

**A STUDY ON REMUNERATIVE PRICES OF
NATURAL RUBBER AND THE IMPACT OF
VOLATILITY IN PRICES ON THE SMALL
RUBBER GROWERS IN KERALA**

Project Report

Submitted by

RITHIKA KANNAN (Reg. No. AB20COM025)

RONA MARIA FRANCIS (Reg. No. AB20COM026)

ROSHNA RANJITH V (Reg. No. AB20COM027)

Under the guidance of

Dr. Mary Sruthy Melbin

In partial fulfilment of requirements for award of the degree of

Bachelor of Commerce



ST. TERESA'S COLLEGE (AUTONOMOUS), ERNAKULAM
COLLEGE WITH POTENTIAL FOR EXCELLENCE

Nationally Re-Accredited at 'A++' Level (Fourth Cycle)

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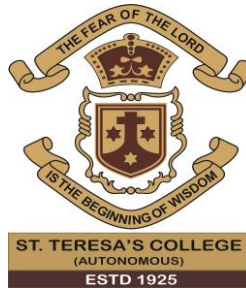
Kottayam-686560

March 2023

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CERTIFICATE

This is to certify that the project report titled “**A STUDY ON REMUNERATIVE PRICES OF NATURAL RUBBER AND THE IMPACT OF VOLATILITY IN PRICES ON THE SMALL RUBBER GROWERS IN KERALA**” submitted by **RITHIKA KANNAN, RONA MARIA FRANCIS AND ROSHNA RANJITH V** towards partial fulfilment of the requirements for the award of degree of **Bachelor of Commerce** is a record of bonafide work carried out by them during the academic year 2022-23

Supervising Guide

Head of the Department

Dr. Mary Sruthy Melbin

Ms. Ann Thomas Kiriyanthan

Assistant Professor

Assistant professor

Dept. of Commerce

Dept. of Commerce

Place: Ernakulam

Date:

DECLARATION

We, **RITHIKA KANNAN, RONA MARIA FRANCIS, and ROSHNA RANJITH V** do hereby declare that this dissertation entitled, **“A STUDY ON REMUNERATIVE PRICES OF NATURAL RUBBER AND THE IMPACT OF VOLATILITY IN PRICES ON THE SMALL RUBBER GROWERS IN KERALA.”** has been prepared by us under the guidance of **Dr. Mary Sruthy Melbin**, Assistant Professor, Department of Commerce, St Teresa’s College, Ernakulam.

We also declare that this dissertation has not been submitted by us fully or partly for the award of any Degree, Diploma, Title or Recognition before.

Place:

RITHIKA KANNAN

Date:

RONA MARIA FRANCIS

ROSHNA RANJITH V

ACKNOWLEDGEMENT

We wish to acknowledge all those persons who helped us in completing our project on the topic. **‘A STUDY ON THE REMUNERATIVE PRICES OF NATURAL RUBBER AND THE IMPACT OF VOLATILITY IN PRICES ON THE SMALL RUBBER GROWERS IN KERALA.’**

First of all, we thank God Almighty for his blessings showered upon us in the conduct of the project study. We are also indebted to Dr Mary Sruthy Melbin, Department of commerce, St Teresa’s College, Ernakulam for her guidance and encouragement for proper completion of study.

We express our sincere thanks to the Provincial Superior and Manager, Rev. Sr. Dr. Vinitha, Director Rev. Sr. Emeline CSST, Principal Dr. Alphonsa Vijaya Joseph, Ms. Ann Thomas Kiriyanathan, Head of the Department of Commerce and all other faculties of the Department of commerce, St. Teresa’s College, for their support and valuable suggestions.

We are thankful to Mr N Radhakrishnan former President of Cochin Rubber Merchant’s Association & Former Vice President of Indian Rubber Dealers Federation, Sri Thomas Oommen, Planter and Dealer at Kottayam, Sri C.V. Ramanathan, former Purchase Manager, Rubber Division, Bata India Ltd, Sri J.R. Vohra, Industrialist, Presidency Rubber Mills Pvt Ltd, Calcutta 1 and also to many Rubber Farmers in Kerala who spared their valuable time and advice at different stages of this study.

We also thank the librarian of St. Teresa’s College, for their kind cooperation.

We would like to express our thanks to all colleagues who were associated with this study and for their sincere contributions towards the successful completion of the project.

We also extend heartfelt thanks to our family for their constant encouragement without which this project would not have been possible.

RITHIKA KANNAN

RONA MARIA FRANCIS

ROSHNA RANJITH V

ABSTRACT

What should be the remunerative price of Natural Rubber so that a Rubber plantation industry can survive in Kerala, while considering the cost input in 2022. This gathers importance as more than 1.2 million Rubber growers are presently suffering due to uneconomic prices. The disruption in production due to vagaries of nature, shortage of tapping labour, the abrupt fall in prices of Natural Rubber sheets, which fell from Rs 240 per Kg in 2011 to less than Rs 100 per Kg within a year pushed the Rubber growers into poverty and debts. Thereafter there existed volatility in prices off and on though the prices settled at around Rs 140 per Kg by end of the year 2022.

This research paper attempted to analyse the major factors that influenced the prices of Natural Rubber mainly in the past 12 years, from 2010 to 2022. This study is based on primary datas collected after discussions with a cross section of small growers after providing them with a questionnaire and also with leading Rubber dealers and experts in the Rubber sector. This paper is also based on secondary datas. Relationships between International Rubber prices and Domestic Rubber prices were analysed along with the effect of the excessive imports of Natural Rubber collected from the datas published by the Rubber Board and Daily newspapers, published from Kerala. It is found that without a price which is profitable enough to sustain the minimum livelihood of Rubber growers, they will not be able to continue Rubber cultivation any further.

The aggregate cost of cultivation per acre of Rubber plantation was estimated during the lifespan of the tree from the collected datas. The effort and investment put in by the growers during the gestation period of seven years of the Rubber plant and thereafter during the yielding period of another 25 years were accounted for along with tapping labour charges, collection and processing charges of Rubber latex into sheet Rubber, interest on capital invested during the gestation period, transportation expenses, cost of family labour and other expenses, managerial cost and also profit element etc as prevailing in December 2022. Value of Rubber latex obtained after processing into sheets, value of field latex sold and also scrap Rubber collected from the bark of the trees after drying the same during the yielding period were also taken into account. The Research Team found that an effective remunerative price works out to Rs 253 per Kg for sheet Rubber. This calculation is based on the existing practice of growers tapping the trees mainly twice in a week or thrice in a week. Rubber Board scientists suggested that tapping once a week will be sufficient to extract the existing yield, provided some

stimulants are used once a month. Since there will be substantial reduction in tappers wages, we re-calculated the remunerative cost of Rubber, which came to Rs 201 per Kg for sheet Rubber. In the present context, the need to ensure remunerative prices to the farmers along with measures for improving quality, higher yield and increase in developmental assistance to the farmers etc have to be taken care of without any further delay.

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CHAPTER 1
INTRODUCTION

1.1. Introduction

The rubber plantation sector, especially the small and marginal farmers are presently undergoing a crisis due to the unremunerative and day to day volatility in prices of Rubber sheets. This has adversely affected the yield and thereby the quantity of production of rubber in Kerala. Few Rubber growers have either reduced the number of tapping days or switched production to other crops after cutting down their existing Rubber Trees. The livelihood of about 1.2 million Rubber farmers in Kerala and their families, 5 lakh labourers involved in rubber plantation sector and also their families is in jeopardy. The disruption in rubber production has adversely affected the economy of Kerala.

This study is to analyse the factors which influence the prices of Natural Rubber. Primary and Secondary data were used by the Research team for the purpose. The day to day volatility in rubber prices, the demand and supply mismatch, the adverse effect of untimely and excessive imports of rubber by the tyre industry, shortage of tappers etc are analysed in this study. The Research team has collected the required datas after meeting a few farmers, traders and experts in the Rubber Sector. They also went through Rubber Board publications, newspaper analysis and other statistical documents, technical and trade publications and other such studies by Researchers conducted earlier. The relationship between the global prices and the indigenous prices, demand and supply and excessive imports of Natural Rubber etc were also examined.

This study is also to find out what should be a reasonable return on the capital invested while considering the gestation period of Rubber trees which is almost 7 years. Cost of the hired labour and estimated family labour, cost of seedlings and chemical fertilizers and manure, insecticides for the protection of the crops etc during the gestation period of trees and thereafter during the yielding period of the rubber trees were examined. The factors such as cost of nursing the trees for achieving highest yield, collection and processing of Rubber latex into sheets, quality up gradation of such sheets are also analysed in this study.

After the due process of meeting and interacting with small Farmers, Traders and experts in the field, the Research Team found that there exists lack of interest in producing more rubber among the rubber growers due to unremunerative prices. The Researchers found that unless economically feasible prices are made available to growers and necessary steps taken in that direction by the Rubber Board, central government and state

governments, the Rubber growers in Kerala might quit Rubber cultivation in the next few years.

