1.1 Introduction

The importance of spices in man’s everyday life is connected with the enrichment of human civilisation, as spices attract people considering its manifold use associated with its unique and exquisite aroma, flavour and medicinal value. Spices trade has emerged as one of the pivotal industries of the world and the lucrative trade of spices was responsible for sea faring, navigation and discovery of many parts of the world. Spices trade in India has a long and varied history as India attracted spice traders from East Asia and Europe for centuries. The competitive advantages in spices production as well as the variety and quality have helped India to be known as the ‘Kingdom of Spices’.
Kerala, known as ‘Spice Garden of India’, is home to all major item of spices production. Though spices encompass a variety of products, small cardamom and black pepper are particularly important in the Kerala’s spices economy. Pepper, the world’s oldest known spice is called ‘King of Spices’ and it is widely cultivated in Kerala, which accounts for more than 86 per cent of the total production in the country. Cardamom generally called, the ‘Queen of Spices’ for its many uses and is treasured around the world. Kerala has accounted for 90 per cent of total cardamom production of the country.

Kerala had strategic advantages in comparison to other countries producing spices like favourable soil and climatic conditions, relatively cheap and skilled labour which in turn helps to have a prominent share of world spices export. However, the impact of trade liberalisation during 1990s created large scale competition in the global market and unending havoc in the spices economy of India and the penumbra of this has created wide ramifications in the spices bowl state of Kerala as well.

1.2 An overview of spices sector in India, Kerala

1.2.1 History of spices trade

1.2.1.1 3000 BC to 200 BC- The Arabs

The prime evidence of use of spices derives from literatures of early civilisations. The Bible refers to the spices trade in the Book of Genesis when Joseph’s elder brothers sold spices for merchants traveling from Gilead to Egypt. The Queen of Sheba prepared a tribute to King Solomon in the form of spices, gold, and precious stones which is mentioned in the books of Kings in Bible (I Kings 10: 1-13, The New King James Version).
The first Olympians in Greece celebrated their triumph by wearing wreaths of bay and parsley in 1453 BC. In 400 BC Hippocrates, itemized more than 400 medicines made with spices and herbs.

A spice trade route "the Golden Road of Samarkand" was developed across the deserts of southern Asia and the Middle East between its kingdoms. For many centuries Arabs controlled this hazardous but lucrative trade. They brought pepper and cloves from India, cinnamon and nutmeg from the Spice Islands (Maluku Islands and Banda Islands) and ginger from China. Their spices markets were Nineveh, Babylon, Carthage, Egypt and Rome (“The history of Spice”, n. d.).

1.2.1.2 200 BC to 1200 AD- The Romans

Romans started sailing from Egypt to India to trade spices during 200 BC. It was a challenging voyage across the Indian Ocean to get pepper, cinnamon, nutmeg, cloves, and ginger which takes two years. But the Roman Empire developed a powerful trading centre in Alexandria, Egypt in the first century BC and was in command of all spices for many years.

1.2.1.3 1200 AD to 1500 AD- The European Discovery

The Republic of Venice held the monopoly of European trade with the Middle East till 15th century. The trade in spices and herbs made the city phenomenally wealthy. Spices were the most expensive products in the middle Ages and these were imported from Africa and Asia. Venice became very affluent by charging huge tariffs.
In the 15th century, the spices trade was distorted by the European Age of Discovery. As the navigational tool was better and long-haul sailing became possible by the time, industrialists began preparing explorers in hopes of bypassing Venice by discovering new ways to reach the areas where spices were grown ("Spice Trade Information Sheet", n. d.).

1.2.1.4 1500 AD to 1800 AD- War for the Control of Spices Trade

This period witnessed several upheavals for the control of spices trade owing to the expansion of income of the middle-class group. The war first started in the Indonesian Spice Islands and continued till the end of the 17th Century with the economically growing European countries and in this group Spain, England, Portugal, and Holland struggled for their supremacy.

In the continued struggle for supremacy from the onset of the 16th century, Dutch prominence was noticeable and hence they controlled the spices trade in the 16th and 17th centuries. France could not even break the Dutch power in spices trade due to less investment they made in spices explorations and market interferences. Instead they adopted other methods like stealing cinnamon, cloves, and un-limed nutmeg from the Dutch for the development of plantation in the French colonies. The war that happened between the Dutch and the English in the year 1780 for the control of spices trade resulted in the destruction of Dutch East India Company and hence the Dutch had to close all the spices trading companies and even the Dutch East India Company itself and returned to their home country.
1.2.1.5 1800 AD to 2000 AD- The Beginning of the American Entry

The period 1800 to 2000 AD considered as the period of American entry in spices trade, which resulted in candid contributions to the spices world. They started the trade in the first time in India by a Boston native named Elihu Yale, who worked with the British East India Company in Madras. Henceforth several Americans entered into the spices trade avoiding the Europeans and entered the business deal directly with the Asians, which helped them to gain from the spices trade.

This period witnessed the growth of spices cultivation in many parts of the globe. Still the production and market are controlled by the Asian economies in products like cinnamon, pepper, nutmeg, cloves, and ginger. Plantation of spices grows unabated with specific concentration of certain products in certain countries and regions, say for example Western Hemisphere for a wide variety of herbs and aromatic seeds; Brazil and Vietnam for pepper; Grenada for nutmeg; Jamaica for ginger and Nicaragua, El Salvador, and the United States for the production of sesame seed. Production of herbs and aromatic seeds were started in California and Canada. This period also witnessed a big change in the use of spices as United States has become the largest buyer of spices followed by the income rich countries in the Europe like Germany, Japan, and France.

1.2.2 Spices Trade and Kerala

Spices trade of Kerala has a firmly embedded history. In early times, Kerala was known everywhere in the world due to its monopoly on spices and the richness it bought to the state. Musiri, the ancient port of
Kerala became the base of world spices trade, almost ages ago. The reasons for the western colonization in India may be the aspiration to control the spices trade from Kerala. Kerala has continued as a major contributor to the international spices trade over the last decade. The spices grown in the state for the commercial purposes are black pepper, cardamom (small), ginger, turmeric, nutmeg, cloves, cinnamon and vanilla.

1.2.3 Spices Sector Development in India

In 1951 the Planning Commission constituted a high-level spice enquiry committee considering the significant role of spices among agricultural commodities produced in the nation. The value of spices in strengthening the national economy and the lack of organized efforts in improving their production and marketing in contrast to other plantation crops like tea, coffee, rubber etc., was noticed by the committee. In its report submitted in 1953 the committee stressed the need for better planning, research and coordinated efforts in the development of spices and spices sector in general.

The central government based on these recommendations provided necessary funds to Indian Council of Agricultural Research (ICAR) for implementing schemes on research development and marketing in the sector. The Central Spices and Cashew Nut Committee comprise government officials and representatives of growers and traders were set up in 1961 in solving the problems for implementing various schemes by the state government.

Based on the report of agricultural research review team, this committee was abolished in 1965 and transferred the responsibility for
spices research to ICAR. Indian Spices Development Council was constituted in 1966 along with the creation of the present Directorate of Areca-nut and Spices Development as a subordinate office under the Ministry of Agriculture.

Through various five-year plans development programs for large scale production, distribution of high yield varieties of spices mooted in India and in the 5th five-year plan there was a plan provision of ₹ 175 lakhs. In the 6th five years plan the state governments were assigned the development programs on spices too. Later, centrally sponsored schemes were given importance to integrated program for development of spices launched. The integrated program for spices development was further strengthened for overall development of 27 economically important spices crops cultivated in India. In the 9th plan focus was on productivity improvement and area expansion along with quality improvement and value addition. During the 10th plan the development programs were implemented through state agriculture/horticulture departments using the funds allotted to them under macro management in agriculture. Government of India had started National Horticulture Mission for an Integrated Development of various horticultural crops including spices, medicinal and aromatic plants in the year 2005-06 (“History of Spices Development in India”, n. d.).

Today, Indian spices are the most preferred items globally, given their attractive aroma, texture, taste and commercial and medicinal value. India is the leading producer, consumer and exporter of spices in the world. Even though there are 109 varieties listed by the International
Organization for Standardization (ISO), only 52 varieties of spices come under the purview of Spices Board in India.

1.2.4 Export Performance- Global, India, Kerala

The spices export basket consists of whole spices, organic, spice mixes, spice blends, freeze dried, curry powders/mixtures, oleoresins, extracts, essential oils, de-hydrated, spice in brine and other value-added products.

India’s position in the global spices trade is a commanding one. During 2016-17, India is the top most exporters of spices (400 million dollars) in the world contributing 21 per cent of the world export in spices. China (396 million dollars) is the second largest exporter followed by the Netherlands (189 million dollars), Germany (107 million dollars) and Spain (106 million dollars). Table 1.1 exhibits the country-wise spices export during 2016-17.

Table 1.1: Country-wise Spices Export during 2016-17

<table>
<thead>
<tr>
<th>Country</th>
<th>Export value (Million Dollars)</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>400</td>
<td>21</td>
</tr>
<tr>
<td>China</td>
<td>396</td>
<td>20.7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>189</td>
<td>10</td>
</tr>
<tr>
<td>Germany</td>
<td>107</td>
<td>5.7</td>
</tr>
<tr>
<td>Spain</td>
<td>106</td>
<td>5.6</td>
</tr>
<tr>
<td>Turkey</td>
<td>82.9</td>
<td>4.4</td>
</tr>
<tr>
<td>Pakistan</td>
<td>65.1</td>
<td>3.4</td>
</tr>
<tr>
<td>United States</td>
<td>52.6</td>
<td>2.8</td>
</tr>
<tr>
<td>South Africa</td>
<td>49.8</td>
<td>2.6</td>
</tr>
<tr>
<td>Indonesia</td>
<td>20.6</td>
<td>1.1</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>5.27</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Source: atlas.media.mit.edu
India’s pioneering position in world spices trade is almost distorted with the excess black pepper production in Vietnam from the mid of 2000s onwards. Vietnam produces about 48 per cent of the world pepper production. But India has only 17 per cent share in world production and Brazil comes next with 15 per cent. Figure 1.1 exhibits the country-wise contribution of black pepper.

