

IMPACT OF RUBBER PLANTATION DEVELOPMENT SCHEMES AMONG SMALL HOLDERS OF RUBBER IN MALAPPURAM DISTRICT

By

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DISSERTATION

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Faculty of Agriculture

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**Department of Plantation Crops & Spices
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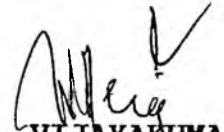
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DECLARATION

I hereby declare that this dissertation entitled "Impact of Rubber Plantation Development Schemes among small holders of rubber in Malappuram District" is a bona-fide record of research work done by me during the course of placement/training and that the dissertation have not previously formed the basis for the award to me on any degree, diploma, associateship or other similar title of any other University or Society.

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CERTIFICATE

Certified that the dissertation entitled "Impact of Rubber Plantation Development Schemes among small holders of rubber in Malappuram District" is a record of research work done independently by Sri.V.R.Vijayakumar under our guidance and supervision and that it has not previously formed the basis for the award of any degree or diploma to him.


We the undersigned members of the Advisory Committee of Sri.V.R.Vijayakumar, a candidate for the Post-Graduate Diploma in Natural Rubber Production agree that the dissertation entitled "Impact of Rubber Plantation Development Schemes among small holders of rubber in Malappuram District" may be submitted by Sri.V.R.Vijayakumar in partial fulfilment of the requirement for the Diploma.



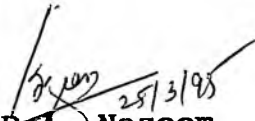
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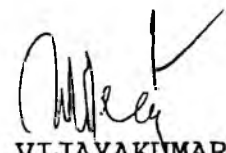
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CONTENTS

	Page No.
INTRODUCTION	1
REVIEW OF LITERATURE	6
MATERIALS AND METHODS	8
RESULTS AND DISCUSSION	10
SUMMARY AND CONCLUSION	47
REFERENCES	1 - 111
APPENDICES	

LIST OF TABLES

Table No.	Title	Page No.
1	Extent of small holdings and large estates in Malappuram district in comparison with that in Kerala State	11
2	Area-wise distribution of holdings under the RPDS and their shares from 1980 to 1988	13
3	Rate of growth of small rubber holdings in Malappuram district during the period 1980 to 1988	14
4	Distribution of the rubber growers according to caste and educational qualification	16
5	Distribution of the rubber growers according to the landed property owned	17
6	Classification of the rubber growers according to the area under rubber and its percentage to the landed property owned	19
7	Classification of the holdings according to the previous cultivation and the reason for rubber newplanting and replanting	21
8	Classification of the rubber growers and the level of the facilities availed under the RPDS	23
9	Distribution of the growers not under the RPDS and the reasons for non-participation	25
10	Classification of the growers according to the use of planting materials	27

29	11	Classification of the surveyed units according to planting distance, lining and planting density	29
30	12	Status of soil conservation works done and the establishment of cover crop	30
32	13	Pattern of intercropping in the surveyed units	32
34	14	Fertilizer application in the surveyed units during 1993	34
36	15	Shading, mulching, irrigation and spraying operations adopted	36
37	16	Year of planting, age and girth of RRII 105	37
39	17	Details of tapping followed in the surveyed units	39
41	18a	Production and productivity in the units under the RPDS	41
42	18b	Production and productivity in the units not under the RPDS	42
44	19	Details of processing, possession of rubber sheeting rollers and smoke houses, insurance coverage, Rubber Producers' Society and Co-operative Society membership	44
46	20	Constraints faced by the rubber growers under RPDS	46

LIST OF FIGURES

Fig.No.	Title
1	Area-wise distribution of holdings under the RPDS and their shares from 1980 to 1988
2	Rate of growth of small rubber holdings in Malappuram district during the period 1980 to 1988
3	Classification of the holdings according to the previous cultivation (per cent)
4	Growth of area (ha) in small holdings in Malappuram and Kozhikode districts

Introduction

INTRODUCTION

Natural rubber is obtained from the latex exudates of various plant species. Among these, the Para rubber, *Hevea brasiliensis*, belonging to the family Euphorbiaceae is the most important species which supplies more than 90 per cent of the natural rubber (Rubber Board, 1980a).

Rubber planting material was brought to India from Sri Lanka during 1878 and the first attempt to plant rubber was made in the teak plantation of Nilambur valley, now in Malappuram district of Kerala State. Commercial rubber plantations were started by European planters from 1902 onwards in the state followed by local planters. This aroused public interest and by 1910, small and marginal farmers also came to the field of rubber cultivation (Rubber Board, 1980b). According to the Rubber (Production and Marketing) Act, 1947, rubber plantations having 20.23 ha and above are classified as large estates and those below 20.23 ha as small holdings (Rubber Board, 1963). By 1955-56, the extent under rubber cultivation in Kerala was 86067 ha spread in 446 large estates having 47579 ha (52.28%) and 29587 small holdings having 38488 ha (47.72%) (Rubber Board, 1993a).

The Rubber Board, an autonomous body, was constituted under the Rubber Act, 1947 to look-after the interest of the rubber industry in India (Rubber Board, 1994a). The Board has been implementing development schemes from 1957 onwards to modernise the existing rubber plantations and to assist extensive cultivation with a view to increase production and to improve productivity. The following schemes were implemented/being implemented (Chithrangadan, 1985 and Rubber Board, 1994b).

- a) Replanting Subsidy Scheme (1957 to 1979)
- b) Newplanting Loan Scheme (1962)
- c) Up-keep Loan Scheme (1963)
- d) Revised Loan Scheme (1966)
- e) Newplanting Subsidy Scheme (1979)
- f) Rubber Plantation Development Scheme, Phase-I (1980 to 1984)
- g) Rubber Plantation Development Scheme, Phase-II (1985 to 1989)
- h) Rubber Plantation Development Scheme, Phase-III A (1990 to 1991)
- i) Rubber Plantation Development Scheme, Phase-III B (1992)
- j) World Bank Assisted Rubber Project (1993 onwards)

The Rubber Plantation Development Scheme (RPDS) was chalked out in 1980 amalgamating all the programmes

then existed giving equal importance for promoting new-planting (NP) and replanting (RP) to increase production of natural rubber by accelerating the pace of NP and RP on modern scientific lines. The RPDS was implemented in three phases from 1980-81 onwards. Under the Phase-I of the RPDS, the minimum eligible area was fixed as 0.20 ha for NP or 0.10 ha for RP. The cash subsidies @ Rs.3000.00 per ha for estates having rubber area exceeding 20.00 ha including NP and @ Rs.5000.00 per ha for small growers having area upto 20.00 ha including NP were paid in seven instalments after the completion of stipulated items of work every year. The small growers were also assisted by giving 3 per cent interest subsidy on the long term credit facility availed from Banks upto the close of the tenth year. The marginal small growers having rubber area not exceeding 6.00 ha were eligible for the following additional assistances (Rubber Board, 1980c).

- i. Re-imburement of cost of plants established at the approved rates. Polybagged plants having advance growth at the time of planting were considered for re-imburement @ Rs.6.00 per plant.
- ii. Re-imburement of cost of fertilizers for seven years @ 50 per cent of the approved rates against bills on the condition that recommended grades and quantities were used.

- iii. Subsidy @ Rs.150.00 per ha for soil conservation works such as terraces or 'edakkayyala walls' or @ Rs.100.00 per ha for silt pits, etc.

The Phase-II of the RPDS was introduced during 1985-86 as a continuation of Phase-I, but with the following changes in the provisions for providing assistance to rubber growers in the State of Kerala and Kanyakumary district of Tamil Nadu (Rubber Board, 1985).

- i. Cash subsidy was limited to small growers having rubber area not exceeding 5.00 ha including NP.
- ii. Interest subsidy of 3 per cent was admissible only for small growers having area not exceeding 5.00 ha.
- iii. Re-imburement of cost of polybagged plants having advance growth was made to all growers.
- iv. Re-imburement of cost of budded rubber plants was made only to growers of Scheduled Caste/Tribe Communities.
- v. Re-imburement of half the cost of fertilizers was made only to growers of Scheduled Caste/Tribe Communities.
- vi. The provision for granting additional assistance for soil conservation works was removed.

The present study covers the RPDS implemented during the year 1980 to 1988. Such a study was undertaken on the ground that it was for the first time that, both RP and NP were integrated under one scheme giving equal importance for both, and the impact of the implementation of the scheme was not studied so far though certain rules were relaxed in the implementation so as to make it more and more attractive to the small growers. The investigation also envisaged to elucidate the extent of adoption of crop production practices, production and productivity and the constraints, if any, faced by the farmers. The study was confined to Malappuram district for the reason that rubber has assumed importance as a major plantation crop in the district consequent to the implementation of the RPDS.

Review of Literature

REVIEW OF LITERATURE

No survey has so far been conducted in the line of the present study after the inception of the RPD Schemes by the Rubber Board. The available literature pertaining to the results of the implementation of various development schemes are briefly reviewed hereunder:

Rogers and Shoemaker (1971) observed that knowledge of improved technology might act as a strong motivation for its adoption among farmers. Rajendran (1978) has reported that majority of the small farmers are either low adopters or medium adopters of improved rice technology.

Varma (1982) listed the constraints in implementing programmes under three main heads, ie. Credit, Organisation factors and Infrastructure.

Bharadwaj (1973) reported that there is a positive relationship between the level of asset holdings and accessibility to institutional finance.

The success of adoption of a particular crop for planting by farmers depends on various factors. George *et al.* (1988) stated that a host of factors such as exemption

from land ceiling legislations, promotional schemes, etc. prompted the small growers to cultivate rubber extensively.

In a study in Mavelikkara taluk of Kerala, Nair (1992) observed that 92 per cent of the area was planted with the clone RRII 105. He had also stated that 92 per cent of the holdings selected for the study had availed financial assistance from the Rubber Board. In another study by Joseph and Haridasan (1993) it was revealed that 84 per cent of the area under their study was planted with the clone RRII 105.

As the level of asset holdings and fund availability increased, the share of family labour declined. Rudra and Mukhopadhyaya (1976) found that even in the lowest size class, 47 per cent of the required labour was hired as certain agricultural operations are hired labour dependent irrespective of the size of the farm. However, Ninan (1984) found that 23 per cent farm requirement in Kerala is met with family labour when all crops are taken together. According to Joseph et al. (1993), the share of family labour is 29 per cent in small rubber holdings.

Rao (1975) pointed out that as the size of the farm increases, the marginal propensity to save increases and greater would be the availability of own funds.

Materials and Methods

MATERIALS AND METHODS

The main objective of the study was to assess the impact of the RPDS among small rubber holders of Malappuram district. Small rubber holdings, replanted/newplanted under the RPDS, Phase-I and Phase-II were considered for the selection of the samples. The study was confined to Ernad, Perinthalmanna, Tirur and Ponnani taluks of Malappuram (Annexure-I). Of these, rubber was introduced to Ponnani taluk only very recently and therefore, comparable samples could not be drawn. Out of the 121 villages in the three taluks covered by the present study, samples were drawn from 35 villages selected at random. Details of the coverage are furnished in Annexure-II.

The first phase of the RPDS was implemented by the Rubber Board during 1980 to 1984 and the second phase during 1985 to 1989. In order to have a coverage of both the phases of the scheme, small holdings, replanted/newplanted between 1980 and 1988 in the size range of 0.20 ha to 1.00 ha were selected for the purpose of investigations. A small percentage of small holdings in the same age and size group exist out of the RPDS in the locality. Therefore, such holdings were also brought under the purview of the present study.

