any other agricultural commodities is subject to seasonal price variations, normally the post-harvest prices being low and pre-harvest prices being high. Supply of ginger is mostly limited to only a few months immediately after harvest whereas the demand for it is throughout the year. A basic element in the formation of ginger price is the moderate storability of the product. Even dry ginger deteriorates after 6 to 8 months. This necessitates market clearance within the crop year, thereby ruling out speculation.

The monthly prices of ginger in different years given in Fig. 6.3 shows the seasonal movements. From the Table 6.3 it is clear that there was a substantial increase in the price of ginger during 1974-75 to 1995-96.

Table 6.3

Monthly Average Prices of Ginger (Rs. per quintal)

Year	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Average
1974-75	639	711	719	669	689	675	671	653	646	660	612	597	662
1975-76	630	647	625	627	657	822	875	937	806	725	697	764	734
1976-77	1,020	1,115	1,400	1,540	1,506	1,690	1,700	1,560	1,160	1,144	1,208	1,481	1,377
1977-78	1,615	1,594	1,581	1,580	1,512	1,560	1,406	1,212	1,170	1,150	1,125	1,108	1,384
1978-79	1,275	1,362	1,362	1,194	1,125	990	1,019	875	825	660	594	585	985
1979-80	563	494	364	500	479	504	495	464	470	483	461	435	476
1980-81	440	438	403	381	390	438	540	538	608	802	859	831	556
1981-82	906	925	904	838	875	821	790	799	906	845	968	1,206	899

(Cont'd...)

Year	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Average
1982-83	1,366	1,324	1,283	1,387	1,459	1,490	1,436	1,631	1,550	1,593	1,828	1,875	1,519
1983-84	2,233	2,469	2,497	2,678	2,866	3,203	2,994	3,369	2,911	2,771	2,850	3,175	2,835
1984-85	3,525	3,513	3,638	3,544	3,231	3,245	3,231	2,734	2,280	1,969	1,609	1,630	2,846
1985-86	2,081	2,025	2,210	2,019	1,733	1,447	1,369	1,183	1,022	972	916	879	1,488
1986-87	894	815	794	809	720	1,044	1,291	1,150	1,266	1,493	1,656	1,359	1,108
1987-88	1,556	1,430	1,464	1,300	1,693	1,872	1,775	1,553	1,581	1,467	2,194	2,034	1,660
1988-89	1,430	1,819	1,738	1,683	1,600	1,369	1,260	1,271	1,185	1,713	2,156	2,219	1,672
1989-90	2,210	2,150	2,094	2,369	2,350	2,281	2,300	2,170	2,436	2,213	2,113	2,405	2,258
1990-91	2,788	2,856	2,910	2,956	2,969	2,937	3,009	3,281	2,825	2,475	2,237	2,700	2,829

(Cont'd...)

Year	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Average
1991-92	2,670	2,440	2,590	2,670	2,815	2,810	2,580	2,475	2,400	2,175	2,115	2,175	2,492
1992-93	2,225	2,205	2,080	2,210	2,660	3,315	3,285	2,925	3,125	2,675	2,375	2,315	2,617
1993-94	2,500	2,325	2,350	2,625	2,856	3,440	3,155	2,688	3,219	3,165	3,056	3,575	2,913
1994-95	3,760	3,625	3,900	4,350	5,656	5,450	5,270	5,256	5,120	5,281	5,213	6,169	4,921
1995-96	6,640	7,200	7,188	7,460	7,638	7,110	6,675	7,063	5,560	5,016	4,875	4,680	6,425

Source: Spices Board, Kochi.

Generally, the ginger prices are lower in January and the decline in prices continues up to June. Gradually it increases and reaches peak level in August-October. However, the pattern of seasonal fluctuations differs from year to year.

6.13. Price Spread of Ginger

Marketing efficiency of any agricultural commodity is judged on the basis, inter-alia, of price received by the producer. 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 (Suryaprakash, Venkataraman and Ramanna 142) Prevailing market practices and market charges made a deep cut in the share of the producer in the price paid by the consumers (Rao 632). One of the main reasons advanced for the low prices received by the agriculturists and relatively high price paid by the consumers is the existence of more market intermediaries for agricultural commodities.

The existence of intermediaries is an inevitable feature in any market where the producers can't have direct contact with the ultimate consumers. Agricultural marketing is different in that individual agricultural producers ordinarily have no significant control over the marketing of their output (Stanton 586). Each agency renders some service in the process of marketing and also earns a varying margin of profit for himself and at the same time bears risk

involved in the process. Price differentials for a particular commodity arising from place, time and form, differences would correspond closely to the costs incurred in providing the respective transportation, storage and processing facilities (Baharumshah and Habibullah 205). As the product moves closer and closer to the ultimate consumer, price per selling unit increases in order to provide margins to the various intermediaries and provide auxiliary services as well. In this process the farmers appear to be the great loser whereas the middlemen to be the gainer.

6.13.1. Marketing Cost and Margin

The difference between the price paid by the consumer and that received by the producer consists of marketing cost and marketing margin. The cost of marketing is considered to be very important since it directly affects the net returns to the producers' as well as consumers' satisfaction. Therefore, the cost of marketing is regarded as an index to measure the marketing efficiency (Pushpavalli 44).

Cost of marketing is the sum of expenses incurred in the various stages of marketing and includes costs of such diverse market services as assembling, processing, storage, transportation, handling, financing, risk-bearing, wholesaling and retailing (Pavaskar and Radhakrishnan A-41). Marketing costs are the actual expenses incurred in the marketing process. They include not only the cost of performing the various marketing function but taxes and other assess-

ments as well (Moore, Johl and Khusro 40). These functions do what their names suggest, they facilitate the smooth performance of the market and hold down the costs of exchange and functions. They are the grease that makes wheels in our marketing system perform easily (Snodgrass and Wallace *Agriculture, Economics and Growth* 165). Direct estimation of real marketing cost is a complex statistical exercise, because of the difficulty in identifying and quantifying the various elements of such costs.

Marketing margin is the difference between the price paid for commodity by the ultimate consumer and that received for it by the producer. Though, day to day marketing margin may actually exceed or fall short of the total marketing bill, such difference will generally be evened out if an average margin is computed for a sufficiently long period of time, say, a year. Such an average margin usually equals or approximates the total marketing costs (Pavaskar and Radhakrishnan A -41).

The study of marketing margin is very essential in the formulation of an appropriate marketing policy. With due consideration to the quality of various services and functions carried out within the agricultural marketing system the most important yardstick to measure the efficiency of a given marketing system is the marketing costs and marketing margin (Kahlon and George 36). In an efficient marketing system, the marketing margins and price spread are fairly near transportation costs, handling charges and normal profits of the traders (Thakur *Foodgrain Marketing Efficiency* 64).

Marketing efficiency implies the use of the best and low cost methods

of marketing with the maximum effectiveness to reduce costs, margins, spoilage, waste and price spreads in the whole marketing system and all agricultural markets (Thakur *Marketing efficiency of Agricultural Markets* 132).

To ensure remunerative prices to the producer, to reduce nonfunctional margins of traders and commission agents as also to promote movement of surpluses for economic development, a properly structured market is an essential prerequisite (Agarwal 444).

6.13.2. Method of Estimation

Margin may be calculated either on a concurrent basis or a lagged basis. '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 during an earlier period, the length of time between the two dates being the average period for which the marketing agency holds the product (Sinha et al. 137). 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 procuring or stock holding for price consideration.

Pavaskar points out the superiority of concurrent margin over lagged margin. For most agricultural commodities, complete and reliable data on storage and transit period between any two stages of marketing are generally not

available to make good approximation of time lags between different geographical and vertical stages of marketing. Most studies, therefore, prefer calculation of margins on the basis of concurrent prices.

The method followed here is to calculate gross margins by comparing the prices at successive levels of marketing and then to have an idea of the margin of the intermediaries by deducting ascertainable costs from the gross margin at different stages of marketing.

6.13.3. Marketing Channels of Dry Ginger

The price spread varies from channel to channel according to the number of intermediaries. The marketing channels prevalent for the marketing of dry ginger are presented below.

Marketing Channels of Dry Ginger:

- A. Farmer (fresh form) → Village Merchant → Wholesaler → Commission Agent → [Industrial User / Secondary Wholesaler / Exporter] → Retailer → Consumer
- B. Farmer (dry ginger) → Village Merchant → Wholesaler → Commission Agent → [Industrial User / Secondary Wholesaler / Exporter] → Retailer → Consumer
- C. Farmer → Wholesaler → Commission Agent → [Industrial User / Secondary Wholesaler / Exporter] → Retailer → Consumer
- D. Farmer → Commission Agent → [Industrial User / Wholesaler / Exporter] → Retailer → Consumer
- E. Farmer → Co-operative Marketing Societies → [K.S.C.M.F. / NAFED / Wholesaler / Exporter] → Retailer → Consumer

6.13.4. Price Spread of Dry Ginger

Price spread and farmers' share in terminal market price in different marketing channels and shares of marketing cost and marketing margin in the total price spread are presented in Tables 6.4 and 6.5. Being one of the largest terminal market for dry ginger in India, Cochin price is taken for the calculation of price spread. The results show that the price spread is highest in Channel A and it is 29.06% of the wholesalers' price, while it is 17.15% in Channel D.

The farmers who sell their produce in fresh form receives a smaller share of terminal market price (70.94%) than those who sell in dry form. The fresh ginger requires further processing and higher margins are to be kept by traders. The share of the farmer is 76.85% when it is sold in dry form (Channel B). However, the farmer earns 80.34% of the price when it is marketed through Channel C. The margins retained by the wholesalers in assembling markets are lower compared to the village merchants. When the farmer sells the product directly through commission agents, the farmer's share is as high as 82.85%. The present rate of margin of commission agents in Cochin market is 1.5%. Details of price spread are given in tables B-4 in Appendix B.

Table 6.4
Price Spread of Dry Ginger in Different Marketing Channels (Rs. per quintal)

Particulars	Channel A	Channel B	Channel C	Channel D
1. Farmer's share in terminal Market Price	940.00 (70.94)	4,073.00 (76.85)	4,258.00 (80.34)	4,390.90 (82.85)
2. Marketing Cost	230.75 (17.42)	942.80 (17.79)	870.80 (16.43)	829.60 (15.65)
3. Marketing Margin	154.25 (11.64)	284.20 (5.36)	171.20 (3.23)	79.50 (1.5)
4. Price Spread	385.00 (29.06)	1,227.00 (23.15)	1,042.00 (19.66)	909.40 (17.15)
5. Selling Price (Terminal Market Price)	1,325.00	5,300.00	5,300.00	5,300.00

Note: Figures in parenthesis indicate percentage to the terminal market price.

Source: Primary data.

Table 6.5
Shares of Marketing Cost and Marketing Margin in Total Price Spread of Dry Ginger (Rs. per quintal)

Particulars	Channel A	Channel B	Channel C	Channel D
Total Price Spread	385.00	1,227.00	1,042.00	909.10
Marketing Margin	154.25 (40.07)	284.20 (23.16)	171.20 (16.43)	79.50 (8.75)
Marketing Cost	230.75 (59.93)	942.80 (76.84)	870.80 (83.57)	829.60 (91.25)

Note: Figures in Parenthesis indicate percentage to the total price spread.
Source: Primary data.

Among the different intermediaries involved in ginger marketing, village merchants retain the highest margin. The wholesalers and commission agents are larger in number and their margins are uniform in all the channels. Thus, the village merchants retain higher profit at the cost of the farmers.

6.13.5 Marketing Channels of Fresh Ginger

The different marketing channels of fresh ginger in the study area are given below.

Marketing Channels of Fresh Ginger

- A. Farmer ---> Village Merchant ---> Commission Agent --> Wholesaler / Exporter --> Retailer ---> Consumer
- B. Farmer ---> Town Merchant ---> Commission Agent --> Wholesaler / Exporter--> Retailer --> Consumer
- C. Farmer ---> Commission Agent --> Wholesaler / Exporter ---> Retailer --> Consumer

6.13.6. Price Spread of Fresh Ginger

Most of the sampled farmers in Wynad district are growing the variety which is not fit for dry ginger preparation. Therefore, usually they are disposing of the product in fresh form, just after the harvest. The price of fresh ginger in vegetable markets during the harvesting period is taken for the calculation of price spread. The farmer's share in terminal market price and shares of marketing cost and marketing margin in total price spread for three marketing channels are summarised in Tables 6.6 and 6.7.

The price spread of fresh ginger is higher when it is sold through the village merchants and lower when it is moved through the commission agents.

