Implication of Trade, Livelihood and Employment Exclusion among Workers in Plantation Sector in Kerala

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By

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Under the Supervision of

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Certificate

This is to certify that the thesis titled **"Implication of Trade, Livelihood and Employment Exclusion among Workers in Plantation Sector in Kerala"** is a record of *bona fide* research work carried out by Mr. Rajesh R under my supervision and guidance. This is an original piece of research and has not formed the basis for award of any degree, diploma, associateship, fellowship or other similar title of any other University or Board and is worth submitting for the award of Doctor of Philosophy under the Faculty of Social Sciences of Cochin University of Science and Technology. I also certify that all the relevant corrections and modifications as suggested by the audience during the pre-synopsis seminar and recommended by the Doctoral committee of the candidate have been incorporated in the thesis.

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Supervising Guide

Declaration

I hereby declare that the dissertation titled **"Implication of Trade, Livelihood and Employment Exclusion among Workers in Plantation Sector in Kerala"** is a record of the bona fide research work done by me and that it has not previously formed the basis for the award of any degree, associateship, fellowship or any other title of recognition.

Place: Kochi **Rajesh R**

Date: 09-03-2015

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Abbreviations

AITUC	All India Trade Union Congress
ASEAN	Association of South East Asian Countries
CAGR	Compound Annual Growth Rate
CENTAD	Consortium for Trade and Development
CITU	Centre for Indian Trade Unions
DFID	Department for International Development
FE	Fixed Effect
FTA	Free Trade Agreement
GNP	Gross National Product
GSDP	Gross State Domestic Product
Ha	Hectare
HHI	HerfindahlHirschman Index
IDRC	International Development Research Centre
ILO	International Labour Organization
INTUC	Indian National Trade Union Congress
MDG	Millennium Development Goal
MNREGA	Mahatma Gandhi National Employment Guarantee Act
MT	Metric Tonnes
NPC	National Productivity Council
NR	Natural Rubber
NTB	Non Tariff Barriers
PCGDP	Per Capita Gross Domestic Product
PLC	Plantation Labour Committee
RE	Random Effect
RSS	Ribbed Smoked Sheets
RTA	Regional Trade Agreement
SAARC	South Asian Association for Regional Cooperation
SLI	Standard of Living Index
UN COMTRADE	United Nations Commodity Trade
UNDP	United Nations Development Programme
USAID	United States Agency for International Development

Chapter 1

INTRODUCTION

Contents

1.1 Background of the Study

Plantation sector plays a significant role in the agriculture economy of Kerala. Among the plantation crops rubber, pepper, cardamom and tea are important in terms of income and employment generation in the state. Plantation crops like cardamom and pepper are highly demanded in foreign markets for its better quality. Since Kerala is the principal producer of cardamom and pepper in the country their share to the foreign exchange earnings of the country is also significant. The revenue generated by the export of cardamom and pepper from the country increased significantly over the years. It increased manifold from ₹74 crore in 1991-92 to ₹623

croreduring April–September, 2014. Because of the high exposure of the sector to international markets the price fluctuation is also very prevalent. The ASEAN countries including Indonesia, Thailand, Malaysia and Vietnam are providing intense challenge to the country in terms of Rubber and Spices trade in the international markets. High import from ASEAN countries to India's domestic market over the years has increased significantly resulting in drastic fluctuation in price especially of Spices causing reverberation to the sector affecting the livelihood of farmers and labourers. In this backdrop the study tries to understand the relative importance of plantation sector in the economy of Kerala and also tries to understand the price and trade implications in the sector. The study also tries to understand the nature of employment and livelihood of plantation workers who are in the lower end of the supply chain.

Kerala occupies a lion's share in the area and Production of natural rubber, pepper and cardamom in the country. Almost 80 percent of the total production of natural rubber pepper and cardamom comes from the state of Kerala. In terms of area, 548225 Ha out of the total 778000 Ha of natural rubber farming in the country is in Kerala, whereas 648220 MT out of 844000 MT is produced in the state. While observing cropping pattern of pepper in the state 84065 Ha in area was cropped in the year 2013-14 whereas production stood at 29408 MT in the year 2013-14. Cardamom was cropped in around 39730 Ha in the year 2013-14 with a total production of 14000 MT in 2013-14.

The plantation sector (Natural rubber and Spices) is beset with problems especially in the form of stiff competition from ASEAN countries as ASEAN countries are the major players in the production of natural rubber and pepper. High competition from ASEAN region over the years has

resulted in increased fluctuations in the domestic price of plantation crops. The situation is more pertinent in context of the India-ASEAN FTA which was signed in the year 2003 and came into effect in the year 2010. Even though plantation crops are being kept in the excluded list till 2016, removal of many of the non-tariff barriers have already resulted in increase in import of plantation crops to India from ASEAN countries (Vishwanathan and Shah, 2008). The situation is more pertinent in the case of natural rubber and pepper as the easing of trade policies by diluting or removing quantitative restrictions enabled industries in India to import huge quantities through duty free channels which was basically instituted as an incentive for promoting exports. Import of natural over the years increased significantly from 68718 MT in 2004-05 to 325189 MT in 2013-14. Similarly in the case of import of pepper the value of import 176 crore in 2007-08 to 616 crore in 2013-14. The easing of quantitative restrictions and thereby increased import from ASEAN countries resulted in high market fluctuation in domestic prices thereby causing severe negative implication on the livelihood of workers. Given the present situation, the removal of plantation crops from the exclusion list after 2016 will have serious ramifications on the plantation economy of the state.

In terms of employment in plantation sector, the main features of a plantation can be termed as those agricultural enterprising which gave prime importance to produce cash crops rather than other agricultural crops mostly of one or two types of crops in large areas of land using cheap labour. Most of the labour in the plantations is informal in nature. Employees are considered to have informal jobs if their employment relationship is in law or not practice not subject to national labour legislation, income taxation, social protection or entitlemet to certain employment benefit (advance notice

of dismissal, severance pay, paid annual leave or sick leave etc). The reasons may be the following non declaration of the jobs or the employees, casual jobs, or jobs of limited short duration or wage below a specified threshold (eg. for social security contribution), employment by unincorporated entreprises or by persons in households, jobs where the employee's place is outside the premises if the employer's entreprise (outworker without employment contract) or jobs for which labour regulations are not applied, not enforced or not compiled with for any other reason (ILO Report, 1993).

While observing the trends in employment in plantation in the state, the sector plays a key role as it provide livelihood opportunities for about 14 lakhs families. It has also been instrumental in developing many of the remote areas into extensive rubber, coffee, tea and spices plantations etc. Among the plantation crops, rubber provides the maximum number of employment opportunity. Over the years the total cropped area of rubber and spices has increased significantly thereby contributing immenselyto the rural labour employment market of the state.

Employment in rubber and spices plantation in the state have a historical background right from the colonial period. The present state of social exclusion among workers in the plantations has direct linkage to the historical perspective of migration and concomitant exploitation occurred during those days. During the early days rubber plantations were concentrated in the districts of Idukki, Kottayam and Pathanamtitta. Later, fall in the profit margin of crops like rice and coconut and increased price of rubber shifted the interest of farmers to rubber which resulted in growth of rubber plantations extensively in the state. In the case of spices like cardamom and

pepper most of the plantations in our state are concentrated in the districts of Idukki and Wayanad.

Referring to the increase in small holdings in rubber plantation, the spurt has been accelerated by a host of socio-economic and political factors including the land reforms initiated in the state since 1957 exempting all plantation crops from land ceiling, progressive nature of the provision of the Plantation Labour Act 1951, Agricultural Income Tax and Plantation Land Tax and the prevailing Law of Inheritance. Consequently the relative share of area under small holdings in the state increased from 34 percent in 1946 to 90 percent in 1995-96 resulting in the small rubber plantation occupying the major share in the total rubber plantations (Prakash, 1999).

In terms of the size of plantations, the situation in spices plantation is quite contrary to that of rubber plantations in the state. Most of the cardamom plantations are owned by big land holding farmers, while about 90 percent of the pepper plantations are owned by small growers. Most of the cardamom plantations in Kerala now-a-days hire contract labourers from Kambam area of Theni district in Tamil Nadu. In the case of contract labourers, the planters are not supposed to give any extra benefit like medical benefits, accommodation etc., hence it is profitable for the planters. Contractualisation of job in plantations is also hampering the collective bargaining capacity of labourers and fall in the trade union activism in plantations.

While observing the socio-economic conditions of workers in the plantations, the condition of workers in spices sector is more vulnerable compared to that of workers in rubber plantations. Even though the Plantations Act of 1951 specifically mentions about the basic amenities to be

provided for labourers, most of the plantations fails to provide many of the facilities. The workers are forced to work and live in unhygienic surroundings leaving a heavy toll on their health conditions. Insecure and unhealthy working conditions make them socially as well as economically weak which automatically exclude them from the main stream. Bad health conditions and low education leave them with lesser options forcing them to enter and remain in a vicious circle of poverty and thereby inherit the culture of poverty. Plantation workers play an important role in development of plantations as the production and productivity of rubber plantations heavily depended on the performance of the workers employed therein. So the welfare of plantation workers remains significant. While understanding the present state of plantation in the state requires some prior understanding regarding the origin and evolution of plantation in the state

1.2 History of Plantation in Kerala

The history of plantation sector in Kerala dates back to the pre independence period i.e. during the colonial rule in India and can be considered as a product of colonialism (Raman, 1986). In Kerala the erstwhile Travancore state was the first to have plantation estates in the late 1860s. The plantation estates in the earlier period were specialized more in growing tea and coffee. The planters mostly British with their influence in the imperial government made constant political pressure on the Travancore princely state to acquire cheap land, labour and capital necessary for establishing plantations. The number of local planters was very less and they owned only small area of land when compared to British planters. The institutional role played by the British government paved the way for the establishment of plantations in Kerala (Umadevi, 1989). The institutional factors like government, family, caste were

very beneficial in the growth of plantation sector in the state. Governmental measures like provision of land at easy terms and promotion of labour migration played a significant role in the flourishing of plantation sector in Kerala in the 19th century. A dual economy consisting of a market based production of cash crops and other tertiary industries related to trade and transport on one hand and the traditional sector consisting of the cultivation of crops like paddy etc on the other side (Umadevi, 1989).

The development of plantations necessitated two basic requisite i.e. large areas of cultivable land and large labour force. During the formative years plantations faced the problem of acute labour shortage. They had to depend on migrant labour whose migration had to be induced by the planters. This resulted in large scale migration of labourers from far flung areas lured by the planters of attractive wage and living conditions. The push and pull factors were very much visible there in the migration of labourers to the plantations during those time. Most of the plantation workers came from areas where poverty was very rampant. For the low caste Indian labourers the opportunity to work on plantation meant a way out of their depressed conditions in their caste ridden villages. Some of the workers left areas affected by severe famine. Only extreme poverty and scarcity of work in their own villages such as famines, flood etc could drive them to this alternative (Umadevi, 1989). Thus the push factors like the prevalence of famine, caste enmity and pull factors like higher salary and better living conditions attracted workers to the plantations. Labourers came from distant places dreaming of high wages but they were met with harsh treatment from the part of planters in the form of wages lower than promised, unhygienic working and living conditions.

As labourers were from far-away places it resulted in the permanent settlement of workers with their family. This permanent settlement of workers resulted in the availability of cheap labour as the whole family including women and children worked on the plantations at the wage determined by the planters. The migration of family also ensured that labour could be reproduced which in turn would ease the problem of further recruitment in the future (Kanchan and Bhowmik, 1999). Women labourers were entrusted with the task which requires no skills. This later turned advantageous for the plantation owners as they used the difference in skill argument to justify the lower wages paid to women workers compared to men workers, in a sector where the wages were already low. There was also a phenomenal trend in the plantation sector regarding the participation of women. Women became an indispensable part of labour in plantation from the very beginning.

1.2.1 Influence of the British Raj in Plantations

Till 1945, the plantations were like little kingdoms of Planters. The major areas where there was high concentration of plantations were Anamallais in Coimbatore District, Highways in Madurai and Singampatti in Tirunelveli District of Madras High Ranges, Vandiperiyar and Peerumade in Travancore and coffee estates in Mysore. There were no sizeable towns near the areas and the public had no contact with the workers of these estates. The British Raj was there to help them and therefore the planters ruled like autocrats in their territory and misery of workers in these plantations started from there. The low educational levels and lack of other employment opportunities of the workers paved the way for increased exploitation by the planters on them (Nair, 2006). The remote locations of these plantations also made the workers unaware about the freedom movements. The British

government lent the planters with the right to exploit the workers in the plantations. Even law like Madras Planter's Act of 1902 was enacted to help the planters. Social workers were not allowed to contact the workers in the estates. During the days of British Raj plantations in Kerala was reported to be the worst in terms of violation of labour rights as well as human rights.

1.2.2 After Independence

It was supposed that the misery of plantation workers will subside with the advent of independence. The younger generation of the workers in plantation estates, were hoping that the estates would be bought over by Indians and that the Indian employers would give them better treatment than the white employers after independence. But soon they realized that colour of the skin of employers did not have any bearing on their treatment of their workers. Indeed many workers in the plantations felt that the European employers were better.

After independence various laws were enacted for protecting the interest of workers like the Industrial Disputes Act, the Factories Act had been passed to confer and protect the rights and privileges of workers, which they did not enjoy earlier. In the case of plantation workers, laws like the Payment of Wages Act and Minimum Wages Act was implemented. The Plantation Labour Act gave workers many rights and benefits like free medical aid, sickness benefit, maternity benefit, annual leave etc. Plantation Labour Act significantly improved the working conditions and rights of workers and they got freed from the inhuman treatment of plantation owners to a certain extent. But the sense of optimism because of these laws did not last for a long time as the workers came to realise that the laws remained as laws and their living conditions did not changed substantially.

One significant development after the enactment of plantation Labour Act was that in order to escape from the stringent labour norms in the Plantation Labour Act, the act was circumvented by most of the Indian Planters mainly by the method of fragmenting the estates, so that the acreage came below that defined as Plantations in the Act even though this fragmentation in most cases remained only in documents. Housing conditions continued to be deplorable. In Kerala by the fragmentation of the estates the employers employed more of temporary and casual workers thereby denying the legitimate rights and privileges of workers and thereby escaped from the strict labour laws under the Planation Labour Act and resulted in the casualization of labour in plantations which was more profitable for the planters.

1.2.3 Trade Unions in Plantations

In Kerala, the first union to be started for the plantation workers was by B.K. Nair under the auspices of the I.N.T.U.C. Almost at the same time another union was started in the High Ranges also under the I.N.T.U.C. But after the Communist Party of India (CPI) came to power in 1957, the A.I.T.U.C unions grew fast. Soon they became the dominant force among the estate labours. Later when the CPI split into CPI and CPI (M), the AITUC unions in the plantations found some of their member joining the newly formed C.I.T.U. The RSP had organized estate workers in the Thenmala Valley under the initiative of ParakkulamBhasi and N. Sreekantan Nair. The Socialist Party also took a hand in the game but their influence was limited to the small coffee estates in Wayanad and Malabar.

There were certain common features with regard to all early labour unions in the plantations. First, they were not recognized on an industry-wide

basis like the Estate Staff Union of South India (E.S.U.C.I) which was the trade union body for the staffs of estates other than workers in plantations. Indeed there was not even one union, which was at least state wide in extent. All of them operated with in districts while some of them operated within districts or confined to local levels. Second unlike the ESUCI, political parties had started most of the early unions of workers. In none of the cases, the workers had not been found to take the initiative to organize themselves. So the trade union movement among the plantation estate workers had been started by outsiders, some of them with laudable objectives and motives and others with the sole objective of making the trade union movement for meeting their source of livelihood. B.K Nair of the I.N.T.U.C, P.Ramalingam of the A.I.T.U.C, P.L. Perumal of HMS etc. were the most influential and honest leaders who worked for the sole benefit of the plantation workers during the early days of trade union movement in the plantations.

Corruption was rampant among the leaders of Plantation Trade Unions. Since the workers did not have any knowledge to organize and run trade unions, outsiders were required for leading the movement. These outsiders played an important role in organizing the workers but at the same time they maintained in good relations with the planters by getting monetary and other benefits from them in regular terms. Planters found this as a good option so as to maintain peace in the plantations and to stop the workers from protesting.

1.2.4 Induction of Plantation Labour Committee and the Tripartite Conferences

Another important initiative happened in the plantation sector of Kerala after the initial days of independence was the tripartite relation initiated and nurtured by the state government since the early 1950s with the active

cooperation of trade unions and employers and their associations. This tripartism came to stay in the plantation industry in the form of Plantation Labour Committee (P.L.C.) under the initiative of the labour commission of the state. It could be undoubtedly said that the Plantation Labour Committee (P.L.C.) is one of the important components in maintaining the industrial relations in Kerala as it was very vulnerable to protest and struggle from the part of labours.

An agreement was also made on the recognition of trade unions in the first tripartite conference which is considered as the Magna Carta of the trade union movement in Kerala. The agreement put forward path for negotiations between plantation unions and the plantation owners. This agreement could also be considered as a Code of Conduct and a Code of Inter-Union Harmony.The tripartite conference also discussed the evil of the Kangany system of recruitment of labourers in the estates and reached a decision to abolish it ultimately. The replacement of Kanganis by a new cadre of labour supervisors was tried at a later date, when there was a greater consensus between the management and trade unions in plantations. Industry-wide settlement of bonus was another important achievement of the conference.

The issues relating to the providing equal wages for both men and women, wage differentials etc. were settled. The Conference also decided to refer the question arising in individual estates to the consideration of this committee on mutual agreement. Based on this view the state government constituted the Tripartite Plantation Labour Committee (P.L.C). This produced a healthy climate of industrial relations in the plantation industry where great lawless and uncertainty prevailed in earlier years. The P.L.C started holding regular and successfully settled several complex issues in the plantations. The

members of the P.L.C used to participate in the deliberation with an honest objective of reaching an amicable settlement.

Another important achievement of the Plantation Labour Committee (P.L.C.) was its efforts in introducing gratuity scheme on a voluntary basis by 1962. Under the P.L.C. Agreement, gratuity would be payable to all employees in the plantation who have employed ten years or more of continuous service at the rate of fifteen days of wage based on the least drawn wage rates immediately preceding the date on which gratuity becomes payable, for every year of service, subject to a maximum of twelve month's wages. Gratuity would be payable to the worker at the above rate at the time of his voluntary retirement after the qualifying period of superannuation or on attaining the age of 58 years or on his retirement after one year of service on account of permanent total disablement due to accident or disease. The gratuity scheme also detailed that the gratuity would also be payable to the nominee of the worker, or in the absence of the nominee, to the legal heirs of the workers who have completed one year of service on his death while in service. For avoiding the likelihood of large number of workers simultaneously seeking payment of gratuity, payment of gratuity would be limited to five percent of the total number of employees in the estate in any calendar year, order of priority being for people with long services. The gratuity scheme was not applicable to those estates which were outside the purview of Plantation Labour Act. Eventually through the circumventing of Plantation Labour Act, by the fragmentation of plantation estates and by the casualization of labour, various acts introduced by respective governments failed to produce the intended outcome as far as improvement in livelihood and employment of plantation workers are concerned.

1.3 Livelihood of Plantation workers (Rubber and Spices)

Livelihood plays a determining role in framing the identity of an individual in a society. Without a better livelihood it is impossible to aim for a better quality of life. Livelihoods may be defined as the means by which households obtain and maintain access to the resources necessary to ensure their immediate and long-term survival. The factors essential for livelihood can be classified into six categories: physical, natural, human, financial, social, and political (US Aid Livelihood and Conflict Report, 2005). Households use these assets to increase their ability to withstand shocks and to manage risks that threaten their well-being. UNDP (2000), in its Millennium Development Goal (MDG) considers livelihood as an important factor responsible for eradicating extreme hunger and poverty and thereby attaining a better human development index. The concept of poverty and livelihood is intertwined to a very great extent. The higher the livelihood option the higher is the chance of the individual to get rid of poverty. The inability to get livelihood options results in the persistence of poverty and inability, ultimately leading to "culture of poverty".

The International Labour Organization notes that the term 'Plantation' at first referred to group of settlers or the political unit formed by it under the British colonialism especially in North America and in the West Indies (ILO Report, 2001). Plantation can be defined as an instrument of force wielded to create and to maintain a class-structure of workers and owners connected hierarchically by a staff line or overseers and managers (Bhoumik, Sharith 1980). Plantation is being distinguished from peasant agriculture by its large scale enterprise which normally requires more labour per unit of land (Mynt, 1973).

1.4 Employment in Rubber and Spices Plantations

The ownership of rubber plantations in Kerala is classified in to two categories i.e. small and large growers depending on the land holdings according to the Rubber Act Rules of 1947 which was amended on 22th January 2010. Those owning upto 10 hectares (24.7acres) are considered to be small growers and planters who possess more than 10 hectares are considered to be large growers. About 93 percent of the total rubber plantations fall under the small holders with a total productivity share of about 85 percent.

A perennial crop like rubber demands an uninterrupted supply of skilled workers relatively for a longer period of time. About 80 percent of the total employment in rubber plantation arises out of tapping and the labour requirement for fertilizer application is only 20 percent (Viswanathan et. al., 2003)

The characteristics of the market for tapping labour may be attributed to a very great extent to the following features.

1) Regular work with an average number of days of employment of 111 days.
2) The existence of a permanent employer.
3) Interest free wage advances and other pecuniary benefits.
4) Tapping work being confined to forenoon hours a facility which enables tapping labourers to go in for other work if they wish.
5) The supply of tapping labourers to the natural rubber sector is influenced not only by the wage level but also by the employment

conditions in the next best alternative employment avenues in the rural sector.

Therefore wage rate for tapping labourers may be compared with the wage rates for other agricultural labourers in the locality (Mohankumar and Binny, 2005).

In rubber plantations, the main work is collecting latex from the rubber trees and it is mainly done by the male workers. Unlike other types of casual works in the farm sector rubber tapping demands labourers to undergo apprenticeship for not less than a year and then later they go for fulltime employment in rubber tapping (Mohan and Binny, 2005).Tapping normally takes place early in the morning, because during the early hours the internal pressure of the tree will be very high which is suitable for tapping. A good tapper can normally tap between 450 and 650 trees. Trees are usually tapped alternate or third daily which varies from plantation to plantation. The latex, which contains 25–40 percent dry rubber, is in the bark, so utmost care is required while tapping as cutting right through to the wood will result in later tapping difficult because of the deformity in the bark. Usually a panel is tapped at least twice, sometimes three times, during the tree's life. All these depend on the skill and efficiency of the tapper because the critical factor is bark consumption. 25 centimeters of (vertical) bark consumption per year is considered to be the standard tapping in Malaysia. The latex tubes in the bark ascend in a spiral to the right. For this reason, tapping cuts usually ascend to the left to cut more tubes.

This nature of rubber tapping demands special skill which has to be acquired through training. So there is a necessity to work as an apprentice for

a certain period for earning the skills. The situation is same in every rubber plantation irrespective of the size of holdings. With the increase in the price of rubber the wages for tappers have also increased from ₹55 to ₹ 95–100 Per 100 rubber trees. Most of the rubber tappers tap up to ₹350 to 450 rubber trees per day. This has resulted in a commensurate increase in income to a great extent. The rubber shades is being extensively used in plantations irrespective of the size because of the increased price of rubber. It has enabled the rubber farmers to earn yield during rainy season and thereby providing employment and wages for the tappers. It has been observed that tappers used to get advances wages from farmers varying from₹1000 to ₹5000. During the decline of price the situation was quite different. They also avail other benefits like assistance for house construction, Children's education and also incentives during festival occasions like Onam and Christmas.

The efficiency and high skill requirement for the job has resulted in less availability of tappers. The higher wages in other unskilled jobs also is a cause for the situation. So the existing tapers are able to demand for a higher wage.In the case of Rubber, the sector has the potential of providing year round employment, when compared to other major crops in the state like paddy and coconut which are highly seasonal in nature. The phenomenal decline in the area and production of paddy and coconut over the years and the increase in rubber plantations can be attributed to the high labour cost. . This is significant in the context that labour intensity in rubber plantation is relatively low when compared to other major crops in the state.

While observing the labour in small rubber plantations, the rubber farmers seemed to be offering the labourers different types of incentives. Some of them offered a few days wage in advance which was to be deducted

in easy installments with a view to ensuring continuous availability of workers. Some others gave the workers interest free loans with fairly long repayment periods. Casual workers who are employed for a fixed wage rate are often offered the additional incentive of mid-morning meals and evening tea and sometime breakfast also. It saves the working time of the labourers who otherwise may go for tea and snacks to a restaurant which may not be in the immediate neighborhood.

A cropping pattern has an implication for the demand for labour. Rubber is not generally considered to be labour absorbing. It generates demand for labour during the initial three to four years. After that maturing, the tree requires a less quantum of labour. Once the tree has grown the major source of demand for labour is in tapping the rubber. Employment in spices plantation also proves to be similar to that of in rubber plantations as spices plantations are also labour absorbing. Seasonality nature of employment is more significant in spices plantations when compared to rubber plantations as demand for labour rises in spices plantation during the maturing and harvesting time. The existence of plantation has increased the work participation in the rural areas. There is a high correlation between the plantation employment and work participation rate in the context of Kerala economy. The presence of plantation employment in the districts of Idukki and Wayanad has enabled these districts with the reputation of having the highest work participation rate in Kerala. Idukki has recorded the highest total WPR as per both 1991 and 2001 censuses.

Regarding collective bargaining and trade unionism of plantation workers is comparatively less in rubber and spices plantations, contrary to the organized nature in tea and coffee plantations in Kerala. One of the reasons

for this organized nature in tea and coffee plantations is that most of the plantations are big in size. So the work force is having a better possibility to get organized. Contrary to this, workers in the rubber and spices plantations are not organized except in large plantations because majority of pepper and rubber plantations falls under small holdings. Even in large plantations (rubber and cardamom) casualisation and contractualisation of labour hampered the collective bargaining capacity of workers.

1.4.1 Women Workers in Plantation

As mentioned in the introduction, women have occupied a very important role in the plantation labour because of the relatively unskilled nature of job. Women workers constitute about 50 percent of the total workers in the plantation sector. However, in rubber plantations only39.9 percent women workers are reported to be employed (MoL Report, 2009). Most of the plantations are located in difficult terrains which are sparsely populated. So a large workforce required in the plantations was recruited from other areas which resulted in the migration of the whole family. As a result women workers were inducted in to the labour force because the wages to women workers were less compared to men and job in plantations required less technical skill when compared to other jobs. Women employees' working in plantation sector is mostly confined to lower level jobs. Their occupancy in the supervisory level or other higher level of post is somewhat minimal. It can be attributed to the low level of educational qualification or lack of technical skills among the women workers.

An extensive study by the National Productivity Council (2009) on "Globalization and Gender" relationships in plantation sector, food

processing, textiles and clothing, handicrafts, and fisheries and other marine products, finds evidence of increased employment in most of these sectors after the trade liberalization. The study points to the fact that the gender-wage disparity irrespective of industry, region or location is still prevalent especially in the context of globalization. In addition, according to the report, gains in income are comparatively higher for men than women in a globalized environment. Constrained by their lack of skills, women have been pushed towards lower-paid lower-skill jobs. Even though the report states an increase in the income of women and economic independence, it cautions that "the situation is yet to achieve a notable improvement in terms of real empowerment for women, equitable distribution of household responsibilities, equal pay for work of equal value and gender balance across occupations". It also mentions that the globalization has brought a number of benefits to the labour market in the country but the benefit received by women workers are less when compared to the male workers (NPC, 2009). A study conducted by the Ministry of Labour (2009) states that only 38.9 percent of cardamom plantations provide maternity benefits to women workers.

1.4.2 Health Issues of Workers in Rubber and Spices plantations

Health condition of workers in the plantation sector in the state is quite serious. Workers in the rubber and spices plantations are faced with multitude of health issues similar to other industries. The continuous exposure to the fresh latex during tapping process, acids used for coagulation of latex and usage of fertilizers and over use of pesticides used in the plantation directly causing allergic reactions. In spite of these allergic symptoms, the regular exposure to these above mentioned things cause respiratory problems, itching and others adds the tapper.

The overuse of fertilisers is adversely affecting the health of the plantation workers in spices plantations. As per the study report of CENTAD by Sengupta and Gopinath (2009) states that increased use of fertiliser cause severe headache, vomiting, lack of concentration, difficulty in breathing, nuerological diseases like depression, lung diseases and may contaminate the water which they use for drinking and other domestic purpose.

Tapping during semi rainy days causes for the spread of fever and other fever based health issues as rubber plantations are considered to be an important hub of mosquitoes. Rubber tappers have to tap the trees in the early morning. Some of the tappers start tapping around 3 am. This results in slower digestion process, head ache, sound less sleep, sleepy mood in the day time etc.

Workers in rubber plantation also suffer from both physiological and psychological health issues (Reddy et.al, 2009). The research by Reddy et.al, (2009) found that the regular Rubber tapping has caused health problems among rubber tapping workers. It varies from simple musculoskeletal aches to more serious and complicated structural damage to bone, muscles, tendons and nerves of musculoskeletal system. The study found that themost of the workers suffers from multiple ailments like neck pain (72.2 percent) followed by low back pain (66.2 percent), shoulders pain (44.9 percent), knee pain (55.8 percent), ankles/feet pain (34.4 percent), elbow pain (33.2 percent), upper back pain (30.8 percent), wrists pain (50.1 percent) and hip/thighs pain (15.3 percent). The workers were in potential risk of neck pain and various other musculo skeletal diseases (MSD) and lung function abnormalities due to exposure to acids, which are being used for the coagulation of latex-these are the major health issues.

The health conditions of workers in the spices plantations are quite similar to that of in rubber plantations. Unhealthy working conditions including over-use of fertilizers are causing a heavy toll on the health condition of the workers making them even more vulnerable in terms of improving their livelihood.

1.5 Statement of the Problem

Plantation economy remains significant in the context of Kerala as about 85 percent of the area and production of natural rubber in the country originates from Kerala (Rubber Board, 2014). Similarly Kerala remains the top contributor of pepper production and cardamom production (Spices Board 2014). During (April to September) 2014,₹623 crore was generated from the export of Spices from the country. In the case of natural rubber export is minimal because of the high domestic demand from rubber based industries in the country. So the sector is crucial for the economy in terms of generating foreign exchange. Because of the relative development of the plantation sector (rubber and spices) the share of employment in the sector also increased significantly. In this situation it could be rightly said that employment in plantation plays a critical role in the rural labour market (Table 1.1)

Table 1.1 Number of Workers Employed in Plantation (in Millions)

Plantation	No. of Workers
Spices	0.15
Rubber(small-large)	0.36

Source: Rubber Board, Spices Board, 2013

Increase in the price of plantation crops namely natural rubber and spices compared to the principal crops in the state like paddy and coconut

resulted in the shift in the agriculture pattern in the state. Rise and fall in the prices of agriculture commodities can make significant reverberations on the employment and livelihood of workers employed therein. In India, during the post-liberalized period from the early 1990s the exposure of the plantation crops to world market has resulted in trade distortion in the form of Regional Trade Agreement (RTA) and Free Trade Agreements (FTA) has resulted exposure of the plantation crops to world market which in turn cause stiff competition from foreign markets. Drastic fluctuations in the price of plantation commodities became the order of the day because of the reduction in non-tariff barriers (NTB) and other measures of reduction in quantitative restrictions resulting in high volume of import especially from ASEAN countries. Fall in price of plantation crops resulted in increased indebtedness among farmers impacting the employment patterns in the plantations in a negative manner.

In the case of pepper, the fall in price of pepper from₹260 in the late 1990s to as low as₹66 in 2005-06 resulted in large scale misery to the livelihood of farmers and workers in pepper plantations. The increase in price fluctuations resulted in indebtedness among workers because the number of work days in pepper plantations was largely dependent on the price of pepper. Most of the farmer suicides in Wayanad district were because of this volatility in the price of pepper and spices (Vineetha and Nair, 2007). Farmer's indebtedness automatically paved the way for increased problems among the labourers causing large scale unemployment of agriculture labourers. This resulted in fall in the wages and thereby causing labour redundancy and ultimately forcing them to remain poor. In addition to the historic reasons responsible for the social exclusion of workers in the

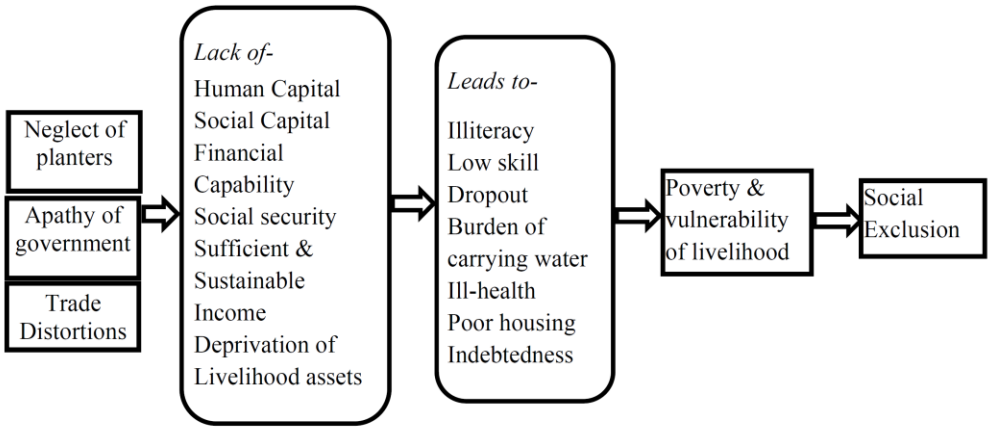
plantation sector, price fluctuations in the post liberalized period made the employment and livelihood pattern of workers more vulnerable.

There exist several socio-economic problems as the plantation workers generally live in remote terrains in conditions with less access to education, health care, safe drinking water, sanitation, crèches, proper housing, nutritious food etc. In some extreme conditions they are susceptible even to starvation death. Hunger and malnutrition are no longer remaining things of the past as disclosed by a doctor working in the plantation areas, "We were beginning to feel that severe malnutrition was a thing of the past. Suddenly we are seeing an alarmingly steady increase in the numbers of malnourished children," (Actionaid, 2005).Workers in plantation in India are highly dependent on plantations for food, drinking water, housing, education and healthcare (Chattopadhayay, 2005). The majority of the plantation workers are either migrants or tribes and the plantations are often situated in isolated, remote areas. When the plantations close down, the workers are left with few alternative means of livelihood (CEC, 2003). Those remain open either cut or fail to pay workers' wages, demand tougher standards on quantity and quality from workers, replace permanent workers with casual labourers and deny legal entitlements such as adequate housing, drinking water, electricity and healthcare to workers.The crisis in plantations also results in the closure of even the health facilities resulting in some instances, the death of women during pregnancy. This has resulted in many children stopping their schooling, as they cannot afford the commutation facility, uniforms and books they need. The employees face the problem of insufficient wage rate compared to the living expenditure, which in most of the time is less than the wage rateprevailing in the state economy in many other sector or even the

wage of casual workers in the state and hence they are found to be dissatisfied with the poor living and working conditions (Joseph, 2002).

Working environment of plantation is also adverse causing a heavy toll on the health of the workers. Workers in the rubber and spices plantations are faced with multitude of health issues similar to other industries. The continuous exposure to the fresh latex during tapping process, acids used for coagulation of latex and usage of fertilizers and over use of pesticides used in the plantation directly causing allergic reactions on the workers causing decline in their human capabilities resulting in deprivation and consequently leading to social exclusion. In addition to this there are many reasons for exclusion. The condition and process leading to social exclusion of the plantation workers can be put together in a theoretical framework as shown in Figure 1.

Figure 1.1 The condition and process of social exclusion as happening among Plantation workers: Theoretical Framework



Even though literature provides enough evidence to highlight the poor employment and livelihood option of workers in the plantation sector, they

remain poor documents in understanding the livelihood pattern of workers in the plantation sector. Based on the literature as well as on the exclusion tendency that is happening in the sector has helped to develop a theoretical framework starting with the problem which in turn is linked to the human and other types of incapability's leading to unemployment, poverty and finally to social exclusion. All these are corroborated in the existing trade implications in the plantation sector.

1.6 Literature Review

As mentioned earlier the plantation sector in the state has a very significant historic setting dating back to 19th century. The colonial presence influenced in the setting up of plantations in the state. Literature review is being done taking into consideration the historical setting of plantation labour and understanding the nature of exploitation backed by theoretical background of poverty social exclusion and the trade and poverty relationship.

Looking into the origin of plantations in the state, Raman, 1986; Hayami and Damodaran, (2004) explains that historically plantations were a product of colonialism. A dualistic system of production characterizes plantation crops. While one sector consists of large holdings (including corporate entities) employing hired wage labour, the second sector comprises of farms growing plantation crops together with other crops in smallholdings typically ranging from a half a hectare to three hectares.

Nair, (2006_a) narrates extensively about the emergence of plantations in the state with the setting up of first coir factory in Alappuzha in 1859 by a European named Darragh. At least more than six decades prior to it, the East India Company was reported to have set up a large estate to grow spices in

Ancharakandy in Malabar in 1797. Two year later estate was handed over to Mardc Brown. Coffee, Pepper, Clove were the major spices grown in these estates on an experimental basis. Regarding the development of plantation in Travancore province, the plantation estates were established in 1860 in the Veli hills under the guidance and direction of Vishakam Thirunal Maharaja and his Dewan (Chief Executive) MadhavaRao. In 1878, the Maharaja of Travancore had assigned 215 sqaure mile territories from the land held by the Poonjar Edavaka (Royal Family) in the Devikulam taluk in the high ranges to one Sir Daniel Munro. In 1897 this estate came under the control of the Kannan Devan Hill Produce Company (K.D.H.P. Co).In the last quarter of the 19th century plantations were set up in Wayanad too. The German Basle Mission had started some textile mills as well as Tile factories in Kannur and Kozhikode. In 1857 the Cochin chamber of commercewas started as an association of British merchants and trading house. The leading members of the chamber were Aspin Wall, Pierce Leslie,Volkart Borthers, William Goodacre, Parry and Company, Madura Company and Harrison and Crossfields. It was under their leadership that a large number of factories and plantations were setup in Kerala at different centres.

Nair, (2006$_b$) describes that the Pandarappatta Proclamation of 1865 and the Jenmi-Kudiyan (landlord-tenant) Proclamation of1867 helped to create a unique rural bourgeoisie class resulting in the emergence of a new order of capitalism in the state with trading profit/merchant capital replaced by industrial capital. During this transition economic surplus was invested extensively in the highlands of the state in starting plantations with crops like tea, coffee, cardamom and rubber resulting in the establishment of large and small plantations. Plantations were owned by both locals and British

capitalists. From day one, the plantations became notorious in their treatment of labour. Following it started an era of working capital mobilisation and struggles became inevitable. In this context emerges the significance of the condition of life and labour in the plantations.

Situation of Life and Labour in Plantations

A detailed account of the reasons for the migration of workers to plantation areas is explained by Paul (1999) as he illustrates that most of the plantation workers came from areas where poverty was very much rampant or from places where they had limited access to means of production and from areas where many of them were indebted to local money lenders. For the workers the movement to plantations for job was more of an escape from abject poverty, indebtedness and exploitation from upper caste people as most of them belonged to the lower caste in the caste hierarchy.

Another narration regarding the permanent settlement of workers in plantation by Sarkar,(1988) narrates that the permanent settlement of workers in and around the plantations is mainly because recruitment of workers in the early stages was family based. This is due to two major reasons, first, the planters wanted cheap labour who would be permanently settled in the plantations. Second family migration would ensure uninterrupted flow of labour supply in the future.

Raman, (1991_a) mentions about the dismal condition in which plantation workers employed and depicts about the structure of workforce in the plantations during those days. The workforce in the estates consisted of estate or garden labour (also known as estate coolies) and factory labour. In the early years, labour was recruited through the so-called Kanganis or jobbers

until recently when that system was legally abolished. However, due to large-scale unemployment and easy availability of labour, the employers in the plantation had begun to reduce the number of permanent workers and started recruiting more of casual labour which was quite stressful. In the early years, labour was brought from neighboring border areas of Tamil Nadu lying adjacent to the high ranges instead of recruiting Kerala labour from mid land and coast land and the exploitation of labourers were prevalent.

Looking in to the history of exploitation of plantation workers, Raman, (2002_a) explains that in spite of the fact that slavery had been abolished by the mid-nineteenth century, workers on plantations found themselves no better off than slaves and bondsmen. So intensive and painful was the ill treatment faced by them. When capitalist plantation production made in-roads on a massive scale into colonized southern India in the middle of the 19^{th} century, it necessitated a mass of labour which had been made 'free' in a double sense: free of any means of subsistence, and free to sell their labour power. Yet, the bondage - bondage in freedom - remained for decades; with respect to the feudal Masters in the countryside first and later the planter patriarchs in the high ranges.

Kurup (1984) and Umadevi (1989) discuss the interpretation regarding early migration of labourers from various part to the plantations holds to the argument that Christian missionaries and humanitarian efforts in favour of the abolition of slavery were, in fact, primarily meant to create the free labour market that was required by the European capitalist planters. Though not explicitly stated, most of the proponents of this perspective treat the abolition of slavery as a mere piece of legislation with the hidden intention of providing cheap labour to the plantations.

Raman, (2002_b), also elaborates the recruitment of labour to plantation from various places and emergence of class exploitation in the place of already existing caste exploitation and thereby making the life of workers no better. Because of the high labour intensity of plantations, the planters were compelled to recruit workers from the already emerged 'labour catchment areas' of Salem, Madurai, Ramanad, Tirunelveli, Tiruchirappalli, Tanjavur and Coimbatore. They were recruited - largely on a family basis by the kanganies. The complexities of the caste structure in the plains thus do not seem to have been reflected as such in the caste-class reality in the plantations. This common background ought to have helped them forge a common class identity but this was not to be, for obvious reasons. However, the fact that the lives of the dalitsand the other backward communities in the plains had been full of hardships and utter misery as the degree of oppression they had had to suffer at the hands of the caste-Hindus was so intense. While asking the question of whether the shift to plantation improved the life of workers, the experiences they underwent at the hands of the European planter, seems that what had actually emerged was only a change of Masters.

Raman, (1991_b) details that during the early years of plantation life was terrible for the workers. The arrangements for housing was so pitiable that the houses were built like a barrack with five to six rooms adjacent to one another and had a long common veranda in front, while behind each roof was a kitchen. But in each room there were at least two families while another family occupied the kitchen. The workers had partitioned two or even three partitions, by means of flattened out kerosene oil tins, gunny bags and wooden posts driven in to the floor. In these portioned room the labourers with their family lived in the most congested manner. Even the verandas were also partitioned into a number of

such rooms. The so-called lines and quarters were unbearably filthy and congested. Some times in a room besides the parents, married sons and daughters with their spouses were forced to live. Because of such overcrowding and intermingling of families, incest and extra marital relations were very common.

Nair, (2006_c) details about the education background of workers and the role of Chettiar in increasing the misery of workers during the period. In terms of literacy levels around 95 percent of the workers were completely illiterate not even knowing to count upto 10. During the early 1940s male estate worker was paid 6 annas(₹0.35) and a female worker was paid 4 annas (₹0.25). Each estate had a primary school up to 4^{th} class. The children would work in the fields till noon and in the afternoon they would go to the estate schools. The attendance was poor and the parents never cared about their children's education. Each estate had a shop run by a Chettiar (person belonging to the merchant caste). As the workers did not have any idea of accounts, the shop owner usually fleeced every worker not only by charging them at high rates but also keeping false account. The workers were paid only once in a year. Every week an adult worker would be paid 4 annas (₹0.25) and 5 measure of rice as means for meeting the expenditure. The estate office would keep an account of the cost of these provisions issued from the estate stores at the end of the year, these amounts were deducted from the wages due to the worker for the year.

The Minimum wages committee on plantations (1952) observed that plantation workers are in a sense protected group, By force of custom and usage they get a number of amneties including free housing, medical aid, school, free lunch for children, crèches and canteen, free firewood, cumbly

allowances and recreational facilities. The per capita cost of amnesties alone ranged between 20 and 30 paise a day.

Conditions of Health Care

Umadevi(1989) observes that heath condition of workers was deplorable and filthy. The situation was worse during the time of monsoon. They were forced to live in such unhygienic conditions like animals for such long periods, that they had lost many traits that distinguish human character and had become very much like animals in their way of living. Malaria was rampant especially during the month of March-June. Every worker would have been attacked by malaria at least once in a month. When the workers failed to join for work for a day, one measure of rice would be cut from his weekly rations from the estate stores. There was also the practice of not paying the usual chelavukasu of 4 annas (₹0.25) if the worker failed to appear for job for more than 4 days. Unable to meet the daily food and health expenditure the workers would be forced to remain in poverty during those days or they need to borrow money from money lenders at an enormous interest rate for meeting the expenditure.

Terms of Employment

Raman,(1986) illustrates regarding the terms of employment, the coolies were engaged not by the estates, but by the maistries. A maistry used to come up with 25 to 100 workers in a gang from the plains and bring them to the estate for which he was given commission. In the interest of his commission, In the interest of his commission, a maistry would try his level best to see that every worker went for work every day. Even persons with fever were forced to go for work by the maistry.

Umadevi (1986) mentions the moment a worker came to the plantation estate his fate was decided. If the worker was single, he could never go back to his native place because he will be having no money left after the annual settlement of his wages. Many of them will be indebted heavily either to the plantation owners or to nearby the shop owners. So unless a worker paid his debts, he would not be allowed to go to his native village. The coolies were virtually locked up in their lines and rooms. There would be a watchman around and the workers were not allowed to go out except to the work spot accompanied by the watchman. All these resulted in forcing the workers to remain in permanent indebtedness and thereby in to the vicious circle of poverty.

Moser and Young (1985) narrates in detail about the exploitation of women workers in plantations during the early days. Women workers were unpaid and invisibilised, or poorly paid and marginalized. The workers were made completely dependent on their employers for every necessity of life.

Behal(1985) narrates that prime reason for the situation was that the planters considered intervention in the social and personal lives of laboures as part of their 'paternalist' obligation. The geographical features of plantations including vastness and isolation and lack of communications and transport act as obstacles in organizing labour protest. Disease, malnutrition and a high rate of mortality were the harsh realities of plantation life for the labourers.

Behal (1985) explains that the various features of the plantation structure such as restrictions on mobility, enforced isolation, social and physical control of the workers were the major constraining factors. Within

this plantation structure the planters consciously and effectively perpetuated the social and educational backwardness of the tribal and semi-aboriginal labour force.

MoL, Govt of India (2009) reports that the situation of workers in plantation workers have not changed over the years as the exploitation of workers is still very much prevalent. The situation is very significant in the context as women workers constitute around half of the total workers in the plantation sector. Women work participation is very high in plantation sector contrary to other sectors.

Vishwanathan, et.al (2003) discuss about the present condition in small rubber plantations. The structural changes happened in rubber small-holdings by the declining size of operational holdings resulted in the non-availability of adequate tapping task from a single grower, leading to the emergence of multiple grower dependence in traditional rubber-growing regions in the state. But due to the highly dispersed structure of small-holdings and the uneconomic size, the tappers are unable to get adequate tapping task even in the scenario of multiple grower dependence. Hence the tappers are deprived of adequate earnings from tapping and even highly skilled and experienced tappers are unable to earn comparable wages vis-à-vis their counterparts in general which has resulted in the withdrawal of skilled and experienced tappers from the market on account of the prevailing lower and stagnant wages and lack of interest among younger generation in tapping. These issues raise the critical question on the socioeconomic conditions of tappers and labour availability in rubber small-holdings in the state.

Rajasenan and Rajesh (2014) illustrate that the workers are more deprived in terms of employment and livelihood assets in the case of spices plantations when compared to rubber plantations.

Poverty and Social Exclusion

Sen (1981) defines poverty as a living condition resulting from the individual's inability to carry out certain primary functions, or to satisfy certain primary needs, because of the reduced possibility of obtaining adequate resources (either income or goods), Poverty thus defined is caused by reduced access to certain goods and resources, not by the lack thereof. The labour market, the state, and the family are the environments and thus the subjects' position on the job market, the welfare services they can access, their family and ethnic context and social networks play a fundamental role in influencing the livelihood of an individual or society. Any failure in access to these basic condition forces the individual or society to the process of social exclusion.

Sen (1983; 1999) also pinpoints that the lack of capability of individual to perform his function is also responsible for poverty. So while estimating poverty individual's well-being or quality of life should be assessed in terms of individual's capabilities, ability or potential in achieving certain things or functions. Functions could be elementary like basic education and health attainments whereas complex functions include the capability to socially integrate. All these functions depend on how individuals attach weight to these functions. Capability approach thereby features the ability of the individual to perform his/her function or a combination of function based on their particular situation or circumstances. Any lack of these capability leads to the situation of poverty and thereby social exclusion.