A survey approach was made for the collection of data. Fifty subsidy permit holders were selected at random from the scheme files maintained by the Field Officers stationed at different places in Malappuram district. Also, 10 small holdings, replanted/newplanted during 1980 to 1988 and which remained out of the RPDS due to various reasons were located with the help of the Field Officers and Rubber Producers' Societies. List of growers covered for the survey is furnished in Annexure-III.

A pre-tested interview schedule was used to gather the required information (Annexure-IV). All the 60 holdings were visited and relevant information collected by personal interview. Additional details required were collected from the Rubber Board Regional Office, Nilambur in respect of the 50 holdings raised under the RPDS.

The following observations were recorded and tabulated to generate maximum information out of the study.

- a) Details of small rubber holders and holdings
- b) Details of facilities availed under RPDS
- c) Adoption of crop production practices like planting materials, spacing, manuring, intercropping, plant protection measures, etc.
- d) Growth performance of plants
- e) Details of tapping
- f) Production and productivity
- g) Constraints faced by the growers

Results and Discussion

RESULTS AND DISCUSSION

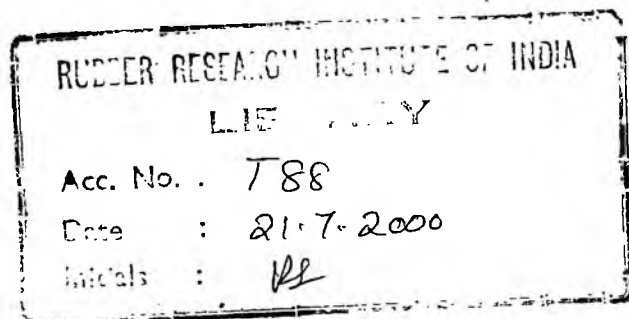
Malappuram revenue district, the southern part of Malabar, was constituted in 1966. A considerable share of inhabitants are settlers from central Kerala and the main occupation of the people is agriculture. The cash crops being cultivated in this district are cashew, coconut and rubber.

4.1 General information

During the year 1970-71, the area under rubber cultivation in Malappuram district was 9930 ha in small holding sector and 7573 ha in large estate sector. Upto the year 1990-91, there was 88.77 per cent increase in area in small holding sector whereas the area in large estate sector showed 48.83 per cent decrease because of fragmentation. When compared to the decreasing trend of 17.75 per cent showed in the large estate sector in Kerala state, the trend in Malappuram district was very spectacular, which stood at 48.83 per cent (Rubber Board, 1993b). This also showed that nearly 50 per cent of area in large estates became small holdings. The details are presented in Table 1.

Table 1. Extent of small holdings and large estates in Malappuram district in comparison with that in Kerala state.

Year	<u>Malappuram district</u>				<u>Kerala state</u>			
	<u>Small holdings</u>		<u>Large estate</u>		<u>Small holdings</u>		<u>Large estate</u>	
	Area in ha.	% increase	Area in ha.	% decrease	Area in ha.	% increase	Area in ha.	% decrease
1970-71	09930	--	7573	--	142611	--	55813	--
1975-76	11416	14.96	5952	21.40	159805	12.06	52003	6.82
1980-81	14491	45.93	4833	36.18	206056	44.49	47728	14.49
1985-86	17631	77.55	3770	50.22	293847	106.08	47659	14.61
1990-91	18745	88.77	3875	48.83	361913	153.77	45908	17.75



As per the payment registers maintained by the Rubber Board Regional Office, Nilambur, 12234 small holdings have been identified under the RPDS during the period from 1980 to 1988. These holdings are classified into two; ie. holdings upto one hectare and those above one hectare. Holdings upto 1.00 ha showed an increase in share from 67.79 per cent to 79.24 per cent while small holdings above 1.00 ha showed a decrease from 32.21 per cent to 20.76 per cent from 1980 to 1988. These details are tabulated in Table 2 and Fig.1.

The rate of growth of small holdings in Malappuram district was spectacular. Small rubber holdings upto 1.00 ha showed a higher rate of growth from 16.57 per cent in 1982 to 167.03 per cent in 1984 in the implementation period of the RPDS from 1980 to 1988. Holdings above 1.00 ha had a growth rate of 12.00 per cent in 1981 to 96.51 per cent in 1984. The highest rate of growth shown in 1984 in both the sections was because that the first phase of the RPDS ended during that year. The holdings upto 1.00 ha showed a declining trend of 90.42 per cent in 1986 which further increased to 115.10 per cent in 1988. But the holdings above 1.00 ha gradually declined from 49.61 per cent in 1985 to 18.60 per cent in 1988 (Table 3 and Fig.2).

Table 2. Area-wise distribution of holdings under the RPDS
and their shares from 1980 to 1988.

<u>Year</u>	<u>Upto 1.00 ha</u>	<u>No. of holdings according to area</u>		<u>%</u>	<u>Total</u>
		<u>%</u>	<u>More than 1.00 ha</u>		
1980	0543	67.79	258	32.21	0801
1981	0723	71.44	289	28.56	1012
1982	0633	67.85	300	32.15	0933
1983	1187	73.50	428	26.50	1615
1984	1450	74.09	507	25.91	1957
1985	1275	76.76	386	23.24	1661
1986	1034	74.77	349	25.23	1383
1987	1077	77.04	321	22.96	1398
1988	1168	79.24	306	20.76	1474
Total	9090	74.30	3144	25.70	12234

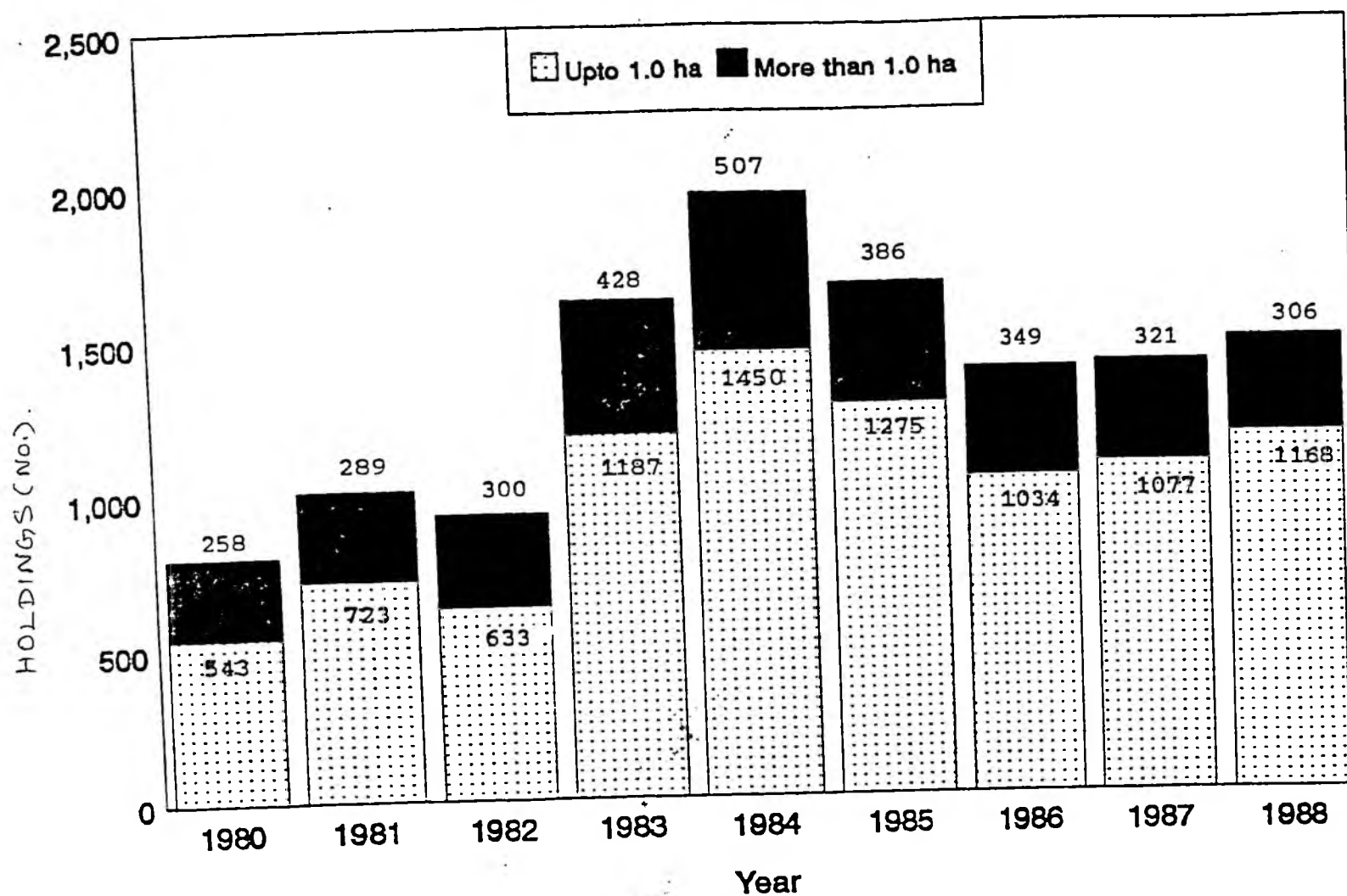


Fig. 1 Area-wise distribution of holdings under the RPDS and their shares from 1980 to 1988.

Table 3. Rate of growth of small rubber holdings in Malappuram district during the period 1980 to 1988.

Year	Upto 1.00 ha	Rate of growth %	Above 1.00 ha	Rate of growth %	Total	Rate of growth %
1980	0543	--	258	--	0801	--
1981	0723	33.14	289	12.00	1012	26.24
1982	0633	16.57	300	16.27	0933	16.48
1983	1187	118.60	428	65.89	1615	101.62
1984	1450	167.03	507	96.51	1957	144.32
1985	1275	134.80	386	49.61	1661	107.37
1986	1034	90.42	349	35.27	1383	72.66
1987	1077	98.34	321	24.41	1398	74.53
1988	1168	115.10	306	18.60	1474	84.02
Total	9090	--	3144	--	12234	--

