

Crop Shifts and Remedies: Socio Economic Problems and Health Hazards of Rubber Farmers

Dr. Bindu V V

Associate Professor, Department of Economics, S.N. College, Kannur, Kerala, India

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ABSTRACT

Agriculture is the main economic activity of Kerala, accounting for 45 percent of the state's income and 48 percent of total employment. Kerala's agriculture stands out as unique in the Indian agriculture scene and has many distinctive features. The agricultural population, with its fixed outlook and attitude, is a great stabilization influence in the social and political spheres. Nearly 85 percent of the total cropped areas in the state were used for the cultivation of 11 major crops. The major portion of Kerala's population depends for its livelihood on cash crops, mainly coconut and rubber since, during the last few decades, rubber has emerged as the more profitable crop and the second largest in terms of the cropped area. Kerala produces 92 percent of India's natural rubber. Kerala and Tamil Nadu together occupy 86 percent of the growing area of natural rubber. This topic has, therefore, a great social significance and is current in its relevance. The objectives included in the study are to analyze the socio-economic problems of rubber farmers, to find out the shift in cropping due to price fluctuations of rubber, to understand the health problems of rubber farmers, and to recommend suggestions for solving the problems of rubber farmers.

Keywords: Hevea Brasiliensis, Varco elastic, vulcanized rubber, elastomers, gutta-percha (Palaquium gutta)

INTRODUCTION

Natural rubber, one of the most valued raw materials, was known to man from very ancient times. There are two sources of rubber: natural rubber from the tree, Hevea Brasiliense's and synthetic rubber produced from petroleum-based products. It is obtained from the latex of various plants. But Hevea Brasiliense's is the most important species, which supplies the natural rubber of commerce today. Natural rubber was used by many manufacturing companies for the production of rubber products. Currently, rubber is harvested mainly in the form of latex from the Para rubber tree or others. The latex is a sticky, milky colloid drawn off by making incisions into the bark and collecting the fluid in vessels in a process called tapping. The latex, then, is refined into rubber ready for commercial processing. Natural rubber is used extensively in many applications and products, either alone or in combination with other materials. In most of its useful forms, it has a large stretch ratio and high resilience and is extremely waterproof. (Indian Natural Rubber.htm).

Efficiency in natural rubber production can be achieved by using high-yielding modern planting material by adopting a low-frequency tapping system, judicious selection of areas for expansion of cultivation and introducing the concept of productivity linked to a wage structure. Natural rubber is a high molecular weight polymeric substance with various elastic properties. The main use of natural rubber is in automobiles. In developed countries, nearly 60% of all rubber is consumed in automobile tires and tubes. A modern automobile has more than 300 components made out of rubber. Many of them are processed from natural rubber. Other uses of natural rubber are footwear, batteries, boxes, foam mattresses, balloons, toys etc., which now find extensive use in soil stabilization, in vibration absorption, and in road construction. Compared to vulcanized rubber, uncured rubber has relatively few uses. It is used for cements, for adhesives, insulating materials, and friction tapes, and for crepe rubber used in insulating blankets and footwear. Vulcanized rubber, on the other hand, has numerous applications. Resistance to abrasion makes softer kinds of rubber valuable for the treads of vehicle tires and conveyor belts, and makes hard rubber valuable for pump housings and piping used in the handling of abrasive sludge.

The flexibility of rubber is often used in hoses, tires, and rollers for a wide variety of devices ranging from domestic clothes wringers to printing presses; its elasticity makes it suitable for various kinds of shock absorbers and for specialized machinery mountings designed to reduce vibration. Being relatively impermeable to gases, rubber is useful in the manufacture of articles such as air hoses, balloons, balls, and cushions. The resistance of rubber to water and to the action of most fluid chemicals has led to its use in rainwear, diving gear, and chemical and medicinal tubing, and as a lining for storage tanks, processing equipment, and railroad tank cars. Because of its electrical resistance, soft rubber goods are used as insulation and for protective gloves, shoes, and blankets; hard rubber is used for articles such as telephone housings, parts for radio sets, meters, and other electrical instruments. The coefficient of friction of rubber, which is high on dry surfaces and low on wet surfaces, leads to the use of rubber both for power-transmission belting and for water-lubricated bearings in deep-well pumps.

Natural rubber, also called Indian rubber consists of polymers of the organic compound isoprene, with minor impurities of other organic compounds plus water. Malaysia is a leading producer of rubber. Forms of polyisoprene that are used as natural rubbers are classified as elastomers. The major commercial source of natural rubber latex is the Pará rubber tree (*Hevea Brasiliense*'s), a member of the spurge family, Euphorbiaceae. This species is widely used because it grows well under cultivation and the properly managed tree responds to wounding by producing more latex for several years. Congo rubber, formerly a major source of rubber, came from vines in the genus *Landolina*. These cannot be cultivated, and the intense drive to collect latex from wild plants was responsible for many of the atrocities committed under the Congo Free State.

Many other plants produce forms of latex rich in isoprene polymers, though not all produce usable forms of polymer as easily as the Pará rubber tree does; some of them require more elaborate processing to produce anything like usable rubber, and most are more difficult to tap. Some produce other desirable materials, for example gutta-percha (*Palaquium gutta*) and chicle from *Manilkara* species. Others that have been commercially exploited, or at least have shown promise as sources of rubber, include the rubber fig (*Ficus elastica*), Panama rubber tree (*Castilla elastica*), various spurges (*Euphorbia* spp.), lettuce (*Lactuca* species), the related *Scorzonera tau-saghyz*, various *Taraxacum* species, including common dandelion (*Taraxacum officinale*) and Russian dandelion (*Taraxacum kok-saghyz*), and perhaps most importantly for its hypoallergenic properties, guayule (*Parthenium argentatum*). The term gum rubber is sometimes applied to the tree-obtained version of natural rubber in order to distinguish (www.rubbertnetworking.com)

Commercial production of natural rubber started in India during 1902. During the early period production was largely contributed by estates. But later the number of small holdings increased and from 1968 onwards production is predominated by small holdings. In the case of India, production of natural rubber has increased in 2003 to 10.3 percent but growth rate decreased to 5.5 percent because of the adverse climatic conditions prevailed in Kerala. India is the fourth biggest producer and consumer of the natural rubber in the world production in 2003. China is the first and largest consumer of natural rubber in the world.