![Pie chart showing percentage contribution of black pepper by country](image)

*Source: Pepper Crop Report by Ned Spice, 2017*

**Figure 1.1:** Global Black Pepper Production by Country 2016-17

Consumption-wise India tops the list with 72000 tonnes, followed by U.S. (64000 tonnes), Vietnam (55000 tonnes) and China (51000 tonnes), and all these countries together consume about 50 per cent of the world consumption.
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India had been the largest producer of cardamom in the world up to the 1980s. After 1980 high levels of production of small cardamom from Guatemala has helped Guatemala the foremost country in producing cardamom. In spite of this production advantage Guatemala has not been able to reap the demand advantage and this is because of the specific flavor and quality known outside the country. Since globalisation the cardamom demand has shown a monotonic increase. The demand mostly comes from India, Pakistan, Middle East countries, European countries, the Unites States of America and Japan. Among these countries, Saudi Arabia, UAE and India itself consume more than 60 per cent of the global consumption.

Table 1.2 shows the country-wise import details of spices and in this the United States, Germany the Netherlands, Japan and the United Kingdom form the top countries importing the spices.

<table>
<thead>
<tr>
<th>Country</th>
<th>Import value (Millions Dollars)</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>249</td>
<td>13</td>
</tr>
<tr>
<td>Germany</td>
<td>138</td>
<td>7.3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>137</td>
<td>7.2</td>
</tr>
<tr>
<td>Japan</td>
<td>124</td>
<td>6.5</td>
</tr>
<tr>
<td>United kingdom</td>
<td>113</td>
<td>5.9</td>
</tr>
<tr>
<td>Spain</td>
<td>94.1</td>
<td>4.9</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>82.3</td>
<td>4.3</td>
</tr>
<tr>
<td>France</td>
<td>72.0</td>
<td>3.8</td>
</tr>
<tr>
<td>India</td>
<td>63.9</td>
<td>3.3</td>
</tr>
<tr>
<td>Pakistan</td>
<td>61.3</td>
<td>3.2</td>
</tr>
</tbody>
</table>

*Source:atlas.media.mit.edu*
Table 1.3 shows the item-wise export of spices from India for the period 2015-16 and 2016-17. During these periods the export markets for Indian spices are US, China, Vietnam, UAE, Indonesia, Malaysia, UK, Sri Lanka, Saudi Arabia, and Germany. It is clear that the year 2016-17 witnessed a record increase in the export of spices and spice products, which comes to ₹ 1766460.65 lakhs in terms of value and 947790 tonnes in terms of quantity. This gives a growth rate of 12 per cent in volume and 9 per cent in value.

Table 1.3: Item wise export of spices from India during 2015-16 and 2016-17

<table>
<thead>
<tr>
<th>Items</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity (Tonnes)</td>
<td>Value (Lakhs)</td>
</tr>
<tr>
<td>Pepper</td>
<td>28100</td>
<td>173041.50</td>
</tr>
<tr>
<td>Cardamom(s)</td>
<td>5500</td>
<td>44982.75</td>
</tr>
<tr>
<td>Cardamom(l)</td>
<td>600</td>
<td>7550.70</td>
</tr>
<tr>
<td>Chilli</td>
<td>347500</td>
<td>399743.97</td>
</tr>
<tr>
<td>Ginger</td>
<td>24800</td>
<td>27595.56</td>
</tr>
<tr>
<td>Turmeric</td>
<td>88500</td>
<td>92165.00</td>
</tr>
<tr>
<td>Coriander</td>
<td>40100</td>
<td>42680.50</td>
</tr>
<tr>
<td>Cumin</td>
<td>97790</td>
<td>153113.00</td>
</tr>
<tr>
<td>Celery</td>
<td>5310</td>
<td>5328.24</td>
</tr>
<tr>
<td>Fennel</td>
<td>15320</td>
<td>17239.60</td>
</tr>
<tr>
<td>Fenugreek</td>
<td>33330</td>
<td>23380.70</td>
</tr>
<tr>
<td>Other seeds (1)</td>
<td>23880</td>
<td>16205.75</td>
</tr>
<tr>
<td>Garlic</td>
<td>23085</td>
<td>15959.00</td>
</tr>
<tr>
<td>Nutmeg &amp; mace</td>
<td>4050</td>
<td>20928.25</td>
</tr>
<tr>
<td>Other spices (2)</td>
<td>43955</td>
<td>58348.50</td>
</tr>
<tr>
<td>Curry powder/paste</td>
<td>26550</td>
<td>53174.50</td>
</tr>
<tr>
<td>Mint products (3)</td>
<td>23250</td>
<td>258130.47</td>
</tr>
<tr>
<td>Spice oils &amp; oleoresins</td>
<td>11635</td>
<td>214255.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>843255</strong></td>
<td><strong>1623822.99</strong></td>
</tr>
</tbody>
</table>

1. Include bishops weed (ajwanseed), dill seed, poppy seed, aniseed, mustard etc.
2. Include asafetida, cinnamon, cassia, cambodge, saffron, spices (nes) etc.
3. Include menthol, menthol crystals and mint oils.

*Source: Spices Board*
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Item-wise analysis shows that Chilli is the most demand-oriented spices in the year 2016-17 giving rise to an export of 400250 tonnes and fetching a value of ₹ 507075 lakhs, which shows an increase of 15 per cent in volume and 27 per cent in value compared to the previous year. In this list of 2016-17 Cumin comes to the second important item of export, which is accounted by a growth rate of 22 per cent in volume and 28 per cent in value. The quantity and value of export of cumin comes to 119000 tonnes and ₹ 196320 lakhs respectively from India during 2016-17.

Another important item in the list of export is Fennel which increased in quantity from 15320 tonnes in 2015-16 to 35150 tonnes in 2016-17. This is given an all-time record of its growth of 129 per cent in volume and 79 per cent in value. But the turmeric export from India both in terms of quantity and value were impressive during the period 2016-17 and this is owing to the high demand from the pharmaceutical sector, and hence the export of this product touched 116500 tonnes in terms of quantity and ₹ 124189 lakhs in terms of value during 2016-17. Garlic also shows considerable growth in export during 2016-17 both in terms of quantity and value. Garlic export increased 92 per cent in terms of value and 39 per cent in terms quantity, which is also phenomenal considering its export in the earlier periods. The items which feature high export are the nutmeg and mace and this too showed an increase of 25 per cent from 4050 to 5070 tonnes in comparison to the previous period. Comparative figures in terms of quantity and value of the export of celery have increased from 5310 tonnes to 6250 tonnes with the corresponding values.
of ₹ 5328.24 lakhs to ₹ 6246 lakhs in the periods of 2015-16 and 2016-17 respectively.

But the paradoxical change that has been noticed with respect to the import and export of pepper, which shows an increase in pepper import and a decline in pepper export. Data show that pepper exports declined to the tune of 37 per cent in terms of volume and 34 per cent in terms of value in the year 2016-17 at a period of the increased pepper imports. Value-wise the export of pepper in the two periods showed a decline from 173041 in 2015-16 to 114312.5 lakhs in 2016-17 with a corresponding quantity decline in export from 28100 tonnes in 2015-16 to 17600 tonnes in 2016-17. This is because of several reasons and the most important is the buyers’ intention to change the consumption of pepper from India either to Vietnam or to Indonesia pepper leading to a situation of losing control of these markets for pepper. Another item which showed considerable decline in export is small cardamom, which showed a decline of 30 per cent in terms of volume and 6 per cent terms of value. The decline of cardamom export in these two periods in terms of quantity and value are 5500 tonnes in 2015-16 to 3850 tonnes in 2016-17 and ₹ 44982.75 lakhs in 2015-16 to ₹ 42150 lakhs in 2016-17.

1.2.5 Kerala-India: Area and Production

In the total spices production, India is the largest producer if all the items of spices are put together. In India, Andhra Pradesh is considered as the biggest producer of spices. The other states in the order of spices production are Rajasthan, Gujarat, Telungana and Karnataka. In the total spices of all varieties Kerala’s position is the 11th, however the state
occupies a monopoly in the production of nutmeg, cardamom and pepper. Figure 1.2 explains the state-wise production of spices in India for the period 2016-17.