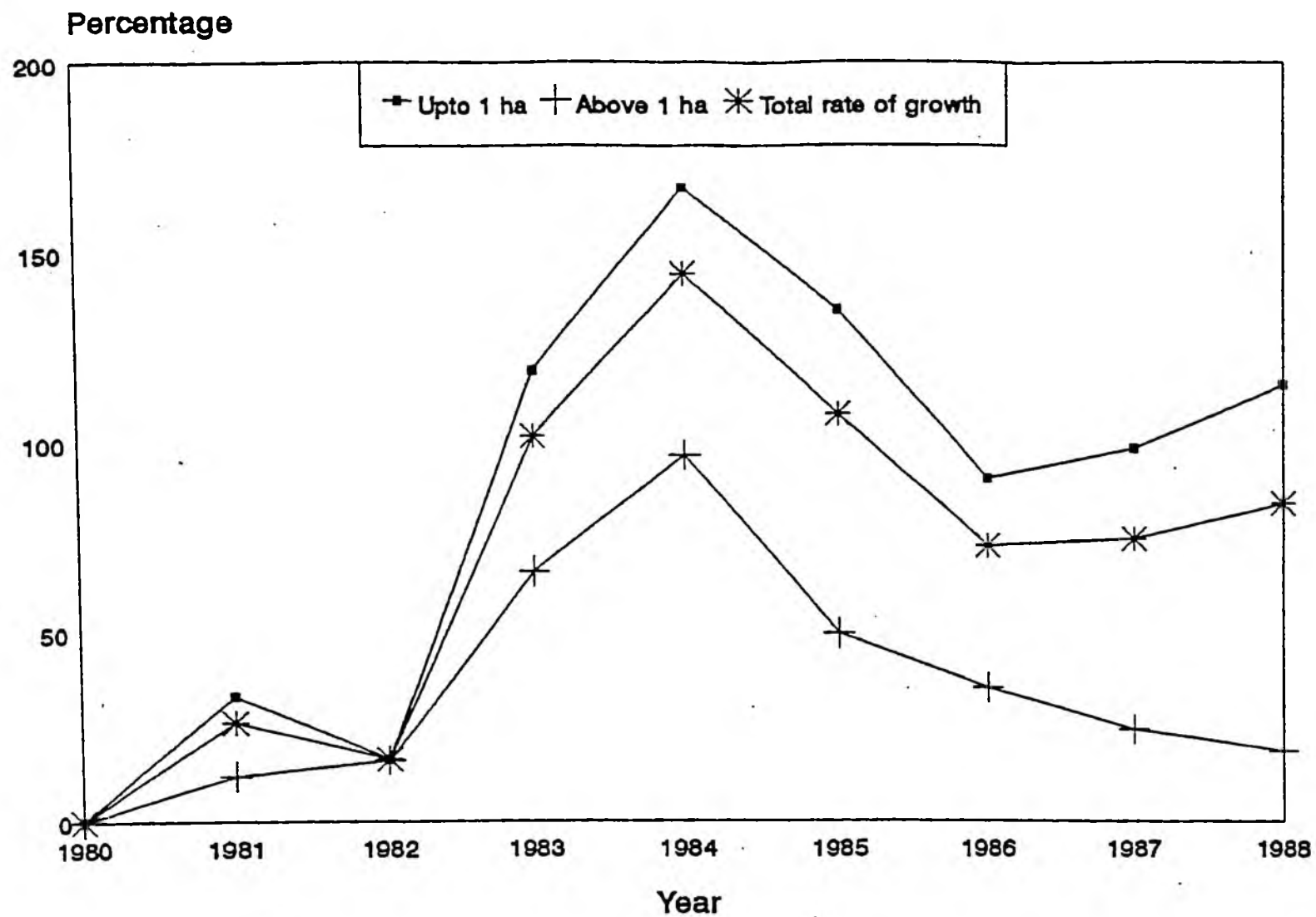


Fig. 2 Rate of growth of small rubber holdings in Malappuram district during the period 1980 to 1988

4.2 Status of rubber growers and holdings

4.2.1 Distribution of the rubber growers according to caste and educational qualifications

The study intended to classify the small rubber growers into Scheduled Caste, Scheduled Tribe and others. But, rubber growers belonging to Scheduled Caste and Scheduled Tribe communities could not be located. Therefore, the participated rubber growers under the category 'others' were again classified as Muslim, Christian and Hindus.

Of the 60 small rubber growers, 28 growers were Muslims (46.67%), 20 growers were Christians (33.33%) and 12 growers were Hindus (20.00%). It was also observed that 4 growers (6.67%) were illiterate, 45 growers (75.00%) had the educational status of primary to higher secondary and 11 growers (18.33%) had college/technical education (Table 4).

4.2.2 Distribution of the rubber growers according to the landed property owned

For this, the landed property including the surveyed rubber area was taken into consideration. The landed property in the size range of 0.21 ha to 2.00 ha and above 2.00 ha were analysed and studied. Also, a caste-wise classification was arrived at (Table 5). It was seen that 40 per cent of the rubber growers under the RPDS and 50 per

Table 4. Distribution of the rubber growers according to caste and educational qualification.

Educational status	Number of rubber growers				%
	Muslims	Christians	Hindus	Total	
Illiterate	4	-	-	4	6.67
Primary	13	6	2	21	35.00
Secondary	8	4	5	17	28.33
Higher Secondary	2	4	1	7	11.67
College	1	3	4	8	13.33
Technical	-	3	-	3	5.00
Total	28	20	12	60	100.00
Percentage	46.67	33.33	20.00	100.00	--

Table 5. Distribution of the rubber growers according to the landed property owned.

Range of area (ha)	Number of rubber growers under the RPDS				Number of rubber growers not under the RPDS			
	Muslims	Christians	Hindus	%	Muslims	Christians	Hindus	%
0.21 - 0.30	-	-	-	-	-	-	-	-
0.31 - 0.40	2	1	-	6	1	-	-	10
0.41 - 0.50	-	2	-	4	-	-	-	-
0.51 - 0.60	1	1	1	6	-	-	-	-
0.61 - 0.70	1	-	-	2	-	-	-	-
0.71 - 0.80	2	1	1	8	2	-	-	20
0.81 - 0.90	1	2	2	10	1	-	-	10
0.91 - 1.00	1	-	1	4	1	-	-	10
1.01 - 2.00	5	6	4	30	3	-	-	30
> 2.00	6	6	3	30	1	1	-	20
Total	19	19	12	100	9	1	-	100

cent of the growers not under the RPDS were having landed properties in the size range of 0.31 ha to 1.00 ha. The Muslim and Christian communities under the RPDS hold properties almost in equal proportions.

4.2.3 Classification of the rubber growers according to the area under rubber and its percentage to the landed property owned

The percentage of the rubber area with the landed property owned by the 60 rubber growers is analysed here and furnished in Table 6. It was seen that 14 rubber growers had planted rubber in 100 per cent of the land which was 23.33 per cent of the growers covered by the study. It was also revealed that 12 of them (85.71%) had landed property below 1.00 ha.

4.2.4 Classification of the holdings according to the previous cultivation and the reason for rubber newplanting and replanting

Out of the 60 holdings surveyed, 51 holdings (85%) were newplanting and 9 holdings (15%) were replanting. The aforesaid 51 growers replaced other plantation crops or annual crops with rubber and preferred rubber cultivation as other crops were not profitable. It was also understood that all of them had the desire to plant rubber. The 9 holders, who replanted the existed plantation with high yielding varieties, were for ensuring a better yield.

Table 6. Classification of the rubber growers according to the area under rubber and its percentage to the landed property owned

Range of landed property in ha	Number of rubber growers									
	Upto 100%	Upto 90%	Upto 80%	Upto 70%	Upto 60%	Upto 50%	Upto 40%	Upto 30%	Upto 20%	Upto 10%
0.21 - 0.30	-	-	-	-	-	-	-	-	-	-
0.31 - 0.40	2	-	1	-	1	-	-	-	-	-
0.41 - 0.50	2	-	-	-	-	-	-	-	-	-
0.51 - 0.60	2	-	1	-	-	-	-	-	-	-
0.61 - 0.70	-	-	-	-	-	-	1	-	-	-
0.71 - 0.80	3	1	-	1	-	-	-	1	-	-
0.81 - 0.90	2	-	1	1	1	-	-	1	-	-
0.91 - 1.00	1	-	-	1	-	1	-	-	-	-
1.01 - 2.00	-	1	3	2	2	1	5	3	1	-
> 2.00	2	1	4	1	2	1	-	3	1	2
Total	14	3	10	6	6	3	6	8	2	2
Percentage	23.33	5.00	16.67	10.00	10.00	5.00	10.00	13.33	3.33	3.33
			60							100

Cashew was the main cash crop replaced with rubber which was 33.33 per cent followed by tapioca and others 21.67 per cent. Paddy cultivated dry land (5%) and waste land (5%) were also converted to rubber plantations. The details are furnished in Table 7 and Fig.3.

4.3 Details of facilities provided under the RPD schemes

Free technical advice, monetary and material assistances were provided to small rubber growers under the RPD schemes. In addition to cash subsidy at the fixed rate, additional assistances such as re-imbursement of cost of planting materials used, half the cost of fertilizers applied on production of bills, subsidy for soil conservation works undertaken and 3 per cent interest subsidy on long term credit facilities availed from Banks were the benefits extended under the first phase of the RPD scheme. In the second phase, exempting growers of Scheduled Caste and Scheduled Tribe communities, the provision for reimbursement of cost of planting materials was limited for polybagged plants with a maximum of 450 numbers per hectare and the provision for assistance for fertilizers and soil conservation works was withdrawn. Under both the schemes, additional assistances were provided only if the holding was eligible to get the cash subsidy.

Table 7. Classification of the holdings according to the previous cultivation and the reason for rubber newplanting and replanting.

Details of the previous cultivation	No. of holdings	%	Reason for rubber newplanting and replanting			
			Other crops not profitable		Poor yield	
			No.	%	No.	%
Cashew	20	33.34				
Cashew, Areca etc.	8	13.33				
Coconut trees	2	3.33				
Mango, Jack etc.	2	3.33				
Tapioca and other crops	13	21.67	51	85	9	15
Paddy land	3	5.00				
Waste land	3	5.00				
Rubber	9	15.00				
Total	60	100.00	51	85	9	15

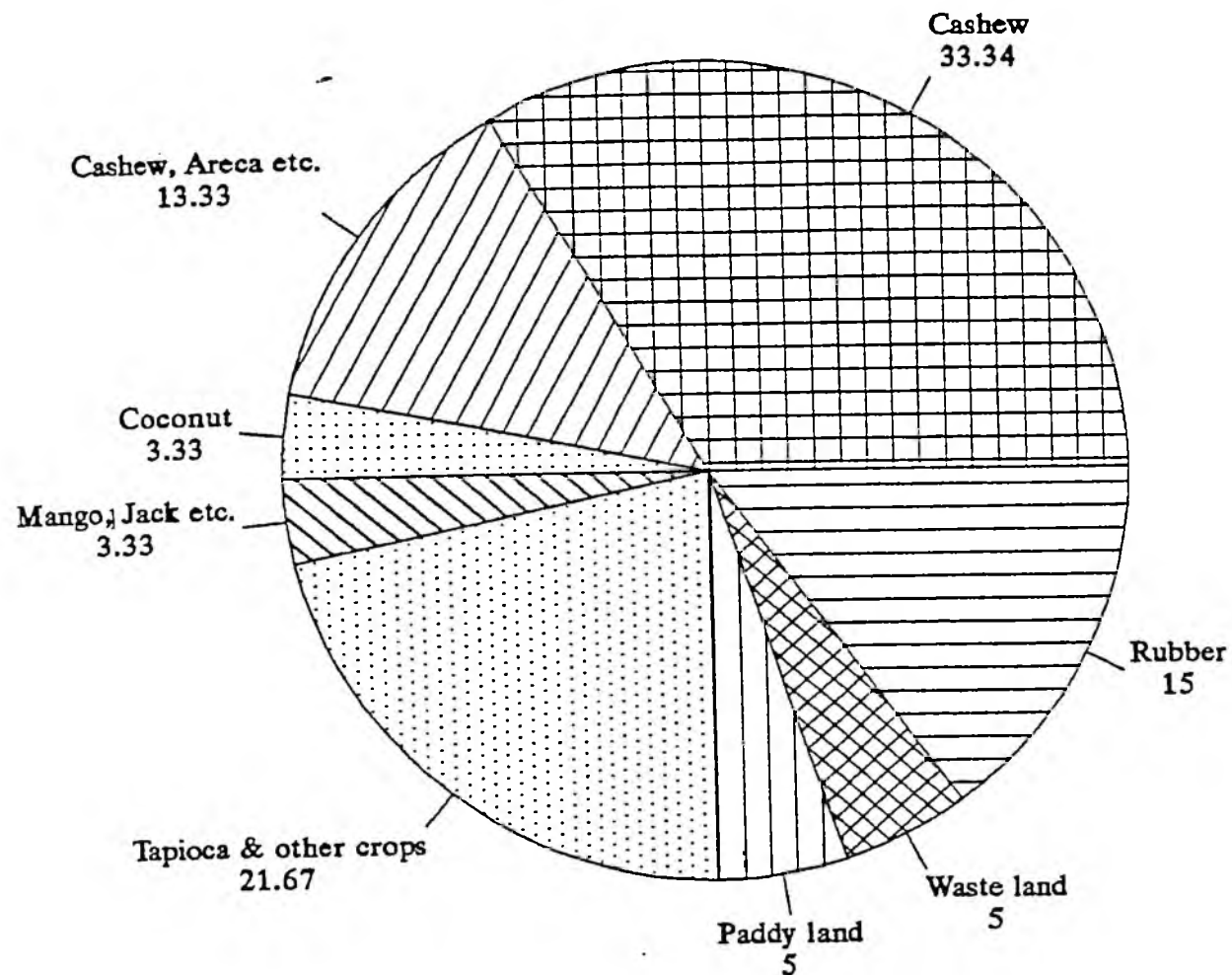


Fig. 3 Classification of the holdings according to the previous cultivation (Percent)