Chambers (1989_a) explains that the concept of poverty have a strong correlation with the concept of social exclusion as deprivation of basic need can perpetuate poverty thereby forcing them to remain socially excluded. Poverty analyses do not only count the poor, but study the 'correlates' of poverty: characteristics such as education, labour market status, gender and location, that are correlated with poverty status which are necessarily important factors while understanding social exclusion.

According to Chambers (1989_b), poverty and vulnerability differs significantly with poverty as a concept dealing more with lack or want of needs whereas vulnerability as a concept deals with individual or society's insecurity and the exposure to greater risk and shocks thereby vulnerability captures the different facetsof deprivation whereas poverty fails to capture those.

DFID (2005) defines social exclusion as 'A process by which certain groups are systematically disadvantaged because they are discriminated against on the basis of their ethnicity, race, religion, sexual orientation, caste, descent, gender, age, disability, HIV status, migrant status or where they live'. Discrimination also occurs in public institutions, such as the legal system or education institutions and health services, as well as social institutions like the household etc.

DeHaan(2002) illustrates that social exclusion is a broad concept which is multi-dimensional in nature with two defining characteristics of exclusion. One main form exclusion comes in the form that people may be excluded from livelihoods, employment, earnings, property, housing, minimum consumption, education, the welfare state, citizenship, personal contacts or respect.The other

one being narrated is that social exclusion implies a focus on the relations and processes that cause deprivation.

Silver (1994_a) and Labonté et.al (2011_a) details that the concept of social exclusion need to viewed on the basis of multi-dimensionality of deprivation based on the fact that people are often deprived of different things at the same time. It refers to exclusion (deprivation) in the economic, social, political sphere and cultural activities at a level considered to be normatively acceptable.

Labonté et.al (2011_b) define that concept of social exclusion correspondences with and contains within it the concepts of poverty, capability and deprivation thereby an accumulation of social disadvantage of people with respect to material resources, social and economic participation and personal growth.

Silver (1994_b) narrates regarding how social exclusion pops in the society. As group formation is a fundamental characteristic of human society that itself is accompanied by the exclusion of others who are not organized. The social exclusion concept is much more than mere deprivation as the process takes us beyond mere descriptions of deprivation, and focuses attention on social relations and the processes and institution which perpetuates deprivation and thereby social exclusion is more significant.

Powell (1995) explains that the concept of relative deprivation is more connected to the concept of social exclusion as it is often referred that the surge in inequality in various parts of the world has enabled in the formation and popularity of the concept called social exclusion. The association of poverty with a more diverse social setting has led to the broader concept of

social exclusion in which material deprivation along with the inability of the poor and deprived to exercise their social, cultural and political rights as citizens.

Trade and Poverty and Labour Market

Promotion of trade is supposed to alleviate poverty in developing and under developed countries as increase in trade to these countries enable themselves to explore new markets.

Winters (1999) claims that the classical link between international trade and poverty in developing countries is through the labour market because the increase in international trade enable the nation to export more of labour intensive goods which will enhance the demand for labour in the labour markets of developing countries if people living under the poverty is part of that labour market. But the chance of increasing the job opportunities and thereby improvement of poverty of these people depends on the operation of these labour markets. Increase in trade or free trade is meant to increase real wages of workers but there arise the question of who would be the actual beneficiary whether the un-skilled labour or the skilled labour.

Bhagwati (2003) narrates that trade is to be considered as engine of growth because trade promotes growth and growth reduces poverty and the openness of economy tends to bring significant improvements in nations efforts to reduce and mitigate poverty. Arne, et.al (2007) explain that the poverty impacts of trade policy are depended heavily on how the increase in demand for labour is transformed to the whole of the economy through higher wages, increased employment. From the perspective of the poor how

markets for unskilled labour and agriculture benefit from trade is most important as majority of the people under poverty in the developing countries are either uneducated or unskilled in nature.

Goff and Singh (2013) illustrate that certain pre-conditions are necessary to reduce poverty even though trade improves. Trade tends to reduce poverty only in countries where financial sectors are deep, education levels high, and governance strong which will capture an economy's ability to reallocate resources to more productive purposes which will help the country to take advantage of increase in international trade. So the setting of this primary condition in addition to trade liberalisation will only enhance trade and increase jobs for domestic population and thereby reduce poverty.

Whereas Santos (2012) pinpoints to a different viewpoint regarding openness of the economy and increase in international trade between countries. Increased openness of economy tends to be linked with a higher volatility and vulnerability of poor households to economic and financial flows. Regardless of the increase in international high growth rates and remarkable trade performance, large proportion of the population in developing countries still live in extreme poverty because of the failure from the part of governments to initiate structural changes in the economy which deprived the large sections of population from enjoying the benefits of growth.

1.7 Objectives of the study

- To understand the area, production, productivity trends of plantation commodity in the state

- To understand the trade impact of plantation commodities to India-Kerala economy with special reference to ASEAN FTA
- To assess the socio economic condition of plantation workers in Kerala thereby identifying their livelihood assets
- To ascertain the factors bringing about the exclusion of workers and their quality of life

1.8 Hypotheses

- H_0 There exists income difference between workers in plantation sub sector
- H_0 Disparity in livelihood assets among rubber and spices sub-sector is persistent
- H_0 There is marked disparity in the quality of life between large v/s small plantations
- H_0 Trade liberalisation has made the plantation sector more vulnerable

1.9 Scope of the Study

There have been numerous studies on the price and trade impacts on the plantation sector but only a few tried to highlight the employment and livelihood of the workers in the plantation sector especially in rubber and spices plantations.The study tries to understand the area and production trends of natural rubber and spices and to find the relative exposure of the country in the international commodity market of natural rubber, cardamom and pepper. Hence the analysis based on the socioeconomic status of the plantation workers as result of the trade implication is specifically important.

As this study focuses especially on the employment and livelihood and associated dimension of social exclusion that is happening in the sector using a wide spectrum of parameters and hence has immense scope for development oriented welfare schemes targeting the poor workers in the sectors.

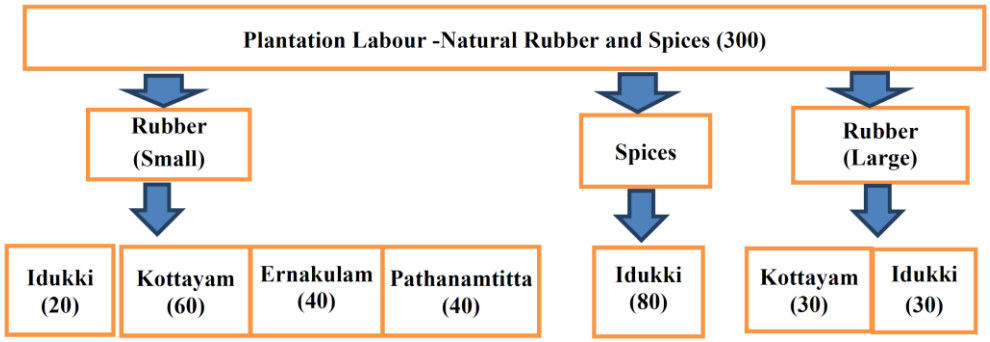
1.10 Methodology

The study, by and large, is primarily focussed on identifying the livelihood, employment and trade implications in the plantation labour. But study is tailored to understand the inter-plantation disparity of livelihood and employment of the workers and hence based more on sociological perspective, whereas the trade aspect of plantation is purely an economic concept. Therefore, this study intends to use both descriptive and analytical approaches for drawing inferences integrating sociology and economics. For this purpose both primary and secondary data have been used.

1.11 Data

Primary data at the individual and household levels were collected to understand the employment patterns and livelihood assets of plantation workers. To supplement primary data, discussions were carried out with trade union activists, social workers and government officials engaged in the area. The major secondary data source is UN Comtrade database on plantation commodities, in addition to this other secondary sources from various international multilateral agencies including ILO, UNDP, IDRC and Government departments and commodity boards have also been incorporated.

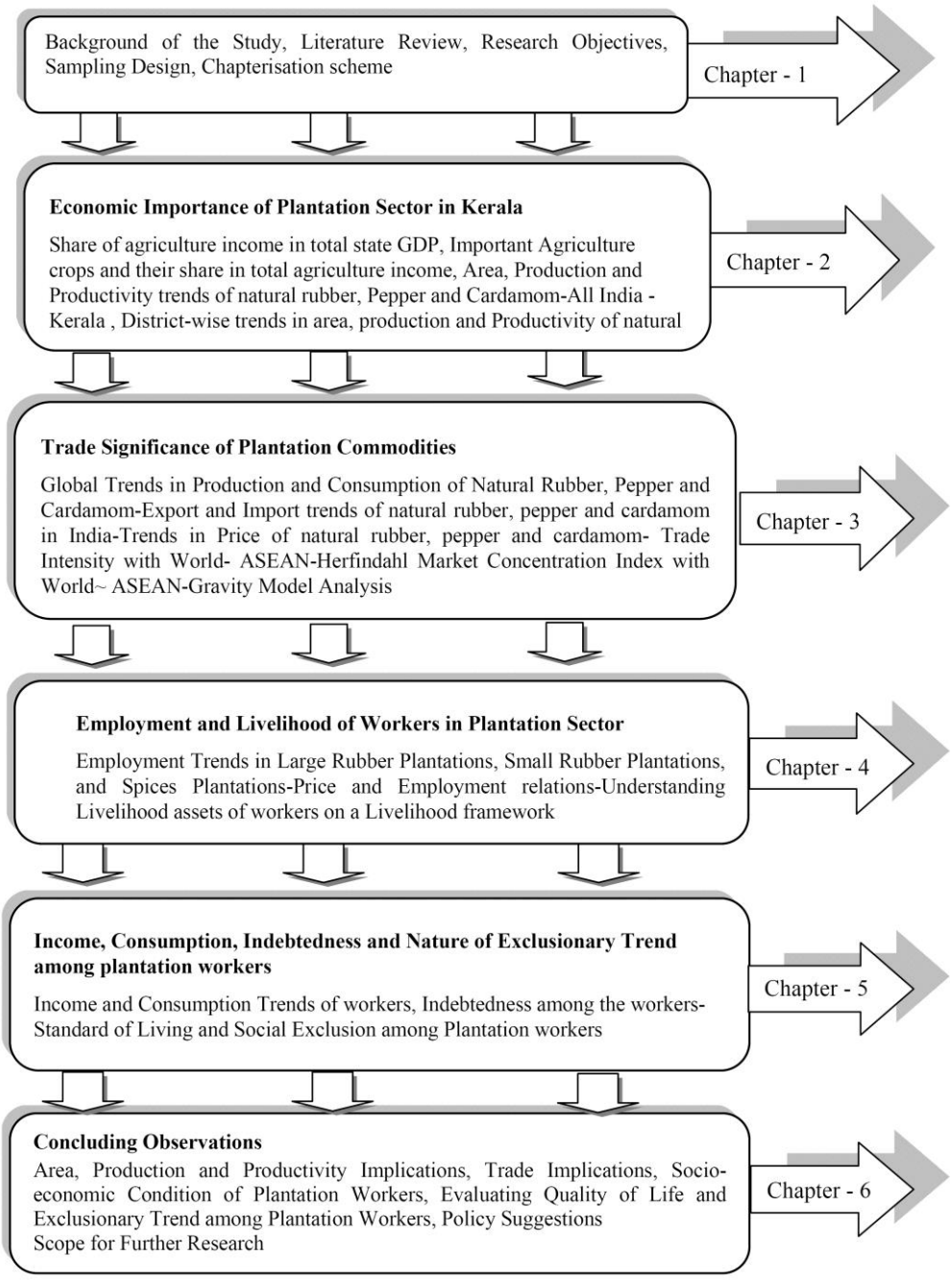
Figure 1.2 Sampling Design



1.12 Scheme of the Study

The study is divided among six chapters. Introduction, literature review, research Problem, methodology form Chapter 1. In chapter 2national trends vis-à-vis performance of Kerala in terms of area, production, productivity of Rubber, Pepper and Cardamom are analyzed and compared. Chapter 3 gives an elucidation of the details regarding the trade dimensions (world and ASEAN) in terms of plantation products. Chapter 4 highlights employment pattern and livelihood assets of workers in the plantation sector based on primary data. Chapter 5too is a measure with the help of primary data to understand the amplitude of income, consumption, education and associated disparity of workers among the sub-sectors which in turn would help to illumine the quality of life among the workers in the plantation sector. Chapter 6 concludes the study with policy suggestions it also gives an idea about future research agenda.

1.13Chapterisation Scheme



Chapter 2

ECONOMIC IMPORTANCE OF PLANTATION SECTOR IN KERALA

Contents

There is almost a general consensus in development economics theories that the role of agriculture in the overall economy diminishes with rapid increase in economic growth. The process of rapid growth is closely associated with, and indeed requires, a shift in economic structure from an agricultural base to a modern industrial base. Kerala is no exception where the contribution of agriculture and agriculture income to state GDP is declining year after year, nonetheless this has not helped for the buoyancy of the industrial sector; but for the growth of the service sector with more bias towards consumption oriented service sector than production oriented service sector. Any growth that witnessed in the agricultural sector is the development of the plantation sector; particularly the rubber plantation occupies a pivotal role in terms of cropping area and share in agriculture income. Cardamom and Pepper also share a predominant portion of the total cropping area and thereby contributing enormously to the agriculture income of state.

In this background the focus of Chapter 2 is to understand the area, production and productivity trends of natural rubber, cardamom and pepper in Kerala vis-à-vis to the all India performance of these commodities. The Chapter 2 also tries to capture district wise variation, if any, in the area production and productivity of the aforesaid commodities. Along with this Chapter 2 also tries to analyse the relative performance of agriculture in the state GDP and agriculture income from various agriculture commodities in the state.

2.1 Contribution of Agriculture to Kerala State GDP

During 2011-12, the contribution from primary, secondary and tertiary sectors to the GSDP at constant prices (2004-05) was 9.48 percent, 20.22 percent and 70.30 percent respectively. At current prices, the primary, secondary and tertiary sectors contributed 15.11 per cent, 21.05 per cent and 63.22 percent respectively to the GSDP during 2011-12 This difference in sectoral share between constant and current prices shows that inflationary trend impacts in the primary sector is much higher than in the secondary and tertiary sectors.

While analyzing the sectoral distribution of state income, it is seen that the contribution from primary sector has been decreasing and while that of the tertiary sector has been increasing. The contribution of secondary sector remained almost stagnant. Sectoral distribution of GSDP from 1980-81 to 2012-13 is provided in Table 2.1. This clearly displays an ever declining share of agriculture and the huge jump in the contribution of tertiary sector in the total GSDP of the state over the years.

Table 2.1 Share of Various Sectors to Kerala State GDP

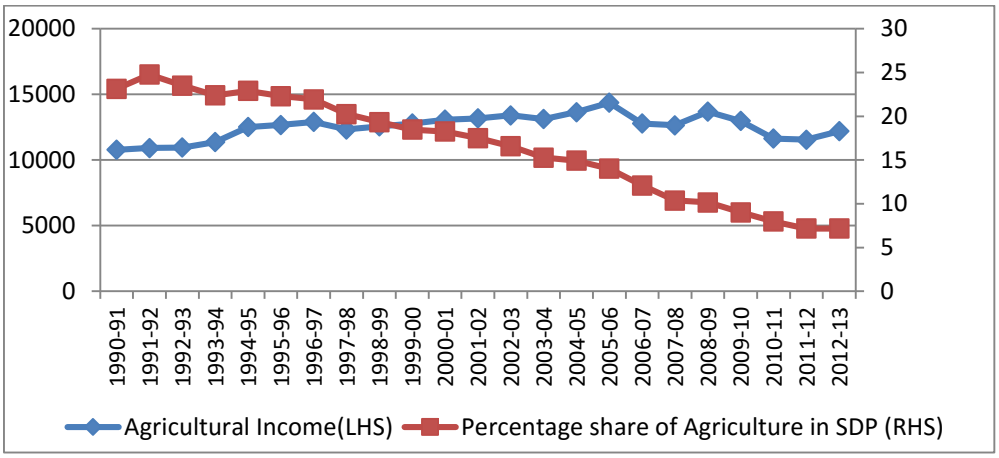
Sector	1980-81	1993-94	2000-01	2009-10	2010-11	2011-12	2012-13
Primary	39.23	32.23	25.30	12.00	10.42	9.71	9.34
Secondary	24.37	20.32	19.50	20.70	22.01	21.81	23.94
Tertiary	36.40	47.45	55.20	67.30	67.57	68.48	66.72
Total	100	100	100	100	100	100	100

Source: Economic Review-Various Issues,1980-13

Share of primary sector consisting of agriculture to the total GDP has been declined significantly over the years. The share of agriculture declined from 39.23 percent in 1980-81 to almost 9.34 percent in 2012-13. At the same time income from agriculture experienced an increase during the period. Agriculture income in the state increased from 10781 crore in 1990-91 to 12197.9 crore in 2013-14 thereby increasing 13 percent during the past 12 years. Even though agriculture income increased, the share of agriculture income to SDP declined sharply from 23.14 percent in 1990-91 to 7.17 in 2012-13 (Figure 2.1). The period from 2000-01 witnessed a steep decline in the share of agriculture in the total SDP of the state.

Share of agriculture income in total SGDP declined almost 60 percent during the period from 2000-01 to 2012-13. This trend is the outcome of an increase in the agriculture commodity prices and the increase in productivity of agricultural commodities. The declining share of real agricultural income to SDP reveals the expansion of industrial and service sector of the economy and also change in the occupational structure of the economy.These structural and occupational changes in the economy are good signs while looking through the prism of development. But the sustainability of an economy with too much reliance on service sector oriented growth remains a question mark in the political and economic discourse of the state.

Figure 2.1 Agriculture Income in Kerala and Share of Agriculture Sector to SDP of Kerala



Source: Agriculture Statistics, 2005-13, Economic Review-Various Issues, 1990-2014; Data for this graph is given in Appendix 2.1

2.2 Income Share of Main Agriculture Crops in Kerala

The composition of various crops in the total agriculture income of the state also witnessed some drastic shift during the period. The period witnessed the emergence of rubber replacing coconut as the principal income generating crop in the state.

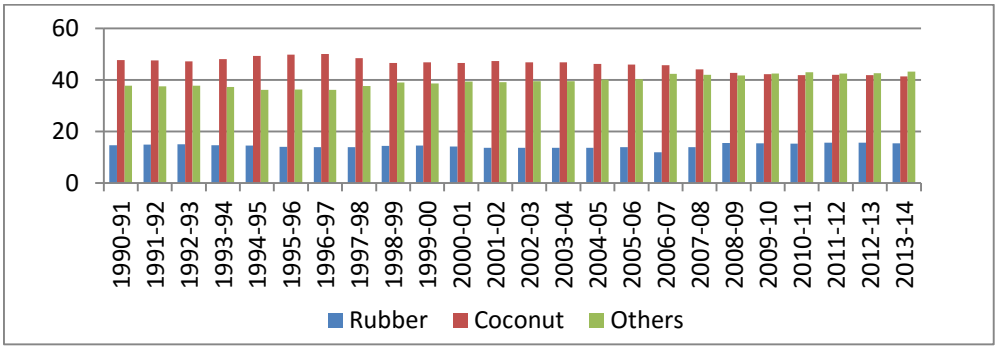
Table 2.2 Income Share of Main Agriculture Crops in Kerala

Year	Rubber	Pepper	Cardamom	Others
2004-05	28.65	3.69	1.98	65.68
2005-06	34.52	3.94	1.78	59.76
2006-07	44.53	4.66	1.65	49.16
2007-08	44.71	3.65	1.94	49.7
2008-09	45.59	2.48	2.37	49.56
2009-10	45.99	3.09	3.14	47.78
2010-11	51.52	3.2	3.3	41.98
2011-12	49.63	3.55	2.09	44.73
2012-13	48.45	3.95	1.97	45.63
2013-14	46.12	4.1	3.03	46.75

Source: Agriculture Statistics, Govt. of Kerala, 2004-13

Fall in production, increasing vulnerability to diseases and fall in price of coconut resulted in the fall in the income share of coconut in the state. Share of paddy, coconut, tea, coffee in the total agriculture income of the state declined from 65.68 percent in 2004-05 to 46.75 percent in 2013-14.During the corresponding period the share of rubber in the total agriculture income of the state increased from 28.65 percent in 2004-05 to almost 50 percent in 2011-12 and later declined to 46.12 percent in 2013-14 due to fall in natural rubber price (Table 2.2). Increase in area of cultivation, higher production and productivity and increase in the price of rubber in the commodity market played an important role in the emergence of rubber as the principal income generating crop in the state.

Figure 2.2 Composition of Major plantation crops in India in terms of area (%) from 1990-2014



Source: Rubber Board unpublished Data, 2013; Data for this graph is given in Appendix 2.2

Out of the total plantation crops in the country, the share of natural rubber in area increased marginally from 14.63 percent in 1990-91 to15.38 percent in 2013-14 (Figure 2.2). Coconut remained as the main plantation crop in terms of area even though its share fell from 50 percent in 1996-97 to 41.36 percent in 2013-14. Fall in the price of coconut and decline in returns from coconut cultivation forced farmers to move to other cash crops like

Rubber. At the same time the share of other plantation crops like Tea, coffee and Spices increased from 36.1 percent to around 43.26 percent in 2013-14.

2.3 Area-Production-Productivity Trends of Rubber, Black Pepper and Cardamom

This section looks into the area production and productivity trends in Kerala in comparison to the all India performance. Along with this district-wise variations in terms of the three main plantation crops are also analysed.

2.3.1 Natural Rubber

2.3.1.2 Relative Contribution of Various States in Terms of Area

Even though the area of natural rubber in traditional rubber growing states like Kerala and Tamil Nadu increased during the period, there is a visible fall in the share traditional rubber growing states in the total area of rubber production in the state. Share of Kerala in total area of rubber in the country fell from 84.3 percent in 2000-01 to 75.0 percent in 2012-13. Share of natural rubber in Tamil Nadu reduced from 3.3 percent in 2000-01 to 2.7 percent in 2012-13 (Table 2.3).

Table 2.3 Percentage Share of Area of Natural rubber in Various States in India

State	Kerala	Tamil Nadu	North East	Other States
2000-01	84.3	3.3	8.4	4
2001-02	83.8	3.5	8.7	4
2002-03	83.6	3.3	9	4.1
2003-04	83.3	3.3	9.4	4
2004-05	83.2	3.2	9.5	4.1
2005-06	82.6	3.2	9.9	4.3
2006-07	81.7	3.1	10.5	4.7
2007-08	80.7	3	11.3	5
2008-09	78.2	3	13.4	5.4
2009-10	76.4	2.9	14.8	5.9
2010-11	75.1	2.8	15.8	6.3
2011-12	75.2	2.6	16	6.2
2012-13	75	2.7	15.9	6.4

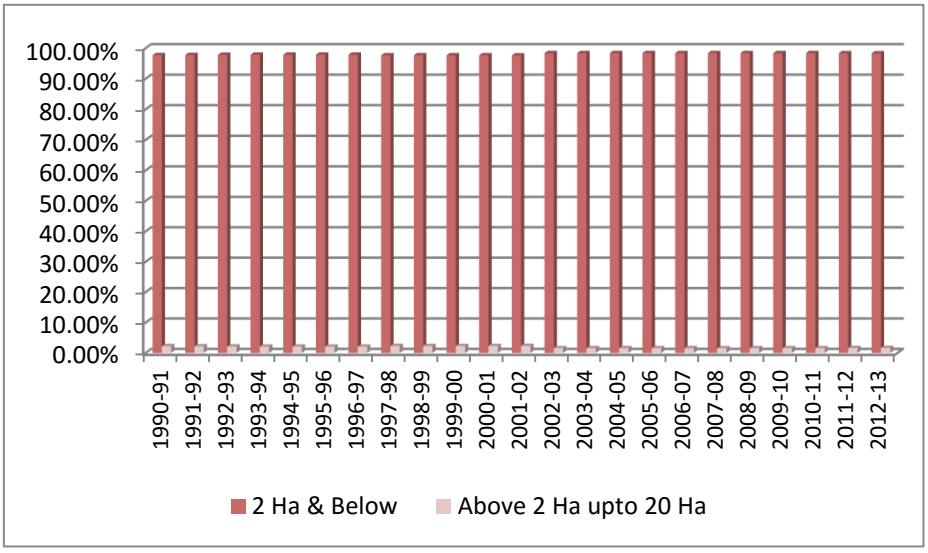
Source: Rubber Board unpublished Data, 2014

During the period from 2000-01 to 2012-13, there was an increase of 88 percent in the area of rubber plantation in north east region. In the case of north east region comprising Tripura, Meghalaya and Assam, the share in total area of rubber plantation in the country increased remarkably from 8.4 percent in 2000-01 to 15.9 percent in 2012-13 (Table 2.3).

2.3.1.3 Rubber Holding in India according to Size

According to the size of plantation, almost 99 percent of the total rubber plantations in the country fall under the category of 2 hectare and below(Figure 2.3). The trend is almost similar in traditional regions like Kerala and Tamil Nadu and non-traditional regions including North East.The percentage values given in Figure 2.3 are almost consistent over the years. Rubber is the major plantation crops in which majority of the farmers are small holders contrary to other plantation crops like tea, coffee, cardamom etc.

Figure 2.3 Share of Rubber Holdings in the Country from 1990-2013 based on Size



Source: Rubber Board, 2013;Data for this graph is given in Appendix 2.3

2.3.1.4 Trends in Area, Production and Productivity of Rubber in Kerala vis-à-vis India

Area and production of rubber plantation in the state increased manifold during the period 1990-91 to 2012-13. Area of natural rubber plantation in the state witnessed a uniform growth throughout the period from 1990-91 to 2013-14 even though the annual growth rate after 1997-98 remained below one percent in most of the time. In terms of area, there was increase from 407821 Ha in 1990-91 to 548225 Ha in 2013-14 thereby registering a growth of 34 percent during the period (Table 2.4).

Table 2.4Area of Natural Rubber in Kerala from 1990-91 to 2013-14

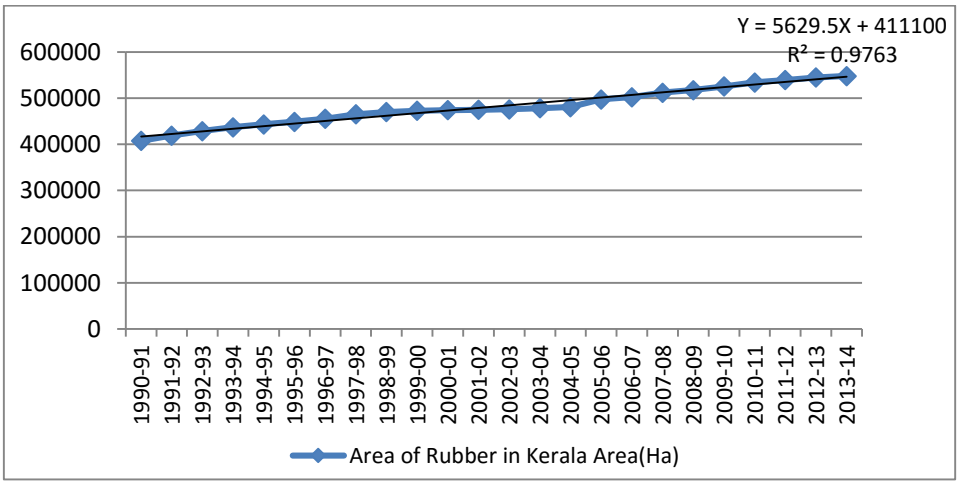
Year (X)	Area(Ha) (Y)	Y = 5629.5X + 411100		Elimination of trend
		Value of X	Trend Value	
1990-91	407821	1	416729.5	-8908.5
1991-92	419174	2	422359	-3185
1992-93	428864	3	427988.5	875.5
1993-94	437100	4	433618	3482
1994-95	443300	5	439247.5	4052.5
1995-96	448988	6	444877	4111
1996-97	455566	7	450506.5	5059.5
1997-98	465282	8	456136	9146
1998-99	469924	9	461765.5	8158.5
1999-00	472900	10	467395	5505
2000-01	474364	11	473024.5	1339.5
2001-02	475039	12	478654	-3615
2002-03	476047	13	484283.5	-8236.5
2003-04	478402	14	489913	-11511
2004-05	480661	15	495542.5	-14881.5
2005-06	497610	16	501172	-3562
2006-07	502240	17	506801.5	-4561.5
2007-08	512045	18	512431	-386
2008-09	517475	19	518060.5	-585.5
2009-10	525408	20	523690	1718
2010-11	534230	21	529319.5	4910.5
2011-12	539565	22	534949	4616
2012-13	545000	23	540578.5	4421.5
2013-14	548225	24	546208	2017

Source: Calculated from Agriculture Statistics, Various Issues,2004-14

One among the reasons for the growth of rubber plantation in the state is relatively higher price for rubber compared to other crops like Paddy and Coconut. The other major factor is that rubber plantation demands less of labour. Since the normal daily wage is much higher in the labour market of Kerala and wage in rubber plantation is comparatively less compared to market wage resulted in the shifting of farmer's interest to rubber cultivation.

A linear trend equation, Y = 5629.5X + 411100, is fitted for the data on area under cultivation of rubber. This line of best fit indicates a coefficient of determination of 0.976 so that the line fitted is 97.6 percent best fit to the data also (Figure 2.4). In the equation, 411100 is the intercept and -0.05 is the slope or the regression coefficient of the equation. These values show the increasing trend in the area for the cultivation of rubber. Details along with the elimination of trend by additive model (actual values–trend values) are given in Table 2.7.

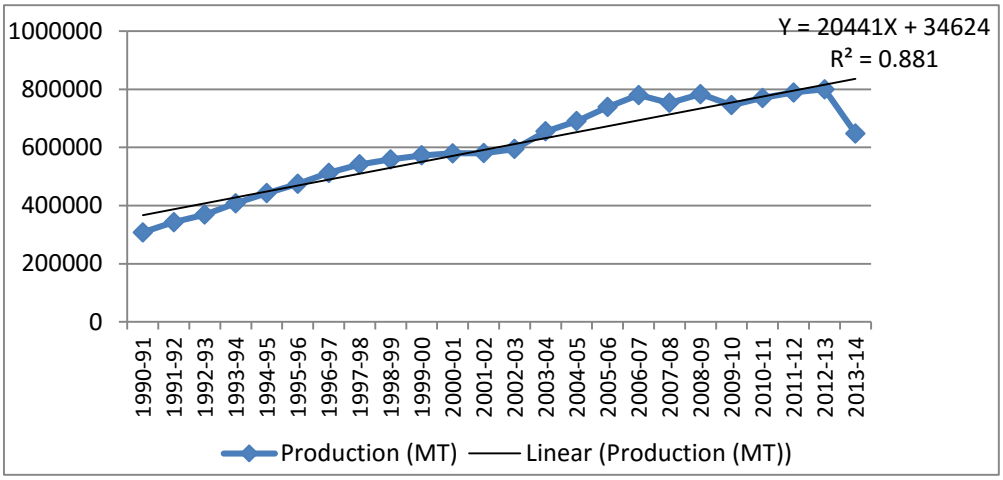
Figure 2.4 Area under Natural Rubber Cultivation in Kerala from 1990-91 to 2013-14



Source: Calculated from Agriculture Statistics, Various Issues, 2004-14

Similar to the case of area of rubber cultivation, a linear trend equation, Y = 20441X + 346244, is fitted for the data on production of rubber in the state. This line of best fit indicates a coefficient of determination of 0.881 so that the line fitted is 88.1 per cent best fit to the data also. In the equation, 346244 is the intercept and -0.05 is the slope or the regression coefficient of the equation. These values show that there is linear increase in terms of production of rubber in the state. Details along with the elimination of trend by additive model (actual values–trend values) are given in Figure 2.5.

Figure 2.5 Production of Natural Rubber in Kerala from 1990-91 to 2013-14



Source: Calculated from Agriculture Statistics, Various Issues, 2004-14

In terms of production, phenomenal growth was witnessed during the period as given in Table 2.5. Percentage production values increased110 percent from 307521 in 1990-91 to 648220 in 2013-14. While a close scrutiny of Table 2.5, it is visible that there has been a steady increase in production of natural rubber over the years. The state was able to achieve this high growth even though in the year 2007-08 and 2009-10 the production growth fell in to negative zone. Introduction of high yielding variety of

natural rubber and more scientific nature of farming may be attributed as the main reason for the increase in rubber production.

State experienced an annual average growth of 1.33 percent in terms of area and 4.52 percent in terms of production during the period from 1990-91 to 2012-13. Annual growth rate of production increased almost 6.59 percent during the ten years from 1990-91 to 2000-01 whereas in the next twelve years from 2001-02 to 2012-13 the annual growth rate declined more than half to3.16 percent.

Table 2.5 Production of Natural Rubber in Kerala from 1990-91 to 2013-14

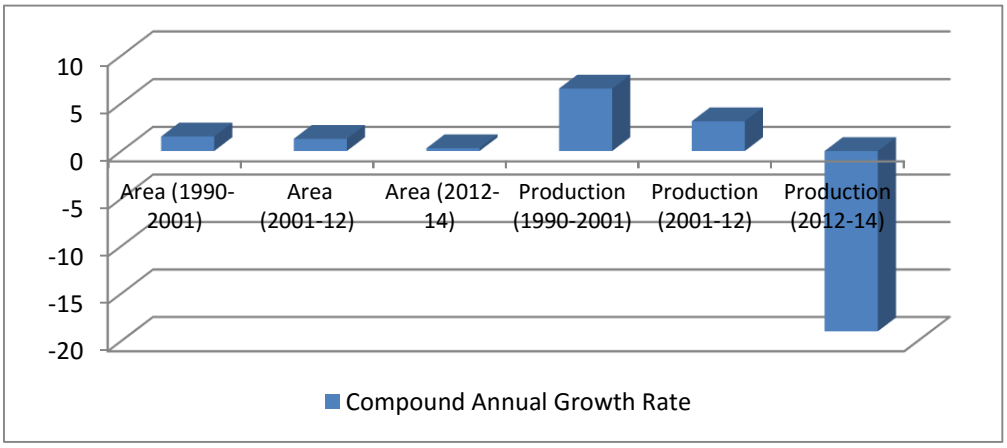
Year	Production (MT)	Trend Equation Y = 20441X + 346244		Elimination of trend
		Value of X	Trend Value	
1990-91	307521	1	366685	-59164
1991-92	343109	2	387126	-44017
1992-93	368648	3	407567	-38919
1993-94	408300	4	428008	-19708
1994-95	442800	5	448449	-5649
1995-96	474555	6	468890	5665
1996-97	512756	7	489331	23425
1997-98	541935	8	509772	32163
1998-99	559099	9	530213	28886
1999-00	572820	10	550654	22166
2000-01	579886	11	571095	8791
2001-02	580350	12	591536	-11186
2002-03	594917	13	611977	-17060
2003-04	655134	14	632418	22716
2004-05	690778	15	652859	37919
2005-06	739225	16	673300	65925
2006-07	780405	17	693741	86664
2007-08	753135	18	714182	38953
2008-09	783485	19	734623	48862
2009-10	745510	20	755064	-9554
2010-11	770580	21	775505	-4925
2011-12	788940	22	795946	-7006
2012-13	800050	23	816387	-16337
2013-14	648220	24	836828	-188608

Source: Calculated from Agriculture Statistics, Various Issues, 2004-14

2.3.1.5 Compound Annual Growth in Area and Production of Rubber in Kerala

In terms of Area during the period 1990-2001 the state experienced a compound annual growth of 1.52 percent (Figure 2.6) and during the period 2001-12 area increased 1.28 percent. In the period from 2012-14 area of cropping registered a decline in growth to below one percent. The situation could be attributed to the decline in the commodity price of natural rubber during the period.

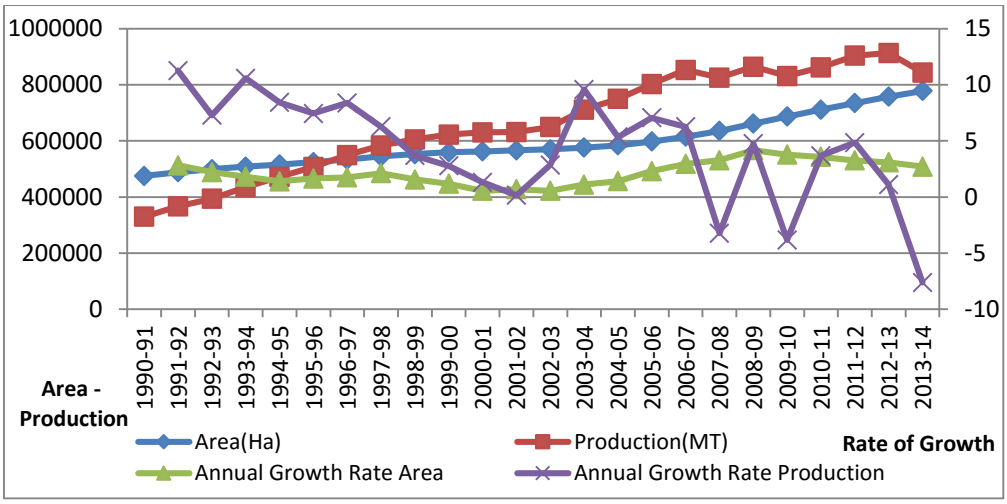
Figure 2.6 Compound Annual Growth in Area and Production in Kerala (1990-2014)



Source: Calculation based on Kerala agriculture statistics, Various Issues, 2004-14

Regarding the growth of production also the state registered significant growth during the period from 1990-2001 with a compound annual growth rate of 6.45 percent and later experienced a growth of 3.11 percent during the period from 2001-12. Rubber production experienced an exponential decline of -18.97 percent during the period from 2012-14. The major reason for the decline in production of rubber is the persistence of poor commodity prices and declining profitability thereby discouraging farmers from rubber tapping.

Figure 2.7 Area and Production Natural Rubber in India from 1990-91 to 2012-13



Source: Calculated from Rubber Board Statistics, Various Issues, 2001-14

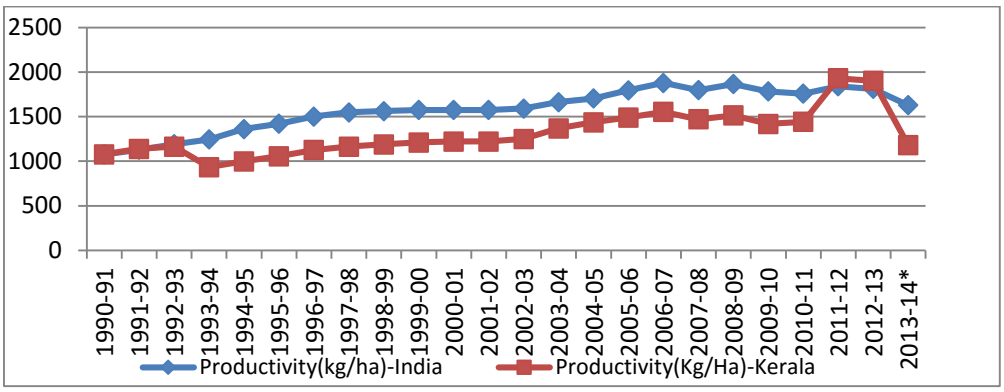
Taking into consideration the Indian scenario, similar positive trends are visible in terms of growth of area and production of natural rubber during the period from 1990-91 to 2012-13. In terms of area, rubber sector in the country increased from 475083 Ha in 1990-91 to 778000 Ha in 2013-14 as given in Figure 2.7. There was an increase of 59 percent in the total area of rubber plantation in the country during the period from 1990-91 to 2013-14.The total area of rubber plantation witnessed 34.6 percent growth during the period from 2000-01 to 2012-13 whereas during the period from 1990-91 to 1999-00, the rubber sector witnessed only 17 percent growth.

In terms of production, India experienced a substantial increase in output from 329615 MT in 1990-91 to 844000 MT in 2013-14. In overall terms, during the period rubber produced increased 156 percent. When we sub-divide the growth in to two periods from 1990-91 to 1999-00 and from 2000-01 to 2013-14, Figure 2.6 explains that production increased more than

88 percent during 1990-91 to 1999-00, whereas during the period from 2000-01 to 2013-14 production increased around 40 percent.

The values shown in Figure 2.6 are quite significant in the context that the area of rubber plantation substantially increased during the period from 2000-01 to 2013-14 and production increased considerably during 1990-91 to 1999-00. But overall average growth of area and production during the period from 1990-91 to 2013-14 stood at 2.14 percent and 3.06 percent respectively.

Figure 2.8 Productivity of Natural Rubber in Kerala and India from 1990-91 to 2013-2014



Source: Rubber Board Statistics, Various Issues, 2001-14; Data for this graph is given in Appendix 2.4

Productivity of natural rubber in Kerala increased from 1079 kg/ha in 1990-91 to 1903 kg/ha in 2012-13. Surprisingly, the productivity of natural rubber both in Kerala and national average declined in the year 2013-14 (Figure 2.8). Productivity stood at 1182 kg/ha and 1629 kg/ha in the case of Kerala and India in the year 2013-14 with reasons for decline still to be determined.

Most of the period from 1990-91 to 2013-14, per hectare productivity of natural rubber in the state was below the national average. In the year

2011-12 and 2012-13 the productivity of natural rubber in the state surpassed the national productivity numbers. Productivity in the state stood at 1931 kg/ha and 1903 kg/ha in the year 2011-12 and 2012-13 respectively whereas national productivity of rubber during the period was 1841 kg/ha and 1813 kg/ha respectively. Introduction of hybrid variety of rubber and more extensive practice of scientific farming are the major reasons for the increase in the productivity of rubber. By taking the average productivity analysis for the last 22 years, i.e. from 1990-91 to 2012-13, shows that productivity of natural rubber in the country stood at 1576 kg/ha whereas Kerala's productivity value was around 1317 kg/ha only (Figure 2.8).

2.3.2 Black Pepper

Black pepper occupies a significant chunk of the total area and production of spices in the state. In terms of area 85 percent of the pepper is cultivated in Kerala whereas in terms of production 30 percent of the pepper is produced in the state. Recent values show that there is a marked fall in the area and production of pepper in the state.

2.3.2.1 Trends in Area, Production and Productivity of Pepper- Kerala vis-à-vis India

Performance of pepper sector in the state witnessed mixed picture during the period from 1990-91 to 2012-13 (Table 2.6). Regarding the area of pepper cultivation, the total area reduced dramatically to almost half from 168500 Ha in 1990-91 to 84065 Ha in 2013-14. High volatility in the price of the commodity and consistently low price are some of the major reasons for the dip in area of cultivation of pepper in the state. Even though the price started increasing recently the production levels are decreasing year after

year. Total area of pepper cultivation in the state actually witnessed a positive growth till 2005-06 when the total area accounted to about 23800 Ha.

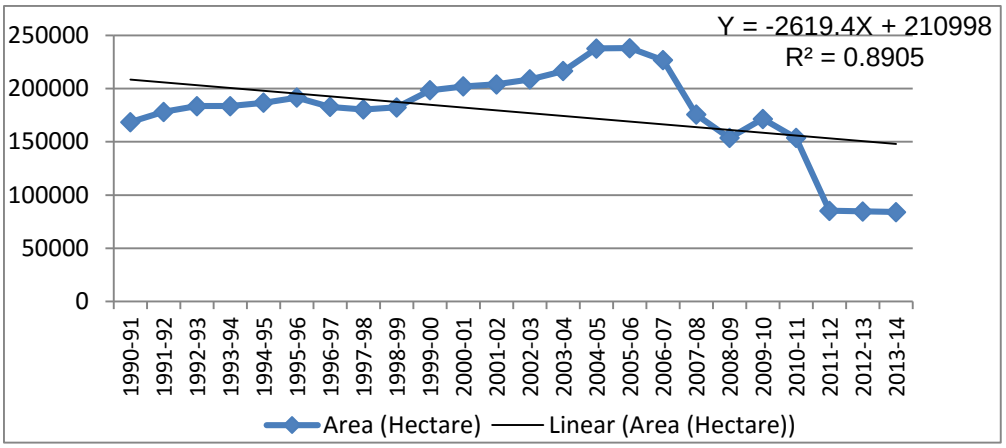
Table 2.6 Area of Pepper Cultivation in Kerala from 1990-91 to 2013-14

Year	Area (Hectare)	Trend Equation Y = -2619.4X + 210998		Elimination of Trend
		Value of X	Trend Value	
1990-91	168500	1	208378.6	-39878.6
1991-92	178100	2	205759.2	-27659.2
1992-93	183500	3	203139.8	-19639.8
1993-94	183500	4	200520.4	-17020.4
1994-95	186700	5	197901	-11201
1995-96	191596	6	195281.6	-3685.6
1996-97	182887	7	192662.2	-9775.2
1997-98	180370	8	190042.8	-9672.8
1998-99	182384	9	187423.4	-5039.4
1999-00	198406	10	184804	13602
2000-01	202133	11	182184.6	19948.4
2001-02	203956	12	179565.2	24390.8
2002-03	208607	13	176945.8	31661.2
2003-04	216440	14	174326.4	42113.6
2004-05	237669	15	171707	65962
2005-06	238000	16	169087.6	68912.4
2006-07	226709	17	166468.2	60240.8
2007-08	175679	18	163848.8	11830.2
2008-09	153711	19	161229.4	-7518.4
2009-10	171489	20	158610	12879
2010-11	153711	21	155990.6	-2279.6
2011-12	85335	22	153371.2	-68036.2
2012-13	84707	23	150751.8	-66044.8
2013-14	84065	24	148132.4	-64067.4

Source: Calculated from Kerala Agriculture Statistics, Various Issues, 2004-14

Area of pepper cultivation in the state started declining from 2006-07, when the area of pepper cultivation declined to 226709 Ha and later fell almost alarmingly to 84707 Ha and 84065 Ha in 2012-13 and 2013-14 respectively (Table 2.6). The phenomenon has much to do with the price volatility which is explained in Chapter 3.

Figure 2.9 Area of Pepper Cultivation in Kerala from 1990-91 to 2013-14



Source: Calculated from Kerala Agriculture Statistics, Various Issues, 2004-14

For understanding the trend in growth of area of pepper cultivation in the state a linear trend equation, Y = -2619.4X + 210998, is fitted for the data on area under cultivation of rubber. This line of best fit indicates a coefficient of determination of 0.890 so that the line fitted is 89.0 per cent best fit to the data also. In the equation, 210998 is the intercept of the regression coefficient of the equation. These values show the increasing trend in the area for the cultivation of pepper in the state. A detail along with the elimination of trend by additive model (actual values – trend values) is given in Figure 2.9.

Production of pepper had a tremendous increase in the 1990s and in the earlier part of 2000s. Production of pepper in the state experienced phenomenal growth in the state during the period from 1990-91 upto 2005-06 when the production of pepper increased from 46800 MT in 1990-91 to 87605 MT in 2005-06. But similar to area of pepper cultivation the production started declining from 2006-07 onwards. Fluctuation in the commodity price of pepper and failure of monsoon etc. paved the way for the decline in pepper

production. The production of pepper in the state declined from 64264 MT in 2006-07 and later to 29408 MT in 2013-14 (Table 2.7).

Table 2.7 Production of Pepper in Kerala from 1990-91 to 2013-14

Year	Production (MT)	Trend Equation Y = -381.25X + 60123		Elimination of Trend
		Value of X	Trend Value	
1990-91	46800	1	59741.75	-12941.8
1991-92	50300	2	59360.5	-9060.5
1992-93	49700	3	58979.25	-9279.25
1993-94	49800	4	58598	-8798
1994-95	59300	5	58216.75	1083.25
1995-96	68568	6	57835.5	10732.5
1996-97	56546	7	57454.25	-908.25
1997-98	46040	8	57073	-11033
1998-99	68510	9	56691.75	11818.25
1999-00	47543	10	56310.5	-8767.5
2000-01	60929	11	55929.25	4999.75
2001-02	58240	12	55548	2692
2002-03	67358	13	55166.75	12191.25
2003-04	69015	14	54785.5	14229.5
2004-05	74980	15	54404.25	20575.75
2005-06	87605	16	54023	33582
2006-07	64264	17	53641.75	10622.25
2007-08	41952	18	53260.5	-11308.5
2008-09	65000	19	52879.25	12120.75
2009-10	48442	20	52498	-4056
2010-11	33991	21	52116.75	-18125.8
2011-12	37989	22	51735.5	-13746.5
2012-13	46298	23	51354.25	-5056.25
2013-14	29408	24	50973	-21565

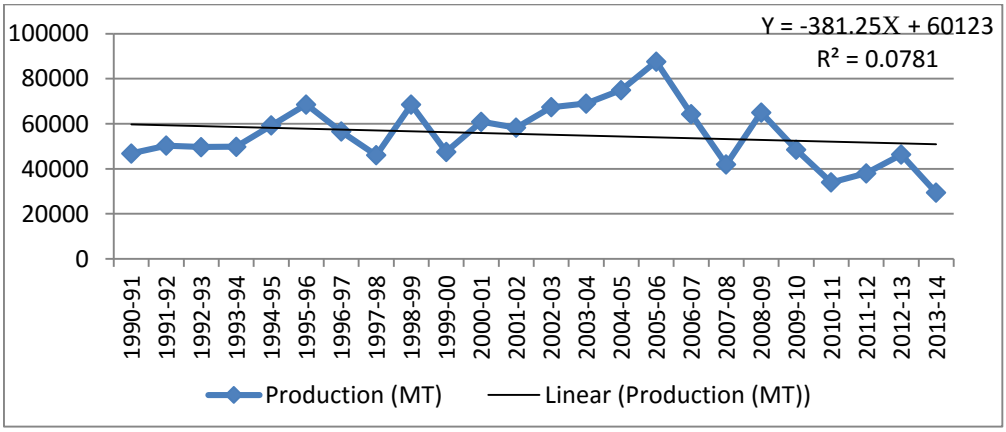
Source: Calculated from Kerala Agriculture Statistics, Various Issues,2004-14

While looking deep in to the data, it is clear that production increased by 87 percent in 2005-06 when compared to 1990-91 values. After 2005-06 a total reversal in production of pepper was witnessed later in the state with

production declining about 50 percent during the 7 years period from 2007-14 (Figure 2.10). The very poor and decreasing performance of pepper production in the state is attributed to higher production cost, market uncertainty in terms of fluctuating prices, import of low quality pepper mainly from Srilanka and Vietnam, lack of proper application of manure, poor marketing facilities and inadequate number of processing industries and warehousing facilities in rural areas.