The prices of natural rubber in India fluctuated with the fluctuations in prices of natural rubber in the international market because of the 1991 trade agreement. Natural rubber cultivation has expanded because of the following supportive factors, like the price factor. As the price of rubber is active for a relatively long period of time, more and more farmers are attracted to the cultivation of rubber, high productivity, and less cost: high productivity of natural rubber as a result of the implementation of sophisticated seeds. Like Bud105, production is comparatively low with other crops. Availability of subsidy, extension services by the Rubber Board, exemption from ceiling limit, and regular flow of income: the income from the rubber is evenly spread over the year.

Rubber plantations were introduced in India by the Europeans. Rubber planning material was brought to India in 1878 from Ceylon. However, it was only in 1902 that natural rubber cultivation was started on a commercial scale in the country. Interestingly, the first commercial plantation of rubber was started in 1902 by the Periyas syndicate at Thattakat near Alwaye in Kerala. The two important factors that were instrumental in the successful introduction of plantation agriculture were the agroclimatic conditions and the availability of cheap land and labour. In our country agriculture provides food and raw materials, employment to a very large proportion of the population, capital for its own developments, and surpluses for national economic development.

The Indian rubber industry has been growing along with its strength and importance as a part of India's burgeoning role in the global economy. India is the third largest consumer of natural rubber and is also one of the fastest-growing economies globally. With a stable annual growth rate of 8 to 9 percent, rising foreign reserves, and rapid expansion in the capital markets and FDI inflow, India proudly stakes its claim as the second fastest-growing major economy in the world. Such factors combined with a high concentration of automobile production and the presence of large and medium industries in South India. Chennai has become the perfect place for the event India Rubber Expo 2011(Narain, D, 1965)

The AIRIA (The All-India Rubber Industries Association) is a nonprofit making body serving the rubber industry and trade with the objectives of safeguarding and promoting the interests of the industry. The All-India Rubber Industries Association was formed in 1945, which is an apex body of the rubber industries—both tire and non-tire sectors—and also of the traders dealing in raw rubber, chemicals, and other raw materials. The association's purpose is to protect and promote the interests. The restriction upon rubber leads to (on export of natural rubber) the availability of natural rubber at a lower price for domestic consumption. This led to the setting up of a new rubber products manufacturing industry and the setting up their subsidiary unit in India; it increased the demand for rubber.

Rubber is also the best compared to all other major crops in terms of production, growth, area expansion, and productivity in India. The rubber grown here is getting the best prices in the world, especially at the farm gate. The manufacturing of the rubber products in India has a history of more than seven decades. The first rubber goods manufacturing unit in India was established in 1922(Indian Tariff Board, 1947).

Agriculture is the main economic activity of Kerala, accounting for 45 percent of the state's income and 48 percent of total employment. Kerala's agriculture stands out as unique in the Indian agriculture scene with its many distinctive features. The agricultural population with its fixed outlook and attitude has a great stabilization influence in the social and political spheres. Nearly 85 percent of the total cropped areas in the state are used for the cultivation of 11 major crops. The major portion of Kerala's population depends for its livelihood on cash crops, mainly coconut and rubber, since during the last few decades rubber has emerged as the more profitable crop and the second largest in terms of the cropped area. Kerala produces 92 percent of India's natural rubber. Kerala and Tamil Nadu together occupy 86 percent of the growing area of natural rubber.

Kerala is the leading consumer of rubber, followed by Punjab and Maharashtra. A labour strike across plantations demanding a wage hike in Kerala has led to the stoppage of work in big rubber estates. The small farmers are not keenly interested on tapping because of low prices. Kerala produces 90 percent of the country's natural rubber. Some years ago, the projection was that India would achieve one million tons of rubber production. But from the third position above Malaysia, we dropped to the fifth below Vietnam and are likely to fall below China this year given the shrinkage in output. The total area under rubber cultivation in the state is 5.45 lakh hectares. Besides, some 11.50 lakh farmers, most of whom are smallholders, are engaged in the cultivation of rubber. The main reason for the reduction in the production of rubber is rubber growers resist tapping due to a sharp fall in the price of natural rubber. Natural rubber production has been at a low ebb ever since the prices nosedived to as low as Rs 120 a kg from as high as Rs 250 a kg two years ago. The poor return and high labour cost have forced many of the growers, 75 percent small and marginal farmers, to keep away from tapping. The unrestricted massive imports by tire companies have also pushed down domestic demand.

Hiking import duty on rubber and bringing port restrictions would push up the domestic demand for the commodity, thereby providing relief to farmers. Production of natural rubber in Kerala has declined by more than 15 percent during the last fiscal year as against the yield for the corresponding previous year, as unremunerative prices kept rubber growers away from tapping. Kerala and Tamil Nadu are the traditional rubber-growing areas in India. These two states account for 97 percent of production of natural rubber in the country.

Kerala, with the highest density of population, has a large percentage of its population that depends for its livelihood on cash crops, mainly coconut and rubber. Here a simple attempt is made to study the socio-economic problems of rubber farmers by taking the case of rubber farmers who belong to Chengalayi Grama Panchayath.