4.3.1 Classification of the rubber growers and the level of the facilities availed under the RPDS

The data on the level of the facilities availed under the RPD schemes furnished in Table 8 revealed that out of the 50 growers, 23 growers (46%) participated in the first phase and 27 growers (54%) in the second phase of the scheme. Re-imbursement of cost of planting materials was approved for 20 growers (86.96%) in the first phase and for 19 growers (70.37%) in the second phase. Additional assistance for fertilizers used was extended to 19 growers (82.60%) and for soil conservation works to 10 growers (43.48%) under the first phase.

Eighty three branches of different Banks (Annexure-V) participated in the RPDS and extended credit facilities during the period 1980 to 1988. The South Malabar Gramin Bank, with its Head Office at Malappuram, provided maximum support through 26 branches. Out of the 50 growers, 12 growers (24%) availed the credit facilities. Twenty seven growers (54%) utilized own reserves and 8 growers (16%) viewed it as liability. The procedure was not appreciated by two of the growers (4%).

Table 8. Classification of the rubber growers and the level of the facilities availed under the RPDS.

Scheme	Cash subsidy		Planting materials		Fertilizers		Soil conserva- tion works		Loan facility		Reason for not availing loan							
											Liability		Own reserve		Documen- ts		Proced- ure	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
RPDS I	23	46.00	20	86.96	19	82.60	10	43.48	5	21.74	2	8.70	15	65.22	1	4.35	-	-
RFDS II	27	54.00	19	70.37	-	-	-	-	7	25.93	6	22.22	12	44.44	-	-	2	7.41
	50	100.00	39	78.	19	38	10	20	12	24	8	16	27	54	1	2	2	4

4.3.2 Distribution of the growers not under the RPDS and the reasons for non-participation

The reasons for non-participation of the growers under the RPDS are analysed and furnished in Table 9. It was observed that all the 10 growers were aware of the scheme. Yield performance in the nearby rubber estates prompted 5 growers (50%) to collect seeds from there and plant. Four growers (40%) planted approved varieties and not participated in the scheme for various reasons. One of them retained other trees in excess of the permissible number. Another one was out of place and one grower was busy with other works. Of the 10 growers, one grower failed to field-bud the unselected seedlings and to establish approved variety.

4.4 Crop production practices

Crop production practices involve long term and short term measures. Use of approved high yielding planting materials, completion of adequate soil conservation works and proper establishment of leguminous cover crop in the initial year of planting are the long term measures. Plant protection, cultural operations, etc. are the short term measures. Results of the study on these aspects are discussed below.

Table 9. Distribution of the growers not under the RPDS and the reasons for non-participation.

Reason for non-participation	Number	%
Not aware of the scheme	-	-
Documents were not clear	-	-
Other trees were in excess	1	10
Failed to establish approved variety	1	10
Planting of unapproved variety	5	50
Engaged in other works	1	10
Out of station	1	10
Utilization of own fund	1	10
	10	100

4.4.1 Classification of the growers according to the use of planting materials

The details of different varieties of planting materials used, type of materials and source are given in Table 10. Out of the 50 participating respondents, 41 growers (82%) have selected the clone RRII 105 and 6 growers (12%) used RRII 105 along with other clones in a mixed manner. It was observed that 25 growers (50%) used poly-bagged plants, 19 growers (38%) used budded stumps and 6 growers (12%) gone for field budding. From the study, it is also seen that 33 of the respondents (66%) depended private source for planting materials and 17 growers (34%) raised own nursery.

Out of the 10 non participating respondents, 6 growers (60%) used unselected seedlings and 4 growers (40%) used approved materials. The clone RRII 105 was selected by 75% of the respondents who used approved planting material.

4.4.2 Classification of the units according to planting distance, lining and planting density

For slopy land, planting is recommended in rectangular system and in flat area, square system is practised (Panicker et al., 1977 and Mani et al., 1990). The result of the study showed that 36 growers under the RPDS adopted the recommended distance which worked out to

Table 10. Classification of the growers according to the use of planting materials

Growers	Clone	Type of planting materials				Source of planting materials				
		Budded stumps	Field budding	Poly bagged	Total	Own nursery	Rubber Board	Private nursery	Total	
Participating	RRII,105	17	5	19	41 (82%)	13	-	28	41	
	GT 1	1	-	-	1 (2%)	-	-	1	1	
	PB 311	-	-	2	2 (4%)	2	-	-	2	
	Mixed	1	1	4	6 (12%)	2	-	4	6	
	Total	-	19	6	25	50	17	-	33	50
		-	38	12	50	100	34	-	66	100
Non-participating	RRII 105	-	-	1	2	3 (30%)	-	-	3	3
	Polyclonal seeds	1	-	-	-	1 (10%)	-	-	1	1
	Local seeds	6	-	-	-	6 (60%)	6	-	-	6
	Total	7	-	1	2	10	6	-	1	3
		70	-	10	20	100	60	10	30	100

72 per cent. It was also revealed that 23 growers (46%) had done lining properly according to the lie of the land. Of the 10 growers not under the RPDS, 5 growers (50%) had followed the recommended spacing and lining (Table 11).

It was seen that, out of the 50 growers under the RPDS, only one grower had maintained the stand below 450 per hectare. Ten holdings were having the stand in the range of 451 to 500 and the rest had a higher stand. Three units (6%) had still a higher stand than 650 per hectare. The units not under the RPDS had the stand between 451 to 650 per hectare.

4.4.3 Status of soil conservation works done and the establishment of cover crop

The status of soil conservation works done and the establishment of cover crop in the 60 units surveyed are furnished in Table 12. Soil conservation works were done in 48 units (96%) out of 50 holdings under the RPDS and in 9 holdings (90%) out of the 10 units not under RPDS.

The establishment of leguminous cover crop would enrich the soil with organic matter, improve the physical and the chemical properties, increase the fertility status and considerably reduce the application of fertilizers in the planted area. Out of the 50 holdings under the RPDS, 36 holdings (72%) raised cover crop in the immaturity period.

Table 11. Classification of the surveyed units according to planting distance, lining and planting density.

Year of planting	No. of units	Area in ha	Planting Distance		Lining		Planting density (pts/ha)						
			Recommended	Not recommended	Recommended	Not recommended	400 450	451 500	501 550	551 600	601 650	> 650	
1980	5	2.32	5	-	2	3	1	1	2	1	-	-	
1981	6	3.47	6	-	2	4	-	2	1	3	-	-	
1982	1	0.78	1	-	1	-	-	-	1	-	-	-	
1983	5	2.47	4	1	4	1	-	2	3	-	-	-	
1984	6	3.17	4	2	4	2	-	-	3	1	1	1	
1985	6	2.44	3	3	2	4	-	2	2	1	1	-	
1986	7	3.43	4	3	4	3	-	1	1	4	-	1	
1987	7	5.02	6	1	-	7	-	2	4	-	-	1	
1988	7	4.22	3	4	4	3	-	-	3	1	3	-	
Total No. under RPDS50			36	14	23	27	1	10	20	11	5	3	
Percent- age			83	82	72	54	2	20	40	22	10	6	
1980	1	0.76	-	1	1	-	-	-	1	-	-	-	
1981	1	0.33	-	1	-	1	-	-	-	-	1	-	
1982	1	0.67	1	-	1	-	-	-	1	-	-	-	
1983	4	2.34	3	1	2	2	-	1	1	2	-	-	
1984	1	0.20	-	1	-	1	-	-	-	-	1	-	
1987	1	0.61	1	-	1	-	-	1	-	-	-	-	
1988	1	1.00	-	1	-	1	-	-	-	1	-	-	
Total No. not under RPDS			5	5	5	5	-	2	3	3	2	-	
Percent- age			17	18	50	50	-	20	30	30	20	-	

Table 12. Status of soil conservation works done and the establishment of cover crop.

Units	Type of soil conservation work adopted				Status of cover crop			Year of planting					Variety of cover crop	
	Indivi- dual terrace	Conti- nuous terrace	Edak- kayy- ala	None	planted Estab- lished	Not estab- lished	Not planted	Be- fore pla- nting	1st ye- ar	2nd ye- ar	3rd ye- ar	4th ye- ar	Puera- ria	Mucuna
Under the RPDS														
Number	4	41	3	2	36	10	4	1	18	14	12	1	45	1
Percentage	(8)	(82)	(6)	(4)	(72)	(20)	(8)						(90)	(2)
Not under the RPDS														
Number	2	7	-	1	2	3	5	-	1	1	3	-	5	-
Percentage	(20)	(70)	-	(10)	(20)	(30)	(50)	-	(10)	(10)	(30)	-	(50)	

Cover crop was not planted in four holdings (8%) and it was not established in 10 holdings (20%). In the surveyed units not under RPDS, 2 holdings (20%) had cover crop.

4.4.4 Pattern of intercropping in the surveyed units

The data pertaining to the pattern of intercropping are furnished in Table 13. The practice of intercropping was not followed extensively in the surveyed units. Out of the 50 holdings under the RPDS, 30 units (60%) were devoid of any intercrop. The rest of the holders (40%) intercropped the rubber areas only for a short period. In the non-participating units, 4 holdings (40%) had no intercrop. The intercrops planted were banana (Nendran), paddy and vegetables. It was observed that many of the growers were not in favour of intercropping in rubber areas in order to ensure better growth of rubber plants.

4.4.5 Fertilizer application in the surveyed units and soil analysis

The survey revealed that the growers were not regular in the application of fertilizers and not following the general manurial recommendations of the Rubber Board. A well balanced nutrient application is necessary for enhancing the growth rate as observed by Mani *et al.*, 1990. The manurial practices adopted during 1993, organic manure application in the life period of the holdings and soil

Table 13. Pattern of intercropping in the surveyed units.

