returns to scale, the major determinant of output, resource-use efficiency and break-even output of pepper in Kerala.

The sixth chapter deals with various aspects of the existing system of marketing practices, marketing cost and price trend of pepper and analyses the problems of marketing of pepper in Kerala.

The seventh chapter examines the various aspects of export performance of pepper and related issues in India. It includes the export price performance of pepper in India and co-integration between domestic and international prices.

The eighth chapter presents a summary of findings, suggestions and conclusion.
This chapter highlights the various review of literatures, concepts and definitions related to production, marketing and export of pepper.

2.1 REVIEW OF LITERATURES

This chapter classifies the review of literatures and concepts definitions under various heads such as:

(i) Production of Pepper.
(ii) Cultivation of Pepper.
(iii) Marketing of Pepper.
(iv) Export of Pepper

2.1.1 Review of Literature Related to Production

Geetha, analysed the yield and output response of pepper farmer about price and non-price variables by wing multiple regression model for a period from 1955-65 to 1978-79. The empirical analysis of the study showed that in Kerala there was only marginal positive response of once under pepper cultivation to
price and yield response negative to price. The negative response of yield was interpreted as restricted exertion of price on output\(^5\).

George Amballor studied the supply responsiveness of pepper in Kerala for a period of 16 years commencing from 1970 to 1986 using the Nerlovian lagged adjustment model. The study revealed that output was responsive to change in prices through area and productivity adjustment\(^6\).

Spices Board published an article on pepper output in 1989 put at 1.55 to 1.60 lakh MT. The article states that in 1989, the estimated production was in the region of 1.55 to 1.60 lakh tones. In 1988, India accounted for the major share in production with 60,000 tones followed by Indonesia with 48,000 tones, Brazil 35,000 tones and Malaysia 18,000 tones.

The export of pepper from India during the year 1988 has been estimated at 50,000 tones as against 32,781 tones of pepper in 1987\(^7\).

S.Giriappa, has analysed on the topic “plantation economy in India-pepper” The main objective of the study is to analyse the trend of production of plantation crops. The study observed that pepper could be grown on areca nut and coconut palms, which is largely grown in the South. Though the world production has considerably gone up, India’s share in world production has gradually declined.

\(^5\) Geetha, “The Supply Response of Pepper in Kerala” Unpublished M.Phil Dissertation to Department of Economics, University of Kerala, Trivandram, 1982, p.120.


\(^7\) “Pepper Output in ’89 put at 1.55 to 1.60lakh MT", *Spices India*, Spices Board, Cochin, November 1988, Vol.1, No.5, pp.11.
This is due to the entrance of many new countries in pepper production. Pepper is the most important spice exported and treaded in India. About 49 percent of total export pepper realizes earnings of spices.

The low productivity of Indian pepper is due to poor genetic base of the existing stains and the free unproductive, old and senile plantations, non-availability of quality planting materials, non-adoption of scientific management, especially nutritional and plant protection crop etc., crop loss due to diseases and pests and the highly fluctuating weather conditions, unstable market prices, poor socio-economic states of the small growers, inadequate credit facilities and inadequate transfer of technology services. Since the scope of increase in the area is limited the alternative is to increase the productivity of black pepper\(^8\).

Jerome, in his study indicated that the growth performance of area under pepper in Kerala was characterized by fluctuations and stagnations. The stagnant yield was found to be due to the traditional methods of cultivation, pests and disease attacks, lack of institutional support and instability in prices. According to the analysis on the trends in the farm, wholesale and export prices of pepper shows year-to-year variations and high degree of instability. The study stressed the importance of the intensive cultivation of pepper in future rather than extensive one\(^9\).

P.D. Jeromi, in his study examined the growth and instability in area production and productivity of pepper in comparison with its competing crops in

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Kerala state and estimated the contribution of area and productivity of pepper production. He identified that due to lower rate of growth of pepper production, pepper was facing severe competition as compared to its competing crops. He concluded that the low and stagnant yield of pepper in Kerala was due to the factors like diseased, averaged and uneconomic pepper vines, non-adoption of improved methods of cultivation, occurrence of pests and disease and inadequate institutional arrangement\textsuperscript{10}.

Spice India has published an article on “Global pepper production to go up”. The production has gone up from 1,74,044 tones in 1997 to 1,86,758 tones in 1998, leaving an exportable surplus of 1,52,546 tones. The IPC session, which took stock of the world production and trade scenario, estimated that the total world production in 1997 world touched 1,74,044 tonnes of which the contribution form IPC countries would be 1,39,544 tonnes. The projection on world production and exportable surplus during 1998 was projected to be 1,86,758 tones and 1,52,546 tones respectively.

The IPC is also planning to make membership in the European spice Avocation and the American spice trade Avocations. IPC will also take a decision to include both there organizations as members. The IPC proposed to hold the next session of the IPC and the Pepper Exim meeting in Indonesia\textsuperscript{11}.

V.Alagappan and M.Manoharan analysed the topic “Production of Pepper in India a Global Perspective” This article endeavours to analyse growth rates of


\textsuperscript{11} “Global Pepper Production to go up”, \textit{Spice India}, Spices Board, Cochin, Vol.10, No.10, October 1997, pp.8-9.
production, area and productivity of pepper in India in comparison with other major producing countries of the world for the period 1989 to 1998 and supply responsiveness of the farmers in India. This article also analyses the magnitude of variability of pepper for the major pepper producing countries and their production share.

