CHAPTER – VI

SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

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Indian Natural Rubber finds a ready market internationally for its characteristic tyres, tubes, flaps, hygienic and pharmaceuticals and Belting. Interestingly India is not only the largest producer of Natural Rubber but also the largest consumer. In spite of high domestic demand, India has been able to export great qualities of Natural Rubber to other countries. It is one of the important foreign exchange earners for India.

Though Natural Rubber cultivation occupies a significant position, it encounters many problems inherent in the field of production and marketing. Wide fluctuations in price structure due to international demand and supply position and the absence of a well-organised trade network. These aspects called for an in-depth study of
factors which contribute to such and allied problems in the production and trading of Natural Rubber.

The researcher has undertaken the present study with the specific objectives of analysing the cost and returns of natural rubber production. The resource use efficiency and returns to scale and evaluating marketing cost, marketing margin, price spread and marketing efficiency of different channels are analysed. On the basis of analysis the following findings are drawn:

**Findings**

The area under cultivation of natural rubber by sample growers reveals that out of 1000 sample growers, more than 10 percent of the sample respondents belong to Kulasekaram, Kaliyakkavilai and Cherupalur, in which Kaliyakkavilai plays dominant role and thereby more than 11.8 percent of total area under cultivation of rubber is undertaking extensively. On the other hand, there is only 3.4 percent of the total sample growers were selected from Muzhumoodu in which there is only 3.4 percent of the total area under rubber cultivation practised. This study covers the total area under rubber cultivation is 18710 hectares in the study area. The study regarding size of land holding under natural rubber and number and number of sample
growers portrays nearly 50 percent of the total sample growers were categorised by small holders which implies in the study area most of the rubber growers are small holders. Rather than more than 11.4 percent of the sample growers are cultivate rubber above 21 hectares as their size of land holding. Only 38.9 percent of the sample growers were categorized by the ‘holdings’ since they cultivate rubber in the area of 2.01 hectares to 20 hectares in the study area. It inferred that the study covers sufficient number of rubber growers in all categories which helps to explore their problems confronted with marketing of rubber in the study area.

The analysis regarding the nature of ownership of land of rubber growers out of 1000 sample respondents 72 percent of them cultivate in their own land, 18 percent of them are cultivate in their rented land and 10 percent cultivate on leased land.

The study regarding age of rubber plant and area-wise classification of natural rubber reveals that 310 of the respondents have 5-10 years old rubber plantation with a total of 1050 hectares, which accounts for 35.96 percent of the total area cultivate. Rubber plantations aged above 20 years forms the least share where only 40
respondents have this category of rubber plantations which accounts for only 4.11 percent of the total area.

The analysis of age-wise income from rubber plantations shows that out of the 1000 respondents, 310 respondents have rubber plantations aged 5 to 10 years, with the total area of 1050. The yield was the highest during this period which is 1880.96 thousand kgs and the income obtained in selling the rubber is Rs. 940.48 lakhs. The yield was the lowest from the rubber plant at the age of below 5 years which is only 2.54 kgs and the income obtained is Rs.1.27 lakhs.

The variable cost incurred in the production of natural rubber reveals that the variable cost of producing rubber per hectare in the study area. Cost of wage to casual workers is the highest with Rs.18,000 per hectare and it accounts for 51.87 percent of the total variable cost. Buying raw material costs Rs.10652 per hectare and it accounts for 30.69 percent of the total variable cost. Transport costs is lowest with Rs.98 per hectare which accounts for 0.28 percent of the total variable cost. The total variable cost of Natural Rubber amounted to Rs. 34700 per hectare.