The study reveals that the farmers earn only 69% of the terminal market price when they adopt Channel A. There is only marginal difference between the farmer's share in Channel A and B. The farmers can earn only 71.70% even from Channel C. Margins retained by different intermediaries in the marketing of fresh ginger are given in tables B-5 in Appendix B.

Table 6.6
Price Spread of Fresh Ginger in Different Marketing Channels (Rs. per quintal)

Particulars	Channel A	Channel B	Channel C
1. Farmer's share in terminal market price	690.00 (69.00)	692.00 (69.2)	717.00 (71.7)
2. Marketing Cost	206.50 (20.65)	211.50 (21.15)	198.50 (19.85)
3. Marketing Margin	103.50 (10.35)	96.50 (9.65)	84.50 (8.45)
4. Price Spread	310.00 (31.00)	308.00 (30.80)	283.00 (28.30)
5. Selling Price	1,000.00	1,000.00	1,000.00

Note: Figures in parenthesis indicate percentage to the terminal market price
Source: Primary data.

Table 6.7
Shares of Marketing Cost and Marketing Margin in Total Price Spread of Fresh Ginger (Rs. per quintal)

Particulars	Channel A	Channel B	Channel C
1. Total Price Spread	310.00	308.00	283.00
2. Marketing Margin	103.50 (33.39)	96.50 (31.33)	84.50 (29.86)
3. Marketing Cost	206.50 (66.61)	211.50 (68.67)	198.50 (70.14)

Note: Figures in parenthesis indicate percentage to the terminal market price.

Source: Primary data.

The farmers and traders report that the higher price spread is due to monopoly trade practice of the wholesalers. In Wynad ginger marketing is controlled by one or two wholesalers who have agents in all towns. These agents dispatch the product to the wholesaler's collection centres in other states.

6.14. Price Spread of Substitute Crops of Ginger

Two substitute crops of ginger, viz., cured turmeric and pineapple are selected for comparing price spread of ginger.

6.14.1 Marketing Channels of Cured Turmeric

The marketing channels prevalent for cured turmeric are presented below.

Marketing Channels of Cured Turmeric

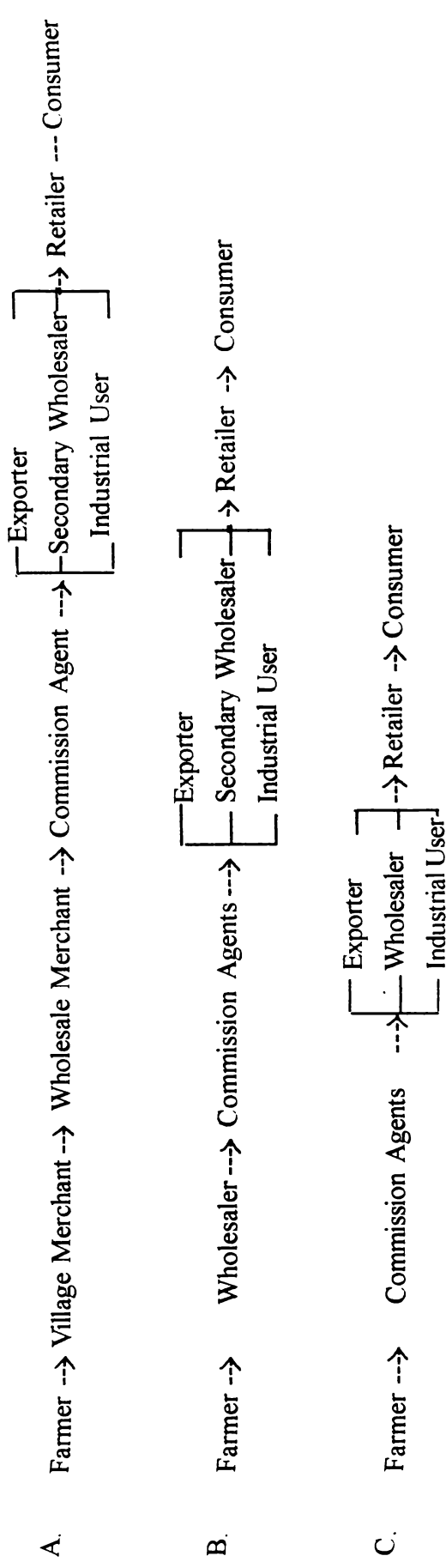


Table 6.8
Price Spread of Cured Turmeric in Different Marketing Channels (Rs. per quintal)

Particulars	Channel A	Channel B	Channel C
1. Farmer's share in terminal market price	1,870.00 (78.75)	1,955.20 (82.33)	2,022.50 (85.17)
2. Marketing Cost	379.25 (15.97)	352.25 (14.83)	316.55 (13.33)
3. Marketing Margin	125.55 (5.28)	67.55 (2.84)	35.60 (1.5)
4. Price Spread	504.80 (21.25)	419.80 (17.67)	352.50 (14.83)
5. Selling Price (Terminal Market Price)	2,375.00	2,375.00	2,375.00

Note: Figures in parenthesis indicate percentage to the terminal market price.

Source: Primary data

Tabel 6.9
Shares of Marketing Cost and Marketing Margin in Total Price Spread of Cured Turmeric (Rs. per quintal)

Particulars	Channel A	Channel B	Channel C
1. Total Prices Spread	504.80	419.80	352.50
2. Marketing Cost	379.25 (75.13)	352.25 (83.91)	316.55 (89.80)
3. Marketing Margin	125.55 (24.87)	67.55 (16.09)	35.60 (10.20)

Note: Figures in parenthesis indicate percentage to the terminal market price.

Source: Primary data.

6.14.2. Price Spread of Cured Turmeric

The same group of merchants are dealing ginger and turmeric. The market intermediaries like village merchants, wholesalers, and commission agents are common for both the crops. The price spread is calculated on the basis of Cochin price during the harvesting period. Tables 6.8 and 6.9 shows that the price spread is higher in Channel A (21.25%). The producer's share in terminal market price is maximum in Channel C (85.17%) and minimum in Channel A (78.75%)

Within the price spread, the village merchants retain the highest margin (Tables B- 6 in Appendix B). At wholesalers' level margin is relatively higher in ginger. Merchants report that higher margins to be kept in ginger in order to cover price risk arising from price fluctuations.

6.14.3 Marketing Channels of Pineapple

Different marketing channels of pineapple are given below.

Marketing Channels of Pineapple.

- A. Farmer --> Pre-harvest contractor --> Commission agent --> Wholesaler / Exporter --> Retailer --> Consumer
- B. Farmer --> Local Retailer --> Consumer
- C. Farmer --> Village Merchant --> Commission Agent --> Wholesaler / Exporter --> Retailer --> Consumer
- D. Farmer --> Wholesaler --> Commission Agent --> Wholesaler / Exporter --> Retailer --> Consumer
- E. Farmer --> Commission Agent --> Wholesaler / Exporter --> Retailer --> Consumer.

6.14.4. Price Spread of Pineapple

Pre-harvest contractor, village merchant, local retailer, commission agent and wholesaler are the intermediaries operating in pineapple marketing. In case of pineapple, the time-gap between the commodity enters the marketing system and the time within which it is consumed is rather narrow due to its high perishability rate. There is more than 30% post-harvest losses observed from the field survey (Padmini 72). Post-harvest losses are loss of weight, loss of juice content and decaying. Besides, prices of pineapple are subject to frequent fluctuations in accordance with the changes in climatic conditions. All these problems in pineapple marketing result in high price spread.

It is not possible to calculate price spread of pineapple in Channel A because the conditions of sale are settled by negotiations and no uniform pattern is followed by the pre-harvest contractors. The average price in retail market during the last season is taken for the calculation of price spread. Of the other four Channels (B, C, D and E) studied price spread is minimum in Channel B (29.09%) and maximum in Channel C (50.90%). The farmer's share in consumer price is highest (71%) when it is sold to local retail merchants (Table 6.10). The shares of marketing cost and marketing margin in total price spread are given in Table 6.11. Details of marketing cost and marketing margin are given in Tables B-7 in Appendix B.

Table 6.10
Price Spread of Pineapple in Different Marketing Channels (Rs. per quintal)

Particulars	Channel B	Channel C	Channel D	Channel E
1. Farmer's share in terminal market price	390.00 (70.91)	270.00 (49.10)	296.80 (53.96)	361.30 (65.69)
2. Marketing Cost	70.00 (12.73)	188.20 (34.21)	188.20 (34.22)	177.70 (32.31)
3. Marketing Margin	90.00 (16.36)	91.80 (16.69)	65.00 (11.82)	11.00 (2.00)
4. Price Spread	160.00 (29.09)	280.00 (50.90)	253.20 (46.04)	188.70 (34.31)
5. Selling Price (Terminal Market Price)	550.00	550.00	550.00	550.00

Note: Figures in parenthesis indicate percentage to the terminal market price.

Source: Primary data.

Table 6.11
Shares of Marketing Cost and Marketing Margin in Total Price Spread of Pineapple (Rs. per quintal)

Particulars	Channel B	Channel C	Channel D	Channel E
Total price spread	160.00	280.00	253.20	188.70
Marketing margin	90.00 (56.25)	91.80 (32.79)	65.00 (25.67)	11.00 (5.83)
Marketing Cost	70.00 (43.75)	188.20 (67.21)	188.20 (74.33)	177.70 (94.17)

Note: Figures in parenthesis indicate percentage to the terminal market price.

Source: Primary data

6.15. Conclusion

The marketing system for ginger consists of ginger growers, merchants and other intermediaries. In Ernakulam district, the product is marketed as dry ginger while in Wynad, the crop is marketed mostly in fresh form. About 60% of farmers of both the districts prefer to sell their produce to the village merchants because it is convenient for them to dispose of their small marketable surplus in the village, particularly, when there is no well organised market centre nearby.

Most of the studies reviewed on price spread concluded that larger the number of intermediaries involved, the lower the farmer's share in trader's selling price. The reasons advocated for lower share of producer in consumer price is the larger magnitude of marketing cost and margin.

The results of this study clearly indicate that the price spread of agricultural commodities varies from channel to channel and between commodities. The farmer's share in terminal market price varies from 69 to 71.7% for fresh ginger, 70.94 to 82.85% for dry ginger, 78.75 to 85.17 % for cured turmeric and 49.1 to 70.91% for pineapple.

A comparative analysis of price spread of fresh and dry ginger with other two crops shows that the major factors significantly influencing price spread are different for different commodities. The price spread of the same commodity varies considerably according to the nature and location of the market. In spite of the smaller number of intermediaries, the price spread is higher in Wynad. Monopoly control by wholesalers is the reason for the higher

price spread.

The marketing pattern and the number of intermediaries are same for dry ginger and cured turmeric. However, price spread is relatively higher in dry ginger due to higher net margin kept by the traders. Among the three crops studied price spread is the highest in pineapple. Pineapple being highly perishable in nature, requires immediate marketing. Instability of prices also leads to higher marketing margins.

Thus it can be concluded that the price spread depends on a number of factors, viz., monopoly trade practices, instability of price and nature of the commodity. The study also indicates that a larger number of intermediaries does not mean higher price spread and vice versa. This is a major departure from the findings of previous studies on the subject.

Chapter Seven
Ginger Export

Chapter Seven

Ginger Export

India has been the major producer and exporter of dry ginger in the world.

Although many varieties of ginger are grown in different parts of the country, only the varieties grown in Kerala which are bold with low fibre and pungency are suitable for making dry ginger. Kerala which accounts for about 25% of production contributes about 70% of the country's export.

Apart from dry ginger, ginger powder and fresh ginger, value added products like ginger oil and oleoresin are also exported from India.

The export of dry ginger from India mainly comprise of two types, namely, Cochin and Calicut. Cochin ginger is considered superior to Calicut ginger in quality. At present, about 80% of dry ginger exported from the country is Cochin ginger which is mainly in the form of non-bleached, ungarbled ginger.

7.1. Export Promotion Measures

The Spices Board has taken several measures in order to promote spices export. The various export promotion measures of the Spices Board fall under two groups, viz., quality improvement programmes and publicity programmes.

7.1.1. Quality Improvement Programmes

To improve the quality of Indian spices to meet the requirements of the consumers, various steps have already been taken by the Board and a number of programmes have been proposed in the VIIIth Five Year Plan. The following programmes have already been undertaken. These programmes cover all sectors of the spice industry, right from the production to export.

7.1.1.1. Quality Improvement Training Programmes.

Board implements a series of training programmes on quality improvement in pepper, ginger, turmeric, fennel, cumin and chillies in the respective growing centres for the benefit of farmers. For conducting training programmes to farmers, officers in the State Department of Agriculture/Horticulture are trained as master trainers.