Both in terms of average area of pepper cultivation and production, India occupies first place. But from the point of view of productivity per hectare, India occupies the last position among the pepper producing countries. India is 67 percent behind the world average of pepper productivity. The productivity rate has increased only by 2.5 per cent. It is evident that there is no supply response from the Indian pepper cultivators and hence they could not enjoy the price hike during the last half of the decade, which is considered to be the boom period for the pepper cultivators.

The reasons attributed for the poor yield are the existence of old and senile plants, limited availability of high yielding varieties, planting of pepper in the homestead grades under inter and mixed crop conditions with mango, Jack, coconut etc, incidence of disease, unfavorable climatic conditions and smaller population of about 560 vines per hectare against 2000 vines in Malaysia and 2500 vines in Vietnam.

The union government had allocated 63.3crores in Eighth plan for pepper alone, by which 28,500 hectares of pepper gardens were rehabilitated. Programmes were initiated by the government for eradication
of quick-wilt and little leaf disease, distribution of input kits and development of demonstration plots in farmer’s fields.\(^\text{12}\)

**2.1.2 Review of Literature Related to Pepper Cultivation**

Seemanthini Ramdas and M. Kader Mohideen, have made an attempt to study the overview of pepper cultivation in Tamil Nadu. According to them, pepper grows at altitudes up to 1500 m but thrives best at 500 m or below. A rainfall of 2500 m or more per annum is considered desirable. In a major pepper growing state of Kerala, the average rainfall is over 300 mm distributed over eight to ten months, with a temperature range of 28 to 35°C.

In Tamil Nadu, the system of cultivation is mainly as an inter or subsidiary crop in plantations of coffee, tea and cardamom. Pepper vines are trained on the shade trees namely silver oak, Erythrina, jack and other forest trees. Varieties like balam kotta, karimunda, kalluvally, kottanadan and paninyur-1 are usually recommended for south India. The performance of paninyur-1 at highest elevations (above 1000 m MSL) is not as encouraging as its performance at lower elevations. At higher elevation, kottanadan and karimunda have faced well, though spares spike set in kottanadan was a limiting factor.

Thus, they have concluded there is enough evidence to suggest that the low productivity in the state could be stepped up substantially by introducing high

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yielding variety cultivation, and also adopting scientific crop management practices\textsuperscript{13}.

Bindu Padmini, has made an attempt to study the economic analysis of pepper cultivation under differing cropping systems in Kerala. The main aim of the study is to know the existing cropping pattern and its cost of production, to calculate the yield gap and to identify its determinants and the problems encountered in the cultivation and marketing of pepper.

According to the findings of the study, it was evident that the average size of the mono cropped and intercropped farms worked out to be 1.90 and 2.40 hectares respectively and the average size of the farm for the entire study area worked out to be 2.28 hectares. The cost per kilogram of pepper worked out to be lower in intercropped farms with 57.07Rs/kg as compared to 60.61Rs/kg in mono cropped farms. The gross profit per hectare was worked out to be the highest in mono cropped farms with 46522Rs/ha as compared to the intercropped pepper with 32751Rs/ha. The major technical problems encountered were the incidence of pests and disaster, lack of suitable varieties, fluctuations in prices and the high unit cost of production due to high labour cost\textsuperscript{14}.

Kashy John, et.al., have made an attempt to study the seasonal climatic influence in pepper production of Idukki district According to them, pepper requires a warm and humid climate with a distributed annual rainfall of about 250 cm. The vine tolerates a minimum temperature of 10°C and maximum of 40°C, the


\textsuperscript{14} Bindu Padmini, “An Economic Analysis of Pepper Cultivation Under Different Cropping Systems in Kerala”, M.Sc Project in Agricultural Economics, Department of Agricultural Economics, Center for Agricultural and Rural Development Studies, Tamil Nadu Agricultural University, Coimbatore, 1997.
optimum being 20 - 30˚c. During the crops reason 1999-2000, an observation at study in a few pepper gardens in Idukki district and discussion with experienced planters were made in understanding the influence of climate in seasonal pepper crop production.

It is observed that the rainfall pattern prevailing continuously without providing a stress after the harvesting of the previous crop is the key factor that played behind the reported crop loss of not less than of 25 percent in Idukki district compared to the previous season\textsuperscript{15}.

T.D.John has made an attempt to analyze the pepper cultivation in Karnataka. According to him, due to the increase in the price of pepper there is an added interest for the coffee growers to plant more pepper vines in their plantation using all the available shade trees. This is evident from the increased demand for pepper-rooted cuttings as planting material in recent years.

Pepper rooted cuttings raised in polythene bags are preferred for planting. Because of the abundant root growth there rooted cuttings can be planted. Runner shoots is not followed now because of the high rate of establishment failure and requirement of more quantity of planting materials. Most of the growers have started taking up prophylactic spraying of fungicide to control the diseases of foot rot and slow wilt. Trichoderma being a natural antagonist fingers against the disease causing organisms, is now prefaced for application in the pepper gardens.

Every effort is being made by the spices Board to improve the quality of the produce at farm level by bringing awareness among the pepper growers through a series of quality improvement training programmes. The growers in Karnataka are fully aware of the situation and at the rate they are taking up planting in recent times. It can be very well said that within a short span of 5-10 years, Karnataka will overtake every other state in India in the production of pepper\(^{16}\).