Similar to the case of area of pepper cultivation, a linear trend equation, Y = 20441X + 346244, is fitted for the data on production of pepper in the state (Figure 2.10). This line of best fit indicates a coefficient of determination of 0.781 so that the line fitted is 78.1 per cent best fit to the data also. In this regression equation, 60123 is the intercept. These values show that there is a linear increase in terms of production of pepper in the state. Trend value and the eliminated trend value are worked out to understand the growth trends in terms of production of pepper in the state.

Figure 2.10 Production of Pepper in Kerala from 1990-91 to 2013-14

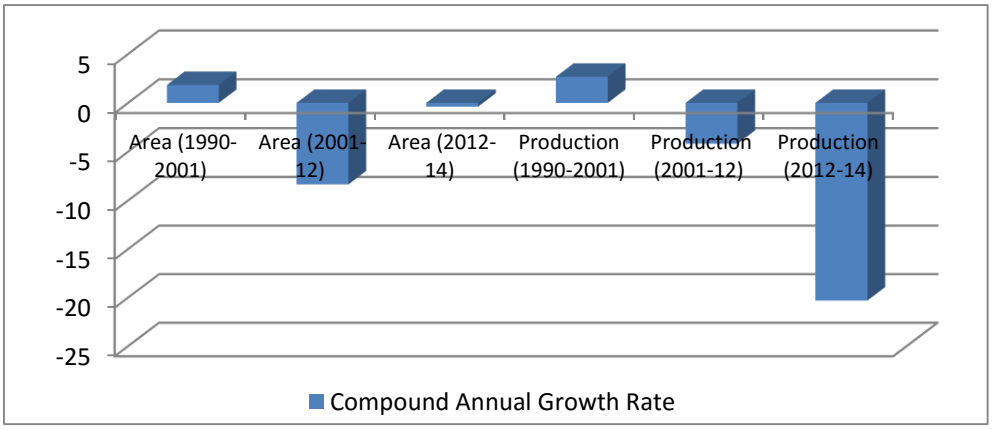


Source: Calculated from Kerala Agriculture Statistics, Various Issues, 2004-14

2.3.2.2 Compound Annual Growth of Area and Production of Pepper in Kerala

While measuring the compound annual growth rate in terms of area and production of pepper in the state the results shows that the sector witnessed a growth of 1.8 percent in terms of area during the period 1990-91 to 2000-01 whereas the growth in area registered a negative growth of 8.34 during the period 2001-02 to 2011-12 (Figure 2.11).

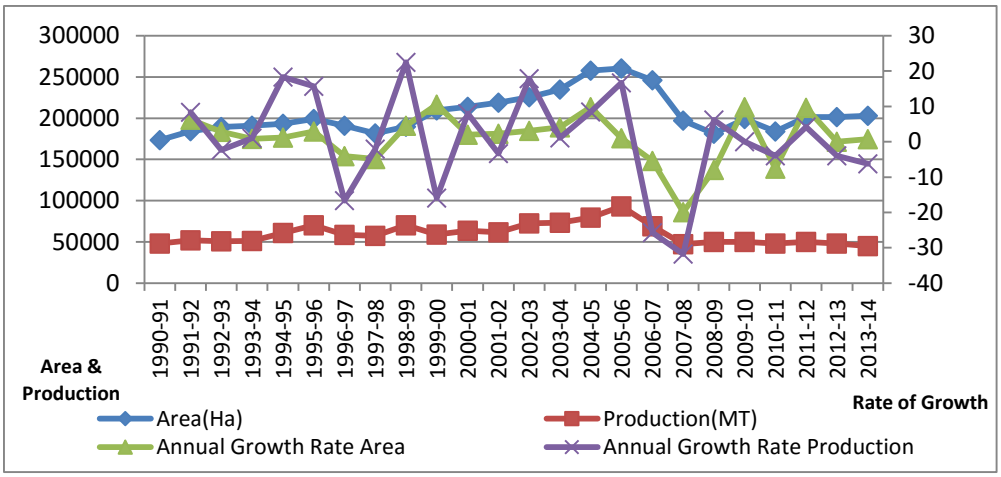
Figure 2.11 Compound Annual Growth Rate in Area and Production of Pepper (1990-2014)



Source: Calculation based on Kerala Agriculture Statistics, Various Issues, 2004-14

In terms of production also similar growth trends are visible. Production increased 2.67 percent during the period 1990-2001, whereas it declined 4.18 percent during the period from 2001-12 (Figure 2.11). Production declined considerably in the past two years to about 20 percent whereas area experienced a decline of 0.37 percent during the period from 2012-14.

Figure 2.12 Area and Production of Pepper in India from 1990-91 to 2013-14



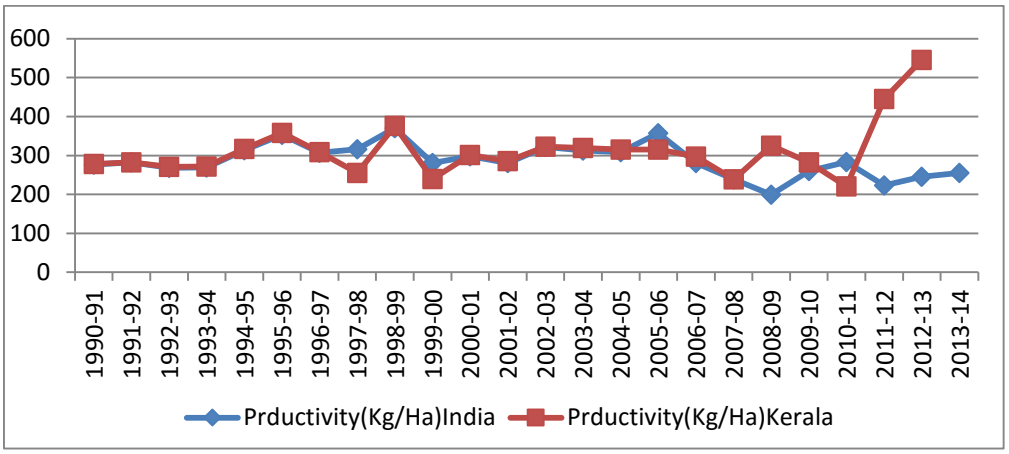
Source: Calculated from Spice Board Statistics, Various Issues, 1990 - 2014

Area of pepper cultivation in the country increased from 173400 Ha in 1990-91 to 202900 in 2013-14 (Figure 2.12). Similar to the trends in Kerala, the area of pepper cultivation increased significantly till 2005-06 when the total area of cultivation stood at 260200 Ha and later declined as per Figure 2.12. In terms of average growth, the period from 1990-91 to 2013-14 witnessed a growth of more than 15 percent, whereas 15 years from 1990-91 to 2005-06 experienced a high growth of 50 percent. Later, the growth rates dipped almost 18 percent during the period from 2006-07 to 2013-14.

In the case of pepper production, the production declined almost 6 percent from 48000 MT to 45000 MT during the period from 1990-91 to 2013-14 (Figure 2.12). Similar to the fall in production of pepper in Kerala, national production also witnessed considerable decline during the period after 2005-06 as the production of pepper in the country declined from 92900 MT in 2005-06 to 45000 in 2013-14 registering a decline of more than 50 percent during the period (Figure 2.12).

Productivity of pepper in the country remained almost in a similar range during the period from 1990-91 to 2013-14 (Figure 2.13). Productivity stood at 277 kg/ha in 1990-91 and increased up to 357 kg/ha in 2005-06. Later productivity also declined in tune with the fall in area and production of pepper in the country. It fell to an all-time low of 199kg/ha in 2008-09 and improved slightly to 255 kg/ha in 2013-14 (Figure 2.13).

Figure 2.13 Productivity of Black Pepper in Kerala and India from 1990-91 to 2013-14



*Source: Economic Review-Various Issues, 1992 -2014; Data for this graph is given in Appendix2.*5

In the case of Kerala, productivity increased from 278 kg/ha in 1990-91 to 546 kg/ha in 2012-13 and declined to 350 kg in 2013-14. But similar to all India trends, productivity declined dramatically after 2005-06, when it slipped from 315 in 2005-06 to 221 in 2010-11. In the last three years from 2011-12 a huge jump was witnessed in pepper productivity in the state except in 2013-14. This is one of the reasons why the production of pepper in the state declined less in comparison to the sharp fall in the area of pepper cultivation (Figure 2.13).

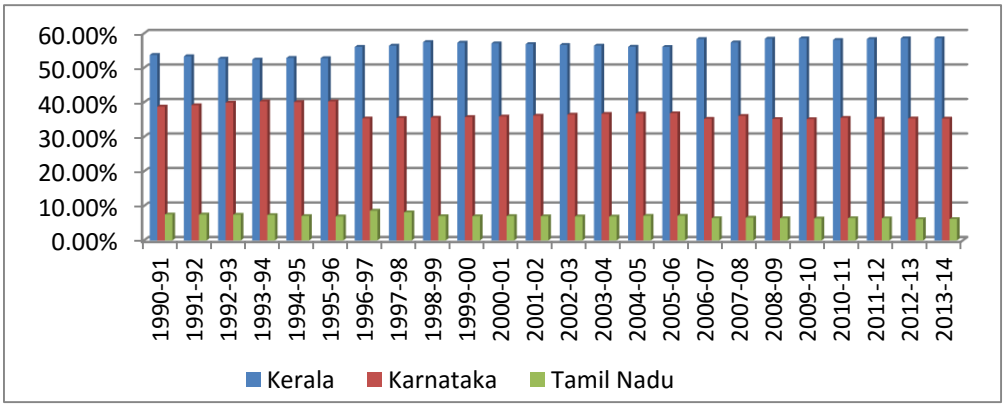
2.3.3 Cardamom

Cardamom is generally produced in the tropical regions of the world. This cash crop is highly labour intensive in nature. India is the second largest producer of cardamom in the world. Indian cardamom is world widely demanded because it is specially aromatic.

2.3.3.1 Share of Various states in terms of Area and Production

Kerala's share in total area of cardamom plantation increased from 53.74 percent in 1990-91 to 58.55 percent in 2013-14 (Figure 2.14). At the same time, the share of other leading cardamom producing states in the country like Karnataka and Tamil Nadu fell during the period. The share of Karnataka in total area fell from 40.28 percent in 1993-94 to 35.28 in 2013-14. In the case of Tamil Nadu, the share in area of cardamom plantation dropped from 7.51 percent in 1990-91 to 6.17 percent in 2013-14.

Figure 2.14 State-wise Area of Cardamom in India from 1990-91 to 2013-14

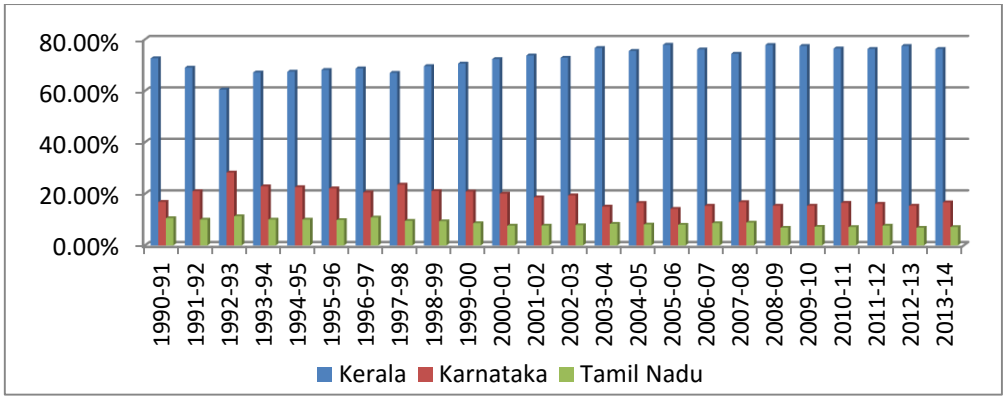


Source: Planning Commission, 2005-14; Data for this graph is given in Appendix 2.6

Kerala's share in total cardamom production was much higher than the share in total area of cardamom plantation in the country. Higher productivity

is responsible for this spectacular performance. Share of Kerala in total cardamom production in the country increased from 60.47 percent in 1992-93 to an all-time high of 77.82 percent in 2008-09 and later dipped slightly to 76.25 percent in 2013-14 (Figure 2.15).

Figure 2.15 State-wise Production of Cardamom in India from 1990-91 to 2013-14



Source: Planning Commission, 2005-14;Data for this graph is given in Appendix 2.7

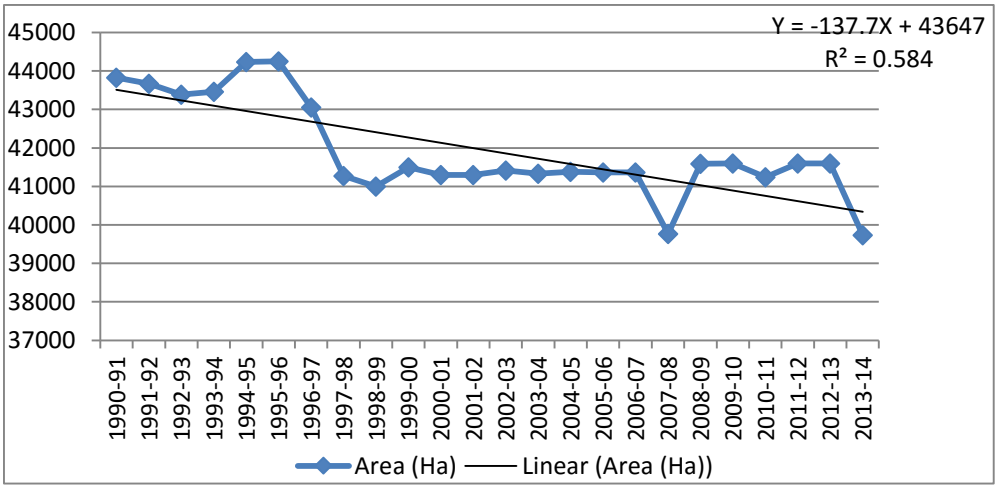
Share of Karnataka in cardamom production was actually very low compared to the state's share in area of cardamom production. State's share in total cardamom production in the country was 28.24 percent in 1992-93 which later fell drastically to 14.15 percent in 2005-06. In the later years the share increased to a lesser extent and reached 16.67 percent in 2013-14. In the case of Tamil Nadu, the state's share in cardamom production in the country dropped from 11.29 percent in 1992-93 to 7.08 percent in 2013-14 (Figure 2.15).

2.3.3.2 Trends in Area, Production and Productivity of Cardamom- Kerala vis-à-vis India

There has been a uniform trend in terms of decline in area of cardamom cultivation in the state. Area of cardamom plantation in Kerala decreased

from 43826 Ha in 1990-91 to 39730 in 2013-14 (Table 2.8). One of the surprising factors to underline from the area production data is that even though the area of cardamom plantation in the state decreased, the production increased manifold during the period. Production of cardamom in the state increased from 3450 MT in 1990-91 to 14000 in 2013-14 (Table 2.16).

Figure 2.16 Area of Cardamom Cultivation in Kerala from 1990-91 to 2013-14



Source: Calculated from Kerala Agriculture Statistics, Various Issues,2004-14

A linear trend equation, Y = -137.71X + 43647, is fitted for the data on area under cardamom cultivation in the state. This line of best fit indicates a coefficient of determination of 0.584 so that the line fitted is 58.4 per cent best fit to the data also (Figure 2.16). In the equation, 43647 is the intercept of the regression coefficient of the equation. The values show that there exists a consistently decreasing trend in terms of area of cardamom cultivation. Trend value and the value after elimination of trend in terms of area of cardamom cultivation is provided in Table 2.8.

Table 2.8 Area of Cardamom Cultivation in Kerala from 1990-91 to 2013-14

Year	Area (Ha)	Trend Equation Y = -137.71X + 43647		Elimination of Trend
		Value of X	Trend Value	
1990-91	43826	1	43509.29	316.71
1991-92	43670	2	43371.58	298.42
1992-93	43388	3	43233.87	154.13
1993-94	43459	4	43096.16	362.84
1994-95	44237	5	42958.45	1278.55
1995-96	44248	6	42820.74	1427.26
1996-97	43050	7	42683.03	366.97
1997-98	41270	8	42545.32	-1275.32
1998-99	41000	9	42407.61	-1407.61
1999-00	41500	10	42269.9	-769.9
2000-01	41300	11	42132.19	-832.19
2001-02	41300	12	41994.48	-694.48
2002-03	41412	13	41856.77	-444.77
2003-04	41332	14	41719.06	-387.06
2004-05	41378	15	41581.35	-203.35
2005-06	41367	16	41443.64	-76.64
2006-07	41362	17	41305.93	56.07
2007-08	39763	18	41168.22	-1405.22
2008-09	41588	19	41030.51	557.49
2009-10	41593	20	40892.8	700.2
2010-11	41242	21	40755.09	486.91
2011-12	41600	22	40617.38	982.62
2012-13	41600	23	40479.67	1120.33
2013-14	39730	24	40341.96	-611.96

Source: Calculated based on Agriculture Statistics, Various Issues, 2004-14

Contrary to the trends in area of cardamom cultivation in the state, production experienced a phenomenal growth in the state. Production of cardamom increased manifold from 3450 MT in 1990-91 to 7600 MT in 2000-01 (Table 2.9). Later production increased almost double to 14000 MT in 2013-14.

Similar to the case of area of rubber cultivation, a linear trend equation, Y = 20441X + 346244, is fitted for the data on production of rubber in the state. This line of best fit indicates a coefficient of determination of 0.881 so that the line fitted is 88.1 per cent best fit to the data also (Figure 2.17).

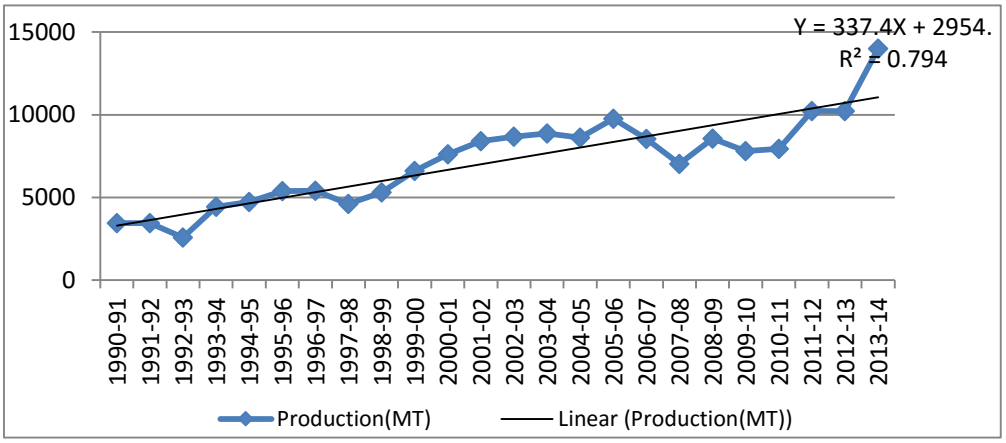
Table 2.9 Production of Cardamom in Kerala from 1990-91 to 2013-14

Year	Production(MT)	Trend Equation Y = 337.44X+ 2954.5		Elimination of Trend
		Value of X	Trend Value	
1990-91	3450	1	3291.94	158.06
1991-92	3450	2	3629.38	-179.38
1992-93	2570	3	3966.82	-1396.82
1993-94	4430	4	4304.26	125.74
1994-95	4720	5	4641.7	78.3
1995-96	5380	6	4979.14	400.86
1996-97	5400	7	5316.58	83.42
1997-98	4600	8	5654.02	-1054.02
1998-99	5300	9	5991.46	-691.46
1999-00	6600	10	6328.9	271.1
2000-01	7600	11	6666.34	933.66
2001-02	8400	12	7003.78	1396.22
2002-03	8680	13	7341.22	1338.78
2003-04	8875	14	7678.66	1196.34
2004-05	8616	15	8016.1	599.9
2005-06	9765	16	8353.54	1411.46
2006-07	8545	17	8690.98	-145.98
2007-08	7030	18	9028.42	-1998.42
2008-09	8550	19	9365.86	-815.86
2009-10	7800	20	9703.3	-1903.3
2010-11	7935	21	10040.74	-2105.74
2011-12	10222	22	10378.18	-156.18
2012-13	10222	23	10715.62	-493.62
2013-14	14000	24	11053.06	2946.94

Source: Calculated based on Agriculture Statistics; Economic Review-Various Issues, 1990-2014

In the equation, 346244 is the intercept and -0.05 is the slope or the regression coefficient of the equation. These values show that there is linear increase in terms of production of rubber in the state. Details along with the elimination of trend by additive model (actual values–trend values) are given in Table 2.9.

Figure 2.17 Production of Cardamom in Kerala from 1990-91 to 2013-14

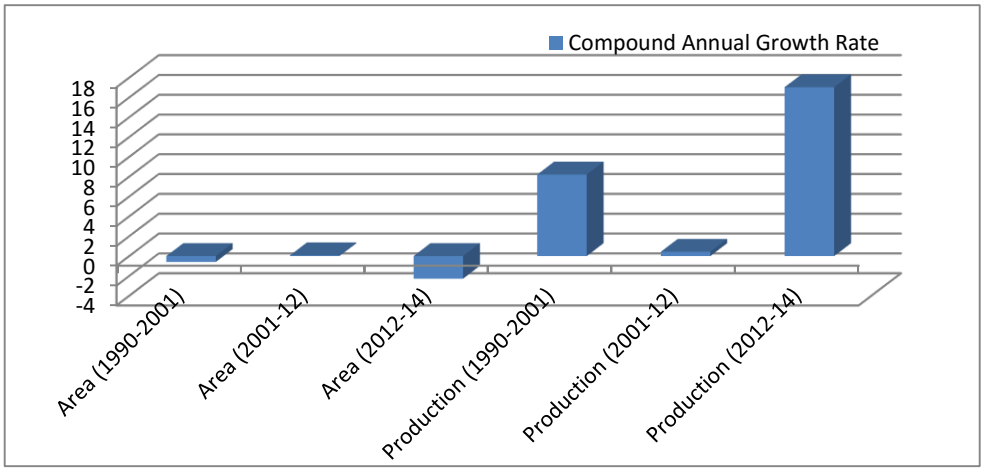


Source: Calculated from Kerala Agriculture Statistics, Various Issues,2004-14

2.3.3.3 Compound Annual Growth of Area and Production of Cardamom in Kerala

Growth in the area of cardamom cultivation in the state over the years remained almost constant over the years from 1990-91 to 2013-14 (Figure 2.18). The compound annual growth of area of cardamom witnessed a growth of less than 1 percent during the period between 1990 to 2001 and 2001 to 2012. In the last two years from 2012, area of cardamom cultivation declined almost 2.27 percent whereas production increased almost 17 percent during the period as shown in Figure 2.18.

Figure 2.18 Compound Annual Growth in Area and Production of Cardamom in Kerala



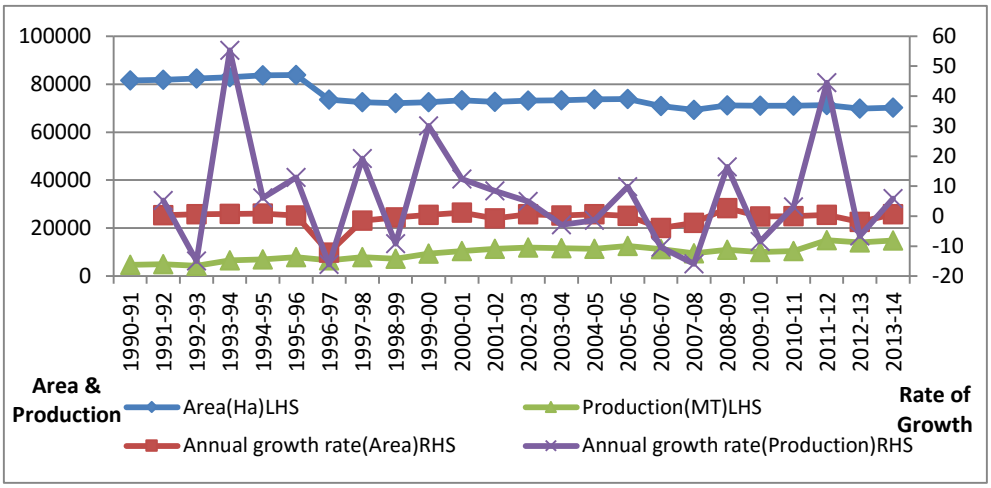
Source: Calculated based on Agriculture Statistics, 2004-14

In the case of all India performance, the area of cardamom plantations in the country witnessed a decline during the 21 year period from 81554 Ha in 1990-91 to 70280 Ha in 2013-14. There was an initial increase in the area of cardamom plantation in the country during the period from 1990-91 to 1995-96. During the period the area of plantation increased from 81554 Ha in 1990-91 to 83802 Ha in 1995-96. Later the area of cardamom plantation declined to 73593 Ha in 1997-98 and further down to 69300 Ha in 2007-08. The numbers increased later and reached 71285 Ha in 2011-12.

Similar to the production data of pepper, the production of cardamom in the country increased even though the area of plantation fell significantly during the period from 1990-91 to 2013-14. Production of cardamom in the country increased manifold during the period from 4750 MT in 1990-91 to 14825 MT in 2013-14. Increase in production of cardamom in increased slowly during the period from 1990-91 to 1998-99 where there was only an increase of 2420 MT, whereas during the period from 1999-00 to 2013-14 the

volume of production of pepper increased to the tune of 7655 MT by 2013-14 as given in Figure 2.19.

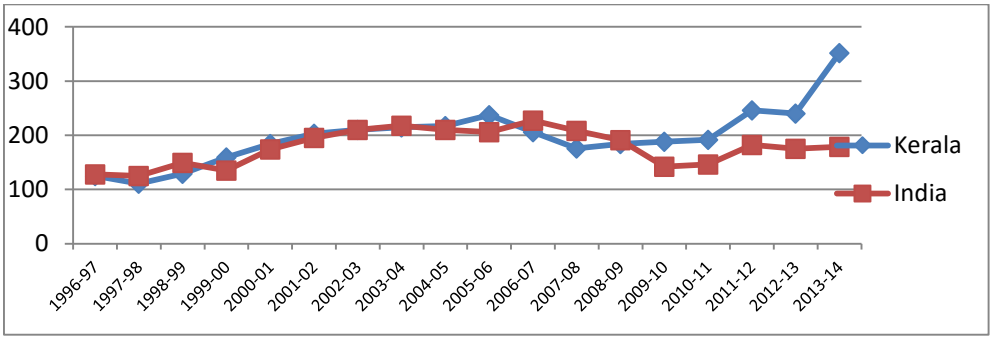
Figure 2.19Area and Production of Cardamom in India-1990-91 to 2013-14



Source: Calculated based on Statistic provided by Spices Board, Planning Commission, 1990-14

High fluctuation in annual growth rate was visible in the case of production of cardamom even though the production was increasing at an increasing rate(Figure 2.19).Contrary to the annual growth rate in production, the annual growth rate in area was somewhat constant as the growth rate was almost zero or in the negative level during most of the period.

Figure 2.20 Productivity of Cardamom in Kerala and India from 1990-91 to 2013-14



Source: Economic Review-Various Issues, 1990-2014; Data for this graph is given in Appendix 2.8

Productivity of cardamom at all India level and Kerala level almost remained identical during the period from 1990-91 to 2008-09. Productivity of cardamom in Kerala almost doubled from 125 kg/ha in 1990-91 to 237 kg/ha in 2005-06. Though the productivity fell to a low of 176 in 2007-08, but the values recovered and reached to an all-time high of 352 kg per hectare in 2013-14 (Figure 2.20). At the same time, productivity of cardamom in national level increased from 128 kg/ha in 1990-91 to 227 kg/ha in 2006-07. Later the productivity slipped down and reached 179 kg/ha by 2013-14.

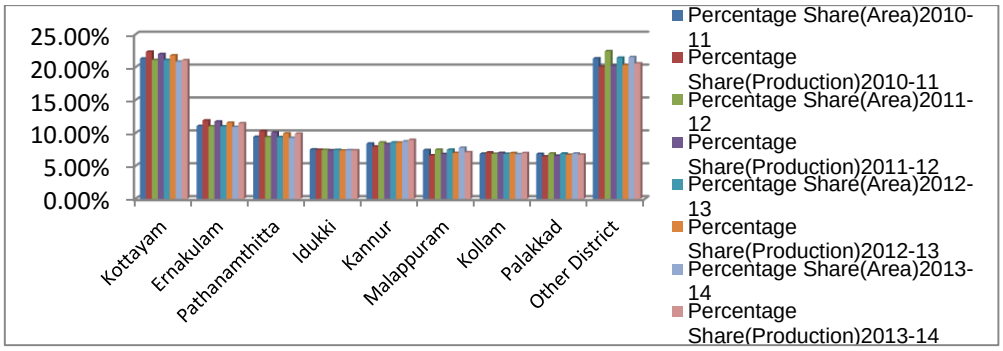
2.4 District-wise Share of Rubber- Black Pepper - Cardamom in Kerala

Relative performance of various districts in the state in terms of area, production and productivity of rubber, black pepper and cardamom has been analysed. Non availability of district-wise data pertaining to pepper and cardamom induce to do this only for rubber.

2.4.1 Rubber

Rubber occupies a predominant position in most of the districts in Kerala except Alappuzha, Wayanad and Thrissur. Major rubber producing districts in the state are namely Kottayam, Ernakulum and Pathanamtitta(Figure 2.21). Kottayam district leads in the state in terms of acreage and production of rubber. Around 21.10 percent of the total rubber plantations in the state belongs to Kottayam district. Kottayam is followed by Ernakulam and Pathanamtitta districts with an area of 11 percent and 9.37 percent of the total rubber plantations in the state.

Figure 2.21 Share of Districts in Kerala in terms of Area and Production of Natural Rubber



Source: Agriculture Statistics, Economic Review-Various Issues, 2010-14;Data for this graph is given in Appendix 2.9

With respect to production also Kottayam comes first with 21.78 percent of the total rubber production in the state followed by Ernakulam and Pathanamtitta districts. Both these districts together produce 21.5 percent of the total rubber production in the state (Figure 2.21).

Table 2.10 District-wise Productivity (Kg/Ha) of Natural Rubber

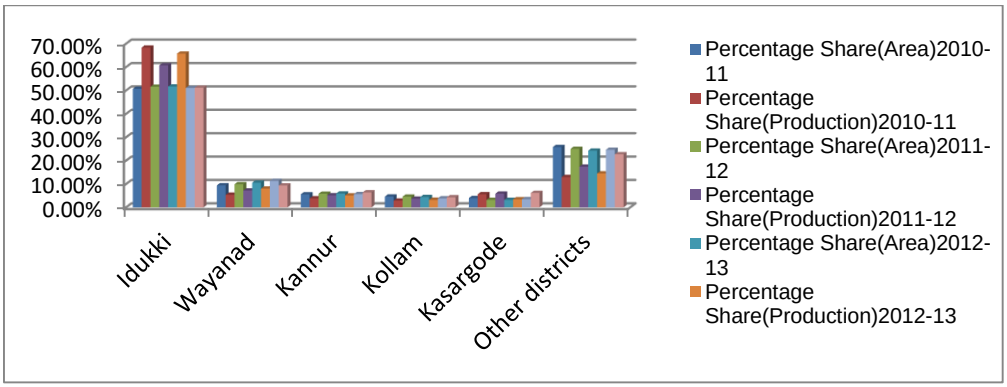
District	Productivity (2013-14)	Productivity (2007-08)
Kottayam	1195	1483
Ernakulam	1256	1512
Pathanamthitta	1263	1478
Idukki	1180	1393
Kannur	1215	1541
Malappuram	1080	1515
Kollam	1263	1556
Palakkad	1153	1479
Wayanad	813	894
Other Districts	1114	1415
State Average	1182	1485

Source: Agriculture Statistics, Economic Review-Various Issues, 2010-14

Per hectare yield of rubber is the highest in Pathanamtitta district with an average yield of 1263 kg/ha whereas in Kottayam the productivity stood at 1195 kg/ha (Table 2.10). Lowest productivity of natural rubber is in Wayanad district with per hectare yield of 813 kg/ha.

2.4.2 Black Pepper

Figure 2.22 Share of Districts in Kerala in terms of Area and Production of Pepper



Source: Agriculture Statistics, Economic Review-Various Issues, 2010-14; Data for this graph is given in Appendix 2.10

In terms of area and production of Pepper, Idukki occupies a predominant place in the state of Kerala. Wayanad, Kollam, Kasargode and Kannur are other major pepper producing districts in the state. Idukki district alone produced 50 percent of the total pepper in the state during the year 2013-14 (Figure 2.22). Area-wise more than 50 percent of the total pepper cultivated in the state is in Idukki district.

Wayanad district comes second in the state in terms of area and production of pepper in the state. In the year 2013-14, 11.33 percent of the total area of pepper cultivation in the state was in Wayanad district and in terms of production the district produced 9.35 percent of the total pepper in

the state. All other districts are minor players in the context of area and production of pepper in the state (Figure 2.22).

Table 2.11 District-wise Productivity (Kg/Ha) of Pepper

District	Productivity (2013-14)	Productivity (2007-08)
Idukki	350	357
Wayanad	289	159
Kannur	395	149
Kollam	390	225
Kasargode	618	238
Other districts	300	170
State Average	352	220

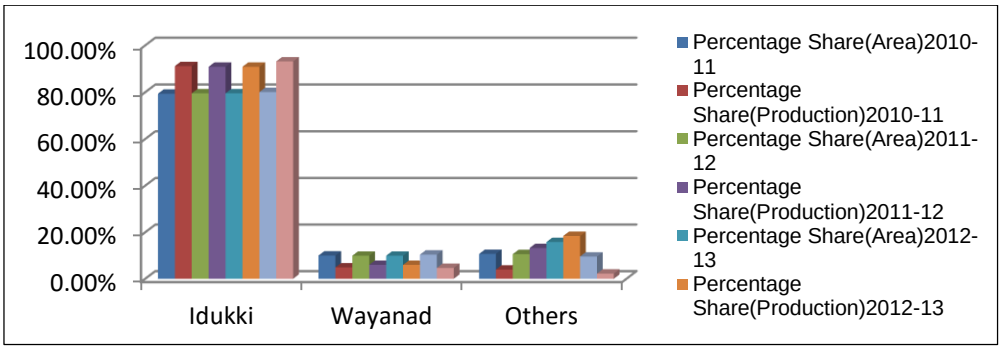
Source: Agriculture Statistics, Economic Review-Various Issues, 2010-14

In terms of productivity of pepper, Kasargodedistrict had the highest productivity of pepper in 2013-14. In the case of Kasragode district the productivity experienced record jump from 225 kg/ha in 2007-08 to 618 kg/ha which was much higher than the state's average productivity of 352 kg/ha (Table 2.11). Idukki district, which stood top in total area and production of pepper, the productivity per hectare stood at 350 kg/ha in 2013-14 compared to 357 kg/ha in 2007-08.

2.4.3 Cardamom

In the case of cardamom also,both in area and production is occupied by Idukki and Wayanad district. Idukki district alone occupies around 80 percent of the total area and more than 93 percent of the total cardamom production in the state during the year 2013-14. Performance of Idukki district is consistent over the years in terms of cardamom production in the state. Wayanad is positioned second in terms of area and production with 10.38 percent of the total cardamom area and 4.64 percent of the total cardamom production in the state as of 2013-14 data (Figure 2.23).

Figure 2.23 Share of Districts in Kerala in Terms of Area and Production of Cardamom



Source: Agriculture Statistics, Economic Review-Various Issues, 2010-14; Data for this graph is given in Appendix 2.11

Productivity of cardamom has improved significantly over the years in the state. In terms of Productivity, Idukki recorded highest productivity of cardamom in the state with 410 kg/ha in 2013-14 compared to 205 kg/ha in 2007-08 (Table 2.12). Productivity of cardamom in Wayanad district also increased from 79 kg/ha in 2007-08 to 158 kg/ha in 2013-14.

Table 2.12 District-wise Productivity (Kg/Ha) of Cardamom in Kerala

District	Productivity (2013-14)	Productivity (2007-08)
Kottayam	59	100
Idukki	410	205
Palakkad	105	99
Wayanad	158	79
State Average	352	177

Source: Agriculture Statistics, Economic Review-Various Issues, 2010-14

Productivity of cardamom in other districts remains poor. One reason for the low productivity is that the weather condition is not conducive for cardamom plantation in districts other than Idukki, Palakkad and Wayanad to an extent.

Area Production and productivity trends of rubber, pepper and cardamom show a mixed picture. Overall, the productivity of all the commodities has increased substantially over the years. Improved variety of crops and modern agriculture practices has helped for this improved productivity both in Kerala and in India. While looking in to the trends in area and production, rubber sector provides promising results but have shown some corrections in 2013-14 owing to the fall in natural rubber prices whereas the trends in pepper and cardamom are not that encouraging. Area and Production of pepper in the state have declined considerably over the years. Similar is the case with cardamom also where the area of cropping in the state declined whereas production levels increased over the years. Price volatility in these commodity markets is supposed to have made significant impact in the area and production trends which will be analysed subsequently. The situation warrants serious introspection as these sectors play a critical role in the agri-economy of the state.

Chapter 3

PLANTATION TRADE – IMPORTANCE OF NATURAL RUBBER AND SPICES

Contents

Chapter 2 brings to focus the economic importance of natural rubber, pepper and cardamom in the state economy in comparison with India by evaluating the trends in area, production and productivity. Chapter 3 tries to juxtapose these in terms of production and consumption into major rubber, cardamom and pepper producing countries. This is to be analysed in relation to the export and import performance of the country in the context of trade liberalisation and thereby identify the nature and dimension of competition from major producing countries. Through the export of these commodities India is able to generate significant amount of foreign exchange and hence export volatilities will have wide implication in India and its reverberations are

more visible in the Kerala economy as Kerala becomes the principal producer of these commodities.

3.1 Global Trends in Production and Consumption of Natural Rubber

Production of Natural Rubber has been increasing steadily over the years. The increase in production of natural rubber in major rubber producing countries has enabled global production quantity to increase. Spurt in manufacturing activities and high demand for automobiles has enhanced the demand for rubber and rubber products globally. Natural rubber therefore could be rightly said as an important agriculture product with significant global industrial demand.

Table 3.1 Year-wise Trends in World Rubber Production

Year	Natural Rubber Production ('000 tonnes)			
	Natural Rubber	Synthetic Rubber	Total	Annual Growth Rate
2000	6762	10870	17632	
2001	7332	10483	17815	1.04
2002	7392	10906	18298	2.71
2003	8064	11425	19488	6.50
2004	8798	11979	20777	6.61
2005	8996	12025	21022	1.18
2006	9931	12702	22633	7.66
2007	10057	13386	23443	3.58
2008	10098	12749	22847	-2.54
2009	9723	12409	22132	-3.13
2010	10393	14124	24517	10.78
2011	11055	15098	26153	6.67
2012	11329	15083	26413	0.99
2013	11223	15068	26291	-0.67

Source: International Rubber Society Group, 2014

Natural rubber production has increased significantly relying on higher consumption demand for rubber. Recent data as given in Table 3.1 shows an increasing trend in production. Globally rubber production witnessed steady growth over the years from 2000 to 2013. The sector had an average growth rate of 3 percent during the period. In terms of natural rubber production it increased from 6762 million tonnes in 2000 to about 11523 million tonnes in 2013 (Table 3.1). The production of synthetic rubber also increased significantly during the period from 2000 to 2013 from around 10870 million tonnes in 2000 to around 15068 million tonnes in 2013. Increase in the global economic growth and demand for manufacturing goods also resulted in the increase in the production of natural and synthetic rubber globally.

3.1.1 World Rubber Consumption

Global consumption of natural rubber is also witnessing phenomenal increase over the years (Table 3.2). Utility of rubber as a raw material for various industrial purposes has augmented the demand for the product. Higher growth of manufacturing sector in developing countries helped the consumption of natural rubber to increase manifold.

In terms of global consumption of rubber, the period from 2001 to 2013 witnessed a growth rate of 3.14 percent. Compared to the year 2000, global demand rose to about 30 percent by 2013. Global economic growth and increase in manufacturing activities and ever increasing demand of automobile sector could be attributed as the reasons for the increased demand of rubber. Consumption of natural rubber increased from 73.4 million tonnes in 2000 to about 11.05 million tonnes in 2013. In the case of synthetic rubber also similar trend is visible in terms of increase in consumption over the

years. Consumption of synthetic rubber increased from 10.8 million tonnes in year 2000 to around 14.9 million tonnes in 2013 (Table 3.2). Increase in the economic development in the emerging economies like China and India had played a significant role for the increase in the consumption of rubber both natural as well as synthetic rubber.

Table 3.2 Year-wise Trends in World Rubber Consumption

Year	Natural Rubber Consumption ('000 tonnes)			
	Natural Rubber	Synthetic Rubber	Total	Growth Rate
2000	7340	10830	18170	
2001	7333	10253	17586	-3.21%
2002	7567	10737	18304	4.08%
2003	7912	11206	19118	4.45%
2004	8698	11700	20398	6.70%
2005	9190	11735	20925	2.58%
2006	9662	12420	22082	5.53%
2007	10139	13073	23212	5.12%
2008	10181	12508	22689	-2.25%
2009	9361	12117	21478	-5.34%
2010	10773	13976	24749	15.23%
2011	11007	14831	25838	4.40%
2012	11042	14895	25937	0.38%
2013	11055	14902	13104	0.08

Source: International Rubber Society Group, 2014

3.1.2 Country-Wise Production of Natural Rubber

Asian countries are among the top rubber producing countries globally. Around 90 percent of the total natural rubber is produced by the top five rubber producing countries including Thailand, Indonesia, Malaysia, India and Vietnam as shown in Table 3.3.

Table 3.3 Country-wise Production of Natural Rubber ('000 tonnes)

Country	2009	2010	2011	2012
Thailand	3164	3252	3659	3778
Indonesia	2440	2736	3013	3040
Malaysia	856	939	996	923
India	820	851	893	919
Vietnam	724	752	812	864
China	644	665	723	795
Others	1054	1204	1045	1108
World Total	9702	10399	11055	11327

Source: International Rubber Society Group, 2014

Among these countries, Thailand remains at the top with an output of 3.7 million tonnes of natural rubber, whereas in India the natural rubber production was only 0.9 million tonnes. Thailand and Indonesia together produces more than 65 percent of the world natural rubber production. Global rubber production registered a growth of 14 percent in 2012 compared to 2009. Growth rate in terms of production of natural rubber in India was around 7.3 percent during 2009-12.

Table 3.4 Country-wise Consumption of Natural Rubber ('000 tonnes)

Country	2009	2010	2011*	2012*
China	3384	3646	3622	3853
India	905	944	957	988
USA	687	926	1029	950
Japan	636	750	772	733
Malaysia	470	458	402	490
Indonesia	352	421	441	488
Thailand	399	459	480	441
Rep.of.Korea	330	384	402	396
World Total	9325	10778	10963	11005

Source: International Rubber Society Group, 2013

China and India are among the major rubber producing as well as consuming countries in the world (Table 3.4). China remained the top consumer of natural rubber during the period from 2009 to 2012. High pace of economic development accompanied by large scale infrastructure development and increase demand for automobile enhanced the demand for natural rubber in China and India. Global consumption of natural rubber increased 15 percent from 9.3 million tonnes in 2009 to 11 million tonnesin 2012.China alone consumed around 30 percent of the total natural rubber. The increase in consumption of natural rubber in India also rests on the same reason of high demand for the product because of fast economic development. In the calendar year of 2012 china, India and U.S.A consumed 3.8 million, 0.98 million and 0.95 million of natural rubber accounting to more than 50 percent of the total global consumption of Natural rubber.

3.2 Natural Rubber- Indian Scenario

3.2.1 Production and Consumption of Natural Rubber

Natural rubber production as well as consumption has increased significantly over the year since 1995-96. Even though the area of cropping of rubber has increased the consumption of NR also increased subsequently.

Production of NR in India at present is below the domestic demand, forcing the country to import natural rubber from other rubber producing countries. Production of Natural rubber stood at 506910 MT in 1995-96 and consumption was around 525465 MT, whereas by 2013-14 the production got increased to 844000 MT and consumption increased to 981520 MT. Thereby supply gap enlarged from 18555 MT in 1995-96 to a record137520 MT in 2013-14 (Table 3.5).

Table 3.5 Production and Consumption of Natural Rubber in India

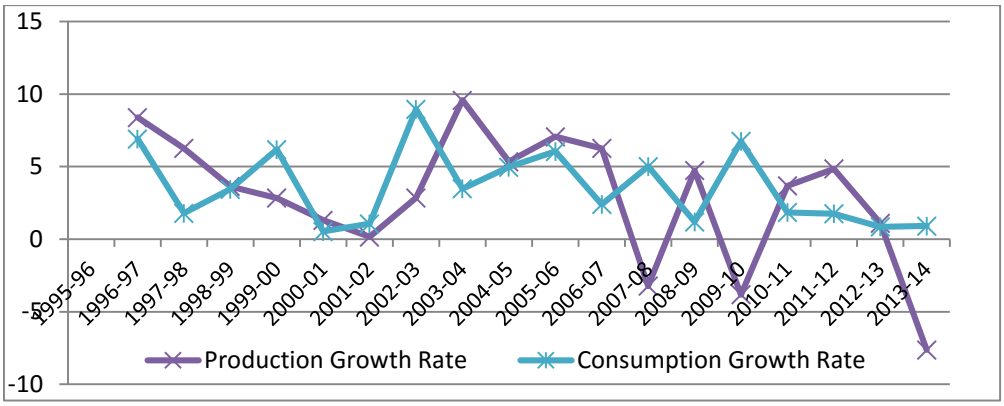
Year	Production	Consumption	Supply Gap
1995-96	506,910	525,465	18,555
1996-97	549425	561765	12340
1997-98	583830	571820	12010
1998-99	605045	591545	13500
1999-2000	622265	628110	5845
2000-01	630405	631475	1070
2001-02	631400	638210	6810
2002-03	649435	695425	45990
2003-04	711650	719600	7950
2004-05	749665	755405	5740
2005-06	802625	801100	1515
2006-07	852895	820305	32590
2007-08	825345	861455	36110
2008-09	864500	871720	7220
2009-10	831400	930565	99165
2010-11	861950	947715	85765
2011-12	903700	964415	60715
2012-13	913700	972705	59005
2013-14	844000	981520	137520

Source: Rubber Board Statistics, Various Issues, 1995-2014

3.2.3 Production and Consumption Growth Rate in India

Growth rate in production of rubber has dropped significantly from 7.4 percent annual growth in 1995-96 to -8.0 percent in 2013-14.Growth rate of consumption always stood higher than the growth rate in production over the years from 1995-96 to 2012-13. One of the reasons for higher import is the existing supply gap between actual production and consumption in the country because of well-established tyre and other rubber based industries in the country as displayed in Figure 3.1

Figure 3.1 Growth Rate of Production and Consumption of Natural Rubber in India



Source: Calculation based on Rubber Board Statistics-Various Issues, 1995 – 2014; Data for this graph is given in Appendix 3.1

Consumption growth rate also dropped but more quantum of fluctuation is visible in the growth rate of consumption which is highly dependent upon the industrial demand for rubber in the country. Higher production and productivity of natural rubber has enhanced significantly in meeting the demand of the manufacturing sector but a deficit of 15 percent in the domestic production and consumption in the country is still prevalent (Figure 3.1).