Intercrop	Without intercrop	Intercropping			Total	%
		Ist year	2nd year	3rd year		
Banana (Nendran)	-	3	5	-	8	16
Paddy	-	1	1	-	2	04
Vegetables	-	4	5	1	10	20
No intercrop	30	-	-	-	-	-
Total under the RPDS	30	8	11	1	50	100
Percentage	60	16	22	2	100	-
Banana (Nendran)	-	1	2	-	3	30
Paddy	-	2	-	-	2	20
Vegetables	-	1	-	-	1	10
No intercrop	4	-	-	-	4	40
Total not under the RPDS	4	4	2	-	10	100
Percentage	40	40	20	-	100	-

analysis after 1990 are analysed and details furnished in Table 14.

It was observed that 42 participating growers (84%) had manured the holdings in both the seasons of 1993 with chemical fertilizers and 7 growers (14%) only once. Of the non-participating respondents, 6 growers (60%) manured during both the seasons and 3 growers (30%) only once. Both the sections had one grower each who have not manured with chemical fertilizers.

It was also seen that 16 growers (26.67%) used rubber mixture and 33 growers (55%) purchased straight fertilizers and mixed before application. A small group of 9 growers (15%) applied complex fertilizers. Two growers (3.33%) had not applied any fertilizers.

Cow-dung was applied frequently in addition to chemical fertilizers. Out of the 60 growers, 49 (81.67%) had applied cow-dung after planting.

Leaf and soil analysis done were also evaluated. It was noted that 16 growers under the RPDS (32%) had got the soil analysed after 1990 whereas it was two (20%) in the case of non-participating growers. Leaf analysis was not done by any one.

Table 14. Fertilizer application in the surveyed units during 1993.

	Frequency				Type of fertilizer						Organic manure			Soil analysis		
	During both seasons	Only one season	Nil	Total	Rubber mixture	Straight fertilizers	Complex	No ferti- lizer	Total							
										Yes	No	Total	Yes	No	Total	
Under RPDS	42	7	1	50	14	29	6	1	50	40	10	50	16	34	50	
Percentage	84	14	2	100	28	58	12	2	100	80	20	100	32	68	100	
Not under RPDS	6	3	1	10	2	4	3	1	10	9	1	10	2	8	10	
Percentage	60	30	10	100	20	40	30	10	100	90	10	100	20	80	100	
Total	48	10	2	60	16	33	9	2	60	49	11	60	18	42	60	
Percentage	80	16.67	3.33	100	26.67	55.00	15.00	3.33	100	81.67	18.33	100	30	70	100	

4.4.6 Shading, mulching, irrigation and spraying operations in the surveyed units

The information collected are given in Table 15. All the 60 growers under the study have done shading, mulching and white-washing in the initial years of the immaturity period. Out of the 50 growers participated in the RPDS, 7 (14%) have watered the plants while 43 farmers (86%) have not done watering. Of the non-participating growers, 9 (90%) have not watered the plants.

The notable information gathered was that 17 growers (34%) out of 50 have not sprayed their areas. Thirty three growers were either regular (34%) or irregular (32%) in spraying operation. The non-participating growers were either irregular (20%) or have not adopted the practice (80%).

4.4.7 Growth performance of the trees/plants

Eighty two per cent of the participating growers and 30 per cent of the non-participating growers have planted the clone RR11 105. This comes to 73.33 per cent of the total surveyed units and therefore, girth performance of this clone alone as recorded at the time of visit was analysed and furnished in Table 16.

Table 15. Shading, mulching, irrigation and spraying operations adopted

No. of growers	Shaded/mulched/ white-washed			Watering in the initial years			Spraying practice			Total
	Yes	No	Total	Yes	No	Total	Regular	Irre- gular	Not sprayed	
under RPDS	50	-	50	7	43	50	17	16	17	50
Percentage	100	-	100	14	86	100	34	32	34	100
Not under RPDS	10	-	10	1	9	10	-	2	8	10
Percentage	100	-	100	10	90	100	-	20	80	100
Total	60	-	60	8	52	60	17	18	25	60
Percentage	100	-	100	13.33	86.67	100	28.33	30	41.46	100

Table 16. Year of planting, age and girth of RRII 105.

Sl. No.	Year of planting	Age in months	Type of planting material	Girth (cm)	Sl. No.	Year of planting	Age in months	Type of planting material	Girth (cm)
Holdings under the RPDS									
01	1980	166	FB	61	22	1985	107	FB	55
02	1980	168	BS	58	23	1985	107	FB	54
03	1980	167	BS	75	24	1985	108	PB	59
04	1980	164	FB	60	25	1985	107	BS	50
05	1981	155	PB	58	26	1986	94	BS	55
06	1981	157	BS	60	27	1986	95	PB	53
07	1981	155	PB	60	28	1986	96	PB	55
08	1981	154	BS	60	29	1986	95	PB	55
09	1982	141	BS	70	30	1986	95	BS	50
10	1983	131	BS	65	31	1987	82	BS	48
11	1983	131	FB	54	32	1987	82	PB	50
12	1983	131	BS	65	33	1987	82	PB	50
13	1983	130	BS	60	34	1987	82	PB	50
14	1983	130	BS	40	35	1987	83	PB	55
15	1984	119	BS	55	36	1988	70	PB	35
16	1984	118	BS	60	37	1988	71	PB	45
17	1984	118	BS	57	38	1988	69	PB	28
18	1984	117	BS	54	39	1988	71	PB	40
19	1984	119	PB	58	40	1988	71	PB	45
20	1984	120	PB	58	41	1988	70	PB	43
21	1985	107	PB	61					
Holdings not under the RPDS									
01	1984	118	FB	55	03	1988	70	PB	47
02	1987	82	PB	45					

FB - Field Budded

BS - Budded Stumps

PB - Polybagged

The girth recorded are not comparable due to reasons such as difference in the time of planting, variations in the topography, irregularity in cultural operations, non-systematic manuring practices, etc. Polybagged plants did not show any outstanding growth difference compared to other types in the later stage of the immaturity phase and in the mature phase. This means that budded stumps, if planted in the ideal conditions and maintained well can acquire the same girth as that of the polybagged plants towards the close of the immaturity period.

4.5 Details of tapping followed in the surveyed units

Out of the 50 holdings raised under the RPDS, 38 units were under tapping. Of the non-participated, 8 holdings were also under tapping. Details of tapping system followed, the practice of giving tapping rest, rain guarding, etc. are furnished in Table 17.

Altogether, 41 holdings followed daily system of tapping and two holdings once in three days system. In one holding, two days tapping with one day's rest was also followed.

Forty one holdings gave annual rest and five holdings did not. It was revealed that only 15 holdings (32.60%) rainguarded the trees for tapping in rainy season. Tapping was done in 30 holdings (65.22%) by paid tappers.

Table 17. Details of tapping followed in the surveyed units

Number of holdings	System of tapping				Annual rest		Rainguarding		Tapper	
	Daily	Alternate Daily	Once in three days	Other systems	Yes	No	Yes	No	Own	Paid
Under the RPDS	-	36	2	-	34	4	13	25	11	27
Percentage	-	94.74	5.26	-	89.47	10.53	34.21	65.79	28.95	71.05
Not under the RPDS	2	5	-	1	7	1	2	6	5	3
Percentage	25	62.50	-	12.5	87.5	12.5	25	75	62.5	37.5

NB: Under the RPDS 12 holdings have not attained tapping stage. So also, two holdings which were not under the RPDS have not reached tapping stage.

4.6 Production, yield per hectare and processing

Here, the area in each holding, number of trees under tapping, tapping days obtained, yield from the holding and per hectare yield for the year 1992-93 and 1993-94 and the details on processing are discussed.

4.6.1 Production and productivity

Out of the 60 holdings put under the study, 46 holdings (76.67%) were under tapping. These holdings showed a varying level of production and productivity owing to the fact that most of them were not following the same practices. Some of the growers gave tapping rest during the rainy season as well as in the summer months. Therefore, the production and productivity in such holdings were comparatively less.

Yield performance in 30 holdings and the per hectare production are furnished in Table 18a and 18b. The holdings which were planted during the year 1980 to 1984 are considered for the tabulation of the data for 1992-93 and 1993-94. The holdings planted during year 1985 to 1988 were either under selective tapping, or tapping started in 1993-94 only or in the immature stage.

Table 18 a. Production and productivity in the units under the RPDS

Sl. No.	Year of planting	Planting material	Area (ha)	No. of trees	1992-93			1993-94			
					Tapping days	Production (kg)	Yield (kg/ha)	No. of trees	Tapping days	Production (kg)	Yield (kg/ha)
01	1980	RRII 105	0.41	177	130	1040	2536	177	125	1000	2439
02	1980	RRII 105	0.43	150	100	0900	2093	150	160	1200	2790
03	1980	RRII 105	0.20	090	125	0500	2500	090	140	0560	2800
04	1980	RRII 105 & GT I	0.81	300	136	1723	2127	300	137	1829	2258
05	1980	RRII 105	0.47	260	120	1200	2553	260	125	1300	2765
06	1981	RRII 105	0.98	425	081	1595	1627	425	090	1710	1744
07	1981	RRII 105	0.36	175	120	0960	2666	175	160	1040	2888
08	1981	RRII 105	0.79	372	120	1728	2187	372	130	1872	2369
09	1981	GT 1	0.36	180	125	0625	1736	180	130	0650	1805
10	1981	RRII 105, RRIM 600 & GT 1	0.54	300	100	1050	1944	300	120	1260	2333
11	1981	RRII 105	0.44	160	110	0660	1500	160	085	0595	1352
12	1982	RRII 105	0.78	370	112	2240	2871	370	115	2300	2948
13	1983	RRII 105	0.66	280	070	0560	0848	280	104	1040	1575
14	1983	RRII 105	0.20	100	060	0240	1200	100	100	0500	2500
15	1983	RRII 105	0.33	180	120	0600	1818	180	130	0715	2166
16	1983	RRII 105	0.53	185	069	0450	0849	230	080	0623	1175
17	1984	RRII 105	0.24	-	-	-	-	076	080	0240	1000
18	1984	RRII 105	0.25	080	055	0165	0660	150	090	0360	1440
19	1984	RRII 105	0.87	420	166	0965	1109	420	160	1861	2139
20	1984	RRII 105	0.97	446	087	1500	1546	480	083	1600	1649
21	1984	RRII 105	0.25	100	130	0455	1820	100	140	0560	2240
22	1984	RRII 105	0.59	295	060	0780	1322	295	103	1339	2269

Table 18 b. Production and productivity in the units not under the RPDS.

Sl. No.	Year of planting	Planting material	Area (ha)	No. of trees	1992-93		Yield (kg/ha)	1993-94		Yield (kg/ha)
					Tapping days	Product-ion (kg)		Tapping days	Product-ion(kg)	
01	1980	U.S	0.76	375	195	1350	1776	375	246	1288
02	1981	U.S	0.33	180	180	0350	1060	180	190	0320
03	1982	U.S	0.67	330	160	0960	1432	330	170	1190
04	1983	U.S	0.57	270	150	0600	1052	270	160	0640
05	1983	U.S	0.52	260	130	0455	0875	260	120	0420
06	1983	U.S	0.81	387	090	0620	0765	387	087	0535
07	1983	P.C	0.44	180	140	0560	1272	180	150	0600
08	1984	RRII 105	0.20	100	120	0240	1200	100	125	0375

U.S - Unselected Seedlings

P.C - Polyclonal Seedlings

The clone RRII 105 gave the highest yield, the per hectare yield being 2948 kg. The only holding exclusively planted with the clone GT 1 gave a high yield of 1805 kg per hectare where the tapping days were 125-130. These exceeded the per hectare yield estimated by the Rubber Board (Rubber Board, 1994c). From the study it was observed that the yearly tapping days less than 100 reduced the production.