![Figure 1.2: Major State-wise Production Spices in India](image)

*Source: Spices Board*

**Figure 1.2:** Major State-wise Production Spices in India

Item-wise production of spices for the two periods (2015-16 and 2016-17) is given in Table 1.4. Compared to the period 2015-16, 2016-17 quantity-wise the production of spices increased 2.5 per cent with 7075500 tonnes. During this period a concomitant increase in the area also with by 2 per cent.
Table 1.4: Major Item-wise area and production of spices in India during 2016-17

<table>
<thead>
<tr>
<th>Spices</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area</td>
<td>Production</td>
</tr>
<tr>
<td>Pepper</td>
<td>131790</td>
<td>48500</td>
</tr>
<tr>
<td>Cardamom(Small)</td>
<td>70080</td>
<td>23890</td>
</tr>
<tr>
<td>Cardamom(Large)</td>
<td>26387</td>
<td>5315</td>
</tr>
<tr>
<td>Chilli</td>
<td>742950</td>
<td>1497440</td>
</tr>
<tr>
<td>Ginger</td>
<td>156910</td>
<td>1025110</td>
</tr>
<tr>
<td>Turmeric</td>
<td>183480</td>
<td>967060</td>
</tr>
<tr>
<td>Coriander</td>
<td>624780</td>
<td>572990</td>
</tr>
<tr>
<td>Cumin</td>
<td>808230</td>
<td>503260</td>
</tr>
<tr>
<td>Celery</td>
<td>4010</td>
<td>5510</td>
</tr>
<tr>
<td>Fennel</td>
<td>76000</td>
<td>129350</td>
</tr>
<tr>
<td>Fenugreek</td>
<td>227960</td>
<td>248350</td>
</tr>
<tr>
<td>Ajwan</td>
<td>26600</td>
<td>16010</td>
</tr>
<tr>
<td>Garlic</td>
<td>295600</td>
<td>1603500</td>
</tr>
<tr>
<td>Tamarind</td>
<td>47660</td>
<td>190780</td>
</tr>
<tr>
<td>Clove</td>
<td>2340</td>
<td>1200</td>
</tr>
<tr>
<td>Nutmeg</td>
<td>22360</td>
<td>15170</td>
</tr>
<tr>
<td>Cinnamon</td>
<td>320</td>
<td>70</td>
</tr>
<tr>
<td>Grand Total including others</td>
<td>3457000</td>
<td>6901780</td>
</tr>
</tbody>
</table>

Source: Spices Board

Highest increase in the production and area is noticed in the case of Chilli in the country with an increase of 25 per cent for the period 2016-17 and the area of cultivation has also shown an increase with 830770 hectares in the same period. But in the case of pepper a negative correlation is identified with area and production as the area of pepper cultivation had decreased from 131790 to 131230 during the same period, which shows a production increase of 17.5 per cent. An increasing trend in the production of spices like coriander, ginger, large cardamom, turmeric, nutmeg and clove has also been noticed. However, small
cardamom exhibits a big deceleration in production of 25 per cent in production and miniscule per cent in area.

The spices grown in Kerala are black pepper, cardamom (small), ginger, turmeric, nutmeg, cloves, cinnamon and vanilla. Kerala lost its top position in the production of pepper to Karnataka, as Karnataka produced 54 per cent of pepper production in the period 2016-17, with an output of 310000 tonnes from the total of 57000 tonnes. The production had almost been close in the period 2015-16 between Kerala and Karnataka with 23000 tonnes and 21000 tonnes.

The status of the major producer of cardamom production is still with Kerala in comparison to other Indian states as 87 per cent of cardamom is produced by Kerala alone. This is the case with nutmeg as the state produced 15200 tonnes out of the total production of 15460 in India in the period 2016-17. Table 1.5 highlights area and item-wise production of spices in the state with its percentage share of Indian production.

**Table 1.5**: Major Item-wise Area and Production of spices in Kerala during 2016-17

<table>
<thead>
<tr>
<th>Items</th>
<th>Kerala (Hectare)</th>
<th>Kerala Production (Tonnes)</th>
<th>India Area (Hectare)</th>
<th>India Production (Tonnes)</th>
<th>Share of area in %</th>
<th>Share of production in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pepper</td>
<td>85000</td>
<td>20000</td>
<td>131230</td>
<td>57000</td>
<td>64.7</td>
<td>35</td>
</tr>
<tr>
<td>Cardamom(s)</td>
<td>39080</td>
<td>15650</td>
<td>69357</td>
<td>17990</td>
<td>56.3</td>
<td>86.9</td>
</tr>
<tr>
<td>Ginger</td>
<td>4500</td>
<td>20000</td>
<td>164850</td>
<td>1081430</td>
<td>2.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Turmeric</td>
<td>2632</td>
<td>6506</td>
<td>193395</td>
<td>1051160</td>
<td>1</td>
<td>0.61</td>
</tr>
<tr>
<td>Tamarind</td>
<td>11000</td>
<td>38250</td>
<td>49020</td>
<td>190700</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>Cloves</td>
<td>1082</td>
<td>78</td>
<td>2350</td>
<td>1220</td>
<td>46</td>
<td>6.3</td>
</tr>
<tr>
<td>Nutmeg</td>
<td>22500</td>
<td>15200</td>
<td>23080</td>
<td>15460</td>
<td>97.4</td>
<td>98.3</td>
</tr>
</tbody>
</table>

*Source: Spices Board*
1.2.6 Spices Production and its Distribution Channels

Spices produced by cultivators are procured by local traders or co-operatives and these groups directly distribute to the processing firms and sometimes cultivators themselves process the spices. The cycle of processing is very wide, it includes washing, threshing, shifting, drying, cleaning and finally grading and storing and these activities may vary with respect to spices’ itself. The processing activities differ in the case of different spices and preferred techniques. This in turn depends on the techniques and even based on the area of production, machinery available, facilities like green house or in the open and to a greater extent the labour cost. Different techniques and methods are used in the developing and developed countries and this will result in different end products and byproducts.

Several processing techniques are launched to make the spices follow the quality assurance standards required to be ascertained with the industry standards per se and the stipulations the various countries adhere to the phytosanitary and other sanitary requirements. These kinds of quality stipulations and its assurances are pre-requisites to overcome technical barriers of trade, which is connected with the use of chemical and other substances during the stages of production and processing, for easy market access in the developed countries. Even grading, packaging sterilization will have high impact in the export market and hence compliance to international standards will create a free flow of spices in the global market.
Spices exports are either done without processing or in the processed form of grinding in most of the time it is exported in the grinded form. Many spices can be exported whole; most are processed, usually by grinding them into powders. Most of the developing countries export spices in the raw form, which is not beneficial for the exporting countries. Developed countries reap most of the gain from trade as they import spices in the raw form and make considerable value addition for the products with appropriate labelling including brand name and packaging and re-export by reaping huge gain from the trade.

1.2.7 Spices Plantation Employment

Employment activities in the spices sector are coming mainly from production, trade and allied activities of the spices sector. This type of employment is region-specific and plantation-specific. Specific areas giving employment opportunities are-

1) From the spices plantations
2) From the manufacturing and export units
3) From the Institutional setups connected for the promotion of spices sector

District-wise nature of employment opportunities shows that the districts of Wayanad and Idukki provide more employment as these districts are considered as the plantations districts of Kerala. But the shift of the demand pattern in the national and global market has its own reverberation in the prices of various plantation products and this has resulted in misery to the producers owing to the fall of wages as a result
of the fall in prices of the products. Demarcating the plantation under area-wise, most of the pepper plantations come under small-holding category which comes to about 90 per cent and in this case the average holding is less than an acre. Impact analysis in the agricultural sector shows that the impact is severe in the case of workers working in the plantations. This has further resulted in indebtedness of farmers as well as the workers working in the plantations. This in a way leads to no choices other than alternate livelihood options and also drastically cutting their consumption of basic necessities. The adoption of MGNREGA with beneficial employment and wages, at least in the case of plantation workers in Idukki resulted in huge out migration of the Tamil workers in Idukki to their home country. This created further disorder in the plantation sector with shortage of workers during harvest periods. Another factor that impedes the availability of workers in the peak periods is the buoyancy that happened in the construction sector in Tamil Nadu. Yet another pertinent issue is the gender disparity with respect to wages that is prevailing in the plantation sector owing to the fact that most of the workers employed in the spices plantations are female workers as it not skill-oriented work.

Table 1.6 explains the number of workers in the two sectors of black pepper and cardamom as per 2016-17 data. It shows workers in different levels like farm level, processing sector and small cultivators both in the case of cardamom and pepper. It infers that women workers in plantation are very poor and this is equally true both for pepper and cardamom.
Table 1.6: Employees in Black Pepper and Cardamom Plantations

<table>
<thead>
<tr>
<th>Employment</th>
<th>Black Pepper</th>
<th>Cardamom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of workers at farm level</td>
<td>201216</td>
<td>61519</td>
</tr>
<tr>
<td>Domestic Market Processing Sector</td>
<td>23045</td>
<td>11685</td>
</tr>
<tr>
<td>Number of small cultivators</td>
<td>232068</td>
<td>32190</td>
</tr>
<tr>
<td>Estimated number of women employed</td>
<td>131507</td>
<td>39570</td>
</tr>
<tr>
<td>Women employed (%)</td>
<td>65.36</td>
<td>64.32</td>
</tr>
</tbody>
</table>

Source: Unpublished data from Spices Board

1.3 An Overview of Literature

The plantation sector in Kerala dates back to the 19th Century with colonial influence which was pivotal in developing plantation-based spices products and hence could better be termed as a sector specific to colonialism. In the year 1797, on Experimental basis, The East India Company started developing spices plantations by producing coffee, pepper and clove at Ancharakandy in Malabar. The year 1860 in Veli hills the then Maharaja of Travancore Vishakam Thirunal began the plantation activities in Travancore, Kerala. As an effort to develop plantation in Devikulam the royal family in Devikulam donated 215 square miles of land to Sir Daniel Munro in 1878 and subsequently in 1897 this formed as plantation estate came under the control of Kannan Devan Hill Produce Company (K.D.H.P. Co). Then came the development of the plantation sector in Wayanad. The Pandarappatta Proclamation of 1865 and the Jenni-Kudiyan (landlord-tenant) Proclamation of 1867 developed a social order in Kerala which in turn led to the emergence of new capitalistic system replacing the system of trading profit/merchant capital to industrial capital. The wealth that had been amassed was further used for developing
plantation crops like tea, coffee, cardamom and rubber both in the form of
small, medium and large plantations (Nair, 2006). Consequent to this,
another activity called plantation trade was developed by Cochin
Chamber of Commerce in 1857 as a sub-activity to help British companies
engaged in spices trade, and this consummated in developing large
number of factories connected to the plantation sector and this had
further helped to boost the development of plantations in Kerala.

The cropping pattern of this sector is different with some engage in
large holding plantations by engaging wage labourers and some small and
marginal cultivators doing multi-cropping in an area below three hectares
(Raman, 1986; Hayami and Damodaran, 2004). A new migration and
settlement order has come with the development of the plantation. This
has resulted in close-knit settlement pattern because of the demand and
recruitment pattern of the plantations and this is generally most of them
have settled in and around the plantation due to the fact that the
recruitment is mostly family based (Sarkar and Bhowmik, 1999).