3.2.4 Type-wise Production and Consumption of Natural Rubber in India

More than 70 percent of the natural rubber in the country is produced in the form of RSS grades. Production of RSS grade rubber in the country increased from 454180 MT in 1999-00 to 667225 MT in 2012-13. Solid Block Rubber is another important form of natural rubber produced in the country (Table 3.6).

Table 3.6 Type-wise Production of Natural Rubber in India (Metric Tonnes)

Year	RSS Grades	Latex Concentrate (DRC)	Solid Block Rubber	Others	Total
1999-00	454180	60640	60095	47350	622265
2000-01	455175	65975	60225	49030	630405
2001-02	453465	62990	656650	49295	631400
2002-03	441875	76205	81405	49950	649435
2003-04	490070	81860	87665	52055	711650
2004-05	532155	78795	84275	54440	749665
2005-06	566445	90950	92540	52690	802625
2006-07	612735	86780	98500	54880	852895
2007-08	583875	88305	100705	52460	825345
2008-09	617125	88070	110275	49030	864500
2009-10	578650	85760	120780	46210	831400
2010-11	618960	76065	117830	49095	861950
2011-12	658200	76490	119815	49195	903700
2012-13	667225	73150	122125	51200	913700
2013-14	622540	68075	106815	46570	844000

Source: Rubber Board Statistics, Various Issues, 1999-2014

RSS grade rubber constitutes about 75 percent of the total natural rubber production in the country. Production of RSS grade rubber increased from 455175 MT in 200-01 to 622540 MT in 2013-14. The share of solid block rubber in the total production increased from 10 percent in 2000-01 to 18 percent in 2013-14. In terms of quantity, the production of solid block rubber increased from 60225 MT in 2000-01 to 106815 MT in 2013-14. Latex concentrate (DRC) and other forms of natural rubber occupy about 8 percent and 6 percent of the total production of natural rubber in the country in 2013-14. 114645 MT of latex concentrate (DRC) and other forms of NR was produced in the country during 2013-14.

3.2.5 Consumption of Rubber- Sector wise-Product-wise

Tyre sector is the major consumer of various forms of rubber like Natural rubber, synthetic rubber and reclaimed rubber. The share of tyre sector in the total consumption of rubber in the country is 65.61 percent. So predominantly rubber is mainly consumed by the tyre industry in the country. Tyre sector itself consumed around 635539 MT of NR in the year 2013-14 whereas non-tyre sector consumed around 329086 MT of natural rubber.

Table 3.7 Sector-wise Consumption of Rubber (Metric Tonnes)

Rubber	Sector	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Natural Rubber	Tyre Sector	508121	576210	597623	631410	635539	652434
	Non tyre Sector	363599	354355	350092	333005	337166	329086
Synthetic rubber	Tyre Sector	185094	238153	298414	307365	323412	349001
	Non tyre Sector	107856	109557	113416	115985	120748	134574
Total NR+SR	Tyre Sector	693215	814363	896037	938775	958951	1001435
	Non tyre Sector	471455	463912	463508	448990	457914	463660
Reclaim Rubber	Tyre Sector	29191	34968	40511	43178	45879	49559
	Non tyre Sector	56839	57282	59779	59257	68716	74166
Total (NR+SR+ RR)	Tyre Sector	722406	849331	936548	981953	1004830	1050994
	Non tyre Sector	528294	521194	523287	508247	526630	537826
Grand Total		1250700	1370525	1459835	1490200	1531460	1588820

Source: Rubber Board Statistics, Various Issues, 2008 -14

When compared to 2008-09 levels, consumption of NR by tyresector registered a growth of 30 percent 2013-14 according to Table 3.7. In the case of non-tyre sector the consumption of rubber actually decreased from 528294 MT in 2008-09 to 537826 MT by 2013-14. Consumption of reclaimed rubber by the tyre and non-tyre sectors increased from 86030 MT in 2008-09 to 123725 MT in 2013-14 (Table 3.7).

Share of tyre and tube of auto mobiles and cycles increased from 65 percent in 2007-08 to 74 percent in 2011-12 in the total consumption of rubber in the form of end products in the country. Consumption of rubber in the form of tyres and tubes of auto and cycles increased from 814063 MT in 2007-08 to 1095335 in 2011-12 (Table 3.8). The other major consumption of rubber in India comes in the form of footwear, belt and hoses, battery boxes, cables and wires etc.

Table 3.8 Consumption of Rubber According to End Products in India (Qty in MT)

End Product	2007-08	2008-09	2009-10	2010-11	2011-12
Auto tyres& tubes	670752	680339	819505	909190	963405
Cycle tyres& Tubes	143311	140832	139405	139880	131930
Footwares	122105	122600	121375	116345	101300
Belts and Hoses	65378	67278	67845	67840	61350
Camel Back	59059	62601	66150	65495	67745
Latex Foam	38522	38445	39465	37765	31260
Dipped Goods	38417	38720	40310	38925	37755
Battery Boxes	15232	14369	Na	NA	NA
Cables and Wires	4768	4489	NA	NA	NA
Other Products	84231	81027	76470	84395	95455
Total non-tyre sector	571023	570361	551020	550645	526795
Total	1241775	1250700	1370525	1459835	1490200

Source: Rubber Board, 2013

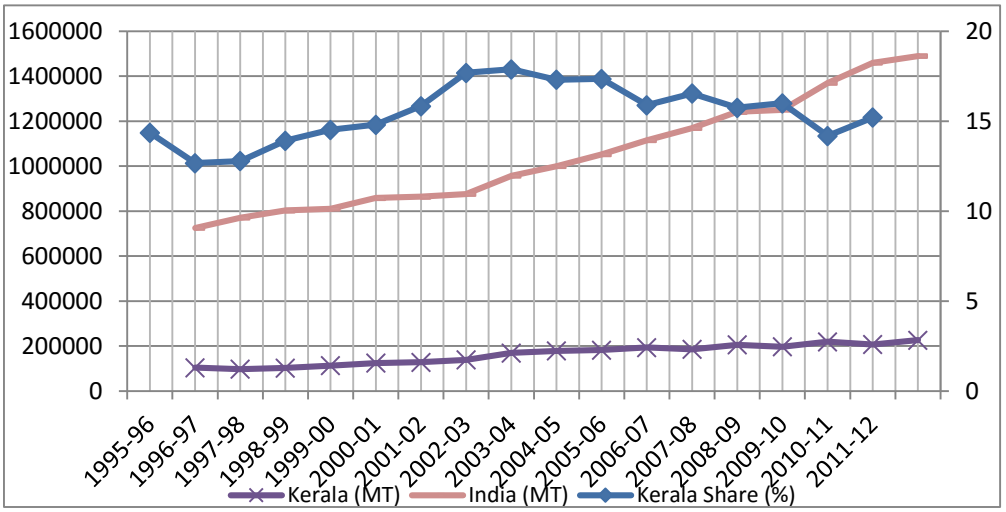
3.2.6 Consumption of Natural Rubber- Kerala Scenario

Kerala, even though a major producer of natural rubber consumes only 15 percent of the total consumption of rubber in the country. Consumption of rubber in the state registered a steep increase from 104159 MT in 1995-96 to 226560 MT in 2011-12(Figure 3.2). Consumption of natural rubber in Kerala comes from industrial units based on rubber who use natural rubber as a raw

material and from people who consume various end products of natural rubber like tyres and tubes, foot wears etc.

In the case of consumption of natural rubber as raw material the lack of major industrial unit based on rubber is one of the reasons for the low amount of rubber consumption in the state. Most of the tyre industries who are the major consumer of natural rubber are now based outside the state. Major tyre manufacturing companies in the country like MRF, Appollo, CEAT etc. initially had significant investment in the tyre manufacturing industry in the state.Except a few, most of their plants were forced to move out to other states because of persistent labour strikes and lock outs. In addition to this, the existing tyre manufacturing plants, major slipper and sandals manufacturing units are still working in the state and that may be the reason for the consumption demand for natural rubber in the state

Figure 3.2 Consumption of Rubber (Natural, Synthetic and Other forms) in Kerala and India



Source: Rubber Board, 2013;Data for this graph is given in Appendix 3.2

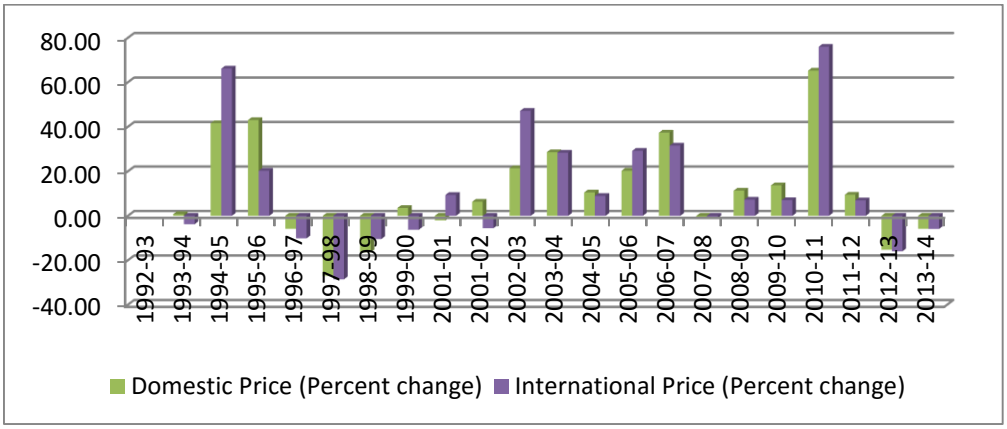
3.3 Trends in Natural Rubber Price- India and International Market

3.3.1 Domestic and International Price of Natural Rubber from 1992-93 to 2013-14

Increase in the global consumption mentioned earlier resulted in the hike in the commodity price of rubber during the recent years. Average price of Natural rubber in Indian market as well as International market almost remain in similar levels over the year from 1992-93 to 2013-14 as given in Figure 3.3. Both domestic and international markets are integrated in such an extent that any forward and backward movement in international market is reflected in the same manner in the domestic market also.

The average price of RSS-4 in Kottayam market was around ₹2569in 1992-93 whereas in Bangkok Market the average price of Natural rubber was around ₹2510 during the same period. Price of RSS-3 and RSS-4 variety of natural rubber increased more than three times by 2011-12 when compared to 2005-06 prices (Figure 3.3).

Figure 3.3 Average Market Price of Natural Rubber in Domestic and International markets in ₹/100Kg



Source: Rubber Board, Various Issues, 1992-2014;Data for this graph is given in Appendix 3.3
Note: Domestic price refers to Kottayam market, International RSS 3 refers to Bangkok price

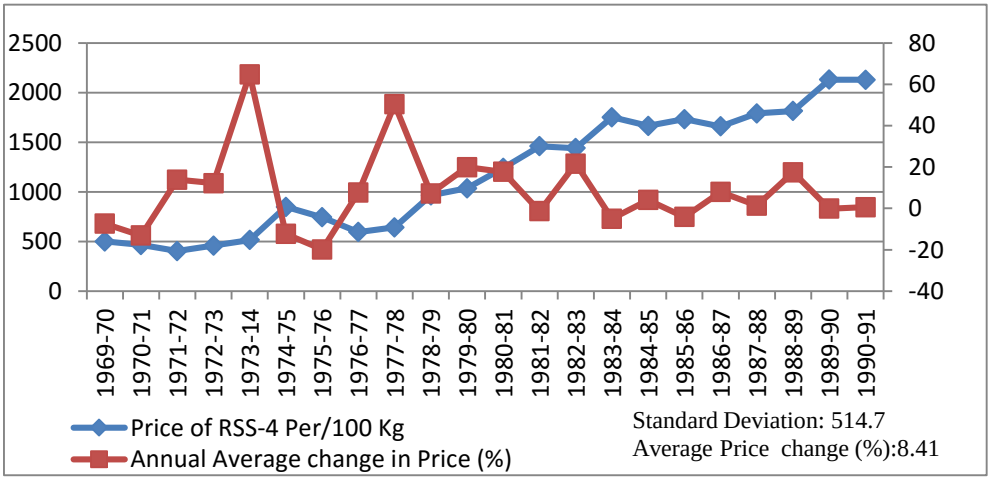
The international market showed some sign of correction in the prices in 2012-13 and 2013-14 because of the slowdown in economic growth especially in the major rubber consuming countries like India and China and owing to the fall in crude oil price thereby making synthetic rubber cheaper.

3.3.2 Domestic Rubber Price and its fluctuations from 1975-76 to 2013-14

Domestic Price of RSS-4 grade natural rubber in the country during the period from 1975-76 to 2013-14 was taken to understand price levels and its average fluctuation during the period. Price level in the pre-liberalized and post-liberalized period has been taken separately to understand whether the liberalization policy impacted price of natural rubber in the country (Figure 3.4).

3.3.2.1 Domestic rubber price during the Pre-Liberalization Period (1975-76 to 1990-91)

Figure 3.4 Average Market Price of RSS-4 Grade Natural Rubberfrom **1975-76 to 1991-92**



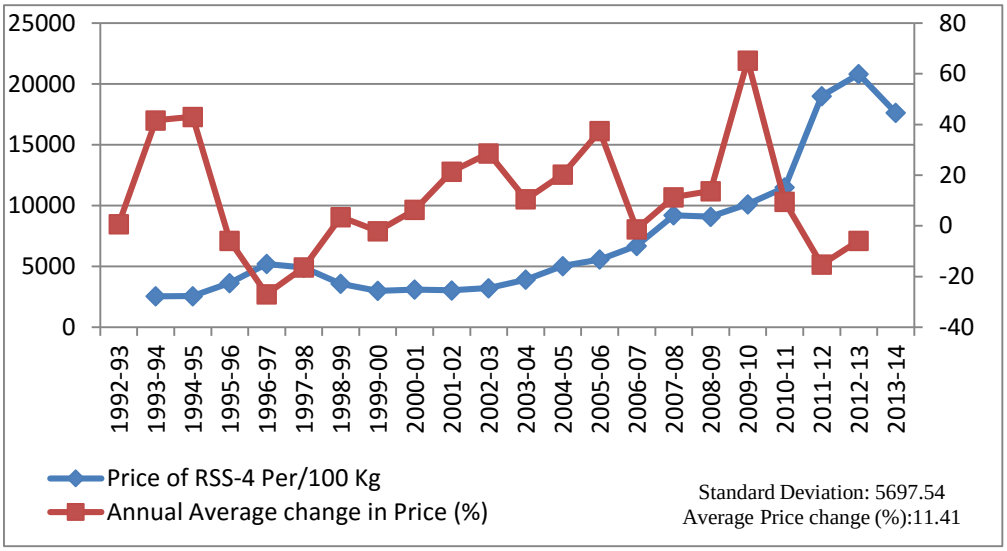
Source: Calculation based on Rubber Board Statistics, 1969-1991; Data for this graph is given in Appendix 3.4

Domestic price of natural rubber during the pre-liberalized period witnessed only nominal increase from ₹ 744 in 1975-76 to ₹ 2141 in 1991-92 as shown in Figure 3.4. The amount of fluctuation in the prices was also minimal during the period. During most of the period the average fluctuation in the domestic price of RSS-4 remained between 0 to 20 percent. Low fluctuation in the price of natural rubber during the pre-liberalized period may be attributed to the lesser exposure of Indian Rubber market to the world Market.

3.3.2.2 Domestic Rubber price during the Post-Liberalized Period (1992-93 to 2013-14)

Rubber prices witnessed upward movement after 1991-92, the period when the structural reforms were made and opened up the economy. Increased economic activity and the industrial use of natural rubber resulted in the increase in the price of natural rubber. Price witnessed an incredible 871 percent increase during the 20 year period from 1990-91 to 2011-12 (Figure 3.5).Price of RSS-4 variety of natural rubber reduced more than 20 percent from₹ 20805 per 100 kg in 2011-12 to ₹ 16602 per 100 kg in 2013-14. Large scale fluctuations in the price of natural rubber were visible during the period. Increase in import from the major rubber producing countries like Thailand, Malaysia and Indonesia and the fluctuating price of crude oil, an important source of synthetic rubber were responsible for the scenario.

Figure 3.5 Average Market Price of RSS-4 Grade Natural Rubber from 1992-93 to 2013-14



Source: Calculation based on Rubber Board Statistics, Various Issues, 1992-2014; Data for this graph is given in Appendix 3.4

3.3.3 Price of Various forms of Natural Rubber

Average price of various grades of natural rubber increased significantly after 2005. The major grades of rubber traded in the domestic market of the country are RSS-4 and RSS-5. The price of these grades of increased from ₹ 6068 and ₹ 5865 per 100 kg in 2005 to a record high of ₹ 21668 and ₹ 21238 per 100 kg in 2011 (Table 3.9). Later the price got reduced to ₹ 14115 and ₹13493 for RSS-4 and RSS-5 by the end of 2014. Large scale import of natural rubber from Thailand, Indonesia and the fall in the price of crude oil are some of the reasons attributed for the fall in price level.

Table 3.9 Annual Average Rubber Price (₹/100 Kg) in Domestic Market from 1997-2014

Year	RSS1	RSS2	RSS 3	RSS 4	RSS 5	EBC 2X	Latex	ISNR 20
1997	4548	4411	4091	3988	3846	3583	5416	3769
1998	3519	3552	3127	3013	2867	2665	4879	2775
1999	3496	3346	3176	2997	2872	2731	3810	2823
2000	3599	3438	3289	3125	2994	2890	4788	2927
2001	3472	3369	3247	3109	2961	2643	4105	2756
2002	3958	3859	3761	3621	3402	3122	5039	3339
2003	5170	5072	4972	4814	4649	4576	6202	4670
2004	5942	5842	5742	5571	5401	5272	7064	5310
2005	6404	6303	6203	6068	5865	5717	7163	5808
2006	9324	9191	9089	8783	8551	8338	10868	8454
2007	9509	9390	9290	9006	8772	8514	10460	8654
2008	11146	11046	10946	10775	10547	10076	11977	10387
2009	10318	10183	10081	9756	9473	8889	11756	9080
2010	15015	17352	17245	16908	16405	15570	11207	15865
2011	23096	22667	22201	21668	21238	20478	13349	20967
2012	19399	19053	18724	18439	18002	17484	12174	17625
2013	18522	17865	17162	16880	16355	15485	11956	15897
2014	15228	15045	14523	14115	13493	10218	8237	12287

Source: Rubber Board, 2014

Price of latex increased with the increase in the price of RSS grades. Latex price increased by more than 200 percent in the last ten years. In 2001, price of latex per 100 kg was ₹ 4105, whereas by 2011 the price reached to ₹ 13349 per 100 kg. By 2013 the price of latex declined to ₹ 8237 per 100 kg as shown in Table 3.9. Same trend is visible in the case of ECB2x and ISNR 20 where the price reached to record levels by 2011 where the price stood at ₹ 20478 per 100 kg in the case of ECB2x and ₹ 20967 per 100 kg of ISNR

20. Later, similar to RSS grade rubber price, the price of ECB2x and ISNR 20 declined almost by 40 percent by the end of 2014.

3.3.4 Month-wise price of Natural Rubber- Domestic Market and Seasonality Index

Average monthly rubber prices witnessed higher amount of volatility during the past three years both in the domestic market as well as in the international market. In the domestic market of Kottayam, average price of RSS-4 variety of natural rubber declined about 15 percent from ₹ 20998 to ₹ 16942 in 2013-14which is shown in Table 3.10.

Table 3.10 Average Month-wise Price of Natural Rubber (RSS-4) (₹/100 Kg)

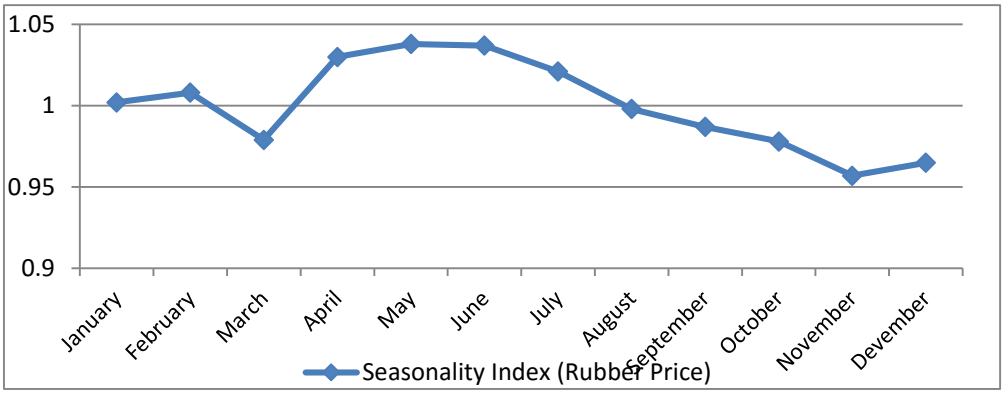
Month	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
April	5840	8634	8979	10965	9488	16418	23868	19344	15695
May	6214	9841	8685	12248	9805	15983	22523	19680	16274
June	6173	10692	8093	12708	9913	17087	22185	19433	16238
July	6562	9821	7943	13340	9819	18215	21242	18807	16879
August	6084	9182	8742	13782	10250	17952	20462	18427	17424
September	6034	8169	8856	13536	10651	16645	21459	17313	19177
October	6555	8709	9424	9074	10898	18112	21185	18465	18994
November	6566	8260	9603	7681	11302	19876	19502	18537	18313
December	6886	8615	9221	6488	13430	20188	20030	17240	16331
January	7360	9716	9432	7034	13772	22160	21668	16170	15600
February	8045	9757	9687	6903	13700	23400	19094	18439	15500
March	8069	9057	10354	7583	14948	22002	18764	16137	16880
Average	6699	9204	9084	10111	11498	19003	20998	18166	16942

Calculated from Rubber Board Data, 2011-14

Month-wise data also explains the existence of seasonality in terms of rubber prices. As Seasonality component is very much prevalent in the month

wise analysis commodity price of natural rubber a seasonality Index was worked out to understand the nature of seasonality. Seasonality Index of natural rubber price explains that there exists seasonality in terms of commodity price. From August to December considered as the peak season in terms of rubber tapping there exist an impact on the commodity prices as prices declines up to four percent compared to the average annual rubber price as shown in Figure 3.6.One major reason that could be attributed to the seasonality in price during the peak tapping months is the high volume of natural rubber import by tyre manufacturing companies from Thailand, Malaysia etc. Seasonal variation in prices seems to be positive during the months from April to July. One reason for the decline in seasonality index during April to July is much to do with the off season in terms of tapping and the onset of monsoon in the state which halts tapping in most plantations.

Figure 3.6 Seasonality Index- Rubber Prices



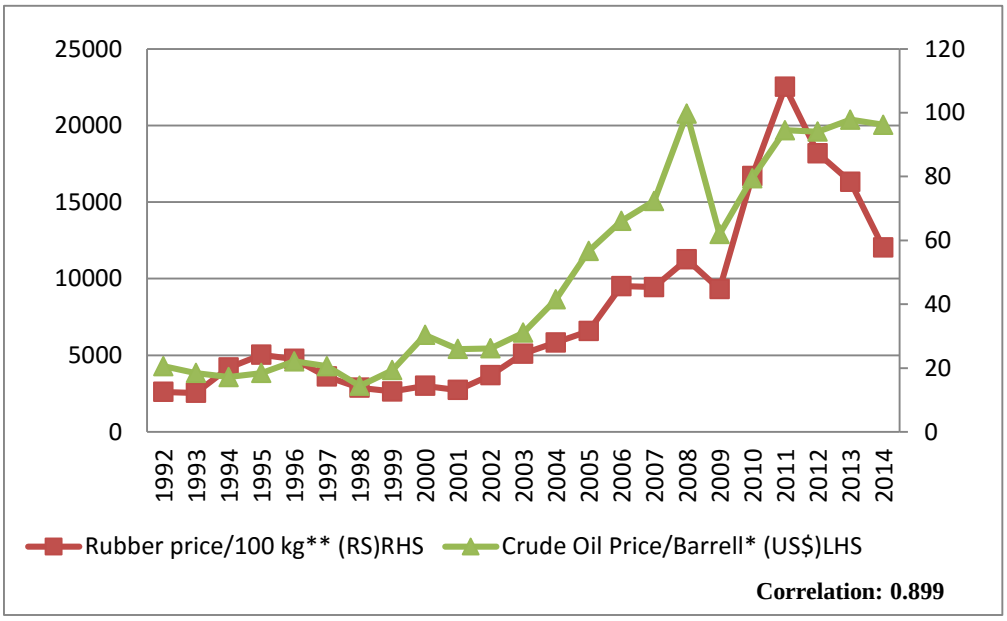
Source: Calculation based on Rubber Board Statistics, 2005-14

3.3.5 International Crude Oil Price and Rubber Price

The price of natural rubber has a high correlation with the price of crude oil in the international market. A rise and fall in the price of natural

rubber is visible with the increase and decreased in the price of crude oil in the international market. Synthetic rubber, a by-product of crude oil is considered as the best alternative to natural rubber for manufacturing purposes. The data during the period from 1992 to 2014 show ample evidence to prove the high correlation between the prices of crude oil and rubber as depicted in Figure 3.7. Price of RSS-3 in the Bangkok international market averaged at ₹ 3745 during the period from 1992-2004 when the price of crude oil stood at US$ 50 per barrel in the international market.

Figure 3.7Correlation between Crude Oil Price and Natural Rubber Price



*Source: Calculated based on *Cushing, OK WTI Spot Price FOB (Dollars per Barrel) & **RSS 3 Price, Bangkok Market,1992-2014 Data for this graph is given in Appendix 3.5*

Rubber prices started increasing thereafter with the increase in the price of crude oil. RSS-3 reached record levels during the period from 2009 when the price of crude oil also reached to an all-time high level. Global demand for rubber and the higher price for synthetic rubber, a bi-product of crude oil

perpetuated the increase in the price of natural rubber. High correlation of 0.9087 exists between the price of crude oil and rubber prices in the international market. Later economic slowdown in the Euro Zone and China resulted in the decline of crude prices resulting in the fall of synthetic rubber and thereby natural rubber prices. Eventually it could be concluded that any forward movement in crude oil prices increase in price of synthetic rubber, which shows conducive for the increase in the price of natural rubber (Figure 3.7).

3.4 Export and Import of Natural Rubber in India

Table 3.11 Export and Import of Natural Rubber in (Metric Tonnes) from 1995-96 to 2013-14

Year	Export	Import
1995-96	1130	51635
1996-97	1598	19770
1997-98	1415	32070
1998-99	1840	29534
1999-00	5989	20213
2000-01	13356	8970
2001-02	6995	49769
2002-03	55311	26217
2003-04	75905	44199
2004-05	46150	72835
2005-06	73830	45285
2006-07	56545	89799
2007-08	60353	86394
2008-09	46926	77762
2009-10	25090	177130
2010-11	29851	190962
2011-12	27145	214433
2012-13	30594	217364
2013-14	5398	325190

Source: Rubber Board Statistics, Various Issues, 1995-2014

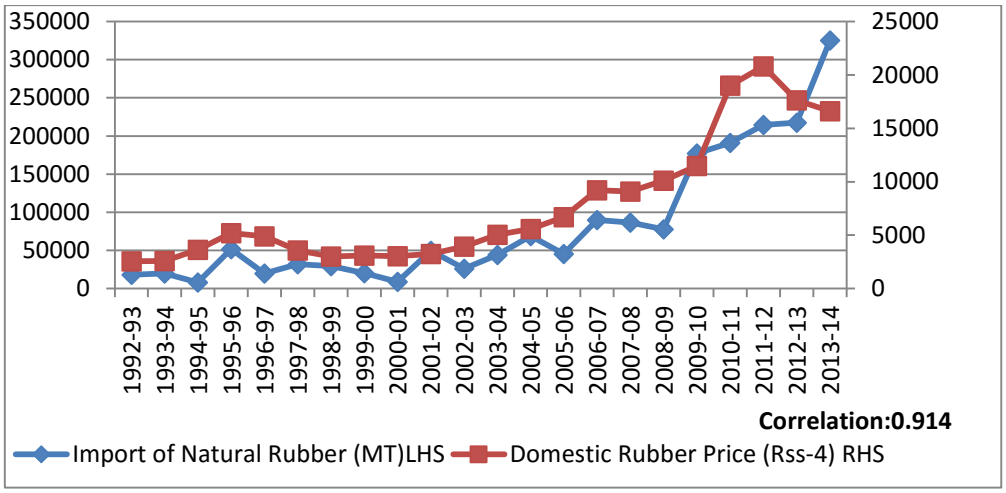
India is a major source of export as well as import of natural rubber. Both export and import of natural rubber experienced a phenomenal increase during the period. Export and Import of natural rubber is significant as India has turned to be a major producer as well consumer of Natural rubber. Post-liberalization period witnessed increasing demand for natural rubber as per Table 3.11.

Export of natural rubber from the country increased from a meagre 1130 MT in 1995-96 to 30594 MT in 2012-13 and later declined substantially to 5398 MT in 2013-14. Growing domestic demand for rubber resulted in increase in the import of natural rubber. Import of NR increased dramatically in the past 14 years starting from 2000-01.The import of NR increased from 51635 MT in 1995-96 to 325190 MT in 2013-14 (Table 3.11). Corresponding period was also the time when the market witnessed drastic fluctuation in the price of NR in the country because of the spike in import from the major rubber producing countries.

3.4.1 Domestic Rubber Price and Its Impact on Import

Prices of natural rubber and import of natural rubber to India show high positive correlation which in a way is justifying the proposition. Import of natural rubber experienced a steep increase when compared to the increase in the price of domestic rubber. Domestic price of natural rubber (RSS-4) increased from ₹ 2550 in 1992-93 to ₹16602 in 2013-14 whereas during the corresponding period the import increased from 17884 MT in 1992-93 to a whopping 325190 MT (Figure 3.8). Import of natural rubber in the initial years of liberalisation increased only minimally from 17884 MT in 1992-93 to 44199 MT in 2003-04. Later the import increased substantially to more than 600 percent and stood at 325190 MT in 2013-14.

Figure 3.8 Correlations between Rubber Price and Import of Natural Rubber to India



Source: Calculated based on Rubber Board Statistics, 1992-2014; Data for this graph is given in Appendix 3.6

One reason that could be attributed for this phenomenon is that there is always a tendency from the part of rubber manufacturers to import natural rubber on a large scale whenever there is a rise in price of natural rubber in the domestic market. Another factor responsible for the increase in import is the demand-supply gap existing in the Indian natural rubber market. High demand for natural rubber in the country's domestic market and the inability of domestic production to meet the domestic demand has paved the way for higher import levels.

Increased demand for rubber in the industrial sector in India especially the tyre industry resulted in the increase in import from other rubber producing countries. In order to meet the increasing demand of the auto mobile sector,tyre manufacturers resorted in import of rubber. India's import of rubber increased from 65246 MT in 1992-93 to a whopping 697029 MT by 2013-14 as shown in Table 3.12. India's import of rubber comprised of

both natural as well as synthetic rubber. Earlier around 73 percent of the total import of rubber to the country was in the form of synthetic rubber.

Table 3.12 Import of Natural Rubber and Synthetic Rubber from 1992-93 to 2013-14

Year	Import (MT)		
	Natural Rubber	Synthetic Rubber	Total
1992-93	17884	47362	65246
1993-94	19940	64338	84278
1994-95	8093	73860	81953
1995-96	51635	71735	123370
1996-97	19770	91050	110820
1997-98	32070	86389	118459
1998-99	29534	97548	127082
1999-00	20213	104842	125055
2000-01	8970	106923	115893
2001-02	49590	111323	160913
2002-03	26229	124475	150704
2003-04	44199	173784	217983
2004-05	68718	113095	181813
2005-06	45285	132118	177403
2006-07	89699	171998	261697
2007-08	86394	195705	282099
2008-09	77762	190630	268392
2009-10	177130	250210	427340
2010-11	190962	302030	492992
2011-12	214433	327625	542058
2012-13	217364	329585	546949
2013-14	325190	371839	697029

Source: Rubber Board Statistics, Various Issues, 1992-2014

Later the share of synthetic rubber in the total rubber import to the country declined to almost 60 percent whereas the share of natural rubber increased substantially from 27 percent in 1992-93 to more than 40 percent in 2013-14. Import of synthetic rubber increased from 47362 MT in 1992-93 to 371839 MT in 2013-14 whereas import of natural rubber increased from 17884 MT to 325190 MT during the corresponding period (Table 3.12). Increase in the price of crude oil over the years has resulted in declining share of synthetic rubber in the total import rubber import into the country.

3.4.2 Major Export Partners of India-Natural Rubber

Even though India is a major rubber producing country, country's export of natural rubber is minimal compared to its production. Major export destination of India's natural rubber produces are countries belonging to various regional blocks like European Union, ASEAN, SAARC etc. (Table 3.13). More than 60 percent of India's natural rubber export is to countries belonging to these three regional blocks. Among these more than 30 percent of the export is to ASEAN countries like Malaysia, Thailand, Indonesia etc which have a dynamic rubber manufacturing industry.

India's export of natural rubber declined considerably after 2005-06 to almost 60 percent by 2012-13. In 2005-06, the export figure was 78380 MT whereas by 2012-13 it got reduced to 30594 MT. Surprisingly the export of natural rubber fell dramatically to 5398.05 MT in 2013-14 for the first time in recent past. One of the reasons for the fall in the export volume of natural rubber is the increase in domestic demand especially from the tyre industry.

Table 3.13 Export of Natural Rubber (MT) to Major Regional Groups and Countries from India

Country/	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
European Union	5493.8	12886	8452.4	10165.4	6059.8	3961.7	4128.7	7907.2	3604.8	594.09
ASEAN	5497.7	9174.8	13357	12622.5	13801.8	7411.9	7127.0	4801.4	10175.8	34
SAARC	2352.8	1872.2	944	1784.2	3312.5	2491.7	2049.5	7413.9	5972.9	2216.94
Total	46150	78380	56545	60353	46926	25090	29851	27145	30594	5398.05

Source: Rubber Board, 2014

3.4.2.1 Export and Import of Natural Rubber to ASEAN Countries

ASEAN countries remain as an important trading partner of India in terms of natural rubber export and Import. Among the ASEAN countries, more than 90 percent of the export is to Malaysia, followed by a smaller percentage of export to Indonesia. During the year 2012-13 India exported 10034 metric tonnes of natural rubber to Malaysia and around 103 MT tonnes to Indonesia. Over the year even though the overall export number of India's natural rubber reduced, there was an increasing trend of export to ASEAN countries during the period from 2004-05 to 2012-13 (Table 3.14). Similar to the fall in total export of rubber from India export of rubber to ASEAN countries also declined drastically to a low of 34 MT in 2013-14

In India the import of natural rubber is increasing year after year to meet the ever increasing domestic demand. The demand supply gap figures discussed earlier proves to this fact. Major rubber producing countries like Indonesia Malaysia Thailand and Vietnam remains the major exporters of natural rubber to India. Indonesia is the major source of import in terms of India's demand for natural rubber as given in Table 3.15

Table 3.14 Export to ASEAN Countries from India (Metric Tonnes)

Country	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Indonesia	0.000	0.000	0.000	0.000	0.000	411	312	414	103	
Malaysia	4387	6362	10412	12092	13510.1	6926	6555	4272	10034	34
Thailand	0.000	0.000	0.000	16.00	0.000	0.000	164	0.000	0.000	
Vietnam	0.000	2271	2641	208.00	0.000	0.000	0.000	0.000	0.000	
Total	4387	8633	13053	12316	13510	7335	7032	4687	10175	34

Source: Rubber Board, 2005-14

Table 3.15 Import of Natural Rubber from ASEAN Countries (Metric Tonnes)

Countries	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Indonesia	11979	17204	39404	36694	20732	84873	87315	62404	99050	146245
Malaysia	25973	9293	4838	3904	5916	5257	9589	11411	6198	7262
Myanmar	561	2827	2827	237	114	305	713	237	60	0
Singapore	435	1092	1092	305	105	38	0	140	463	0
Srilanka		1550	1550	7276	6453	12802	7007	5282	4716	3079
Thailand	29447	9574	9574	33973	41888	62056	47064	88070	39795	81853
Vietnam	1702	3464	3464	3005	1357	4619	20436	28113	51273	69220
Cambodia							420	362	1532	783
Others	335	259	586	997	807	5694	15150	8000	13000	16744
Total	68718	45285	89699	86394	77762	177130	190962	214433	217364	325189

Source: Rubber Board, 2014

Around 45 percent of the total import of natural rubber to India is from Indonesia. Import from Indonesia increased from 11979 MT in 2004-05 to 9164245 MT in 2013-14. The other two major sources of import are from Thailand and Vietnam. They together meet around 40 percent of India's NR import. In the case of Thailand the volume of import to India increased from 29447 MT in 2004-05 to 81853 MT in 2013-14 whereas from Vietnam it got increased significantly from a meagre 1702 MT in 2004-05 to 69220 MT in 2013-14 as detailed Table 3.15. Import of natural rubber from Malaysia, the leading producer of Natural rubber to India comprises only 3 percent of India's total natural rubber import.

Even though import of natural rubber is increasing significantly, there has been an increase in the export of rubber based products. Compared to 2011-12 the export earnings to the country from rubber products posted a growth of 17.8 percent growth in 2012-13 as illustrated in Table 3.16.

Table 3.16 Export of Rubber Product from India (in Crore₹)

Products	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**
Automobile tyres and tubes including tyre retreading material	3584.9	3642.3	4830.2	7791.6	9428
Beltings	335.1	369.2	353.2	533.2	659.1
Cycle tyres& Tubes	400.4	349.8	421.1	638.3	550.8
Hoses	162.1	170	234.1	346	370.1
Hygienic medical & surgical articles	590.5	425.5	421.1	347.4	446.8
Rubber Cots & Aprons for Textile Industry	17.8	21.5	------	------	-----
Rubber Sheeting	404.5	460	522.5	693.9	723.7
Reclaimed Rubber			228	324.7	403.5
Others	1186.9	1351.2	1172.9	1923.7	2260.8
Total	6682.2	6789.5	8183.1	12598.8	14842.8

Source: Rubber Board, 2013

Amount of foreign exchange received through the export of rubber products has increased substantially from ₹ 6682.2 crores in 2008-09 to ₹14842.8 crores in 2012-13 (Table 3.16). Among the products, automobile tyres and tubes including tyre retreading material alone was exported for ₹9428 crores, constituting for more than 65 percent of the total export earnings from rubber products. Export earnings from the sale of beltings, cycle tyres and tubes stood at ₹ 1210 crores in 2012-13.

3.4.3 Grade wise Export and Import of Natural Rubber from India

Table 3.17(a) Grade-wise Import of Natural Rubber

Grade	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
ISNR	50720	37433	55074		49130			136552	64166	0
Latex	979	783	1401	854	1412	4439	3500	33	63	
Others	65	0	136	466		300	215	0	0	2377
PLC	152	76.5	76	129		51	0	0	12	0
RSS	20919	6992	33110	26348	27219	73766	59157	68846	53750	92059
TSR				5859		98573	125464		99372	230219

Table 3.17(b) Grade-wise Export of Natural Rubber

Grade	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
ISNR	11558	13395	8454	8240	9283	7999	4992	953	9173	1465
Latex	10496	24153	16056	22640	20836	13106	10717	1494	7009	1318
Others	0	0	0	0	0	0	0	0	1045	
RSS	24028	35187	35187	28675	14209	2827	13150	9371	13225	2614

Source: Rubber Board, 2014

ISNR, RSS and TSR are the major grades of natural rubber imported by India. In the year 2013-14, 230219 MT of TSR and 92059 MT of RSS grade rubber was imported as shown in Table 3.17(a). In terms of export of natural rubber, ISNR, Latex and RSS are the major items. Compared to 2011-12, the quantity of export of ISNR increased during 2013-14 from 953.2 MT to 1465 MT as detailed in table 3.17(b).

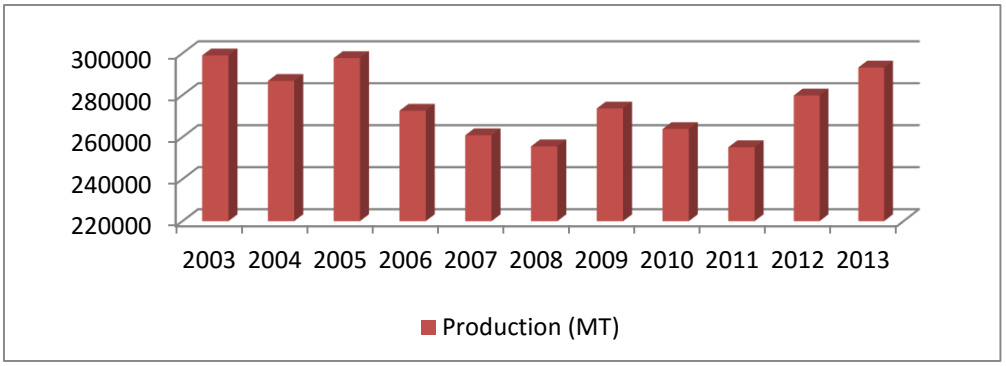
3.5 Black Pepper and Cardamom- Global and Indian Scenario

Here the analysis is focused with respect to black pepper and Cardamom in terms of Production and Consumption. It also tries to understand the export and import performances and trade volumes involved in it over the years. Trends in prices are also looked in, to find any positive or negative impacts on these two commodity sectors.

3.5.1 World Black Pepper Production

Brazil, India, Indonesia, Malaysia, Sri Lanka and Vietnam are the major contributors of pepper in the international market. India, used to be the largest producer in the 1990s, lost its place to Vietnam subsequently. Globally black pepper production declined considerably over the years from 2003 to 2013. Fall in production of pepper in major pepper producing countries resulted in such a turnaround.

Figure 3.9 World Black Pepper Production



Source: Spices Board, 2014;Data for this graph is given in Appendix 3.7

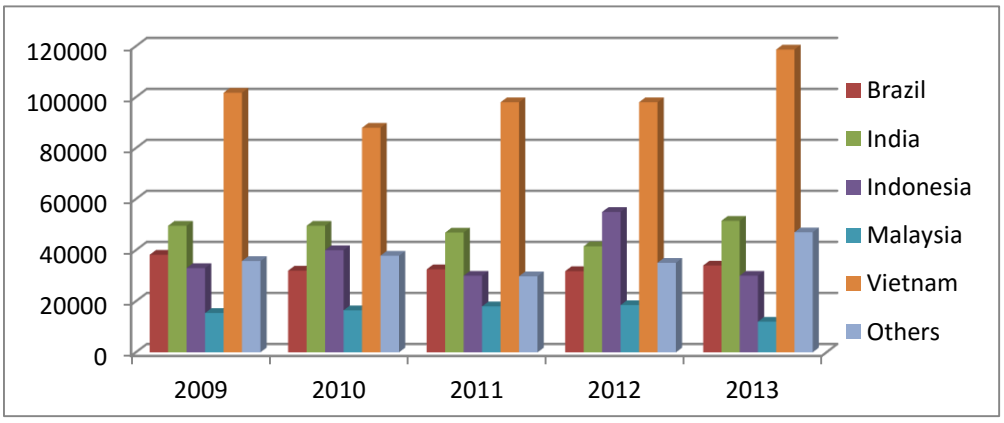
Larger fluctuations in the price of black pepper and changing weather patterns resulted in the downfall of worldwide pepper production. Production declined from 298984 MT in 2003 to 255604 in 2008. Later the global

production witnessed some upward movements and the output numbers stood at 293200 MT in 2013 still below the figures of 2003 (Figure 3.9).

3.5.2 Country-wise Production of Black Pepper

India was leading in pepper production till late 1990's; later Vietnam emerged as the key pepper producing country globally. During the period from 2009 to 2013, pepper production in Vietnam increased from 101750 MT in 2009 to 118700 MT in 2013. Share of Vietnam in global pepper production also increased from 37.18 percent in 2009 to 40.48 percent in 2013 as displayed in Figure 3.10.

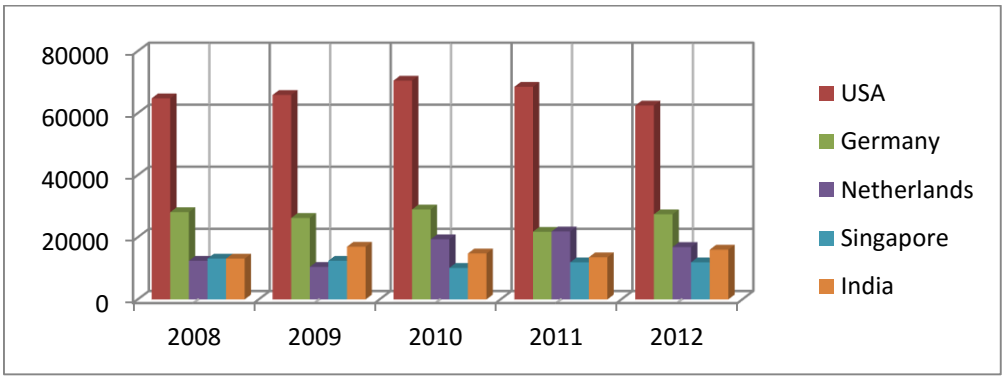
Figure 3.10 Country-wise Production of Black Pepper



Source: Spices Board, 2014;Data for this graph is given in Appendix 3.8

In the case of India also pepper production increased from 49550 MT in 2009 to 51500 MT in 2013. The combined share of India and Vietnam in global pepper production also increased during the period from 55.29 percent in 2009 to 58.05 percent in 2013. In the case of Indonesia, production declined from 33000 MT in 2009 to 30000 MT in 2013 (Figure 3.10).

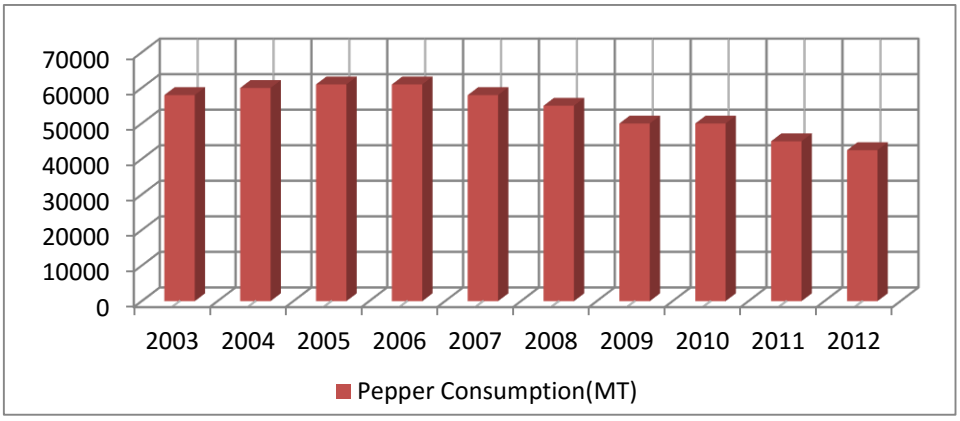
Figure 3.11 Major Importing Countries of Black Pepper



Source: Spices Board, 2014;Data for this graph is given in Appendix 3.9

USA, Germany, Netherlands, Singapore and India are the top five pepper importing countries in the world. Import of Pepper by USA stood at 62458 MT in 2012 eventhough the quantity declined from 64879 MT in 2009. In the case of Germany also the import declined from 28085 MT in 2009 to 27393 in 2012 whereas import by Netherlands increased from12434 MT to 16862 MT during the period. Import by India also increased during the period from 13121 MT in 2009 to 16008 MT in 2012 (Figure 3.11).

Figure 3.12 Consumption of Pepper in India



Source: Spices Board, 2013;Data for this graph is given in Appendix 3.10

Even though the import of Pepper to India increased, consumption numbers witnessed a trend of steady decline since 2006 (Figure 3.12). Consumption first experienced an increase from 58000 MT in 2003 to 61000 MT in 2006 but later declined drastically to 42500 thereby registering a downfall of 26.72 percent. Fall in consumer preference, because of increase in the price of pepper is considered to be the important reason attributed for the steady fall in consumption numbers. Price of black pepper registered a threefold increase in its price in the period 2012-13 when compared to 2006-07 price level.

3.5.3 Price of Black Pepper in Various International Markets

Pepper price had a phenomenal increase in almost all the major international markets during the period from 2005-06 to 2013-14. Price of Pepper witnessed a huge increase of more than 300 percent in the major international pepper markets like India, Brazil, Indonesia, Malaysia and Vietnam during the period from 2005-06 to 2013-14. Decline in rainfall and fall in productivity in major pepper producing countries like Vietnam, India and Indonesia resulted in the decrease in supply of pepper eventually caused a giant leap in the commodity price of Pepper in the International markets. According to Table 3.18, average price of pepper per MT stood at US$ 4267, US$ 4683 and US$ 3923 in India, Indonesia and Vietnam markets respectively.