1.2 Significance of the Study

Natural rubber prices movement in India is influenced by overseas markets at Bangkok, Tokyo, Kuala Lumpur, Singapore etc. The emerging new producers are the African countries. North eastern states in India now contribute a reasonable share of Indian supplies. Input costs in North Eastern states are much lower than that of Kerala due to low cost of labour etc, which also has to be taken into account.

The enthusiasm shown by Indian tyre companies to import rubber and holding excessive stocks in the country lead to lower market demand of Rubber produced in Kerala and consequent and fall in prices. This also has to be scrutinised as this creates frustration among the Rubber growers.

These factors are taken up in the scope of the study as it assumes significance in the context of demand and supply. The Research Team went through the previous studies conducted by :

1. National Research Programme on Plantation Development, Commerce Ministry, Government of India to arrive at cost and returns of Natural Rubber production in Kerala in 2016 which was published as discussion paper number 55.
2. A study on the impact of fall in prices with respect to farmers in Kottayam district. This study paper was published by Amrita Vishwa Vidyapeetham by University scholars Ranjini S. Nambiar and P. Balasubramanian in 2016 based on the data collected in 2014-2015.
3. Rubber Board's study on the cultivation of Natural Rubber for the year 2015-2016 on the small rubber holdings sector based on input cost.

1.3 Statement of the Problem

Apart from internal factors namely high labour cost, shortage of tapping labour, high cost of fertilizer and other inputs etc, the inexplicable volatility in the day to day prices of natural rubber sheets created by the Futures trading markets in the worlds trading centres and disequilibrium of demand and supply owing to excessive imports were found to hurt the Rubber farmers. Rubber is a seasonal produce, as almost 50% of the quantity produced is obtained during the 4 months, beginning from October every year. Unregulated and excessive imports by the Tyre Industry created panic in the Rubber

market and caused dip in prices to an economic levels. The high labour cost, shortage of tapping labour etc prevents the rubber growers in getting remunerative prices for their produce. The growers have to undergo a long and tiresome gestation period of 7 years before they start getting yield from the rubber trees. They have to invest in Rubber budded plants clearing the land suitable for cultivation, taking pits, invest in rubber seedlings, fertilizers and manure and insecticides when necessary, pay hired labourers and nurse the plants for about 7 years before the tree starts giving yield. The yield will be less during the initial years of tapping. The productive life of the rubber tree is around 25 years. That means the growers have to look after the tree for about 32 years from the day of planting the plants with the active assistance of their family members. During this period they have to suffer the vagaries of nature, ever increasing cost of inputs, shortage of tapping labour, collection of latex and processing into sheets etc. Then only the sheets could be marketed and farmers could start to get a return on their investment and effort.

1.4 Objectives

An in depth examination and empirical analysis of the rubber cultivation, yield, processing latex into Rubber sheets, fluctuating market trend, and volatility in prices is necessary before arriving at a solution to the problems faced by rubber farmers in Kerala.

The following factors shall be studied: -

- Cost of land acquired for cultivation, labour charges for preparation of land suitable for cultivation, cost of planting budded plants, applying manure, fertilizers and insecticides when necessary and thereafter for nursing the plantation for 7 years during the gestation period.
- Interest on the capital invested during the gestation period.
- Direct labour charges and family labour charges during the gestation period and thereafter, the expenses incurred for tapping, collection charges of latex, conversion charges of latex into sheet Rubber and for drying sheets before marketing such sheets.
- Collection of scrap rubber from the bark of the tree and drying the same before marketing.
- The capital invested during the gestation period to be calculated and then divided in equal yearly installments and amortized such cost during the productive period of the Rubber tree. (25 years).

- Determination of remunerative prices of such Rubber sheets ready for marketing, and also field latex, if any, sold and scrap Rubber collected, dried and sold.
- Consider the Market trend, day to day volatility in prices and the related causes of such volatility.
- Whether the prices received by Rubber growers are reasonable to meet the cost of production.
- If the prices received by the growers are unremunerative, what are the remedies, incentives and relief to be granted to them.

1.5 Research Methodology and Data Collection

- **Primary Data** – The data collected by researchers directly from 30 farmers through convenient sampling method and through personal and telephonic interviews, surveys etc. An inquiry based survey was conducted with a representative group of farmers mainly from Kottayam, Thiruvananthapuram and Ernakulam districts. A detailed questionnaire was prepared and placed before the growers with whom the Research team interacted personally and on phone.
- **Secondary Data** – The Data collected from publications or authorised institutions.

Research team felt that an industrial raw material like Natural Rubber sheets remain an agriculture produce, even though the latex collected from the Rubber tree undergoes a process with the help of a coagulating agent like diluted formic acid and thereafter the coagulated substance is sheeted out with the help of rollers and then dipped, dried and again smoked for further drying the sheets to make it a marketable agricultural produce. The very fact that Rubber Sheet is further processed in Rubber goods manufacturing units together with synthetic Rubber, carbon black, Rubber chemicals, fillers etc shows that Natural Rubber sheets in its form is an industrial raw material and not an industrial product.

After examining all aspects of producing Rubber sheets from latex collected from the Rubber tree, the researchers felt that the manufacturing process of an industrial product is not involved in the production of Natural Rubber sheets and therefore these sheets can be considered as a Natural agricultural produce.

The exact analysis of the cost involved and returns received from rubber cultivation require a complex calculation due to the gestation period of the Rubber plant being 7 years and the economic life span of the Rubber tree being 24-25 years thereafter. Yield per tree also differs, though marginally. Therefore, in this Research paper the formula

for arriving at the cost of perennial crop is applied for finding out the cost of production of Rubber Sheets. The total input cost incurred during each year on the basis of per acre of plantation is aggregated to determine the entire cost of cultivation during the life cycle of the tree. Such cost incurred is calculated at December 2022 prices.

The yield obtained from the Rubber tree is in two forms. They are :

1. Rubber latex tapped and collected from the tree in containers which are processed into Rubber sheets or sold as field latex as such.
2. The Rubber scrap collected from the bark of the tree and also out of spilled latex, if any, collected from the ground.

CALCULATION OF COST OF PRODUCTION OF A PERENNIAL CROP LIKE RUBBER.

- ✓ The total input cost during the life cycle of the tree (32 years) per acre of Rubber plantation is tabulated as in Table 5.1. – **(A) Rs**
- ✓ The total yield of latex tapped from the tree converted into sheet in Kg – **(B) Kg**
- ✓ The yield of latex tapped from the tree and sold as field latex (in dry Rubber content) -DRC – **(C) Kg**
- ✓ The total weight of the scrap collected during the yielding period of the tree, dried, segregated into marketable form -- **(D) Kg**
- ✓ Sales Value received from the sale of field latex – **(E) Rs**
- ✓ Sale value received from sale of scrap Rubber -- **Rs (F)**
- ✓ Therefore the value of input cost in producing sheet Rubber -- **(A) – (E + F) = (G)**
- ✓ The input cost of sheet Rubber per Kg = **(G) / (B) = (H) Rs**
- ✓ Add 10% on **Rs (H)** towards managerial cost = **Rs (I)**
- ✓ Add another 10% profit on **Rs (H)** = **Rs (J)**
- ✓ Therefore the cost of marketable Rubber sheet per Kg = **(H) + (I) + (J) Rs**

Market prices of all inputs and wages as prevailed in Kerala were used for cost estimation. Processing cost of converting latex into sheet Rubber was calculated as per market norms. Generally growers get 65% of the produce as sheet Rubber, 15 % DRC sold as field latex and 20% as scrap Rubber (DRC). The rate of interest calculated at the rate of 12% is as per banking norms. Cost of family labour is estimated after discussions with growers, whom the Research Team interviewed.

1.6 Scope of Study

The scope of the study is to identify the remunerative prices of natural rubber and the impact of volatility in prices in the small rubber growers in Kerala. The study is based on the secondary data from various publications and the data provided by the authorised organisations. Primary data based on the convenient sampling of 30 rubber growers from Kerala was also considered.

1.7 Limitations of the Study

Rubber being a perennial crop and its economic life is stretched up to a maximum of 24-25 years, the cost estimation of Rubber sheet, field latex and scrap Rubber sold in the market as per DRC becomes a complex affair. Therefore the Research Team had to go through various factors before arriving at the cost of production of Rubber sheets basing on primary and secondary datas.

As already explained, this paper is prepared after due discussion with many small growers and traders and others based on a questionnaire. During discussions the Research team found that the cost of Rubber produced by farmers varied district wise in Kerala. There were also marginal differences in the cost of inputs. The estimate of inputs and the value of the output can vary marginally due to other factors than what is considered in this study paper. The period of study for statistical purpose is for the years 2011-2012 to 2021-2022 and upto December 2022. The Researchers found that there was substantial price volatility during this period. The production and prices were the lowest in 2012-2016 and thereafter volatility in prices existed in the range of Rs 100-180 per Kg till 2022.