REVIEW OF LITERATURE

Rubber is a major plantation crop in Kerala. There are a lot of studies that analyze the various aspects of rubber plantations. Some of the important studies related to rubber farming and about rubber farmers are discussed in the next section.

The Government of India (1952) estimated the cost of rubber plantations. The commission has incorporated maintenance of nature estimates, tapping and collection of latex, processing and feasibility of investment in rubber, and examined the present value of future returns. The IRR calculated by them on capital for rubber was 10 percent. The BCR worked at using a constant discount rate of twelve for rubber. The payback period of rubber was estimated at 14 years.

Narain, D. (1965) explains that in the Indian context, about the impact of commodity price stabilization on the area under annual crops. He studies by taking 6 crops, viz., wheat, rice, cotton, jute, groundnut, and sugarcane. The study reveals that the farmers were significantly responsive to price with notable preference for high-value cash crops. George, Unni (1969-70), made some important observations on the small farmers in India. Most of the smallholders used ordinary planting materials; interplanting of other crops was found to be crucial in determining the yield of rubber. The majority of the small growers were found to practice the crude method of sun or kitchen smoking. Both manuring and plant protection measures were regularly done only in 37.7 percent of the total area surveyed. The survey revealed that the average yield per hectare in budded colonies in the selected area was 641,565 and 388 kilograms, respectively.

George and Joseph (1973) George and Joseph (1973) analyzed the world of natural rubber and its relevance to India. They attempted to analyze the main features of the changing dimension of the world's natural rubber economy and outline the priorities and strategies relevant to India in the context of the new economic scenario. S.D (1957) evaluated the cost of tapping is the major item in the total cost of production of natural rubber.

Sudhardi, Artina (1975) tapping specialization observed that tapping and transportation costs account for about 25 percent of the total expenditure on a rubber estate. Jose, R. V. (1978) tried to show the area, production, and market trends of rubber in Kerala. Kurian (1982) stated that there was a rapid growth in plantation crops in Kerala, especially in the past two or three decades. P.P. Pillai (1982) reported a substantial increase in the area under plantation crops in both absolute and relative terms. Mani, Sunil (1982) studies the behavior of natural rubber prices and market structure. Unni, Jeemol (1983), examines the shift in the cropping pattern of Kerala over the period of 1960-1961 to 1978-79. Job, Elsamma, and Mukundan, K. (1984), in their study, evaluated the cost and returns costs of production and capital productivity of rubber cultivation by smallholders in two zones of the Kottayam district in Kerala. Thomas, Ciciliyamma (1984), tried to estimate the profitability of rubber cultivation. Umadevi (1984) assessed the impact of rubber plantations on the Kerala economy. George, Tharian, Haridasan, and Sreekumar (1988) attribute the dynamic growth of rubber plantations in India to the incentives provided by the government at the level of cultivation, production, and marketing of rubber in Kerala. An important factor that led to the extension of rubber cultivation was the implementation of land reforms. Narayanan, D. (1990), in their working paper, proved that there was a large explanation of the area under natural rubber cultivation. The area in 1940-41 was 12000 hectares. Relative price movements play a central role in determining the growth path of agricultural incomes. Vyas (1995) feels that India's marketing game plan for the 1990's calls for accepting five major marketing strategies: qualities, innovation, productivity, wider market research, and globalization.

K. Tharian George and M.R. Sethuraj (1996) outline the relevance to India in the context of the new economic scenario. Joseph and George (1996) analyze the relative profitability of natural rubber vis-à-vis other crops. Since the late 1970s, there has been the growing commercial importance of rubberwood for a variety of natural applications based on an empirical investigation among the rubber planters. Roselind George (1996) attempts to analyze the consumption, saving, and investment pattern in the rubber plantation sector and is providing a considerable surplus to those who are engaged in the sector, and they are able to set apart a portion of their income as savings. The mode of disposition of savings showed that 75 percent of the savings were disposed of in physical assets and the rest in financial assets.

Krishna Kumar, R. (2001) analyzed that nearly 85 percent of the total cropped area in the state is used for the cultivation of 11 major crops. The most discernible trend in the past few decades has been the marked shift in the cropping pattern towards relatively less labour-intensive crops. The area under paddy cultivation has come down from 8 lakh hectares to 3.53 lakh hectares (in 1998-1999). According to a study, over 60 percent of the land that went out of paddy cultivation continues to be used for agriculture. Paddy was substituted with coconut, rubber, and areca nut or food crops such as banana, tapioca, and vegetables.

Krishnakumar, R. (2000), states that as a result of the liberalization policies, the confidence of state agriculturists had broken because of the dramatic fall in the prices of cash crops like tea, coffee, rubber, coconut, etc. Rubber fetched an average price of 52 per kg in 1996 and sold at Rs. 28 by September 2000. As a result of strong protests following the large-scale import of natural rubber in the early 1990s, the center imposed a ban on its import in February 1999. Due to an increase in the prices of natural rubber and synthetic rubber at the international market, domestic producers began to see a slight recovery. This shift not only revitalized the local rubber industry but also encouraged the farmers to invest in more sustainable agricultural practices. In the international market, the demand for natural rubber has crashed today; it shows the benefits of liberalization.

Lakshmi and K. Tharian George (2003) attempt to study rubber cultivation in Kerala. This study analyzes the relative contribution of the four selected factors: cooperative price stability, relative profitability, institutional support, mechanisms, and technology shift. B.A. Prakash explains that the cash crop orientation of Kerala is owed to the leisure-prone labour culture of the people. The landlords prefer cash crops since the former requires less personal attention and supervision. K. Tharian George Tom, Joseph, and Joby Joseph (2002) made an attempt to explore the socio-economic implications of this trend. Their findings indicate that while cash crops may yield higher immediate profits, they also create vulnerabilities for farmers due to fluctuating market prices and dependency on external factors. This needs a re-evaluation of agricultural policies to ensure sustainable practices and economic resilience among local farmers. They try to study the natural rubber in a post-quantitative-restrictions regime.