C.Chandran, et.al., have analyzed the Resource use efficiency in pepper cultivation. The main objective of the study is to evaluate the allocate efficiency in the use of recourses in the production of pepper. For the purpose of the study, the required information was collected from 117 pepper cultivators in Idukki District, Kerala state. To assess the resources productivity and returns to scale in pepper cultivation, Cobb-Douglas type production was used. The findings of the study the coefficient of determination infers that 77.90 percent of variation in output of pepper was explained by all the fire independent variables such as number of pepper vines, human labour in man days, manure and fertilizers in rupees, age of the plants in years, and cost of plant protection in rupees. F-test shows that the estimated Cobb-Douglas type function for yield increasing stage of 4 to 12 years of pepper plants is statistically significant at one percent level.

It is observed that the sum of the production elasticity for yield increasing stage (4 to 12 years of age) of plant was 1.904 indicating the increasing returns to scale. In the case of yield decreasing stage (13 to 20 years of age) of plants, the sum of the elasticity was 0.478 indicating the decreasing returns to scale.

According to the yield increasing stage the ratio for marginal value products to the factor cost were 8.44, 3.7 and 164.49 respectively for human labour, manures and fertilizers and cost of plant protection. Whereas, in the case of yield decreasing stage, the ratio of marginal value products to the factor cost were 6.68 and 93.94 respectively for manures and fertilizers and plant protection chemicals it is inferred that every rupee spent on manures and fertilizers and plant protection chemicals would yield Rs.6.68 and Rs93.94 worth of output respectively. This indicates that there is more scope for increasing the cost of manures and fertilizers and plant protection to raise the returns from pepper. However, in this stage of crop, the yield was decreasing.

Dr. V. Alagappan and M. Manoharan have studied the topic “Economics of pepper production” The main objective of the study is to know the problems of pepper production, cost and returns and capital productivity. According to the findings of the study, the Total variable Cost per acre increased from 7 to 12 years of age group to 17 to 20 years of age group. The output of pepper per acre during the age group of 4 to 6 years was 414.0Kg, which reached a maximum of 672.12Kg during the peak yielding stage of 7 to 12 years and started deceasing.

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and reached a minimum of 264.63Kg during 17 to 20 years of the age with an overall average of 506Kg acre. It was observed that though the total cost of production per acre was the lowest in the age group of 17 to 20 years, the unit cost of production was the highest among all the age groups because of low productivity. Due to high productivity the highest gross margin was found during the age of 7 to 12 years. Pepper price is showing a fluctuating trend.

The results of the price analysis indicted that even at the low-price of Rs.100 per Kg the economical variability of the investment on pepper cultivation could be maintained.

2.1.3 Review of Literature Related to Marketing

This section gives a brief idea about the review of past studies related to marketing. M.Tamilselvan, et al., have analyzed the topic "Marketing of Spices in India". India produces over 28 lakh tones of spices. Kerala has the credit for producing a large share of high valued spices like black pepper, cardamom, dry ginger, turmeric, nutmeg, mace, clover and cinnamon.

Although black pepper is the largest export earner its production has been showing an erratic trend with high fluctuation. The low rate of productivity is the

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major hurdle as the scope for increasing the area under cultivation is limited. The increase in production has therefore to be largely achieved by increasing the productivity and thereby reducing the cost of production. Small cardamom also assumes greater significance in internal consumption and export. Because of the low productivity and high cost of production, Indian cardamom is not able to stand the competition in the international markets. Ginger production in the country has shown phenomenal increase during the last decade registering an increase of 48 per cent. Chilies and turmeric are the two important spices having steady domestic market throughout the year.

The study concludes that there is no regulated market for spices of other crops in Kerala. The co-operative marketing societies in Kerala who handle these commodities are also not functioning well, due to poor financial resources, which make them to provide short term and long-term loans to the farmers in time. This wide range of disparity in the price received by the producers is mainly due to expenses incurred in marketing, margin of profit enjoyed by the pre harvest contractors and village merchants, deduction on account of high moisture percentage, incidence of various taxes and other charges, transport costs etc\(^1\).

M.K.K.Menon has analysed the topic "Trends in Black Pepper – Production, Processing and Marketing". The study covers the major producers and consumers and examines the pepper situation with figures touching upon India's domestic

market and consumption. It also covers marketing of Indian pepper and the world supply demand situation. Over the last five years production has decreased from 2,00,000 tonnes to about 1,50,000 tonnes. The deficit caused by this became very apparent during 1997\textsuperscript{20}.

The Kerala State Civil Supplies Corporation (Supply Co) has finalized a major plan to procure organic pepper from the farmers in the state to market it under the brand name of 'sabari'. The plan is to procure organic pepper directly from the farmers who cultivate pepper 1000 ft above the sea level in the Idukki and Wyanad district. The cultivation practices and the product should be certified by agencies that can certify organic cultivations programme. Apart from promoting organic cultivation of pepper in high altitudes, the procurement programme would also lead to the marketing of organic pepper and pepper powder. It is also planning to export organic pepper and pepper powder to West Asian countries along with other curry powders\textsuperscript{21}.

T.Taranath Shet has analysed the topic "Marketing Perceptive of Pepper". According to his study in 1984-85, the world production of pepper drastically declined to 1,30,000 tonnes from our earlier level of 1,54,000 tonnes. India fortunately had a good production of pepper in 1984-85 of about 55,000 tonnes and in 1985-86 about 65,000 tonnes. This trend slightly, declined during 1986-87.

\textsuperscript{21}\textit{The Economic Times}, "Commodity / Trade", Chennai, 7\textsuperscript{th} October 2005, p.19.
and however picked up in 1987-88 but not to an alarming position. India's share in the world market which was 14 per cent in the year 1981 rose spectacularly to approximately 30 per cent of the world's sales.