The Research Team examined factors like import and export statistics of Natural Rubber, consumption of Natural Rubber by Rubber based industries, stock held towards the end of each month in the country, demand and supply of rubber during the period of study mainly from statistics published by Rubber Board. The cost of inputs were obtained from several farmers. There were slight differences in the cost of inputs furnished by them. Reliance on various other data examined in this study can affect the observations made in this paper.

1.8 Keywords

Demand and supply Mismatch – Supply being more than demand due to excessive imports.

Gestation Period – The seven years period starting from planting the buds till the tree attains yielding age.

Inexplicable volatility – The uncertain high and low prices which cannot be easily explained.

Empirical analysis – Evidence based approach to the study and interpretation of information.

Holdings – Rubber cultivated in an area under single ownership.

Tapped area – Area which is being tapped for yielding latex.

Tappable area – The rubber plants in an area which attained prescribed girth of 50 cm and a height of 125 cm ready for harvesting.

1.9 Chapterisation

Chapter 1- Introduction

This chapter gives a brief introduction about the topic, its significance in the research area, problem statement, methodology adopted, objectives to be achieved and limitations of the study

Chapter 2- Literature review

This chapter deals with the literature relating to the topic under study. It also includes analysis of secondary data relating to topic under study.

Chapter 3 – Theoretical framework

This chapter introduces the theory of the research topic.

Chapter 4- Data analysis and interpretation

It includes analysis and interpretation of secondary and primary data collected based on variables related to the study.

Chapter 5- Summary, findings and conclusions

It deals with a brief summary of what the researcher has found out from the study and the final conclusion and recommendations.

CHAPTER 2
REVIEW OF LITERATURE

2.1 Introduction

In this chapter some important literature has been reviewed.

1. Sri K.J. Joseph of National Research Programme of Plantation development, Ministry of commerce, Govt of India and Sri C.V. Ajith Kumar, formerly of Kerala, Agriculture University, Thiruvananthapuram in their discussion paper no 55 on Cost and Returns of Natural Rubber Production in Kerala submitted in 2016, discussed on the ongoing crisis in India's Natural Rubber Sector. The study highlighted some of the important dimensions of the ongoing crisis namely unprecedented decline in prices, productivity and production of Rubber. They have gone into the cost of production of Rubber and reported that " At the ongoing market price, the recorded net operating income and net total Income for those with holding size below 2 hectares and depending entirely on Rubber cultivation for their livelihood, is likely to be below the poverty line. In the current context the need to ensure remunerative prices along with measures that contribute to cost minimisation, higher yield and improving output quality by revamping R and D, extension, training and developmental activities of the Rubber Board with a new orientation cannot be overemphasized".
2. Smt. Ranjini Nambiar and P Balasubramaniam, Research scholars from Amrita school of Arts and Science, Kochi (2016) on " A study on the impact of fall in prices with respect to farmers in Kottayam district" mainly on small holdings was conducted in 2016. They said the prices which were in the range of Rs 248 per Kg in 2011 abruptly fell to Rs 80 per kg in the subsequent years and that such an alarming situation might cause even suicide of the Rubber growers in Kerala in the absence of any hope. This study was done exclusively on secondary data. The report further said that the living conditions of Rubber farmers were poor and fall in price have affected the livelihood of the farmers who depended only on Rubber cultivation. Without a minimum profitable price and support from the Govt and Rubber Board, it will be difficult for Rubber growers to continue cultivation.
3. The Rubber Board, Ministry of Commerce was entrusted to estimate the state wise cost of production of Natural Rubber. Rubber Board officials submitted a report basing on the cost of cultivation of Natural Rubber in 2015-16. For the small holding sector based on total labour and material cost incurred during each year. The total

cost of cultivation per hectare of plantation was estimated for the entire life span of the Rubber Trees by aggregating the cost incurred during each year from planting clones to the end of the yielding period of the tree. The state wise production cost was reported to be ranging from Rs 170.76 per Kg in Assam to Rs 251.18 per Kg in Goa. The report further said that the cost of production in Kerala in 2015-16 was Rs 172.07 per Kg without salvage value of the tree and Rs 162.61 with salvage value of the tree. The Rubber Board Researchers further reported that “ Compared to the record price of Rs 240 per Kg for RSS 4 grade in 2011, the present price (2015-16), hovering below Rs 130 per Kg is rather un remunerative”.

4. A study on Price Discovery of the Rubber futures market in India by Smt. Deepthi Kuriakkattil, SCMS group of Educational institutions of September 2022. The study reported in the price discovery analysis of Rubber Market for the period 01/01/2015 to 31/07/2017 that there is a unidirectional causal relationship from Future to Spot market in the long run. The study further says that Futures prices lead the Spot prices.

CHAPTER 3
THEORETICAL FRAMEWORK

3.1 Does Volatility In Prices Adversely Affect Natural Rubber Production ?

The subject of this Research is to find out the remunerative price of Natural Rubber in Kerala and the impact of volatility in prices on the small and marginal Rubber growers. This study is necessitated due to the fact that Rubber growers in Kerala are forced to discontinue the cultivation of Rubber which was existing for more than 12 decades in the state. The growing demand of Rubber in India necessitates an increase in production of Rubber. 'Atma Nirbhar' is the policy of the Government of India and Natural Rubber being a strategic commodity, it is absolutely necessary that production of Rubber should increase year after year in the country. It was therefore necessary to study the grievance of Rubber farmers in Kerala who produce just more than 75% of Rubber produced in the country.

Almost all the studies of remunerative prices for Natural Rubber was conducted as far back as in 2015-2016, when the production in the country fell down drastically to reach 5,62,000 tons in 2015-16 from 9,13,700 tons in 2012-2013. The major reason for the price fall in 2012 from Rs 240 per Kg to less than Rs 100 per Kg in 2015 was due to the fall in international prices of Rubber.

The studies which were conducted in 2015-2016 cannot be called infallible, as it was difficult to collect all required data from concerned people within a short time due to a panic situation in the Rubber sector, due to steep fall in prices and production of Rubber.

The first report of a Research Team by the Rubber Board was conducted in 2016 for determining cost of production of Rubber in different states. This study revealed that higher cost of production was in Goa at the rate of Rs 251 / 281 per Kg.

Cost of production in Kerala was recorded as Rs 172 / 07 per Kg. This report also revealed that the cost of cultivation of Rubber in Kerala was the highest. We have felt that the ground realities have changed now after 6 years.

Another Research report conducted by Amrita School of Arts and science in Kochi commented that the Rubber prices in India is determined to a very extent by the Global crude oil prices. The report further illustrated the various factors affecting domestic prices: prices of synthetic Rubber, crude oil and international prices, Domestic production and area under cultivation etc. They recommended a minimum support price

of Rs 200 per Kg, considering production cost. They also sought a ban on import of Rubber. We felt that it was not possible to ban import of Rubber as there was a heavy shortfall in production of Rubber to meet the consumption by domestic Rubber goods manufacturers.

Again there was another study by the National Research program of plantation development sponsored by the Ministry of Commerce and Industry, Government of India, New Delhi. This study was on cost and return of Natural Rubber production in Kerala. The Researchers in Kerala examined operating cost, total cost, total economy cost per Kg per Acre of Rubber produced in Kerala and came to the conclusion that cost of Kg of Rubber produced in Kerala turns out to Rs 117 per Kg in Kottayam and Rs 118 per Kg in Thiruvananthapuram Districts of Kerala. They also reported that “ At the ongoing market price the recorded net operating income and net total income for those Holding sized below to Hectares and depending entirely on Rubber cultivation for their livelihood is likely to be below poverty line. They also recorded that the total given on their Research paper may not tally with the sum averages given in the report. While examining this Research report, we found out that there were totalling mistakes in the datas which affected the calculation in finding out the cost of Rubber. But the paper contained several useful pieces of information on the input cost of Rubber production.

The framework of our Research takes into account latest statistics collected from growers, traders, experts, Rubber Board publications, newspaper reports etc.

TABLE 3.1
NATURAL RUBBER
PRODUCTION, IMPORT AND CONSUMPTION
2001-02 TO 2021-22

YEAR	PRODUCTI ON	IMPORT	EXPORT	CONSUMPTION	CLOSING STOCK
2001-02	6,31,400	49,769	6,995	6,38,210	1,93,070
2002-03	6,49,435	26,217	55,311	6,95,425	1,17,995
2003-04	7,11,650	44,199	75,905	7,19,600	85,190
2004-05	7,49,665	72,835	46,150	7,55,405	1,10,385
2005-06	8,02,625	45,285	73,830	8,01,110	93,020
2006-07	8,52,895	89,799	56,545	8,20,305	1,65,290
2007-08	8,25,345	86,394	60,353	8,61,455	1,64,280
2008-09	8,64,500	77,762	46,926	8,71,720	1,96,230
2009-10	8,31,400	1,77,130	25,090	9,30,565	2,11,290
2010-11	8,61,950	1,90,692	29,851	9,47,715	2,88,300
2011-12	9,03,700	2,14,433	27,145	9,64,415	2,36,275
2012-13	9,13,700	2,62,753	30,594	9,72,705	2,53,000
2013-14	7,74,000	3,60,263	5,398	9,81,520	2,45,000
2014-15	6,45,000	4,42,130	1,002	10,20,910	2,52,000
2015-16	5,62,000	4,58,374	865	9,94,415	2,24,000
2016-17	6,91,000	4,26,188	20,920	10,44,075	2,64,000
2017-18	6,94,000	4,69,760	5,072	11,12,210	2,92,000
2018-19	6,51,000	5,82,351	4,551	12,11,940	3,08,860
2019-20	7,12,000	4,57,223	12,872	11,34,120	3,31,091
2020-21	7,15,000	4,10,478	11,343	10,96,410	3,48,816
2021-22	7,75,000	5,46,369	3,560	12,38,000	4,28,625

Source: Rubber Board Publications.