Pradeep, B., & Jacob, J. (2021) investigate how extreme price volatility has influenced rubber cultivation across the traditional growing regions of Kerala and Tamil Nadu. Their findings suggest that while some farmers have adapted through diversification and innovative farming techniques, many still face significant challenges. This highlights the urgent need for comprehensive support systems that can stabilize income and promote sustainable agricultural practices in the face of global market pressures. Despite a severe market crash after 2012, researchers discovered that the total rubber-cultivated area expanded overall, debunking the popular assumption that low prices triggered a massive conversion of plantations to other uses. However, the data reveals a geographical divide in grower attitudes, where affluent central districts saw land declines while southern and northern regions continued to plant. The authors conclude that socio-economic dependency likely dictates these patterns, as less wealthy farmers remain committed to rubber for their livelihoods while more prosperous growers.

Rejimol, M., & Jagathish, M. (2022). highlights India's prominent role as a global leader in rubber manufacturing, while specifically identifying Kerala as the nation's industrial epicenter. By providing impressive statistical data, the text illustrates how a vast majority of the country's output and cultivation area are concentrated within this single state. Ultimately, the source serves to define Kerala as the indispensable heart of the trade, demonstrating how its specialized land use sustains India's high international standing.

Shruthi (2023) paper examines the socio-economic conditions and operational challenges faced by rubber planters in the Kadaba Taluk region of Karnataka, India. Utilizing a survey of 50 local farmers, the study reveals that the majority of these producers operate on small-scale holdings of two acres or less and possess limited educational backgrounds. The author highlights critical industry obstacles, including volatile market prices, the impacts of climate change, and a significant shortage of skilled labor for tapping. Data indicates that most planters belong to an average income group with modest savings and basic living amenities. To support these growers, the text suggests that the government should implement price stability measures, provide subsidies for insecticides, and offer specialized training for laborers. Ultimately, the source warns that a lack of interest from younger generations and ongoing financial instability may threaten the future of rubber cultivation in the district.

Prabhakar, & Bhattacharya, P. (2025) explores how rubber cultivation serves as a vital financial pillar for small-scale landholders in Tripura, India. By analyzing survey data through statistical modeling, the authors reveal that an overwhelming 98 percent of participants rely on these plantations for their economic survival. The study identifies that factors such as land ownership and labor size directly boost production, while also noting that farmers face income instability due to complex supply chain fluctuations. Ultimately, the text provides a framework for policymakers to design interventions that better support the socio-economic welfare of these rural agricultural communities.

Objectives of The Study

- 1) To analyse the socio-economic problems of rubber farmers
- 2) To find out the shift in cropping due to price fluctuations of rubber.
- 3) To understand the health problems of rubber farmers and to recommend suggestions for solving the problems of rubber farmers.

METHODOLOGY

Both primary and secondary data were applied in the study. The study is of a descriptive nature. The data were collected from the sample respondents through the use of the structured questionnaire. The sample was selected using convenience sampling method. The sample of 50 rubber farmers was selected from Chengalay Grama Panchayath of Kannur District. For sample selection only rubber farmers were considered. Therefore the sample size was limited to 50.

The study discusses the problems faced by rubber farmers and their prospects in future. It is gathered from rubber farmers around the area. Secondary data is collected from published reports, books, journals, internet etc.

The data collected is tabulated and analyzed. The data is supported by various statistical tools such as tables and diagrams.

RESULTS AND DISCUSSION

The Kannur district was formed on 1st January 1957, when the erstwhile Malabar District and Kasaragode taluk of Madras State were reconstituted into three districts, viz., Kannur, Kozhikode, and Palakkad. At that time, this district had taluks including Mananthawady(now in Wayanad District) and Hosdurg (now in Kasaragod District). Waynad was formed in 1980 and Kasaragode District in 1984.

The study area belongs to Chengalayi Gramapanchayath. Chengalayi Grama Panchayath is one of the 81 grama panchayaths in Kannur district. It exists in the Taliparamba block. The area is ultimately a rural one in the early decade, where there is more forest area, and only a small part of the panchayat is used for inhabitation. Now there are different kinds of developmental activities that are carried out. This panchayat is a lowland where floods are a common phenomenon. Most of the people in this panchayat are depending on agriculture, and they produce rice, rubber, tapioca, bananas, pepper, etc. The panchayat is situated on the banks of the Valapattanam River. It includes two villages, namely Chengalayi and Chuzhali. It has an area of 67.33 [sq.km](#). It is bounded in the north by Sreekandapuram Panchayath and in the south by the Valapattanam River. There are 18 wards in the panchayath. The total population of the panchayath according to the 2001 census is 28781 persons, consisting of 14083 males and 14698 females. There are 28 temples.

The rubber becomes one of the important cash crops of Kerala. As a source of livelihood, it provides direct and indirect employment to a large proportion of people who belong to Kerala. Due to the price hike in rubber, several farmers doing traditional food crop cultivation started to shift towards the cultivation of rubber. Rubber cultivation requires comparatively less care and protection. Therefore, the majority of the farmers prefer this. The cultivators get good remuneration. But recently due to price fluctuations in the international market and the increased import of rubber from foreign countries, there is a reduction in the price of rubber. This adversely

affected the very existence of the farmers. Through this study a simple attempt is made to analyze the socio-economic problems of rubber farmers. For the purpose of the study, Chengalayi Grama Panchayat, which belongs to Kannur District, was selected. By using the convenience sampling method, 50 samples are selected. A structured questionnaire was prepared to conduct the personal interview with the farmers. Collected information is analyzed and presented in the following section by using statistical tools like tables and diagramsetc.exhibit opportunistic behavior in response to market fluctuations.