7.1.1.2. Other Programmes

(i) A scheme has been sanctioned for payment of subsidy to spice exporters for setting up quality control laboratories to a maximum of Rs.100,000/ per unit or 50% of the total cost whichever is less.

(ii) Board has initiated a scheme for payment of grant-in-aid to the

exporters for the purchase of Gas Chromatograph with Electron Capture Detector for monitoring the pesticide residues in spices. Exporters who avail themselves of this facility will be paid a maximum of Rs.200,000/- or 50% of the cost of the equipment whichever is less.

(iii) The developed countries are insisting on importing spices from units which have adopted ISO 9000 quality management system. To enable the exporters and processors to introduce ISO 9000, the Board has drawn out a scheme for payment of grant-in-aid of Rs.200,000/- or 50% of the cost of consultancy / certification, whichever is less.

7.1.1.3. Promotion of Spices Board Logo

For the promotion of export of spices in branded consumer packs, the Board has launched a scheme for the award of Spices Board logo. The Logo Scheme was launched in Middle East markets during October 1993.

7.1.1.4. Quality Evaluation and Upgradation Laboratory

The Board has set up Quality Evaluation and Upgradation Laboratory for assessing the quality of spices exported under Spices Board logo. This laboratory will regularly monitor physical, chemical and microbial contamination of all spices exported from India. Regular monitoring of pesticide residues in all spices is being conducted on a priority basis.

7.1.1.5. Quality Improvement Programmes with the assistance of ITC, Geneva

The Spices Board has implemented a number of quality improvement programmes which are financially supported by the International Trade Centre, Geneva.

7.1.2. Publicity Programmes

Publicity is a vital component of the success of various schemes and programmes of research, development and marketing. The Board had undertaken a wide range of overseas publicity programmes.

(i) The Board participates in many international fairs. Spices and spice products suited for different markets are displayed in these exhibitions besides providing promotional literature to the visitors. Firm orders for different spices and spice products are secured by exporters in these fairs. Considering the changes that have taken place in the global spice trade and world markets, deliberations are based on markets, products and quality. International experts from the world spice industry present papers in these sessions. The Board's participation helps in disseminating the latest developments taking place in the Indian spice industry.

(ii) Trade enquiries received at the fairs are circulated to the Indian

exporters through a foreign trade enquiry bulletin.

(iii) A quarterly journal titled 'Indian Spices' is regularly out by the Board mainly for circulation among buyers of Indian spices and consumers located overseas.

(iv) The Board has released a Catalogue of Indian Spices. The Catalogue contains many details about 52 spices that come under the purview of the Board. This Catalogue is mailed to overseas buyers to enable them to have detailed information on Indian spices.

(v) As part of the logo promotion programme, advertisements on the logo are released in 5 million aerograms issued by the Postal Department. This has helped in getting good publicity for the new quality logo for Indian spices overseas.

(vi) Advertisements on popularising Spices Board's logo are released in various overseas newspapers especially in the Gulf and also in Indian publications having Gulf editions.

(vii) Two promotional films titled 'Fragrant Flavour' and 'Blended Bouquets' were produced by the Board for viewing by the overseas audience. Copies of these films have been made and mailed to various Indian Missions and Trade Promotion organisations overseas for screening on various occasions.

7.1.3. Grading and Standardisation of Ginger

On the recommendation of the Spices Enquiry Committee, a decision was taken by the Government of India in the year 1951, to introduce compulsory pre-shipment inspection and quality control for spices. The grades adopted for various spices are those prescribed under the Agricultural Produce Grading and Marking Act, 1937, and these grades are popularly known as Agmark Grades. The Spices Export Promotion Council, Cochin initiated the scheme with effect from 1st January 1963. Initially, black pepper, cardamom and dry chillies were brought under the purview of the scheme. Subsequently, dry ginger and turmeric were included with effect from 1st August 1964. The Pre-shipment Inspection Scheme is operated by the Directorate of Marketing and Inspection, Ministry of Agriculture, Government of India.

To facilitate systematic grading, specifications have been laid down under Agmark for dry ginger-bleached/non-bleached- and powdered ginger. The Grading and marking rules were notified in year 1964. Necessary changes in the specifications were made from time to time and notified in the Gazette. The details of the Agmark specifications are given in Appendix A. According to the existing grade specifications, there are 16 grades in all for dry ginger including non-specified and one for powder.

Grades have been laid down separately for 'Cochin' and 'Calicut' types of ginger. The quality of the ginger has been broadly divided as 'garbled' and

'ungarbled' and the grades have been provided accordingly. Further, a classification has been made between 'bleached' and 'non-bleached' ginger. Non-specified grades have also been provided for both Calicut and Cochin type of gingers to meet the special requirements of the foreign buyers. For ginger powder, there is only one grade. Besides special characteristics, certain general characteristics have also been laid down in the specifications covering certain aspects like taste, flavour, wholesomeness, moulds, and insect infestation.

Dry ginger is subjected to physical analysis whereas, for ginger powder chemical analysis is carried out. The quality factors like extraneous matter, very little pieces, lime as calcium oxide are to be determined in terms of percentage by weight. For ginger powder also, all quality factors are to be calculated as percentage by weight. It is reported that up to 1991, almost the total quantity of dry ginger and powder exported from the country was graded. But at present, the graded ginger forms only a small percentage of country's export. Grading depends on the contract between the exporter and the importer.

There is no compulsory pre-shipment inspection and quality control for spice oil and oleoresin.

The specifications laid down by the international organisation for standardisation include physical and chemical qualities for ginger. However, it is important that the standards laid down for export purposes are the same as that of International Standards Organisation, if not superior. Besides, Inter-

national Standards, some of the countries have also laid down their own standard specifications for different commodities.

7.2. Growth of Ginger Export

The last thirty six years have witnessed a substantial increase in ginger export earnings (Table 7.1). The substantial increase in the export earnings of ginger is partially due to the increase in the unit value realisation. As Table 7.2 shows during 1960-61 to 1995-96 inspite of the fluctuations in unit value of ginger the compound growth rate of the value of ginger export (10%) was higher than the growth of the quantity of export (2.9%).

Table 7.1

Export of Ginger from India.

Year	Quantity (tonnes)	Value (Rs. '000)	Average Unit Value (Rs. Per Kg.)
1960-61	5,577	8,372	1.50
1961-62	7,808	11,195	1.43
1962-63	6,087	12,024	1.98
1963-64	4,873	14,151	2.90

(Cont'd...)

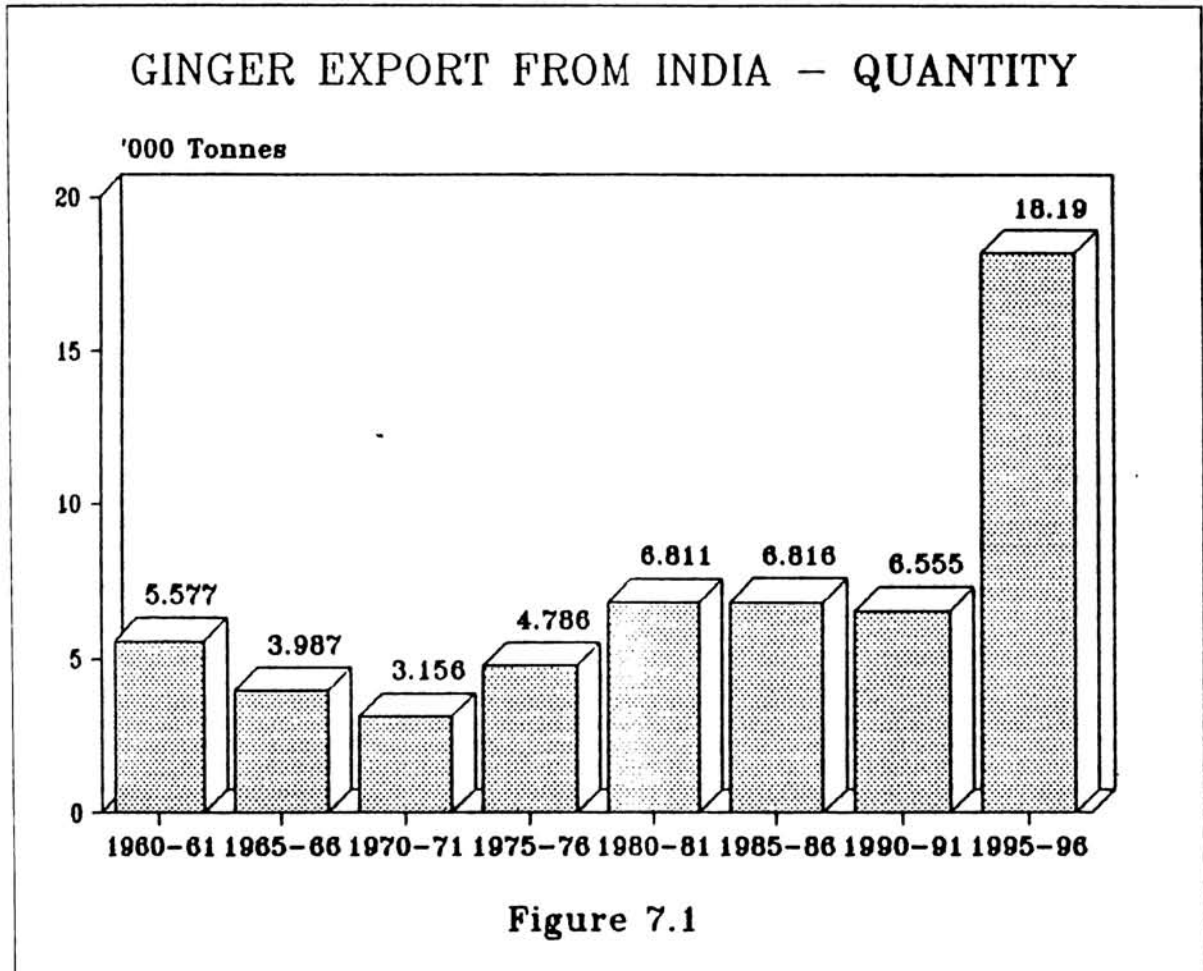
Year	Quantity (tonnes)	Value (Rs. '000)	Average Unit Value (Rs. Per Kg.)
1964-65	3,608	13,267	3.68
1965-66	3,987	13,249	3.32
1966-67	5,035	16,056	3.19
1967-68	3,915	13,076	3.34
1968-69	1,717	8,962	5.22
1969-70	1,223	12,303	10.06
1970-71	3,156	26,094	8.27
1971-72	6,746	27,531	4.08
1972-73	6,051	20,994	3.47
1973-74	5,083	25,593	5.04
1974-75	4,681	35,127	7.50
1975-76	4,786	41,049	8.58
1976-77	4,461	58,432	13.10
1977-78	9,762	1,36,899	14.02
1978-79	14,515	1,43,172	9.86
1979-80	11,486	72,696	6.33
1980-81	6,811	36,797	5.40
1981-82	4,718	39,523	8.38

(Cont'd...)

Year	Quantity (tonnes)	Value (Rs. '000)	Average Unit Value (Rs. Per Kg.)
1982-83	3,955	58,849	14.88
1983-84	4,629	1,19,016	25.71
1984-85	7,329	1,87,276	25.55
1985-86	6,816	1,08,935	15.98
1986-87	4,843	57,116	11.79
1987-88	2,628	48,899	18.61
1988-89	6,368	94,082	14.77
1989-90	8,139	1,26,244	15.51
1990-91	6,555	1,17,579	17.94
1991-92	14,259	2,18,810	15.35
1992-93	9,825	1,68,737	17.17
1993-94	18,441	2,47,812	13.44
1994-95	12,022	1,67,303	13.92
1995-96(P)	18,190	3,82,873	21.05

(P) Provisional

Source: Spices Board, Kochi.