Fixed cost incurred in the production of natural rubber reveals that the total fixed cost incurred by the rubber growers in the
study area. The major items of the fixed cost are rented or leased land, interest on long term loans, salary to the permanent workers, depreciation and property tax etc. All these variables are considered this study for cost of cultivation of rubber in the study area. More than 60 percent of the total fixed cost spent for paying rent or lease to the land. Besides, more than 12 percent of the total fixed cost incurred by the growers towards paid to the interest to the long-term loans which mainly used for purchasing of land, machineries, etc. Property tax and depreciation also availed 1.51 percent of the total variable cost incurred by the growers in the study area.

Total cost of production of natural rubber reveals that the variable cost incurred in producing rubber per hectare of land is Rs.34,700 which accounts for 91.32 percent of the total production cost. The fixed cost incurred is Rs.3300 per hectare and it accounts for only 8.68 percent of the total production cost. It inferred that the total variable cost played dominant role, which often changes on the basis of market movements.

Net profit earned by natural rubber growers shows that the Gross returns per hectare are Rs. 63,500 and the cost of production was Rs 38,000 and net profit obtained is Rs. 25,500.
The production and price of RSS1 grade rubber from April 2003 to March 2004 shows that the price of RSS1 grade rubber from April 2003 to March 2004 the price per Kg of RSS1 grade Rubber was the highest during the month of December 2003 and February 2004 and it was Rs 57.5 Per Kilogram and it was the lowest during the month of April 2003 and September 2003, it was only Rs.54.5/Kg.

Rubber production is seasonal in nature. It is influenced by the climate conditions the study area, production is peak during the months of December and February at about 76.01 thousand kgs and the lowest in the month of April an account of 54.89 thousand kgs. It also estimated that the average price for the rubber variety RSS 1 was Rs.56 per kg during the period April 2003 to March 2004.

The production and price of RSS2 grade rubber from April 2003 to March 2004 shows that the price of RSS2 grade rubber from April 2003 to March 2004 the price per Kg of RSS2 grade rubber was the highest during the month of July 2003 and it was Rs 56.75 Per Kg and it was the lowest during the month of August 2003 and it was only Rs 53.24 per Kilogram.
Regarding the production it is the highest in the month of December 2003 with 75.82 thousand Kgs and the lowest in the month of April 2003 accounts for 5186 thousands Kgs.

From the study it can inferred that the average price of RSS$_2$ during the period was estimated Rs.55.00 per kg.

The yield and price of RSS3 grade rubber from April 2003 to March 2004 shows that price of RSS3 grade rubber from April 2003 to March 2004. The price per Kg of RSS3 grade rubber was the highest during the month of February 2004 and it was Rs 54.63 Per Kilogram and it was the lowest during the month October 2003 and it was Rs 49.37 per Kilogram.

Regarding the production it is the highest in the month of December 2003 with 78.77 thousand kgs and the lowest in the month of April 2003 and the production is 39.87 thousand kgs. It also calculated that the average price for the rubber variety RSS3 was Rs.52 during the period April 2003 to March 2004 in the study area.

The production and price of RSS4 grade rubber from April 2003 to March 2004 shows that price of RSS4 grade rubber from April 2003 to March 2004, the price per Kg of RSS4 grade rubber was the highest during the month of October 2003 and it was Rs 51.67 Per
Kilogram and it was the lowest during the month February 2004 and it was Rs 47.67 per Kilogram.

Regarding the production it is the highest in the month of December 2003 with 65.477 Kilogram and the lowest in the month of April and the production is 39.92 Kilogram. The average price for the RSS4 was estimated Rs.51.17 during the same period.

The production and price of RSS5 grade rubber from April 2003 to March 2004 shows that price of RSS5 grade rubber from April 2003 to March 2004 the price per Kg of RSS5 grade rubber was the highest during the month of July 2003 and it was Rs 50.29 Per Kilogram and it was the lowest during the month August 2003 and it was Rs 45.71 per Kilogram.

Regarding the production it is the highest in the month of December 2003 with 64.15 Kilogram and the lowest in the month of April 2003 and the production is 30.46 thousand kgs. The average price for rubber variety was estimated during same period at Rs.48.68 per kg in the study area.