TREND OF PRODUCTION IN NATURAL RUBBER 2009-10 TO 2021-22

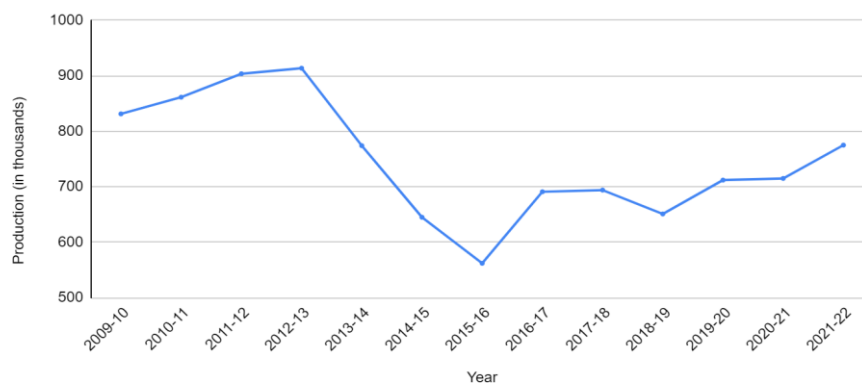


Fig No.3.1: Trend of production in natural rubber 2009-10 to 2021-22

TABLE 3.2
COMPARISON OF DOMESTIC AND INTERNATIONAL PRICES OF NR
(Rs/100 kg)

Year/Month	RSS 4	RSS 3	Latex (60% drc)		ISNR 20	SMR 20
	Domestic	International	Domestic	International	Domestic	International
April 20	NT	10394	NT	12248	NT	8405
May 20	11573	10538	13372	12745	10592	8319
June 20	12013	11438	14185	14400	10584	8720
July 20	12683	11518	13547	13925	10766	8903
August 20	13219	13012	13117	14155	10965	9782
September 20	13415	14400	12888	14532	10918	10049
October 20	14223	16112	14975	17275	11598	11185
November 20	15617	16963	17877	18983	12358	11617
December 20	15842	17071	17620	17933	12959	11608
January 21	15188	15876	18118	16895	12610	11572
February 21	15604	16355	19148	17923	14110	12305
March 21	16659	16894	21257	20433	15013	12758
2020-21	14185	14214	16009	15954	12043	10435

Source: Rubber Board Publications

PRICE OF NR IN DOMESTIC & INTERNATIONAL MARKETS

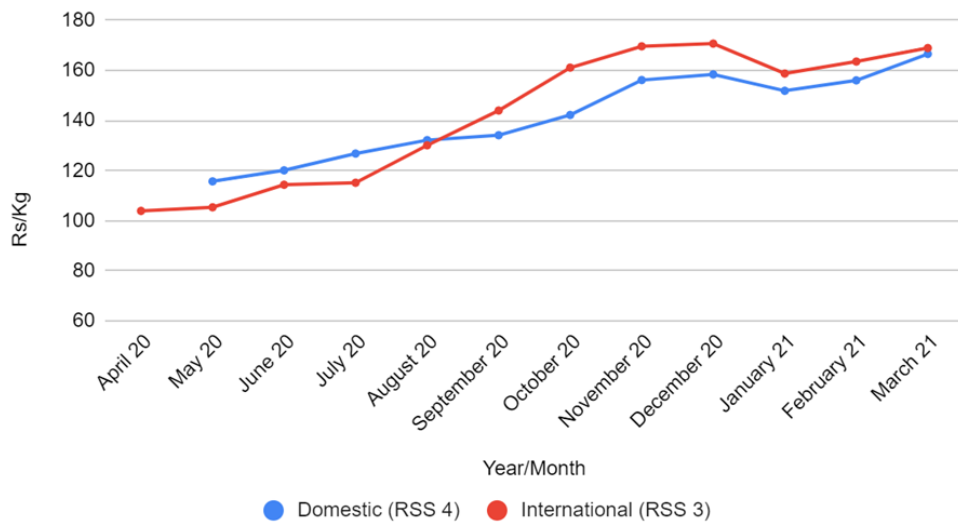


Fig No.3.2: Price of NR in domestic and International markets

The input cost of components in Rubber plantations has been examined in detail. The Research Team went through the input cost of various components during the gestation period from the first year to the seventh year the plantation (gestation period) and the capital invested is also tabulated (Table 5.1), interest at the rate of 12% per annum added to the capital each year upto the end of the gestation period of seven years. Thereafter such capital invested along with imputed value of family labour charges were computed and distributed to the input cost during the yielding years i.e from the 8th year of the tree to 32 years.

The income received from the sale of scrap Rubber which are collected from the bark of trees and sold at DRC content has been taken into account while calculating the income. The value of field latex sold as per DRC has also been taken into account.

CHAPTER 4
DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The Research Team has analysed the factors which influence the prices of Natural Rubber basing on Primary and Secondary data collected directly from the farmers, traders etc and also from Rubber Board Publications and from newspapers etc.

4.2 Interaction with Rubber growers for Data Collection

An inquiry based survey was conducted with a representative group of 31 Rubber farmers mainly from Kottayam, Thiruvananthapuram and Ernakulam districts. A detailed questionnaire was prepared and placed before the growers with whom the Research team interacted personally and on phone.

- The growers highlighted the ever increasing cost of inputs such as wages of farm workers, tapping labour, cost of fertilizers, manure and plant protection insecticides etc. Shortage of experienced tapping labourers was another problem they faced. Unrestricted imports of different grades of Rubber mainly by the tyre industry created havoc in the market due to excessive supply during the high yielding season. Their absence from the market though temporary led to sudden dip in prices. They wanted the government to interfere in the matter to mitigate their sufferings by controlling excessive imports and also by declaring a minimum price for Rubber sheets and taking measures for ensuring minimum prices.

Table No 4.1 : INTER CROPS CULTIVATED BY RUBBER FARMERS

CULTIVATED / NON-CULTIVATED	NO: OF FARMERS	PERCENTAGE
Cultivated	21	70
Non-Cultivated	9	30
Total	30	100

Source: Primary Data

INTER-CROPS CULTIVATED BY RUBBER FARMERS

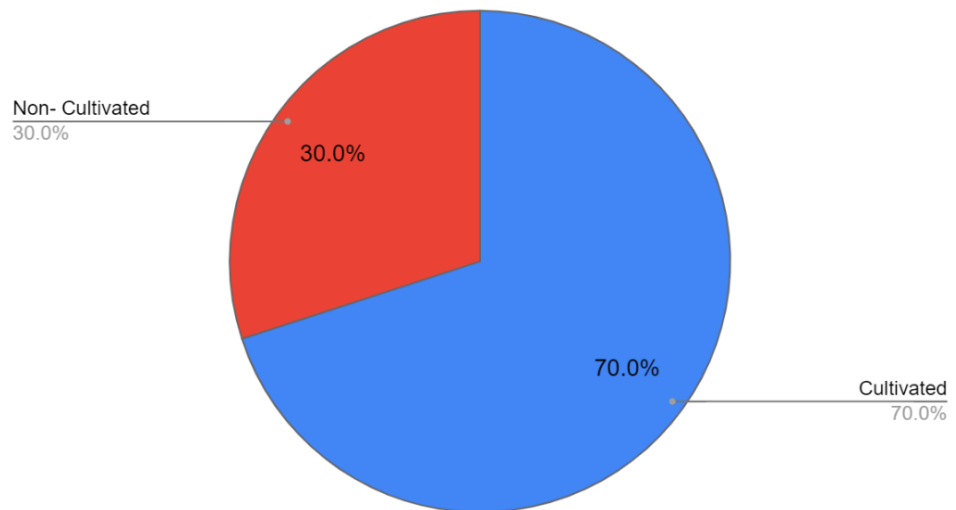


Fig No.4.1: Inter-crops cultivated by Rubber Farmers

- 22 out of 30 Rubber growers said that they did not cultivate inter-crops in their farms. Few others said that they benefited from such inter-crops, but their net earnings from the cultivation of inter-crops was nominal.
- The income from sale of matured unyielding trees (over the age of 32 years) was also taken up with the growers. They were of the opinion that though they expected some revenue out of such sales, the quantum of such revenue could not be assessed in the present instance. They said that capital investment on the cultivated land value was not included in the costing and / or the interest on such land value was included in the costing in the past by Researchers. They also said the income from the sale of trees should not be treated as a revenue.
- All the growers were happy with the technical assistance they got from the Rubber Board and the help received from their family members during the nursing and immature plant stage and also during the yielding stage of the trees.
- 15 farmers preferred to sell the produce daily, 10 farmers weekly and 6 of them fortnightly. Few of them said that they stored Rubber sheets for more days in anticipation of better prices. 70% of the farmers interviewed were members of the Rubber producing societies or co-operatives.
- All of them said the Rubber cultivation will become profitable only when Rubber prices go beyond Rs 250 per Kg. It was observed from the interaction with the farmers that their lifestyle was affected negatively after 2011 when the prices fell from Rs 240 per Kg to Rs 100 per Kg in the subsequent year. They had to reduce the expenses even for food, travel etc and even bring their children back

from English medium public schools to Government schools in Kerala etc. Many farmers had to sell their vehicles acquired in installments, when the prices fell drastically after 2012.