Various problems of the pepper plantations according to Rajesh (2015)
are based on monsoon failures, increase in diseases, low price and
indebtedness among the farmers. These problems in most of the situation
lead to dropping pepper cultivation during the early 2000s and this in turn
leads to problems like reduction in area cultivated, low production and
productivity of pepper in Kerala. But in the case of cardamom, the area is
also declined but increase in production has happened owing to the increased
use of high yielding varieties. The instability of price acts as major factor for
the decrease of area under cardamom cultivation i.e., from ₹ 968 per kg in
2010-11 to 649 per kg during 2013-14.
Suresh (1983) explains in detail the economics of cardamom production and processing by looking to the full details of cost of production and associated revenue earned from the cardamom plantations. His empirical analysis using statistical methods in this respect is useful for various types of cardamom producers.

By adopting a historical analysis of the spices product like pepper in its production, procurement and marketing of Kerala, Menon (1987) stresses the need for cooperatives for procurement and export to make pepper production remunerative for the growers. The reasons for the productivity issues are connected with several factors like poor genetic stocks, high population of senile and unproductive vines in the gardens, illogical mixing and incomplete adoption of maturing inter alia proper shading and protection of the plants with adequate soil protection methods etc.

Consumption pattern of pepper is elucidated by Ravindran (1999) with the help of factors like population, per capita income, and financial position status of people, food habits and factors relating to health. With these factors he identifies that pepper consumption in the global market has a perpetual positive growth rate. Among the countries Denmark comes first with an annual per-capita consumption of 194 grams. Region-wise America and Europe constitute the major pepper demand areas and according the demand for pepper is in a way depends on the demand in these two market areas.

While analyzing the post-harvest technologies, Jose (2002) stresses the need for standardised solar tunnel techniques for drying and also
Introduction

highlights the need for best processing methods so as to have more quality for the spices considering for export markets.

The genetic potential and variability of cardamom study at the experimental farm in the Indian Cardamom Research Institute at Myladumpara during the period 1999-2002 shows that genetic factors have high variability in the productivity and production of cardamom (Radhakrishnan, 2003).

Production and marketing study of black pepper of Sanjana (2004) in the Kanyakumari district shows that the black pepper production is at break-even at the level of 222kg and the sale’s break-even at ₹ 15500 with a P/V ratio of 40 per cent. The cultivators at the Kanyakumari district face severe production related problems of diseases, high price of manure, availability of skilled laborers, water scarcity, severe climate and non-availability of finance etc. High volatility of price makes pepper cultivation uneconomic and this is the reason for their disinterest in acreage extension for reaping the economies of scale.

Nair (2006) studies the manifold marketing and production problems of cardamom in Kerala and presents a list of problems to be solved urgently and they are high cost of production, land tenure, problems faced by small growers, low prices for the product, high debt, pest and disease of plants, low yield and low productivity. He also identifies high non-production related cost, such as cost of packing, transportation, loading and unloading and these are even increasing which makes the total cost involved in the production of spices very high.
Balakrishnan (2008) highlights that low-price factor of cardamom makes a downward shift in the area under cardamom during 1992-2006. However, the production trend of cardamom is positive with a growth rate of 24 per cent per annum and this is comparatively less with that of Karnataka and Tamil Nadu. To earn more and strengthen production in the cardamom sector post-harvest processing procedures are to be done immediately for the cardamom sector in Kerala.

Nature of cultivation, holding type and consumption pattern of cardamom producers are evaluated by Yesudas (2012) and he reveals that most of the cultivators have 11-15 years of experience and are having an acreage holding of about 20 acres, which means most are small type cultivators. For the cultivation they get financial assistance and the procedure in getting the loan from the banks are cumbersome and hence take long time to get the loan. It also reveals that area cultivated do not have any relation with the period of cultivation of the cardamom and most of the cultivators one time or another face natural calamities which according to them affects their profitability in production.

Mary (2012) in her study comes across problems of the cultivators as mostly production and marketing. The cultivators fail to make use fully of the schemes of the Spices Board meant for the production, post-harvest processing and marketing of spices. But the exporters are well aware of the schemes of the Spices Board and hence they fully make use of these for reaping the export potential.

Magesh’s (2012) study relating to the production of pepper from the period 2005 onwards in Kerala shows a negative trend and it comes
to 1.46 per cent per annum and the reason for this is low productivity and area under reduction. The present pepper export is mainly connected with high unit value realization and not with any growth in quantity. But the positive nature of the compound growth rate of export is visualized in the case of quantity and value and also unit value in the periods of 2005-2010 and this also acts as a positive indication for expansion of export.

Seetha (2013) explains cost differences in the cultivation of small and large farms and concludes that cost of production is more in the case of small farms and this is mostly connected with fixed cost. In the profit evaluation too, the large farms have an advantage and it percentage-wise it is 47.01 and this considerably high compared to the small farms. Other cost factors according to her is connected with high input cost together with loss incurred owing to randomness of climate together with erratic price factors affecting marketing of the products.

Mohideeen (2013) uses Cobb-Douglas production function techniques to explain the cardamom production in Idukki district so as to identify the determinants of production for comparison purposes of the small and large producers. The variables that have been used for analyzing the cardamom production using the Cobb-Douglas techniques encompass labour, manure, fertilizer, pesticide and irrigation. The analysis shows that pesticide influences the output significantly. The other factor which has got significant influence in production is labour. Among the factors that constraint production, labour comes as the pertinent variable.

Implications relating to environment are analysed by Sreedharan (2015) by connecting the agricultural activities of the cardamom sector.
The use of pesticides and the present agricultural practices have implication to soil quality leading to environmental issues. The major implication causing environment in the cardamom production is the perennial use of banned pesticides items like monocrotophos, phorate, quinalphos and endosulphan. The prolific use of these banned fertilizers creates health hazards to the spices producers and the result of this manifests in the form of cancers and abortion to the female workers.

George and Cherian (2017) highlight actions of the Spices Board for improving the production and marketing of cardamom. Though Spices Board does several activities for the improvement of spices production, the growers are not fully happy with the activities of auction and marketing. Most of the cultivators are unaware of the practices of modern post-harvest techniques of grading and drying. Lack of awareness exists among the farmers about the modern farming and post harvesting methods of drying, grading. Suggestion is also put forwarded for the use of organic farming and the use of modern technologies, which will generate good demand in the developed economies.

Using quantitative techniques, Devi et al. (1990) evaluate the production related factors of plantation products like banana of Kerala for the period 1970-87. Using different statistical techniques, they find that quadratic function gives better result than other estimation methods based on coefficient of determination.

Raju (1993) while analyzing the production and productivity of rubber plantation sector in Kerala shows that the sector is dominated by small holding and this type of domination helps Kerala to have a
monopoly in rubber cultivation and production with 85.1 per cent based on area and 93.3 per cent in production level. In this respect the Rubber Board of India implements many measures for production and related improvement in rubber cultivation and marketing. Demand analysis of natural rubber shows wide fluctuations in demand and supply.

Cropping pattern of various crops in India is explained by Dhinasa and Sharma (1995) using statistical methods and they use in this the analysis with the help of an exponential function for the cropping pattern changes of Punjab for the period 1965-91. The result obtained from the estimation shows that cropping pattern changes for most of the agricultural products like wheat, moong, paddy, and cotton and these crops exhibit high growth in production and area.

According to the Economic Survey (1995-96), 95 per cent of natural rubber demand in the country is met by domestic production and the deficit is met by imports. Production and area under the natural rubber have shown significant upward trend.

Karnataka’s major agricultural commodities growth pattern of products like ground nut, tur, jowar, ragi and paddy by Maheswari (1996) for the period 1955-90, explains by dividing the period into two in order to understand the influence of green revolution and shows that the first phase of 1955-67 the growth rate increases in an exponential pattern except groundnut and in the second period of 1967-90 barring paddy and jowar also exhibits increasing trend. In spite of this spectacular growth rate the area under production does not show any concomitant increase in output.
Sreeja (1998) observes production and area relationship of three major crops of Kerala such as coconut, rubber and paddy and comes to the identification of increase in area for coconut and rubber and decrease of area for paddy. Decision behavior of the farmers in the case of paddy is vital for policy formulation, whereas for coconut and rubber the decision factor to a greater extent is influenced by supply response factor. Using growth models Lathika (2002) evaluates the factors that influence coconut cultivation in Kerala. The analysis shows that instability factor acts as major variable in the decline in production, area and productivity for the period 1960-99 which has resulted in a per year declining growth rate of 1.19 per cent. Kottayi (2008) analyses the major crop sectors for the period 1960-2005 and shows high levels of stagnation and negative growth rates for most of the crops of Kerala. Products like banana and areca-nut the growth in output is triggered mainly by area. But in the case of coconut, rubber and pepper the growth is contributed by output factor. In the case of rice, tapioca and cashew long-run impact is visible with respect to area and output. It is clear that area does not have any influence in the case of plantation crops like cardamom, tea and coffee but has a positive output response. Wage factor and own price factors response show that wage factor seems to be responsible in the case of rice and coffee, whereas price factor acts as prominent response variable in the case of tapioca, coconut, pepper and cardamom. In the case of banana factors like wages and prices are influential in production and this is also valid in the cases of areca-nut, cashew, and tea. Relative response in productivity with respect to rubber and that of coconut and pepper shows a negative response to that of the price of rubber.
Sheshagiri (2014) identifies the reason for the low productivity and area under rice production in various states in India. Even in the reform period itself the yield if rice shows a big reduction of 1.87 during 1991-2000 to 0.64 during 2000-10 and the reason for the low production of rice is low productivity. It varies between 44.35 per cent and 39.45 per cent during the two periods. During the same the area under rice production also varies differently in different states and in the case of states like Tamil Nadu, Andhra Pradesh, Uttar Pradesh, Assam, Bihar and Orissa show a decline. However, states like Punjab, Haryana, Chhattisgarh and West Bengal show an increase.