GINGER EXPORT FROM INDIA - VALUE

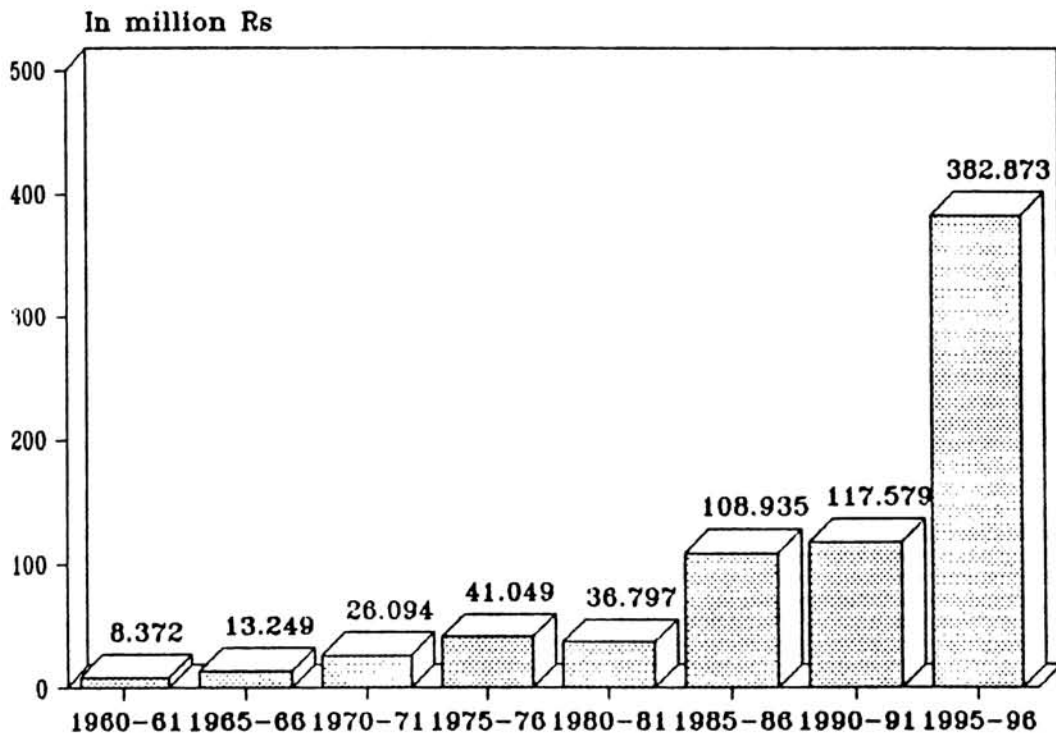


Figure 7.2

The average unit value increases from Rs.1.50 in 1960-61 to Rs.10.06 in 1969-70, then it declines to Rs. 5.4 in 1980-81, further increases to Rs.25.55 in 1984-85 and again it declines to Rs.11.79 in 1986-87 and increases to Rs. 21.05 in 1995-96.

The substantial increase in the unit value realisation of export made a significant contribution to the ginger export earnings during 1960s. During 1970-71 to 1979-80, there was some marked decline in quantities. The quantity exported has again picked up recently, recording a compound growth rate of 16.1% during 1990-91 to 1995-96.

During 1990-91 export of ginger declined to 6555 M.T. valued at Rs. 11.76 crores. The fall in quantity and value was mainly because of decline in export to West Asian countries owing to the Gulf crisis.

Export earnings from ginger in 1991-92 registered a substantial increase. During the year the total value of export was Rs. 21.88 crores, 86.10% increase over the previous year compared to 117.52% increase in quantity. The reported crop failure in China was the main reason for increased demand for Indian ginger in international market.

Both quantity and value of ginger export has shown a declining trend during 1992-93.

Table 7.2

Compound Growth Rates of Quantity and Value of Ginger Export from India.

Period	Quantity	Value
1960-61 to 1969-70	-0.17	1.7
1970-71 to 1979-80	12.20	22.0
1980-81 to 1989-90	1.00	8.3
1989-90 to 1995-96	16.10	17.1
1960-61 to 1995-96	2.90	10.0

Source: Computed from the data published by the Spices Board, Kochi.

During 1993-94, the export of 18,441 tonnes surpassed the previous highest. During the year large volume of fresh ginger has been exported to Bangladesh and Pakistan. Besides, India has been competitive in the international market with a price lower than that of China, the major competitor. In 1994-95, it declined to 12,022 tonnes valued at Rs. 16.73 crores. However, in 1995-96 India attained an all-time record in ginger export earnings, i.e. 18190 tonnes valued at Rs. 38.29 crores.

The recent increase in the quantity of ginger export was mainly due to change in composition. Since 1990-91, India has been exporting large quantities of fresh ginger.

Table 7.3

Export of Ginger Oil from India.

Year	Quantity (tonnes)	Value (Rs.'000)
1986-87	13.60	10,079.47
1987-88	6.91	5,042.00
1988-89	6.29	5,237.40
1989-90	4.38	3,648.10
1990-91	3.82	3,632.00
1991-92	6.94	6,926.90
1992-93	6.41	6,616.00
1993-94	5.95	5,958.00
1994-95	7.53	10,801.00
1995-96	6.74	21,478.00

Source: Spices Board, Kochi.

The export growth of ginger oil has not been satisfactory during 1986-87 to 1995-96 (Table 7.3). During this period, there was an increasing trend in both quantity and value of ginger oleoresin export. However, as Table 7.4 shows, the growth of the value of oleoresin export was substantially higher than the growth of its quantity.

Table 7.4

Export of Ginger Oleoresin from India

Year	Quantity (tonnes)	Value (Rs. '000)
1986-87	15.87	6,056.59
1987-88	14.82	5,467.10
1988-89	25.63	11,267.22
1989-90	23.63	11,228.35
1990-91	29.10	15,264.50
1991-92	43.53	31,825.00
1992-93	36.63	28,338.00
1993-94	51.05	39,957.00
1994-95	57.92	53,296.00
1995-96	52.49	62,210.00

Source: Spices Board, Kochi.

7.3. Relative Growth of Ginger Export

The export earnings of India from spices and ginger have recorded substantial increase during 1960-61 to 1995-96. Between 1960-61 to 1995-96, export earnings from ginger increased from Rs.0.83 crores to Rs.38.29 crores representing a compound growth rate of 10% compared to a growth rate of 11.9% in spices export earnings of India during this period. Thus the growth rate of spices export earnings is faster than the ginger export earnings.

Table 7.5 makes it clear that although during 1960-61 to 1995-96 the compound growth rate of the spices export earnings is higher than that of the ginger export earnings in India, it is during 1970-71 to 1980-81 that the export performance of the ginger is very spectacular.

During 1960-61 to 1969-70, 1980-81 to 1989-90 and 1990-91 to 1995-96, the growth rate of export earnings of ginger lagged very much behind that of the spices export earnings. The compound growth rate of ginger exports during 1960-61 to 1969-70 is only 1.7% compared to the 3.91% of the spices export earnings.

Table 7.5

Compound Growth Rates of Spices and Ginger Export From India.

Period	Spices	Ginger
1960-61 to 1969-70	3.91	1.7
1970-71 to 1979-80	2.09	22.0
1980-81 to 1989-90	16.3	8.3
1990-91 to 1995-96	26.9	17.1
1960-61 to 1995-96	11.9	10.0

Source: Computed from the data published by the Spices Board, Kochi.

Since 1991-92, the divergence in the growth rates between the spices export earnings and the ginger export earnings is substantial. The exceptionally good growth in the spices exports is mainly responsible for this. In 1991-92, the growth of export earnings of ginger was spectacular. Ginger export earnings increased by more than 86% against the increase of less than 58% in the spices export earnings. However, during 1990-91 to 1995-96, the compound growth rate of spices export earnings (26.9%) was substantially higher than the growth rate of ginger export earnings (17.1%).

7.4. Share of Ginger in the Spices Export Earnings

The notable fluctuations in ginger export earnings has resulted in fluctuations in the share of ginger in the spices export earnings of India. From about 5.11% in 1960-61, it reached the peak level of 10.66% in 1983-84 and then it touched the lowest level of 1.64% in 1987-88 (Table 7.6).

Although ginger export earnings increased substantially in the decade following 1983-84, its share in total spices exports ranges from 1.64 % to 10.66%. In 1991-92, India attained an all-time record of Rs.21.88 crores in ginger export earnings over the previous years. However, the share of ginger in spices export earnings was only 5.74% during this period. In 1994-95, the share of ginger export again declined to 2.7%. This substantial decline was due to decline in ginger export by 32.49% compared to an increase in spices export by 8.52%.

Table 7.6

Share of Ginger in the Spices Export Earnings of India

Year	Spices Export (Rs. '000)	Ginger Export (Rs. '000)	Share of Ginger (Percentage)
1960-61	1,63,960	8,372	5.11
1961-62	1,75,203	11,195	6.39
1962-63	1,33,730	12,024	8.99
1963-64	1,52,793	14,151	9.26
1964-65	1,65,465	13,267	8.02
1965-66	2,30,544	13,249	5.75
1966-67	2,78,191	16,056	5.77
1967-68	2,71,702	13,076	4.81
1968-69	2,50,441	8,962	3.58
1969-70	3,44,798	12,303	3.57
1970-71	3,88,200	26,094	6.72
1971-72	3,66,047	27,531	7.52
1972-73	3,05,612	20,994	6.87
1973-74	5,56,052	25,593	4.60
1974-75	6,25,025	35,127	5.61

(Cont'd...)

Year	Spices Export (Rs. '000)	Ginger Export (Rs. '000)	Share of Ginger (Percentage)
1975-76	7,27,248	41,049	5.64
1976-77	7,59,810	58,432	7.69
1977-78	14,18,849	1,36,899	9.65
1978-79	15,49,295	1,43,172	9.24
1979-80	15,50,765	72,696	4.69
1980-81	11,70,550	36,797	3.14
1981-82	9,25,101	39,523	4.27
1982-83	9,28,541	58,849	6.34
1983-84	11,16,622	1,19,016	10.66
1984-85	20,90,224	1,87,276	8.96
1985-86	28,25,208	1,08,935	3.86
1986-87	28,19,877	57,116	2.03
1987-88	29,80,803	48,899	1.64
1988-89	28,18,707	94,082	3.34
1989-90	28,25,456	1,26,244	4.47
1990-91	24,21,442	1,17,579	4.86
1991-92	38,09,676	2,18,810	5.74
1992-93	41,86,364	1,68,737	4.03

(Cont'd...)

Year	Spices Export (Rs. '000)	Ginger Export (Rs. '000)	Share of Ginger (Percentage)
1993-94	57,14,401	2,47,812	4.34
1994-95	62,01,053	1,67,303	2.70
1995-96(P)	74,33,500	3,82,873	5.15

(P) Provisional

Source: Spices Board, Kochi.

The share of ginger in total spices export earnings ranged between 3.57 and 8.99% during the period 1960-61 to 1969-70, between 4.60 and 9.65% during 1970-71 to 1979-80 and between 1.64 and 10.66% during 1980-81 to 1989-90. During 1990-91 to 1995-96, the share ranged from 2.7 to 5.74%.

Increasing domestic demand for ginger, price competition in international market coupled with the overall better performance of spices have contributed to the recent fall in the share of ginger export earnings. It should, however, be noted that although the recent figures of share of the ginger in the total spices export earnings are lower than the peak level of 10.66% achieved in 1983-84, they are significantly higher than the figures for the late 1980s.

During 1995-96, the share of ginger oil and oleoresin in the export earnings of spices oil and oleoresin was about 8% compared to 15% in 1987-88.

7.5. Comparative Performance of India

The growth in India's export earnings from ginger and ginger products have, as a whole, been impressive. However, export earnings is not the whole indicator of the strength of the export sector.

The notable increase in the quantity and value of Indian ginger export started from 1970-71. India did fairly well in the 1970s in seizing the opportunity provided by the fast growing world demand. However, the quantity of ginger exported from the country has been more or less stagnant during the 1980s.

India was the largest exporter of ginger in the world. India's share in the world export was as high as 50% in 1971 (Das 345). It declined to 36% in 1980, again to 16% in 1983 and further to 6% in 1988. However, it increased to 25% in 1991 (Table 7.7).

When the countries like China, Jamaica and Nigeria took up ginger cultivation on commercial scale and started exports, their contribution to the international market increased and simultaneously India's share started declining. The failure of the market leader to increase the supply to the fast growing market and the comparatively high price enabled the competitors to forge ahead

Table 7.7

World Export of Ginger and India's Share (Quantity in M.T.)

Year	India	World	Share of India (Percentage)
1980	11,486	32,021	36
1981	6,811	23,073	30
1982	4,718	28,000	17
1983	3,955	24,959	16
1984	4,629	25,718	18
1985	7,329	30,874	24
1986	6,816	23,769	29
1987	4,843	47,601	10
1988	2,628	41,965	6
1989	6,368	38,345	17
1990	8,139	34,943	23
1991	6,555	25,810	25

Source: *Fruits and Tropical Products*, Commonwealth Secretariat, London.

easily. As Table 7.8 shows, in many years, the price of Indian ginger has been not competitive compared to China, the main competitor in international market. Besides, higher domestic consumption often leads to reduced availability for exports. As a result India lost the supremacy in ginger export. India which had been the largest supplier of ginger to West Asian countries was overtaken by China and other countries.