4.6.2 Details of processing, possession of rubber sheeting rollers and smoke house, insurance coverage, Rubber Producers' Society and Co-operative Society membership

Majority of the small growers process the produce as ribbed smoked sheets. The coagulated sheet rubber is to be pressed and grooved by rollers and smoked for marketing. Many of the growers depend on others for rubber sheeting rollers and the sheets are smoked in kitchens. The facilities available with the growers participated in the study were also analysed. Their participation in the Insurance of Rubber Plantation Scheme implemented by the Rubber Board, their involvement in the activities of Rubber Producers' Societies and Co-operative Societies were also assessed and depicted in Table 19.

It was seen that 33 growers (55%) had their own rubber sheeting rollers and 11 growers (18.33%) had own

Table 19. Details of processing, possession of rubber sheeting rollers and smoke houses, insurance coverage, Rubber Producers' Society and Co-operative Society membership.

Particulars of the facilities	Units having the facility		Units not having the facility		Total	%
	Number	%	Number	%		
Have own rubber sheeting rollers	33	55.00	27	45.00	60	100
Have own smoke house	11	18.33	49	81.66	60	100
Have insurance coverage	2	3.33	58	96.66	60	100
Member of Rubber Producers' Society	43	71.66	17	28.33	60	100
Member of Co-operative Society/Bank	41	68.33	19	31.66	60	100

smoke houses. The insurance coverage was very low and it was only 3.33 per cent. It was also revealed that 43 growers (71.66%) were members of Rubber Producers' Societies and 41 growers (68.33%) were members of Co-operative Societies/Banks.

4.7 Constraints faced by the rubber growers under the RPDS

All the growers expressed their appreciation in the implementation of the RPDS by the Rubber Board. Ten growers (20%) expressed no constraints in participating in the scheme and in getting assistance. Delay in the disbursement of subsidy in the early stage was reported by only one grower. So also, delay in getting Bank loan was pointed out by another grower. Lack of technical advice at the time of pre-planting works and after the commencement of tapping was revealed by 28 growers. High development cost was the concern for 12 growers. Scarcity of skilled tappers and labour was expressed by 12 and 4 growers respectively. In one holding, bark dryness was the problem and in another, plants were severely affected by drought. The details are furnished in Table 20.

Table 20. Constraints faced by the rubber growers under the RPDS.

Constraints	Number of rubber growers	Percentage
Lack of technical advice at the time of the pre-planting and after the commencement of tapping	28	56
High development cost	12	24
Scarcity of skilled tapper	12	24
Lack of labour	4	8
Bark dryness of the clone RR II 105	1	2
Delay in getting subsidy	1	2
Delay in getting Bank loan	1	2
No constraints	10	20

Summary and Conclusion

SUMMARY AND CONCLUSION

Natural rubber is one of the crops enjoying Government patronage on account of the growing internal consumption and the strategic commercial importance. Efforts to increase indigenous production consisted of extensive cultivation and modernization of the existing plantations. For this, assistance was provided by the Rubber Board since 1957 with special consideration to the small holding sector. The present study intended the assessment and analysis of the impact of the RPD Scheme implemented by the Rubber Board in Malappuram district. The data collected from the rubber growers and additional details collected from the Rubber Board were analysed and the major findings are summarised as follows:

From the study, it was found that 25 of the growers (41.67%) were having only landed property upto 1.00 ha out of which 12 growers (48%) have planted 100 per cent of the area with rubber. It was also revealed that 51 growers (85%) replaced other crops with rubber where cashew was the main crop (33.33%). All these 51 growers opined that they planted rubber as other crops were not profitable as rubber in Malappuram district.

It was noticed that 44 growers (73.33%) have planted the clone RR11 105. This comes to 82 per cent if the growers under the RPDS alone are considered. It was also observed that 50 per cent of the growers under the RPDS have used polybagged plants. This means that majority of the growers are adopting the recommendation of the Board.

The farmers have gained a fair amount of scientific knowledge of cultivation of rubber by undertaking own planting. Thirty six growers under the RPDS and 5 growers not under the RPDS have followed the recommended planting distances. So also, 11 growers (22%) have maintained a per hectare stand in between 400 to 500.

In the case of intercropping, it was revealed that 30 per cent did not raise intercrop and 38 per cent maintained it upto the second year and only 2 per cent upto the third year. No one planted intercrop after the third year. The intercrop raised helped the growers to a very great extent to supplement their income during the immaturity period. This also means that the growers have adopted the recommendations of the Board which goes to the credit of the RPDS.

The study further revealed that the polybagged plants do not have any advantage in the overall growth

during the latter period of the immaturity phase. If budded stumps are planted in the ideal season/condition, they can also thrive well as the polybagged plants and attain equal girth by which the development cost can be reduced considerably.

The study indicated that 68.33 per cent of the growers have adopted alternate daily tapping system which is normally recommended. Some growers gave rest during rainy and summer months which adversely affected the yield and productivity. The study has brought to light that the yield will be uneconomic if the number of tappings obtained are less than 100 per year. It was further noticed that it will be possible to get an yield of 2948 kg or more per hectare if planted with RR II 105 and if the scientific management practices and correct system of tapping are followed.

It is noticeable that all the participants have expressed their appreciation in the implementation of the RPD Schemes. However, 28 growers have desired that imparting of technical assistance in the pre-planting period and after starting tapping would go a long way to improve proper management of areas planted under the RPD scheme. Scarcity of skilled tappers and labour in Malappuram district needs immediate attention. It is suggested that the Rubber Board may strengthen the extension and advisory

services so that the growers can get timely help especially before carrying out the pre-planting works. Better service may also be provided in the exploitation period. Scarcity of skilled tappers is due to low wage rate for tappers in rubber plantations. So, training programmes may also be conducted in a phased manner and introduction of new systems of exploitation practised in other countries, which does not require much skill, may be thought of so that unskilled labourers can be effectively engaged.

The impact of the implementation of the RPD Schemes, especially in the small holding sector, is clearly manifested in Malappuram district. The small holders share was 88.77 per cent in 1990-91. The rate of growth was 167.03 per cent in holdings having area up to 1.00 ha. Kozhikode district in South Malabar having the same agro-climatic conditions showed a lesser performance than that of Malappuram district (Fig.4). This concludes that the RPD Schemes have created a positive impact among the rubber growers in Malappuram district which enabled them to develop good plantations realizing better profit as compared to other crops.

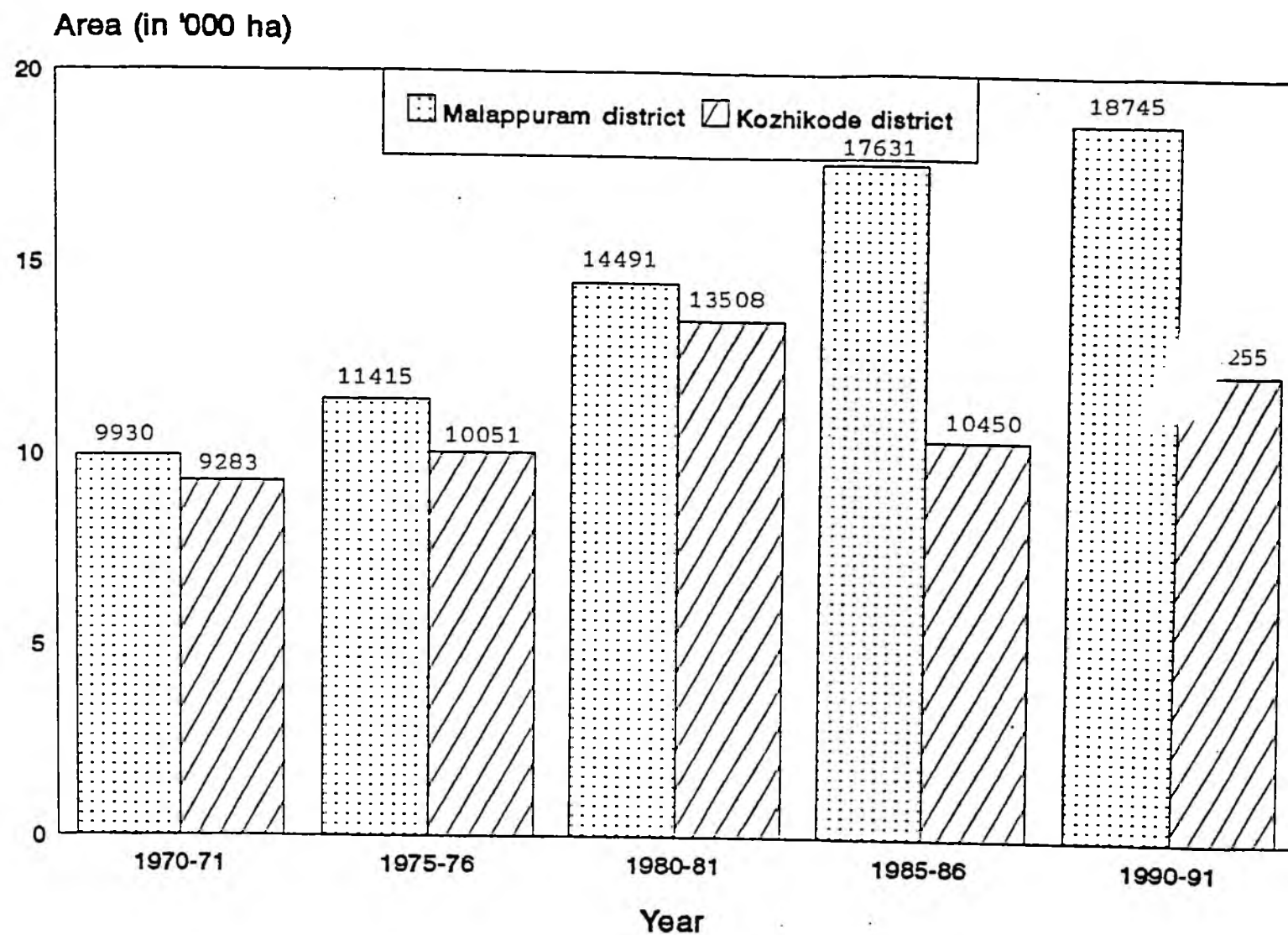


Fig. 4 Growth of area in small holdings in Malappuram and Kozhikode districts.