Jayasree (2016) elucidates the high-level volatility in production and area of horticultural during 1998-2014. Income and profitability comparison between horticultural products and major crops show high income levels and profitability for horticultural products. The income and the profitability of horticulture crops are higher than the principal crops like rice, jowar, wheat, groundnut, maize, sugarcane, bajra and cotton. Citing the example of Andhra Pradesh, she further substantiates that employment is more in the case of horticulture activities.

Area and production analysis by Senthilkumar and Swarupa (2018) identify that Idukki comes as the first place with regard to area of pepper cultivation and Wayanad as the first pepper producing district. Among the 14 districts of Kerala, Alappuzha comes the last in area and production of pepper district of Kerala. In the case of value Idukki pepper fetches maximum with ₹1537.7 crores and Wayanad with ₹309.23 crores. Based on valuation pepper from Thrissur district fetches the lowest value
Performance of Spices Sector in Kerala: A Study with Special Reference to Post Liberalisation Era

of 31.38 crores. They have pointed out that Pepper production dropped alarmingly in Kerala and the reason for this downfall is climate changes, market distortion and shifts from pepper to cash crops. In order to overcome this situation, it is suggested to go for specific plantation cultivation initiative with active participation on the part of local bodies linking the plantation areas.

Climate induced changes, temperature and rainfall changes, in the year 2016-17 as per the Economic Times (2016) reports a loss of cardamom production to 20 to 25 per cent and in this case, Idukki alone reports a drop and loss of 5 to 10 per cent. To overcome the climate induced drop in production the cultivators have been given additional assistance of ₹ 721 lakhs to the growers.

Bastine et al. (2010) study of instability both in the domestic and foreign sector show that price volatility factor for pepper changes two-fold irrespective of domestic and foreign markets during 2009-10. But they have noticed some improvement in the post-lateralled period. They are of the view that large scale import from Sri Lanka and ASEAN economies create the situation worse in the domestic markets. All these make the production of pepper not only uneconomic but cultivators prefer to go for a shift of the crop and to annul this institutional interference is inevitable for controlling the price changes.

Potentialities of value added spices study of Benjamin (1988) shows that value addition in spices has both benefits and problems. It also includes analyses like issues of processing and market trends of value added spices in the foreign markets.
Area, production and productivity of various Indian states are analyzed by Khan (1990) and shows that Tamil Nadu has area improvement of 35 per cent in the case of black pepper, Karnataka with 18 per cent and Kerala with 27 per cent. The study shows a 56 per cent reduction in production in Tamil Nadu, 4 per cent in Karnataka, whereas Kerala exhibits 13 per cent increase in production in Kerala.

The nature of supremacy of the production of cardamom according to Chacko (1994) is the result of several factors till 1979-80 and subsequently the country loses its position and hence the export of the product has also come down. Several reasons have been cited and important factors are competition from other newly emerging producers and also erratic variation in climate resulting in recurrent variation in production and export. In spite of these the period 1990-91 and 1992-93 are periods of survival in production and export.

Jayesh (2001) examines pepper production and export of the southern states of India. It is identified that two southern states of Tamil Nadu and Karnataka show a declining growth rate of 1.62 per cent and 0.47 per cent in area and production. The other major spices item of cardamom irrespective of area reduction exhibits significant increase in production and productivity. Zachariah (2005) study observes the importance of value addition in pepper and its importance in export and domestic market demand. He identifies several products from like pepper cookies, perfume, oil, yoghurt and tea.

While analysing the price volatility, Jose (1978) points out that some periods the price fluctuations are mild and in other occasions it
seems to be severe. This in fact results in high element of risk which in turn creates some kind of uncertainty for the producers to continue production and consistent growth of production of pepper and its export. A possible way out is also put forwarded by the author to work for the long-term price stabilisation process by the spices producing countries with a community feeling. Price stabilisation process becomes successful only with a multi-pronged approach rather than dealing with fixation of minimum price, creation of stabilisation fund, or buffer-stock policy, but it encompasses adjustment polices from the institutional agencies connected with spices producers and exporters linking consumers as well both in the domestic and export market perpetually with some kind of tax adjustments.

Shinoj and Mathur (2006) while analyzing demand for major spices in the domestic market find that the expenditure elasticity is positive and inelastic from the period 1987-88 to 1999-2000. The spurt in demand for spices warrants specific attention by the authorities to meet this increase in demand with more production, productivity and increase in the area of cultivation.

Shivakumar (2013) is of the opinion that futures trading has resulted in less price instability and volatility for most of the plantation items.

Test of futures efficiency according to Basavaraj and Prahalad (2013) of chilly show a long-run equilibrium for price discovery and price stabilization. This shows that futures for chilli is promising in the spot market for grasping expectation linked futures spot prices. Cointegration analysis of spot and futures of pepper for the period 2005-13 shows
bilateral causality connecting present price of pepper in the futures and future markets with the help of Pairwise Granger Causality test (Viswanathan and Sridharan, 2014). Causality analysis of Joshi (2015) reveals bi-directional one for spot and futures prices of black pepper and chilly and unidimensional for turmeric, coriander and cumin. It comes to notice that long run stability of prices is the result of exogenous shocks and long run adjustment and equilibrium are automatic in the spot prices.

While analysing the futures trading on the prices of turmeric, Datta and Sarkar (2015) come to the realization that it has no real impact on the prices as it remains almost same if we try to adjust inflation on spot prices. Moreover, it is observed that in many occasions the futures negatively influence the spot prices as it does not have showed any price rise or any erratic price fluctuations of turmeric.

Perception of the farmers regarding short-cum-long term relation of futures and spot prices according to Nirupama (2013) has both short-term and long-term relationship between spot and futures prices of pepper and cardamom. It is believed that sales, price and feasibility in futures trading and its benefits are based on the predetermined perception factors.

The impact of futures trading on the price of pepper is analyzed by Francis (2012) as it helps to develop an active price mechanism through price evaluation and discovery based on effective price management. It is possible to identify cointegration between spot and futures prices and in this respect, futures prices seem to be price stable. The major reason according to him for the non-participation of the farmers for future trading is their ignorance regarding the futures and its beneficial aspects and its
market efficiency. This will help to increase in the area under production and productivity linked measures to improve output growth. Farmers are not able to participate in futures trading due to lack of awareness.

Jain (1970) cites the alarming reverse trend of India’s pepper export and its competitiveness. These kinds of trends are noticed not only in the production and productivity of pepper but also in the export level. This is not a mere short-term fluctuation in production and export and it seems to be perennial and unsustainable change. There are reasons to identify this reverse trend and the major one is the increase in production in Indonesia and Malaysia with high importance for export. To be competitive, one option according to the author is diversification in production particularly that of white pepper, which helps to nullify the reduction in export earnings.

Another study of Rajesh (2015), highlight the decline of quantity export of spices from Kerala as result of the increasing competition from Vietnam as the major contributing factor. The export increase of cardamom is the result of the increase in demand from Saudi Arabia, the major cardamom consuming country. An important aspect of the market for the post-liberalisation period for sustenance is market integration and price stability.

In his thesis Jacob (1985) argues that Kerala has a virtual monopoly in export for most of the resource-based sectors like spices, cashew kernels, sea food, coir and coir products. With export data he highlights the fact that Kerala has already lost the premier export position in most of the resource-based products and in the case of resource-based products
the competition is very severe and difficult to hold the present position. In examining government policies and actions of the related organizations to make the growth of these sub-sectors of the agricultural commodities explains the need for proactive and timely actions to get back the earlier global market leadership.

Export performance of a variety of spices products has been evaluated by Viju (1989) and the products that come under his analysis includes important spices of India like pepper, cardamom, turmeric, ginger, chillies, cumin, fenugreek, celery and fennel. Product-wise analysis of export performance shows tremendous growth with fluctuations. In this list of analysis; turmeric exhibits both high growth as well as high instability from the export earnings. Bifurcating the spices into major and minor groups, chillies comes as a major earning item in the list of minor spices groups and in this group high level of instability in export is exhibited for cumin. Grouping of the countries in political angle, socialist groups have been identified as the major export market for pepper. But our export share with respect to cardamom and ginger these countries market seems to be small. To make spices export competitive, he suggests the need for productivity improvement particularly in the case of pepper and cardamom as these are major earners in the spices export items. Issues relating to the marketing of cardamom in India are evaluated by Nair (1987) with the help of the performance analysis both in the domestic and international market. He believes the prime cause that has been faced by the cardamom growers in India are quality issues owing to the changes in weather-based disease like ‘katte and rot’. This stipulates the immediate adoption of technological improvements so as to safeguard
quality of cardamom which in turn is based on factors like processing, curing, packaging, transport and storing. For this it is required to safeguard stability in prices both at the domestic and international market alike.

Sandhu (1989) analyses the export demand and income elasticity of black pepper in the global market and in this he specifically analyses the income elasticity of export in the USSR market and identifies factors like price competitiveness, income growth and changing consumption patterns. Though the Indian pepper price is high, comparing Indian export with Brazilian and Indonesian pepper the market of Indian pepper is better and this is because of the specific quality the US consumers consider while purchasing pepper hence this makes the US market favorable for India.

George (1994) evaluates the demand pattern of various spices for the period 1993-94 in the global market and identifies that pepper comes to be most important spices in terms of spices demand and in percentage terms it comes to around 33 per cent of the total spices export from India. The other import items of spices export as per the study is mint oil, turmeric, chillies, spice oil and oleoresin.