- 28 out of 30 farmers having farm area less than 2 acres did not avail of the Kerala Governments price support scheme which ensured them Rs 150 per Kg for Rubber sheets and thereafter enhanced to Rs 170 per Kg, due to the fact that many of them were not able to comply with the procedures stipulated by the Government. The farmers wanted the Government to increase the amount of the Price Support Scheme to Rs 250 per Kg immediately. Such measures would help to enhance the production of Rubber considerably.
- 3 farmers admitted that they have already cut down some of their trees as Rubber Farming was not remunerative enough.

Table No 4.2 : FARMERS EXPERIENCE IN CULTIVATION

YEARS OF EXPERIENCE	NO: OF FARMERS	PERCENTAGE
15-20	15	50
10-15	9	30
5-10	6	20
Total	30	100

Source: Primary Data

EXPERIENCE IN CULTIVATION

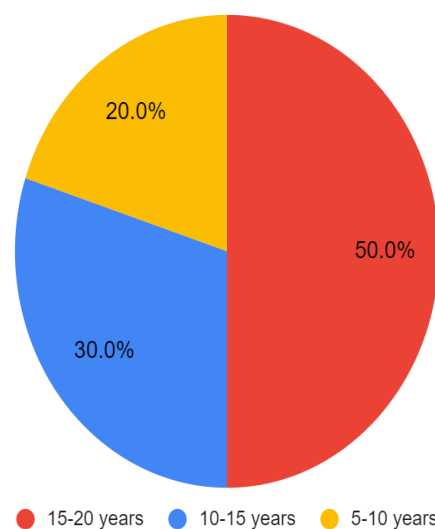


Fig No.4.2: Experience in Cultivation

- Out of the farmers interviewed, 50% of them had 15-20 years of experience in Rubber cultivation. 30% of them had 10 -15 years of experience and the rest of them were in cultivation for 5-10 years.

Table No 4.3 : DURATION OF TAPPING

DURATION	NO OF FARMERS	PERCENTAGE
Alternate days	20	65
Once in 3 days	9	30
No Tapping	1	5
Total	30	100

Source: Primary Data

DURATION OF TAPPING

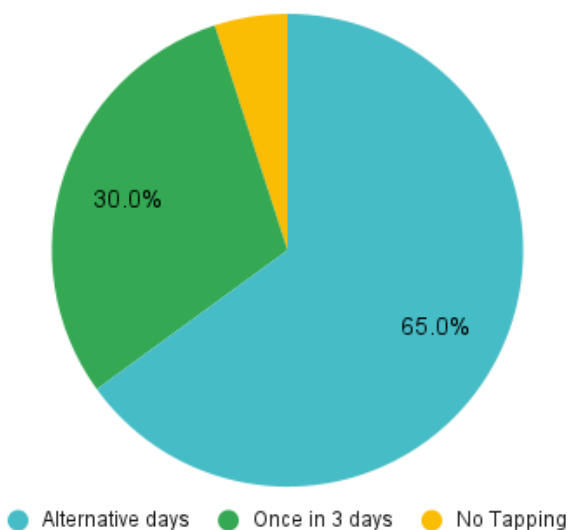


Fig No.4.3: Duration of Tapping

- Out of the farmers whom we interviewed, more than 65% of them were tapping on alternative days and 30% once in 3 days. Some of them stopped tapping in order to reduce tapping expenses etc.

Table No 4.4 : LABOUR ENGAGED FOR TAPPING

LABOUR ENGAGED	NO : OF FARMERS	PERCENTAGE
Hired Labour	23	75
Family Labour	7	25
Total	30	100

Source: Primary Data

LABOUR ENGAGED FOR TAPPING

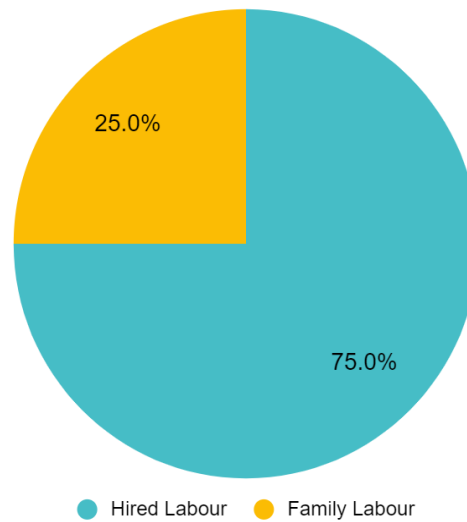


Fig No.4.4: Labour Engaged for Tapping

- Almost all the farmers used fertilizers, manures etc recommended by Rubber Board field officers. 75% of the respondents hired labour for tapping their trees and balance tapped their own trees.
- The families of almost all the respondents helped the farmers in the farm.
- All the farmers sold scrap Rubber obtained from the bark of the tree after drying fully. Most of the farmers sold the latex tapped from the tree after converting into sheet Rubber and few of them sold field latex directly to processors.
- Almost 60% of the farmers had rollers installed in their farm to sheet out Rubber and remaining growers took help from others for sheeting out Rubber by paying charges.

Table No 4.5 : SMOKEHOUSE OWNED BY FARMERS

OWNED / HIRED	NO: OF FARMERS	PERCENTAGE
OWNED	15	50
HIRED	15	50
Total	30	100

Source: Primary Data

SMOKEHOUSES OWNED BY FARMERS

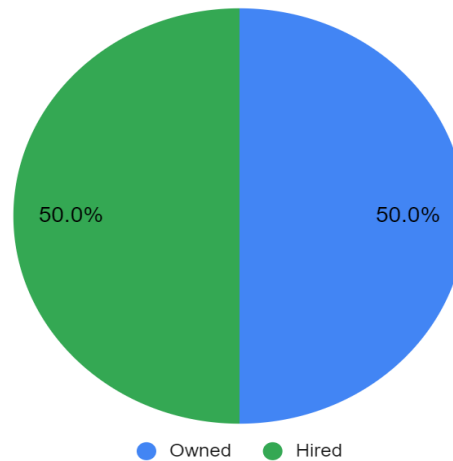


Fig No.4.5: Smokehouses owned Experience in Cultivation

- Almost 50% of the small farmers had their own smokehouse and the rest hired this facility.
- The issue of capital invested in the land for cultivation of Rubber also was discussed. Most of them said they had inherited the land from their families. The unanimous opinion of the farmers was that they were not able to continue Rubber farming as a profession due to un-remunerative prices of Rubber Sheets.
- The issue of capital invested on the Rubber plantation from day 1 till the trees reached maturity stage for tapping was also discussed. It was informed that many of them had borrowed money to meet such huge expenses and they were worried about the repayment of such loan with interest.
- The growers requested the research team to take into account the amount of interest involved in the capital invested during the initial planting operation and till the tree is matured for yield. They have also raised the question of adding

interest on the land value at existing market rates. They informed that the market price of land ranged between Rs 40 - Rs 50 lakhs per acre and complained that the previous cost studies ignored these facts. The growers suggested that while calculating the input cost of sheet Rubber, the formula for arriving at the cost of an industrial product should be applied. In this context they referred to the Supreme Court order in the Falcon Tyres vs State of Karnataka and others on the appeal (Civil) 4408 of 2001.

- Almost all the Rubber dealers whom the Research team interviewed were also large farmers having 10-50 acres of Rubber estates. They highlighted the volatility in prices due to the influence of foreign and local Futures Market. They also complained about the purchasing policies of the tyre industries and the excessive imports of Natural Rubber by the tyre companies.

In the light of the above discussions, the Research team felt that they should examine the cost formula of an Industrial Rubber product. The following cost inputs are generally applied for an Industrial Rubber product :-

1. Cost of various raw materials consumed while manufacturing the finished product with the aid of power, machineries etc in a plant set up for the purpose.
2. Wages incurred while processing such raw materials at different stages of manufacture of the finished product.
3. Direct expenses viz. supervisory charges, managerial and staff expenses, packing charges, transporting etc.
4. Employees gratuity, Bonus, E.P.F, E.S.I contribution, Medical leave to workers and staff.
5. Cost of tools and spares.
6. Selling, distribution expenses and other administrative expenses.
7. Finance costs.
8. Rent, local taxes etc.
9. Depreciation of assets.