Table 7.8.

Annual Average International Prices of Ginger (Cents per lb)

Year	Indian	Chinese
1980-81	46.51	60.28
1981-82	55.50	46.24
1982-83	109.29	51.00
1983-84	144.00	121.56
1984-85	169.71	182.20
1985-86	78.54	105.65
1986-87	58.41	60.10
1987-88	92.78	54.32
1988-89	92.94	64.73

(Cont'd...)

Year	Indian	Chinese
1989-90	78.94	76.34
1990-91	88.78	77.58
1991-92	69.00	83.00
1992-93	65.00	81.00
1993-94	61.00	75.00
1994-95	79.00	62.00
1995-96	125.00	56.00

Source: Spices Board, Kochi.

7.6. Composition of Export

Although India exports ginger in many forms like dry ginger, fresh ginger and ginger powder, more than 50% of the total ginger export earnings is contributed by dry ginger. Besides, India also exports value added products like ginger oil and oleoresin.

In recent years, the export performance of fresh ginger is spectacular. Fresh ginger accounted for 8.93% of the total ginger export earnings in 1988-89. By 1991-92 the respective figure reached about 21.83%. In 1993-94, it further increased to about 34.81%, again to 42.27% in 1994-95 and then it declined to 40.91% in 1995-96 (Table 7.9).

Table 7.9
Item-wise Export of Ginger from India (Qty. in M.T.; Value in Rs. '000)

	1988-89		1989-90		1991-91		1991-92	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Ginger Dry	4,332.00 (68.04)	76,783.80 (81.61)	4,832.60 (59.38)	109,777.50 (86.96)	3,737.00 (57.01)	103,565.80 (88.08)	6,635.30 (46.54)	163,525.80 (74.73)
Ginger Fresh	1,410.60 (22.15)	8,399.50 (8.93)	3,084.00 (37.89)	14,356.70 (11.37)	2,728.50 (41.63)	12,932.30 (11.00)	7,316.10 (51.31)	47,767.40 (21.83)
Ginger Powder	624.90 (9.81)	8,898.90 (9.46)	222.20 (2.73)	2,109.90 (1.67)	89.30 (1.36)	1,081.00 (0.92)	307.60 (2.15)	7,517.20 (3.44)
Total	6,367.50 (100.00)	94,082.20 (100.00)	8,138.80 (100.00)	1,26,244.10 (100.00)	6,554.80 (100.00)	1,17,579.10 (100.00)	14,259.00 (100.00)	2,18,810.40 (100.00)

	1992-93		1993-94		1994-95		1995-96	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Ginger Dry	3,979.18 (40.50)	1,13,655.00 (67.36)	4,796.51 (26.00)	1,50,836.00 (60.87)	1,878.81 (15.63)	89,248.00 (53.35)	3,195.28 (17.57)	2,05,293.00 (53.62)
Ginger Fresh	5,124.80 (52.16)	31,643.00 (18.75)	13,358.97 (72.45)	86,260.00 (34.81)	9,972.78 (82.95)	70,715.00 (42.27)	14,705.54 (80.84)	1,56,648.00 (40.91)
Ginger Powder	721.02 (7.34)	23,440.00 (13.89)	286.50 (1.55)	10,717.00 (4.32)	170.91 (1.42)	7,340.00 (4.39)	289.93 (1.59)	20,932.00 (5.47)
Total	9,825.00 (100.00)	1,68,738.00 (100.00)	18,441.98 (100.00)	2,47,813.00 (100.00)	12,022.50 (100.00)	1,67,303.00 (100.00)	18,190.75 (100.00)	3,82,873.00 (100.00)

(P) Provisional

Note: Figures in parenthesis indicate percentage to the total ginger export from India.

Source: Spices Board, Kochi.

Ginger powder accounted for only a small portion of total ginger export earnings. During 1988-89 to 1995-96 it ranged from 0.92 to 13.89%.

The value added products like oils and oleoresins have many advantages over the dried spices. The recent changes in the market behaviour and changes in consumer preference have resulted in the usage of more and more value added products. The product can be standardised both in respect of strength and quality and usually free from bacteria which is considered a very important factor in food industry. When spices are exported in bulk form, it is more vulnerable to price fluctuations. Price competition is of less magnitude in branded and value added spices where the non-price factors such as brand image, brand preference, brand loyalty, quality and such elements become more relevant for consumer preference. Spices export from India in value added forms have shown a significant growth during the last few years.

The export earnings of ginger oil during 1986-87 to 1995-96 ranges between Rs. 36 lakhs and Rs. 2.15 crores. The export of oleoresin has shown an increasing trend. In 1995-96, India's export earnings from ginger oleoresin was Rs.6.22 crores which was equivalent to 16.25% of the value of ginger export during this period (Tables 7.3 and 7.4).

For the growth of ginger products exports in future, more reliance will have to be made on product diversifications with much greater thrust on value added items. However, India's share in the export products like ginger preserve and ginger in brine is negligible.

COMPOSITION OF EXPORT OF GINGER
FROM INDIA (VALUE IN Rs. '000)

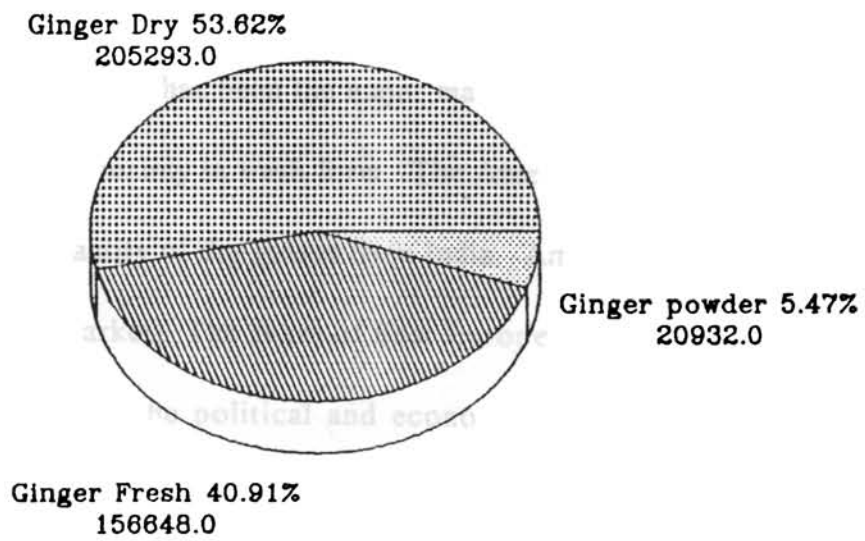


Figure 7.3

7.7. Direction of Export

As in the case of ginger products, the markets for Indian ginger are also characterised by a lack of diversification.

Although Indian ginger is exported to a large number of countries spread all over the world, they are too dependent on a small number of markets, particularly Saudi Arabia, YAR, U.S.A., Pakistan and Bangladesh.

West Asian Zone has been the major market for dry ginger. East Asian Zone imports ginger mainly in fresh form. The American Zone is also purchasing a substantial quantity of dry ginger from India. Among the E.E.C countries, U.K., is the main market. The share of East European Zone suffered a severe setback in 1991-92. The political and economic changes in Europe had a major impact on India's spice export to this region. Export of ginger from India to different zones are given in Table 7.10.

A substantial share of ginger export earnings from ginger oil and oleo-resins are contributed by U.K. and U.S.A.

Over the years, some changes in the relative shares in different markets of Indian ginger have taken place. The prominent change was in the direction of concentration.

Zone-wise export of ginger reveals that West Asian Zone which had been the largest market for Indian ginger was overtaken by East Asian Zone in 1993-94. Up to 1989-90, more than 60 % of ginger export earnings were

Table 7.10

Zone-wise Export of Ginger from India (Qty. in M.T.; Value in Rs. '000)

	1988-89		1989-90		1990-91		1991-92	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
America	635.90 (9.99)	8,967.70 (9.53)	524.10 (6.44)	9,052.70 (7.17)	681.30 (10.40)	15,416.00 (13.11)	1,832.20 (12.85)	41,542.30 (18.99)
E.E.C.	335.20 (5.26)	5,104.40 (5.43)	285.60 (3.51)	5,752.70 (4.56)	358.00 (5.46)	1,026.80 (0.87)	682.20 (4.78)	17,574.60 (8.03)
East Asia	1,200.20 (18.85)	8,200.10 (8.72)	3,119.00 (38.32)	16,563.30 (13.12)	2,765.50 (42.19)	16,152.90 (13.74)	7,336.10 (51.45)	51,201.00 (23.40)
West Asia	3,472.10 (54.53)	58,633.70 (62.32)	3,754.40 (46.13)	87,249.20 (69.11)	2,439.00 (37.21)	66,928.90 (56.92)	3,356.40 (23.54)	82,280.00 (37.60)
North Africa	435.50 (6.84)	6,765.90 (7.19)	219.20 (2.69)	4,334.30 (3.43)	147.40 (2.25)	3,896.40 (3.31)	745.30 (5.23)	18,475.10 (8.44)
Others	288.60 (4.53)	6,410.40 (6.81)	236.50 (2.91)	3,291.90 (2.61)	163.60 (2.49)	14,158.10 (12.05)	306.80 (2.15)	7,737.40 (3.54)
Total	6,367.50 (100.00)	94,082.20 (100.00)	8,138.80 (100.00)	1,26,244.10 (100.00)	6,554.80 (100.00)	1,17,579.10 (100.00)	14,259.00 (100.00)	2,18,810.40 (100.00)

(Cont'd...)

	1992-93		1993-94		1994-95		1995-96 (P)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
America	1,323.26 (13.46)	37,672.00 (22.33)	1,301.67 (7.06)	41,864.00 (16.89)	346.80 (2.89)	9,604.00 (5.74)	400.47 (2.20)	23,269.00 (6.08)
E.E.C.	489.50 (4.98)	14,388.00 (8.53)	708.65 (13.84)	22,333.00 (9.01)	343.00 (2.85)	14,183.00 (8.48)	421.02 (2.31)	26,742.00 (6.98)
East Asia	5,458.59 (55.56)	40,690.00 (24.11)	13,507.18 (73.24)	91,768.00 (37.03)	9,918.84 (82.50)	73,848.00 (44.14)	14,759.04 (81.14)	1,64,920.00 (43.07)
West Asia	1,369.39 (13.94)	42,036.00 (24.91)	2,440.23 (13.23)	77,097.00 (31.11)	957.17 (7.96)	47,482.00 (28.38)	2,008.56 (11.04)	134,005.00 (35.00)
North Africa	883.75 (9.00)	23,841.00 (14.13)	300.00 (1.63)	9,014.00 (3.64)	348.00 (2.90)	16,374.00 (9.79)	511.42 (2.81)	30,582.00 (7.99)
Others	300.51 (3.06)	10,111.00 (5.99)	184.25 (1.00)	5,737.00 (2.32)	108.67 (0.90)	5,812.00 (3.47)	90.24 (0.50)	3,355.00 (0.88)
Total	9,825.00 (100.00)	1,68,738.00 (100.00)	18,441.98 (100.00)	2,47,813.00 (100.00)	12,022.50 (100.00)	1,67,303.00 (100.00)	18,190.75 (100.00)	3,82,873.00 (100.00)

(P) Provisional

Note: Figures in parenthesis indicate percentage to the total ginger export from India.

Source: Spices Board, Kochi.

contributed by West Asia. In 1991-92 it declined to 37%. In 1992-93, West Asian Zone continued to be the largest market for Indian ginger with a share of about 25% of ginger export earnings, followed by East Asia and American Zone. From 1993-94 onwards East Asia ranks first with a share of more than 35% of the ginger export earnings.

Considering the period since 1973-74 until 1990-91, Saudi Arabia was the dominant market for Indian ginger and in 1984-85, its share was as high as 52% of the total ginger export earnings (Das 348). The average market share of Saudi Arabia was more than 35% upto 1990-91. There was a decline thereafter. The share declines to 30.4% in 1990-91 and further to 15.74% in 1991-92. It was only 13.48% in 1993-94 and 1994-95, but it increased to 18.86% in 1995-96 (Table 7.11).

Between 1988-89 to 1995-96, except in 1992-93 when the share of Y.A.R was 5.16%, in all the years it was above 11%.