In the year 1972, the international pepper community was formed with India, Indonesia and Malaysia, the three major pepper producing countries as members. There was a great potential for exporting pepper in attractive small packs because the Government has been giving cash subsidy of 5 to 10 per cent for small packs of 1 kg and lower\(^\text{22}\).

Jaya S. Anand in a case study on pepper marketing by co-operatives has made an attempt to study the efficiency of the Santhanpara Cardamom Marketing Co-operative Society (SCMS) in the field of pepper marketing in the Bisnovally area.

According to the market for pepper, it is clear from the fact that exporters and big wholesalers make profit mainly from price fluctuations during off seasons. Co-operative marketing societies take advantage of this price fluctuation if they are to give better prices to the producers. The correlation co-efficient between the purchase price and sale price by giving two months lag was 0.95, indicating that whenever the purchase price increases / decreases the selling price also increases or decreases. The Regression Co-efficient reveals that for one rupee

change in purchase price, the change in selling price is only 1.0099, showing that the margin of profit is very low (0.0099).

An analysis of the marketing efficiency of the society reveals that the society's procurement pricing is sound; its selling policy is not at all impressive\(^\text{23}\).

Shenay and Ravindran, have made an attempt to analyse the seasonal and long term trends in the price of pepper. According to them, there were not many variations in seasonal price. The monthly prices varied around 6 per cent of the mean, but annual fluctuations were violent and frequent. The study suggests that, Government should be providing more storage facilities and crop insurance to the growers to overcome this situation\(^\text{24}\).

2.1.4 Review of Literatures Related to Export

H.K. Sandhu, in his research article on “India’s export share of black pepper in the world trade - an econometric analysis” has analyzed the share of black pepper in the world trade during fifties, sixties, seventies and eighties. An attempt had been made to work out the export demand, income and export market share elasticity in important market segments for Indian exports, with the help of time series data using double logarithmic function.


According to the exports of pepper pimento from India, the estimated coefficients of the constant and elasticity for trend were positive and were also found to be significant at 1 and 5 per cent level of significance respectively. The Indian export price elasticity was found to be 0.138 and was significant at 5 per cent level with negative sign indicating an anticipated trend in respect of price resistance from Brazilian exports. Though the export price elasticity was low in U.S.S.R, yet it has indicated an important share of the market for Indian exports in U.S.S.R. The positive income elasticity also demonstrated favourable consumption behaviours of the inhabitants.

The Indian pepper had been facing a hard competition in U.S.A. Market and Indian exporters have to work hard in order to maintain its share in the market. But the circumstances were favourable for its expansion of trade because of rising per capita demand of the commodity because of it qualitative aspects\(^25\).

Saikat Sinhavoy and Sanjith R. Nair had made an attempt to analyze “International trade and pepper price variations applying co integration approach”\(^25\). This study attempts to examine whether the movements in international prices of Indian pepper reflect the variations in such prices of other economies and secondly, whether the domestic price of pepper moved synchronously with the international prices by applying co-integration approach. The unit root test for the variables done in terms of Dickey-fuller (DF) and Augmented Dickey –Fuller (ADF) methods to assure stationarity, the Engle – Granger two-step procedure is followed to find the co integration.

The results points out that pepper is a crop for which India together with Indonesia, Malaysia and Brazil enjoys oligopoly power in the pepper market and no country is a dominant oligopoly. They examine whether Indian pepper price reflects international market conditions. The study shows that long-run price movement of Indian pepper has been synchronous with the international prices, indicating an integrated market and domestic supply responsiveness to international market conditions. If so, it would have been worth while to examine the role of Government with regard to pepper export in the context of a liberalized régime.\textsuperscript{26}

P.D. Jeromi and N. Nagarajan In their article entitled “Price competitiveness of India’s agricultural exports: A case study of pepper” examines the price competitiveness of India’s export viz- a – viz major competitors during the period 1965-91.

The results of the regression analysis reveal that India’s pepper exports, to a great extent, are influenced by her export price, in terms of her competitors who were found to be negatively associated with India’s exports. It was found that one per cent increase in weighted relative price will lead to a more than one per cent decline in India’s exports. Among the competing countries, Indonesia was found to be the dominant competitor of India, followed by Malaysia. Inter-temporal analysis reveals that during the seventies, India faced higher degree of competition from her competitors. During the eighties, India’s export price and relative price, in terms of Indonesia, had highly influenced her exports. As India is facing stiff competition in the international market, the study calls for measures to enhance the competitive

power of India’s pepper exports, which is possible through the reduction in the cost of cultivation or an increase in the yield of the crop\textsuperscript{27}.

M.Krishnan has analyzed the export of spices in Kochi port. The objective of the research is to study the importance of spices in the external trade of India and to assess the trend in the export of spices from a major production centre in India and Kerala. The study deals with the export of main spices from India such as pepper, Cardamom, Ginger and Turmeric.

The findings of the study confirm that India produced about 38790 MT of pepper with an area of 1.55 lakh hectares under cultivation during 1989 to 1990. India’s contribution to the world production of pepper was ranging between 25 to 31 per cent. The production of cardamom in terms of quantity shows a fluctuating trend and the national production of cardamom was 3,100 Mt and the production of ginger and turmeric was 152890 Mt and 389500 Mt during the same period\textsuperscript{28}.