Research team felt that an industrial raw material like Natural Rubber sheet remain an agricultural produce, even if the latex collected from the tree underwent a process with the aid of a diluted coagulating agent (generally formic acid) and thereafter the coagulated portion is rolled into sheets, dip dried and kept in a smokehouse to make the sheet completely dried in order to make it into marketable form. The very fact that such Rubber sheets are processed as a raw material in a Rubber goods manufacturing plant

and further mixed with Rubber chemicals and fillers, synthetic Rubber etc and through various production departments before the final product is produced, proves that Natural Rubber, as it is, cannot be called an industrial Rubber product.

The Researchers also went through the order of the Hon. Supreme court in the case no. (Civil) 4408 of 2001. In that case, the Supreme court had ordered that the legislature had while making the law for Entry Tax purpose placed Rubber sheets taxable under Entry Tax Act, due to the reason that such Rubber sheets had undergone a chemical treatment and thereafter rolled with the help of a roller. The Research team felt that the Supreme court had only confirmed the law passed by the legislature declaring Rubber taxable under Entry Tax Act.

4.3 Input cost components involved in Rubber Plantation.

- The cost of machine labour involved in clearing the weeds and levelling the lands.
- Labour involved in digging pits of the required specifications, applying manure in the pits, planting the seedlings, putting required fertilizers initially and thereafter, and later nursing the seedlings with adequate water, applying fertilizers and insecticides when necessary during the first year of plantation employing hired labour and taking assistance of family labour.
- The cost of budded plants, fertilizers, manure, plant protection, insecticides, transportation cost involved in the first year of planting and also during the immature plant stage of seven years (gestation period).
- Hired labour cost and the family labour involved in applying fertilizers, manure during the gestation period of further 6 years.
- The cost of hired labour, family labour, tapping labour, the cost of fertilizers, manure etc from 8th year onwards till the end of the yielding period of 32 years.
- Cost of transportation of latex from farm to the processor, for sheeting out Raw sheets, smokehouse charges involved in drying sheets, cost of tray for the purpose of carrying the latex, cost of tapping knife, cost of latex collection cups, cost of rainguarding etc.
- The cost of capital invested and the interest on capital involved each year till the plant attains maturity to be calculated and amortized and proportionately distributed to the input cost during the yielding period of 25 years.
- Managerial cost of 10% has to be added to the input cost.
- Profit of 10% to be added to the input cost.

CHAPTER 5
SUMMARY, FINDINGS, RECOMMENDATIONS
AND CONCLUSION

5.1 Introduction

In India there are more than 1.33 million small holdings, 538 medium and large scale estates as per the Rubber Board estimates as on 31.03.2022. The area under cultivation was 8,26,660 hectares, of which, tappable area was 7,18,800 hectares. The tapped area was only 5,26,500 hectares. The average yield has increased from 1442 Kg per hectare in 2020-21 to 1472 Kg per hectare in 2021-22. In Kerala, the rubber plantation covered an area around 5,50,000 hectares. Over 90% of the holdings are with small and marginal farmers owning less than 2 acres.

Natural Rubber is tapped from trees in latex form which are processed into sheets. The scrap Rubber collected from the tree is processed into technically specified block Rubber at the processing factories.

In its life span, the Rubber Tree undergoes 3 stages :-

1. Nursing stage of newly planted seedlings – 2 years.
2. Immature plant stage – 3 to 7 years.
3. Yielding stage of matured Trees – 8 to 32 years.

Year wise input cost during the gestation period of the Rubber tree has already been tabulated in Table 5.1. The investment along with the input cost per year during the yielding years is annexed with this report as shown in Table 5.1.

5.2 Input cost during the Gestation Period as per Table 5.1

Table 5.1 illustrates the input cost each year including the interest on capital investment calculated in each year during gestation period of seven years.

TABLE 5.1
INPUT COST PER ACRE OF RUBBER CULTIVATION (ROUNDED OFF) DURING
GESTATION PERIOD - (7 YEARS)

S. NO	PARTICULARS	1st YEAR	2nd YEAR	3rd YEAR	4th YEAR	5th YEAR	6th YEAR	7th YEAR
1.	MACHINE LABOUR FOR LEVELLING LAND	10,000	-	-	-	-	-	-
2.	LABOUR CHARGES : FOR DIGGING PITS, APPLYING MANURE, PLANTING SAPLINGS, PUTTING FERTILIZERS AND INSECTICIDES WHEN REQUIRED	14,500	8,000	7,000	8,500	9,000	10,000	11,500
3.	COST OF FERTILISERS, INSECTICIDES, ETC...	8,750	9,500	10,000	11,000	11,500	12,000	12,000
4.	COST OF SAPLING 200 NOS	20,000	2,500 (Replacement)	-	-	-	-	-
5.	LAND TAX	300	300	300	300	300	300	300
6.	TRANSPORT AND INCIDENTALS	3,500	2,000	2,500	2,500	3,000	3,500	4,000
7.	SUB TOTAL	57,050	22,300	19,800	22,300	23,800	25,800	27,800
8.	INTEREST CALCULATED ON CAPITAL INVESTED @12% PER ANNUM	6,850	10,300	14,000	18,300	23,400	29,300	36,000
9.	IMPUTED VALUE OF FAMILY LABOUR	18,000	16,000	18,000	20,000	20,000	20,000	20,000
	TOTAL	81,900	48,600	51,800	60,600	67,200	75,100	83,800

YEAR WISE COST FOR THE GESTATION PERIOD IS TABULATED BELOW

	Amount
First Year -	81,900
Second Year -	48,600
Third Year -	51,800
Fourth Year -	60,600
Fifth Year -	67,200
Sixth Year -	75,100
Seventh Year -	83,800
Total Rupees =	4,69,000

The vast majority of growers did not get any return on their investment throughout these years as they have not applied / received any Rubber Board subsidy or any benefit from cultivation of inter-crops. The total investment including interest as shown in Table 5.1 will be amortized into instalments in each yielding year of the Rubber Tree (25 years) i.e from 8th year to the 32nd year.

In the Table 5.2, 5.3, 5.4 appearing below, the Research Team has tabulated the input cost for the 25 yielding years.

5.3 Input cost of yielding years (25 years) as per Table 5.2, 5.3, 5.4

**TABLE 5.2
INPUT COST PER ACRE OF RUBBER CULTIVATION (ROUNDED OFF)
YIELDING YEARS
8th - 16th YEAR OF PLANTATION**

S. NO	PARTICULARS	8th YEAR	9th YEAR	10th YEAR	11th YEAR	12th YEAR	13th YEAR	14th YEAR	15th YEAR	16th YEAR
1.	LABOUR CHARGES FOR TAPPING THE TREE	18,000	20,000	27,000	28,000	28,000	28,000	29,000	30,000	30,000
2.	OTHER LABOUR CHARGES	5,000	5,000	6,000	6,000	7,000	8,500	8,500	9,000	9,000
3.	RAIN GUARD, FERTILISERS AND MANURE, PLANT PROTECTION, ETC...	10,000	10,500	13,500	13,500	14,500	16,500	17,000	17,000	17,500
4.	LAND TAX	300	300	300	300	300	300	300	300	300
5.	TRANSPORT AND OTHER MISCELLANEOUS CHARGES	3,500	4,000	4,500	4,500	5,000	5,000	6,000	6,000	6,500
6.	LATEX PROCESSING CHARGES, SMOKING COST OF COLLECTION OF SCRAP RUBBER ETC..	3,000	4,000	5,000	5,000	5,000	6,000	6,000	6,500	7,000
7.	FAMILY LABOUR	19,000	25,000	25,000	25,000	25,000	26,000	27,000	27,000	27,000
8.	AMORTIZATION COST OF CAPITAL INVESTED (FROM 1st YEAR TO 7th YEAR INSTALLMENTS)	13,000	19,000	15,000	19,000	23,400	15,000	19,000	19,000	19,000
9	SUB TOTAL	71,800	87,800	1,00,300	1,00,800	1,03,800	1,09,300	1,12,800	1,14,800	1,16,300

TABLE 5.3
INPUT COST PER ACRE OF RUBBER CULTIVATION (ROUNDED OFF)
YIELDING YEARS
17th - 25th YEAR OF PLANTING

S. NO	PARTICULARS	17th YEAR	18th YEAR	19th YEAR	20th YEAR	21 st YEAR	22 nd YEAR	24th YEAR	25th YEAR
1.	LABOUR CHARGES FOR TAPPING THE TREE	30,000	31,000	31,000	32,000	32,000	33,000	33,000	34,000
2.	OTHER LABOUR CHARGES	9,000	9,000	10,000	11,000	11,000	12,000	12,000	12,000
3.	RAIN GUARD, FERTILISERS AND MANURE, PLANT PROTECTION, ETC...	18,000	18,000	19,500	19,500	20,000	21,000	21,000	22,000
4.	LAND TAX	300	300	300	300	300	300	300	300
5.	TRANSPORT AND OTHER MISCELLANEOUS CHARGES	6,500	6,500	7,000	7,000	7,000	7,500	7,500	7,500
6.	LATEX PROCESSING CHARGES, SMOKING COST OF COLLECTION OF SCRAP RUBBER ETC..	7,000	7,000	7,500	7,500	7,500	7,500	8,000	8,000
7.	FAMILY LABOUR	27,000	27,000	27,000	28,000	28,000	28,000	28,000	28,000
8.	AMORTIZATION COST OF CAPITAL INVESTED (FROM 1 st YEAR TO 7 th YEAR INSTALLMENTS)	19,000	19,000	19,000	19,000	19,000	19,000	19,000	19,000
9	SUB TOTAL	1,16,800	1,17,800	1,21,300	1,24,300	1,24,800	1,28,300	1,28,800	1,30,800