Another point to be noted is the change in the share of U.S.A. The market share of U.S.A. increased from 7.52% in 1988-89 to 17.06% in 1991-92. By 1992-93 with its share of 20.71%, U.S.A. became the largest market for Indian ginger. However, during 1993-94, it came down to 15.52%, again to 4.75% in 1994-95 and then it increased to 5.05% in 1995-96.

Besides, the share of East Asia has shown an increasing trend in recent years. Pakistan and Bangladesh whose market share was negligible began to increase it since 1988-89 and by 1991-92 with a share of 19.75% Pakistan

Table 7.11

Country-wise Export of Ginger from India (Qty. in M.T.; Value in Rs. '000.)

	1988-89		1989-90		1990-91		1991-92	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
U.S.A.	527.60 (8.29)	7,074.00 (7.52)	532.30 (6.54)	7,623.90 (6.04)	608.80 (9.29)	13,469.40 (11.46)	1,674.80 (11.74)	37,333.20 (17.06)
Saudi Arabia	2,082.80 (32.71)	36,222.00 (38.50)	2,316.20 (28.46)	55,052.20 (43.61)	1,209.50 (18.45)	35,742.90 (30.40)	1,386.40 (9.72)	34,439.90 (15.74)
Y.A.R.	791.50 (12.43)	12,372.70 (13.15)	803.80 (9.88)	16,736.70 (13.26)	1,100.70 (16.79)	27,596.90 (23.47)	1,510.70 (10.60)	36,496.90 (16.68)
Pakistan	890.70 (13.99)	5,199.80 (5.53)	1,854.00 (22.78)	8,728.60 (6.91)	855.50 (13.05)	4,879.60 (4.15)	6,176.50 (43.32)	43,207.30 (19.75)
Bangladesh	174.40 (2.74)	700.90 (0.75)	1,164.10 (14.30)	5,426.30 (4.30)	1,673.90 (25.54)	7,071.00 (6.01)	964.90 (6.77)	3302.10 (1.51)
Others	1,900.50 (29.84)	32,512.80 (34.55)	1,468.40 (18.04)	32,676.40 (25.88)	1,106.40 (16.88)	28,819.30 (24.51)	2,545.70 (17.85)	64,031.00 (29.26)
Total	6,367.50 (100.00)	94,082.20 (100.00)	8,138.80 (100.00)	1,26,244.10 (100.00)	6,554.80 (100.00)	1,17,579.10 (100.00)	14,259.00 (100.00)	2,18,810.40 (100.00)

(Cont'd...)

	1992-93		1993-94		1994-95		1995-96 (P)	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
U.S.A.	1,213.36 (12.35)	34,936.00 (20.71)	1,188.67 (6.45)	38,449.00 (15.52)	301.80 (2.51)	7,943.00 (4.75)	333.57 (1.83)	19,336.00 (5.05)
Saudi Arabia	767.95 (7.82)	24,878.00 (14.74)	990.22 (5.37)	33,415.00 (13.48)	430.50 (3.58)	22,547.00 (13.48)	1,019.51 (5.60)	72,207.00 (18.86)
Y.A.R.	322.56 (3.28)	8,704.00 (5.16)	998.79 (5.42)	29,285.00 (11.82)	400.51 (3.33)	19,378.00 (11.58)	658.25 (3.62)	43,612.00 (11.39)
Pakistan	3,840.31 (39.09)	26,959.00 (15.98)	6,396.74 (34.68)	51,182.00 (20.65)	3,717.82 (30.92)	34,502.00 (20.62)	7,948.96 (43.70)	96,835.00 (25.29)
Bangladesh	1,288.88 (13.12)	5,461.00 (3.23)	6,987.06 (37.88)	36,449.00 (14.71)	6,104.87 (50.78)	35,036.00 (20.94)	6,712.35 (36.90)	59,385.00 (15.51)
Others	2,391.94 (24.34)	67,798.00 (40.18)	1,880.50 (10.20)	59,033.00 (23.82)	1,067.00 (8.88)	47,897.00 (28.63)	1,518.11 (8.35)	91,498.00 (23.90)
Total:	9,825.00 (100.00)	1,68,736.00 (100.00)	18,441.98 (100.00)	2,47,813.00 (100.00)	12,022.50 (100.00)	1,67,303.00 (100.00)	18,190.75 (100.00)	3,82,873.00 (100.00)

(P) Provisional.

Note: Figures in parenthesis indicate percentage to the total ginger export from India.

Source: Spices Board, Kochi.

became the largest market. The market share further increased to 20% in 1993-94 and 1994-95 and again to 25.29% in 1995-96. The share of Bangladesh increased from 0.75% in 1988-89 to 14.71 % in 1993-94. In 1994-95, Bangladesh ranks first with 20.94 % of the country's ginger export earnings. However, it declined to 15.51 % in 1995-96.

Although the share of Saudi Arabia in the ginger export earnings of India has substantially declined, the expansion of the markets of U.S.A. Pakistan and Bangladesh is mostly responsible for the growth of India's ginger export earnings in recent years. During 1991-92 to 1993-94, the combined share of U.S.A. and Pakistan has been around 37%. During 1995-96, the share of U.S.A. in country's ginger export earnings declined to 5.05%.

In respect of value added products like ginger oil and oleoresin, India depends mainly on American Zone, E.E.C. and West Asian Zone. In 1995-96, Saudi Arabia alone account for about 77% of the export earnings from ginger oleoresin. However up to 1995-96, U.S.A. was the largest market for ginger oleoresin. Besides Saudi Arabia, and U.S.A., the other important market for oil and oleoresin are Japan, U.K., Netherlands and France.

In short, there is very high market concentration in respect of fresh ginger, ginger oil and oleoresin. Pakistan and Bangladesh account for more than 90% of fresh ginger export from India. In respect of dry ginger, although one or two markets contribute larger share of export earnings, market concentration is very much lower than the above mentioned items.

7.8. Relation between Domestic and International Price of Ginger

Price of any commodity basically depends upon supply and demand and ginger is not an exception to this. The demand for dry ginger consists of internal demand and export demand. The relation between export price of ginger and its domestic prices indicates that the latter is exposed to international trade fluctuations and high price uncertainty to farmers. Price fluctuations in both domestic and export market make changes in total production and export of ginger.

The fluctuations in ginger prices in international market may be mainly due to the changes in the supply conditions rather than demand factor. According to the estimates of International Trade Centre, the world demand for ginger has been growing at a rate of 2.9 % per annum. Based on this the world demand for ginger is estimated to be around 23,000 tonnes in 2000 (Mariwala 74-75)

An important aspect of movement of prices is the short-term cyclical fluctuations. The turning points of upswings and downswing in prices are recurring alternatively at almost regular intervals.

Table 7.12

Domestic and International Prices of Ginger (Rs. per quintal)

Year	Domestic Price	International Price
1976-77	1,377	1,504
1977-78	1,384	1,858
1978-79	985	1,502
1979-80	476	804
1980-81	556	811
1981-82	899	1,098
1982-83	1,519	2,330
1983-84	2,835	3,283
1984-85	2,846	4,449
1985-86	1,488	2,118
1986-87	1,108	1,646
1987-88	1,660	2,653
1988-89	1,672	2,967
1989-90	2,258	2,893
1990-91	2,829	3,496
1991-92	2,492	3,863

(Cont'd...)

Year	Domestic Price	International Price
1992-93	2,617	4,139
1993-94	2,913	4,209
1994-95	4,921	5,459
1995-96	6,425	9,647

Source: Spices Board, Kochi.

Domestic and international prices of ginger have increased substantially during 1976-77 to 1995-96. Interestingly, wide fluctuations were also noticed in both the prices.

In 1976-77, domestic and international prices of ginger were Rs.1,377 and Rs.1,504. In 1979-80, the corresponding figures declined to Rs.476 and Rs.804 (Table 7.12). Then it slowly started rising and reached a peak level in 1984-85. Again in 1985-86 and the subsequent years, the domestic and international prices of ginger remained well below the 1984-85 level. However, from 1987-88 onwards ginger prices were increasing year by year up to 1990-91. In the next year, they declined and thereafter showed an increasing trend. Ginger prices reached an all-time record level in 1995-96 when domestic and international prices were Rs.6,425 and Rs.9,647.

DOMESTIC AND INTERNATIONAL PRICE OF GINGER

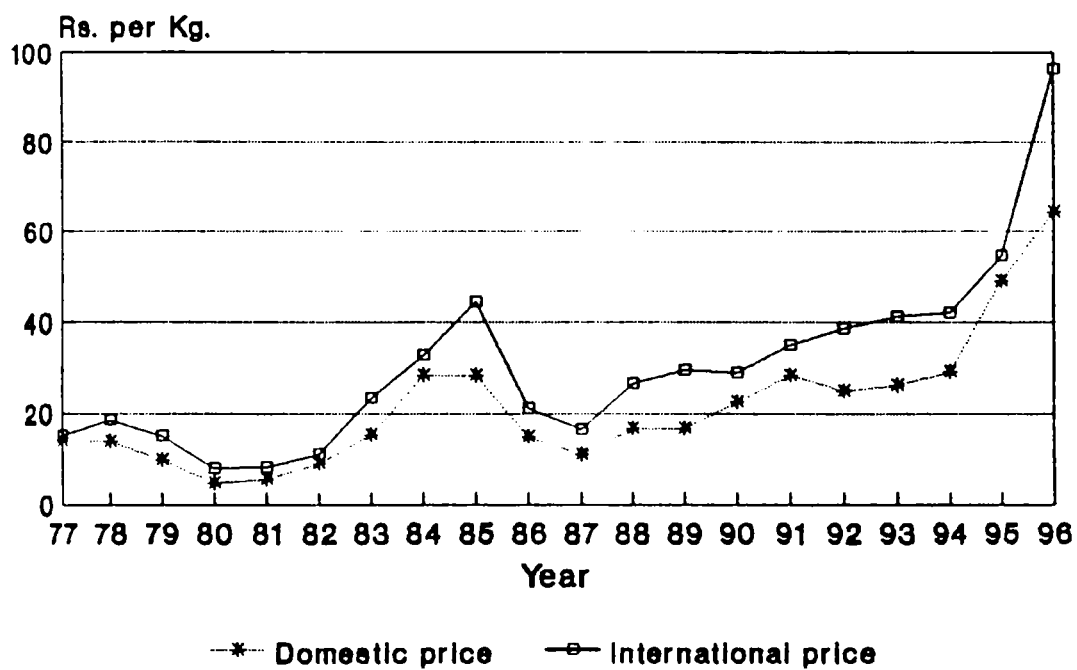


Figure 7.4

As Fig.7.4 illustrates, the domestic and the international prices of ginger have close relationship and their movements are in the same direction.

7.9. Instability of Ginger Export Earnings

One of the basic problems with the export of ginger from the country is year to year fluctuations in export earnings. Excessive fluctuations in export earnings generally originate from variations in supply or demand or other factors.

Export instability can be defined as short term fluctuations in export earnings or quantity corrected from the trend. Instability measure is usually defined as an average of the trend eliminated values of a time series. Mac Bean Index is used for the construction of an instability index. Mac Bean Index measures deviations from a five year moving average of observed values. The index is defined as:

$$M B I = \frac{100}{n-4} \sum_{t=3}^{n-2} \frac{X_t - MA_t}{MA_t}$$

Where MA_t is a five year moving average of the X_t values centred on year 't' and 'n' is the number of observations.

The level of instability of production, export and export earnings were analysed for two periods, i.e., from 1960-61 to 1976-77 and from 1977-78 to 1993-94.

Table 7.13

Mac Bean Index of Instability of Production, Export and Export Earnings of Ginger.

Items	First Period	Second Period	Percentage
	(1960-61 to 1976-77)	(1977-78 to 1993-94)	Change
Production	6.529	5.009	-23.28
Export	28.531	28.437	- 0.33
Export Earnings	19.898	34.284	72.30

Source: Computed from the data published by Spices Board, Kochi.

Table 7.13 shows that instability has decreased for production and export of ginger. For production the decrease in instability is 23.28%. The high percentage decrease in the instability of production may be due to the fact that India's ginger production has shown more or less steady increase during the second period.

In terms of value, the export instability increased by 72.30%. This leads to the conclusion that the year to year variations in price of ginger is the reason for instability in export earnings.

7.10. Determinants of Ginger Export

Ginger production in India generally exceeds domestic demand and the surplus finds disposal in the foreign markets. Thus, the level of production of ginger in any year determines the volume of export from the country. But the flow of ginger into the export market depends upon the export price or more precisely upon the ratio of Indian ginger price to Chinese price in international market.