K. V. Peter has analyzed the topic “Makings of a Global Leader”. The global demand for black pepper shot up from 1.85 lakh tonnes during 2000 to 2.10 lakh tonnes during 2005. The fundamentals of the black pepper market look favourable to farmers. But in the long term, an increase in price may not be of advantage, considering induced and enforced changes in food ingredients using additives or alternative lower grades of pepper to beat the price rise. Higher


productivity, clean pepper and reasonable threshold price affordable to the food industry are the keys to future black pepper trade in India.\textsuperscript{29}

P.Senthilkumaran and V.Vadivel have studied the topic “Prospects of pepper in India”. According to their study there was a decrease in the production of black pepper after the year 1995. When compared to the production of 1996, the production during 1997 came down by 9.24 per cent. In general, there was a gradual rise in the area of cultivation from 1990 onwards except in 1996-97, when there was 9.32 per cent reduction from 1995-96. This could be attributed to conversion to other crops such as rubber in Kerala due to extensive damage of pepper due to diseases. Fluctuation in prices also contributed to the situation. Due to substantial reduction in the area of cultivation, the production also dropped by 10.08 per cent from 1995-96 seasons. But, during 1997-98, there was a 40.01 per cent increase in production than 1996-1997 seasons. Besides, the average price also increased by 107.01 per cent.\textsuperscript{30}

Black pepper is the foremost export oriented spice produced in India and it accounted for about 40 per cent of the total export earnings from spices during 1997-98. The 1996-97 periods witnessed the highest export of pepper from India, which was about 47,893 tones. Compared to this period, the export during 1997-98 was 25.42 per cent less. Nonetheless, the foreign exchange earning increased upto 17.95 per cent, which was mainly due to the rise in the unit value price. The recent trend of export of pepper from producing countries showed that India exported 29,072 tonnes during the period from January to July 1999. Next to India was

\textsuperscript{29}K.V. Peter, “Makings of a Global Leader” \textit{The Hindu Survey of Indian Agriculture}, 1999, pp.81-83.

Vietnam, which exported 2,890 tonnes of pepper. Exports of pepper from India rose by 34 per cent during January-July 1999 period, compared to the same period of 1998.

S.R. Rajesh et.al., have studied the topic “Economic Analysis of pepper export”. The study is an attempt to analyze the export performance of pepper with a view to explore export potentials and the related issues in potentials and the related issues in pepper exports. Times series data on area, production, export quantity, export price, domestic consumption and domestic price of pepper were collected for the study from the various issues of spices Statistics for the period from 1980-81 to 1999-2000.\(^{31}\)

The coefficient of multiple determinations indicated that 85 per cent of the variations in export of pepper are explained by the variables included in the function. Variables like production, domestic price and area influenced the pepper export significantly. Export of pepper depended upon the level of production given the domestic demand. On the contrary domestic price has got negative effect though its magnitude is less. This might be due to the integration of domestic price and overseas price, and also growth in domestic consumption though insignificant. Thus export of pepper is highly influenced by production. This could be possible by increasing both area and productivity and production remains at competitive price.

S. Jeyarani, et.al., in their research article on “India’s export share of black pepper in the world trade” has highlighted that India is the top exporter of pepper. According to their article, the international pepper community’s (IPC’s) projection

comes on the heels of India reporting a 20 per cent jump in the production of black pepper in the year 2002, estimated at 57,270 tonnes. The United Nations Development Programme (UNDP) is providing aid worth $1 million (Rs.3 crore) to the Indian government over a period of three years from 1994-95 to 1996-97, to enable India to upgrade quality and export of spices from India from nearly Rs.340 crores in 1992-93 to Rs.600 crores by 1996-97.

To safeguard farms from dipping pepper prices, the state government had late in the previous year started procuring the commodity at Rs.75 per kilogram. However, due to huge imports from Sri Lankan, pepper prices have fallen to Rs.65.

To check pepper imports into the country, which was pushing the domestic prices down, they had banned duty-free import of pepper for export production, under the advance license scheme. However domestic prices of pepper are not globally competitive, comparing poorly against the global average of around 60 rupees per Kg. India’s annual pepper output is pegged at 75,000 tones against the demand for 55,000 tones.

Ratna Ganguli has published a research article "pepper exports rise 16 per cent as regular buyers return "According to his research the traditional buyers of Indian black pepper like Canada / Australia, Japan and USA have again turned back to India.

This has helped India raise its overall black pepper exports by more than 16 per cent to 9,835 tonnes in the first five months of 2005-06 compared to 9,300 tonnes in the corresponding period the previous year.

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ASTA grade black pepper originating from India had been ruling at $1,750 – 1,800 per tonne in international markets. The upswing in Indian prices had been mainly triggered by lower production of the spice in 2004, which declined to about 60,000 tonnes in that year.

However, with the spice production bounding back to 70,000 tonnes in 2005, Indian pepper prices started softening from February 2005. The slow decline in its price has gradually brought down the price differential between Indian pepper and Vietnam pepper to around $ 150 – 175 per tone by August 2005. This has against prompted India's traditional buyers to pick up this black pepper imports from India.