Table No 1 Age wise classification

Age (in years)	No. of farmers	Percentage (in %)
40 – 50	11	22
50 – 60	21	42
60 – 70	13	26
70 – 80	5	10
Total	50	100

Source: sample survey

Table 1shows the age wise classification of rubber farmers. 22 percent of the farmers belongs the age group of 40 to 50 years. 42 percent of the farmers are within 50 to 60 years and 26 percent of the farmers are belonging to the age group of 60 to 70. 10 percent of the farmers are above 70 years aged. Based on the surveyed information the retired government employees and aged people are more interested to do the rubber cultivation. Young generation is not attracted to this job. The surveyed information itself shows that all the respondents belong to the age group of 40 and above.

Table No 2 Monthly Income classification

Income (in Rs.)	No. of farmers	Percentage (in%)
10000 – 20000	8	16
20000 -30000	18	36
30000 – 40000	15	30
40000 -50000	8	16
50000-60000	1	2
Total	50	100

Source: sample survey

Table 2 shows that 16 percent of the people have income in between10000 and 20000, 36 percent of the respondents have monthly income in between 20000 to 30000. 30 percent have monthly income in between 30000 to 40000, and 2 percent of them have monthly income between 50000 and 60000. Income earned not only from rubber cultivation is included here but from different other sources such as income earned from government jobs, business, income from animal husbandry etc.

Table No 3 Total Land possession

Land area (in acres)	No. of farmers	Percentage (in %)
1 – 2	9	18
2 – 4	18	36
4 – 6	16	32
6 -8	7	14
Total	50	100

Source: sample survey

The table 3shows that 18 percent of the farmers possess only 1 acre to 2 acres of the land area, 36 percent of the farmers possess agricultural land 2 to 4 acres, 32 percentage of the farmers possess agricultural land is 4acre to 6 acre, and 14 percentage of the farmers possess 6 acres to 8 acres.

Table No :4 Land Used for Rubber Cultivation

Land area (in acres)	No. of farmers	Percentage (in %)
1 – 2	20	40
2 – 4	12	24
4 – 6	13	26
6 – 8	5	10
Total	50	100

Source: sample survey

The table 4 shows that the area devoted for rubber cultivation. 40 percent of the cultivators are used 1 acre to 2 acres for rubber cultivation. 24 percent people are used 2 acres to 4 acres for rubber cultivation. 26 percentage people are used 4 acres to 6 acres for rubber cultivation, and the 10 percentage of people are used 6 acres to 8 acres for rubber cultivation.

Table No :5 Experience in rubber farming

Experience (in years)	No. of farmers	Percentage (in %)
5 – 10	14	28
10 – 20	25	50
20 -30	11	22
Total	50	100

Source: sample survey

The table 5 shows the personal experience of rubber cultivators in this field. 28 percent of the cultivators have got 5 to 10 years' experience in this field. 50 percent of the farmers have 10 to 20 years. And 22 percentage people have 20 years' experience. 80 percent of the farmers are continuing this work. They are not shifted to the cultivation of other crops. And 20 percent of the farmers are not continuing this work, due to the reduction in price of rubber. They stopped the rubber cultivation and shifted to more profitable crops cultivation. The farmers find it difficult to meet the production expenses due to reduction in the price.

Table No 6 Rubber tapping from own area / leased area

Rubber tapping	No. of farmers	Percentage (in%)
Own	38	76
Lease	12	24
Total	50	100

Source: sample survey

The Table 6 shows the farmers are tapping rubber either from their own land or they lease the rubber cultivated area for tapping. 76 percent of the farmers are tapping rubber from their own land and 24 percent of the farmers are tapping rubber from the leased land. Large scale farmers, who are possessing large land area, lease extra land for cultivation from their neighbours, from other large-scale farmers. During the lease period the owner of the land has no right upon his land.

Table No 7 Avail Loan for cultivation

Category	No. of farmers	Percentage (in%)
Availed	31	62
Not availed	18	36
Total	50	100

Source: sample survey

The table 7 shows that whether the farmers are availing loan for rubber cultivation. 62 percent of the cultivators are taking loan for cultivation and 36 percent of the cultivators are not taking loan for cultivation purpose. They are availing loan either from co-operative banks or from money lenders. Banks are charging low interest rate upon these loans. 80 percent of the cultivators are depending banks for meeting their loan requirements and 20 percent cultivators are availing loan from private money lenders.

Table 8 Purpose of loan

Purpose	No. of farmers	Percentage (in %)
Agriculture	25	50
Housing	8	16
Education	12	24
Other*	10	20

Source: primary survey *others includes business needs and for personal purpose

Table 8 shows the different purposes for taking the loan. 50 percent of the farmers are taking loan for agricultural purposes. 16 percent of the people are using the loan for housing. 24 percent of the people are taking the loan for educational purpose and 20 percent are taking loan for meeting other expenses such as meeting business needs and for personal purposes. In this way some of the farmers are misusing the loan which provided for agricultural purposes.

Table No 9 Amount of credit

Credit (Rs. In lakhs)	No.of farmers	Percentage (in%)
Less than 1	16	32
1 – 2	19	38
More than 2	15	30
Total	50	100

Source: sample survey

Table 9 shows the percentage of loan amount availed for cultivation. 32 percent of the farmers are taking less than 1 lakh, 3 percent of the people are taking loan in between 1 lakh to 2 lakh, and 45 percent of the farmers are availing 2 to 5 lakhs as loan.