The following function is estimated to study the determinants of ginger export from India and their relative importance.

$$EIG = a_0 + a_1 \text{ PIN/PC} + a_2 \text{ PI/PD} + a_3 Q_t$$

Where EIG = Quantity of ginger export in the year t

PIN / PC = Ratio of Indian ginger price to Chinese price in international market

PI / PD = Ratio of international price of ginger to domestic price.

Q_t = Production of ginger in the year t

The data for the variables included in the regression equation is given in Table B-8 in Appendix B.

The estimated regression equation for ginger export is presented below:

$$\text{EIG} = 6029.7664 - 3846.9336^{**} \text{PIN/PC} + 3934.7083^{****} \text{PI/PD} - 0.01051 Q_1$$

$$(1.346) \quad (-3.473) \quad (1.459) \quad (-0.601)$$

$$R^2 = 0.68$$

$$F = 4.96$$

** : Significant at 5% Level.

**** : Significant at 20% Level.

The value of the coefficient of multiple determination is 0.68. It indicates that nearly 68% of the variations in the export of ginger from India can be explained by the explanatory variables specified, viz., ratio of Indian ginger price to Chinese price in international market, ratio of international price to domestic price of ginger and the production of ginger in India. F value is also significant in the equation.

Among the variables used for the analysis, the ratio of Indian ginger price to Chinese price in international market is significantly related with the Indian ginger export. The negative relationship between these two variables indicates that the smaller this ratio the more will be export and vice versa.

The positive relationship between international price and domestic price shows that India exports more ginger whenever prices are attractive abroad.

The production of ginger does not have the expected sign but the coefficient is not statistically significant. Thus, the output of ginger is insignificant

in determining ginger export from India.

The results conclusively show the significant influence of price competitiveness on the ginger export from India. Therefore, the yield per hectare of Indian ginger is to be increased in order to bring down the price to the level of competing countries.

7.11. Problems of Ginger Export

The Indian ginger export is fraught with many problems which hamper the growth of export. The following are the important problems of India's ginger export.

7.11.1. Quality Problems

The consumers of spices all over the world are becoming more and more quality conscious. The importing countries are stipulating more stringent quality requirements year after year. Quality has emerged as the most important and initial aspect of international trade in spices. Developed countries are major markets for spices export. They insist on stringent microbiological standards for spices. Spices exported to any country should conform to the cleanliness specifications stipulated by that country.

Unhygienic processing conditions, unfavourable climate, and absence of mechanical processing may lead to higher moisture content and infestation of

pests and fungus. In those cases, the customers will devalue the product. Importing countries often revise such laws in the light of new scientific findings. Similarly, changes are often made in tolerance levels of pesticide residue. These countries are also steadily bringing down the permissible levels of other impurities. Thus scientific and technological advancement brings forth new challenges in the export trade. The greater importance given to quality by the consumers and the growing competition underline the need for constant efforts for quality improvement.

7.11.2. Growing Competition in the World Market

The export of ginger from the country is facing stiff competition in the international market from many developing countries. China is the main competitor of Indian ginger.

Price competitiveness is the key to successful exports. The basic problem with the export from the country is high prices. High prices can be attributed to low productivity and high internal demand. India, no doubt, is the largest producer of spices but at the same time the largest consumer. Unless the prices are brought down to the level of competing countries no major breakthrough can be made.

Besides, to gain a sustainable competitive advantage, an exporting country must be able to supply the quality a customer requires at a competing price. Complaints regarding the quality of the Indian spices have been frequent. Gingers

produced in other states are considered inferior in quality due to high fibre and moisture content. Exporters should ensure the hygiene and quality of the product and buildup consumer confidence.

7.11.3. Fluctuations in Price

Export of ginger has shown wide variations over the years. The export mainly depends on the domestic production as well as the production of other producing countries. The export price of ginger depends upon the demand in the international market and domestic production. The noticeable fluctuations in exports of ginger is mostly due to demand uncertainty. This uncertainty of overseas demand for ginger seriously affects the wholesale prices of ginger in the home markets which further leads to the production uncertainty. Any shortfall in production will influence the domestic price as domestic demand is increasing year by year.

7.11.4. Lack of Diversification

Lack of diversification of India's ginger export is reflected in the product and market concentration. Bulk of the export from the country is comprised of dry ginger though fresh ginger is also exported.

The progress achieved in the export of value added products from India has, however, been disappointing although ginger oil and oleoresin export dur-

ing 1994-95 is equivalent to about 20 % of the ginger export. Though fully aware of the risk of over dependence on few markets, India could not succeed in making significant export to other destinations.

7.11.5. Lack of Coordination in Production and Marketing of Ginger Export

Lack of coordination in production and marketing of ginger export is another problem to exporters. The study reveals that various agencies are dealing with various aspects of ginger like production, marketing and research. The Directorate of Cocoa, Arecanut and Spices Development deals with the development programmes for ginger, whereas the Agricultural Universities, National Research Centre for Spices, Calicut, Research Station at Amabalavayal undertake research on various aspects of ginger crop including the development of high yielding varieties. The Central Food Technological Research Institute and the Regional Research Laboratory undertake research on product development and processing technology. The Spices Board concerns itself with the promotion of export of spices including ginger. The absence of a single agency with an integrated approach has stood in the way of accelerating the effort in production and export of ginger.

7.12. Conclusion

India has been the major exporter of ginger in the world. During the last

three decades, world trade in ginger recorded impressive growth. There is considerable scope for boosting export of ginger by the producing countries including India. But during the last decade, the country has lost her prime position as compared to the past. Our competing countries like China could made use of the opportunity.

Although the compound growth rate of ginger export earnings during 1990-91 to 1995-96 is as high as 17.1%, it is true that the export of ginger is not impressive in comparison with the performance of spices in general. In recent years, the growth rate of spices has been substantially higher than that of ginger.

Price movements have been in the same direction in both domestic and international markets of ginger. Among different variables, the ratio of Indian ginger price to Chinese price in international market is significantly related with the Indian ginger export.

India has not been successful in meeting the real challenges of ginger export. This is evident from:

(i) The decelerated export growth of ginger due to high domestic demand and the consequent fall in market share.

(ii) The very slow progress of export of value added products like ginger oil and oleoresin.

ii) The very slow progress in market and product diversification.

(iv) Comparatively high price of Indian ginger which adversely affects the export.

Currently, India suffers from certain disadvantages in relation to her competitors. India has been a traditional exporter of ginger confined by and large to dry ginger. On the other hand, the newly emerged competitors have been exporting diversified products. Besides, they have cost advantage over India due to high productivity. In short, the Indian ginger export has a growing challenge ahead.

However, although the competition is increasing, India can look forward to further growth in ginger export if proper measures are taken as suggested in the last chapter.

Chapter Eight
Problems of Ginger Cultivation

Chapter Eight

Problems of Ginger Cultivation

This chapter examines the problems faced by ginger growers in various aspects of its production and marketing. Like other farmers ginger growers also face a number of problems. These problems, are classified into three groups, namely problems of inputs, marketing problems and general problems.

8.1. Problems of Inputs

Problems of inputs include problems of land, labour, mulching materials, manures, chemical fertilizers and plant protection. Results of the survey are presented in Table 8.1

8.1.1. Land

Non-availability of fertile land is one of the important problems. The most suitable soil for maximum ginger production is sandy loam having good drainage and rich in humus content. The problem of disease tends to increase when ginger is grown every years in the same land. In less fertile land they have to use larger quantities of manures and fertilizers. The probabilities of

Table 8.1**Problems of inputs**

Problems	Wynad	Ernakulam
	(Number of farmers)	
Land	46 (51)	73 (81)
Labour	22 (24)	40 (44)
Seed	29 (32)	34 (38)
Mulching Materials	19 (21)	67 (74)
Manures and fertilizers	69 (77)	64 (71)
Plant diseases	90 (100)	90 (100)

Note: Figures in parenthesis indicate percentage.

Source: Primary data.

destruction of crops by pests and diseases are low in virgin lands. Farmers report that with the transformation from annual crops to perennial crops like coconut and rubber, land available for cultivating ginger as a pure crop has declined. The field survey shows that about 83.33% of farmers in Wynad and 91.11% in Ernakulam district are cultivating it as an intercrop (Table 3.1).

8.1.2. Labour

Ginger cultivation is highly labour intensive. Table 5.8 reveals that labour constitutes more than 30% of the total cost. Non-availability of labour and the consequent increasing wage rate are the main problems related with labour. The increasing cost of cultivation of ginger is mainly due to increasing wage rate year by year. On the other hand there is no such steady increase in ginger price. Many farmers complain that sufficient labour is not available during the planting period.

8.1.3. Seed

Most of the farmers surveyed have inform that inadequacy and non-availability of healthy seed is a serious hurdle in the efficient production of ginger. Generally, cultivators retain adequate quantities from their crop for the purpose of seeds. In many years the preservation of seeds from previous cultivation is not possible due to the plant diseases. They further add that most of them are purchasing seeds from adjoining areas. As a result of this they have to pay exorbitant prices and still there is no guarantee for the good quality disease-free seed.

Taking recourse to high yielding varieties is one of the ways to increase the yield of a crop. Most of the respondents are not aware of the new vari-

eties like ‘Suprabha’, ‘Suruchi’ and ‘Surabhi’ released recently by the research institutions. Besides, ginger seeds are not supplied by Krishi Bhavans or Government farms.

8.1.4. Mulching Materials

Application of green leaves during planting and six months later have an effect of increasing yield to a considerable extent over the non-mulched crop. At present because of the heavy deforestation there is great difficulty in getting green leaves. Majority of the sampled farmers inform that mulching materials are not available in sufficient quantities. The cultivators had to purchase the green leaves from outside the village which resulted in additional cost. About 40% of the farmers mulched only once due to the non-availability and high cost of mulching materials. Some farmers in Ernakulam district inform that due to the shortage of green leaves, they are using coconut palm which is not a proper mulching material. Shortage of green leaves is a problem which would receive more attention in future.

8.1.5. Manures and Chemical Fertilizers.

Ginger is a crop which requires heavy dosage of manures and fertilizers. The study shows that most of the farmers are not applying adequate quantity of manures and fertilizers. Non-availability of cattle manure is one of the

important problems of ginger growers. The per hectare use of chemical fertilizers is also far below the recommended dosage. Many growers report that prices of chemical fertilizers have increased by more than 100 % within three years.

8.1.6. Plant Diseases

All sampled farmers have reported that plant disease is the most important problem of ginger cultivation. Various pests and fungi destroy the crop quantitatively and qualitatively. Many diseases are seed borne and soil borne. The main pests found in this plant are shoot borer, leaf roller and rhizome scale.

The shoot borer is the most important pest of ginger. It feed on the growing shoot resulting in yellowing and drying of the infested shoots. The larvae of the leaf roller fold the leaf and feed from within. The rhizome scale cause damage to ginger rhizomes under field as well as under storage conditions.

The major diseases in ginger are the crop loss due to rhizome rot and bacterial wilt. Even though all farmers are using plant protection chemicals, it is of negligible quantities. Majority of farmers are found to be ignorant of the measures to be adopted against these diseases and pests. An effective control measure for soft rot is not available at present.

8.2. Marketing problems

In the process of marketing the ginger growers face several types of difficulties in relation to processing, storage, price fluctuation and market intelligence (Table 8.2).

8.2.1. Processing

Ginger is sold either in fresh or dry form. Major portion of ginger from Emakulam district is converted into dry form. Peeling of fresh ginger is highly labour intensive. Many farmers report that they had to transport the product to distant place for sun drying. Mechanical processing of ginger is not popular in Kerala. Traditional method of processing and unfavourable climate during the processing period would boost-up cost and reduce quality.

8.2.2. Storage

Storage forms an integral part of marketing. In the study area, the villages are not provided with storage facilities. Most of the farmers are compelled to sell the product immediately after harvest owing to the lack of storage facilities. Some large scale cultivators sell the commodity through commission agents who store it in godowns at Cochin. The main cost involved in the

storage are godown rent, interest and storage losses due to drainage and insect attack. Dry ginger is susceptible to weevil infestation, particularly during monsoon.

The survey shows that majority of the farmers sell the produce to village merchants or town merchants. Under this existing marketing system, producer's share in the price paid by the consumer is comparatively low. A sizable part of the terminal market price is taken away by the middlemen as their margin.

Table 8.2

Marketing Problems

Problems	Wynad	Ernakulam
	(Number of farmers)	
Processing	4 (4)	13 (14)
Storage	6 (7)	36 (40)
Price fluctuations	76 (84)	74 (82)
Market intelligence	46 (51)	23 (26)

Note: Figures in parenthesis indicate percentage.