This had improved the total availability of the spices in 2005. As it is compulsory to re-export the entire imported pepper, a 7 per cent surge in import of cheap pepper from Vietnam and Sri Lanka had also played a role in variety India's pepper export. Like 2004, in 2005 too bulk of the imports came from Vietnam and Sri Lanka and exporters import cheap pepper from these countries to re-export it after value addition.\(^{33}\)

H.O. Binh Minh published an article "Vietnam's Pepper output to dip 10 per cent". According to him, the pepper yields in Vietnam, the world’s biggest exporter of the black spice, are expected to fall 10 per cent by 2006 mainly because of drought but output could be stable as more average becomes productive. A drought hit the south, where most of Vietnam's pepper is grown in

March and April, because of delayed arrival of the rainy season until mid-May. Yields will be 10 per cent lower also because farmers who have seen the low returns from the crop will not plant a new or invert more in this existing area.\textsuperscript{34}

The various review of literatures mentioned above analyses the area, production, marketing and export of pepper in Kerala and India this study is an exceptional attempt to analyse the impact of Liberalization on the trend of area, production, productivity, domestic prices of pepper and various issues related to it export and export prices of pepper and suggest measures to solve the problem in pepper plantations.

2.2 CONCEPTS AND DEFINITIONS

This section highlights the various concepts and definitions related to production, marketing and export.

2.2.1 Spices

The term spice was derived originally from Latin word “Spices aromatacea”. It was subsequently shortened to “spices” meaning a commodity of special value of distinction.\textsuperscript{35}

\textsuperscript{34} HO Binh Minh, "Vietnam's Pepper Output to dip 10 per cent", \textit{The Economic Times}, Commodities / Trade, Chennai, 30\textsuperscript{th} December 2005, p.17.
According to Webster, “Spices are specifically any of various aromatic vegetable productions used in cooking and for flavouring food. It can be as well as vegetable condiment, usually in the form of powder to relish food”.

2.2.2 Pepper

Ayurveda fruits, roots and Leaves of Pepper are used as medicines. Pepper has a meaning as the Killer of poisons. It is sharp and an effective remedy for asthma, cough, heart diseases, and pains and is advised in the treatment of diabetes and piles.

2.2.3 Production

Smith defined production, based on the purpose of the same. Accordingly, he defined production as the creation of utilities or commodities and services in order to gratify human wants.

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Ahuja\textsuperscript{39} remarked that the production in economics was not merely confined to effecting physical transformation in the matter, but it also covered those activities such as transporting, financing, wholesaling and retailing.

Koutsoyiannis\textsuperscript{40} defined production as the transformation of factor inputs (outputs) at any particular time period.

In this study, production has been defined as the utilization and transformation of the various input resources like land, labour, capital and organization which include human labour, vines, fertilizers, irrigation, pesticides etc., for the production of pepper at a particular period of time.

2.2.4 Productivity

Productivity and production analysis had been used as a major factor to determine the growth in output. Effecting improvements in productivity offers a viable approach to achieve growth in developing countries.

In a multi–product context productivity was defined as the ratio of the index of total agricultural output to the index of total inputs used in farm production by Loomis and Barton. In general, they put it as the output per unit of input and same as the average product of the input. Eventually, it ignored the contribution of other complimentary inputs.\textsuperscript{41}

\textsuperscript{39}H.L. Ahuja, \textit{A Text Book of Modern Economics}, S. Chand and Company Limited, New Delhi, 1979, p.279.


Radha Krishna\textsuperscript{42} defined productivity as the relationship between inputs and outputs in agriculture.

In the present study, productivity has been defined as the quantity of pepper produced/obtained from per hectare of land cultivated under the different cropping systems. It is represented in terms of kg/ha.

2.2.5 Cropping System

According to Mandal Ghosh\textsuperscript{43} cropping pattern specified the combination of activities leading to Diversification or specialization of agriculture. It has importance from the point of view of both the individual farm and the nation as a whole.

For the individual farm, it’s the question of combination of crops to be grown to limited land area and with the given quantities of labour, capital and management resources. Whereas for the nation as a whole, it considers the crop combinations to be grown in different areas of the country with the available labour, capital and management resources.


In this study, cropping system has been defined as the cropping pattern followed in the cultivation and management of pepper crop in the major pepper growing areas of Kerala in combination with perennial plantation crops as the base crop and different annual and perennial crops of varying height, rooting pattern and duration so as to increase the intensity of cropping and to optimize the returns for different cropping environments.

2.2.6 Cost Structure

The right decision on investment in farming activities can be taken only when valuable information on cost and returns are available. Such information will be very useful to improve cropping pattern as well as efficiency through least cost combination resources.

Cost of Cultivation

Cost of cultivation is of vital importance in agriculture because cost measures efficiency in production. The term cost general refers to the outlay of funds for productive services. In agriculture, cost of production refers to the expenditure incurred by the farmers on various inputs to obtain the Final produce. The nature of cost incurred by the Farmer for cultivation of Crops is of two types, they are:

1. Variable cost (or) operational cost and
2. Fixed cost.

Variable Costs

Farming expenses, which are a function of farm output, are known as variable costs. There will be no variable cost if the farmer decides to leave his land idle for a year. The costs change with the quantity of farm output turned out in the production process. Variables costs include payments such as wages paid to hire labour, the price of vines, fertilizer, manure, pesticide, fuel and power used, expenses on transport and the like. Since variable cost is a function of output, total variable cost increases with the level of farm production.

Fixed Cost

Fixed costs are those costs that do not change as output changes. These costs are independent of output and are a fixed amount, which must be incurred by a farm irrespective of the size of the output.

Fixed costs are constant over time and do not vary with changes in output. They exist even in the absence of cultivation. Fixed cost of an Indian farm for a period of one year include,
1. Revenue for Land.
2. Interest on investment in equipment.
3. That part of depreciation building machinery that does not vary with the use but result form the passage of time alone.
4. Insurance on buildings equipment.
5. Wages of Labour hired on a year round basis.
6. Cost of all family labour employed on the farm and
7. Maintenance cost of farm.