In terms of the export of spice oil and oleoresins, the study of Henry (1998) examines the relative position in the world oleoresins market. The study explains the tremendous possibilities spice-oils and oleoresins export from India and in this India can continue the first position in the market share for many years as many units have to use modern technology with a view to meeting the demand and requirements global
buyers. It is also identified that oleoresins of capsicum and turmeric well will be used as natural colours in the food processing industry.

Iqbal (1998) identifies several problems that has been hampering the export performance, competitiveness and growth of pepper studied the export performance of pepper in terms of its growth and value of export and competitiveness. He gives a list of the problems the producers and traders face as licensing issues, issues relating to institutional finance, problems in making use of the export credit and delay and problems in availing the export concession from the government and Spices Board. In this respect his suggestion is to spices related institutional mechanism need to be worked properly to make the exporters problem minimum.

The vibrancy of the spices sector is well evaluated by Mamta (1999), the relationship between spices export and the role of Spices Board in the export of spices from India. He also explains that high domestic prices make high level vibrancy in spices trade in the global market.

Raju (2000) reveals the fluctuating trends of India’s pepper exports in the pre-globalised periods of 1980-81 to 1989-90. The dynamics during this period shows high levels of instability in price and export earnings. Statistical analysis like regression shows significant influence on domestic production and export of pepper. The exports from Malaysia negatively influence India's export prospects. The region-wise analysis during the period shows pepper export is in a decelerating trend in the East European region, whereas during the same period an uptrend is noticed in the American region, which shows market loss and market capture.
Rajesh (2002) evaluates three factors relating to the export, competitiveness and market opportunities of spices. For achieving this market integration between the domestic and export market is needed. He identifies that post-liberalised period witnessed high volatility and this is substantiated with fluctuations in export value and unit value with less earnings for pepper and ginger in spite of the increase in export quantity.

Krishnan (2012) examines various determinants of spices trade with respect to area, production and productivity in the liberalisation era. The inflow of pepper from other countries develops all round issues in pepper production and its trade. During this post-reform period the compliances connected to SPS, packaging and labelling *inter alia* other nontechnical barriers greatly impacted the spices trade.

Bhatt and Valasan (2016) try to anlyse the sub-sectoral influence in the spices trade from Kerala and hence come to the conclusion that pepper segment is the leading export sub-sector from Kerala. The important point they suggest for the growth imperatives of pepper export is the increasing use of product based on its medicinal value. Though the product is influential with respect to seasonality and prices region to region, the market for the product seems to be in an uptrend nature.

Prasad (2000) cites one major reason for the uneconomical cost structure in agriculture in India is the unaffordable tariff rates and unfriendly import license policies. This makes Indian agriculture have not been tuned to the world prices of agriculture and hence has to face recurring external shocks. The present trade policy of doing away with the
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Export subsidies and other favorable measures of the government helps to a greater extent the smooth flow of agricultural commodities.

The issues and benefits of organic products for exports though creates favorability to export, if has got immense supply and demand miss-matches, technology use as well as certification and inspection related costs impede the growth cycle in export (Kalamkar, 2007). According to him the potential of organic products export of the agricultural products to be tapped fully with necessary precautions which in turn will benefit more to the small and marginal farmers.

The need to address the competitiveness of export according to Shirish et al. (2013), help to reduce the market competition that is faced by our farmers in the global market as they are unaware of most of the market parameters like new initiatives, processing losses and wastages. For achieving these basic infrastructure facilities are to be improved along with the improvement in labelling and packaging techniques.

Study of major spices export from India according to Varghese (2001) is linked to techno-economic factors in spices cultivation. A relative and comparative analysis in this respect is made with respect to cost of production and profitability. The study shows the inability to compete with the cardamom export from Guatemala. As a result of the competition India’s share from 60 per cent export of cardamom has reduced to an alarming level of 1.9 in the period 1997-98. To meet this threat according to him is to cut down the cost of production by improving the productivity in order to make Indian cardamom competitive with that of the Guatemala’s cardamom.
Chapter 1

Production and export analysis of Krishnadas (2010) shows significant improvements in area and production and export of some items of spices, particularly that of pepper and turmeric. Area-wise chilli shows a negative trend but output growth is positive. The growth in the area of chilli and coriander are negative whereas production has exhibited an increasing growth. In the case of cumin, production is positive but has a negative growth rate in productivity. Black pepper growth in export earning shows a positive growth and this is mainly because of increased value and not because of increase in quantity. Technological upgradation helps to increase production and insurance schemes help to overcome climatic and price instabilities.

Production and export study of spices during the period 1960-2000 of Peter e. al. (2006) show both quantity and earning increase from export of spices. But a five-year period base analysis shows a decline in quantity during 1966-71, 1981-86 and other five years’ periods records an increase in quantity exports. They show that the quantity and earnings from export show a big jump for the 40 years period from ₹ 16 crores in 1960-61 to 2025 crores in 1999-2000.

Angels et al. (2011) based on compound growth of several of turmeric exports during the period of 1974-2008 explain significant growth of production yield, price, export and quantity and value move along with the direction of trade. The growth rate based on instability infers high instability both for both in the domestic and international market with respect to various factors. It is also noticed 87 per cent export share retention with respect to minor importing countries.
Thomas and Sundaresan (1996) examine the export performance and price integration of cardamom in the markets of Tamil Nadu and Kerala. They stress the need for institutional support for overcoming exploitation of the small farmers and for this one suggestion is a dynamic market system giving benefit to growers. The study of Ibrahim (2017) evaluating the export performance for the period 1985-2013 of spices in the WTO regulation. He identifies growth instability, direction and composition of export and the reduction of market opportunities in the WTO period because of new competitors and rigorous stipulations.

Muruganandhi et al. (2008) identify market opportunities and export performance of turmeric. In this study they identify Malaysia and USA as stable markets and others countries are in the category of unstable markets which requires pricing strategies for market positioning.

Shinoj and Mathurb (2008) study of post reform period of agriculture exports of India show comparative advantage. They identify two commodities of coffee and tea in terms of comparative advantage and moreover, the advantage of these commodities has been waning recently and two countries have gained advantage in the place of India for these commodities; Sri Lanka for tea and Vietnam for coffee.

Trade is often considered as an engine of growth, this is because trade generates growth, which, in turn, reduces poverty (Bhagwati, 2003). Trade promotion in the developing countries results in poverty alleviation through the changes in labour markets. However, it is yet to evaluate who is going to be benefitted from this and identification of this seems to be precarious (Winters, 1999). This to a greater extent depends on how the growth result is
converted, if it results in higher wages and increased employment the growth is beneficial (Cazes and Verick, et al., 2007). Evaluation of trade benefits is a big concern in Kerala as the plantation sector begets unskilled workers and small growers with family workers. As most of the workers of the plantation sector are mostly poor and marginal growers, trade development may have direct impact on improvement in their income and hence acts as ways to exit poverty of the households (Rajesh and Rajasenan, 2015). But it seems that trade needs will show beneficial signals of income growth if it has a robust financial sector with good education and governance (Goff and Singh, 2013). If things are conducive, trade liberalisation will generate positive benefit to the marginalized.

South Asian Free Trade Area (SAFTA) agreement and India Sri Lanka Free Trade Agreement (ISFTA) have created big impact in the pepper price in the markets of India and particularly in Kerala (Khrishnakumar, 2017). The reason is that these agreements helps Sri Lanka to import pepper at 8 per cent in the place of 70 per cent from other countries as per the first agreement and at zero per cent duty for the Sri Lanka to export 2500 tonnes of pepper to India as per the second agreement. Moreover, ASEAN agreement helps to import pepper at the rate of 54 per cent from Vietnam.

The study highlighting the relationship between import liberalisation on the export from India by Tabassum (1999) shows that India’s trade makes a significant positive shift since 1990 onwards. This is because of the relaxation of the controls on trade and also the result of the new EXIM policy. The shift in the trade is noticeable with the change that has
happened in the export GDPs pre and post-liberalisation periods from 15 to 24 percentages respectively. In spite of all these, the impact seems to be worrisome because of the increasing trade deficit and particularly the trade deficit after the 1995-96 period owing to its downward trend.

One of the prominent resource-based sectors in Kerala, the marketing issues in the pre and post-liberalisation periods of natural rubber production analysis shows beneficial impacts during the period of post-liberalisation as it helps to grow the sector by 5 per cent per annum in the first five years after liberalisation with concomitant positive changes in the prices of natural rubber (John, 2002). The scenario makes a reverse shift soon as the price fall from 1996-97 makes the sector unprofitable and hence many have started diverting their interest in rubber plantations. This period also witnessed a downfall in the demand for natural rubber and this mainly the result of government policies connecting liberalisation as showing green flag for importing the multinational companies rubber-based products required for the automobile sector in India like the tyres and tubes. This along with South Asian Free Trade Area (SAFTA) agreement he popularization of synthetic rubber creates further peril in the rubber plantation sector. Another reason for the deplorable situation of the rubber sector is the status change of the rubber plantation from the agriculture to that of the industry and hence losing the beneficial aspects of the WTO Agreement on Agriculture. Soon the rubber sector identifies a supply demand miss-match owing to heavy import of natural rubber into the country when the country has sufficient natural rubber production which in turn results in unprecedented price fall for the product.
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Liberalisation linked agricultural crises has been explained by Mathew (2003), he views that Quantitative Restrictions (QRs) has also ignited crisis and this is substantiated with the growth rate of agricultural crops which falls to 2 per cent during 1997-98 from 2.3 per cent during 1990-91. The yield rate decline is much more worse than the growth of agriculture during the two decades of 80s and 90s in comparison, as the fall in yield during this period is almost one per cent, i.e., from 2.7 to 1.37 per annum. A noticeable change is the structural transformation from food crops to cash crops and in Kerala this type of transformation has happened with the conversion of forest land into rubber, coffee, spices and coconut type cash crops.