The production and price of latex grade rubber from April 2003 to 2004 shows that price of Latex grade rubber from April 2003 to March 2004 the price per Kg of Latex grade rubber was the highest
during the month of February and March 2004 was Rs 16.32 Per Kilogram and it was the lowest during the month of September and it was Rs 12.76 per Kilogram.

Regarding the production it is the highest in the month of September 2003 with 23.63 thousand kgs and the lowest in the month of October 2003 and the production is 17.00 Kilogram. The average price for the rubber variety was estimated during same period at Rs.14.64 per kg in the study area.

The study regarding the total annual production and total annual income from different grades reveals that the natural rubber Grade RSS1 shows the dominant variety producing total annual production of 786.40 thousand kgs leads to Rs.440.65 lakhs generating in the study area which followed by the natural rubber variety RSS2 the total annual production was 766.10 thousand kgs and generating the total annual income of Rs.421.56 lakhs in the study area.

The latex one of the variety of natural rubber fetching lowest price of Rs.14.64 per kg and the total annual production of 243.77 thousand kgs and earning Rs.35.50 lakhs.
It also inferred that during the study period, the varieties RSS1, RSS2 and RSS3 were high price and producing more in the study area than the other varieties of natural rubber in the study area.

The analysis regarding the method of storing rubber sheets shows that 43.7 per cent of the respondents were having own storage facility. More than 33 percent of the respondents store in smoke house. Around 17.0 per cent in commission shop and 6.2 per cent of the respondents store their rubber sheets in Rubber Co operative Marketing Society located in the study area.

The analysis regarding cost of fertilizer for rubber cultivation incurred per hectare reveals that total amount of rupees spent on fertilizers is Rs.3700. Out of this, Rs. 1750 (47.30 percent) is spent on buying single super phosphate, Rs. 945 (25.54 percent) is spent on rock phosphate, Rs. 520 (14.10 percent) is spent on applying urea, Rs. 300 (8.11 percent) is spent on other fertilizers and Rs. 185 (5.00 percent) is spent on applying other fertilizers.

The sources of borrowing by the rubber growers reveal that more than 61 percent of the rubber growers directly depend on commercial banks to avail various kinds of loans in the study area. Moreover, in the study area, more than 33 percent of the rubber
growers relied on the non-institutional finance such as friends, relatives and moneylenders. It is to be noted here that the Rubber Cooperative Societies role is very less accounts for only 3 percent of rubber growers borrowed finance.

The distribution showing production constraints faced by the rubber growers shows that out of 1000 sample rubber growers 753 of them are facing the constrains of high cost of labour, 720 of them face the problem of inadequate credit, 678 of them face the problem of untimely availability of credit and 250 growers reported the problem of costliness of seeds.

The study regarding the labour charges incurred by the rubber growers shows that labour charge for undertaking tapping constitute the major share of 76.83 percent of the total labour cost, payment to watchman constitute 3.73 percent processing of latex constitute, 11.11 percent labour charge for applying fertilizer, 2.78 percent and 1.89 percent to taking pits for planting rubber plants.

The study regarding rubber cultivators on the basis of their primary occupation shows that around 23 percent of the sample respondents are self employed more than 31 percent of them look after their field or farm since they directly depend on Agriculture.
percent are in government service, 15.10 percent are involved in rearing cattle and 13.50 percent of the sample respondents have no occupation.

The reason for choosing a particular variety of rubber by the sample growers reveals that more than 93 percent of the growers have chosen particular variety of rubber because of high, and consistent yield. Around 81 percent have selected a particular variety because of the availability of higher quality of rubber seedlings, 75.6 percent have selected because of the suitability of conducive climatic conditions and 62.5 percent have chosen a particular variety because of resistant to pest and disease.