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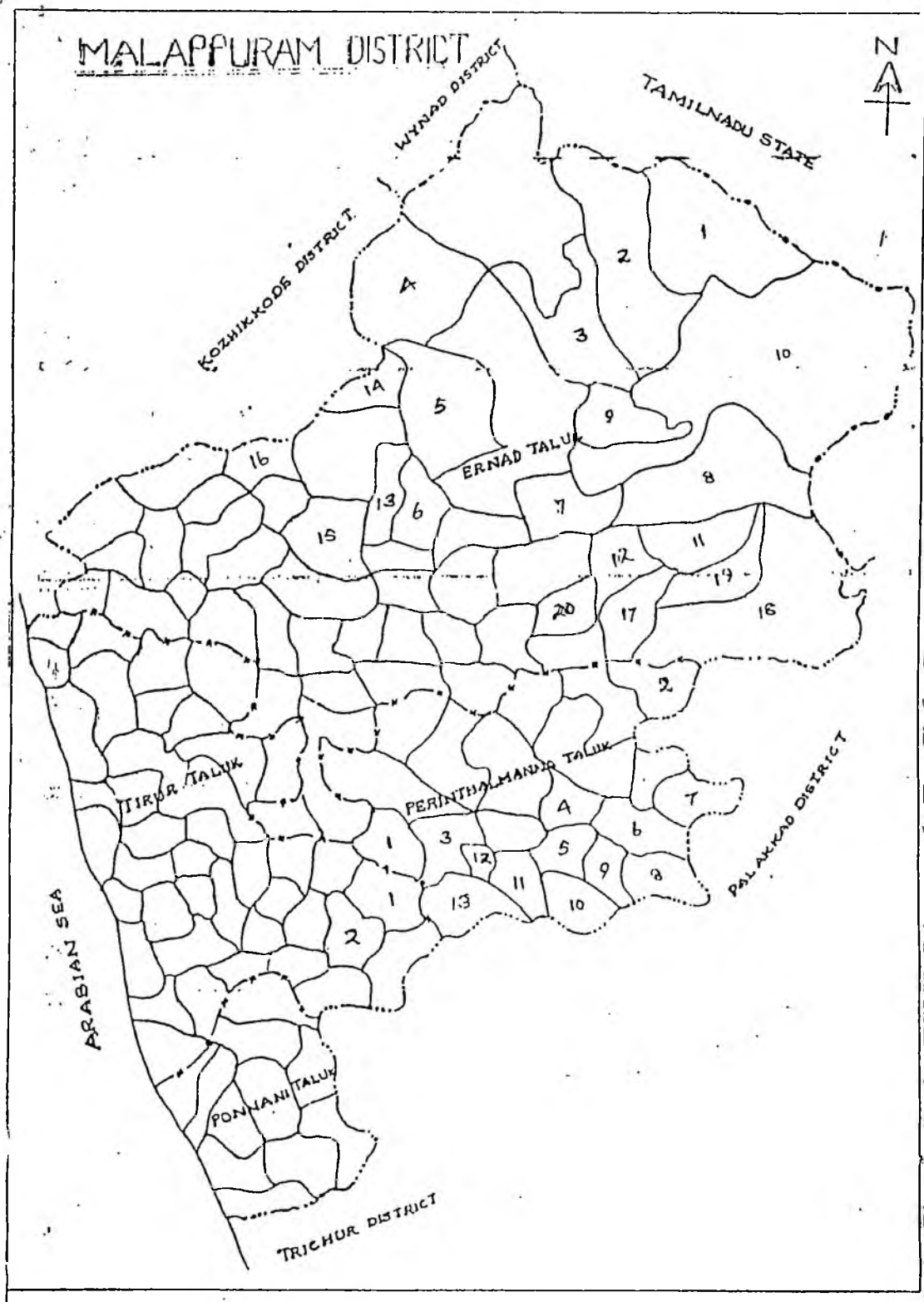
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Appendices

ANNEXURE I



ANNEXURE-II
TALUK AND VILLAGES FROM WHERE HOLDINGS WERE SELECTED FOR
THE SURVEY

Sl.No.	Name of village	No. of holdings selected
ERNAD TALUK		
1	Vazhikkadavu	1
2	Edakkara	1
3	Chungathara	1
4	Akampadam	1
5	Pullippadam	7
6	Edavanna	1
7	Wandoor	1
8	Chokkad	2
9	Karulai	2
10	Amarambalam	1
11	Kalikavu	2
12	Vellayoor	2
13	Perakamanna	3
14	Vettilappara	2
15	Kavannoor	3
16	Keezhuparambu	3
17	Thuvvur	2
18	Karuvarakundu	2
19	Kerala Estate	1
20	Chembrassery	2
PERINTHALMANNA TALUK		
1	Kuruva	1
2	Edapatta	1
3	Puzhakattiri	1
4	Perinthalmanna	1
5	Pathaikkara	1
6	Thazhekode	2
7	Arakkuparambu	2
8	Aliparambu	2
9	Anamangad	2
10	Elamkulam	1
11	Pulamanthole	1
12	Kuruvambalam	2
13	Moorkanad	1
TIRUR TALUK		
1	Edayoor	1
2	Kattiparuthi	1

ANNEXURE-III
HOLDINGS SELECTED FOR THE STUDY IN MALAPPURAM DISTRICT

A. Holdings newplanted/replanted under the Rubber Plantation Development Schemes of the Rubber Board during the period 1980 to 1988

Sl. No.	Name & address of the owner	Permit No.	Area in ha
1	2	3	4
1	K.J.Thomas Karumangal Puthanazhy, P.O. Karuvarakundu	PD/KD/451/80(A)	0.41
2	Lonappan John Valiyamplackal Vellayoor, P.O.	PD/KD/453/80(A)	0.43
3	V.S.Govindan Nair Vellappallil Chokkad, P.O.	PD/KD/467/80(A)	0.20
4	T.V.Thomas Thekkekulathu Vettilappara, P.O.	PD/KD/747/80(A)	0.81
5	Mathari Muhammed Payippullu Thuvvur, P.O.	PD/KD/896/80(A)	0.47
6	K.Vasanthakumary Lakshmie Nivas Pullyil Nallamthanny, P.O. Nilambur	PD/KD/69/81(A)	0.98
7	Chakkalakunnnan Kadeeja Pullengode, P.O. Kalikavu	PD/KD/634/81(A)	0.36
8	Cherumkal Ayishaumma Udirampoyil Pullengode, P.O. Kalikavu	PD/KD/1126/81(A)	0.79

Contd.

Annexure-III. Continued

1	2	3	4
9	Chirayinmel Veeraukutty Keezhuparambu, P.O. Areacode	PD/KD/1320/81(A)	0.36
10	Scaria S/o Chacko Plaparampil Palachode, P.O. Perinthalmanna	PD/PG/282/81(A)	0.54
11	K.C.Ouseph Kaithamattam Palachode, P.O. Perinthalmanna	PD/PG/1012/81(A)	0.44
12	Rosamma Cheruthodukayil Inchananiyil Vettilappara, P.O.	PD/KD/513/82(A)	0.78
13	Ahammedkutty & Nafeasa Mannilthodi Perakamanna, P.O.	PD/KD/468/83(A)	0.66
14	Illickal Pathumma Thelpara Kavalamukkatta, P.O.	PD/KD/1132/83(A)	0.20
15	M.P.Philipose Mammoottil Palachode, P.O. Perinthalmanna	PD/PG/171/83(A)	0.33
16	V.Gopinathan Nair Kochuveettil Kolappadu Eranhikode, P.O.	PD/NR/67/83(A)	0.53
17	A.P.Sayedlavi Arangumpadavan Kavannoor, P.O.	PD/NR/694/83(A)	0.75
18	P.K.Chacko Padinjareveettil Valillapuzha, P.O.	PD/NR/143/84(A)	0.24

Contd.

Annexure-III. Continued

1	2	3	4
19	P.K.Abdul Gafoor Kooriathu Othai Perakamanna, P.O.	PD/NR/146/84(A)	0.25
20	K.P.Churian & Achamma Rex Villa Wandoor, P.O.	PD/NR/457/84(A)	0.87
21	P.Nafeesa Pulathu Paingacodekalam Erannahimangad, P.O.	PD/NR/890/84(A)	0.97
22	Mammedkutty VKE House Eruvetty, P.O. Areacode	PD/NR/920/84(A)	0.25
23	E.S.Varghese Erattukulangara Karulai, P.O.	PD/NR/1755/84(A)	0.59
24	Suhura W/o. Abdulla Thuliyathu Manalaya Anamangad, P.O.	PD ₂ /NR/A/85/113	0.26
25	Kanhirala Ahammedkutty Puthenpurackal Mampad, P.O.	PD ₂ /NR/A/85/604	0.48
26	V.P.Kunhimammedkutty Kunnummel Pullippadam, P.O.	PD ₂ /NR/A/85/980	0.65
27	M.T.Mani Manimala Kannathu Kerala Estate, P.O.	PD ₂ /NR/A/85/1129	0.32

Contd.

Annexure-III. Continued

1	2	3	4
28	K.T.Paulose & Alice Kunnummel Puliacode Iringattiri, P.O.	PD ₂ /NR/A/85/1203	0.48
29	M.T.Varghese Muthalapa Thazhekod West, P.O.	PD ₂ /NR/A/85/1566	0.25
30	P.Mohammed Haji Alingal Puthalam Areacode, P.O.	PD ₂ /NR/A/86/192	0.77
31	Abdul Hameed Choondiyan Othai Perakamanna, P.O.	PD ₂ /NR/A/86/212	0.20
32	M.Narayanan Nair Mancheri Arackuparambu, P.O.	PD ₂ /NR/A/86/159	0.61
33	M.Parukuttyamma Mancheri Arackuparambu, P.O.	PD ₂ /NR/A/86/884	0.37
34	Aleyamma W/o.Zacheria Uthickamannil Munda, P.O. Edakkara	PD ₂ /NR/A/86/905	0.34
35	V.P.John Vadakkumkara Chokkad, P.O.	PD ₂ /NR/A/86/943	0.26
36	M.P.Mohan Silpi Aliparambu, P.O.	PD ₂ /NR/A/86/948	0.88
37	P.Sivasankaran Punnasseril Pathaikkara, P.O.	PD ₂ /NR/A/87/97	0.95

Contd.

Annexure-III. Continued

1	2	3	4
38	Thrassery Mohammed Kodassery Chembrassery, P.O.	PD ₂ /NR/A/87/312	0.43
39	K.V.Ramunni Warriar Usha Mandiram Chembrassery, P.O.	PD ₂ /NR/A/87/314	0.87
40	Maliackathodi Maideenkutty & Mohammedkutty Thazhekod West, P.O.	PD ₂ /NR/A/87/479	0.71
41	V.K.Hamza Haji Valelil Kattekattu Chorandi Aliparambu, P.O.	PD ₂ /NR/A/87/900	0.58
42	Mathew Kuralassery Padattukuzhiyil Edayur North, P.O. Valancherry	PD ₂ /NR/A/87/1089	0.53
43	Malayanakathu Sukumaran Basil Nivas Perinthalmanna, P.O.	PD ₂ /NRA/87/1334	0.95
44	Jose Vallikappan Parel Karuvarakundu, P.O.	PD ₂ /NR/A/88/179	0.88
45	A.V.Yohannan Arakandel Vengode, P.O.	PD ₂ /NR/A/88/200	0.41
46	M.P.Muhammed Punnakode Anamangad, P.O.	PD ₂ /NR/A/88/447	0.88
47	V.K.George Vadakkethayil Chungathara, P.O.	PD ₂ /NR/A/88/485	0.75

Contd.