Table No 9 Maintenance cost incurred for rubber plantation

Maintenance cost (per month)	No. of farmers	Percentage (in%)
5000 - 10000	15	30
10000 – 15000	22	44
15000 – 20000	7	14
20000 – 30000	6	12
Total	50	100

Source: sample survey

Table 9 shows the maintenance cost incurred for rubber plantation. 30 percentages of the farmers are incurring maintenance cost in between 5000 to 10000. 44 percent of farmers are incurring cost in between 10000 to 15000. 14 percent farmers are incurring cost in between 15000 to 20000. 12 percent of the farmers are incurring a maintenance cost for plantation in between 20000 to 30000. Maintenance cost is very high because it include wage rate for workers, cost of fertilizer etc.

Table No 10 Sources of maintenance cost

Sources	No. of farmers	percentage
Saving	12	24
Income from others	11	12

Borrowing	22	44
Daily Wage	5	10
Total	50	100

Sample survey Source:

Table 10 shows that 24 percent of the farmers meet their cost from past savings. 12 percent of the farmers are meeting their cost from the income of other members. 44 percent of the famers are meet cost by borrowing and 10 percent of the farmers are meet their cost through daily wage. 42 percent of the farmers are employing other workers for rubber tapping. 58 percent of the farmers are not employing outside workers for rubber tapping. Majority of the owners do not appoint workers for rubber tapping because it increases cost. Tapping workers are paid as Rs. 7 per tree. 52 percentage people have animal husbandry and 48 percentage people do not have animal husbandry. The farmers engaged in animal husbandry can collect adequate bio- fertilizers from their own sources and can reduce the use of chemical fertilizers.

Table 11 Category of animal husbandry

Category	No. of farmers	Percentage (in%)
Cattle	20	40
Goat	9	18
Poultry	15	30
Others*	6	10
Total	50	100

survey Source: sample *Rabbit growers, duck growers etc.

The table 11 shows the different types of animal husbandry which include cattle, goat, poultry, and others. 40 percent of the farmers are engaged in cattle growing, 18 percent are engaged in goat farming and 30 percent are poultry farmers and 10 percentages are other categories the people have animal husbandry. Government is giving subsidy for rubber cultivation. They are providing rubber plants at subsidized rate and fertilizers and pesticides are also provided at subsidized rate 50 percentage of the respondents replied that they are availing subsidy and others are not availing. Because subsidies are provided to those farmers who are the members of rubber board, and the BPL category get more subsidy compared to others.

Table No 12 Loss of rubber through natural calamities/Diseases

No. of rubber (no. of rubber trees/Year)	No. of farmers	Percentage (in%)
0 -5	18	36
5 – 10	11	22
10 – 15	7	14
15 - 20	14	28
Total	50	100

Source: sample survey

Table 12 shows the loss of rubber trees. 36 percent of the farmers had lost less than 5 rubber trees during a year. 5. 22 percent of people had lost rubber trees within the range of 5 to 10. 41 percent of people had lost their rubber for 10 to 15. And 28 percentages of people had lost rubber for 15 percentages a bow. The farmers use different types of fertilizers. 20 percent of the farmers are using chemical fertilizers. 50 percent of the farmers are using bio fertilizers. i.e., half proportion of the surveyed respondents is using bio fertilizers. 30 percent people are using both chemical and bio fertilizers. 66 percent of the farmers get assistance in the form of fertilizers at reduced rate and provide rubber plants at reduced rate at the initial stages of rubber cultivation from Krishi bhavan and 34 percent of the farmers do not get any assistance from Krishi bhavan.

Table No 13 Rubber tapping day - daily or once in two

Category	No. of farmers	Percentage (in%)
Daily	33	67
Alternate days	15	30
Total	48	100

Source: sample survey

About the table 13, 67 percent of the farmers are tapping rubber daily and 30 percent people are tapping alternate days. New plants are tapped daily and other plants are tapped alternate days because of less comparatively less availability of rubber milk. 54 percentage workers response that their works are seasonal which means that they are not doing the tapping work during rainy seasons and 46 responded that their works are not seasonal, because they are doing the tapping work for the entire period by taking adequate precautions during rainy periods. Tapping becomes more profitable during summer seasons. 24 percent of the farmers possess tapping machine and 76 percent have not own machine to make rubber sheet. They depend on other farmers who possess the machine. Because of the higher cost required for purchasing tapping machine. Farmers are expecting additional assistance from the government in the form of financial support for purchasing tapping machine, educational support for their children, pension for rubber farmers etc. 74 percent of the farmers are expecting assistance from the government and 26 percent of the farmers are not expecting any other assistance from the government.

Table No 14 Marketing of rubber

Category	No. of farmers	Percentage (in%)
Local	31	62
Whole sale	19	38
Total	50	100

Source: sample survey

The table 14 shows the marketing of the rubber. 62 percent of the farmers sale the rubber in their local market, because they are doing only small-scale cultivation and have less production. Therefore, they find it easier to prefer the local market. 38 percent of the farmers are marketing their rubber sheets in the wholesale market. They get comparatively higher price for their product than those farmers who are selling their products to the local sellers. The farmers procure rubber with the expectation of rise in price of rubber in future. 86 percent of the farmers are stock rubber with expectation of future rise in price. 14 percent of the farmers are not stock the rubber with the expectation of future rise in price. 76 percent of the farmers are registered in rubber board. Those who registered in the rubber board get adequate compensation from the government in case of rubber tree loss due to natural calamities. But 24 percent of the farmers are not registered in rubber board. Young farmers and small-scale farmers are not interested to take the membership.

Table No 15 No. of rubber sheet obtained

No. of rubber sheet (daily)	No. of farmers	Percentage (in%)
Less than 5	24	48
5 – 10	13	26
10 – 15	5	10
More than 15	8	16
Total	50	100

Source: sample survey

Table 15 shows that the number of sheets produced by the farmers per day. 48 percent of the farmers get less than 5 per day, 26 percent of the farmers get 5 to 10 sheets per day, 10 percentage of people get 10 to 15 sheets per day.16 percent of the farmers get above 15 rubber sheets got once.