The analysis regarding price trend of natural rubber shows that the prices despite fluctuations have a positively increasing trend. This is further underlined by the fact that the trend value obtained by the moving mean order method, is at 0.245528. This shows that there is general trend of increase in price by 24 percent over the previous a price despite wide fluctuations. By the study of various parameters of the market channels and their correlation strengths the various independent variables whose composite the x is, can be identified.
Hypotheses are formed to obtain an idea regarding the kind of factors that can influence the net profit obtained by rubber growers.

The study regarding storage of natural rubber by the sample growers shows that 40 percent of them stored their rubber sheets maximum of 30 days from the date of getting ready of rubber sheets, followed by more than 27 percent of the respondents who stored their rubber sheets from 31 to 60 days. More than 11 percent of the rubber growers could store the rubber sheets more than 90 days in order to get reasonable and rightful price.

The analysis regarding channels of distribution local marketing shows natural rubber passes through one or two hands to reach the final consumer manufacturer. There may be many gaps between the Growers and Manufacturers. The grower doesn’t know what kind of product and manufactures requires and in what quantities. In channel I there is direct contact between the grower and manufacturers. But in the study area the direct sale to the manufacturer is not so prominent.

In channel II the natural rubber product passes through two or three hands (stage) to reach the consumer. In this type channel the local merchant is playing an important role. The local merchant is
acting as the intermediary between grower and the manufacturer. Majority of the growers sold the rubber to the local merchants. The preference for the local merchant is due to immediate payment. The local merchant disposes them directly to the manufacturer.

In channel III the products passes through three or four hands (stage) to reach the manufacturer. The grower disposes them to the local merchant from whom to the wholesaler and it is the wholesaler who sells them to the manufacturer.

In channel IV the product passes through one or two hands (stage) to reach the consumer. The products are sold to the wholesaler directly from whom the manufacturer procures them.

In channel V the product passes through one or two hands to reach the consumer. The growers sell the products to the co-operative marketing societies and they sold to the manufacturer.

The study regarding disposal of natural rubber shows that the disposable of natural rubber sheet by the rubber growers through various sources in the rubber market. More than 78 percent of the rubber growers, they sold their produce nearly 29.08 lakh of tonnes of rubber sheets through local merchants. This is the prime source intake maximum produce in the study area, which followed by the another
source namely wholesaler. Around 18 percent of the rubber growers relied on wholesaler to sell their rubber sheets. Moreover the rubber cooperative society also playing vital role to buy the rubber sheets from the growers, accounts for more than 2 percent in the study area. Nearly 1.5 percent of the rubber grower depend on manufacturers directly to sell their rubber sheets in the study area.

The study regarding disposal of natural rubber in latex form shows that out of the 1000 sample growers, 63.80 percent sell through local merchant and a meagre proportion of 1.2 percent sells to manufacturer. Of the total quantity of rubber sold, 63.80 percent is sold to local merchants and only 1.2 percent is sold to manufacturer.

The study regarding preference of sample growers in selling their rubber sheet through various channels. Of the total 1000 sample growers 65.8 percent sell because they offer the growers a fair price, 23.1 per cent received advance and therefore they sell it to them and 11.1 percent sell the yield to the respective middlemen since they provide storage facilities.

The analysis regarding source of price information in the study area shows that 47.6 percent of them are getting the price information through the newspaper, 18.6 percent through radio, 14.5
percent through the market committee and 19.3 percent of the growers receive the information about the price from the televisions. Newspapers and Radio are the prime sources to supply market information about rubber in the study area.

In the study regarding opinion on rating of price by sample growers in the study area shows that 49.6 percent of the growers are of the opinion that they are getting good prices for their products, 22.0 percent agree that they got very good price, 20.9 percent opined that they get fair price for their yield and 7.5 percent opinion reveals that they do not get sufficient price for their rubber sheets.

The study regarding mode of transport used by sample growers shows that 53.3 percent bring their rubber produce by tractors and 15.1 percent of the growers bring their yield to the market through Lorry.