TABLE 5.4
INPUT COST PER ACRE OF RUBBER CULTIVATION (ROUNDED OFF)
YIELDING YEARS 26th - 32th YEAR OF PLANTING

S. NO	PARTICULARS	26th YEAR	27th YEAR	28th YEAR	29th YEAR	30 th YEAR	31 st YEAR	32th YEAR
1.	LABOUR CHARGES FOR TAPPING THE TREE	35,000	33,000	32,000	32,000	30,000	28,000	24,000
2.	OTHER LABOUR CHARGES	12,000	11,000	11,000	10,000	8,000	7,000	7,000
3.	RAIN GUARD, FERTILISERS AND MANURE, PLANT PROTECTION, ETC...	22,000	20,000	17,500	15,000	13,000	12,000	6,000
4.	LAND TAX	300	300	300	300	300	300	300
5.	TRANSPORT AND OTHER MISCELLANEOUS CHARGES	8,000	7,000	7,000	6,000	5,000	3,000	3,000
6.	LATEX PROCESSING CHARGES, SMOKING COST OF COLLECTION OF SCRAP RUBBER ETC..	8,000	7,500	7,000	6,000	4,500	4,000	3,500
7.	FAMILY LABOUR	24,000	23,000	22,000	20,000	20,000	18,000	17,000
8.	AMORTIZATION COST OF CAPITAL INVESTED (FROM 1 st YEAR TO 7 th YEAR INSTALLMENTS)	19,000	19,000	19,000	19,000	19,000	19,000	19,000
9	SUB TOTAL	1,28,300	1,20,800	1,15,800	1,08,300	99,800	91,300	79,800

YEAR WISE INPUT COST OF THE YIELDING YEARS :

The input cost includes the amortized amount of capital invested which is added equally during the yielding period as shown in above Tables.

8th Year – 71,800

9th Year – 87,800

10th Year – 1,00,300

11th Year – 1,00,800

12th Year – 1,03,800

13th Year – 1,09,300

14th Year – 1,12,800

15th Year – 1,14,800

16th Year – 1,16,300

17th Year – 1,16,800

18th Year – 1,17,800

19th Year – 1,21,300

20th Year – 1,24,300

21st Year – 1,24,800

22nd Year – 1,28,300

23rd Year – 1,28,800

24th Year – 1,30,800

25th Year – 1,33,300

26th Year – 1,28,300

27th Year – 1,20,800

28th Year – 1,15,800

29th Year – 1,08,300

30th Year – 99,800

31st Year – 91,300

32nd Year – 79,800

TOTAL = 27,88,000

Total cost of the plantation during the bearing period including the amortized cost for the first 7 years = Rs 27,88,000/-

5.4 ECONOMIC COST

While calculating the economic cost, the Research Team has considered subsidy, if any, received by growers from Rubber Board, income from cultivation of inter crops, income from sale of unyielding Trees at the end of yielding period and also the interest on the value of land during the period of cultivation. As explained earlier, most of the small growers neither did receive any subsidy nor did receive any amount from the cultivation of inter crops. Income from the sale of trees at the end of the 32nd year of plantation cannot be estimated now as it is a distant probability. Moreover the income if any derived from such sale of trees would offset the interest on the land value during the lifetime of the tree.

During the year 2012-2015, the prices and production of Rubber had gone down drastically due to drop in price in the International Market, and the domestic conditions existed at that time as stated earlier in this Research report. Thereafter the prices and production picked up gradually with some volatility in a few months every year and reaching an uneconomical level of Rs 145 per Kg by December 2022.

In estimating the cost of return on investments, the Research Team have discussed the issues involved in the cultivation, especially cost of fertilizers, manure, labour cost, plant protection measures, involvement and extent of family labour, availability of tapping labour and other costs involved in detail. We have also gone through the discussion papers prepared exhaustively by Rubber Board and also other study papers on the subject with regard to inputs.

5.5 YIELD

The All India average production of Rubber arrived by the Rubber Board in 2021-2022 was 1472 Kgs per h.a. The average yield per h.a. in Kerala as published in Volume No 42 of 2021 was 1534 Kgs per h.a. Since the growers differed in their statements regarding the yield per acre, the Research Team felt that they should proceed with Rubber Board data on this matter. Based on this the average yield per acre in Kerala is calculated on the basis of 1534 per Kg per h.a. in the year 2022 also. When converted into acres, the yield per acre works out to 620 Kgs. The yield consists of 65% of Rubber latex converted into sheet Rubber, 15% of which are sold as field latex and 20% as scrap Rubber.

PRODUCTION OF DIFFERENT FORMS OF NATURAL RUBBER 2021-22

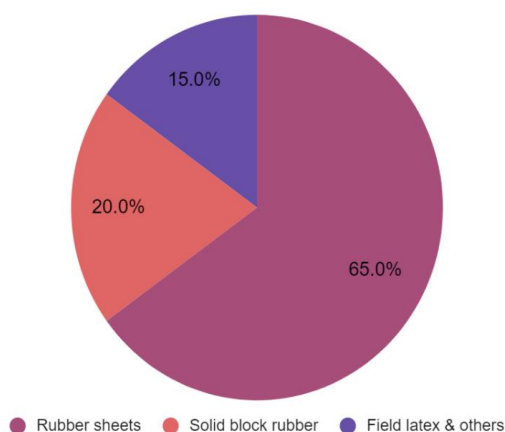


Fig. No. 5.1: Production of different forms of natural rubber 2021-22

The Research team found that in the first 2 years of the bearing period, the yield will be less and thereafter the yield will increase gradually year after year till the 15th year. The peak production will be from 16th year to 25th year of the life of the tree and thereafter yield will get gradually reduced. The economic yielding period of the tree will be from 8 to 32 years.

The growers had objected to the Rubber Board figures and emphasised that the production was not above 500 Kgs per acre. They said that the Rubber Board figures are only estimates made out from the report supplied by the field officers which were not exact figures of production. Researchers opted to take Rubber Board figures as it was more authentic.

5.6 REMUNERATIVE COST OF RUBBER SHEET AT DECEMBER 2022 PRICE

The Research Team calculated the input cost of Rubber sheet and also the remunerative prices as shown below and as per the calculation method stated under methodology in Chapter 1 of this Research paper.

- Total Input cost of Rubber per acre during the lifetime of the tree as per Table A (1) (2) (3) & (4) **Rs 27,88,000**
- Basing on above, the per acre input cost (**Rs 27,88,000 / 25**) = **Rs 1,11,520**
- The dry Rubber content of Rubber tapped from the tree in a year at the

rate of 1534 Kg per hectare, converted into per acre. (as per Rubber Board statistics.)	620 Kg
● Out of the above the dry Rubber content of field latex collected and sold. (15% of the yield)	93 Kg
● The scrap Rubber collected and sold (DRC)	124 Kg
● Therefore the quantity of sheet Rubber (DRC)	403 Kg
● Sale value received from the sale of latex basing on the average prices of December 2022. (93 Kg x Rs 125 per Kg)	= Rs 11,625
● Sale value received from sale of scrap Rubber (DRC) sold. (124 Kg x Rs 120 per Kg)	= Rs 14,880
● Total sale value received from the sale of field latex and scrap Rubber. (rounded off)	= Rs 26,500
● The input cost of Rubber sheet as per Table A.	Rs 1,11,520
● Less sale value received from field latex and scrap Rubber scrap Rubber.	Rs 26,500
● Therefore the net input cost of sheet Rubber (rounded off)	= Rs 85,000
● The input cost of sheet Rubber per Kg (Rs 85,000 / 403 Kg) (Rounded off)	Rs 211 per Kg
● Add 10% managerial cost.	Rs 21 per Kg
● Add 10% profit	Rs 21 per Kg
● Therefore remunerative price of Rubber sheet is	<u>Rs 253 per Kg</u>

(This calculation is based on the prevailing average market prices of sheet Rubber in December 2022 at the rate of Rs 140 per Kg)

5.7 ALTERNATIVE PRICE MECHANISM OF INPUT COST OF RUBBER SHEETS.

Kerala Rubber growers have to take into account the prices on which the supplies of Rubber sheets made available by the North Eastern states, which are less than existing Kottayam prices. We have to admit that their wage structure is low and they make use of most of the advantages made available to them by the Rubber Board and tyre Industry. The tyre companies import mostly technically specified block Rubber or Rubber compounds to reduce the cost. Rubber compounds attract only 10% customs duty and block Rubber is assessed at the rate of 25% duty. The international prices of block Rubber was as low as Rs 115 per Kg during December 2022 and therefore 90% of the Rubber imported contained block Rubber and also compounded Rubber. Such imports are a threat to Kerala Rubber growers.