Table No 16 Suggestions of Farmers to improve their condition

Suggestions	No. of farmers	Percentage (in%)
Need Govt. intervention	20	40
Assure distribution of amount	18	36
Decrease duration gap	12	24
Total	50	100

Source: primary data

40 percentage of the farmer responded that the Government intervention is necessary to solve their problems related to their welfare and 36 percent respond that Government should assure about the distribution of the allocated amount. And 24 percent response that rubber board should decrease the duration gap between the allotment of fund to the workers and reaching the fund at the hands of workers.

Table No.17 Health problems

Response	No. of farmers	Percentage (in%)
Back pain	20	40
Cold &Veasing	18	36
No. health problem	12	24
Total	50	100

Source: primary data

Out of 50 samples responded (Table 17) that they are suffering from different types of health problems. 40 percent of the respondents are suffering from back pain. Due to the work at early morning 36 percent of the respondents replied that they are suffering from wheezing and cold. 24 percent of the farmers are not much

problems. The study provides detailed information about rubber farmers in Chengalayi Panchayath. Surveyed information is analyzed and presented in a systematic manner in the previous chapter. The present chapter develops with the findings/observations derived from the study and the recommendations for improving the working conditions of rubber farmers and conclusion.

Findings of the Study

Rubber farmers belong to different age groups surveyed farmers belong to the age groups 40 to 80 and majority belongs to the age groups of 50 to 60 i.e., 42 percent. The farmers are doing cultivation dedicatedly (60%) but new commerce is also there in this field. Monthly income shows that the rubber farmers earn a lowest income of 10 percent and a maximum of 60000 per month based on the survey results. 30 percent farmers get a monthly income within the range of 20000 to 30000. results shows that total land area possesses by farmers are within the range of 1 acre to 8 acres. 36 percent of the farmers possesses 2 to 4 acre and 14 percent farmers possess 6 to 8 acres of land area. The farmers are doing not only rubber cultivation but also different other crops. 14 percent of the farmers are cultivating rubber in 1 to 2 acres of land. And 10 percent are doing cultivation in 6 to 8 acres of land. Rubber farmers have got 5 to 30 years' experience in this field. 50 percent of the farmers got 10 to 20 years' experience in this field. And 22 farmers got 22 to 30 years' experience. Due to non-profitability and price reduction in rubber cultivation 20 percent of the farmers are shifted to the cultivation of other crops. 76 percent of the farmers are doing rubber tapping from their own area and 24 percent are tapping rubber from the least land. Rubber farmers are achieving loans from co-operate banks and money lenders. Banks are charging low interest rates up on loans, the banks are providing loans for different purposes like agriculture, housing, education and also for meeting business needs etc. loans are provided with in the range of less than 1 lakh and more than 2 lakhs. Rubber farmers are employed in other jobs such as government jobs, coolie, doing business etc. 58 percent of the farmers take it as a part time job. Rubber farmers are increasing a maintained cost within the range of 5000 to 30000 per month. Normally the maintained cost includes cleaning surround area of rubber. Wages for tapping workers and cost of fertilizers. This cost is met through different sources such as past savings, income from other members, borrowing etc. 42 percent of the farmers appoint outside workers for doing tapping work. 52 percent of the farmers are doing animal husbandry along with rubber cultivation. Which helps them to reduce the use of chemical fertilizers? Half proportion of the rubber farmers use availing subsidy from government for purchasing fertilizers, pesticides etc. the conditions for getting subsidy include the farmers belongs to BPL categories and are the members of rubber board. Rubber growers lost rubber trees due to natural calamities or deceases. The surveyed information shows that the farmers lost 5 to 20 rubber trees per year.

Krishi bhavan is providing assistance to rubber farmers in the form of farmers at subsidy rate and new plans at reduce rate. 67 percent of the rubber farmers are tapping rubber daily and 30 percent are tapping alternative days. 54 percent of the farmers are tapping seasonally because they are not doing the work rainy season. Tapping become more profit from summer season. Purchase own tapping machine have very expensive there for only 24 percent of the respondent process tapping machine. 62 Percent of the farmers same their rubber sheet in the local market and they get comparatively lower price than others who are preferring wholesale market. 86 percent of the rubber farmers procure rubber with the expectation of future price raise. Based on the survey information the rubber farmers get 5 to 15 rubber sheets daily. 48 percent of farmers get less than 5 sheets. Rubber farmers are suffering from different health problems. Such as back pain, cold etc.

LIMITATIONS

- 1) Due to the deficiency of farmers growing only rubber the sample size has to be reduced to fifty.
- 2) Non availability of accurate and reliable data about production and productivity from the sample area through primary source.
- 3) Limitation of the time also affected the study.

SUGGESTIONS

Government interventions. Provide financial support to purchase tapping machine or rent the tapping machine through Krishi bhavan. Proper storage facilities are to be developed by the government to support the rubber farmers in order to procure their rubber sheets. Proper advice and awareness should be provided to reduce of

rubber milk during rubber tapping. Fix the wage rate of rubber farmers. Make available better price for their products even in the local market. Pension schemes are to be introduced to rubber farmers. Adequate measures are to be adopted to attract young generation in this field. Provide educational support to the children of rubber farmers. Proper government intervention in this field is required to reduce the price fluctuations in this field and future by protect the farmers.