The analysis regarding number of sample growers receiving advances from middlemen reveals that 74.8 percent of them receive advances from the middlemen and 25.2 percent of the respondents have not received advances.
The study regarding availability of godown facility in the study area 89.3 percent have godown facility and 10.7 percent do not have godown facility.

The analysis regarding marketing cost incurred rubber growers. Harvesting cost constitute the major share of 40.48 percent of the total marketing cost. Transportation charges constitute 11.91 percent, cost an packing of on smoking of rubber constitute 7.93 percent of the total marketing cost.

The analysis of Price spread in Channel – I shows that for RSS 1 grade rubber the difference between the manufacturers price was Rs.0.128 which is Rs.0.13 for RSS 2, Rs.0.13 for RSS 3, Rs.0.131 for RSS 4, 0.132 for RSS 5, and 0.09 for Latex. The difference between the manufacturers price and the grower’s earnings was the highest in the sales of RSS 5 grade rubber.

The analysis of Price spread in Channel – II the difference between the manufacturers price and the growers earnings per kilogram of natural rubber was Rs.926 which is Rs.0.927, Rs.0.928, Rs.0.929, Rs.0.93, Rs.0.59, for RSS 2, RSS 3, RSS 4, RSS 5 and Latex respectively. The difference was the highest in selling RSS 4 Grade rubber.
The analysis of Price spread in Channel – III the difference between manufacturers price and grower’s earnings in the sale of RSS 1, RSS 2, RSS 3, RSS 4, RSS 5 are Rs.2.029, Rs.2.03, Rs.0.031, Rs.2.08, Rs.2.03 and Rs.1.4 respectively. The difference is the highest in the sales of RSS 3 grade rubber.

The analysis of Price spread in Channel – IV the difference between manufacturers price and grower’s earnings in the sale of RSS 1, RSS 2, RSS 3, RSS 4, RSS 5 are Rs.1.234, Rs.1.235, Rs.1.236, Rs.1.237, Rs.1.238 and 0.9 respectively. The difference was the highest in the sale of RSS 5 grade rubber.

The analysis of Price spread in Channel – V the difference between the manufactures price and the grower’s earnings in selling RSS 1, RSS 2, RSS 3, RSS 4, RSS 5 grade rubber are Rs.0.853, Rs.0.853, Rs.0.853, Rs.0.853 and Rs.1.58 respectively. The difference was the same in the sale of all the grades of rubber.

The study regarding problems faced by the rubber growers in marketing shows that 800 respondents faced the problem of price fluctuation, 650 respondents reported low price, 500 respondents felt poor marketing information. The analysis shows that majority of
rubber growers are facing problem of price fluctuation and transport. Apart from that the study reveals that the low price and multiplicity of market charges are the problems faced by the rubber growers in the study area.

The ANOVA analysis of Grower Earning shows that the channels play a statistically significant role in determining the Grower’s earning. Within a chosen channel for a particular grower the kind of rubber (RSS1, RSS2, RSS3, RSS4, RSS5 and Latex) in itself is not statistically as important as the choice of channel in influencing the grower’s earning. The variance is high among the channels than between the grades of rubber in a particular channel. The tabled F value is also significantly less than the F value of the ANOVA analysis. This shows that the channels differ significantly among themselves for the parameter of Grower’s earning.

So the hypothesis is that the channels are not significant is falsified for the parameter of Grower’s Earning. Rubber Grower’s earning is significantly associated with the choice of the channel. As Grower’s earning is essential in determining the profit the hypothesis is falsified with respect to this parameter.
The ANOVA analysis of Marketing Cost shows that the Tabled F value is greater than the F value and that the strength of the variation between the groups is less than the strength of the variations between the marketing cost obtained between marketing the various grades of rubber through a particular channel. So the marketing costs of various grades of rubber differ in a statistically significant manner. Thus it can be seen through ANOVA analysis that the marketing cost does not differ significantly by the channels.