In Indian market, the price of pepper had a phenomenal increase from US$ 1650 per MT in 2005-06 to US$ 7214 per MT in 2012-13. Later price reduced 6 percent to US$ 6775 per MT in 2013-14. Similarly in Malaysian market, the price of pepper increased from US$ 1602 to US$ 7443, registering 341 percent increase during the period from 2005-06 to 2012-13.

In Vietnamese market, the price of pepper registered a record 450 percent increase during the period, from US$ 1190 in 2005-06 to US$ 6541 in 2013-14 as detailed in Table 3.18.

Table 3.18 Average Price of Black Pepper U$ /Metric Tonne in Various International Market

Year	India	Brazil	Indonesia	Malaysia	Vietnam
2005-06	1650	Na	1454	1602	1190
2006-07	2346	Na	Na	2648	2055
2007-08	3552	Na	Na	3961	3348
2008-09	2953	Na	Na	3624	2767
2009-10	2885	Na	Na	3675	2517
2010-11	4419	4654	4170	4845	3879
2011-12	6609	6905	6845	7284	6503
2012-13	7214	6550	6512	7443	6512
2013-14	6775	6586	6790	7068	6541

Source: Spices Board, 2014

3.5.4 Price of Black Pepper in the Indian Domestic Market and the Seasonality Nature

Average price of black pepper had a meteoric rise during the period from 2005-06 to 2013-14. During the period the price of black pepper increased more than 500 percent. According to Table 3.19 average price of pepper increased from ₹ 66.4 per Kg to ₹ 197 per kg in 2010-11 and later to₹ 448.2 in 2013-14.

Fall in the production in the major producing countries like India and Vietnam resulted in the spurt in the price of pepper in the commodity market. For the past two years the price of pepper is remaining at an all-time high. Pepper price for the first time in history crossed the ₹ 500 mark in the year 2014 (Table 3.19). Fall in production of pepper in Idukki the heartland of

black pepper in the country in addition to the 20 percent fall in production in other major producing countries like Vietnam, Sri Lanka and Indonesia enabled the price to shoot up.

Table 3.19 Average Month-wise price of Black Pepper in Domestic Market (₹/Kg)

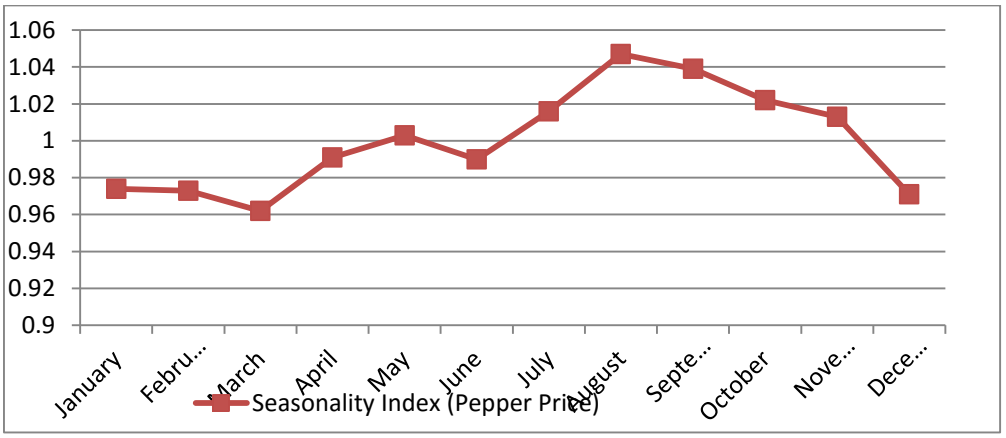
Month	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
April	67.5	71.3	147.6	143.6	126	152.8	259.6	382.6	360.1
May	64.17	69.9	145.9	143.9	127.9	161.9	287	385.9	353.7
June	63.2	69.5	142.8	143.8	128.2	163.1	279.5	396.2	364.8
July	60.9	82.2	145.4	142.8	126.3	193.1	279.7	413.8	405.1
August	63.5	101.6	133.3	143.4	145.1	197.8	298.9	413.9	417.7
September	63.6	124.6	125.3	136.5	144.8	198.8	329.5	410.2	425.6
October	63.8	120	138.8	130.9	142	191.1	350.4	418.5	449.2
November	66.8	108.3	137.9	116.1	147.6	212.4	342.9	401.6	505.6
December	72.6	99.9	133	106.6	142.6	213.1	348.2	385.1	519.7
January	68.4	113.3	141.7	120.3	136.2	221.5	321.4	395.7	515.1
February	70.3	123	143.6	114.1	132.6	229.5	328.5	408.9	530.4
March	72.1	121.8	148.7	109.2	137.3	228.9	399.2	365.2	532
Average	66.4	100.5	140.1	129.3	136.4	197	318.7	398.1	448.3

Source: Spices Board, 2014

Seasonality nature is also visible in the price of pepper as the average price of pepper usually remains high during the April-November period compared to December-March period (Figure 3.13). While looking in to the seasonality index seasonal nature of commodity price of pepper is quite visible. The price of pepper remains to be above the annual average rubber price during the months of April to November whereas a decline in the price is visible in the months from December – March. One reason for the phenomenon is that most of the harvest in the case of pepper happens during

the December-June period and thereby increased supply during the period results in the lower than average annual price compared to rest of the calendar year as shown in Figure 3.13.

Figure 3.13 Seasonality Index- Pepper Price



Source: Calculation based on Spices Board Data,2005-14

3.6 Cardamom

In the production scenario Guatemala is the prominent supplier of cardamom in the world market. The cardamom cultivated in Guatemala is a native of India's Malabar Coast; Elettaria cardamomum. In India, cardamom cultivation is under forest shades whereas in Guatemala it is done in open at higher altitudes where low pressure persists. Guatemala produces around 25000-30000 tonnes yearly and exports majority of its output to the Middle East and to the European countries. According to Cardamomerous Association of Guatemala, cardamom production in Guatemala in the year 2012stood at 29000 tonnes, up 12 percent from 2011 figure. India is the second largest producer of cardamom in the world. But, India was the leading exporter during 1970-1975; Guatemala surpassed India and this is attributed to higher prices for Indian variety and low yield.

3.6.1 Price of Cardamom in the International Market

Price of cardamom in the international market witnessed large amount of fluctuations during the period from 2006-07 to 2013-14. Fluctuation in cardamom production in the major producing countries like India and Gautemala resulted in the large scale fluctuation in cardamom price in the international market. The price of fancy green variety of cardamom increased from US$ 8.87 per Kg in 2006-07 to a record high of US$ 37.36 in 2010-11 and later declined in similar levels and reached US$ 17 per kg in 2013-14 (Table 3.20).

Table 3.20 Average Price of Cardamom in International Market from 2006-2014 (US$ Per Kg)

Year	Fancy Green	Indian(Extra Bold 6-7 Mm)
2006-07	8.87	9.62
2007-08	10.99	15.45
2008-09	14.52	15.65
2009-10	21.59	20.89
2010-11	37.36	30.96
2011-12	30.69	18.92
2012-13	22.81	19.60
2013-14	17.01	13.88

Source: Market News Service, ITC, Geneva, 2006-14

In the case of Indian variety of cardamom also the price increased almost in the similar fashion where the price reached a record high of US$ 30.96 in 2010-11 from US$ 9.62 per kg in 2006-07 (Table 3.20). The increase in the price of cardamom during the period 2010-11 was attributed to the overall decline in the production of cardamom in the major producing countries like Guatemala and India because of adverse weather conditions. Later the price witnessed a downward trend after fresh arrivals of cardamom

and positive signs of improvement in production in these countries. The price of Indian variety of cardamom stood at US $ 13.88 as of 2013-14.

3.6.2 Price of Cardamom in the Indian Domestic Market and the Seasonality Nature

Table 3.21 Average Monthly Price of Cardamom (Small) in Domestic Market (₹ / Kg)

Month	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
August	239.3	333.8	395	589.3	719.1	1353.5	599.2	767.6	617.6
September	239.7	369.3	400.9	618.3	679.5	1075.5	613.3	711.9	622.1
October	223.6	295.8	410.5	569.5	659.1	898	572.7	724.2	588.7
November	217.1	261.7	474.1	489.8	713.9	973.6	518.5	782.8	602.7
December	216.4	258	530	440.1	833.2	1205.8	509.3	804	564.7
January	208.6	305.2	601.8	466.9	1015.9	1341.9	512.7	785.8	569.7
February	202.9	331.4	588.1	505.4	961.1	1104.2	650.7	723.6	660.5
March	190.5	323.4	499.8	499.3	1008.2	989.5	826.9	659.8	706.2
April	196.4	364.2	531.2	581.3	1103.3	955.8	799.8	628.9	836.1
May	203.8	355.9	572.9	613.1	1249.6	706.7	800	571.7	810.2
June	218.9	336.3	576.4	683.7	1513	720.3	695.2	579.7	744.2
July	217.1	366.7	561.1	684.4	1504.5	687.8	766.9	557.9	772.8
Avg	215.5	315.4	503.4	538.1	876.6	968.2	645.6	686.8	649.2

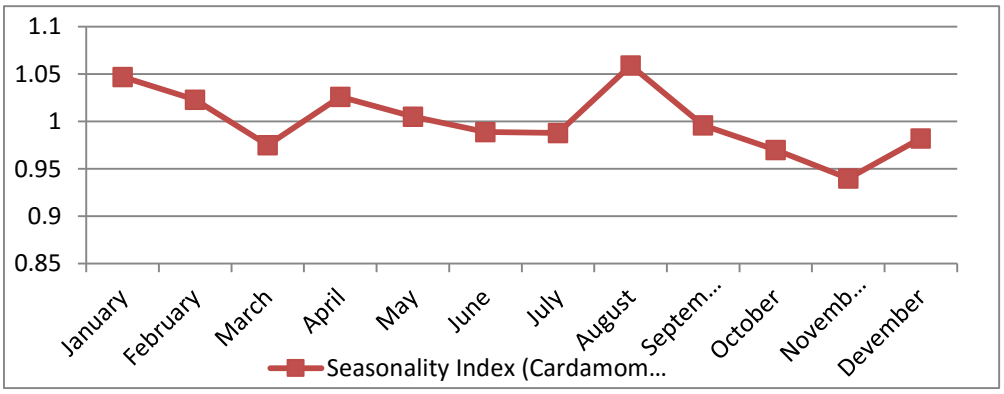
Source: Spices Board, 2014

Price of cardamom experienced high price volatility in the Indian domestic commodity market similar to the fluctuations happened in the international markets as shown in Table 3.21. The pattern was also similar to what experienced in the case of black pepper in the commodity market here. Price of cardamom increased from ₹ 215.5 per kg in 2005-06 to a record high of ₹ 968.2 in 2010-11 thereby posting an increase of 350 percent during the period.As mentioned earlier, fall in the production of cardamom in majoring

supplying countries like Guatemala and India was responsible for the steep increase in the price of the commodity during the above said period. Later improvement in the production numbers in these countries resulted in the normalisation of price and the average price of cardamom declined to ₹ 649.2 in 2013-14.

Seasonality nature is very much prevalent in the case of cardamom prices. Harvest season in cardamom plantation starts from September up to December with peak harvest happening from the month of September to November. Downward slide in the price of cardamom coincide with the peak harvest season as shown in Figure 3.14.

Figure 3.14 Seasonality Index-Cardamom Price



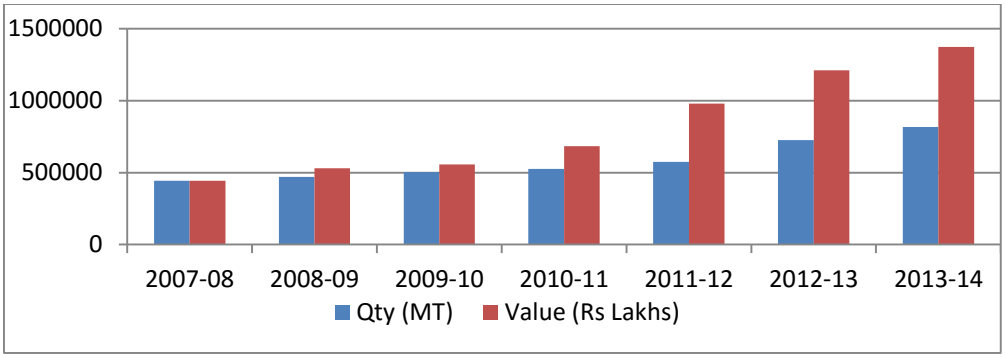
Source: Calculated based on Spices Board data, 2005-14

Price of cardamom increases above the average annual price in the months of December – February period. In addition to the seasonality nature production of cardamom in other major cardamom producing countries like Guatemala also determines the relative movement of cardamom price in the domestic market of India.

3.7 Black Pepper and Cardamom- Export and Import Performance of India

Trade of spices occupies a very significant role in the agro-commodity market of India. Indian spices are very famous throughout the world market since medieval period. Spice commodities have generated global fame and rich revenues to Indian economy all these years. Kerala is considered as the spice hub of the country because of its variety. Data during the period from 2007- 12 also explains this positive trend in the case of spices export from the country. Export of spices from the country experienced tremendous growth during the period from 2007-08 to 2013-14. Quantity of spices exported from the country increased substantially during the period from 444250 MT in 2007-08 to 817250 MT in 2013-14 (Figure 3.15). In terms of revenue, the export of spices had an exponential growth during the period. High commodity prices of spices and fall in production of spices in the major spice producing countries like Vietnam, Guatemala etc. helped in increased demand for Indian spices in foreign markets. Foreign exchange revenue generated from the export of spices increased from ₹ 4435 crore in 2007-08 to ₹13735crorein 2013-14.

Figure 3.15 Quantity and Value of Spices Exported from India from 2007-2014



Source: Spices Board, 2014; Data for this graph is given in Appendix 3.11

The numbers are significant in the context that quantity of export experienced only about 80 percent growth (Figure 3.15) during the period from 2007-08 to 2013-14, whereas the foreign exchange revenue from the export of spices increased exponentially to more than 200 percent during the period. Increase in the commodity price of spices in the international market has enabled the country to earn larger amount of foreign exchange thorough its export during the period.

3.7.1 Black Pepper and Cardamom - Export Performance of India

In terms of value black pepper and cardamom form 10 percent of the total revenue generated from the export of spices. Export performance provides a positive trend in the context of India. The export quantity and volume of spices showed a significant increase during the period from April to September in 2014 when compared to the corresponding period in 2013. Total value of spices export increased from ₹6364crore in April–September, 2013 to ₹6962crore in April – September period of 2014. Quantity of pepper exported from the country increased from 9535 MT in April to September 2013 to 10100 MT during the corresponding period in 2013 (Table 3.22). Value of export of pepper also experienced an increase from ₹309 crore to ₹423 crore during the corresponding period thereby registering an increase of 30 percent.

But when compared to 1991-92 data, the volume of export of pepper declined significantly during the period in 2013-14, whereas the total value generated from the export witnessed a tremendous growth. In the case of cardamom both quantity and volume of export increased during the period 2013-14 in comparison to 1991-92. Export quantity of cardamom declined from 1442 MT to 1295 MT and value also declined from ₹114crore to

₹108crore during the period from April-September in 2013 when compared to the corresponding period in 2012 (Table 3.22).

Table 3.22 Export of Spices from India (Qty:Tonnes ; Value : ₹Lakhs)

Spice	1991-92		April-September 2013		April-September 2014		% change in 2014 from 2013	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Pepper	20535	74.3	9535	394.89	10100	514.86	6	30
Cardamom (Small)	544		1442	114.50	1295	108.06	-10	-6
Total including others	142104	3810	376684	6364.6	421570	6962.9	12	9

Source: Spices Board, 2014

3.7.1.1 Country-wise Export of Black Pepper from India

Export of spices has helped the country to earn huge amount of money in the form of foreign exchange. USA, UK, Germany, Italy and Canada are the major importers of black pepper from India. Even though the quantity of pepper export from India declined 24 percent from 35000 MT in 2007-08 to 15362 MT in 2012-13, the value of export experienced a steep increase of from ₹ 519 crore in 2007-08 to ₹ 638 crore in 2012-13 (Table 3.23).

Value of pepper exported from the country increased from₹ 519 crore in 2007-08 to ₹6388 crore in 2012-13. USA is the major export destination of Indian Pepper. In 2012-13, around 7177 MT of pepper was exported to USA alone accounting to about 30 percent of the country's total export to the world. In terms of revenue 30 percent was generated from the export to USA valuing about 295 crore in the year 2012-13 (Table 3.23).

Table 3.23 Country-wise Export of Pepper from India (Qty in MT and Value in Lakhs)

Country	2007-08		2008-09		2010-11		2011-12		2012-13(P)	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
USA	14496.36	21149.90	9978.97	16325.32	6920.95	13883.41	9383.35	30979.23	7177	29589
U.K	1817.82	2583.48	1514.36	2869.12	1476.97	3273.56	1443.90	4972.93	1309	5658
Germany	1690.70	2741.23	1200.94	2031.83	715.36	1333.37	1181.30	3842.25	747	3358
Italy	1601.04	2289.54	1287.90	1927.95	899.94	1807.05	1021.20	3543.95	406	1574
Canada	1396.95	2119.31	1281.36	1944.45	1065.56	2111.25	897.11	2785.94	538	2061
Singapore	1293.95	1850.66	220.62	300.37	203.74	379.81	344.18	1063.45	138	473
Australia	1084.62	1697.90	802.22	1400.93	592.01	1369.12	991.60	3464.30	468	2027
Total including others	35000.10	51950.02	25250.09	41373.50	18850.08	38318.50	26699.73	87813.42	15362	63810

Source: Spices Board, 2014

3.7.1.2 Country-wise Export of Cardamom from India

India is one of the major producer, consumer and exporter of cardamom. Earlier, country's cardamom imports were more than its exports due to high domestic consumption. Meanwhile, India's imports of total cardamom in the last couple of years have declined sharply due to steady domestic production and decline in output in Guatemala. Increase in production of cardamom in the country resulted in increased export of cardamom from the country. Export of cardamom from India experienced a positive growth from a meagre 499 MT in 2007-08 to a whopping 4649 MT by 2011-12. Value of export also increased from a meager ₹ 24 crore in 2007-08 to ₹212 crore by 2012-13 enabling the country to earn rich foreign exchange as illustrated in Table 3.24.

Increase in demand from Saudi Arabia, the major cardamom consuming country was responsible for the hike in export quantity and value from the country. Almost 65 percent of the total cardamom export from the country is destined to Saudi Arabia (Table 3.24). In terms of value from cardamom export, ₹160crore was earned through export to Saudi Arabia alone. U.K, Malaysia, Kuwait and Japan are the other four major consumers of Indian cardamom. 40 MT of cardamom was exported to U.K generating revenue of 3.4 crores during 2012-13.

Table 3.24 Country wise Export of Cardamom from India (Qty in MT and Value in Lakhs)

Country	2007-08		2008-09		2010-11		2011-12		2012-13 (P)	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
Saudi Arabia	330.95	1794.26	519.32	3331.01	723.50	8155.96	3097.51	23828.52	1777	16082
Malaysia	29.33	102.35	27.58	134.84	20.79	229.06	78.16	664.21	35	186
Kuwait	18.05	94.64	4.25	28.11	101.96	1109.60	116.62	910.67	112	1038
U.K	17.17	67.79	7.21	50.69	18.30	238.14	142.96	1008.34	40	342
Japan	16.19	90.45	25.02	223.20	26.26	376.52	46.24	525.00	8	76
Total	499.99	2475.00	750.07	4726.49	1175.09	13216.24	4649.71	36322.30	2371	21215

Source: Spices Board, 2013

3.7.2 Black Pepper and Cardamom- Import Trends in India

Import of spice to meet domestic demand increased more than doubled when compared to 2007-08 figures. In US dollar terms the value of spices import increased from US$ 167.5 million in 2007-08 to US$ 481.8 million in 2013-14 (Table 3.25).

Quantity of import of spices increased from 83545 MT in 2007-08 to 1.3 lakhs MT in 2013-14. During the corresponding period the value of import increased from ₹ 765.3 crore to ₹ 2905.1 crore (Table 3.25). Import of pepper and cardamom comprised 13 percent in terms of quantity and 22 percent of the total value of spice export to the country. Pepper import increased from 10750 MT in 2007-08 to 15680 MT in 2013-14. Value of pepper import also increased in the concerned period from ₹176 crore to ₹616crore. Cardamom import to the country increased significantly from ₹180 MT in 2007-08 to 1110 MT in 2013-14 whereas value increase significantly from 3 crore in 2007-08 to31croreduring the corresponding period (2013-14) as illustrated in Table 3.25.

Table 3.25 Item-wise Import of Spices into India (Qty. in Tonnes& Value InRs. Lakhs)

Spices	2007-08		2008-09		2009-10		2012-13		2013-14	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value
Pepper	10750	17664	18100	23465.	16100	27010	15600	56944	15680	61620
Cardamom (Small)	180	308	95	335	75	656	495	1612	1110	3165
Total including Others	83545	76538	106700	110045	86775	117550	131722	210231	130010	290513
Value (Milion US$)	167.5		232.3		257		387.90		481.86	

Source: Spices Board, 2014

3.8 Trade Implication of Rubber and Spices

3.8.1 Trade Intensity Index-Natural Rubber-Pepper-Cardamom

Trade intensity index is worked out to understand the relative volume of export of natural rubber, spices and products thereof from India. The trade intensity index uses similar logic to that of revealed comparative advantage, but for markets rather than products. It indicates whether a reporter exports more, as a percentage, to a partner than the world does on average. It is measured as country i's exports to country j relative to its total exports divided by the world's exports to country j relative to the world's total exports.

Mathematical Definition of Trade Intensity Index:

$$100*\left(\frac{\frac{x_{ijk}}{X_{jk}}}{\frac{x_{wjk}}{X_{wk}}}\right)$$

where x is the value of exports of product k from origin country i to destination j, and X is totalexports from i of product k; w indicates the world as origin.Range of Values: 0 to +∞. A value greater than 100 indicates a relationship more intense thanthe world average for the partner.

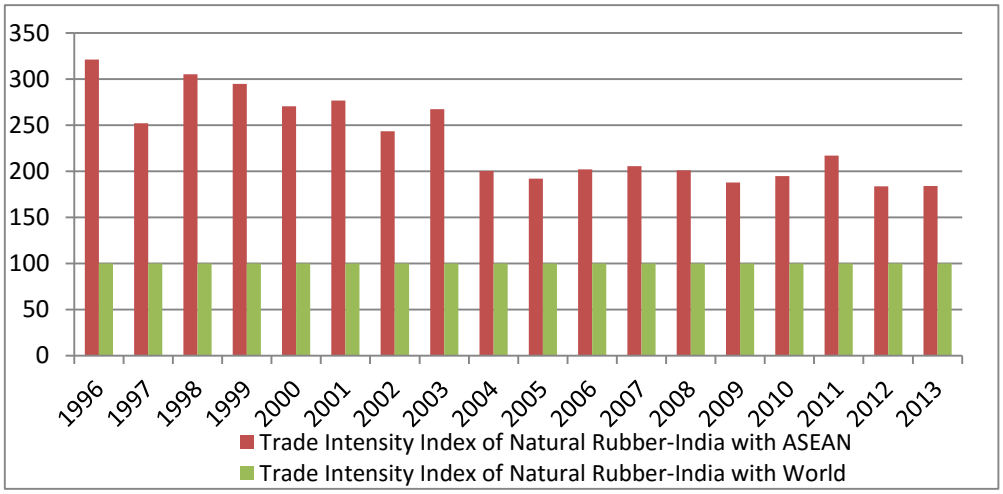
3.8.1.1 Trade Intensity Index of Natural Rubber- India-ASEAN-World

Trade Intensity Index of India with ASEAN countries indicate that India have strong export relations with the ASEAN bloc in terms of natural rubber is concerned. The value of Trade intensity of India with ASEAN bloc has averaged at more than 200 during the period from 1996-2013. The trends also indicate the trade intensity index got reduced from a peak of 320.96 in

1996 to 200.96 in 2008 and to a further low of 183.77 by the year 2013which indicate a more diversified export market for rubber from India to other world markets (Figure 3.16).

The emergence of china as a major consumer of natural rubber can be attributed for the fall in the trade intensity of India with the ASEAN countries during the period. Even though the quantities have declined over the year, still the numbers indicate that the importance of ASEAN countries as a major export destination of natural rubber from India. India's Free Trade Agreement (FTA) with ASEAN, which came in to existence in 2009 have no significant impact on the trade of natural rubber with ASEAN as natural rubber is kept under the exclusion list in the list of products where systematic reduction in tariff duty is restricted to protect the interest of natural rubber growers in the country (Figure 3.16).

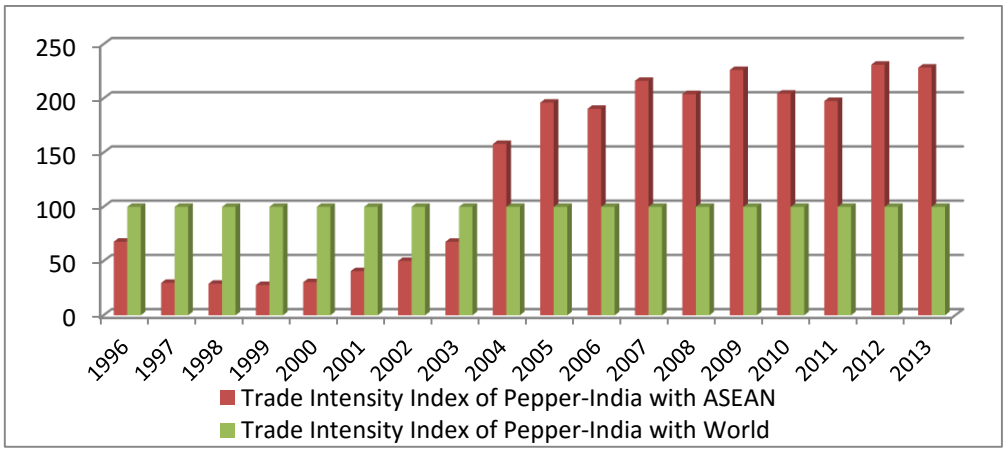
Figure 3.16 Trade Intensity Index of Natural Rubber- India-ASEAN-World



Source: Calculated from UNCOMTRADE Data Base, 1996-2014; Data for this graph is given in Appendix 3.12

3.8.1.2 Trade Intensity Index of Pepper- India-ASEAN-World

Figure 3.17 Trade Intensity Index of Pepper- India-ASEAN-World

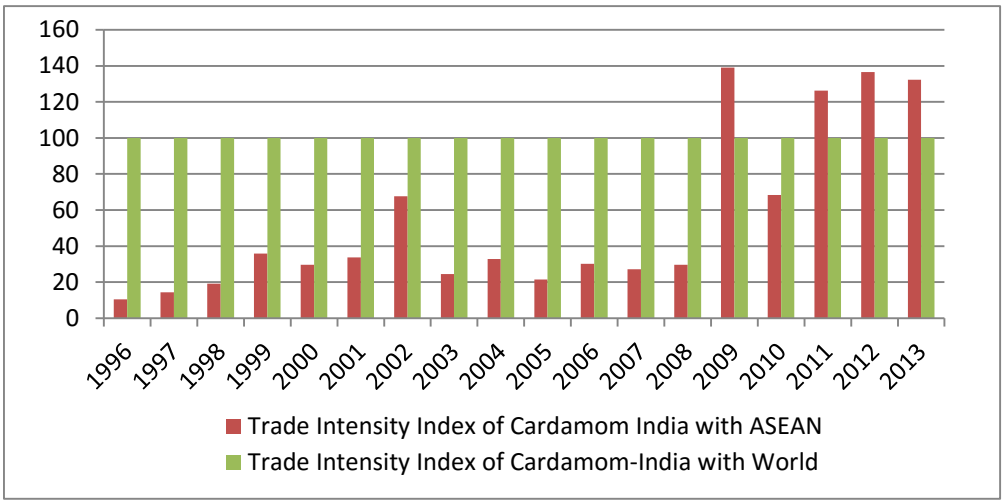


Source: Calculated from UNCOMTRADE Data Base, 1996-2014; Data for this graph is given in Appendix 3.13

Trade intensity index of India to ASEAN countries declined from 67.81 in 1996 to 27.91 in 1999 and later increased to 50 in 2003. Positive improvement in the trade intensity index started from 2004 when the index increased to 157.95 and later reached 228.34 by 2013 (Figure 3.17). Any value higher than 100 i.e. world average is considered to be significant. Value close to 200 or more implies that ASEAN regional group of countries constitute an important source of India's export even though there exists a higher competition from other major pepper producing countries like Vietnam and Indonesia.

3.8.1.3 Trade Intensity Index of Cardamom- India-ASEAN-World

Figure 3.18 Trade Intensity Index of Cardamom- India-ASEAN-World



Source: Calculated from UNCOMTRADE Data Base, 1996-2014; Data for this graph is given in Appendix 3.14

In terms of cardamom export, the trade intensity index (Figure 3.18) indicates that where the world average is 100 over the years from 1996 to 2013, the export to ASEAN was negligible in 1996. The volume of export increased and thereby the trade intensity index increased from a low of 10.51 in 1996 to 132.26 by 2013. A better understanding of the figures indicate that cardamom export to ASEAN countries averaged only 28 during the period from 1996 to 2008 thereby clearly showing low trade intensity and below the world average. Any value higher than 100 with the partnering country or a particular regional bloc is considered as intense in terms of trade relationship.

From 2009 there is a marked shift in the export growth of cardamom from India to ASEAN. Trade intensity increased from 29.62 in 2008 to

138.95 in 2009 and declined to 132.26 in 2013. One important factor responsible for the sudden spike in the trade intensity in terms of cardamom with ASEAN is the implementation of India-ASEAN Free Trade Agreement and thereby the relaxation of export duty and related tariff lines. The year from 2009-2013 witnessed the emergence of ASEAN countries as a major source of export of Indian cardamom as detailed in Figure 3.18.

3.8.2 Herfindahl-Hirschman Index

The **Herfindahl index** also known as **Herfindahl–Hirschman Index** or **HHI** is a measure of the size of firms in relation to the industry and is also an indicator of the amount of competition among them. Named after economists Orris C. Herfindahl and Albert O. Hirschman, it is an economic concept widely applied in competition law, antitrust and also technology management. It is defined as the sum of the squares of the market shares of the 50 largest firms (or summed over all the firms if there are fewer than 50) within the industry, where the market shares are expressed as fractions. The result is proportional to the average market share, weighted by market share. As such, it can range from 0 to 1.0, moving from a huge number of very small firms to a single monopolistic producer. Increases in the Herfindahl index generally indicate a decrease in competition and an increase of market power, whereas decreases indicate the opposite. The major benefit of the Herfindahl index in relationship to such measures as the concentration ratio is that it gives more weight to larger firms. The measure is essentially equivalent to the Simpson diversity index used in ecology and to the inverse participation ratio (IPR) in physics.

Herfindahl-Hirschman Market Concentration Index

This indicator is a measure of the dispersion of trade value across an exporter's partners. A country with a preponderance of trade value concentrated in a very few markets will have an index value close to 1, whereas trade value close to 0 will be having a diversified market with low volume of risk. As a result, it is an indicator of the exporter's dependency on its trading partners and the danger it could face depends on its partners increase trade barriers. Measured over time, a fall in the index may be an indication of diversification in the exporter's trading partnerships. If a country exports to only a single market, then the indicator returns no value.

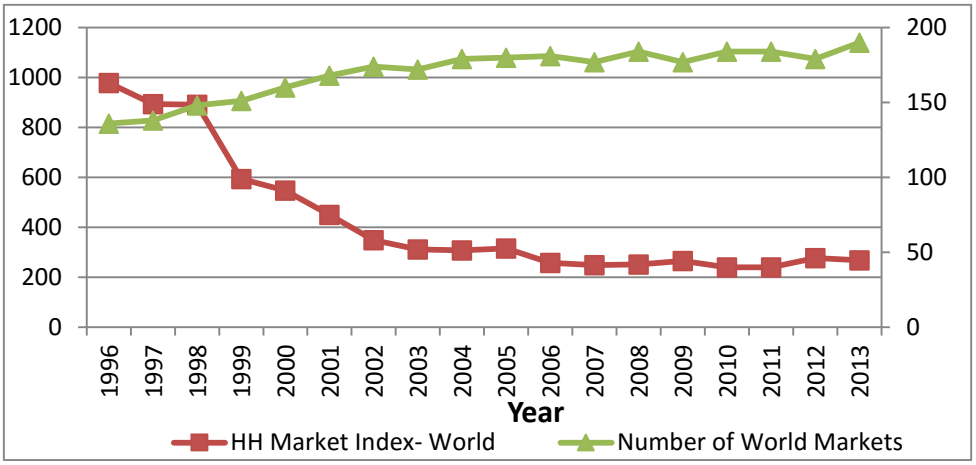
Mathematical Definition:

$$\frac{\sum_{j=1}^{n_i}\left(\frac{x_{ij}}{X_i}\right)^2 - \frac{1}{n_i}}{1 - \frac{1}{n_i}}$$

X is the total value of exports from reporter i, x is the value of exports from country i to destination market j, and n is the number of partner markets to which country i exports.Range of Values: 0 to 1. A higher index indicates that exports are concentrated in fewer markets, whereas a country trading equally with all partners will have an index close to 0.Alternatively, if whole percentages are used, the index ranges from 0 to 10,000 "points". For example, an index of 0.25 is the same as 2,500 points.

3.8.2.1 Herfindahl-Hirschman Market Concentration Index of Natural Rubber-India -All World-ASEAN

Figure 3.19 Herfindahl-Hirschman Market Concentration Index of Natural Rubber-India-All World

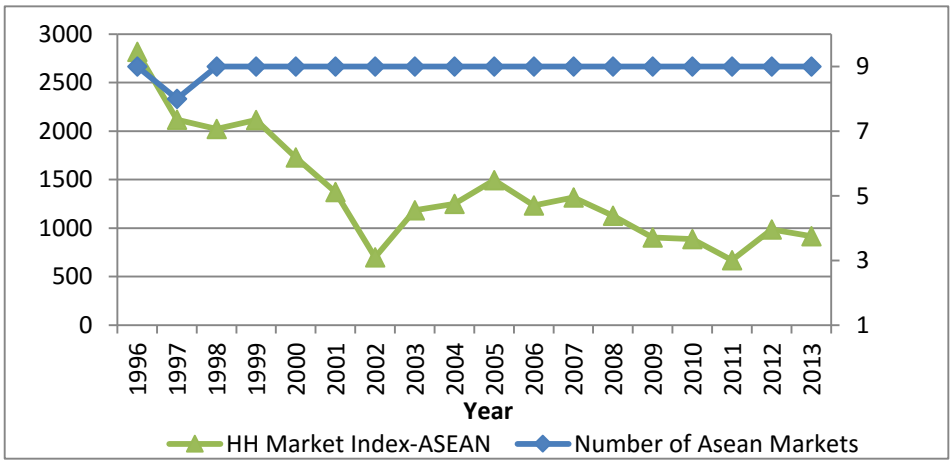


Source: Calculated from UNCOMTRADE Data Base, 1996-2014; Data for this graph is given in Appendix 3.15

Herfindahl-Hirschman Market concentration Index is employed to understand how far the market is concentrated or diversified in terms of exports. In terms of natural rubber, the index shows that market concentration of India on world market is getting diversified over the years. The HH index value as per Figure 3.19 reduced from 978 in 1996 to 594 in the year 1999. The figures witnessed substantial dip during the period from 1998-2013 registering a decline of more than 60 percent during the period. By 2013 the HH market concentration index of India with whole world in terms of Natural rubber stood at 268 thereby showing a healthier and diversified international market for natural rubber and products thereof. HH value of 978 in the year 1996 itself is significant to showcase the low level of vulnerability in the export arena of the country as any figure below 3000 is considered to be a strong indicator of the diversified foreign market for the product (Figure 3.19).

The reason for the low HH index number is complimented by the increase in the number of markets where natural rubber is exported. The number of markets to which natural rubber is exported increased from 136 countries in 1996 to 184 in 2011 as shown in figure 3.19. As of 2013 the number of export partners of natural rubber produced from India stood at 190 thereby witnessing more than 30 percent increase in number of markets during the period from 1996 to 2013. One of the important advantages of increase in export markets is the low levels of vulnerability because of diversification. Dependence on few markets is usually vulnerable to any export oriented products as any slump in economic growth of those markets will reflect in the price and demand for the product.

Figure 3.20 Herfindahl-Hirschman Market Concentration Index of Natural Rubber-India-ASEAN



Source: Calculated from UNCOMTRADE Data Base, 1996-2014; Data for this graph is given in Appendix 3.16

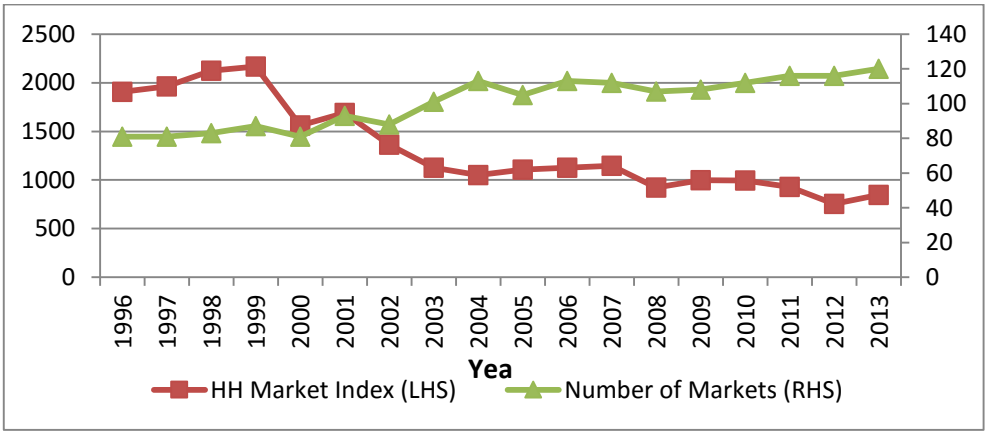
The results of HH index of India with world in the case of Natural rubber is supplemented with the results of HH index of India with ASEAN also. A higher concentration of Indian exports to ASEAN countries during the late 1990s. HH Index of India with ASEAN stood at 2818 in 1996

whereas by 2013 the index fell to 918 as depicted in Figure 3.20. Indonesia, Thailand and Malaysia were the major export partners of natural rubber from India but the economic growth and increased demand for Natural rubber by China and other emerging economies in the world played an important role in the lesser reliance on the ASEAN countries as export partners. During the period from 1996 to 2013 the HH market concentration index of India with ASEAN declined about 75 percent.

Out of the ten ASEAN countries, India has export market of Natural rubber in Indonesia, Malaysia, Thailand, Philippines, Myanmar, Singapore, Cambodia, Vietnam and Brunei. Laos is the only country among the bloc which demanded zero quantity of natural rubber over the years from 1996 to 2013 (Figure 3.20). Lack of demand or relatively small size of nation may be the reasons that could be attributed in the case of Laos.

3.8.2.2 Herfindahl-Hirschman Market Concentration Index of Pepper-India-All World-ASEAN

Figure 3.21 Herfindahl-Hirschman Market Concentration Index of Pepper-India -All World

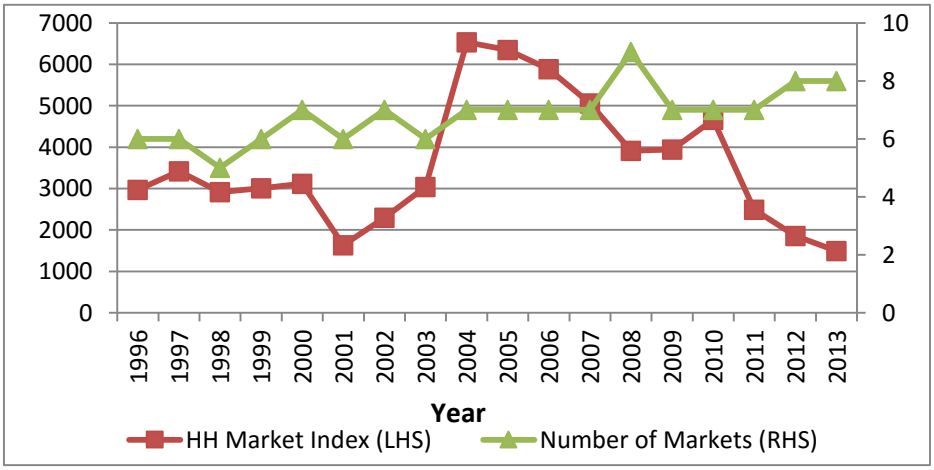


Source: Calculated from UNCOMTRADE Data Base, 1996-2014; Data for this graph is given in Appendix 3.17

The HH market concentration index illustrated in Figure 3.21 of pepper in the case of India with world explains the diverse market the country is having in terms of pepper export. The HH index fell from 1905 in 1996 to 848 in 2013. The performance of the country assures the relatively safe position of the country in the international export market. One reason for the strength in index number is the increase in the number of country's export markets. The number of export market increased from 81 in 1996 to 120 in 2013.

HH market concentration index of India with ASEAN in the trade of pepper is relatively low when compared to world market as outlined in Figure 3.22. One reason for the situation is the relatively higher competition in the export market from ASEAN countries like Vietnam and Indonesia and other regional players in the production of pepper like Sri Lanka. Almost all the major world players in pepper production are either members of ASEAN or neighboring countries of India. This is one of the primary reasons for a lower HH index for India with ASEAN in the context of Pepper.

Figure 3.22 Herfindahl-Hirschman Market Concentration Index of Pepper –India-ASEAN

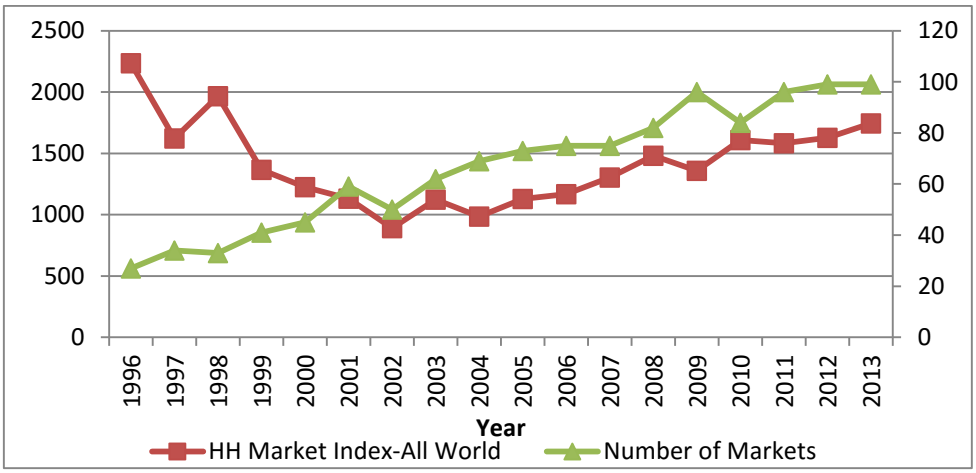


Source: Calculated from UNCOMTRADE Data Base, 1996-2014; Data for this graph is given in Appendix 3.18

HH index of India with ASEAN declined to 6531 in 2004 from 2972 in 1996. Later the index increased significantly and reached 1860 in 2012 as shown in Figure 3.22. The number of markets also increased from 6 in 1996 to 8 in 2012. But increased in the number of markets is not that significant in the context of ASEAN as the total members in the regional group are 10.

3.8.2.3 Herfindahl-Hirschman Market Concentration Index of Cardamom-India-All World-ASEAN

Figure 3.23 Herfindahl-Hirschman Market Concentration Index of Cardamom-India-All World

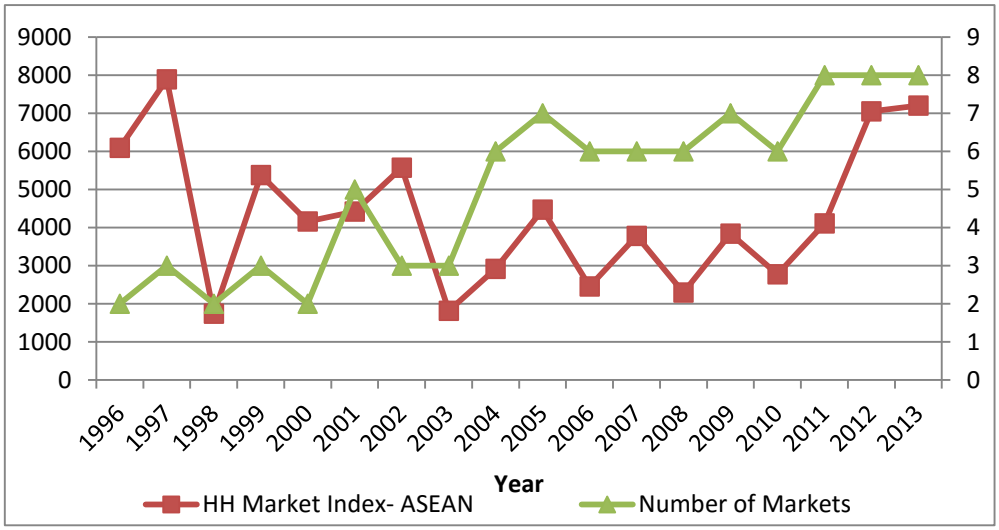


Source: Calculated from UNCOMTRADE Data Base, 1996-2014; Data for this graph is given in Appendix 3.19

Herfindalhl-Hirschman Market concentration Index of Cardamom with respect to India to All world as illustrated in Figure 3.23 shows similar trends of HH index of natural rubber but the decline is only to a lesser degree. HH Index of India with All world declined 55 percent from 2235 in 1996 to 891 in 2004. Later the index increased to 1745 in 2013. In the case of number of markets for cardamom exports from India, there witnessed a steady growth of 155 percent during the period from 27 markets in 1996 to 99 markets in 2013.

Even though the figures increased from 891in 2004 to 1745 in 2013, still the numbers provide strong signs of a diversified export market for cardamom from the country. HH Index reached 891 in 2004 and 984 in 2006 when the total number of markets where just 50 and 69 respectively. Thereafter the index value increased to 1745 in 2013 and the number of markets also increased to 99 by 2013. The increase in HH index with increase in the number of markets is contrary to the argument of HH Market Diversification Index. One reason for the situation may be the high concentration of cardamom export to a select few markets than to the all markets concerned (Figure 3.23).

Figure 3.24 Herfindahl-Hirschman Market Concentration Index of Cardamom-India-ASEAN



Source: Calculated from UNCOMTRADE Data Base, 1996-2014; Data for this graph is given in Appendix 3.20

HH Index results of India with ASEAN in terms of Cardamom showed large scale fluctuations during the period between 1996 and 2012. Index stood at 6093 in 1996 and it increased to 7894 in 1997. The index fell

significantly to 1744 in 1998 and again rose to 5376 in 1999. Similar trends of high fluctuation are visible during most of the period till 2012. There is a higher concentration on few markets among the ASEAN countries even though the number of markets has increased during the period from 2 in 1996 to 8 in 2012 as shown in Figure 3.24. It could be attributed as the major factor for high HH market Index of cardamom with respect to India with ASEAN.

3.9 Import of Natural Rubber and Pepper to India-A Gravity Model Analysis

3.9.1 Gravity Model – A Brief Understanding

Gravity model originating from Newton's Gravity Law is used to examine the trade flow between nations. The quantum of trade between the nations depends on the explanatory variables such as the size of the per-capita gross domestic products of the exporting and importing nations, distance between the nations, and other specific variables added in the equation to capture the effects on trade. Gravity equations have been used successfully for a number of decades to explain a range of economic phenomena. In economics, gravity equations relate some observed outcome to the economic mass and distance between two economic units. Disciplines such as urban economics and transport economics have used the approach to model outcomes such as the number of passengers travelling on a certain route between two cities or suburbs.

Even though Gravity model found its widest application in international economics where it has been used to model bilateral trade flows between countries. The principle was first found to work in international economics by Jan Tinbergen in 1962. He tried to understand the international trade flows that would prevail if no trade barriers were being used. He was of the opinion that free trade was good for the world economy as a whole.

The theoretical base for Tinbergen was based on the earlier empirical studies, which concluded that the most significant determinants of optimum trade were the size of GNP of trading countries and the geographical distance of these countries. The size of GNP affects trade in two ways: firstly, it shows the general volume of demand in that country and secondly, it is a good proxy for the diversity of production in that country. A country with more diversified industry will need to import proportionally less than a country with less diversified one. On the other hand, a country with diversified production has capability to export a wide range of goods. The distance between countries is obviously expected to be negatively correlated with the exports, since longer distance should mean higher trading costs.

