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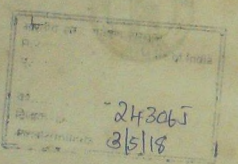
ANNUAL REPORT AND ACCOUNTS OF THE RUBBER BOARD FOR THE YEAR 1986-'87

THE RUBBER BOARD
[GOVT. OF INDIA, MINISTRY OF COMMERCE]
KOTTAYAM—686 001
KERALA STATE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THE RUBBER BOARD

Annual report on the activities for the year 1986/87

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ANNUAL REPORT ON THE WORKING OF THE RUBBER BOARD FOR THE YEAR 1986/87

PART I - INTRODUCTION

This is the Annual Report of the Rubber Board on its working for the year 1986-87. It contains a summary of the activities from Ist April 1986 to 31st March 1987.

uses, it plays an important role in the industrial

Rubber is relatively a new crop for the people of India. As a strategic raw material with thousands of Industrial/and economic development of the country. Europeans were the first to introduce rubber cultivation in our country, at the beginning of the present century. At first its cultivation was confined to the organised sector. Indian-owned plantations and more specially small holdings made their appearance later. After independence the growth was very fasts. In the meantime, research in prominent rubber growing countries had progressed well, resulting in breeding of high yielding clones and developing improved cultural practices and efficient crop exploitation and processing techniques. These called for quick changeover from traditional methods to modern practices/ technologies.

The agro-climatic as well as socio-economic environment in the rubber growing tracts of India differ widely from those in other rubber producing countries. In selection of planting materials, soil conservation measures, plant protection techniques, tapping, crop processing, etc. India had to evolve suitable practices/technologies. The Rubber Research Institute of India was accordingly established in 1955. Development/extension efforts had been taken up in the meanwhile. With the sustained research and development activities in course of time, coupled with extension and advisory back-up for translating the techniques evolved in the laboratories to the planters' field, India soon emerged as a major force among the natural rubber producing countries in the world.

In breeding high yielding planing materials India is not behind any other country. It has evolved its own clones of which RRII 105, with annual yield potential of 2500 Kg. per hectare, can stand comparison to any modern clone in the world. Other rubber producing countries like Malaysia, Thailand and China have obtained from us nucleus material of RRII 105 for propagation and studies on its performance in local conditions. More varieties in the RRII 200 and 300 series are in the pipeline, with promise for still higher yields. In 1955 India was producing only 23,000 tonnes of natural rubber. In about 3 decades it has registered nearly a ten-fold growth - the production in 1986/87 was of the order of 220,000 tonnes. The average productivity of the plantations, measured in terms of yield per hectare, went up during the period from 300 to 900 Kg.

Growing the crop in association with leguminous ground cover which has efficiency to fix atmospheric nitrogen into the soil, application of fertilisers after soil and leaf analysis, exploitation of the crop with the application of yield stimulation techniques, processing technically specified rubbers that offer process advantage and energy saving to the manufacturer, consumption research to improve the technological properties of rubber, etc. are some of the major techniques we follow, as in the case of other major rubber producing countries.

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India is not self-sufficient in natural rubber. The production during 1986-87 was 219,520 tonnes while the consumption was 257,305 tonnes. The gap is of the order of 37,000 tonnes. Improving domestic production to take the country to self sufficiency is one of the prime objectives of the Rubber Board. As the country accelerates its pace of industrial development, the demand for rubber will go on increasing. It is estimated that India would require 5 lakh tonnes of natural rubber by 2000 AD. To achieve this we should have 4 lakh hectares of yielding plantation by them. The present area under rubber is 3.8 lakh hectares. About 2 lakh hectares have to be additionally put under rubber by 2000 AD as about 20% of the plantations would normally be in the immaturity stage at any point of time in an expanding plantation sector. Possibility of large scale expansion of rubber in the traditional region is limited owing to scarcity of land. The scope for expansion lies in non-traditional areas in the North-Eastern States, Madhya Pradesh, Orissa, Andamans, etc. Though steps have been taken to extend rubber cultivation to these areas, lack of infra-structural facilities impede the progress.

1. Review of progress

Natural rubber industry performed well in 1986-87; its production increased to 219,520 tonnes from 200,645 tonnes in 1985-86, registering 9.5% growth rate. The growth in consumption was equally good - 257,303 tonnes, as against 235,440 tonnes during the previous year, recording a rate of 9.3%. To meet the gap between production and consumption STC imported 40,228 tonnes of NR during 1986-87. In addition, 5128 tonnes of natural rubber was imported directly by the exporters of rubber products through the export incentive scheme. As the year 1986-87 came to a close, STC had in stock 11,672 tonnes of natural rubber, including 6,735 tonnes of domestically procured quantity.

The developmental activities undertaken during the period consisted of implementation of schemes for the following:

1. Promotion of newplanting and replanting of rubber.
2. Production and distribution of high yielding planting materials.
3. Improving production and crop processing through extension services, training, demonstration, supply of essential inputs, etc.

Promotion of newplanting and replanting was mainly carried out through implementing an integrated scheme called the Rubber Plantation Development Scheme on an all India basis. The Rubber Plantation Development Scheme Phase II for implementation during the VII Plan received the Government's approval during this period. Under this scheme financial assistance in the form of cash grants and bank loans, and free technical assistance are extended to the participating growers. Newplanting and replanting were got carried out in about 8,500 hectares and 3,500 hectares respectively. Over Rs.11 crores was disbursed as financial assistance to growers during the year. A total of 19,783 applications were received for assistance covering an area of 14,539.85 hectares.