The ANOVA analysis of the different sources of information reveals that the tabled F value is less than estimated value of the F. This shows that the distribution of the choice of sources of information of rubber price is statistically significant. This is indicated by the higher value for the strength of variations between the groups than within the groups.

A study of the correlation coefficients between market-wise spread of different sources of information on price and actual level of price obtained by the growers. The price categories are ‘Very Good’, ‘Good’, ‘Fair’ and ‘Not sufficient’. It is found that the ‘Very good’ category has no statistically significant relation with market-wise distribution of any of the sources of price information. But ‘Good
category' has statistically significant correlation coefficient of 0.67. With ‘Good category’ it was found that the source of price information television has a statistically significant negative correlation of –0.59. Television also has a strong correlation coefficient of 0.66 with ‘not sufficient’ category.

Hence it was found that when television as a source of information has a less important role to play and is not trustworthy as compared to newspapers. This may be because the rubber price fluctuations are given more importance by local media than a centralized media like Television. The above analysis shows the hypothesis that the source of price information is not random and hence there will be statistically significant variation between the kind of sources of information preferred by the growers in the market-wise distribution is validated.

The ANOVA analysis for distribution of different modes of transport reveals that the tabled value of F is significantly less than estimated value of F. The variance between the groups is much higher (11794.34) than the variance within groups (5320.35). This shows that the grouping between particular modes of transport is higher and statistically significant. Of the different modes of transport the tempo
has the highest proportion at 55.3 percent, followed by tractor (29.6 percent) and lorry (15.1 percent).

From the above analysis it has been found that hypothesis, 'the kind of transport selected by the rubber growers has a significant and strong relation to the kind of price obtained by the rubber growers' is valid and held true.

Suggestions

Rubber cuttings of proven and improved hybrid varieties must be made easily available to the rubber growers through recognised nurseries, at subsidised rates.

The improved and hybrid varieties must be pest resistant and drought-tolerant. They must be suitable for cultivation in high altitudes and adoptable to different agro climatic conditions.

The latest bio-technologies like Genetic engineering and Tissue culture may be followed to develop drought and pest resistant rubber varieties to achieve the maximum level of productivity.

The growers must be educated on the scientific methods of intensive cultivation to increase productivity by periodical "Growers Meet" organised by government organisations and extension agencies, using all the popular media of communication.
Co-operative farming may be taken up by enclosing large areas for rubber cultivation. In such a case, integrated pest management, effective labour management and co-ordinated functioning in all aspects of rubber cultivation are possible.

Liberal financial assistance made be available to the growers as crop loans and development loans through commercial banks and co-operative societies during their needy time.

Assured floor price to rubber will encourage the prospective growers to continue rubber cultivation and undertake the same on a large scale.

Information on marketing should be passed on to growers and traders through the mass media and other means of communication.

Warehouses must be established in the production centres so that the growers can stock their produce to sell it at attractive price at the appropriate time.

More number of co-operative societies may be organised so that the growers can market their produce through these societies and realise reasonable returns.
Grading and processing facilities may be provided at the production centres so that the rubber growers would get right price for their produce.

Growers must be educated about quality control from the field level onwards. Quality will command good demand in the international market and fetch attractive prices.

New industries may be started as joint ventures in collaboration with NRIs and other foreign investors to manufacture value-added rubber products which would facilitate easy marketing in foreign countries too.

Indian rubber may be made attractive among foreign consumers by personal selling and also by arranging stalls in international trade fairs.

Conclusion

Natural rubber being a significant product to earn foreign exchange. For those who were involved in production of latex to generate significant level of income and generate employment to landless labourers in and around the study area of the district. The production of latex is influenced by various factors such as climate, age of tree, quality of plants and landscape etc. The study area is more
suitable for the cultivation of rubber and as a result they produce better quality of latex. In natural rubber market, middlemen were influenced more but most of the growers opines that they got fair price through this middlemen. Price spread is not a significant level in the study area.