Tinbergen began his analyses using only three explanatory variables: GNP of exporting country, GNP of importing country and the geographical distance between countries. The basic form of Tinbergen's Gravity Model ended up being:

Model Specifications

The gravity model in its basic form is $\mathbf{Log\ X_{ij} = C + a\ log\ PCGDP_i + b\ log\ PC\ GDP_j + c\ log\ D_{ij} + u_{ij}}$

Where log X_{ij}- the quantum of exports from country i to country j

C is the constant

log$PCGDP_i$ is the log of the percapita GDP of the exporting nation i

log$PCGDP_j$is the log of the percapita GDP of the importing nation j

log$D_{ij}$is the log of the distance between the trading nations.

u_{ij} is the random error term

The gravity trade equation relates the level of trade between two countries to the economic masses' of the two countries, normally measured by GDP, and the distance between them. The model anticipates that trade will be greater in absolute terms, the greater are the economic masses and the closer together are the two economies. In relative terms, the model also anticipates that as economic masses increase, trade decreases as a proportion of these masses.

3.9.2 Gravity Model Study on Rubber and Pepper Imports from ASEAN to India

The basic gravity model can be extended to incorporate the explanatory variables such as GDP, common colony, language. The following gravity equation is used to capture the effects of each of these variables on the quantum of natural rubber imports from ASEAN countries to Indian Market.

Gravity Model Rubber

$$\mathbf{Log(M_{ij}) = \alpha + \beta_1 \log (GDP_i) + \beta_2 (GDP_j) + \beta_3 \log (PCGDP_i) + \beta_4 (PCGDP_j) + \beta_5 (Dist_{ij}) + \beta_6 (Lang_{ij}) + \beta_7 (Col_{ij}) + U_{ij}}$$

$\text{Log } M_{ij}$ - natural log of imports from j to i (i = India j= Export markets)

C - constant

logGDPi - natural log of India's GDP

logGDP_j - natural log importing markets' GDP

logPCGDPi - natural log of India's real Per Capita GDP

logPCGDP_j - natural log importing markets' real PER CAPITA GDP

Dist_{ij} - distance between the capital cities of exporting and importing nations

$Lang_{ij}$ - Language used by the people in the exporting and importing nations

Col_{ij} - Whether the exporting and importing nation part of the same colonial rule

earlier

u_{ij} - random error term

The data on the dependent variable, quantum of imports are based on the data from the WITS database of World Bank and UN COMTRADE for the period 1996 to 2012 as earlier data are not available. The data on the GDP and per capita GDP of the exporting country and the importing countries are based on the World Bank Database for the period 1996 to 2013. The explanatory variable distance is invariant to time.

The coefficient GDP of the importing nation has a significant role as it represents the demand for the goods from the exporting nation. The expected sign of the coefficient of this variable can be either positive or negative. A positive sign for the coefficient of this variable implies that higher per-capita real GDP reflects a larger demand for the imports from the exporting countries. On the contrary, its coefficient may be negative if higher per-capita real GDP implies lesser demand for the import products in the home country. The coefficient GDP of the exporting nation is expected to be positive or negative. A positive coefficient suggests that the home country will be able to export more provided that the per capita real GDP rises, signifying enhanced production capabilities of the nation. But a negative coefficient suggests a decline in the ability of the nation to export due to a rise in domestic demand for the product or fall in trade competitively.

The coefficient per capita GDP of both the importing country and the exporting country was also taken to get a better reflection of the economy per-capita as India and major ASEAN countries like Indonesia, Philippines, Thailand, Vietnam and Malaysia have a high population. Distance which is the actual physical distance between the capital cities of the trading nations can be used as proxy for trade cost between the nations. The geographical distance between the markets is expected to possess a negative coefficient. Countries with short distance are expected to trade more than far off nations. Common colony is taken as dummy variable to understand past common colonial linkage i.e. whether the trading countries were past colonies of European imperial countries. Members of past colonies are supposed to trade more and thereby possess a positive coefficient. Common language is also taken as the dummy variable to evaluate whether the ethnic communities in the trading countries use common language.

Panel data was used and regression analysis is performed with the help of Stata-program. Both fixed effects (FE) and random effects (RE) techniques are used to study the suitability of these techniques for explaining the imports to India from ASEAN countries. These two methods differ in the way how individual specific effects are treated. In FE model it is assumed that the individual specific effect is correlated with the individual variables. Therefore there is some variable that we have not taken into account, but as it correlates with the ones that we do use, there will not be omitted variable bias. In RE model individual specific effect is not correlated with the individual variable so over time there are changes within one group which our variables cannot explain. In a simple form both models are like:

$Y_{it} = \beta_0 + X_{it}\beta + Z_i + \Upsilon + \alpha_i + \varepsilon_{it}$

β_0 - constant term

X_{it} - Observed time-variant factors, can be estimated in both FE and RE models

Z_i - Observed time-invariant factors, can be estimated in RE, but not FE models

α_i - Un-observed individual specific effect. In FE model is assumed to be correlated with one of the observed time-variant factors, thereby omitted. In RE model this is assumed to be uncorrelated with both time-variant- and time-invariant factors. Instead it's included in the residual term.

ε_{it} - Un-observed random error term, residual

3.9.2.1 Results and Discussion

Table 3.26 Gravity Results-Natural Rubber

Limp	Coef.	Std.Err	Z	P>|z|	95 % conf.interval	
$lgdp_i$	7.482241	4.385316	1.71	0.088	-1.11282	16.0773
$lpcgdp_i$	-7.3624	5.048407	-1.46	0.145	-17.2571	2.532296
$lgdp_j$	0.16071	0.09777	1.64	0.012	-0.03091	0.352335
$lpcgdp_j$	1.316455	0.088372	14.9	0.000	1.14325	1.48966
comlang_et~o	-3.35108	0.243258	-13.78	0.000	-3.82786	-2.8743
Comcol	-1.00422	0.215725	-4.66	0.000	-1.42704	-0.58141
Ldist	-0.17413	0.47167	-0.37	0.712	-1.09858	0.75033
_cons	-106.433	56.8618	-1.87	0.061	-217.88	5.013768
R-Square : within = 0.687; Between = 0.9616; Overall = 0.849						

Gravity analysis on rubber is done for the 10 ASEAN countries; Brunei and Cambodia were omitted because of lack of time series data on import of rubber to India from these countries. As is clear from Table 3.26, the

coefficient of GDP of home country-India (importing nation) in terms of import is significant and positively correlated whereas the Per-capita GDP of India is not significant and negatively correlated. Results, therefore, explain that higher the GDP of the importing country higher is the chance of increase in volume of import in order to meet domestic demand. In the case of ASEAN countries (exporting nations) both the GDP as well as Per-capita GDP are positively correlated thereby implying that higher the size of GDP higher will be the capability of the exporting country to export more. When looking into the significance level also both GDP and per-capita GDP are highly significant at 95 percent confidence level.

Time invariant dummy variables like common language is highly significant but with negative signs. One reason for the negative sign may be the ethnic language of both ASEAN countries and India is not common and the only exception of Singapore where Tamil, an Indian language is one of the ethnic languages of the country. Another time invariant variable i.e. common colony is highly significant even at 5 percent level of significance but again negatively correlated. One reason for the negative correlation may be that majority of the countries coming under ASEAN block and India were not part of any common colony of European countries.

Results given in Table 3.26 shows that distance is not all significant in terms of import of rubber from ASEAN countries to India and is negatively correlated. The negative correlation is quite similar to earlier gravity studies based on distance. It is noted that here the sign of the coefficient is negative, means less geographical distance influence for higher import and vice versa. Earlier studies also prove that trade increase between short distance countries and falls with increase in distance as transaction cost is significant in trade.

Highly insignificant result is because ASEAN countries are globally the major rubber producing countries and thereby irrespective of the distance factor, the ASEAN trade block will remain the major source of supply of natural rubber to India.

Table 3.27Hausman Fixed Effect - Random Effect Test- Natural Rubber

	(b)	**(B)**	**(b-B)**	**sqrt(diag (V_b-V_B))**
	Fe	**Re**	**Difference**	**S.E.**
lgdpi	3.11427	7.482241	-4.36797	..
lpcgdpi	-1.1471	-7.3624	6.215298	..
lgdpj	0.078057	0.16071	-0.08265	..
lpcgdpj	0.06864	1.316455	-1.24782	0.380925

chi2(4) = (bB)'[(V_b-V_B)^(-1)](bB)= 8.74

Prob>chi^2 = 0.068

(V_b-V_B is not positive definite)

To get a better understanding regarding, whether random effect is significant, Hausman's Test was performed. Test was conducted to understand how time variant factors like GDP, Per-capita GDP of ASEAN block and India is significant in the import of natural rubber to India. Random effect was employed as dummy variables like common language, distance, common colony etc. are time invariant. The null hypothesis in Hausman Test is that the random effect is not correlated with other regressors in the model. The results of Hausman Test as given in Table 3.27 with a Chi-Square value is of 8.74, which is low and we cannot reject the null hypothesis on a sufficient confidence level. Therefore, in this case it seems like the Random Effects model (REM) would be more suitable.

Table 3.28 Gravity Results- Pepper

Limp	Coef.	Std.Err	Z	P>|z|	95 % conf.interval	
$lgdp_i$	-24.3715	14.02886	-1.74	0.082	-51.8675	3.124588
$lpcgdp_i$	13.6754	8.143692	1.68	0.093	-2.28594	29.63674
$lgdp_j$	27.91267	15.15268	1.84	0.065	-1.78603	57.61138
$lpcgdp_j$	-15.7617	7.189609	-2.19	0.028	-29.853	-1.67027
comlang_et~o	30.70538	14.11978	2.17	0.03	3.031115	58.37965
comcol	21.81251	11.72321	1.86	0.063	-1.16457	44.78958
ldist	-24.0225	17.52667	-1.37	0.17	-58.3741	10.32913
_cons	281.4381	183.6317	1.53	0.125	-78.4735	641.3497
R-Square :Within =0.0796; Between = 0.9922; Overall = 0.6469						

Gravity model of Pepper, five ASEAN countries were omitted out of the total ten countries because of the lack of time series data and their lack of relative significance in pepper import to India. Indonesia, Malaysia, Vietnam, Thailand and Singapore are the five countries taken for the gravity model analysis. In the case of Pepper imports, the results show that GDP of the importing country-India is negatively correlated but having significance at 95 percent level of significance (Table 3.28). At the same time the results show that the per-capita GDP of importing country-India is positively correlated with 95 percent confidence level. Positive correlation of Per capita GDP of India implies that higher markets and higher demand for import pepper in India.

While looking in to the results the GDP of exporting country-ASEANblock is positively correlated and significant at 5 percent level of significance, whereas Per-capita GDP in the case of ASEAN country is negatively correlated. The negative correlation result of per-capita GDP

clearly explains that higher the size of GDP of exporting country higher is the chance of export and vice-versa. One reason for the negative correlation of per-capita GDP of ASEAN could be high domestic demand for the product in these countries. Common language as per early gravity model estimate proves to be highly correlated in accelerating trade and here also the coefficient results prove to be high positive correlation and hence is also significant even a 5 percent level (Table 3.28). The coefficient value of common colony also positively correlated with good significance level but in the case of ASEAN India Pepper Trade only Singapore was part of any colony which India was part of. Distance factor in this analysis is also positively correlated with 5 percent significance level, thereby explaining that short distance between India and ASEAN countries is propelling substantially in the increase of import of pepper from ASEAN to India. The correlation result on distance is similar to the theories on gravity model which states the shorter the distance the higher the volume of trade and vice-versa.

Table 3.29Hausman Fixed Effect - Random Effect Test- Pepper

	(b)	**(B)**	**(b-B)**	**sqrt(diag (V_b-V_B))**
	fe	**Re**	**Difference**	**S.E.**
lgdpi	13.00476	-24.3715	37.37623	
lpcgdpi	-5.48728	13.6754	-19.1627	
lgdpj	-16.4126	27.91267	-44.3252	
lpcgdpj	8.29178	-15.7617	24.05343	

chi2(4) = (bB)'[(V_b-V_B)^(-1)](bB)= 35.69

Prob>chi^2 = 0

(V_b-V_B is not positive definite)

In order to understand whether random effect is significant in the case of import of Black Pepper from ASEAN to India, Hausman Test was used. The test was employed as to understand how time invariant factors like GDP and per capita GDP of importing country (India) and exporting country (ASEAN) was impacting on the import of black pepper to India. The null hypothesis in Hausman Test (Table 3.29) is that the random effect is not correlated with other regressors in the model. The results of Hausman Test in the present model are shown in Table 3.29.

Analysis of commodity prices of Rubber, Pepper and Cardamom provides ample proof to the fact that large scale fluctuations are visible in terms of commodity prices. Inter-year and intra-year fluctuations are also prevalent in the commodity prices. In terms of consumption of rubber increasing influence of import is a worrying sign for the farmers in the country as the sector is prone to large scale volatility in the prices. Improvement in the commodity price of pepper and cardamom has enabled the country to earn rich foreign exchange revenue over the years. While working out the Herfindahl-Hirschman Market concentration Index and Trade Intensity Index explains to the fact that export of these commodities have improved significantly and the country is able to diversify its export markets over the years both with ASEAN countries and countries across the globe. Gravity model worked out to understand the reasons for increased import of natural rubber and pepper from ASEAN countries explains that per capita GDP, better proximity etc. are significant factors responsible for the spurt in export from ASEAN countries to India.

Chapter 4

EMPLOYMENT AND LIVELIHOOD OF THE WORKERS IN PLANTATION SECTOR

Contents

Chapter 3 explained the trade implication of the plantation sector with specific analysis to the ASEAN markets. The plantation as a whole depends on the price volatilities in the international market as it is basically export linked and hence any instability that happens in the international market will have immediate reverberations in the employment and livelihood of workers at the lower end of the supply chain. Chapter 4 looks into the implications the plantation sector in Kerala has in the two areas of employment and livelihood. For the purpose of analysis this chapter is apportioned into large versus small plantations. Accordingly in the first section employment patterns in large rubber and cardamom plantations are discussed and the second section analyses the livelihood assets of the workers in rubber and spices plantations. Integrating these two in relation to the earnings of the sector is used to identify the changes in the living condition of the workers.

Section 1

4.1 Employment in Spices and Large Rubber~ Small Rubber Plantation

4.1.1 Employment in Spices Plantations

Employment in spices plantation plays a crucial role in the labour market especially in the Idukki and Wayanad districts. More than 90 percent of the spices plantation in the state (Pepper and Cardamom) originates from Idukki district as mentioned in Chapter 2. One of the important significances of spices sub-sector in the employment market is the high concentration of female work force in this sub-sector comprising more than two third of total employment.

Table 4.1 Sector-wise Employment in Spices Plantations

Sectors employed	Pepper	Cardamom
Estimated no of workers in farm level	253720	73795
Domestic market processing sector	25000	11986
No of small growers	482068	37190
Estimated no of women employed	176129	48898

Source: Unpublished Data, Spices Board, 2012

Table 4.1 shows the number of workers in farm level, domestic market processing sector and the number of small growers in cardamom and pepper plantations in Kerala and the share of women in the total labour force in spices plantations. Employment in spices plantations is a major source of income and employment for a sizeable population especially in the Idukki district as it is considered as the spices hub of the country. One reason for the high concentration of women in spices plantation is that it requires unskilled workers, and hence exists high gender discrepancy in terms of wage.

Like any other agri-commodity, price of spices and employment and wages of workers in the sector is highly correlated. Decline in the price of spices has resulted in fall in the wages and associated unemployment in the sector. In the case of pepper, about 90 percent of pepper plantation comes under small growers and the average size of land holding is less than one hectare. Large versus small categorization shows that pepper is mostly (90 percent) small holding types, whereas most of the cardamom plantations fall under the category of large plantation. Volatility in prices of pepper and cardamom drastically impacted farmer income in the state resulting in high indebtedness among the farmers as most farmers have borrowed money for farming. Farmer indebtedness impacted substantially on the livelihood of workers employed there as employment in spices plantation showed a deceleration. This has resulted in family budget distortions, changes in consumption pattern and alternative livelihood strategies. It also made them to shift their children from quality public school education to government school and even forced to change them from private hospital healthcare to government hospitals (Vineetha and Nair, 2007).

Nature of vulnerability of employment in the spices sub sector has resulted in the alienation of workers from the spices sub sector resulting in labour shortage. In addition to the crisis in employment in the spices plantation many other factors also paved the way for labour shortage in plantations. The presence of Tamil labourers especially from Theni and Kambam area of Tamil Nadu is relatively high in the spices plantations of Idukki district. MNREGA employment in their home state resulted in out-migration of Tamil workers. Along with other state specific factors serious labour shortage is reported by planters especially during the period of

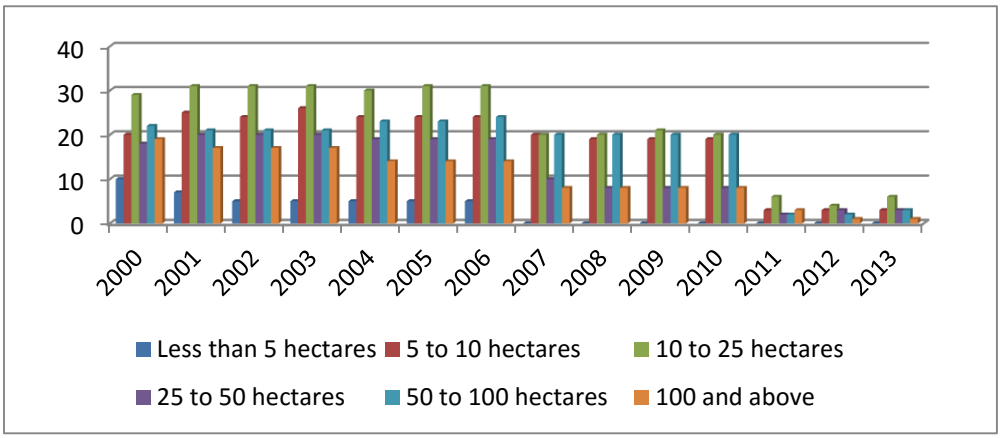
harvesting. The recent spurt in the construction sector in Tamil Nadu also has created negative impact on the labour availability in spices plantations.

4.1.1.1 Employment in Large Cardamom Plantations

Employment in spices plantation shows that there has been a decline in employment as well as in number of cardamom plantation who submitted returns. The number of cardamom plantations which submitted returns depending on the size, declined from 161 in 2000 to 16 in 2013. The steep decline in the number of cardamom plantations submitted returns happened from 2007 when the numbers declined to 78 and since then a massive decline is visible (Figure 4.1).

Failure on the part of the cardamom plantations to file return is not the only reason attributed for the decline in the number of cardamom plantations as their data proves a negative growth in terms of average daily employment in cardamom plantations from 2005 onwards. So any apprehensions of a decline in the number of total cardamom plantations are unwarranted.

Figure 4.1 Number of Cardamom Plantations Submitted Returns According to Size

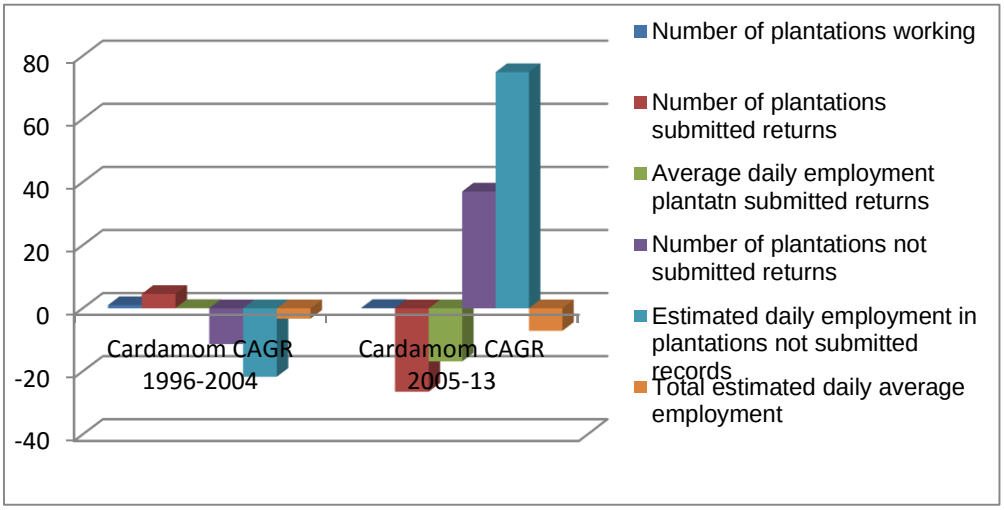


Source: Govt. of Kerala, 2014;Data for this graph is given in Appendix 4.1

4.1.1.2 Trends in Employment Growth in Cardamom Plantation

Figure 4.2 works out the compound annual growth rate in large cardamom plantations in the state. Compound annual growth is worked out to understand the performance of large cardamom plantations terms of average daily employment in plantation which submitted returns and plantations not submitted returns (Figure 4.2). Number of plantations submitted returns declined during the period 2005-13 resulting in the fall in average daily employment in cardamom plantations submitted returns when compared to the period from 1996-04.

Figure 4.2 Compound Annual Growth of Employment in Cardamom Plantation



Source: Govt. of Kerala, 2014;Data for this graph is given in Appendix 4.2

In the case of large cardamom plantations, compound annual growth of daily employment in plantations not submitted returns experienced 74 percent increase during the period from 2005-13 whereas during the period from 1996-2004 the CAGR had a negative growth rate of 21 percent. Average daily employment in cardamom plantations witnessed 16 percent decline

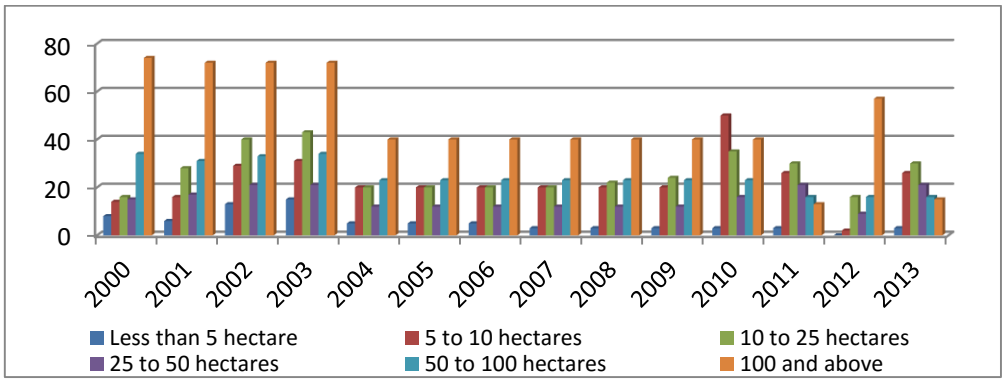
during the period 2005-12(in cardamom plantations submitted returns) [See Figure 4.2].Total estimated average daily employment in cardamom plantations experienced a decline of 7 percent during the period 2005-13, whereas during the period from 1996-04 also there was a negative growth of 3 percent. Eventhough estimated employment increased during the period 2005-13 total average employment experienced a decline because of the decline in compound annual growth in employment in plantations submitted returns.

4.1.2 Employment in Rubber Plantations

4.1.2.1 Employment in Large Rubber Plantations

Rubber plantations in the state which submitted returns depending on the size also declined from 161 in the year to 100 in 2012 (Figure 4.3). Number of rubber plantations with an area of 100 hectares and above fell from 74 in 2000 to 57 in 2012. During the period the relative share of plantation with an area of above 100 hectares got increased as the total number of plantations got reduced during the period.

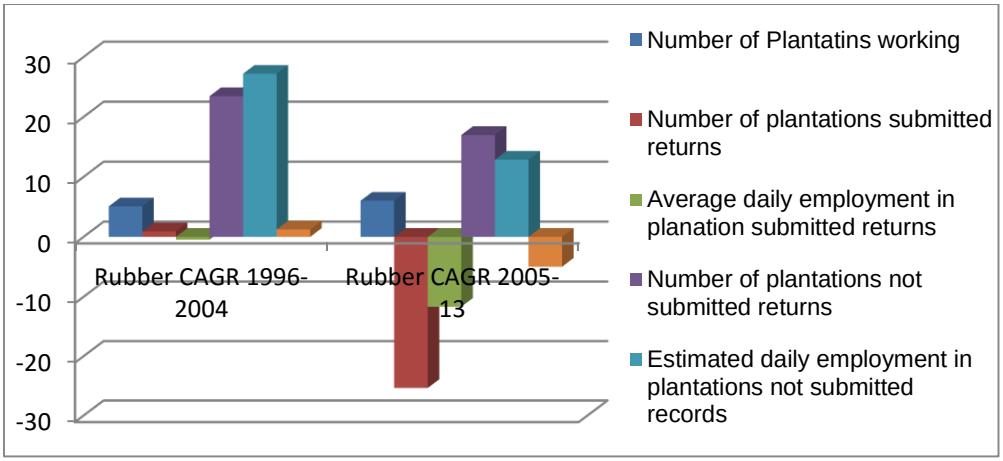
Figure 4.3 Number of Rubber Plantations Submitted Returns according to the Size



Source: Govt. of Kerala, 2014; Data for this graph is given in Appendix 4.3

As mentioned earlier in the case of cardamom plantation, the situation of rubber plantations is also quite similar (Figure 4.4). The number of rubber plantation submitted returns has declined drastically over the years and the volatility of commodity price have much to do for the situation.

Figure 4.4 Compound Annual Growth of Employment in Rubber Plantation



Source: Govt. of Kerala, 2014; Data for this graph is given in Appendix 4.4

Compound annual growth has been calculated for understanding the growth in number of plantations working and the estimated daily average employment in large rubber plantations. Number of rubber plantations working increased 5 percent during the period from 1996-2004 whereas during the period from 2005-13 the growth rate stood at 6 percent thereby witnessing a steady increase. At the same time, total estimated average daily employment in rubber plantation increased 1.22 percent during the period from 1996-04 and experienced a negative growth of 4 percent during the period from 2005-13 (Figure 4.4).

Average daily employment in large-scale rubber plantations registered low growth or registered negative growth even though the price of natural

rubber increased after 2002. Average daily employment in rubber plantation increased from 19877 in 1996 to 25581 in 2002. Later it increased slightly to 25846 in 2003 and declined significantly every consecutive year since then and reached 15325 in 2013 (Figure 4.4).

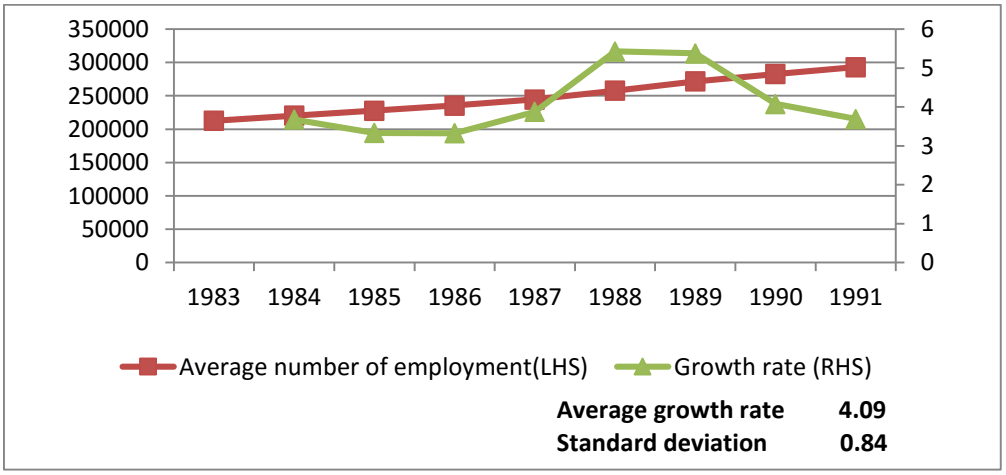
Large rubber plantations contribute less than 10 percent of the total employment in total rubber plantations in the states and therefore remain less significant when compared to small rubber plantation. It is also difficult to find a positive correlation between rubber price movement and average daily employment in rubber plantations since a decline in average daily employment started from the time the commodity prices increased drastically. So other pertinent issues may be attributed for the decline in average daily employment in large rubber plantation during the period.

4.1.2.2 Employment in Small Rubber Plantations

Small rubber plantations in the state could be rightly said as the major employment generating sector in the agriculture economy of the state. The sector plays a significant role in providing employment and livelihood to a large population over the years. Time series data of average daily employment in small rubber plantations from 1983 to 2013 has been taken to understand the trends in employment patterns in small rubber plantations. The dynamics of employment in small rubber plantations are manifested based on multitude of factors including price of natural rubber, the growth in area of rubber plantations, the dynamics of rural labour market in the state especially in the context of Mahathma Gandhi National Rural Employment Guarantee Programme (MNREGP).

Average daily employment in small rubber plantation during the pre-liberalization period from 1983 to 1991, the period which data is available, experienced an average annual growth of 4 percent. During the year 1988 and 1989 the growth of average annual employment in small plantations had a growth of more than 5 percent (Figure 4.5).

Figure 4.5 Average Daily Employment in Small Rubber Plantations from 1983-1991

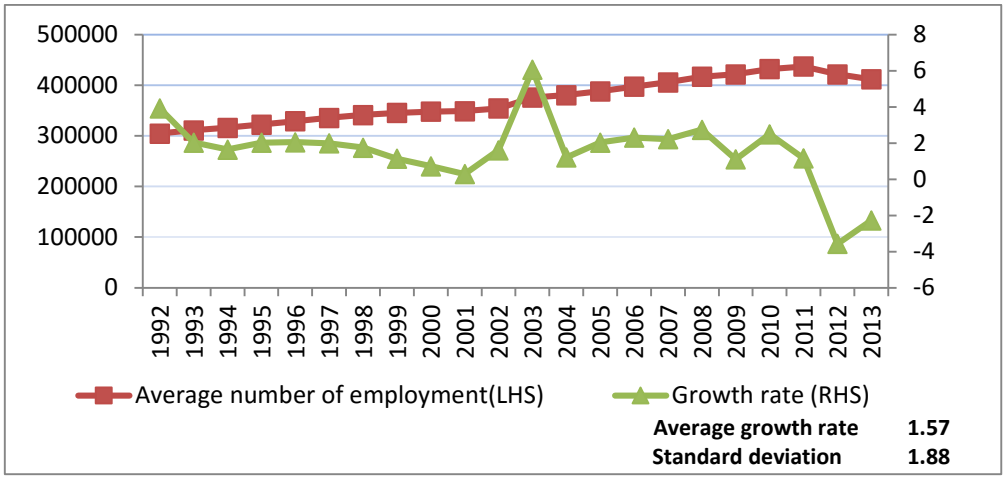


Source: Rubber Board Data, 2012; Data for this graph is given in Appendix 4.5

Average annual daily employment increased from 212613 in 1983 to 293108 in 1991 showing a strong healthy growth. The values are significant in the context that commodity price of rubber remained very low during the pre-liberalization period but daily employment showcased remarkably significant improvement.

Compared to pre-liberalization period, employment growth during the post-liberalization period nosedived dramatically in the small rubber plantation. High amount of fluctuation in the growth of employment was visible during the period (Figure 4.6).

Figure 4.6 Average Daily Employment in Small Rubber Plantations from 1992-2013



Source: Rubber Board Data, 2014; Data for this graph is given in Appendix 4.5

The period from 1992 to 2012 witnessed a gradual increase in terms of daily average employment. Daily employment increased nominally from 304618 in 1992 to 347700 in 2000 and later increased to 411800 in 2013. Average growth in annual employment during the period stood at less than 2 percent whereas the pre liberalization period from 1983 to 1991 witnessed a growth of 4 percent (Figure 4.6).

This is significant in the context that, the price of rubber experienced a phenomenal increase during the post-liberalization period whereas the average annual daily employment in small scale rubber plantations increased in a nominal rate. The period also experienced an increase in total area of rubber plantations in the state and a tremendous increase in production. One reason attributed for the situation is the larger fluctuation in the price of rubber resulted in the fall in employment in the small rubber plantations as the sector was highly vulnerable to prices and resulted in many plantations being abandoned by farmers because of the fall in prices during the period.

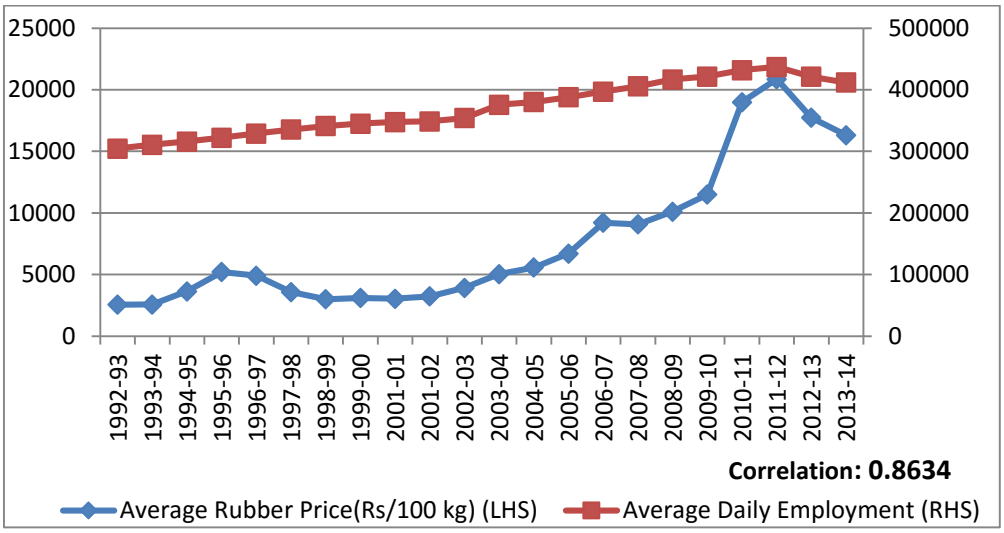
Price of rubber fell from ₹ 52 per Kg in 1996 to ₹ 29 in 1999 and remained below the ₹ 50 mark till 2004. Later, as the prices started showing trends of positive improvement, the average daily employment also increased in a much higher rate during the period from 2004 up to 2011. In the year 2013 average daily employment had a negative growth of 2.27 percent from 437000 to 421400.

While observing the numbers regarding average daily employment, it could be rightly claimed that the small rubber plantations compared to other agriculture sector provides a major chunk of employment opportunity in the rural labour market in the state, even though the post liberalization period experienced a deceleration in growth. This is significant in the sense that 93 percent of the total rubber holdings falls under small holders contributing 85 percent of the total production in the state.

4.1.3 Rubber Price Movement and Its implications on Employment

Price of rubber plays a very important and determining role in the generation of employment in rubber plantations. Time series data from 1992 to 2013 was used to understand the correlation between rubber price movements and employment in rubber plantations. Analysis proves that there exists a direct relationship between the price of rubber and average employment in small rubber plantations. As a result high correlation is also prevalent in terms of rubber prices and average employment in small rubber plantations. High commodity price of natural rubber is critical in the employment prospects in rubber plantations.

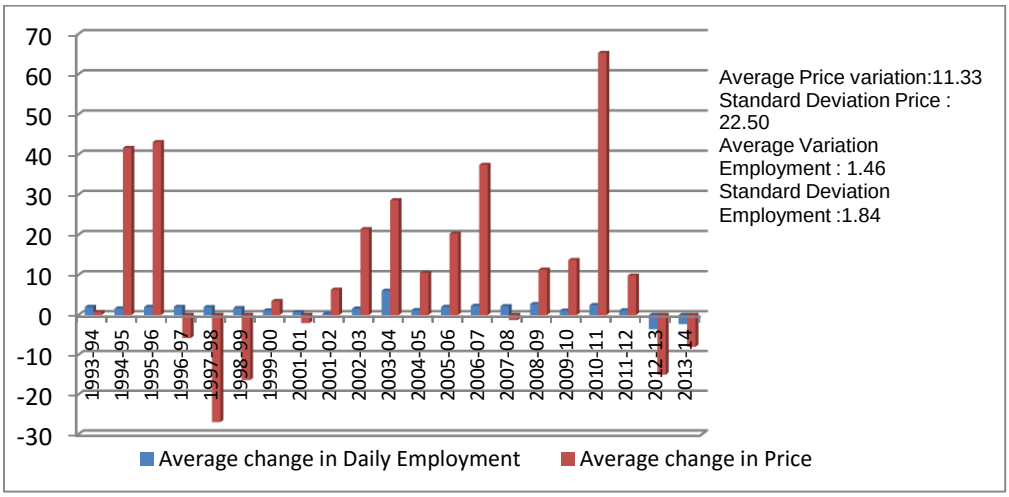
Figure 4.7 Rubber Price and Daily Employment in Small Rubber Plantations



Source: Rubber Board Data, 2014; Data for this graph is given in Appendix 4.6

Data show that there was a visible and phenomenal increase in employment as the price of natural rubber increased. Average employment in small rubber plantations increased from 354300 in 2002-03 to 375770 in 2003-04 as rubber prices increased from ₹ 3919 per/100 kg to ₹ 5040 during the corresponding period. As rubber price increased to ₹ 20871 per/100 kg employment in small rubber plantations increased to an all-time high of411800 and later declined to in 2013-14 as prices declined to 16321 per/100 kg (Figure 4.7) . The table explains that rubber price remains a decisive factor in determining the employment generation in rubber plantations.

Figure 4.8 Average Variations in the Price of Rubber and Daily Employment in Rubber Plantations in Kerala



Source: Rubber Board Data, 2013; Data for this graph is given in Appendix 4.6

The average variation in the price of rubber and daily employment in small scale rubber plantations shows that average variation is more in the case of former than later. Average price variation is about 11.33 during the post liberalization period from 1993-94 to 2012-13 as shown in the figure 4.8, whereas average variation in daily employment is just 1.46during the above mentioned period. There exists a huge variation in annual average price of rubber whereas the variation in employment is only minimal. Figure 4.8illustrates that even though there exist variation in the growth rate of employment, higher amount of fluctuation exists in the price of natural rubber.

Section 2

4.2 Understanding Plantation Labour in a Livelihood Framework

4.2.1 Livelihood Assets of Plantation Workers

This section 2 of Chapter 4 basically tries to understand the livelihood assets of plantation (Large and Small) workers. It shows that income is not the only factor which impacts or improves livelihood of an individual albeit income is also a determining factor. The nature and possession of various livelihood assets plays a significant role in improving the quality of life of an individual as well as household. Therefore the study necessitates the need for evaluating the livelihood assets of plantation workers. In order to understand the livelihood assets of plantation workers in large and small plantations (Rubber and Spices),assets are classified in to broad categories based on the livelihood framework developed by international agencies like UNDP and USAID for understanding the livelihood assets of vulnerable section in the society. The assets are classified into broad categories namely physical assets, natural assets, human assets, financial assets, political assets and social assets etc.

4.2.1.1 Profile of Workers

Table 4.2 Gender-wise Workers Profile in Plantations (Percentage)

type of Plantation * Sex Crosstabulation			
% within type of Plantation			
		Sex	
		Male	Female
type of Plantation	spices	50.0	50.0
	rubber small	75.0	25.0
	rubber large	93.3	6.7

Source: Primary Survey, 2013-14

Before going into the detail about the various social assets, a classification of workers employed in rubber and spices plantations on the basis of gender is analyzed. As mentioned earlier there is a high concentration of female work force in the plantation sector of Kerala. Relatively unskilled nature of job and lower wages are some of the reasons for the high demand and participation of women in this sector. In spices plantation around 50 percent of workers were female workforce whereas in rubber small and large rubber plantations only 15 percent constitute female workforce (Table 4.2).

4.2.1.2 Physical Assets

Physical assets constitute an integral part in terms of understanding the livelihood of an individual. Physical assets are considered as a reflection of the quality of livelihood they possess. The quality of physical assets the workers possess improves corresponding to the improvement in their livelihood. Higher the livelihood options and income generation higher will be the chance to possess better physical assets. In order to evaluate the physical assets- possession and nature of the type of house, area of house, ownership of house, land holding pattern, sanitary facility, ownership of vehicles, possession of T.V, refrigerator, mobile phones etc. of workers were taken into consideration. Data from the primary survey was used to analyze each of these livelihood variables.

4.2.1.2.1 Ownership of house-Type of house-Area of house

Ownership of house is considered as an important variable in understanding the nature of ownership of physical assets among the workers in plantation sector. About 41.2 percent of workers in spices plantations live in house owned by them. Out of this, 25 percent of their houses are partially

or fully financed by government agencies (Table 4.3). Majority (58.8 percent) of the workers in the spices plantations live in rented houses or quarters provided by plantation owners. One reason for the situation is that a major chunk of workers in the spices plantation come to plantations in Idukki from the border districts of Kambam and Theni in Tamil Nadu.

Table 4.3 Ownership of House (Percentage)

type of Plantation * Ownership of house Crosstabulation					
% within type of Plantation					
		Ownership of house			
type of Plantation		Own	Govt. provided own house	Partially by govt. and own	Others
	spices	16.2	2.5	22.5	58.8
	rubber small	61.9	.6	5.6	31.9
	rubber large	41.7			58.3

Source: Primary Survey, 2013-14

In the case of workers in small rubber plantations 61.9 percent of the workers stay in own house and around 6.2 percent of the workers stay in own house funded by government partially or fully. Around 32 percent of the workers in small rubber plantations stay in rented homes as quarters facility is not provide in the case of workers in small plantation (Table 4.3). Around 58.3 percent of the workers in large rubber plantations stay in labour quarters or rented property therefore it could be reasonable to assume that for the majority ownership of own house is still a major problem and a major drawback in terms of ownership of physical assets are concerned.

Type of house is another important variable to understand the quality of physical asset workers possess. In the case of workers in plantation sector, majority of the workers in spices plantations (78.8 percent) live in serviceable

kucha houses which are of low standard and around 21.2 percent of the workers live in non-serviceable kucha type of house which are also of low standard (Table 4.4).

Table 4.4 Type of House (Percentage)

type of Plantation * type of house Crosstabulation				
% within type of Plantation				
		type of house		
type of Plantation		**semi-pucca**	**non serviceable kucha**	**serviceable kucha**
	spices		21.2	78.8
	rubber small	68.8	31.2	
	rubber large	88.3	11.7	

Source: Primary Survey, 2013-14

Consequently workers along with their family including their school going children(s) are forced to live in congested environment restricting their prospects to study at home also. Surprisingly none of the workers in spices plantations lives in pucca or semi-pucca houses thereby showing their poor wage levels is forcing them to lead a poor standard of life.

Compared to workers in spices plantations a significant majority of workers in small and large rubber plantations stay in semi-pucca houses which are far better than kucha and serviceable-kucha kind of homes. Around 68.8 percent workers in small rubber plantations and 88.3 percent of the workers in large rubber plantations stay in semi-pucca houses and the figures of those staying in kucha houses are 31.2 percent and 11.7 percent respectively in small and large rubber plantations (Table 4.4). One significant finding from the data is that none of the workers surveyed irrespective of the type of plantations stays in pucca houses.

Table 4.5 Chi-Square between Plantation and Type of House

Chi-Square Tests			
	Value	**Df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	2.429E2[a]	4	0.000
Likelihood Ratio	277.935	4	0.000
Linear-by-Linear Association	168.401	1	0.000
N of Valid Cases	300		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.60.			

Source: Calculation based on Primary Survey, 2013-14

Chi-Square analysis between Plantation and type of house proves that there exists significant difference between plantations while assessing the type of house the workers are residing. There is significant and high association between plantation and the type of house they resides (Table 4.5).

Area of houses another significant component in understanding physical assets of workers also provides trends similar to that of type of house where the condition of workers in spices plantations remains abysmal. Around 97 percent of the workers in spices plantations stay in house with an area of less than 500 sq.ft and only 3.8 percent sq.ft workers stay in houses in an area of between 500-750 sq.ft (Table 4.6).

Table 4.6 Area of House (Percentage)

type of Plantation * area of house Crosstabulation				
% within type of Plantation				
type of Plantation * area of house Crosstabulation				
type of Plantation		**Between 250 - 500 sqft**	**Between 500 - 750 sqft**	**Between 750 - 1000 sqft**
	spices	96.2	3.8	
	rubber small	5.6	81.2	13.1
	rubber large	1.7	98.3	

Source: Primary Survey, 2013-14

Here also the workers in rubber plantations irrespective of the type of plantations remain better when compared to that of spices plantations. 81.2 percent of the workers in small rubber plantations and 98.3 percent of the workers in large rubber plantations stay in houses with an area of between 500-750 sq.ft (Table 4.6). Only 7.3 percent of the workers in small and large rubber plantations stay in house with an area less than 500 sq.ft. 13.1 percent of the workers in small rubber plantations stay in houses with an area of between 750-1000 sq.ft.

4.2.1.2.2 Land Holding Capacity-Sanitary Facilities

Table 4.7 Landholding Capacity (Percentage)

type of Plantation * land holding Crosstabulation					
% within type of Plantation					
		land holding			
		No land	Upto 10 cents	10-50 cents	50 cents- 1 acre
type of Plantation	spices	21.2	76.2	2.5	
	rubber small	6.9	55.6	36.9	.6
	rubber large	18.3	76.7	5.0	

Source: Primary Survey, 2013-14

Possession of land is significant in the sense that land provides the owner an option to make use of it for productive purposes and also as a mortgage in the case of a financial emergency. Land holding capacity considered as an important physical asset in improving the livelihood of workers is also comparatively less among the workers in plantation sector. Around 21 percent of the workers in the spices plantation possess no land at all and the figure is 6.9 percent and 18.3 percent respectively (Table 4.7) in the case of small and large rubber plantations.

Workers who are possessing land upto 10 cents is 76.2 percent in the case of workers in spices plantations and about 55.6 percent and 76.7 percent in the case of small and large rubber plantation workers respectively. Those who are possessing land between 10-50 cents are higher among workers in small rubber plantations with around 37 percent of the workers. In spices plantations around 2.5 percent of workers and in large rubber plantations around 5 percent possess land with an area between 10-50 cents (Table 4.7).

Sanitary facility is another important physical asset which plays an important role in improving the health of an individual. Surprisingly around 22.5 percent of the workers in spices plantation do not have latrine facility and opt for open defecation (Table 4.7). The consequences of open defecation are so severe to cause long lasting health problems to the individual and society he/she belongs.

Out of the remaining 77.5 percent of workers who have sanitary facility 38.8 percent have toilets with roof and wall but no water connection, whereas another 38.7 percent have toilets with no roof at all.

Table 4.8 Sanitary Facilities (Percentage)

type of Plantation * sanitary latrines Crosstabulation						
% within type of Plantation						
		sanitary latrines				
type of Plantation		**with roof, wall, water connection**	**With roof, wall, no water connection**	**Without roof**	**Without door**	**No latrine/ Open defecation**
	spices		38.8	38.7		22.5
	rubber small	21.9	68.1	8.8	1.2	
	rubber large	6.7	86.7	6.7		

Source: Primary Survey, 2013-14

Contrary to workers in spices plantations, almost all workers in rubber plantations have toilet facilities. Around 21.9 percent workers in small rubber plantations have toilet facilities with roof, wall and water supply and for around 68.1 percent of the workers, toilets are with roof and wall but no water connection. Remaining 10 percent of the workers in small rubber plantations have toilets without roof or without doors. In large rubber plantations only 6.7 percent of the workers have toilet facility with roof, wall and water connection whereas majority (86.7 percent) of the worker have sanitary facility with roof and wall but no water connection as shown in Table 4.8.

4.2.1.2.3 *Status of Electrification*

Table 4.9 Status of Electrification (Percentage)

type of Plantation * electricity Crosstabulation			
% within type of Plantation			
		Electricity Connection	
		Yes	**No**
type of Plantation	spices	87.5	12.5
	rubber small	99.4	0.6
	rubber large	100.0	

Source: Primary Survey, 2013-14

Looking in to the status of electrification 87.5 percent of the workers in spices plantation have their houses electrified (Table 4.9). In rubber small and large plantations the figure is almost 100 percent in terms of electrification.

4.2.1.3 Natural Assets

Natural assets include accessibility to food, water resources, timber products etc. as most of the plantations are situated in high altitude areas

where accessibility to the basic amenities are very less and dependent more on natural assets. But we were only able to get information regarding their accessibility to drinking water and its duration.

4.2.1.3.1*Water Availability (Source-Status-Duration of water availability)*

An adequate supply of water for drinking and household use is a basic pre-requisite for the health and welfare of the workers. Further, it reduces the time spent by workers to collect water from distant places. Many water borne diseases like typhoid, dysentery, jaundice etc can be reduced by the supply of adequate quantity of safe drinking water. Drinking water collected from underground springs in plantation may contain high concentration of pesticides because of the wide use of pesticides in plantation.

Table 4.10 Main Source of Drinking Water (Percentage)

type of Plantation * main source of drinking water Crosstabulation						
% within type of Plantation						
		main source of drinking water				
type of Plantation		**own well/tube well**	**public well**	**Public tap**	**Canal**	**dependent on others**
	spices	11.2	43.8	30.0	11.2	3.8
	rubber small	53.8	40.0	6.2		
	rubber large		70.0	30.0		

Source: Primary Survey, 2013-14

Source of drinking water remains a major concern among the workers in the plantation sector. Only 11.2 percent of the workers in spices plantations have own well or tube well as primary source of drinking water. Around 43.8 percent of the workers depend on public well and another 30 percent depend on public tap for drinking water (Table 4.10). For 11.3 percent of the workers canals or natural stream is the primary source of drinking water which usually dries during the time of summer making the workers and their family deprived of drinking water during the time.