Sindhu (2006) evaluates liberation impacts on trade with the help of Cointegration and Vector Error Correction Models and shows the differences in the rate in the pre and post-liberalisation periods. The growth rate in the post-liberalisation period makes an improvement from 7.26 per cent to 9.21 per cent compared to the pre-liberalisation period. It is also shown that during the same period export growth is also witnessed in the case of manufactured goods. The primary product export during the same period shows a declining trend of 16.12 per cent during 2001-02 from 26.4 per cent during 1987-88. But another important finding is that of the increase in imports during the first phase of liberalisation. Tobit model-based export intensity evaluation for identifying export at the firm levels gives impressive beneficial impacts during the first phase of liberalisation.

An evaluative study of agricultural advances during the pre and post-liberalisation period of selected banks by Hanamashetti (2011) in the
Maharashtra state comes to the conclusion that agricultural advances have come down to (total advances to BOM) to 5.88 per cent in the post-liberalisation period of 1991-2010 to -3.18 per cent during the pre-liberalisation period of 1980-1991. It also gives the inference that some banks have shown impressive advances for agricultural purposes in the first phase of the liberalised period.

Sangappa and Mamanshetty (2013) try to identify the globalisation impact in the agricultural economy of India. Their analysis shows that the low agricultural export from India is highly correlated with the high cost of production and low quality of the product. Another reason for the low export performance of the agricultural products is the stringent norms stipulated by WTO for agricultural exports. The prevalence of quantitative restrictions and the failure in lifting it makes agricultural export a distant reality.

As per the USAID-ACCESO (2011) survey the economic slowdown of 2008 has resulted in sluggishness in demand for cardamom and hence import of cardamom comes down to 26000 MTs in 2010 compared to 37000 MTs in 2008. The reason for this condition is the change owing to the income elasticity of demand and this is true with respect to the cardamom demand in India and Saudi Arabia. Another reason which the survey comes to the conclusion is the withdrawal of most of the Middle East economies from the cardamom market owing to political unrest in the region in 2011 significantly correlates with income trends. The survey finds that buyers from the Middle East withdraw from the market on concerns over political unrest in the region in 2011. It is also stated that
the situation is slowly changing, which in turn comes to buoyancy in demand for cardamom not only in the Middle East countries but also the spurt in global demand and hence production need to be equipped with the expected change in demand.

Vasanthagopal and Thomas (2011) try to address the issues of the spices sector owing the changing stipulations that are coming from WTO and FTA agreements. These issues are generally categorized separately connected to Kerala and India as non-profitable trade, problems in the availability of skilled labour, unwillingness on the part of the traders to continue the trade, non-remunerative price for the products. The study comes to the fact that the fall in price that has been happening in Kerala is the import of spices from pepper producing countries as a result of the ASEAN trade agreements. Hence to help the spices producers urgently control pepper import which in a way helps to assure incentive price for the cultivators of Kerala.

There also exists an opposite view as has been put forwarded by Santos (2012), that the trade liberalisation may lead to market shrinkage, deleteriously affecting the poor and the marginalized small-farmers in the agricultural and plantations and even in the case of unskilled workers in the rural areas. It seems that owing to the issues for a structural transformation of the economy the benefit in most of the situation will not lead to beneficial trickle-down effect to the agricultural and plantation sectors.

Thampy (1999) connects two factors in the global market with respect to spices trade; the nature and the payoffs and also the volume and directions in the emerging market. He shows that productivity is to be
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increased in order to make the spices remunerative and economical and this is true with respect to most of the spices products like pepper, chillies, ginger and turmeric. He shows that promotional measures have a positive relationship between export growths. This will help both to have more volume as well as value from trade. He also identifies a negative correlation between cost in the global market and Indian export of spices.

John (2003), examines the future prospects of spices trade as it gives a considerable share in total export basket and also an important component in the export of agricultural produce which comes about 8.5 per cent. His view is that the future spices export of India depends on the requirement of the importers with their quality stipulations and also based on global quality standards.

Philip (2003) evaluates various problems of the various stakeholders including producers, traders and exporters with special reference to pepper and cardamom. He explains that the market potential both domestic and foreign for spices is huge and considering this the potential for the spices growers is immense. The domestic stakeholders need to consider the role of price in the production and export of spices. But the market distortion due to holding the stock of the spices makes the exporters in precarious situation particularly in giving the spices products in time for shipment which in a way helps other countries to dominate in the global market.

Shankara et al. (2013) observe farmers’ perception regarding climate change and the steps taken to negate the impacts. The analysis is based on 120 farmers’ perception living in the dry zone of the east Karnataka. The
analysis shows that 73.34 per cent observe to have high perception regarding rainfall change within the years 2000 and 98.34 per cent expect the change after 2000. Relating to the perception of temperature changes during the same period it changes from 76.66 per cent to 99.16 per cent. Perception regarding yield everyone believes that it reduces yield and it is connected with income, soil nutrients and increase in cost of cultivation, pests, diseases and changes in climate. It is also identified that significant changes happen to most of the variables since 2000.

Patidar and Patidar (2016) explain that cultivators have high level of perception relating to organic farming. Farmers have identified some good relationship between organic farming and this is significantly connected with age, educational background, and farm size. As the farmers perception is positive and they are very much eager to espouse to agricultural methods based on organic farming. To make perception into reality they are of the opinion that the government has to take proactive policies to make organic farming useful by giving facilities like credit, training on technicalities. The perception of this type of organic farming does not cost much as they are giving more importance to yield and profit.

1.4 Research Gap

The review of literature gives a vivid picture of the spices sector and also sector specific issues of pepper and cardamom both in the pre and post-liberalisation periods. One can identify a gap while scanning the available literature and also if one delves deep into the various focused research on the thematic areas, it is obvious that perception of the major stake holders of the pepper and spices sector specifically in the contention period of the
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liberalized era is conspicuously unavailable. Another area which is not deeply analyzed is the uncertainties in production, price and market using statistical techniques so as to deal empirical precision. The present study tries to plug the gap in the spices area research and hence this study.

1.5 Significance of the Study

The study is significantly important in Kerala as spices is one of the prime foreign exchange earners of the state and spices cultivation is an important livelihood aspect for the majority of people living in the Western Ghats parts of Kerala. In the post-liberalisation period and predominantly after the enactment of several regional trade agreements and free trade agreements the stakeholders, particularly the spice cultivators are disappointed with price and competition related miseries.

1.6 Statement of the Problem

India, being the largest producer and exporter of spices, the spices sector plays a key role in the agricultural economy of the country. Kerala, the spice bowl of India, enjoyed a prime position in the production of black pepper and small cardamom in the country. The earnings from pepper and cardamom production in Kerala have nearly halved in the last few years. As an important foreign exchange earner to the country and the state of Kerala, the spice products did not adhere to any type of trade restrictions or any actions on the part of the government for obstructing the trade and export of spices in the early times. But the present situation is precarious as the spices legacy of the state has been in jeopardy as the pepper and cardamom products face manifold problems owing to the drastic steps that have initiated in the world after liberalisation.

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In spite of multiple actions from the stake holders and institutional groups, the market share and export share of pepper and cardamom has been coming down year-to-year. The difficulties of the spice cultivators encompass livelihood issues, productivity problems, area reduction and rampant competition in global market and even continued threat of foreign spices in the domestic market. This situation is all pervasive in Kerala, but it seems perennial in the districts of Wayanad and Idukki and is mostly among small and marginal spice cultivators. Recent farm suicides are mere clear testimonies to substantiate the vulnerability associated with the spices cultivators in the state. Though several causes are explained to substantiate the real problem of the spices sector, the price instability and competition of the spices product like pepper and cardamom *inter alia* liberalisation and associated regional agreements relating to plantations create further havoc to the spice cultivators. The issues associated with the spices sector as evinced from the review of literature as well as the perception obtained from the stake holders bring to the fact that spices sector is bestowed with lingering problems after liberalisation as the spices products are highly globalised products which need to be addressed. In this situation, the study is relevant to evaluate the performance of spices sector in Kerala in the post-liberalisation period.

1.7 Conceptual Framework

The theoretical base of the study centers around the trade liberalisation and its impact on the pepper and cardamom cultivators in Kerala. The liberalisation started in the sector through international trade agreements, formal and informal institutional linkages and global competition. Advent
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of international trade agreements opened up the spices sector globally resulting in competition. Due to this any unrest in the global spices market impacted the local producers. To counter the impact on this locally, formal and informal institutional setup were constituted. These were set up to safeguard the interests of the pepper and cardamom cultivators and to protect them from price fluctuations. However, the futures trading in pepper and cardamom have intensified the issue of uncertainty of prices in the local market. The integration of domestic and global markets also implied that the producers have to adhere to quality standards, improve productivity, use innovative techniques for cultivation and processing, etc. The overall impact of the liberalisation on the small farmers was in the form of high production cost, price variations, labour and capital problems, low productivity, low earnings and livelihood issues to the farmers. These are well elucidated in Figure 1.3.

\[\text{Figure 1.3: Theoretical Framework}\]
1.8 Scope of the Study

The study is intended to analyse the performance of spices sector in Kerala during post-liberalisation era. The scope of study covers performance of spices in terms of area under cultivation, production, price and export. It also intends to cover the socio-economic aspects and the perception of spice cultivators on performance of spices during post-liberalisation period. The spice crops under the study are limited to black pepper and small cardamom which are the principal spices in Kerala. The study is also confined to two spice cultivating districts of Kerala viz., Idukki and Wayanad as these are the major production and cultivation area of spices.

1.8.1 Spice crops under the study

Two major spices crops of pepper and cardamom were for the study as these two crops form the items coming in the export basket of spices from India and also from Kerala. Employment-wise and area-wise also these two are considered important in Kerala.