5.8 RUBBER BOARD SUGGESTION TO REDUCE INPUT COST

In the present context the scientists of Rubber Board have suggested pursuing tapping of the Rubber Tree instead of twice or thrice in a week as is the practice now, to once a week without compromising on the yield. If this suggestion can be adopted there will be reasonable savings on the wages of tapping Rubber and other labourers. The Rubber Board suggestion is to use Ethephon 10%, which is a plant growth regulator mixed with three times palm oil or coconut oil duly stirred before applying each time with a brush on the cut surface of the bark of the tree once in a month. We find that a considerable amount towards tapping wages etc can be saved after taking care of the cost of Ethephon and oil. Taking this suggestion into account the Research team made a fresh calculation of input cost and also the remunerative price of Rubber produced each year. To achieve the best price advantage the state Government has to announce an increase in support price of Rubber sheet from Rs 170 per Kg to Rs 200 per Kg during the year 2023-24.

5.9 REVISED INPUT COST AND REMUNERATIVE PRICE OF

RUBBER SHEET.

● Total input cost during the lifetime of the tree as illustrated in Table A.	Rs 27,88,000
● Less Savings on tapping labour cost	Rs 2,47,000

● Therefore the net input cost	Rs 25,41,000
● Basing on the above per acre revised cost of input comes to (Rs 25,41,000 / 25) =	Rs 1,01,640
● The dry Rubber sheet content of Rubber tapped from the tree in a year at the rate of 1534 Kg per hectare converted to per acre.	= 620 Kg
● Out of the above dry Rubber content of field latex (15%) sold.	= 93 Kg
● The dry Rubber contents of scrap Rubber sold.	124 Kg
● Sale value of field latex (assuming a price of Rs 200 per Kg for sheet Rubber) at the rate of Rs 160 per Kg	= Rs 14,880
● Sale value of scrap Rubber (assuming a price of Rs 200 per Kg for sheet Rubber) at the rate of Rs 140 per Kg	= Rs 17,360
● Total sale value received from the sale of field latex and scrap Rubber.	= Rs 34,240
● The input cost of Rubber sheet 403 Kg	= Rs 67,400
● Therefore Input Cost of Rubber sheet per Kg (Rs 67,400 / 403 Kg)	= Rs 167 per Kg
● Managerial cost 10%	= Rs 17 per Kg
● Profit 10%	= Rs 17 per Kg

● Remunerative price as per revise costing	= <u>Rs 201 per Kg</u>

5.10 Recommendations

Price stabilization fund scheme of Central Government for Agriculture products.

1. In July 2003 Central Government had established a Price Stabilisation Fund for plantation crops including Rubber in order to safeguard the interest of Growers. That was a participative scheme where the growers also had to invest some funds. That did not work out and the scheme ended without much result in 2013. The Central Government should join in the Rubber production incentive scheme of the Kerala Government by contributing equal funds to the State's scheme.
2. The amount granted under Rubber Plantation Subsidy Scheme to be raised to 1,00,000 per hectare by the Central Government and at the same time steps shall be taken to pay subsidies directly to farmers bank account.
3. Banks / NAFED shall be advised by the Central Government to grant agricultural loans to the Rubber growers at the rate of interest not exceeding 7 % per annum.
4. Minimum Support Price for Rubber to be declared at the rate of Rs 200 per Kg by State Government without any delay and Rubber Board may be directed to procure excess sheet Rubber lying with the growers with the assistance of NAFED.
5. The State Government should grant special incentives to MSMEs to start a maximum number of Rubber goods manufacturing units in Kerala.
6. The Rubber Board and its Research wing should be strengthened.
7. The National Rubber policy announced by the Central government in 2019, which is now lying in cold storage, should be brought back to limelight and an expert committee should be appointed to re-examine the suggestions contained in the policy.
8. It is known that Rubber products Manufacturing Industries emit a lot of carbon dioxide while manufacturing Rubber Goods whereas Rubber Trees absorb Carbon dioxide and emit oxygen in nature. In all the developing countries, Taxes and duties are charged on such carbon emissions by Industry. The Indian Government is also planning to introduce this system in India. Such amount collected from Industry shall be paid to the Rubber growers / Rubber Plantations according to the norms fixed by the Government. It is understood that the Government is planning to pay such an amount to the growers who replant the Rubber Trees or put up new Rubber plantations. If this scheme has to benefit the

growers it will be necessary that the government of India extend such benefit to all existing Rubber plantations. The Central Government and Rubber Board should take appropriate steps to enable the Rubber farmers to get such Carbon credit funds at the earliest.

5.11 Conclusion

The Research Team has highlighted two possibilities at arriving at the remunerative price of Rubber. On being on the existing mode of tapping the trees as per the age old practice in the plantation sector viz. the duration of tapping being thrice a week or in some cases twice a week. The remunerative price as per costing on December 2022 prices in terms of Table A works out to Rs 250 per Kg.

Rubber Board scientists are of the opinion that growers could save tapping charges by tapping once a week and in that process the yield will not come down at all and the growers will save substantial amounts towards wages paid on tapping. Switching on tapping to once a week will help overcome the extent of shortage of tapping labourers existing now. The additional cost involved in applying Ethephon 10% duly diluted with palm oil / coconut oil in 1:3 proportion once a month on the cut portion on the bark of the tree will slightly add to the cost, but yet there will be much saving on the tapping and other charges. By adopting this tapping method once a week, the remunerative price of Rubber sheet can be brought down to Rs 201 per Kg. It is a fact that once the Rubber prices reach Rs 200 level per Kg, there will be proportionate increase in the rates of field latex and scrap Rubber. This will work out to the advantage of the growers. But this can be achieved only when the state government increases the present support price from Rs 170 per Kg to Rs 200 per Kg. In Fact the Government might not need additional funds towards support price, as the market prices would gradually go up.

In the 2023-24 Budget proposal, the Kerala Government had allotted only Rs 600 crores for the purpose of granting support price. It is known that a million small and marginal farmers in Kerala produced about 3 lakh tons of Rubber sheets in a year. Apart from field latex which is directly sold and scrap Rubber. In December 2022 the Rubber sheets fetched an average of 140 per Kg. At this rate the amount which was required for paying the price difference between market price and support price would have been Rs 60 paise per Kg, when support price was increased to Rs 200 per Kg. To meet this, an amount of Rs 1800 crores would be necessary. But once the government announces the increase in support price to Rs 200 per Kg and at the same time force the Central Government to

stop import of rubber compound at 10% Customs Duty and also regulate the block Rubber imports to the extent what the industry needs for their consumption and thus reduce the excessive carry over stock in each month with the industry, growers and processors, the Rubber sheet prices will increase automatically to a higher level of 200 per Kg. There will also be a proportionate increase in the field latex and scrap prices. Such increase in price will work to the advantage of the Government as the net outflow of amount towards the Support Price Scheme will come down.

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APPENDIX

QUESTIONNAIRE

As a part of our UG Final Year Project, We the students of St Teresa's College, Ernakulam, are conducting a survey to find out the Brand Switching Behavior of Consumers in the FMCG Industry with reference to Kochi. This study is conducted by Shiya Antony, Shwetha Suresh, and Shweta Antony from the Department of Commerce (Regular), St Teresa's College, Ernakulam. The information provided will be used for academic purposes only. Kindly furnish us with the details below:-

1. Are you a full time Rubber grower?
2. What are your other occupation?
3. How long have you been in the cultivation of Rubber?
4. Have you planted these Rubber trees in this place or you inherited these?
5. Did you engage your family members to look after the plantation?
6. Did you ever apply Rubber plantation subsidy from the Rubber Board?
7. Did you grow any other crops in between the Rubber trees?
8. Where you satisfied with the advice of Rubber Board officers?
9. Did you experience any difficulty in getting tapping labour at the right time?
10. How about the rate of wages of the labour force and of the tapping labour?
11. Do you have rollers for processing the coagulated latex into sheet form? If not did you take any help from others?
12. Are you satisfied with the quality of Rubber sheets produced?
13. Are you happy with the prices received from the dealer?
14. Is your Rubber cultivation a profitable vocation?
15. How many times did you tap the trees in a week?
16. Did you use protective cover during the rainy season?
17. Do you own a smoke house?
18. Did you get any subsidy under Price Support Scheme from the State Government?

19. What do you do with the Rubber tree after the productive life of the tree?
20. Are you a member of any Rubber producing society or cooperatives?
21. What should be a remunerative price for Rubber sheets according to yourself?
22. What do you think about the Rubber import policies of Central Government?
23. What other assistance do you need form the Government?