Situation is better when looking in to the case of workers in small rubber plantations. More than half of the workers (53.8 percent) depend on own well or tube well as primary source of drinking water. Among the workers in small rubber plantations 40 percent depend on public well and another 6.2 percent of workers depend on public tap as the primary source of drinking water (Table 4.10).

In the case of workers in large rubber plantations none of them has own well or tube well as the primary source of drinking water. A significant majority (70 percent) of the workers in large rubber plantations depend on

public well for drinking water and another 30 percent depend on public tap for drinking water purpose.

Regarding plantation workers, duration of water availability is also remained a matter of grave concern. Changing weather patterns and fall in average annual rains because of decline in monsoon showers could be attributed for the decline in duration of water availability. Among the workers in plantations, for around 65 percent respondents, there is difficulty in availability of water during summer especially in the months of March, April and May. Alarmingly only 25 percent of the workers have availability of water through-out the year whereas 16.2 percent enjoy water availability only upto 6 months and around 58.8 percent of the workers finds difficulty in water availability during summer (Table 4.11).

Table 4.11 Duration of Water Availability (Percentage)

type of Plantation * duration of water availability Crosstabulation				
% within type of Plantation				
		duration of water availability		
type of Plantation		**Whole year**	**Difficulty in availability during summer**	**Up to 6 months**
	spices	25.0	58.8	16.2
	rubber small	50.6	47.5	1.9
	rubber large	3.3	90.0	6.7

Source: Primary Survey, 2013-14

In small rubber plantations also only 50.6 percent of the workers have round the year availability of water. At the same time, 47.5 percent of the workers find difficulty in water availability during the peak of summer. Observing the case of workers in large rubber plantations, for around 90 percent of the workers water availability during summer is difficult and for 6.7 percent of the workers duration of water availability is only upto6

months. Among the workers only 3.3 percent enjoy round the year water availability in large rubber plantations (Table 4.11).

Table 4.12 Distance to Water Source (Percentage)

type of Plantation * distance to main source Crosstabulation				
% within type of Plantation				
type of Plantation	**distance to main source**			
		Less than 100m	**Between 100m-250m**	**More than 250m**
	spices	37.5	51.2	11.3
	rubber small	77.5	22.5	
	rubber large	56.6	43.4	

Source: Primary Survey, 2013-14

Regarding distance to water sources for household purposes, only 37.5 percent of the respondents in spices plantations have access to water source in a distance less than 100 metre. For around 51.2 percent (Table 4.12)of the workers distance to water source was between 100 to 250 metres and around 11.3 percent of the workers have to cover a distance of more than 250 metres to access water source like public tap, public well, streams etc.

In small rubber plantations, workers access to water sources in terms of distance was comparatively better when compared to workers in spices plantations. Majority of the workers have access to water sources in a distance less than 100 metres for household purpose. Rest of the 22.5 percent of the workers responded of accessibility to water source was between a distance of 100- 250 metres (Table 4.12). Around 56.6 percent of the workers in large rubber plantations have access to water sources in a distance of less than 100 metres and 43.4 percent of the workers responded that they had access to water source in a distance between 100-250 metres.

Table 4.13 Status of day-to-day Water Availability (Percentage)

type of Plantation * status of water availability Crosstabulation				
% within type of Plantation				
		status of water availability		
type of Plantation		Always	Some days	Daily (certain hours)
	Spices	48.8	17.5	33.8
	rubber small	91.2	1.9	6.9
	rubber large	68.3		31.7

Source: Primary Survey, 2013-14

Regarding availability of water, more than 50 percent of the workers in spices plantations experience difficulty as water availability is for some days or only for certain hours especially during summer season. Location of spices plantations in difficult geographical terrains could be attributed as the prime reason for the difficulty in water availability to the majority of the workers. In small rubber plantations around 91.2 percent of the workers receive uninterrupted supply of water whereas only 8.8 percent of the workers face difficulty in availability of water whereas in large rubber plantations 68.3 percent of the workers receive water round the clock and 31.7 percent of the workers receive water only during certain hours of in a day (Table 4.13).

The poor condition of housing and latrine facility and difficulty in access to water source for drinking and other household chore among workers in spices provides bleak picture demonstrating the poor living conditions they are associated with.

4.2.1.4 Human Assets

Human assets plays crucial role in determining and attaining a decent livelihood option and thereby improving the overall quality of life. These are

considered to be the key factors responsible for attaining a better human development regardless of the type of society they belong. Education attainment, proficiency of skills and vocational training, type of employment etc. forms a crucial part of human assets of an individual in their livelihood strategy.

4.2.1.4.1 *Education Attainment*

Table 4.14 Educational Attainments (Percentage)

type of Plantation * general education Crosstabulation						
% within type of Plantation						
type of Plantation		general education				
		Illiterate	Primary	Up to SSLC	SSLC	Pre-degree/ Plus two
	spices	3.8	38.8	48.8	8.8	
	rubber small		6.2	27.5	56.9	9.4
	rubber large		3.3	33.3	58.3	5.0

Source: Primary Survey, 2013-14

In the case of workers in the plantation sector of Kerala, the general education levels of workers remain considerably low when compared to the mainstream Kerala society. The situation is dismal in the case of workers in spices plantations. Around 38 percent of the workers in spices plantation have education only upto primary level whereas 48 percent have general education upto 10^{th} grade. The percentage of spices plantation workers having education qualification of SSLC is only 8.8 percent and the surprising fact is that not a single worker in spices plantation is having pre-degree or above as an education qualification (Table 4.14).

Workers in rubber plantations the education levels are somewhat similar both in the case of small and large rubber plantations. Percentage of workers having education qualification of primary school levels are less in both large and small rubber plantations with 3.3 percent and 6.2 percent respectively (Table 4.14). Around 56.9 percent of the workers in small rubber plantation have passed SSLC, whereas in large rubber plantations the figure stood at 58.3 percent. Contrary to spices plantations 9.4 percent and 5 percent of the workers in small rubber plantations and large rubber plantations have passed pre-degree / plus-two.

Table 4.15 Chi-Square Test between Education and Type of Plantation

Chi-Square Tests			
	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	1.000E2[a]	8	0.000
Likelihood Ratio	107.919	8	0.000
Linear-by-Linear Association	59.864	1	0.000
N of Valid Cases	300		
a. 5 cells (33.3%) have expected count less than 5. The minimum expected count is .60.			

Source: Primary Survey, 2013-14

Chi-Square results also prove to the fact that there exists significant difference in terms of education of workers depending on the type of plantation. Therefore it could be rightly said that type of plantation is significant in understanding the education qualification of workers and thereby assessing their human capital (Table 4.15).

Another very important human asset is the proficiency in job related skills. Proficiency in any job related skill enhances the chance to get better paid and to reduce the vulnerability of job loss. Here also the performance of

workers in spices plantation is poor. All workers in spices plantation possess any job related skills making them more vulnerable in seeking employment other than works which require no skills and are less paid (Table 4.16).

4.2.1.4.2 *Proficiency in Job-related Skills*

Table 4.16 Skill Status (Percentage)

type of Plantation * Skill status Crosstabulation			
% within type of Plantation			
type of Plantation		**Skill status**	
		No skill	**Other skills**
	Spices	100.0	100.0
	rubber small		100.0
	rubber large		100.0

Source: Primary Survey, 2013-14

In the case of rubber plantations the level of proficiency in any particular skill among workers is almost 100 percent as tapping of rubber trees is considered as a skilled job which requires sufficient amount of tapping skill.

4.2.1.4.3 *Apprenticeship in Rubber Plantation*

Table 4.17 explains that in small scale rubber plantations tappers work as apprentice for a short duration to acquire the requisite tapping skills. It is observed to be a regular practice in most of the rubber plantation in the state.

Table 4.17 Duration of Apprenticeship in Rubber Plantations

Region	**Apprenticeship (In months)**	**Tappers who received wage during apprenticeship(%)**
Kottayam	11	10

Pala	15	17
Thodupuzha	18	15
Changanacherry	13	34
Kanjirapally	30	30
Average	17	22

Source: Mohankumar and BinnyChandy, 2009

The duration of apprenticeship varies from place to place. Apprenticeship is reported higher in Kanjirapally with 30 months whereas it was lower in Kottayam. Relatively better job opportunity in Kottayam could be one of the main reasons for the shorter duration of apprenticeship there. While observing the percentage of tappers receiving wage during apprenticeship only a minority of the tappers do receive any amount as wage during that period (Table 4.17).

4.2.1.4.4 *Age Classification of Workers on the Basis of Age Category*

Table 4.18Age of the Tapper and Tapping Performance in Rubber Plantation

Age group	Percentage of tappers	Number of trees tapped daily
20-30	16	319
30-40	24	325
40-50	34	339
50-60	18	303
60-70	8	283

Source: Mohankumar and Binny Chandy, 2009

Table 4.18 shows the age of tappers and the number of trees tapped daily. About 58 percent of the tappers fall under the age group of 30-50. The tappers in the age group between 40-50 daily tap the highest number of trees daily with 339 trees a day, whereas it is the lowest among the age group of 60-70 with only 283 trees (Table 4.18).

Table 4.19 Plantation-wise Classification of Workers Age Category-wise (Percentage)

type of Plantation * age category Crosstabulation						
		age category				
		18-25	**26-35**	**36-45**	**46-55**	**above 55**
type of Plantation	spices		25.0	43.8	23.8	7.5
	rubber small	1.9	36.2	34.4	21.9	5.6
	rubber large		21.7	28.3	33.3	16.7

Source: Primary Survey, 2013-14

Age is considered as a critical variable in terms of creation of all kind of livelihood assets. Lower the age category higher will be the chance to productive to enhance livelihood opportunities. The age category also determines whether the nature of job is attractive and whether the younger generation is more inclined to it or not.

In the case of workers in plantation sector, irrespective of the type of plantation only less than 1 percent belongs to the age category of 18-25. Around 25 percent of the workers in spices plantations belong to the age category of 26-35 whereas 43.8 percent belongs to the age category of 36-45 and 23.8 percent under the age group of 46-55 (Table 4.19). Only 7.5 percent belongs to the age category of 55 and above in spices plantations in the state. Similar to other studies (Mohan Kumar and Binny Chandy, 2009) mentioned earlier the age classification of workers show similar trend in the present study also. More than 36.2 percent of the workers in small rubber plantations belong to the age category of 26-35 whereas 34.4 percent belongs to the age category of 36-45. Around 27.5 percent of the workers fall under the age bracket of 46 and above.

Around 21.7 percent of the workers in large rubber plantations fall under the age category of 26-35 and around 28.3 percent falls under the age category of 36-45. Workers who belong to the age of 46 and above comprise

around 50 percent of the total workers in the large rubber plantations (Table 4.19).

4.2.1.4.5 Primary and Secondary Employment of workers

In spices plantations in the state for around 51.2 percent of the workers estate labour in plantations remains the main employment source. Around 48.8 percent of the workers in spices plantations consider estate labour as secondary employment source and their main employment is agriculture labour (Table 4.20).

Table 4.20 Primary Employment in Plantations (Percentage)

Crosstabulation			
% within type of Plantation			
	Main employment		
type of Plantation		**Agricultural labour**	**Estate labour**
	Spices	48.8	51.2
	rubber small	16.2	83.8
	rubber large		100.0

Source: Primary Survey, 2013-14

In the case of small rubber plantations main employment of more than 83 percent of the workers is estate labour whereas in large rubber plantations the figure is 100 percent (Table 4.20). One of the main features that could be attributed to the situation is the nature of employment in rubber and spices plantations. Rubber plantation demands through-out the year employment whereas in spices plantations employment is seasonal in nature. This could be attributed as the main reason why majority of the workers in rubber plantations is dependent on estate labour as source of primary employment whereas lesser number of workers dependent on estate labour in the case of spices plantations.

While talking about subsidiary employment in plantations, the option of livelihood available to workers among plantations workers is very limited owing to low human and social capital among the workers as per the Table 4.21. The situation clearly indicates their vulnerability in alternative source of livelihood in the case of a downfall in employment in plantation sector.

Table 4.21 Subsidiary Employment in Plantations (Percentage)

% within type of Plantation					
		subsidiary employment – A			
		Agricultural labour	**Employment guarantee scheme**	**Non-agricultural labourer**	**Estate labour**
type of Plantation	spices				100.0
	rubber small	46.9	14.4	24.4	14.4
	rubber large	60.0		40.0	

Source: Primary Survey, 2013-14

All the workers employed in spices plantations consider estate labour as the only source of subsidiary employment (Table 4.21). Looking into the situation of main employment above and secondary employment here in this section it is getting clearer that workers in spices plantations are more vulnerable in terms of employment opportunities. Limited employment opportunities because of low education qualifications and skill status could be interpreted as major factors responsible for the situation. Lack of other major economic activity other than plantation sector is happening in areas where spices plantations situate. This is also resulting in lesser employment options other than estate labour for the workers in spices plantations.

Almost 66.2 percent of the workers in small rubber plantations woks as agriculture labour and therefore agriculture labour could be considered as a subsidiary source of employment. Around 18.1 percent of workers in small

rubber plantations work in Mahatma Gandhi National Rural Employment Guarantee Schemes which guarantees 100 days of assured employment (Table 4.21). Among the plantation workers in small rubber plantations female workers are the major beneficiaries of the MNREGA related jobs. In small rubber plantations around 15.6 percent of workers consider estate labour i.e. job as tappers in rubber plantations as subsidiary employment. Contrary to small rubber plantations, almost all workers in large rubber plantations consider agriculture labour as the sole option of subsidiary employment.

4.2.1.5 Financial Assets

Financial assets play an integral part in the improvement of livelihood of an individual. Possession of financial assets enables the individuals significantly in their quest for social inclusion as livelihood is highly dependent on the financial assets of an individual. Wages, access to credit facility and saving habit determines the nature of financial asset. In order to understand the financial assets of plantation workers variables such as possession of bank account, provision of insurance coverage, accessibility or difficulty in access to credit from formal sources like bank, average monthly income etc.

The more the financial assets, the better is the probability to acquire other livelihood assets. It also indicates whether their wages are enough to make a decent living and gives a picture about their ability to get access to credit facilities from financial institutions like bank and co-operative societies as well as their saving habits and other financial inclusion features.

4.2.1.5.1 *Average Daily wage and Average Monthly Income among Workers*

Table 4.22 Average Daily Wage in Plantations (Percentage)

type of Plantation * average employment Crosstabulation

% within type of Plantation						
type of Plantation	**Average daily wage (₹)**					
		150-200	**201-250**	**251-300**	**301-400**	**Above 400**
	spices	72.5	27.5			
	rubber small			20.6	75.6	3.8
	rubber large			100.0		

Source: Primary Survey, 2013-14

Average daily wage of workers in spices plantation remains very low when compared to the rubber plantations. Around 72.5 percent of the workers in spices plantations earn only an average daily wage between ₹ 150-200 and about 27.5 percent of the workers earn between ₹ 201-250. The situation in rubber plantation remains different from that of spices plantations. All workers in rubber plantations earn ₹ 250 as average daily wage (Table 4.22).

In small rubber plantations 20.6 percent of the workers earn an average daily wage of ₹ 251-300, whereas around 75.6 percent of the workers earn an average daily wage between ₹ 301-400. Only 3.8 percent of the workers earn an average wage of more than ₹ 400. Compared to small rubber plantations, the average daily wage in large rubber plantations stood between ₹ 251-300(Table 4.22).

Average monthly income could be attributed as the most significant component in understanding the quality and standard of life of an individual. Monthly average income varies significantly between rubber and spices plantations. Average monthly income in spices plantations remains comparatively very low when compared to that of rubber plantations. Irrespective of the type of plantation, rubber plantation workers earn better

wage and monthly income when compared to workers in spices plantations as illustrated in Table 4.23.

Table 4.23 Average Monthly Income –Plantation-wise (Percentage)

type of Plantation * category wise income Crosstabulation							
% within type of Plantation							
type of Plantation		category wise income					
		Below 2500	**2501-4000**	**4001-6000**	**6001-7500**	**7501-9000**	**Above 9000**
	spices	6.2	67.5	25.0	1.2		
	rubber small			20.6	41.2	28.1	10.0
	rubber large			1.7	88.3	10.0	

Source: Primary Survey, 2013-14

Among the workers in spices plantations around 6.2 percent of the workers earn an average monthly income of below ₹ 2500, whereas a significant majority of the workers i.e. around 67.5 percent of the workers earn an income of between ₹ 2501–4000. Another 25 percent of the workers earn an income between ₹ 4001-6000 and around 1.2 percent of the workers have a monthly earning between ₹6001-7500 as shown in Table 4.23.

In the case of workers in small rubber plantations average monthly income generation is much higher when compared to spices plantations. About 20.6 percent of the workers earn an average monthly income between the range of ₹ 4001-6000 and more than 41 percent of the workers earn an average monthly income between ₹ 6001–7500. In the case of small rubber plantation workers, those who are earning monthly income between ₹ 7501–9000 comprises 28.1 percent whereas 10 percent of the workers earn more than ₹ 9000 per month. Significantly around 70 percent of the workers earn monthly income of more than ₹ 6000 which is

considerably a decent income provided the present standard of living of workers in the state (Table 4.23).

Workers in large rubber plantations remain better off in terms of improved monthly average income when compared to workers in spices plantations. Table 4.23 shows that around 88.3 percent of the workers earn an average income of between ₹ 6001-7500 and another 10 percent earn their monthly income of between ₹ 7501–9000.

Table 4.24 Chi-Square between Income and Type of Plantation

Chi-Square Tests			
	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	2.800E2[a]	10	0.000
Likelihood Ratio	313.499	10	0.000
Linear-by-Linear Association	108.141	1	0.000
N of Valid Cases	300		
a. 5 cells (27.8%) have expected count less than 5. The minimum expected count is 1.00.			

Source: Calculation based on Primary Survey, 2013-14

Chi-Square results substantiate the existence of income disparity among workers in the plantation sector. There is significant and high association between the location of the plantation and education attainment of workers (Table 4.24).

4.2.1.5.2 *Possession of bank account -Access to Credit -Insurance Coverage*

Table 4.25 Possession of Bank Account (Percentage)

type of Plantation * have bank account Crosstabulation		
% within type of Plantation		
type of		**have bank account**

Plantation		yes	No
	spices	18.8	81.2
	rubber small	32.5	67.5
	rubber large	30.0	70.0

Source: Primary Survey, 2013-14

Possession of bank account is considered to be an important financial asset in empowering the individual significantly. It is considered so because of the possession of bank account open the workers access to formal source of credit and safe savings option. While looking in to the possession of bank account among the workers in the plantation sector it seems that the majority of workers (72.9 percent) irrespective of the type of plantation remain outside the formal source of banking facilities (Table 4.25).

Possession of bank account is least in the case of workers in spices plantation. Only 18.8 percent of the workers do have bank account which is relatively poor to the current standards. The situation in rubber plantations also remains dismal. In the case of small rubber plantations 32.5 percent workers responded of having bank account whereas in large rubber plantations only 30 percent as shown in Table 4.25.

Table 4.26 Insurance Coverage (Percentage)

type of Plantation * insurance coverage Crosstabulation			
% within type of Plantation			
type of Plantation		**insurance coverage**	
		yes	**No**
	spices	23.8	76.2
	rubber small	100.0	
	rubber large	30.0	70.0

Source: Primary Survey, 2013-14

Insurance coverage is another important financial asset which guarantees monetary help to the workers in the case of any health hazards. Insurance coverage provided by the employer or the government funded commodity boards like spices board, Rubber Board here in the case of plantation workers is a crucial source of social security provision for the workers.

Insurance coverage among the workers in spices plantation remains poor. Around 76.2 percent (Table 4.26) of the workers remain outside the ambit of insurance coverage thereby exposed to greater vulnerability to their livelihood and employment in the emergence of any health hazards or other exigencies. One reason for the situation is that most of the labours employed in spices plantations are casual labourers thereby the provision of insurance coverage is deprived for them even though Spices Board provides insurance coverage to workers employed in spices plantations.

Contrary to spices plantation workers, all workers in small rubber plantation have insurance coverage provided by Rubber Board whereas in large rubber plantation only 30 percent workers responded of having insurance coverage (Table 4.26). Rubber Board provides insurance coverage only to workers employed in small rubber plantations whereas insurance

coverage to workers in large rubber plantations are provided by the Department of Labour Affairs, Government of Kerala.

Table 4.27 Difficulty in Obtaining Bank Credits (Percentage)

type of Plantation * difficulty in obtaining bank credits Crosstabulation			
% within type of Plantation			
type of Plantation		difficulty in obtaining bank credit	
		Yes	No
	spices	83.8	16.2
	rubber small	77.5	22.5
	rubber large	58.3	41.7

Source: Primary Survey, 2013-14

Examining whether there is difficulty in getting bank credits for workers in the plantation sector around 73.2 percent of the workers across plantations responded of having difficulty in getting it. Difficulty in getting bank loan is high among workers in spices and small rubber plantations. In spices plantation 83.8 percent of the workers responded of having difficulty in getting bank loans, whereas the in small rubber plantations around 77.5 percent workers opined of difficulty in getting bank credits (Table 4.27).Workers in large rubber plantations remain relatively better off when compared to other plantations in this regard with 41.7 percent workers responded of having no difficulty while getting bank loans. One possible reason for this is that large plantation workers are relatively better off while getting banks credits because of their relatively stable income. While workers in spices and small rubber plantations is exposed to fluctuating income and their land holding capacity is also less which makes things difficult while accessing banks for credit needs.

4.2.1.5.3 *Beneficiaries-Nature- Amount of Government Sponsored Schemes*

Table 4.28 Beneficiaries of Various Government Schemes (Percentage)

type of Plantation * personal scheme 1 Crosstabulation							
% within type of Plantation							
		Personal Scheme					
		No benefits	House	Latrine	Education	Medical	Others
type of Plantation	spices	58.1	11.2	3.8	22.5	2.5	1.9
	rubber small	61.6	16.5	4.4	10.3		7.2
	rubber large	58.3	1.7		35.0	5.0	

Source: Primary Survey, 2013-14

Even though plantation workers remain excluded from the main stream while assessing various development indicators, assistance from the part of government is meagre for the workers. Majority of workers in the plantation sector failed to receive any of the government benefits under various schemes. Around 60 percent of the workers in plantation sector surveyed opined of getting no benefits under various government schemes. The rest 40 percent received benefits under various schemes for the purpose of construction of house, latrine, and education stipend for their childrens, medical allowance and other related government benefits.

In spices plantation 11.2 percent (Table 4.28) of the workers received financial assistance from government for the construction of houses, whereas 3.8 percent received financial assistance for the construction of latrines. As shown in Table 4.28 around 22.5 percent of the workers received financial aid or stipend for the education of their childrens. Only 2.5 percent of the workers received any kind of financial assistance for medical purpose. Under

the category of other benefits from government including old age pension only 1.9 percent of the workers benefitted.

Table 4.29 Nature of Benefit Under Various Government Schemes (Percentage)

type of Plantation * personal scheme type Crosstabulation			
% within type of Plantation			
		personal scheme type	
		recurring	one time
type of Plantation	spices	75.6	24.4
	rubber small	61.6	38.4
	rubber large	91.0	9.0

Source: Primary Survey, 2013-14

Among the workers in spices plantation sector who received any benefits from the government schemes, for around 75 percent respondents the scheme is of recurring in nature including education stipend for children(s) of the workers and old age pension for elderly people staying with the workers. Table 4.29 explains that 24.4 percent of the workers received one time benefits from the government in the form of financial assistance for the construction of house, toilet facility and medical assistance.

In the case of workers in small rubber plantations 61.6 percent of the workers received government benefits which were of recurring in nature like education stipends and old age pensions for the members belonging to workers family. Around 38.4 percent of the workers received one time government benefits including financial assistance for the construction of house, toilet facility and medical assistance etc. Majority of the workers in large rubber plantations (91.0 percent) responded of receiving government benefits which was of recurring in nature and only 9.0 percent received benefits from government in the nature of one time assistance (Table 4.29).

Table 4.30 Amount of Benefits Received under Various Schemes (Percentage)

Type of Plantation	Up to ₹ 1000	Between ₹ 1000-5000	Between ₹ 5000- 20000	Between ₹ 20000 -50000	Between ₹ 50000- 75000
spices	66.8	2.6	7.7	10.1	12.8
rubber small	61.0	2.0	7.2	26.0	3.8
rubber large	80.0	8.0		8.0	4.0

Source: Primary Survey, 2013-14

Within those who received benefits under various government schemes as shown in Table 4.30, more than 75 percent of the workers received benefits only up to the tune of ₹ 1000. Most of the respondents who fall under that category received financial assistance in the form of education stipend to their children as mentioned in the table 4.30.

In spices plantation 66.8 percent of respondents received financial assistance only upto₹ 1000, whereas only less than 2.6 percent received financial assistance between ₹1000–5000 from various government assisted schemes. Among the spices workers who received benefits 7.7 percent of the respondents received financial aid of between ₹ 5000 and ₹ 20000 and 10.1 percent received an amount between ₹ 20000-50000 and the rest 12.8 percent respondents got financial assistance between ₹ 50000-75000 (Table 4.30).

In the case of workers in small rubber plantations also majority of the workers (61 percent) received financial assistance of maximum ₹ 1000 whereas 9.2 percent received financial help of an amount between ₹ 1000-20000. Around 30 percent of the workers responded of getting financial assistance between ₹ 20000-75000. In large rubber plantation workers, only 20 percent (Table 4.30) among the beneficiaries received any benefits of

more than ₹ 1000. Out of this, 12 percent received benefits from various government schemes of an amount between ₹ 20000-75000.

4.2.1.6 Political Assets

Political assets include citizenship, access to political leadership, recourse to a functioning legal system etc. Among the assets access to political leadership is possible through gaining membership in political parties. The influence of political party among workers is considerable in any organized work group. In order to address their grievances and to attain their rights and benefits affiliation to any of the political party is necessary. There are ample evidences to substantiate the fact that most of the agitations made by workers for attaining their rights were accomplished with the involvement of political parties and their affiliated trade unions.

4.2.1.6.1 *Possession of Voter ID and Voting in General Elections*

Possession of voter identity card is considered an important political asset as it enables the citizen to exercise the right to electoral franchise. Political participation in the form of participation in the electoral process is considered to be empowering to the citizen. In India, electoral identity card is also considered as an important proof in availing other government benefits.

Table 4.31 Possession of Electoral Id (Percentage)

type of Plantation * possession of voters id Crosstabulation			
% within type of Plantation			
		possession of voters id	
		yes	No
type of Plantation	spices	95.0	5.0
	rubber small	99.4	0.6
	rubber large	100.0	

Source: Primary Survey, 2013-14

Among workers in the plantation sector, almost 98 percent of the workers possess electoral identity cards (Table 4.31). Around 5 percent of the workers in spices plantations responded of not having voter identity card whereas in small and large rubber plantation almost every one responded of possessing electoral identity card.

Table 4.32 Participation in the General Elections (Percentage)

type of Plantation * voted in 2011 elections Crosstabulation			
% within type of Plantation			
	voted in 2011 elections		
type of Plantation		**yes**	**No**
	spices	47.5	52.5
	rubber small	86.2	13.8
	rubber large	100.0	

Source: Primary Survey, 2013-14

Regarding voting in election held to Kerala assembly in 2011, only 47.5 percent of the workers exercised their electoral franchise (Table 4.32). Majority of the workers come from the neighboring districts of Kambam, Theni in Tamil Nadu. Most of them do not have any residence proof either here in their place of work or in the state which they originally belong to and this could be one major reason attributed for the low participation of spices plantation workers in the election process. Whereas in the case of small rubber plantation, 86.2 percent of the workers exercised their voting rights and all of the workers in large rubber plantations exercised their right.

4.2.1.6.2 *Membership in Political Party or Associated Trade Unions*

Membership in political party is considered to be an important political asset. Membership in political parties enables to organize to address their

grievances in work place including issues like wage discrimination, low wages, violation of minimum wages, curtailing of social security measures etc.

Table 4.33 Membership in Political Party or Trade Unions (Percentage)

type of Plantation * membership in political party Crosstabulation			
% within type of Plantation			
		membership in political party	
type of Plantation		**yes**	**No**
	spices	21.2	78.8
	rubber small	50.0	50.0
	rubber large	68.3	31.7

Source: Primary Survey, 2013-14

Contrary to general understanding, majority of the workers (54.0 percent) in the plantation sector responded of not having membership in any political party. In spices plantations only 21.2 percent of the workers responded of having membership in any of the main stream political party whereas in small rubber plantations around 50 percent workers and in large rubber plantation around 69 percent of the workers as shown in Table 4.33 are having membership in political party. Low membership in political party or trade unions associated with the main stream political party could be attributed as the major reason for the poor bargaining power and their related miseries among the spices plantation workers.

4.2.1.7 *Social Assets*

Social capital nowadays plays a very important role in shaping the overall development of an individual. Social assets include kinship structures, religious group, self-help groups and recreation clubs and other social network groups etc together contribute significantly in the advancement

of social capital of an individual. Social capital has tremendously impacted social groups around the globe and those who have strong and deep social capital have a positive impact on their livelihood. Therefore it could be rightly said that social assets play a very important role in improving the social capital of an individual as well as society.

Among the social assets the study was able to capture the presence of kudumbashree alone in the case of workers in spices plantations and that too minimal. This clearly explains the limited social capital the workers in plantation sector is associated. Recreation centres or entertainment clubs are also not present in the case of plantation workers irrespective of the type of plantations. Different study by sociologists and other development specialist pinpoint on the low levels of social capital to the persistence of high level of poverty among various social groups.

Kudumbashree, a state government initiative aimed for financial and social empowerment of women is considered as the most successful self-help group movement in the country. It has made significant headways with proven credentials in achieving the target.

Table 4.34 Membership in Kudumbashree (Percentage)

type of Plantation * membership in kudumbashree Crosstabulation			
% within type of Plantation			
		membership in kudumbashree	
		yes	**No**
type of Plantation	spices		100.0
	rubber small	24.4	75.6
	rubber large	6.7	93.3

Source: Primary Survey, 2013-14

The presence of Kudumbashree have reached every nook and corner of the state enabling women to engage in productive activities and thereby making them financially empowered. Surprisingly among the workers in spices plantations none of them is associated with Kudumbashree even though half of the respondents in spices plantations are women folk. The situation is not better in rubber plantations also with only 24.4 percent respondents and 6.7 percent respondents (Table 4.34) in the case of small rubber and large rubber plantations respectively.

Analysis amplifies the proof that commodity prices play a determining role in employment generation in plantations as there exists high correlation between employment generation in plantation sector and respective commodity prices. Recent drop in the price of natural rubber has resulted in the decline in average daily employment in rubber plantations. Evaluation of livelihood asset of plantation workers in the Chapter was undertaken to apprehend the nuances associated with the development and empowerment of workers in the plantation sector by measuring the ownership of various livelihood assets among them. The analysis proved that workers in the plantation sector, Rubber and Spices (small and large), somewhat remain insulated from the development paradigm of the state. Regarding the entitlement of almost all important livelihood assets the workers remain deprived or the quality of possession is poor. This emerges significant in the context that plantation sector especially rubber and spices sub-sector because of their better commodity prices have provided rich revenue to the state exchequer over a period of time and better income to the farmers thereby improving their fortunes. Evaluation of livelihood assets among the workers

exemplifies the slow pace of empowerment or progress in their path towards attaining an improved employment and livelihood option.

Chapter 5

INCOME, CONSUMPTION, INDEBTEDNESS AND NATURE OF EXCLUSIONARY TREND AMONG PLANTATION WORKERS

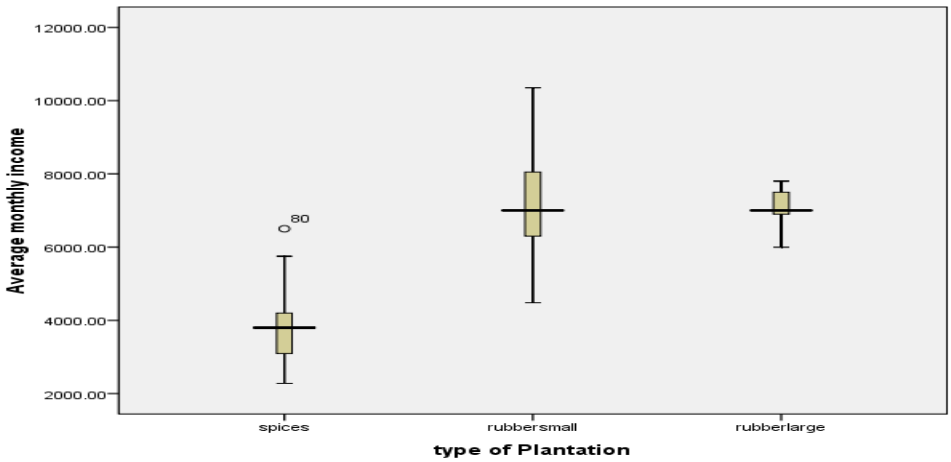
Contents

Employment pattern and livelihood assets of plantation workers discussed in Chapter 4 showed high level of disparity among rubber and spices plantations (large and small). Chapter 5 tries to understand in detail the plantation wise as well as region-wise income pattern of workers employed there. In order to have a clear picture of the consumption pattern, disaggregated expenditure patterns are also analysed in detail to see the composition of food and non-food expenditure among the workers. Attainment of various livelihood assets is taken into consideration to understand the quality of life of workers who are employed in these plantations. It is measured to understand how the disparity and deprivation in livelihood assets are forcing the workers in the plantation sector to remain

socially excluded from the main stream of the society.

5.1 Trends in Monthly Income and Expenditure of Plantation Workers

Figure 5.1 Box Plot with Total Monthly Income Levels of Workers-Plantation-wise



Source: Calculation based on Primary Survey, 2013-14

Figure 5.1 shows the spread of monthly income of workers who are employed in the rubber and spices plantations. Average monthly income of workers in spices plantation remains low compared to that of in large and small rubber plantations. The variation in average income is higher in the case of workers in small rubber plantations whereas it is lowest in the case of large rubber plantations. Fixing of minimum wage by the state government in large plantation could be one of the reasons attributed for the lesser degree of variation in monthly income of workers in the case of large rubber plantations.

5.1.1 Income and Expenditure of Workers-Plantation Sector-wise

Table 5.1 Monthly Income and Expenditure of Plantation workers-Combined

	N	Minimum	Maximum	Mean	Std. Deviation
Monthly Income	300	2280.00	10350.00	6237	1852.52074
Monthly expenditure	300	1200.00	6550.00	2736	723.70938

Source: Calculation based on Primary Survey,2013-14

Monthly income and expenditure among workers in the plantation sub sector portrays wide range of variation. The mean income of workers across plantations (rubber and spices) stood at₹6237 whereas₹2736 was the mean expenditure.Table 5.1 the income of workers ranges from a minimum of₹2280 to a maximum of ₹10350 whereas expenditure ranged from ₹1200 to ₹6550.

Table 5.2 Income and Expenditure of Workers Plantation Sub-sector

Type of plantation	Income				Expenditure			
	Mean	Max	Min	SD	Mean	Max	Min	SD
spices	3724	6500	2280	835	3034	6550	1500	860
rubber small	7167	10350	4480	1308	2596	4600	1200	620
rubber large	7106	7800	6000	403	2711	5050	1200	673

Source: Calculation based on Primary Survey, 2013-14

While disaggregating the monthly income and expenditure plantation-wise, the variation is the highest in the case of small rubber plantation workers and variation is less in the case of large rubber plantation workers. Among the spices plantation workers the maximum monthly income is around ₹ 6500, whereas the minimum comes around ₹2280 (Table 5.2). Mean income among large and small rubber plantations in the state remain at above

₹7000 per month, whereas among spices plantation workers it stood at ₹3724 which comes only about half of the average monthly mean income of large and small rubber plantation workers.

Looking into the expenditure pattern of workers among sub-sectors, expenditure is high in the case of spices sub sector whereas in large and small rubber plantations the number remains low compared to their average monthly income. Mean average expenditure of workers in spices plantation stood at ₹3034; whereas among large and small rubber plantation workers it was₹2711 and ₹ 2596 respectively (Table 5.2).

Table 5.3 Difference between Monthly Income and Expenditure of Plantation Workers

Type of plantation	Mean diff	Max diff	Min diff
spices	690	-50	780
rubber small	4571	5750	3280
rubber large	4395	2750	4800

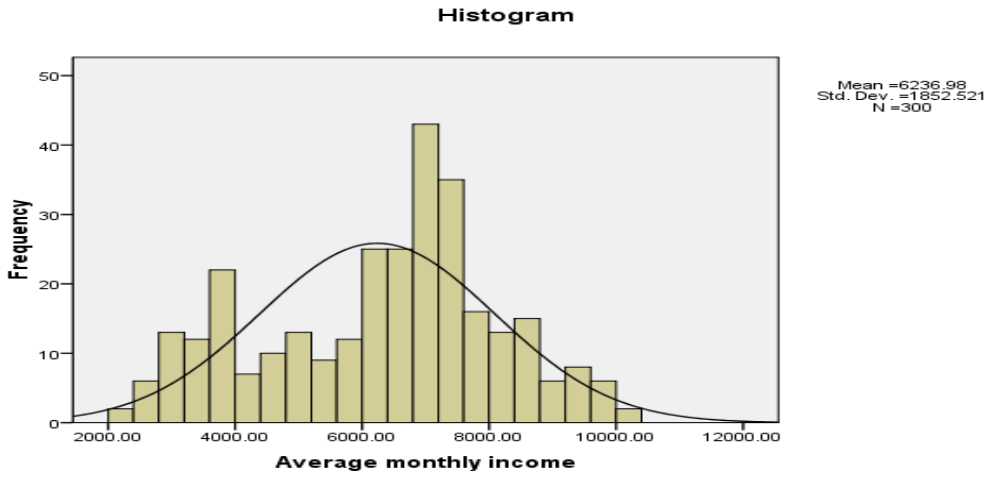
Source: Calculation based on Primary Survey,2013-14

Among the workers in the plantation sector, the mean difference in income and expenditure is the lowest in the case of workers in spices plantations with a meagre amount of ₹ 690after meeting all the monthly expenditure. In the case of workers in small and large rubber plantations they are relatively better off as per the response given by the workers (Table 5.3).

Monthly income distribution of workers in the plantation sector shows significant variation in income among the workers in the plantation sector. The mean income of workers in the rubber and spices sub-sector clearly proves that wide disparity exists in terms of wage and monthly income of the workers. The

mean income of workers in plantation sector is skewed to the mean income of workers in large and small rubber plantations (Figure 5.2).

Figure 5.2 Monthly Income Distribution of Plantation Workers



Source: Calculation based on Primary Survey, 2013-14

With differences observed in the descriptive statistics, ANOVA is used to check the mean differences. Test also enables to understand if the differences in monthly income are statistically significant or not. To check the differences in the mean, the following hypothesis is formulated.

H_0 There is no significant differences between the incomes of plantation workers

The significant F value of the ANOVA model offers statistical support to the observation that monthly income of workers in rubber and spices sub-sectors are different. As the F value is significant at more than 1 percent level, the null hypothesis is rejected and thereby it could be concluded that workers in rubber and spices sub sector are not homogeneous from the point of income as shown in Table 5.4.

Table 5.4 Result of ANOVA -Income of Plantation Workers

Tests of Between-Subjects Effects

Dependent Variable:category wise income

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	220.596[a]	2	110.298	270.573	0.000
Intercept	3095.671	1	3095.671	7.594E3	0.000
Typefplantation	220.596	2	110.298	270.573	0.000
Error	121.071	297	0.408		
Total	4302.000	300			
Corrected Total	341.667	299			

Source: Calculation based on Primary Survey, 2013-14

Dunnett test was used to examine which all among the plantation sub-sector workers income have significant difference (Table 5.5). Similar to the earlier observations the test proves that difference in mean income is the highest between spices plantation workers and large rubber plantation workers and is highly significant at 1 percent level, whereas difference between income of large and small rubber plantation workers is not significant even at 5 percent level.

Table 5.5 Inter-Plantation Difference in Income- Multiple Comparisons

category wise income

Dunnett t (2-sided)

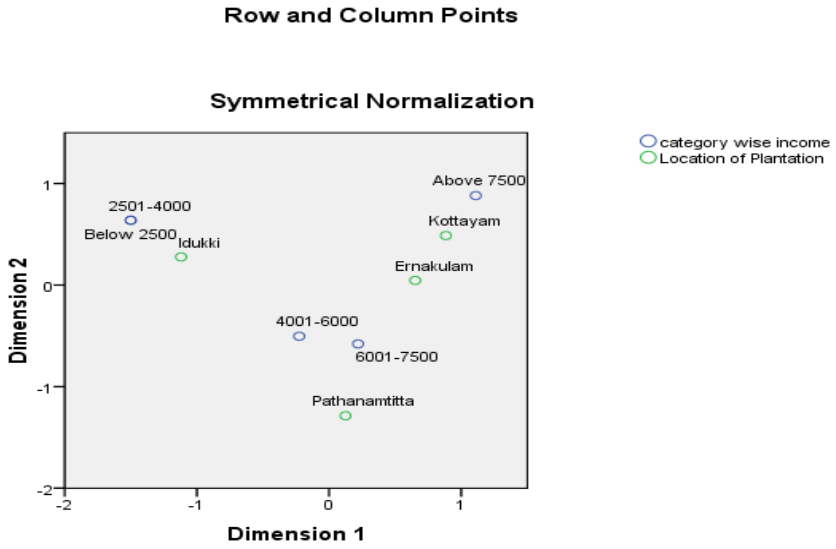
(I) type of Plantation	(J) type of Plantation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
spices	rubberlarge	-1.8708*	.10904	0.000	-2.1109	-1.6308
rubbersmall	rubberlarge	.0917	.09665	0.512	-0.1211	0.3044

Source: Calculation based on Primary Survey, 2013-14

5.1.2 Region-wise Trends in Monthly Income of Plantation Workers

Location of the plantation also seems to be an influencing factor in improving income and livelihood attainments. Results shows that plantation workers employed in Idukki district receive less average wage and monthly income when compared to other districts. Difficult terrains where the plantations are located and lack of other employment opportunities could be attributed as the possible reasons for the situation. In terms of average monthly income, plantation workers in Idukki district remain close to the monthly income bracket of below 2500 and between ₹2500-4000 as shown in Figure 5.3.

Figure 5.3 Region-wise Average Monthly Income of Plantation Workers



Source: Calculation based on Primary Survey,2013-14

Compared to Idukki district, workers in Kottayam has better wage prospects and thereby improved average monthly income. Figure 5.3 explains that almost all plantation workers in Kottayam district earning ₹7500 and

above whereas workers in Pathanamtitta receiving average monthly income between ₹ 4000-7500. The data point to the fact that there exists regional difference in terms of average monthly wage of workers in plantation sector.

Table 5.6 Chi-Square Tests-Region-wise Average Monthly Income of Plantation Workers

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.315E2[a]	15	0.000
Likelihood Ratio	266.073	15	0.000
Linear-by-Linear Association	36.953	1	0.000
N of Valid Cases	300		

Source: Calculation based on Primary Survey,2013-14

Chi-Square result also validates the fact that in addition to sector-wise difference, there exist significant regional differences in terms of average monthly income among plantation workers (Table 5.6).

5.2 Expenditure Pattern of Workers in Rubber and Spices Plantation

Consumption expenditure of workers is evaluated to have an understanding regarding the pattern in expenditure and whether the income is sufficient to meet the workers consumption demands. Expenditure on food and non-food items is also taken into consideration to see relative share of both in the total expenditure.

Disaggregated expenditure of plantation workers for various needs like education expense of their children(s), health expenditure, communication expenditure, expenditure incurred for the consumption of alcohol, tobacco, debt repayment expenses and other miscellaneous expenditure are also taken into consideration for analysing the relative share of food and non-food

expenditure.

Table 5.7 Type of Plantation * Monthly Expenditure on Food Consumption Cross tabulation (Percentage)

Type of Plantation	Between ₹500-₹1000	Between ₹1000-₹1500	Between ₹ 1500-₹ 2000	Between ₹ 2000-₹ 2500
Spices	3.7	32.0	46.2	18.0
rubbersmall	3.7	30.0	51.2	15.0
Rubberlarge	1.7	26.6	61.7	10.0

Source: Calculation based on Primary Survey,2013-14

Monthly food consumption expenditure provides a better insight regarding the composition of food expense on the total monthly household expenditure. In the case of workers in spices plantations about 3.7 percent of the workers have monthly food consumption expenditure between₹500–1000, whereas 32 percent of the workers spend between ₹1000-1500 for monthly consumption of food (Figure 5.7). Around 64.2 percent of the workers in spices plantations incur a monthly expenditure between ₹1500-2500 for the consumption of food as shown in Table 5.7.

Regarding food expenditure among workers in small rubber plantations, 30 percent incurred a monthly expense of between ₹1000-1500 on food items, whereas majority (66.2 percent) of the respondents had monthly food consumption expenditure between ₹1500-2500 (Figure 5.7). Similar to the case of workers in spices plantation, only 3.7 percent of the respondents had a monthly expenditure between ₹500-1000 on consumption of food items.

Among the workers in large rubber plantations almost 71.7 percent of the respondents incur expense between₹1500-2500 as monthly food consumption expenditure. For about 26.6 percent of the respondents their

monthly food consumption expenditure ranged between ₹1000-1500(Figure 5.7).

Table 5.8 Type of Plantation * Monthly Expenditure on EducationCross tabulation (Percentage)

Type of Plantation	Less than ₹ 500	Between ₹500-₹1000	Between ₹ 1000-₹1500
Spices	68.75	28.75	2.5
rubbersmall	88.1	10.0	1.9
rubberlarge	86.7	13.3	

Source: Calculation based on Primary Survey, 2013-14

Education expenditure incurred by workers in plantation sector is minimal considering the ever increasing cost of education in the state. Discontinuing education after SSLC or plus-two may be the reason attributed for the low education expenditure among the workers. Among the workers in spices plantation for about 68.7 percent of the workers incurred a monthly education expense of less than 500 rupees whereas 28.7 percent incurred an expense of between₹500–1000. Only 2.5 percent of the workers in spices plantation responded of incurring an expense between ₹1000-1500 as shown in Table 5.8.

In the case of workers in small rubber plantations almost 88 percent of workers incurred monthly expense of less than 500 rupees whereas 10 percent of the workers incurred expense between₹500–1000 as part of education expense (Table 5.8). Large rubber plantation workers also incurred small amount as monthly education expenditure where 86.7 percent of the workers have expenditure of less than₹500.

Table 5.9 Type of Plantation * Monthly Expenditure on Health Crosstabulation(Percentage)

Type of Plantation	Less than ₹ 250	Between ₹ 250-500	Between ₹ 500-750	Between ₹ 750-1000	Above₹ 1000

Spices	57.5	28.75	10.6	1.25	2.5
rubber small	85.6	12.5	0.6	0.6	0.7
rubber large	88.3	11.7			

Source: Calculation based on Primary Survey,2013-14

Regarding health expenditure of the workers in the plantation sector too, the expenses is not that high. Compared to other plantation workers, spices plantation workers incurred higher medical expense. Around 57.5percent of the workers in spices plantation incur expense of less than 250 rupees. For about 28.7 percent of the workers, monthly medical expenditure on health is between ₹ 250-500. Another 14.3 percent of the workers had monthly expenditure of above ₹500 (Table 5.9).

In terms of medical expense also the situation is similar both in the case of small and large rubber plantation workers. Medical expenditure is comparatively minimal in small rubber plantations with 85.6 percent of the workers incurred an expenditure of less than₹250 and around 12.5 percent of the respondents with monthly expenditure between ₹250-500. Only less than 2 percent of the workers incurred monthly expense of above ₹500. Among the workers in large rubber plantation also majority of the workers (88.3 percent) incurred monthly medical expense of less than ₹250 and around 11.7 percent of the respondents opined of incurring expense ranging between ₹250-500 (Table 5.9).

Table 5.10 Type of Plantation * Monthly Expenditure on Communication Crosstabulation (Percentage)

Type of Plantation	Less than₹100	Between ₹100- ₹250	Between ₹250 –₹500
Spices	70.0	26.25	3.75
rubbersmall	35.6	47.3	17.1

rubberlarge	28.3	66.7	5.0

Source: Calculation based on Primary Survey,2013-14

Communication expense was also taken in to consideration while calculating the average monthly expenditure of the workers. Among spices plantation workers, 70 percent of the respondents incurred less than₹100 (Table 5.10) whereas 26.2 percent of the respondents in spices plantations incurred expense between₹100-250 as communication expenditure including mobile recharge. Only 3.7 percent of the workers responded of incurring expenditure of more than ₹250.