Black Pepper

Black Pepper with its scientific name *Piper nigrum* is a climbing type plant which is highly greenish. It grows with the help of its vine nodes. In a single rod itself it contains many single seeded berry which forms the black pepper fruit. The fruit undergoes many changes in its colour from green to yellow, then to red. After this it becomes black when the drying process is completed. The value of this spice is very high as it is inevitable part of human life and hence it is often connected with the
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Black pepper has got preservative properties it is profusely used by meat preservators, pickle makers, and also for canning and baking. Other important uses of black pepper are in seasoning, flavouring cooked food stuffs and spices mixes. From black pepper several value-added products are also produced such as pepper oil, oleoresin, micro encapsulated pepper, green pepper in brine, dehydrated green pepper and frozen pepper etc. Black pepper has got many therapeutic values and hence it is used immensely in the pharmaceutical industry. But black pepper has got important properties like analgesic, anti-oxidant, anti-pyretic, and anti-microbial.

In India about 75 varieties are cultivated in various states and among this Karimunda is cultivated widely in Kerala. Other popular varieties include Narayakodi, which is cultivated mostly in Central Kerala, Kottanadan produced in South Kerala, Neelamundi is cultivated in Idukki, Aimpiriyan is an important item in Wayanad, Kuthiravally is also a popular variety in Kozhikode and Idukki and Balancotta,
Kalluvally from the major item in North Kerala. A product which has a different bearing pattern is Kuthiravally and Balancotta.

**Small Cardamom**

With the scientific name *Elettaria cardamomum Maton*, small cardamom unlike black pepper is a plant which grows maximum to 3 meters tall, supported with pseudo stems and oval shape fruit with 10-15 seeds. The ripe one is brownish black and is covered with white mucilagenous coat. It is also known as “queen of spices”. The various ingredients that contain in the small cardamom consist of oil, oleoresin, green cardamom and white cardamom.

The powder produced from small cardamom is used for flavoring food materials. Small cardamom seeds are used as an ingredient for the production of perfumes. Small cardamom oil too has got immense uses and mainly used for flavoring beverages. It has got very high value in the pharmaceutical industry and hence the medicinal properties are immense. Different varieties of small cardamom are available in different regions and it includes Njallani green gold, Vander cardamom, Panikulangara No. 1, Palakuzhi selection and Valley green bold. Several other varieties have also been developed in various cardamom research laboratories and these consists of ICRI developed MHC-10, MHC-13, MHE-18, ICRI-1 and ICRI-2. Appangala-1, Appangala-2, IISR Avinash. The Cardamom Research Station of KAU has developed PV-2.
1.9 Objectives of the Study

The principal objective of the study is to evaluate the performance of spices sector in Kerala with special reference to post-liberalisation era. More specifically:

1) To examine the performance of spices sector in terms of area under cultivation, production and productivity in a dichotomous framework of pre and post-liberalisation era.

2) To analyze the export performance of spices in the post-liberalisation period and implications of market concentration and shifts.

3) To identify the importance and issues of the spices sector in a three-pronged framework of small, medium and large spice cultivators in terms of production and export.

4) To study the socio-economic aspects of the spices cultivators

5) To assess the perception of spice cultivators for bettering production and earning and the need for government policies.

1.10 Hypotheses

The hypotheses formulated for the above stated objectives are:

1) Instability of production of pepper is high during the pre-liberalisation period.

2) Instability of production of cardamom is high during the pre-liberalisation period.

3) There exists high price variation for pepper in the post-liberalisation period.
4) There exists high price variation for cardamom in the post-liberalisation period.

5) The earning levels of the cultivators are same irrespective of the size of holdings.

6) The perception of cultivators with regard to the role of international trade agreements in the present crisis in the spices sector is same irrespective of the size of holdings.

7) The perceptions with regard to the opportunities in the spices sector are same for both pepper and cardamom cultivators.

1.11 Methodology

1.11.1 Data Source

The method of study is both explorative and analytical in nature. Secondary data have been used to understand the time series-based change in production, productivity and area under cultivation, marketing and export of the sectoral and sub-sectoral of spices in Kerala. Data pertaining to these have been obtained from Spices Board, various journals, bulletins, books and periodicals issued by Spices Board and Indian Institute of Spices Research, Indian Pepper and Spice Trade Association (IPSTA), Chamber of Commerce, Directorate of Economics and Statistics, Agriculture related websites of the government, Economic Review of the Kerala State Planning Board, trade related and other scholarly journals, newspapers, internet and other published works. Data and inferences about the spices sector have also been gathered through comprehensive discussions with officials of Spices Board, Kochi, Research Station of Kerala Agriculture University, Pambadumpara,
Indian Cardamom Research Institute, Myladumpara, Wayanad Welfare Society at Manathavady and Spices Park, Puttady.

The primary data pertaining to this study had been amassed with a specifically prepared interview schedule so as to collect primary data from the spices cultivators which were pre-tested in the form of a pilot study to ascertain the quantum of data that had to be elicited from the survey. This was further revised with statistical background and adequate statistical tests of the questions included in the interview schedule.

1.11.2 Sample Design

Two commodities of spices, pepper and cardamom account for more than 50 per cent of the total spices produced in the state. Among the 14 districts of Kerala Idukki and Wayanad occupies not only major production and area cultivated districts. Being the major spices producing districts the samples for the study is also collected from these two districts. Further, three major spices producing Taluks in these two districts are identified based on production and area cultivated. The Taluks identified include Udumbanchola, Peerumedu and Devikulam from Idukki District and Mananthavady, Sulthanbathery and Vythiri from Wayanad District. The samples are proportionate multi-stage stratified random sampling method. Based on these method 800 samples were collected of which 449 from Idukki and 351 from Wayanad and this is depicted in Figure 1.4.
1.11.3 Period of the study

The study, that is connected with secondary data spans 25 years period starting from the year of liberalisation, i.e., from 1991-2016. However, some of the analyses have been done with the pre-liberalised data set as well; therefore it is inexact to state that the period of analysis is strictly from 1991-2016.

1.11.4 Tools Used for Analysis

The study uses statistical methods like Cuddy-Della Index of Instability (CDI), Analysis of Variance and Post hoc Test, Nominal Protection Coefficient (NPC), Chi-Square Tests, Mann Whitney U Test and Factor Analysis. The instability in area, production, productivity, export and price of pepper and cardamom during the period 1966-2016 is worked out by using the Cuddy-Della Index of Instability (Cuddy and Della Valle, 1978 and Della Valle, 1979). The CDI values are computed for the overall period as well as for the pre (1966-67 to 1990-91) and
post-liberalisation periods (1991-92 to 2015-16). These are compared so as to evaluate the level of instability, if any compared to the pre-liberalisation period. The higher the CDI score, the higher is the instability and vice-versa. Variation in price of pepper and cardamom is evaluated during the post-liberalisation period using ANOVA. Seasonal difference and seasonality of price of pepper and for each period after liberalisation are also evaluated. Price ratio between domestic and international prices of pepper and cardamom is worked out using NPC. Factor analysis is used to unearth the perception of cultivators with regard to various aspects such as intensity of present issues in the spices sector, impact of trade agreements on cultivators, steps to remove the ill effects of international trade agreements and steps needed to rejuvenate the spices sector.

**Evaluation of Instability**

The instability in the non-trended data series is usually calculated by evaluating the Coefficient of Variation (CV). For a time-series data de-trending needs to be done before exploring and explaining the results.

The Cuddy-Della Index of Instability (CDI) can be written as:

\[ CDI = CV \times \sqrt{1 - R^2} \]

Where,

\( CV = \) Coefficient of Variation

\( R^2 = \) Coefficient of Determination
1.12 Limitation of the Study

The area of the study is limited to one of the stakeholders in the spices sector i.e., the cultivators and some of the cultivators were reluctant to reveal their income and their level of satisfaction towards initiatives of government agencies. Another limitation in the perception evaluation is not comparable with pre and post-liberalization thinking. Secondary data for the study were collected from various publications of government agencies, there arise minor changes among the figures. In spite of all limitations, all efforts have been made to ensure the correctness of data collected.

1.13 Chapterisation

The study is divided into six chapters. The first chapter gives what the study intends to cover, i.e., research problem, literature review, objectives, hypotheses, methodology and scheme of the thesis. Chapter 2 elicits the area, production and productivity as well as the institutional linkages required for developing the spices sector inter alia the cost of cultivation aspects for pepper and cardamom. Trade related data and price indicators of pepper and cardamom are analysed in the third chapter. Chapter 4 with the aid of primary data presents the socio- economics and livelihood profile of the pepper and cardamom cultivators and also given an overview of the plantation profile. Chapter 5 is an evaluation of perception of spice cultivators based on primary data. Chapter 6 gives summary of findings, conclusions and policy suggestions.
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Chapter 1
Introduction

Chapter 2
Production Issues and Institutional Mechanism in the Spices Sector
Growth in Area, Production and Productivity, A Pre-Post comparison of Area, Production and Productivity of Pepper and Cardamom, Cost of Cultivation, Institutional setups for the promotion of spices, Development Programmes, Export Promotion Programmes, Promotion of organic farming.

Chapter 3
Export Performance of Spices

Chapter 4
Socio-economic Profile of Spice Cultivators
Basic Profile of Plantations, Socio-economic and Demographic Profile, Income, Experience in Spice Cultivation, Plantation Profile, Financial Assistance Received, Use of Organic Manure for Cultivation, Adhering to International Quality Standards, Expenses in Spice Cultivation, Market Profile, Futures Trading, Satisfaction.

Chapter 5
Perception of Spice Cultivators
Problems in Spices Sector, Impact of Trade Liberalisation, Trade Agreements and its Impact on Spices Sector, Opportunities in the Spices Sector, Removing the ill-effects of International Trade Agreements, Actions required to Rejuvenate the Spices Sector, Role of Government in Rejuvenating the Pepper and Cardamom Sector

Chapter 6
Summary of Findings, Conclusions and Policy Suggestions

Figure 1.5: Chapterisation Scheme
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