CONCLUSION

The conclusion of the project says that the rubber farmers are facing many problems. Now the price of rubber is decreasing, because the importing of rubber is increase. Then rubber farmers are employed in other jobs such as in government jobs, coolie, business etc. 58 percent of farmers takes it as a part time job. Due to non-profitability and price reduction in rubber cultivation 20 percent of the farmers are shifted to the cultivation of other crops. They are also suffering from different health problems, such as back pain, cold and wheezing etc. With the ever-increasing demand for natural rubber in the Indian Context, rubber has immense potential for growth in and out of the Country. Kerala accounts for 90.8 percent of total area under rubber in India and nearly 91 percent of the total production of natural rubber is in Kerala. During the last few decades rubber has emerged as the most profitable crop and the second largest in terms of the Cropped area. Rubber is the only Crop in the state which has recorded steady increase in acreage, production and productivity, whereas the rest of the agricultural economy of Kerala has been languishing. The major reasons for the unprecedented expansion of rubber are the following. Price of rubber remained attractive. The income from rubber is evenly spread over the year. Rubber Board, which has one of the best extension management systems all over India, has helped in spreading the rubber cultivation. Rubber cultivation is exempted from the ceiling limits prescribed by the Agrarian Relation Act. Subsidy for new plantations was introduced in 1979.

REFERENCES

1. D. Narian. (1965). Impact of price movements on areas under selected crops in India (1930-1939). Cambridge University Press.
2. Devi, U. (1984). The impact of plantations on Kerala economy with special reference to rubber: Some historical and quantitative aspects (Unpublished M.Phil thesis). University of Kerala, Trivandrum.
3. Dhindsa, K. S., & Sharma, A. (n.d.). Analysis of cropping pattern in Punjab during 1965-66 to 1990-91.
4. George, K. T., & Sethuraj, M. (1996). Dynamics of world natural rubber economy: Its relevance to India. *Economic and Political Weekly*, June 1996.
5. George, K. T., Joseph, T., & Joseph, J. (2002). Natural rubber in post-quantitative restrictions regime. *Economic and Political Weekly*, August 10, 2002.
6. George, K., & Joseph. (1973). Natural rubber economy: Its relevance to India. *Indian Journal of Agricultural Economics*, October-December 1973.
7. George, R. (1996). The consumption, saving and investment pattern in the rubber plantation sector of Kerala economy (Unpublished M.Phil thesis). Department of Economics, University of Kerala, Trivandrum.
8. Government of India. (1992). Report of Tariff Commission on the revision of raw rubber prices. Bombay.
9. Job, E., & Mukundan, K. (1984). Economics of rubber cultivation by small holders in Kottayam District. *Indian Journal of Agricultural Economics*, XXXI (1).
10. Jorge, T., Haridasan & Sreekumar. (1988). Role of government and structural changes in rubber plantation. *Industry Economic and Political Weekly*, XXIV, 48, November 26.
11. Jose, R. V. (1978). Economics of rubber cultivation in Kerala (Unpublished Ph.D. thesis). University of Cochin.
12. Joseph, T., & George, K. (1996). Primary processing of rubber wood in Kerala: Report of a sample survey. *Wood News*, January-March, 39-43.
13. Krishnakumar, R. (2001, January 20–February 2). Kerala. *Frontline*, 18, 4.
14. Kurian. (1982). Agricultural changes: A comparison of Tamil Nadu and Kerala. In P. P. Pillai (Ed.), *Agricultural development in Kerala* (pp. 6–17).
15. Lakshmi, S., & George, K. T. (2003). Expansion of natural rubber cultivation in Kerala: An exploratory analysis. *Indian Journal of Agricultural Economics*, 58(2).

16. Mani, S. (1982). An analysis of Indian natural rubber market (Unpublished M.Phil dissertation). Jawaharlal Nehru University, New Delhi.
17. Narayana, D. N. (1990). Agriculture economy of Kerala in the post seventies: Stagnation or cycles? C.V.S Working Paper No. 235, pp. 12, 30.
18. Pillai, P. P. (1982). Growth of agricultural output in Kerala during 1952-53 to 1978-79. In P. P. Pillai (Ed.), *Agricultural development in Kerala*. Agriculture Publishing Company, New Delhi.
19. Prabhakar, & Bhattacharya, P. (2025). Land ownership and socio-economic dependence on rubber plantations: Insights from smallholder farmers in Tripura, India. *Journal of Land and Rural Studies*, 13(2), 181–196. <https://doi.org/10.1177/23210249251328798>
20. Pradeep, B., & Jacob, J. (2021) Kerala growers and their interest in rubber cultivation. *Economic & Political Weekly*, 56(34). [EPW Engage](#)
21. Prakash, B. A. (n.d.). Growth and survival. In *The Kerala economy*. Sage Publications, New Delhi, p. 22.
22. Rejimol, M., & Jagathish, M. (2022) A study on the problems faced by the rubber farmers of Kerala. *International Journal of Food and Nutritional Sciences*, 11(10). <https://www.ijfans.org/issue-content/a-study-on-the-problems-faced-by-the-rubber-farmers-of-kerala>
23. Shruthi (2023) A study on socio-economic status and the problems of rubber planters with special reference to Kadaba Taluk of Dakshina Kannada District, Karnataka. *PARIPEX - Indian Journal of Research*.
24. Sudhardi, A. (1975). Tapping specialization in menara Pkebanam. Rubber Research Center, Gatus Stratiga, Indonesia (p. 401).
25. Thomas, C. (1984). An economic analysis of rubber cultivation in Kerala (Unpublished M.Phil dissertation). University of Kerala.
26. Unni, J. (1983). Change in the cropping pattern of Kerala. *Economic and Political Weekly*, XIII (39).
27. Unni, J., & George. (1969-1970). Rubber small holdings in India: Report of sample survey 1969-70. Rubber Board, Kottayam.
28. Vimala Ratne, S. D. (1973). Economic evaluation of tapping systems (p. 401).
29. Vyas, N. (1995). India's marketing game plan for the 1990's. *Indian Journal of Marketing*, XXIV (1), 10-12.