Communication expenditure is high in the case of workers in rubber plantation when compared to spices plantations (Table 5.10). Around 64.4 percent of the workers in small rubber plantation incurred monthly communication expenditure between ₹100–500 whereas 35.6 percent of the respondents incurred communication expenditure of less than ₹ 100. Among the workers in large rubber plantations, almost 71.7 percent of the workers responded of monthly communication expenditure between ₹100–500 and around 28.3 percent of the workers incurred expenses of less than ₹100 for communication purpose.

Table 5.11 Type of Plantation * Monthly Expenditure on Alcohol and Tobacco Crosstabulation (Percentage)

Type of Plantation	Nil	<Rs 100	Rs 100–250	Rs 250–500	Rs 500 –750	Rs 750–1000	>Rs 1000
Spices	46.25	8.75	17.5	17.5	2.5	6.25	1.25
rubbersmall	41.25		10.0	43.13	2.5	3.12	
Rubberlarge	31.66		8.33	56.68	3.3		

Source: Calculation based on Primary Survey,2013-14

Evaluating alcohol and tobacco consumption among the workers in the plantation sector clearly showcases that almost 60 percent of the workers consume either tobacco or alcohol. The value is relatively very high given the underlying health hazards related to the consumption of these products (Table 5.11). Alcohol and tobacco consumption are very high in the case of workers in large rubber plantations with 70 percent of the workers exposed to the use of these products. Around 65 percent of the respondents in the large rubber plantations spend between ₹100 –500 monthly for the consumption of alcohol and tobacco products.

Similar to large rubber plantations, alcohol and tobacco consumption are very high in the case of small rubber plantation workers as illustrated in Table 5.11. About 53 percent of the workers spend an amount between ₹250-500 and around 5.6 percent of workers spend an amount ranging from ₹500-1000 per month for consumption of alcohol and tobacco products in the case of workers in small rubber plantations. Even though tobacco and alcohol consumption is less in the case of spices plantation workers when compared to other plantations, the percentage of respondents who spend an amount more than ₹500 is high10 percent) as shown in Table 5.11.

Table 5.12 Type of Plantation*Monthly Expenditure on Debt Repayment Crosstabulation (Percentage)

Type of Plantation	Nil	₹100- ₹500	₹500 – ₹ 1000	₹1000-₹2500	>₹ 2500
Spices	51.4	31.2	16.8	7.4	1.2
rubbersmall	90.6	8.8	0.6		
rubberlarge	83.3	11.7	5.0		

Source: Calculation based on Primary Survey,2013-14

In terms of debt repayment also the situation of workers in spices

plantation is bad as the debt obligation is high in the case of workers working there. Compared to the low income generation of workers their relative debt repayment burden is quite high with 16.8 percent of the workers repay an amount between ₹500-1000 as detailed in Table 5.12). Around 7.4 percent of the workers in spices plantations repay an amount between₹1000-2500 and another 1.2 percent have monthly debt repayment obligation of above₹2500.

Contrary to the case of workers in spices plantations, monthly debt repayment in the case of small rubber plantations is very less with only 8.8 percent (Table 5.12) having debt repayment between₹100-500. Interestingly more than 90 percent of the workers have no monthly debt repayment obligations and debt repayment of an amount higher than ₹500 among workers in small rubber plantation is only 0.6 percent. Similar to the case of workers in small rubber plantations, monthly debt repayment is less in large rubber plantation also with 83.3 percent opined of having no monthly repayment.

Table 5.13 Share of Various Components in Total Monthly Expenditure (%) of Plantation Workers

Type of plantation	Food	Education	Health	Communication	Tobacco &Alcohol	Entertainment	Debt Repayment
Spices	0.57	0.10	0.09	0.02	0.07	0.00	0.15
rubbersmall	0.72	0.08	0.03	0.06	0.09	0.00	0.02
rubberlarge	0.70	0.08	0.02	0.06	0.10	0.00	0.04

Source: Calculation based on Primary Survey,2013-14

An attempt was made to look into the composition of various items in

the consumption basket of workers in the plantation sector of Kerala. While looking in to the percentage share of various components in the total monthly expenditure of workers, expenditure for consumption of food comprise lion share across plantations.

In small and large rubber plantations food consumption expenditure alone comprises 70 percent of the total monthly expenditure whereas in spices plantation food consumption expenditure comprises 57 percent of the total expense. Non-food expenditure comprised around 43 percent of the total expenditure in the case of workers in spices plantations which is relatively on the higher side when compared to workers in rubber plantations. Combined expenditure on education and health among workers in spices, small rubber and large rubber plantation are 19 percent, 11 percent and 10 percent respectively as shown in Table 5.13.

Alarmingly the expenditure on consumption of tobacco and alcohol exceeds the component wise expenditure by workers on education and health across the plantations. Communication expense form a minor part of the total expenditure in plantations with 2 percent, 6 percent and 6 percent respectively in spices, small and large rubber plantations (Table 5.13). Interestingly none of the plantation workers stated to have any entertainment expenditure as part of their average monthly expenditure.

Regarding debt repayment expenditure, in spices plantation the monthly expense comprises around 15percent of the total monthly consumption expenditure, whereas it is only 2 percent and 4 percent respectively in small rubber and large rubber plantations (Table 5.13). Relatively low and inconsistent income among workers in spices plantation workers could be

attributed to the higher incidence of indebtedness among them.

Table 5.14 Disaggregated Average Monthly Expenditure (₹) of Plantation Workers

Type of plantation	Food	Education	Health	Communication	Alcohol	Entertainment	Debt repayment	Total
Spices	1723.75	313.12	261.25	71.25	201.8	0	460	3031.25
rubbersmall	1875	200	78.4	165.6	97.2		42.5	2458.75
rubberlarge	1890	216.7	65.8	162.5	21.6	0	108	2465

Source: Calculation based on Primary Survey, 2013-14

Monthly expenditure of plantation workers provides a picture contrary to the monthly income pattern of workers in the plantation sub-sector of rubber and spices. Food expenditure among workers in rubber and spices plantations provide similar trends, whereas the non-food expenditure is the highest in the case of workers in spices plantations (Table 5.14). Higher expenditure for meeting education and health needs of family members is one contributing factor for increased non-food expenditure among spices plantation workers.

5.3 Indebtedness among Plantation Workers

Table 5.15 Indebtedness to Commercial Banks (Percentage)

type of Plantation * bank amount Crosstabulation					
% within type of Plantation					
type of Plantation		**Nil**	**Between 10000-50000**	**Between ₹50000-100000**	**Above 100000**
	spices	91.2	6.2	2.5	
	rubbersmall	91.9	3.2	4.3	0.6
	rubberlarge	85.0	5	6.6	3.4

Source: Calculation based on Primary Survey,2013-14

An attempt was made to understand plantation workers exposure to bank credits by looking into the amount of indebtedness among the workers. Table 5.15 shows low rate of indebtedness among plantation workers in the case of credit from banks. Around 91.2 percent of the workers in spices plantation responded of having no indebtedness with formal banks whereas the Figure is 91.9 percent and 85 percent respectively in the case of workers in small rubber and large rubber plantations.

Around 6.2 percent of the workers in spices plantations responded of having indebtedness of an amount between₹10000-50000 and another 2.5 percent of the spices plantation workers responded have debt obligation of amount between ₹50000-100000(Table 5.15). In the case of small rubber plantations 3.2 percent of the workers have indebtedness between ₹10000-50000 whereas 4.3 percent of the workers have debt obligation with banks ranging between₹ 50000-100000. Less than 1 percent of workers only have indebtedness of more than₹100000.

Exposure to bank credit is the highest among workers in large rubber plantations. About 5 percent of the workers responded of having exposed to indebtedness with banks of an amount between ₹10000- ₹50000 and6.6 percent of workers having indebtedness of between ₹50000- ₹100000. Among the workers having debt obligation of more than₹100000, the highest is in the case of large rubber plantation workers, with 3.4 percent having debt obligation of more than₹100000.

Exposure of plantation workers to private money lenders is relatively high when compared to their exposure to formal banking sources (Table 5.16). The trend is high in the case of spices plantations with more than half of the

workers having debt obligation with private money lenders. Around 12.7 percent of the workers have debt obligation of below 10000 whereas 36.7 percent of the workers responded to have indebtedness to private money lenders between ₹10000-50000. About 3.6 percent of the workers have debt obligation with private money lenders ranging between ₹50000- ₹100000 as shown in Table 5.16.

Table 5.16 Indebtedness to Private Money Lenders (Percentage)

type of Plantation * private money lender amount Crosstabulation					
% within type of Plantation					
type of Plantation		**Nil**	**Below 10000**	**Between 10000-50000**	**Between 50000-100000**
	spices	46.8	12.7	36.7	3.8
	rubbersmall	78.1		13.2	8.7
	rubberlarge	85.0		13.3	1.7

Source: Calculation based on Primary Survey, 2013-14

In the case of small rubber plantations the exposure of workers to private money lenders are nominal when compared to spices plantation workers. Around 78.1 percent of the workers in small rubber plantations have zero level of indebtedness to private money lenders. Those having indebtedness between ₹ 10000-50000 comprises around 13.2 percent of the small rubber plantation workers (Table 5.16).

Workers in large rubber plantation workers have the least exposure to private money lenders with 85 percent of the respondents having no indebtedness to private money lenders. Around 13.3 percent of the workers in large rubber plantations as detailed in Table 5.16 have indebtedness of between ₹10000-50000 and only 1.7 percent have debt obligation

between₹50000-100000.

The amount of indebtedness to private money lenders by workers in plantation seems to be nominal, but when compared to their exposure to formal source of credits the number lies on the higher side. The extra-normal interest rates charged by private money lenders force the workers to remain in permanent debt trap thereby trimming down their already low earnings. The indebtedness to private money lenders poses hindrance on the overall development of the workers.

Exposure of workers in the plantation sector to formal source of credit is minimal. Lack of accessibility to formal source of credit to the poor and downtrodden section of the society is still a disturbing reality. Almost 90 percent of the workers in the spices and rubber sub-sector opined of having no indebtedness to co-operative societies (Table 5.17).

Table 5.17 Indebtedness to Co-operative Society (Percentage)

type of Plantation * Co-operative society amount Crosstabulation					
% within type of Plantation					
type of Plantation		**Nil**	**Below 10000**	**Between 10000-50000**	**Between 50000-100000**
	spices	91.3	3.7	2.5	2.5
	rubbersmall	88.1		5.6	6.3
	rubberlarge	90.0		3.3	6.7

Source: Calculation based on Primary Survey,2013-14

In the case of spices plantation workers, 3.7 percent responded of having indebtedness of an amount below ₹ 10000 whereas 2.5 percent of the workers responded of having indebtedness of an amount between ₹10000-50000. For about 2.5 percent of the workers in spices plantation responded of having indebtedness of an amount between ₹50000-100000 as shown in

Table 5.17.

Among workers in small rubber plantations about 5.6 percent of the workers responded of having indebtedness of an amount between ₹10000-50000 and around 6.3 percent opined of having indebtedness levels ranging between ₹50000-100000. Almost 10 percent of the workers in large rubber plantations have indebtedness between ₹10000-100000 in co-operative societies (Table 5.17).

Table 5.18 Indebtedness to Local Shop Keepers (Percentage)

type of Plantation * * Local shopkeepers amount Crosstabulation						
% within type of Plantation						
type of Plantation		**Between 500-1000**	**Between 1000-2000**	**Between 2000-3000**	**Between 3000-5000**	**Above 5000**
	spices	7.5	22.5	38.75	23.75	7.50
	rubbersmall	1.25	32.5	37.5	22.5	6.25
	rubberlarge		26.7	41.6	31.7	

Source: Calculation based on Primary Survey,2013-14

In terms of indebtedness to local shopkeepers, almost all workers across plantation have some amount of indebtedness as part of their purchase of groceries and other stationary goods. Around 30 percent of the workers in spices plantations have taken credit of amount between₹500-2000 for the purchase of groceries and other stationary goods. As Table 5.18 explains around 38.7 percent of the workers have taken credit of an amount between ₹2000-3000 and 23.7 percent of the workers have indebtedness between ₹30000-5000. Those who have taken credit of more than ₹5000 for the purchase of goods from local shop keepers constitute 7.5 percent of the total spices plantation workers.

Among small rubber plantation workers, 70 percent of workers have

indebtedness of an amount between ₹1000-3000 whereas 22.5 percent of the workers have debt obligation between ₹3000-5000 incurred as part of purchase of goods from local shop keepers. For about 7.5 percent of the workers in small rubber plantations, the indebtedness to local shop keepers amounts more than ₹5000 (Table 5.18).

In the case of workers in large rubber plantations, 68.3 percent of the workers owe an amount between ₹1000-3000 to local shop keepers. Around 31.7 percent of the workers have debt obligation between ₹3000-5000 to local shop keepers incurred while purchase groceries and other stationary goods as shown in Table 5.18.

Regarding indebtedness of plantation workers to family/friends/neighbours, only 9.6 percent of the workers have debt obligation. Among spices plantation workers 20 percent have some amount of debt obligation to family/friends/neighbours. Out of this 12.5 percent of the workers have debt obligation between ₹ 5000-10000 and about 2.5 percent have debt obligation between ₹10000-25000 (Table 5.19).

Table 5.19 Indebtedness to Family/Friends/Neighbours (Percentage)

type of Plantation *Family/Friends/Neighbours amount * Crosstabulation							
% within type of Plantation							
type of Plantation		**Nil**	**Below 5000**	**Between 5000-10000**	**Between 10000-25000**	**Between 25000 - 50000**	**Above 50000**
	spices	80.0	5.0	12.5	2.5		
	rubbersmall	89.3	0.6	5.0	3.1	1.3	0.7
	rubberlarge	91.7		3.3	5.0		

Source: Calculation based on Primary Survey,2013-14

In the case of small rubber plantation workers only 10.7 percent of the workers have some debt obligation to family/friends/neighbours. Out of this

8.1 percent of the workers have debt obligation of an amount between ₹5000-25000 as shown in Table 5.19.Among the plantation workers, workers in large rubber plantations responded of having the least debt obligation to family/friends and neighbours. Only 8.3 percent of the workers in rubber plantation responded of having indebtedness in the range between ₹ 5000-25000 to family/ friends/neighbours.

5.4 Region-wise Education Attainment of Plantation Workers

Table 5.20 Location of Plantation * General Education Crosstabulation (Percentage)

% within Location of Plantation						
		general education				
Location of Plantation		**Illiterate**	**Primary**	**Up to SSLC**	**SSLC**	**Pre-degree/ Plus 2**
	Idukki	2.9	30.5	45.7	20.0	1.0
	Kottayam		6.3	27.4	54.7	11.6
	Ernakulam		7.5	42.5	42.5	7.5
	Pathanamtitta		3.3	20.0	71.7	5.0

Source: Calculation based on Primary Survey,2013-14

In terms of general education also there exist regional differences. Similar to the trends in monthly average income, general education attainments are also high among plantation workers in Kottayam and Pathanamtitta districts. As Shown in Table 5.20 almost 76.7 percent of the plantation workers in Pathanamtitta district have education qualification of SSLC and above, whereas in Kottayam district about 66.3 percent of the workers possess education qualification of SSLC and above. Similar to other attainments also workers in Idukki district remain backward in terms of education attainments also with 30.5 percent have schooling only upto

primary level and 45.7 percent had schooling upto SSLC. Interestingly 2.9 percent of the plantation workers are illiterate in Idukki district (Table 5.20).

Table 5.21 Chi-Square Tests- Location of Plantation and Education Attainments

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	81.082[a]	12	0.000
Likelihood Ratio	84.390	12	0.000
Linear-by-Linear Association	42.493	1	0.000
N of Valid Cases	300		

Source: Calculation based on Primary Survey,2013-14

Chi-square results substantiate the existence of regional disparity in education attainment of workers in the plantation sector. There is significant and high association between the location of the plantation and education attainment of workers as shown in Table 5.21.

5.5 Standard of Living and Social Exclusion among Plantation Workers

5.5.1 Standard of Living of Plantation Workers

In order to understand the quality of life of workers in plantation sector the Standard of Living Index (SLI) was worked out by measuring the attainment of livelihood assets discussed in the previous chapter. Variable are taken into consideration on the basis of ownership of various assets mentioned in the previous chapter like physical assets, human assets, natural assets, financial assets, social assets and political assets. Among these assets, variables are derived based on the relative importance in shaping and improving the SLI of workers. Based on their accomplishment of these assets

the workers in rubber and spices sub-sector are ranked under the category Low SLI, Medium SLI and High SLI.

Table 5.22 Standard of Living Index of Plantation Workers (Percentage)

type of Plantation * Plantation SLI Crosstabulation				
type of Plantation		Plantation SLI		
		Low SLI	Medium SLI	High SLI
	Spices	68.8	30.0	1.2
	rubbersmall	1.2	41.2	57.5
	rubberlarge	10.0	80.0	10.0

Source: Calculation based on Primary Survey,2013-14

Almost 68.8 percent of the workers in spices plantation fall under the category of low SLI whereas those who have medium and high SLI are 30 percent and 1.2 percent respectively. In comparison to spices plantation workers most of the workers in small and large rubber plantations falls under the category of medium and high SLI as illustrated in Table 5.22. Around 57.5 percent of workers in small rubber plantation have high SLI and around 41.2 percent of the workers have medium SLI whereas workers who have low SLI is less than 2 percent in terms of their livelihood assets (Table 5.22).

In order to see, if there exists, any relationship between type of plantation and SLI correlation analysis was undertaken. Correlation result further proves that there exists high correlation between the type of plantation where the workers are employed and their standard of living.

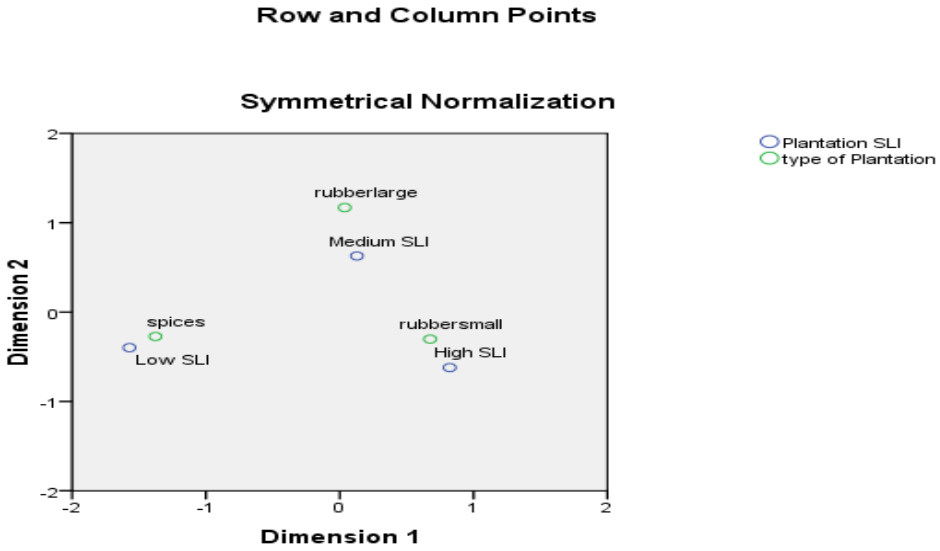
Table 5.23 Correlation- Type of Plantation and SLI

		type of Plantation	Plantation SLI
type of Plantation	Pearson Correlation	1	0.381**
	Sig. (2-tailed)		0.000
	N	300	300
Plantation SLI	Pearson Correlation	0.381**	1
	Sig. (2-tailed)	0.000	
	N	300	300

***. Correlation is significant at the 0.01 level (2-tailed).*
Source: Calculation based on Primary Survey,2013-14

Analysis shows that the correlation is significant even at 0.01 level (Table 5.23). The result validates the argument that higher is the chance of workers in small and large rubber plantations to have better standard of living when compared to those in spices plantations. Correspondence analysis has also indicated that standard of living of workers employment varies depending on the type of plantation they are employed. Workers in spices plantation situates close to the correspondence graph, whereas workers in large rubber plantation is showing proximity to Medium SLI as shown in Figure 5.4, whereas workers in small rubber plantations situate close to High SLI based on the various parameters in analysed for assessing standard of living Index.

Figure 5.4 Correspondence Graph for SLI of Plantation Workers



Source: Calculation based on Primary Survey,2013-14

5.5.2 Region-wise SLI of Plantation workers

Table 5.24 Location of Plantation and SLI (Percentage)

% within Location of Plantation				
Location of Plantation		**Plantation SLI**		
		Low SLI	**Medium SLI**	**High SLI**
	Idukki	53.3	45.7	1.0
	Kottayam	6.3	41.1	52.6
	Ernakulam		35.0	65.0
	Pathanamtitta	1.7	61.7	36.7

Source: Calculation based on Primary Survey,2013-14

In terms of SLI among workers in plantation sector, regional disparity is very much persistent. Quality and possession of livelihood assets are considered to be an important factor responsible for better SLI. The lack of entitlement to those livelihood assets results in vulnerability to livelihood options and thereby deprivation of better SLI. Regional disparity in daily wages, average monthly income, education attainments and other livelihood assets etc have contributed for the regional disparity in SLI also as detailed in Table 5.24.

More than half of the workers employed in Idukki district belong to the low SLI category because of the deprivation of various livelihood assets. In the case of workers with high SLI only 1 percent constituted in Idukki district. Plantation workers employed in Kottayam, Ernakulam and Pathanamtitta enjoys relatively better SLI owing to their improved possession of livelihood assets (Table 5.24).Almost 50 percent of the workers in Kottayam, Ernakulam and Pathanamtitta districts belong to the high SLI category.

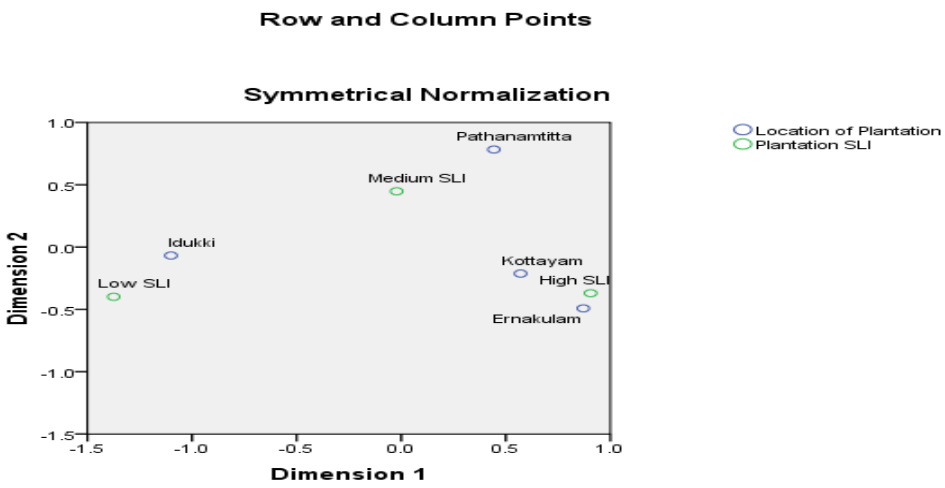
Table 5.25 Chi-square –Location of plantation and SLI

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.423E2[a]	6	.000
Likelihood Ratio	168.943	6	.000
Linear-by-Linear Association	68.528	1	.000
N of Valid Cases	300		

0 cells (.0%) have expected count less than 5. The minimum expected count is 8.40.
Source: Calculation based on Primary Survey,2013-14

Chi-Square result also explains that there exist significant regional differences while evaluating the workers performance in terms of standard of living index as illustrated in Table 5.25. The correspondence graph also pinpoints to the existence of sharp regional differences in terms of SLI of plantation workers with workers in Idukki staying near to the point of low SLI, whereas workers in Pathanamtitta situating close to medium SLI in terms of attainment of livelihood assets. As mentioned in the Figure 5.5, plantation workers in Kottayam and Ernakulam district enjoy high SLI and thereby located close to the point of high SLI in the correspondence graph.

Figure 5.5Correspondence Graph for SLI of Plantation Workers- Region-wise



Source: Calculation based on Primary Survey,2013-14

5.5.3 Income category and SLI

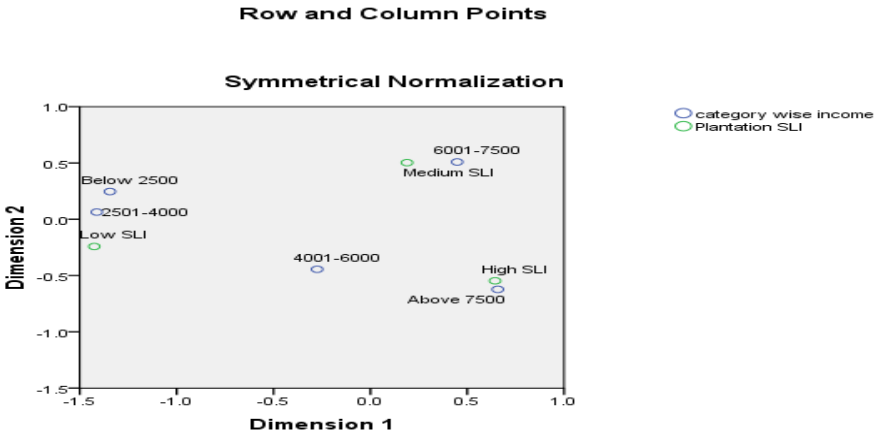
Table 5.26Category-wise Income * Plantation SLI Crosstabulation (Percentage)

% within category wise income				
		Plantation SLI		
		Low SLI	Medium SLI	High SLI
category wise income	Below 2500	60.0	40.0	
	2501-4000	63.0	35.2	1.9
	4001-6000	31.5	33.3	35.2
	6001-7500	5.0	61.7	33.3
	Above 7500	4.5	37.3	58.2

Source: Calculation based on Primary Survey,2013-14

Monthly average income seems to be an influencing factor while understanding the performance of standard of living among workers in the plantation sector. Among the many variables income plays a critical role in improving the quality of life of an individual. Around 96 percent of the workers enjoying high and medium SLI had an average monthly income of above ₹7500 as illustrated in Table 5.26. Almost 60 percent of the workers with low SLI earned monthly income of less than ₹ 2500. Those having low SLI under the income bracket of ₹2500–6000 stood at around 50 percent.

Figure 5.6 Correspondence Graph of Plantation Workers- Income and SLI



Source: Calculation based on Primary Survey,2013-14

Correspondence graph categorically clears the argument that workers with better income is positioned in a better place in terms of SLI whereas workers with low income appears to perform badly in terms of livelihood assets and thereby has low SLI (Figure 5.6).

5.5.4 Social Exclusion of Plantation Workers and Determining Factors

Evaluation of various livelihood assets and the employment pattern of workers in plantation sectors throw light to the fact that the livelihood and employment of workers remain vulnerable and they remain socially excluded from the main stream of society. Deprivation of quality livelihood assets are making the plantation workers livelihood more fragile and leading them to social exclusion. Seasonal nature of jobs and lack of effective social security provisions are also making them more vulnerable. Volatility of commodity price is proving to be determinant factor in employment generation in plantations. Poor education attainment in addition to lack of effective job related skills leave the workers with fewer options other than jobs in plantations making their livelihood even more depended on plantation. The situation is more pertinent in the case of spices plantation workers.

Logistic Regression was performed to understand the major factors responsible for social exclusion among the plantation workers. Variable for the analysis are taken into consideration based on their relative importance in determining and improving livelihood of workers in the plantation sector.

Table 5. 27 Logistic Regression-Factors affecting Social Exclusion

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	type_of_house	6.815	3.419	3.974	1	0.046*	911.488
	house_ownership	6.310	1.930	10.687	1	0.001**	549.992
	land_holding	12.991	6.965	3.479	1	0.062*	4.385E5
	sanitary facility	8.031	2.990	7.214	1	0.007**	3.074E3
	electrification_status	6.283	2.933	4.589	1	0.032*	535.253
	source_drinkng_water	8.117	3.442	5.561	1	0.018*	3.350E3
	status_water_avaiblty	0.543	0.615	0.778	1	0.378	1.721
	fuel_cooking	3.387	7.148	0.225	1	0.636	29.576
	bank_account	8.807	2.799	9.899	1	0.002**	6.680E3
	avg_monthlyincome	-0.079	1.216	0.004	1	0.948	0.924
	Education_attainment	1.278	1.084	1.389	1	0.239	3.590
	Lost_days_disease	6.565	1.912	11.789	1	0.001**	710.009
	Constant	-125.772	39.959	9.907	1	0.002	0.000

Source: Calculation based on Primary Survey,2013-14

Variables which have a significant relation in determining the nature of exclusion in terms of livelihood assets are type of house, ownership of house, land holding pattern, nature of sanitary facility, electrification status source of drinking water, possession of bank account and number of days lost due to diseases etc as detailed in Table 5.27.Most of the variables taken into consideration for the regression model seem to be contributing significantly to the exclusion among the workers in the plantation sector especially among spices plantation workers.

The logistic regression model for the factors contributing livelihood deprivation and thereby social exclusion can be interpreted as

Livelihood Status
(Excluded or Not Excluded) = 6.815 *(Type of house)* +6.310 *(ownership of house)* +12.991 *(land holding)* +8.031*(sanitary facility)* +6.283 *(electrification status)* +8.117 *(source of drinking water)* +8.807 *(possession of bank account)* + 6.565 *(lost working days because of disease)* $+\varepsilon_i$

Income has been important in determining the level of standard of living of the workers. As the income earning capacity of the plantation workers are very poor, it is reflecting badly in the expenditure basket even in the food and non-food items of consumption. This also has created high levels of dependency to informal source of credit, which in turn has put them into increasing indebtedness and poor education attainments. Other areas of issues which are closely linked to the income expenditure are high expenditure incurred on health which is making the livelihood of the plantation workers vulnerable. Livelihood deprivation obviously leads to social exclusion which is interlinked to a very large extent. In comparison to the rubber plantation the problem is worse in the case of spices plantations.

Chapter 6

CONCLUDING OBSERVATIONS

Contents

The study has been divided into two parts.

The first part of the study has focused on the trends in area, production and productivity comparing the state's performance with of national level performance. Also an attempt was made to understand the trends in commodity price over the years especially in the post liberalization period from the early 1990s. Plantation commodities occupy an important share in the country's export basket and thereby earning foreign exchange to the national exchequer. Taking into consideration the competitive dimension of natural rubber, cardamom and pepper in the export market was analyzed to see penetration of these commodities in the world market.

The second part of the study has tried to understand the plantation workers livelihood by understand the employment generation in the sector. Livelihood assets of plantation workers were analyzed to understand the

nature of ownership of various assets. Understanding the poor quality and ownership of various livelihood assets and their relative deprivation the study also tried to understand the income-expenditure patterns and the nature of indebtedness among workers and the factors responsible for deprivation and thereby social exclusion.

6.1 Area, Production and Productivity Implications

Area, Production and productivity trends of rubber, pepper and cardamom show a mixed picture. Area, Production trends are impacted greatly by the commodity price of the plantation crops.High correlation exists between commodity price and area and production trends of plantation crops in the state. Incentive in the form of better price is also the prime reason for the change in the agriculture pattern in the state from paddy cultivation to cash crops like coconut, natural rubber, pepper etc.

In terms of Natural Rubber, Kerala experienced a steady growth over the years in terms of area production and productivity as the price of rubber has increased. Area of rubber in the state experienced a growth of 34 percent in 2013-14 when compared to 1992-93. In the case of production the sector witnessed an increase of 160 percent from 307521 MT in 1990-91 to 800050 MT in 2012-13 and declined sharply to 648220 MT in 2013-14 owing the decline in natural rubber price. The price of natural rubber experienced an increase from ₹ 25 per kg in 1992-93 to more than ₹ 166 per kg in 2013-14 thereby registering an average annual growth of 6.92 percent. The correlation worked out in this respect shows a strong positive correlation (0.9087) with the international crude oil prices as synthetic rubber is one of the important bi-products of crude oil.

In terms of black pepper, the state witnessed a deceleration in growth. Even though Kerala occupies a lion's share of 85 percent of area in the country, the area of pepper cultivation declined around 50 percent during the period from 1990-91 to 2013-14. But from 1990-91 to 1999-00, the sector had a positive growth of 17 percent in terms of area which further decelerated into a negative growth of 58 percent during the period from 2000-01 to 2013-14. Production of pepper increased from 46800 MT in 1990-91 to 87605 MT in 2005-06. But similar to the decline in area of pepper cultivation in the state, production of pepper also started declining from 2006-07 onwards. The decline in trend remains significant in the context that price of pepper started increasing from the period 2006-07 when price started moving from₹ 100 per kg in 2006-07 to ₹ 448 per kg in 2013-14. Primary observations from field testifies to the fact that failure of monsoon, adverse weather conditions, increase in diseases to pepper crops, increase in wages, low prices and indebtedness among farmers during the early part of 2000's resulted in farmers abandoning pepper cultivation resulting in fall in area and production of pepper in the state.

In the case of cardamom the area of cultivation declined whereas production increased. The situation could be attributed for the high yielding variety of cardamom being cultivated by farmers. Area of cardamom plantation in the state decreased from 43826 Ha in 1990-91 to 39763 in 2007-08, later the quantity increased nominally to 39730 Ha in 2013-14. At the same time the production of cardamom shows a manifold increase from 3450 MT in 1990-91 to 14000 MT in 2013-14. Price of cardamom witnessed an increase in fluctuation during the period from 2005-12 when the price increased from ₹ 215 per kg in 2005-06 to ₹ 968 per kg in 2010-11 and later

declined to ₹ 649 per kg in 2013-14. This volatility in the price of cardamom resulted in lack of interest on the part of farmers to cultivate cardamom which could be attributed as one of the reasons for the decline in the area of cardamom cultivation.

Productivity of natural rubber, pepper and cardamom has increased substantially over the years. Improved variety of crops and modern agriculture practices have helped a lot in picking up the productivity of these commodities. In terms of rubber the productivity increased from 1079 kg/ha in 1990-91 to 1903 kg/ha in 2012-13 and later declined drastically to 1182 kg/ha in 2013-14. Productivity of pepper in the state increased from 278 kg/ha in 1990-91 to 546 kg/ha in 2012-13 but similar to the trends in area and production, the productivity also declined dramatically after 2005-06, when it slipped from 315 in 2005-06 to 221 in 2010-11 but later and stood at 546 kg/ha in 2013-14. Productivity of cardamom in Kerala almost doubled from 125 kg/ha in 1990-91 to 237 kg/ha in 2005-06. Though the productivity fell to a low of 176 in 2007-08 the numbers recovered and reached to an all-time high of 246 kg/ha in 2011-12 and later declined to 179 kg/ha in 2013-14.

6.2 Trade Implications

In terms of trade implications the plantation sector has a significant impact on the economy of Kerala as the plantation commodities have considerable market importance both in domestic and international market.Even though the price of natural rubber increased in the post-liberalization period from the early 1990s, the period also witnessed increase in the fluctuation in the price of natural rubber facing tough competition from the major rubber producing countries included in the ASEAN bloc mainly

Malaysia and Thailand and Indonesia as a result of the opening up of the Indian market. Though opening up of the economy increased the trade volume of plantation commodities, increase in demand for natural rubber from industrial sector resulted in high volume of import of natural rubber from other countries. The import of natural rubber increased from 51635 MT in 1995-96 to 325190 MT in 2013-14 with around 90 percent of import came from these three countries. Similarly in the case of cardamom and pepper also the exposure of our economy to foreign competition resulted in constant fluctuations in commodity prices.

Pepper and cardamom occupy 10 percent of the total spices exported from the country. Even though the quantity of pepper exported from the country declined from 35000 MT in 2007-08 to 15362 MT in 2012-13, the value of export experienced a steep increase of 70 percent during the period i.e. from ₹519 crore in 2007-08 to ₹638crore in 2012-13 with USA, Germany and Italy as principal importers. There are several reasons for the quality decline and major factors are, fall in the production and the increased competition from Vietnam, the major producer of pepper.

In the case of cardamom, increase in domestic production resulted in increase in export of cardamom i.e. from 499 MT in 2007-08 to a whopping 2371 MT by 2012-13. Value of export also increased from a meager ₹ 24 crore in 2007-08 to ₹ 212crore by 2012-13. Increase in demand from Saudi Arabia, the major cardamom consuming country was responsible for the hike in export quantity (65 percent) and value (₹ 160crore). U.K, Malaysia, Kuwait and Japan remain the other major importers of cardamom from India.

Import of pepper and cardamom comprised 12 percent in terms of total quantity and 27 percent of the total value of spices export. Pepper import increased from 10750 MT in 2007-08 to 15680 MT in 2013-14. Value of pepper import also increased in the concerned period from ₹176 crore to₹616crore. Cardamom import to the country increased from 180 MT in 2007-08 to 1110 MT in 2013-14 whereas value increase significantly from₹3 crore to ₹31crore during the corresponding period.

The ASEAN countries becoming major producers of plantation commodities like natural rubber and pepper and hence it remains relevant in the context of India-ASEAN FTA even though plantation commodities are placed in the negative list till 2018 insulating competition from ASEAN countries as of now. Even though situation remains safe as of now, the study tried to understand the market concentration of the plantation commodities in the international trade sphere. Herfindahl-Hirschman Market concentration Index is used to identify empirical realities so as to understand how far the market is concentrated or diversified in terms of exports of natural rubber, pepper and spices from India. With fall in index value exemplifies diversified market nature for the commodity, in the case of natural rubber the index value declined from 978 in the year 1996 to 268in 2013 and number of markets for natural rubber export increased from 136 to 190. Similarly in the case of pepper and cardamom also the index declined respectively from 1905 and 2935 in 1996 to 748 and 1745 in the year 2013. The number of markets also increased from 27 in 1996 to 99 in the case of cardamom and number of markets increased from 81 in 1996 to 120 in the year 2013. Results of Herfinadhl-Market Concentration Index prove that the post liberalization era enabled the country to discover new markets for Natural rubber, Cardamom

and Pepper. Increase in the number of export markets is positive to the plantation economy as concentration on fewer markets is vulnerable in the period of increased competition from other countries.

Similarly, comparative analysis of India's trade intensity to world as well as ASEAN group of countries shows that ASEAN block was taken into consideration in the case of plantation commodities because many of the ASEAN countries are major players in terms of production of natural rubber and pepper and India forms a major destination of export of plantation commodities. The analysis proves that the trade intensity index of India with ASEAN in terms of natural rubber declined from 320.96 in 1996 to 183.77 in 2013 proving fall in export concentration to ASEAN countries. In the case of Pepper and cardamom, trade intensity index explains an increase in export concentration on ASEAN countries as the index value increased from 67.81 and 10.51 in 1996 to 228.34 and 132.26 respectively in 2013.

The Gravity model helped to analyse the underlying factors responsible for the increase in import to the country from ASEAN countries in the case of natural rubber and Pepper. Model estimates explain that higher the GDP of the importing country higher is the chance of increase in volume of import in order to meet domestic demand. In the case of ASEAN countries (exporting nations) both the GDP as well as Per-capita GDP are positively correlated thereby implying that higher the size of GDP the higher will be the capability of the exporting country to export more.

In the case of Pepper imports, the Gravity model results show that GDP of the importing country-India is negatively correlated significantly related.

Positive correlation of Per capita GDP of India implies that higher markets and higher demand for import of pepper in India.

While looking in to the results the GDP of exporting country-ASEAN block is positively correlated and significant at 95 percent level of significance, whereas Per-capita GDP in the case of ASEAN country is negatively correlated. The negative correlation of per capita GDP clearly explains that higher the size of GDP of exporting country higher is the chance of export and vice versa. One reason for the negative correlation of per capita GDP of ASEAN may be the high domestic demand for the product in these countries. Other time invariant variable also proves to be significant in the analysis.

6.3 Socio-economic Condition of Plantation Workers

Employment pattern in rubber and spices sub-sector has been analyzed by looking in to the commodity prices so as to see the changes in employment pattern over the years. The study has helped to understand that commodity price and employment generation in plantations are interconnected to such an extent that a fall in the commodity price have greater reverberations on the employment pattern in plantations. Average daily employment in small rubber plantations increased from 304618 in 1992-93 to 411800 in 2013-14 as price increased from ₹ 25 per kg to ₹163 per kg during the corresponding period. Similarly in the case of cardamom average daily employment experienced a compound annual growth rate of 6.75 percent during the period 2005-13as the commodity price of cardamom increased. All these trends pinpoints to the fact that plantation economy still plays an important role in the rural labour market of the state.

Livelihood analysis both in the small and large holdings show that workers belonging to rubber (large and small rubber) plantations have shown better possession of livelihood assets when compared to spices plantation workers as 16.2 percent of the spices sub-sector workers claimed about ownership of house which is considered to be an important and primary livelihood asset. Whereas more than 50 percent of the rubber plantation workers possess own house. Regarding the type of house almost 80 percent of the workers in spices sub sector have houses which are serviceable kucha in nature whereas almost 75 percent of the workers in rubber plantations have semi-pucca type of house.

In the case of natural assets like accessibility, availability and duration of water for drinking and other household purposes, the situation of workers in spices plantation still remain poor as around 80 percent of workers depending on public well public taps and canals as source of drinking water. Around 60 percent of the workers in spices plantation suffer water crisis during the period of summer where as 47.5 percent suffer the problem in small rubber plantations

Human assets are considered to be the fundamental assets in the quest for attaining better livelihood assets and thereby improving standard of living. Education qualifications, proficiency in job related skills, age, primary employment etc are taken as human assets in this study. In terms of education qualification almost 60 percent of the workers in rubber sub sector have S.S.L.C qualification whereas in spices sub sector 3.8 percent of the workers responded that they are illiterate and only 8.8 percent of the workers completed S.S.L.C. Proficiency in job-related skill is almost nil in the case of spices plantation workers. Regarding age of the workers one of the disturbing

trends is that around 70 percent of the workers in rubber sub-sector are above the age of 35. This explains the disinterest among the younger generation in taking up job in plantation which will have far reaching consequences in the plantation sector of the state. Seasonality of job, unhealthy working conditions, existence of wage lower than the market rate etc. is the major factor responsible for the disinterest. In terms of proficiency of skills majority of workers remain unskilled making employment options limited. Regarding employment options, the workers are left with few options other than job in plantations. Negligible presence of industries, lack of job related skills and remote location of plantations could be attributed for the situation.

Evaluating financial assets also give clear indication that the road to secure financial assets still remains a distant dream for the workers in plantation sector. About 72.9 percent of the workers irrespective of the type of plantations responded that they have no bank account. Absence of proper social security options, poor saving habits etc. are making the livelihood of workers highly vulnerable. Regarding possession of political and social assets also the workers in the plantation sector are equipped with fewer assets, making them more vulnerable in the present day context where political and social assets acts as an important facilitator in enhancing the employment and livelihood options.

Indebtedness among the workers in these plantation sub-sectors are also playing an important role in hampering the livelihood assets of workers. Exposure of plantation workers, especially spices sub-sector workers to informal source of credit, is really a disturbing trend as the informal sources like private money lenders charges exorbitant interest and forces the workers to remain under their clutches throughout the life. Inaccessibility, time lag

and complex procedures for availing credit in formal sources are some of the reasons attributed for the increasing credit exposure to informal sources.

Evaluating income and expenditure trends pinpoints to the fact that disparity in terms of income exist among the plantation workers. Average monthly mean income of workers in spices sub sector came to₹ 3724 whereas in rubber plantation (large and small) it was around ₹ 7100. Regarding expenditure pattern trend, spices plantation workers incurred more expenditure when compared to workers in rubber plantations. Average monthly expenditure analysis stood at ₹ 3034,₹ 2596 and ₹ 2711 respectively among workers spices, large and small rubber plantations. Expenditure on food consumption itself comprised almost half of the total expenditure in the case of spices plantation workers whereas among rubber sub-sector workers food consumption forms around 70 percent of the total expenditure. The matter occupies greater significance in the context of lower average mean income among spices sub sector workers while greater expenditure incurred to meet expenditure on alcohol, health treatment and debt repayment making them more vulnerable among the plantation workers. In addition to the above mentioned plantation wise disparity, region wise disparity also exits with workers in Idukki district remaining worse off among the regions studied in terms of education, income and other important livelihood assets explained earlier.

6.4 Evaluating Quality of Life and Exclusionary Trend among Plantation Workers

Standard of living as a base with livelihood assets is worked out to highlight exclusionary trend among workers in the plantation sector. The

analysis shows that there exists wide disparity in standard of living which in turn keeps them socially excluded. Chi-Square result also validates the argument that inter-plantation difference exist in terms of livelihood assets, monthly income-consumption and indebtedness leading to social exclusion of workers. Logistic regression result also exhibits significant relationship with factors like type of house, ownership of house, land holding pattern, nature of sanitary facility, electrification status source of drinking water, possession of bank account and number of days lost due to diseases affecting social exclusion. Correspondence Analysis proves the existence of small versus large plantation disparity in terms of livelihood. Workers in spices sub-sector (which mostly are large in size) fall under the Low SLI category, whereas workers in small rubber plantations fall under high SLI category and large rubber plantation workers come under medium SLI category based on their relative performance of various livelihood assets.

The plantation sector provides a mixed picture while observing the area, production, productivity, price and trade trends of natural rubber, pepper and cardamom. Kerala remains to be the key producer of all these plantation commodities. In terms of area and production the rubber sub sector provides promising results, whereas the situation is not so rosy in the case of pepper as the area of cropping have declined drastically over the years. Cardamom production increased substantially even though the sector witnessed decline in terms of area of cropping. Productivity of all plantation commodities increased significantly over the years owing to the introduction of high yielding varieties of these crops. Commodity prices analysis of plantation crops show a direct bearing on the area and production trends of these commodities. Opening up of the economy provided positive and

negative implications on the sector with export markets increasing on one side and increase in competition from the other side. Analysis proves to the fact that post liberalization period enabled the sector to discover newer markets and thereby diversify markets and to reduce vulnerabilities associated with tougher competition in international market. At the same time the quantitative easing in the form of removal of non-tariff barriers resulted in larger volume of import of plantation commodities from ASEAN countries. In a sense the plantation sector remains vulnerable and the situation becomes susceptible once the sector is removed from the excluded list in the ASEAN FTA as ASEAN countries are the major global players in terms of productions of Natural rubber and Pepper.

While observing the employment though wage levels have improved because of improvement in commodity price of plantation crops, significant improvements are not visible in their livelihood and they remain excluded compared to other sections of the society. Trade distortion in the form of RTA and FTA has resulted in increased global competition to the plantation economy of the state paving way to large scale fluctuation in commodity prices obviously making already fragile plantation labour more vulnerable. In addition to this, low education, poor skill status, poor financial stability, fewer social security options, adverse geographical location etc are impeding their improvement in livelihood leaving them in vicious circle of exclusion. Putting together the aforementioned facts and analysis, the study reach to a conclusion that, regarding the livelihood and employment workers in plantation sub-sector is in the quest for accomplishing a better standard of living still remains a distant dream.

6.5 Policy Suggestions

- Increase in Price stabilization fund is needed to insulate the plantation commodities from increased price volatility as commodity prices have a direct bearing on the area production of plantation crops.
- Continuance in keeping plantation crops in the negative list in the case of India-ASEAN FTA also is desirable given the relative importance of the sector in the economy of Kerala and nation in terms of earning substantial revenue
- Its high time governmental agencies intervene to understand the underlying reasons for the deprivation of livelihood and employment option and thereby forcing them to remain in a vicious circle of social exclusion.
- Stricter implementation of the Plantation Labour Act by ensuring plantations obliges the rules and regulations for promoting the welfare of workers are also needed.
- Measures also need to be taken to expand the ambit of the social security provisions of plantation workers thereby enhancing the social protection of plantation workers and their families and thereby reducing the vulnerability of livelihood in case of adversity.
- Commodity boards like Spices Board and Rubber Board needs to be more proactive in promoting the welfare of workers by increasing the plan expenditure on labour component.

6.6 Scope for Future Research

The present study has focused basically on the trends of production of the plantation sector and this in turn are juxtaposed to the employment, income and livelihood so as to address the issue of social exclusion of the workers. Livelihood of the resource based industries in Kerala and its implications on employment of the workers in a comparative framework would help to unravel sectoral and sub-sectoral issues *inter alia* the trend of exclusion of the workers is one such area for research which will help for policy formulations. In Kerala the trend of commercial agriculture is always prone to area and output responsiveness with price and this shift will have benefits and problems to various sectors and sub-sectors not only to the plantation owners but also to the workers. A study based on this will be useful in understanding the employment and income shifts of the workers and thereby the implication of social exclusion the working class faces in the plantation sector visa-a-vis other sectors. The rubber and spices have vibrant backward and forward output and supply chains with very high national and international link giving a high prominence with the capitalist business groups who make all kind of distortions for taking undue advantage in this chain excluding the life and livelihood of the people in the lower end of the chain. This possibly is a fertile area for future research.

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