Source: Primary data.

8.2.3. Price Fluctuations

There are great fluctuations in the prices of ginger. The farmers have no control over ginger prices. They are not getting remunerative price during the peak harvesting seasons and they are not in a position to keep the material in their houses. The cyclical and seasonal fluctuations coupled with lack of holding capacity by farmers and the nature of the commodity being susceptible to insect damage influence the cultivation. Because of the uncertainty in prices, they can't calculate even the probable profitability of ginger cultivation. Therefore, most of the ginger cultivators are small and medium farmers who use their own family labour for cultivation.

8.2.4. Market Intelligence

Market intelligence is one of important aspects in the modern system of marketing. A smooth marketing system depends upon accurate, adequate and timely information. Unfortunately, the existing facilities available in the country are far from being satisfactory.

Majority of the farmers complained about inadequate information relating to market prices and market arrivals. The service provided by the authorities are not adequate to reach the producers, especially small and marginal cultivators. Most of the producers depend on the fellow cultivators or on the village merchants to know the prevailing prices. The information received from

other cultivators is usually not up to date and the traders often pass-on misleading information.

The prices of ginger are being broadcast by the All India Radio along with the prices of other agricultural commodities. Some of the local and national newspapers are also publishing prices of ginger. The small cultivators, however, are unable to take advantage of this facility. It discourages the cultivators to cultivate ginger for a longer period.

8.3. General Problems

The general problems observed by ginger cultivators cover the problems of credit and extension activities.

Table 8.3

General Problems

Problems	Wynad	Ernakulam
Credit	60 (67)	62 (69)
Extension Activity	90 (100)	90 (100)

Note: Figures in parenthesis indicate percentage.

Source: Primary data

8.3.1. Credit

Non-availability of adequate finance at reasonable cost is a serious problem which the ginger farmers face. This problem comes in the way of processing which affects selling price. Financial constraint weakens the holding capacity of farmers in times of market decline and the resultant fall in the value realisation may even affect their ability to continue the ginger cultivation.

Although there are cooperative societies and commercial banks in villages to provide credit facilities to farmers, finance continues to be an important constraint. The amount of loan given by these institutions is inadequate for their need and so the major source of finance is the professional money lenders.

8.3.2. Extension Activities

All the respondents inform that they are not getting technical advice on production, processing and marketing from the local Krishi Bhavans or Government agencies. A wide gap exists in the yield obtained at the research institutions and that in the farmer's field. Most of the ginger growers are not aware of the new varieties released and cultivation and processing techniques developed recently. This shows that even the available technical know-how is not fully made use of by farmers.

8.4. Conclusion

Although majority of the farmers face a wide range of problems, plant diseases, price fluctuations, non-availability of fertile land and lack of extension activity are identified as the major problems of ginger cultivation. The detailed enquiry into these constraints will help in exploring the opportunities for enhancing ginger production in Kerala.

Chapter Nine
Summary of Findings and Recommendations

Chapter Nine

Summary of Findings and Recommendations

9.1 Summary of Findings

The major findings of the study are the following:

9.1.1 Trends in Area, Production and Yield per Hectare

The growth performance of ginger has varied from state to state.

(i) The area, production and yield per hectare of ginger in India have shown an increasing trend during 1957-58 to 1993-94.

(ii) The area under ginger in Kerala during 1977-78 to 1993-94 (till 1977-78 data for Meghalaya is not available) has been growing very slowly (1.23%) while other major ginger producing states such as Meghalaya (3.92%), Orissa (7.27%) and West Bengal (7.79%) have recorded a remarkable improvement.

(iii) In case of production, the growth rate of Kerala is only 3.41%. However, there has been a spectacular growth in Orissa (11.16%) and West Bengal (8.77%).

(iv) The yield per hectare in Kerala has been growing at a rate of

2.18% per annum. Orissa stands first in maintaining higher growth rate (3.89%) while the lowest growth rate (1%) is found in West Bengal.

(v) The average growth rates of Kerala do not reveal the real growth pattern. While the Wynad district has made spectacular growth in area and production, Ernakulam shows negative growth rates.

(vi) The compound growth rates of area, production and yield per hectare of ginger in Kerala are not impressive in comparison with that of all India growth rates and of other major producing states. Kerala's share in country's ginger output declined from more than 60% till 1976-77 to 25% in 1993-94.

The general trend of crop shifting in Kerala, i.e., from annual crops to perennial crops, the emergence of substitute crop and lower yield per hectare are the main reasons for decelerated growth rate of ginger production in Kerala.

9.1.2. Acreage Response

The acreage response analysis reveals the following:

(i) Among the variables used for the analysis, lagged values of price and area are significantly related with current area under ginger.

(ii) The positive relationship between the area allocation and price movements shows the price consciousness and economic rationality on the part of the farmers.

(iii) The significant positive relationship between the current area and the lagged area indicates the gradual increase in area under ginger in Kerala.

(iv) The other variables like lagged yield, rainfall, lagged price of turmeric and current area under pineapple have an insignificant influence on area under ginger in Kerala.

(v) The district-wise acreage response analysis reveals that lagged price, by and large has no significant impact on ginger area in Ernakulam and Wynad districts.

(vi) Lagged area and lagged turmeric price are the important variables influencing current area under ginger in Wynad district.

(vii) In Ernakulam district, current year pineapple area is the most important factor influencing area under ginger.

Thus the factors influencing area under ginger are different in different districts and the state as a whole.

9.1.3. Cost of Cultivation

Cost of cultivation and net profit per hectare in Wynad and Ernakulam districts are worked out to find the comparative advantage a district or region enjoys in regard to the production of ginger.

(i) More than 80% of ginger farmers in both the districts grow ginger as an intercrop in coconut, arecanut, pepper and rubber plantations.

(ii) Ginger is a soil exhaustive crop and it should not be grown in the same field year after year. Therefore, it is commonly rotated with other crops like tapioca, banana, sesame, yam and lemongrass.

(iii) Cost of cultivation of all categories of farmers in Wynad are substantially higher than the cost incurred by the respective categories in Ernakulam district.

(iv) Although the proportion of each item to total cost is more or less same in two districts, farmers in Wynad invest more on all major inputs.

(v) The cost of cultivation per hectare varies from Rs. 71,245 to Rs. 80,285 in Wynad and Rs. 57,112 to Rs. 66,462 in Ernakulam.

(vi) The cost structure of ginger reveals that labour cost is the largest item accounting for more than 30% of the total cost of cultivation. Seed, manures and fertilizers and rental value of land are the other major components of the cost of cultivation.

(vii) Although the cost of cultivation per hectare is higher in Wynad, net profit is about 50% higher due to higher yield per hectare. Agro-climatic conditions and use of high yielding variety seeds are the main reasons for higher yield per hectare in Wynad.

Thus, there should be a regional approach to boost the ginger output of Kerala taking into account the regional disparities in cost of cultivation, yield and net profit per hectare.

9.1.4. Marketing

Since the mode of marketing in Wynad differs from that in Ernakulam, marketing channels and price spread in the two districts are analysed separately.

(i) The marketing system for ginger in Kerala consists of ginger growers, merchants and other intermediaries.

(ii) The role of cooperative sector in the marketing of ginger in the state as a whole is insignificant.

(iii) More than 40% of farmers in both the districts dispose of their produce through the village merchants.

(iv) The farmers share in terminal market price is higher for dry ginger (Ernakulam) as compared to fresh ginger (Wynad). The higher price spread of fresh ginger is due to monopoly control by wholesale traders in Wynad.

(v) Price spread of two substitute crops of ginger, viz., turmeric and pineapple, reveals that farmer's share in terminal market price is higher in turmeric and lower in pineapple in comparison with that of ginger.

(vi) The farmer's share in terminal market price varies from 69 to 71.7% for fresh ginger, 70.94 to 82.85% for dry ginger, 78.75 to 85.17% for cured turmeric and 49.1 to 70.91% for pineapple.

(vii) The major factors significantly influencing price spread are different for different commodities.

(viii) The marketing pattern and the number of intermediaries are same for dry ginger and cured turmeric. However, price spread is relatively higher in dry ginger due to higher marketing margin.

(ix) High price spread of pineapple is attributed to the perishable nature and price instability of the product.

The price spread depends on a number of factors, viz., monopoly trade

practices, instability of price and nature of the commodity. The study also indicates that a larger number of intermediaries does not mean higher price spread and vice-versa.

9.1.5 Export

India has been the major exporter of dry ginger in the world. Although many varieties of gingers are grown in different parts of the country, only the varieties grown in Kerala which are bold with low fibre and pungency are suitable for dry ginger.

(i) The compound growth rate of ginger export earnings during the last thirty six years is 10%.

(ii) Significant increase is also recorded in the export earnings of value added products of ginger.

(iii) The last decade witnessed an erosion in the dominance of India in ginger export. India's share in world ginger export has declined from 36% in 1980 to 25% in 1991.

(iv) India and China are the two major suppliers of ginger in the world market. The major buyers are Saudi Arabia, YAR, USA, UK, Bangladesh and Pakistan.

(v) Among the variables used for the regression analysis, the ratio of Indian ginger price to Chinese price in international market is significantly related with the Indian ginger export. The negative relationship between these

two variables indicates that the smaller this ratio the more will be the export and vice-versa.

(vi) The positive relationship between the ratio of international price to domestic price and ginger export shows that India exports more ginger whenever international prices are attractive.

(vii) The output of ginger is insignificant in determining ginger export from India.

(viii) Price movements are in the same direction for both domestic and international markets of ginger.

(ix) Mac Bean Indices of instability is estimated for production, volume of export and export earnings of ginger. However, instability is found only in export earnings.

(x) Increasing domestic demand, very slow progress of export of value added products, slow progress of product and market diversification and comparatively high price of Indian ginger are the main problems of Indian ginger export.

Although the competition is increasing, India can look forward to further growth in ginger export if proper measures are taken.

9.1.6 Cultivation Problems

Ginger farmers face a wide range of problems. The major problems are the following:

- (i) Non-availability of fertile land.
- (ii) Increasing prices of manures and fertilizers.
- (iii) Plant diseases.
- (iv) Price fluctuations.
- (v) Inadequate credit facilities.
- (vi) Lack of extension activity.

9.2 Recommendations

Based on the findings of the study, the following recommendations are made for development of production, marketing and export of ginger.

(i) Although the average yield per hectare of ginger in Kerala is lower than that of many other states, there is further scope for increasing it. Yield can be increased by the timely supply of disease-free seed to farmers. The Government should undertake the responsibility of distribution of healthy seeds through panchayat level Krishi Bhavans. Productivity increase is needed not only to increase the output but also to improve the cost competitiveness and profitability.

(ii) Since there is only limited scope for increasing area under ginger in Kerala as a monocrop, the existing potentialities of cultivating ginger as an intercrop in coconut, arecanut and young rubber plantations may also be exploited to the maximum possible extent. In ginger cultivation, emphasis should, therefore, be placed on both productivity increase and area expansion.

(iii) To protect cultivators from incurring loss the Government should announce a support price for ginger.

(iv) There should be a balance between demand and supply. For efficient marketing, it should be ensured that market does not suffer due to short or excess supply. When supply exceeds demand, the state and central level cooperative organisations should enter the market and purchase the surplus.

(v) Side by side with crop research, marketing research may be taken up so that enough data are available to the policy makers to fix prices and formulate developmental policies.

(vi) Technological upgradation of processing is very much essential to improve the quality of dry ginger. Ginger is a food item and considerable importance is attached by importing countries to hygiene part of the produce. Traditional method of processing will result in loss of flavour and quality. Scientific drying facilities should be made available by the Spices Board especially in major producing districts like Wynad, Ernakulam and Idukki for producing clean and good quality product retaining the original flavour. This would encourage buyers' confidence, help the farmers to get better price for the commodity and would result in increased export.

(vii) There is a lot of potential for the export of value added products like ginger oil and oleoresin especially to the developed countries. This potential needs to be tapped fully.

(viii) Adequate International Marketing Information System should be developed so as to help formulate suitable strategy to develop exports.

(ix) Attention should be paid to the diversification of the export products and markets. Steps may be taken to introduce ginger in syrup and ginger candy in the export market. For this purpose, suitable ginger varieties should be identified and up-to-date scientific processing techniques may be imparted to the manufactures.

(x) Extension agencies located in the ginger producing areas should be more alert in diagnosing and suggesting timely and suitable remedies to the growers for their field problems.

(xi) Most of the ginger cultivators are not aware of the new varieties released recently by the research centres. Technical know-how should be made available to farmers to enhance production without time lag.

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