Annexure-III. Continued

1	2	3	4
48	Pulincheri Ramunni Nair Devi Nivas Palunda Edakkara, P.O.	PD ₂ /NR/A/88/693	0.20
49	K.V.Sreenarayanan Parayathu Thozhuvannoor, P.O. Valancherry	PD ₂ /NR/A/88/852	0.65
50	T.Narendran & Kunhilexmy Kunnathukalam Puzhakattiri, P.O.	PD ₂ /NR/A/88/1352	0.45

B. Holdings newplanted/replanted without availing of subsidy from the Rubber Board under Rubber Plantation Development Schemes during the period 1980 to 1988

Sl. No.	Name and address of the owner	Year of planting	Area in ha
1	K.P.Sultan Kannadiparampan Pullippadam, P.O.	1980	0.76
2	Pottayil Marackar Amapoyil Vellayoor, P.O.	1981	0.33
3	Kambrathu Kammu S/o Moideen Pullippadam, P.O.	1982	0.67
4	Valiyapeedikakkal Unnikammed Pullippadam, P.O.	1983	0.57
5	Kondottiparamban Kuttiali S/o Mammatty Pullippadam, P.O.	1983	0.52

Contd.

Annexure-III. Continued

1	2	3	4
6	V.P.Kunhimohammedkutty Kunnummel Pullippadam, P.O.	1983	0.81
7	Thondiparampil Unneema Valillapuzha, P.O.	1983	0.44
8	Pakidiyiri Mohammed Payippullu Thuvvur, P.O.	1984	0.20
9	P.K.Punnoose Kayyalathu Cherukara, P.O.	1987	0.61
10	Thottiyil Mohamedali Padapparambu Pang, P.O.	1988	1.00

ANNEXURE-IV
IMPACT OF RUBBER PLANTATION DEVELOPMENT SCHEME AMONG SMALL
HOLDERS OF RUBBER IN MALAPPURAM DISTRICT

Pre-tested Interview Schedule

Details of the rubber grower and holding

1. Reg.Number/Permit Number :
2. Name and address of the grower :
3. Caste : SC/ST/Others
4. Education status of the grower : Primary/Secondary/Higher Secondary/College
5. Family status :
 - a) No. of family members :
 - b) Employed :
 - c) Unemployed :
 - d) Undergoing studies :
 - e) Engaged in agriculture including rubber :
 - f) Business etc. :
6. Total rubber area owned by the grower in ha : ~~Year of planting/Area/Clone~~
7. Area owned which is under other crops (crop-wise) :
8. Rubber area covered by the study : Year of planting/Area
9. Location of the holding :

Amsom/Desom :
Village :
Taluk :
10. Are you traditionally a rubber grower : Yes/No
11. Is the area a replanting/new planting or both :

RP/NP/Both
Area: RP
NP

12. If replanting, why it was replanted? : Poor yield/damaged by natural calamity/desire to plant with high yielding varieties
13. If a new planting, what was the crop cultivated previously? :
14. Why the area was planted with rubber? : Land is not suitable for crops/other crops was not profitable/desire to plant rubber
15. Have you applied for subsidy under the RDD scheme of the Rubber Board? : Yes/No
- a) If yes, from whom you got the information : Rubber Board/Other organisations/members of the family/relatives/friends/newspaper/publications/Radio/TV
- b) If no, why? : No information of the scheme/title was not clear/other trees were in excess/other reasons

Details of availing facilities under RPD Scheme

16. Extent and amount : Area/Rs.
17. Reimbursement of cost of planting materials : Polybagged plants: Rs.
Budded stumps : Rs.
Field budding : Rs.
18. Reimbursement of cost of fertilizers : Rs.
19. Assistance for soil conservation work : Rs.
20. Have you availed of the Long term loan from Bank? : Yes/No
- a) If Yes, which is the bank and what is the amount of loan? :

- b) If No, specify the reason :
21. Have you received 3% interest subsidy from the Rubber Board :
- a) If received, the Amount : Rs.
- b) If not, why? Specify reason :

Adoption of crop production practices

22. Varieties of planting materials used

Sl.No.	Name of variety	Area	When planted
--------	-----------------	------	--------------

23. Type of planting materials and source :
24. Spacing adopted and initial stand :
25. Was lining done according to the lie of the land? : Correct/Not correct
26. Topography of the land : Flat/Steep/undulating
27. Soil conservation work done : Individual terraces/terraces/edakkayala walls/silt pits
28. Is soil conservation work done satisfactorily : Satisfactory/Not satisfactory
29. Were other trees in excess removed : Yes/No
30. What are the other trees retained? : Coconut palm :
Arecanut palm :
Other trees :

31. Intercropping done or not : Yes/No
- a) If yes types of intercrops grown : Ist year
2nd year
3rd year
after 3rd year
- b) If no, reasons for intercropping :
32. Was cover crop established : Established/planted but not established
33. When it was established : Ist year/2nd year/3rd year
4th year
34. Type/types of cover crop : and area under each
35. Have you collected cover crop seeds : Yes/No

kg
36. Whether manuring was done as per recommendation : Quantity/dosage
37. Source of fertilizer used:
38. Whether organic manure was applied :
39. Whether soil/leaf analysis done (Specify the period etc.) : Yes/No

Plant protection measures

40. Were the plants shaded/ mulched/white washed during the initial years (specify) : Yes/No
41. Were the plants watered in the initial years for better establishment : Yes/No

42. Whether the crop grown as irrigated? : Yes/No

43. Whether spraying was done regularly : Yes/No

44. Type of fungicide used :

45. What are the other diseases noticed : 1)
2)
3)
4)

46. What are the curative measures adopted :

47. Were all the plants saved? : Yes/No

Growth performance of plants

48. Initial stand per hectare :

49. Present stand per hectare :

50. Reason for reduction in stand :

51. Present girth of plants/ trees and height :

52. Grading of girth : Below average/average/
good/excellent

Tapping, production and productivity

53. Year/month during which tapping was started :

54. Age at which tapping was started :

55. If trees were left untapped the reason therefor :

56. No. of trees under tapping :
57. Tapping system followed :
58. Whether tapping rest is given during summer months : Yes/No
59. Whether rain guarding is done : Yes/No
60. If done, type of rain guard :
61. Tapping days obtained during 1992-93 & 93-94 :
62. Quantity of rubber obtained : DRC of latex
----- + scrap
sheet rubber
1992-93
1993-94
63. System of processing adopted :
64. Frequency of disposal : Daily/Weekly/fortnightly/monthly etc.
65. Whether own tapping or by paid tapper : Own tapping/paid tapper
66. Daily tapping and collection wage :
67. Wages paid during 1992-93 and 93-94 :
68. Price realized : 1992-93
1993-94
69. To whom the produce is sold :
70. Have you got own sheeting: Yes/No
rollers
71. Hence you got smoke house: Yes/No

72. Have you insured the rubber area? : Yes/No
73. Are you a member of RPS? : Yes/No
74. Are you a member of Co-op. Society/Co-op. Bank? : Yes/No
75. Are you desirous to plant rubber in more area? : Yes/No
76. Constraints/difficulties :
experienced by the farmers
in availing aid under the
RPD scheme
- a) Delay in disbursement
 - b) Formalities
 - c) Lack of technical advice
 - d) Other
77. Other details if any :

Place:

Date :

V.R. Vijayakumar

ANNEXURE-V

LIST OF BANKS WHICH EXTENDED CREDIT FACILITIES TO THE RUBBER GROWERS IN MALAPPURAM DISTRICT UNDER THE RUBBER PLANTATION DEVELOPMENT SCHEMES DURING 1980 TO 1988

1. South Malabar Gramin Bank, Nilambur
2. South Malabar Gramin Bank, Karulai
3. South Malabar Gramin Bank, Vazhikkadavu
4. South Malabar Gramin Bank, Kinaradappu
5. South Malabar Gramin Bank, Eranhimangad
6. South Malabar Gramin Bank, Pothukal
7. South Malabar Gramin Bank, Vaniyambalam
8. South Malabar Gramin Bank, Keezhattoor
9. South Malabar Gramin Bank, Mampad
10. South Malabar Gramin Bank, Chokkad
11. South Malabar Gramin Bank, Cherukode
12. South Malabar Gramin Bank, Pulamanthole
13. South Malabar Gramin Bank, Pandikkad
14. South Malabar Gramin Bank, Anamangad
15. South Malabar Gramin Bank, Vettathoor
16. South Malabar Gramin Bank, Thirurkkad
17. South Malabar Gramin Bank, Chulliyode
18. South Malabar Gramin Bank, Karuvarakundu
19. South Malabar Gramin Bank, Kolathur
20. South Malabar Gramin Bank, Vengode
21. South Malabar Gramin Bank, Thazhekcode
22. South Malabar Gramin Bank, Thuvvur
23. South Malabar Gramin Bank, Elamkulam
24. South Malabar Gramin Bank, Elamkur
25. South Malabar Gramin Bank, Kuniyil
26. South Malabar Gramin Bank, Ooragam
27. Canara Bank, Nilambur
28. Canara Bank, Malappuram
29. Canara Bank, Wandoor
30. Canara Bank, Edakkara
31. Canara Bank, Vетtilappara
32. Canara Bank, Manjeri
33. Canara Bank, Mukkom
34. Canara Bank, Perinthalmanna
35. Canara Bank, Kalpakamcherry
36. Canara Bank, Edavanna
37. Canara Bank, Sreekrishnapuram
38. Canara Bank, Mannarkad
39. Federal Bank, Nilambur
40. Federal Bank, Angadipuram
41. Federal Bank, Edavanna
42. Federal Bank, Pandikkad

43. Federal Bank, Pulamanthole
44. Federal Bank, Ooragam-Vengara
45. Federal Bank, Areacode
46. Federal Bank, Alanallur
47. Union Bank of India, Nilambur
48. Union Bank of India, Pottasserry
49. Vijaya Bank, Thootha
50. Vijaya Bank, Malappuram
51. Vijaya Bank, Tirur
52. Syndicate Bank, Tirur
53. Indian Bank, Nilambur
54. State Bank of Travancore, Pottasserry
55. State Bank of India, Manimooly
56. Bank of Baroda, Palakkad
57. Nedungadi Bank, Kalikavu
58. Service Co-operative Bank, Kalikavu
59. Service Co-operative Bank, Ooragam
60. Service Co-operative Bank, Chungathara
61. Service Co-operative Bank, Vazhikkadavu
62. Service Co-operative Bank, Pothukal
63. Service Co-operative Bank, Panthalloor
64. Service Co-operative Bank, Amarambalam
65. Service Co-operative Bank, Thachinganadam
66. Service Co-operative Bank, Wandoor
67. Thachinganadam Service Co-operative Bank, Kalikavu
68. Panthalloor Service Co-operative Bank, Kadambode
69. Moothedam Service Co-operative Bank
70. Nilambur Service Co-operative Bank, Chandakkunnu
71. Vazhikkadavu Service Co-operative Bank, Manimooly
72. Pothukal Service Co-operative Bank, Kadambode
73. Chaliyar Service Co-operative Bank, Akampadam
74. Ernad Co-operative Land Mortgage Bank, Manjeri
75. Ernad Co-operative Land Mortgage Bank, Karuvarakundu
76. Syndicate Bank, Kalamassery
77. Land Mortgage Bank, Manjeri
78. Co-operative Agricultural Development Bank,
Perinthalmanna
79. Ernad Co-op. Agricultural Development Bank, Nilambur
80. Ernad Co-op. Agricultural Development Bank, Kondotty
81. Ernad Co-op. Agricultural Development Bank, Majeri
82. Ernad Co-op. Primary Agricultural Development Bank,
Kondotty
83. Tirur Co-op. Agricultural Development Bank, Valancherry