The total cost of cultivation is made up of total variable cost and total fixed cost. The total cost also includes the explicit costs. Explicit costs are those expenses, which the farmer makes in buying seed, fertilizer, manure and other inputs and serves directly.

These costs also include the cash wages paid to the hired labourers by the farmers. Imputed costs are the imputed values of the farmers’ own resources and labour.

Mohan classified costs as direct cost and indirect cost. According to him indirect cost consists of annual share of establishment cost, interest on fixed and working capital and depreciation on fixed assets. Direct cost includes annual
maintenance and operation cost, repairing charge, land revenue and other charges.\footnote{44}{C.K. Mohan, “Production, Marketing and Price Behaviour of pepper in Vazhoor Block of Kerala State”, Unpublished M.Sc (Agri), Project submitted to Tamil Nadu Agricultural University, Coimbatore, 1973, p.28.}

In the present study, total cost of production is classified into fixed cost and variable cost. Fixed cost includes land revenue, rental value of land, annual share of net establishment cost, depreciation on fixed assets, repairs and maintenance and interest on fixed capital, excluding land.

The variable cost includes annual operation and maintenance cost, which included cost incurred on labour, manures and fertilizers, plant protection, tying materials and interest on working capital.

Land Revenue

The prevailing land revenue as per the Government rate was charged

Rental Value of Land

The Directorate of Economics and Statistics imputed rental value for owned land at the existing rate of rent prevailing for similar land in the village. In the case
of leased land, the actual rent paid was taken\textsuperscript{45}. In the present study, all the sample pepper gardens were owner-operated. Therefore the rental value prevailing in the adjoining areas was taken as the rental value of pepper gardens under study.

**Total Establishment Cost**

This refers to the cost incurred in the establishment of pepper farms upto the commercial bearing stage, which is of 3 years. This included rental value of land, cost incurred on pepper vines, standards, tying material, manures and fertilizers, plant protection chemicals, labour involved in various operations of the farm, interest on working capital and other costs such as interest on fixed capital, depreciation and repairs and maintenance.

**Annual Share of Net Establishment Cost**

The value of yield of pepper during the establishment period was deducted from the total establishment cost to arrive at the net establishment cost. These costs were spread over to the economic life span of pepper vines, which was taken as 17 years.

The annual share of net establishment cost thus arrived at was used in estimating the cost of pepper production.

Pepper Vines

Patel valued the farm-produced seedlings at the prevailing market price\(^\text{46}\). In the present study pepper vines purchased from outside the farm were valued at the actual cost and for the farm-production vines was imputed at the prevailing market rate.

Standard

Standard refers to the cutting of trees for growing pepper. “Murukku” (Erithrina indica) “Kilingil” and the like are suitable trees for growing pepper. In the present study, growers’ own standards were valued at the prevailing market rate and the purchased standards were valued at the actual purchase price.

Pepper Farm

It is the area of pepper crop raised by a single grower and situated within the sample village limits.

Farm Building

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\(^{46}\)P.C.Patel, “Principles and Practice of Farm Costing with Farm Studies”, Government Central Press, Bombay, 1933,p.81.
It refers to the shed used for storage and processing of pepper and for keeping implements.

**Machinery**

It refers to sprayers, dusters and pumps owned by a grower.

**Tools and Equipment**

This refers to shovel, spades, crowbar, hammer, sledgehammer, sickle, mat and ladders owned by a grower.

**Material**

This includes gunny bags, knife, buckets and tarpaulin purchased by grower for his farm.

**Depreciation**

Depreciation was charged to meet the loss due to wear and tear on fixed assets. Here depreciation was calculated under straight-line method. It was done separately for farm building, machinery, tools and equipment and material. Depreciation was charged at the rate specified below\(^{47}\):

\[
\text{Farm Building} \quad 2 \text{ per cent}
\]

Machinery                10 per cent  
Tools and Equipment    25 per cent  
Material             50 per cent

Labour

Karnam Lokanatham, in his study, “An Economic Analysis of Areca nut Plantation in Coimbatore District”, treated hired labour and family labour alike, the women and the juvenile were standardized into Man-day equivalent in proportion to their wage rate prevailing in the locality.  

In the present study, family labour and hired labour are treated alike and converted into common physical units in terms of Man-day’s equivalent. In this study, 8 hours of work has been considered to be one Man-day unit. The woman labour was standardized into Man-day equivalent based on the wage rate prevailing in the locality.

Manures and Fertilizers

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The farm-produced manure was valued at the market price prevailing in that area. The purchased farmyard manures and fertilizers were valued at their purchase prices plus the cost of transport.

**Plant Production Chemicals**

Plant production chemicals were charged at the rates, actually paid by the pepper cultivators.

**Tying Materials**

Generally coir threads are used to tie plants with standards. The actual purchase price of tying materials was taken into account.

**2.2.7 Returns**

Kaul and Metha defined gross income as the value of cash, the value of produce actually sold and the value of produce remaining, stock all valued at harvest prices prevailing in the village.

Tandon and Dhondayal defined net income as the gross Income minus total expenses of production namely, cost of seeds, manures, irrigation charges, and wages of hired labourers and imported value of unpaid family labour, depreciation, and rent, interest on owned & working capital and market cost.
**Gross Returns**

The market value of bunches of pepper and their by-products has been termed as gross returns.

**Net Returns**

Gross returns minus total cost have been termed as net returns. According to Murugadass, gross income is the actual amount realized on the sale of the produce and he arrived at the net income by deducting the cost of cultivation form the gross income\(^\text{49}\).

Reddy et al, defined gross income as gross value of output sold and net income was the residue of gross income after deducting the total cost\(^\text{50}\).

In the present study, gross return on pepper production is the value realized on the sale of total output after deducting marketing cost. Contribution has been calculated by deducting variable cost from the gross returns. By deducting fixed cost from contribution we arrive at the net profit.

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2.2.8 Resource-use Efficiency and Returns to Scale

Bindu Padmini fitted a multiple regression type production function in pepper cultivation. The output of pepper was taken as dependent variable. The price of pepper per kilogram, the vines, the number of vines per acre, the cost of plant protection chemical, the number of diseased vines, the cost of fertilizer and manures, the establishment cost of pepper and the labour cost have been treated as independent variables\(^{51}\).

Mohan in his study used Cobb-Douglas type production Function to express input-output relationship per hectare of pepper farm. He has taken pepper output per hectare as dependent variable.

The area in hectares, the age of the vines in years, the cost of establishment, fertilizers and manures in rupees and the cost of plant protection and spraying have been considered independent variables\(^{52}\). In the present study, Cobb-Douglas type production function is fitted to estimate the resource returns, returns to scale and resource use efficiency. The output of pepper in kilogram per acre has been taken as dependent variable.


NUMBER OF VINES PER ACRE HAVE BEEN TAKEN AS INDEPENDENT VARIABLES. THE EFFICIENCY OF RESOURCE USE IS STUDIED WITH THE HELP OF MVP/MIC RATIO USING COBB-DOUGLAS PRODUCTION FUNCTION.

2.2.9 Market

The American Marketing Association\textsuperscript{53} viewed market as an expression of the aggregate forces or conditions within which buyers and sellers would make decisions resulting in the transfer of goods and services consequent to the aggregate demand of the potential buyers of a commodity service.

According to Stanton, marketing is a total system of interacting business activities designed to plan, price, promote and distribute want-satisfying products and services to the present and potential customers\textsuperscript{54}.

In the present study, marketing refers to all business activities that direct the flow of goods and services from the primary producer to the ultimate consumer.

2.2.10 Agricultural Marketing

\textsuperscript{53} Committee on Definitions, \textit{Marketing Definitions}, American Marketing Association, Chicago, 1960, p.15.
Khols defined agricultural 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 were in the hands of the ultimate consumers\textsuperscript{55}.

National commission on Agriculture stated that “Agriculture marketing is a process which starts with a decision to produce a saleable farm commodity and it involves all aspects of market structure or system, both functional and institutional, based on technical and academic considerations and includes pre and post-harvest operations, assembly, storage, transportation and distribution”\textsuperscript{56}.

In the present study, agricultural marketing comprises all the operations and agencies involved in the movement of agricultural produces form the farm to the final consumer.

2.2.11 Market Structure


According to Wells, market structure includes the various market channels, intermediaries and traders involved in moving the produce from the producers to the consumers or users\textsuperscript{57}.

In the present study, market structure includes domestic market channels, intermediaries such as village traders, co-operative societies, primary wholesalers and secondary wholesalers who are engaged in the trade channel.

2.2.12 Marketing Cost

Dhull and Gangwar describe marketing costs as sum of actual costs incurred by each agency involved in the marketing channel of performing their functions. These include transportation cost, loading and un-loading charge, weighing charge, cleaning charge, market fees, commission, sales tax, processing cost and wastage\textsuperscript{58}.

In the present study marketing cost is the sum of actual costs incurred by each agency involved in the marketing channel for performing its functions.

2.2.13 Marketing Margin

\textsuperscript{57} O.V.Wells, \textit{Marketing Year Book of Agriculture}, V.S.D.A., 1954, p.3.

\textsuperscript{58} D.N.Dhull an A.C.Gangwar, “Markets of Rape seed and Mustard in Haryana”, \textit{Agricultural Marketing}, Vol.16, No.1, 1973, p.16.
Ramamoorthy defined marketing margin as the income to the marketing who might themselves have paid out most of the cost to cover their own expenses, the price they paid for labour, equipment and the like in carrying out the marketing functions, bearing a portion as a reward for management of the enterprise and risk\textsuperscript{59}.

In the present study, marketing margin is the profit received by the different marketing agencies in carrying out their marketing functions.

2.2.14 Price-Spread

Singh and George defined price-spread as the marketing cost incurred and marketing margin earned on the costs in the movement of the produce from the primary source to the ultimate consumer\textsuperscript{60}.

In the present study, price-spread is the difference between the price paid by the ultimate consumer and price received by the grower and it includes the costs and margin of different agencies.


2.2.15 Marketing Efficiency

Dahl and Hamond referred marketing efficiency to the achievement of minimum cost in accomplishment of the basic marketing functions of assembling, processing, transportation, storage, distribution and related physical and facilitative activities\(^61\).

According to Sidhu and Ranji, marketing efficiency can be improved through operational efficiency and pricing efficiency. The operational efficiency here refers to the cost effectiveness. The latter refers to the structural characteristics of the marketing system where the sellers are able to get the true value of the produce and consumers receive the true worth of their money\(^62\).

2.2.16 Export

Oxford Thesaurus defines export as sending goods or services to another country for sale and introducing ideas or customs to another country\(^63\).

CHAPTER III


\(^{63}\) Oxford Dictionary Thesaurus and Word Power Guide, Oxford University, YMCA Library Building, Jai Sing Road, New Delhi, 2005, pp. 312.