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In view of the limited scope for expansion of rubber cultivation in the traditional rubber growing areas, development of rubber plantations in selected non-traditional tracts is being undertaken on a massive scale. Such non-traditional areas are identified in the North-east region, Orissa, Andaman & Nicobar Islands, Goa, Maharashtra, etc. Under the 6.18 crore scheme for accelerating rubber plantation development in the north-eastern region, newplanting was got done in an estimated 3,000 hectares during the year. Comprehensive arrangements were also made to step up newplanting in 4,000 hectares during 1987-88, including large scale transport of planting materials from the traditional regions for raising polybag plants.

A significant breakthrough was achieved in developing a solid medium in which shoot tip cultured plants developed tap roots and leaves. They are now undergoing the hardening process in the soil medium under glass house conditions. The tissue culture derived plants look similar to their original clonal source. Two indigenously developed clones RRII-203 and 208 were released for planting. Their yield potential and other characters were found to be better than the current highest yielder in India - RRII 105.

A Central Testing Laboratory was opened for testing various parameters of processed rubber and other products. Work relating to establishment of three more crumb rubber processing factories in the co-operative sector was completed during the year. The factories have started trial production.

An Electronic Data Processing Unit has been established in January 1987.

The Cost Accounts Branch of the Ministry of Finance conducted a detailed study on the cost of production of rubber. The Rubber Board actively co-operated with this study. They have submitted their report to the Government.

2. Rubber Prices

Though the market witnessed swings up and down during 1986-87, the average price for NR was Rs.1660 per quintal, a fair improvement over the previous year. The Government of India had earlier fixed the fair price of RMA-4 grade rubber at Rs.1650/- per quintal. The average of the market moved more or less in tune with this, though in May it was at 1738, the peak for the year, and in October Rs.1584, the lowest.

As the peak production season started in September, the market started to come down. The average of Rs.1686 in August slipped to Rs.1605 in September. The STC enetered the domestic market as part of the price support procurement envisaged in the buffer stock scheme and made domestic purchases through the cooperative network and through the outlets of the Kerala State Warehousing Corporation. A total of 6,735 tonnes was procured from September to December 1986.

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3. Expenditure

The total gross expenditure during 1986-87 went up to Rs.2193.12 lakhs; Rs.1,551.96 lakhs under Plan and Rs.641.16 lakhs under non-plan. The funds received from the Government amounted to Rs.2048.98 lakhs, as against Rs.1,266.58 lakhs during the previous year. The increase is 62%. An amount of Rs.941.91 lakhs was collected towards excise duty on rubber and Rs.923.17 lakhs was remitted to the Consolidated Fund of India during the year.

4. Visit of One-man Committee

The Government of India, Ministry of Commerce appointed Sri.M.Ramakrishnayya, IAS (RTD) as One-Man Committee to review the functions, activities and cost effectiveness of the Rubber Board, the Coffee Board and the Tea Board. The Committee was constituted to make recommendations on the following also.

(1) The future role of the Board in respect of production, extension services, development scheme, promotional/marketing activities in the broad perspective of national and international developments in the commodities and suggest essential changes in the statutes,

(2) the Board's work among small growers, trimbal and backward classes, and

(3) financial activities for infrastructural development in the context of the activities of commercial banks and NABARD.

The One-Man Committee visited the Rubber Board from 10 to 12 March, 1987 and held detailed discussions with the concerned interests.

5. International developments

The latest data published by the International Rubber Study Group indicate that total consumption of natural rubber rose by 0.9% to a new peak of 4.4 million tonnes in 1986. According to the supply/demand balance, the overall position of NR moved into surplus (by 30,000 tonnes) compared with a deficit of 20,000 tonnes in 1985. Estimated supply/demand balance for 1985-86 is given below:-

	Natural Rubber (in 000 tonnes)	
	1985	1986
Production	4330	4430
Consumption	4355	4385
	-25	+45

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The average price of RSS-3 grade rubber in the Kuala Lumpur market was M$ 202.1 per quintal for 1986 which was M$ 179.8 in 1985. A new International Natural Rubber Agreement (INRA) was adopted in March 1987 under the auspices of the UNCTAD to stabilise the price of natural rubber. This agreement succeeds the 1979 agreement which is to expire in October 1987 after its two year extension period. The maximum size of the buffer stock in the new pact is fixed at 5.5 lakh tonnes. The main features in the new pact resemble those in the existing agreement.

5. International meetings/conference

The 96th Group meeting of the International Rubber Study Group was held in London from 16 to 20 June 1986. An Officer from the High Commission of India, London represented India at the meeting.

The 6th Seminar and Workshop on 'Progress and Development of Rubber Smallholders' was held in Indonesia by the Association of Natural Rubber Producing Countries from 22 to 26 July 1986. India was represented at the meeting by the Chairman, Rubber Board and the Jt.Rubber Production Commissioner

The 16th meeting of the Executive Committee of the Association of Natural Rubber Producing Countries was held in Kuala Lumpur on 11 and 12 September, 1986. The First Secretary, High Commission of India represented India at the meeting.

The meeting of the International Rubber Research and Development Board, along with the Directors' meeting and the Plant Breeders meeting was held in Goa from 28 to 31 October 1986. The Chairman, Rubber Board, the Director of Research and heads of Divisions in the Rubber Research Institute attended the meeting.

A workshop on 'Cooperation among Asian Producing Countries in trade and Marketing of Natural Rubber' was held in Thailand in February 1987, organised jointly by the ANRPC, ESCAP and UNCTAD. The Chairman, Rubber Board represented India at the Workshop. India had presented two papers at the Workshop, one on 'Status of NR in India' and the other on 'Prospects for ensuring remunerative price for NR in Asian Producing Countries'.

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PART - II - CONSTITUTION AND FUNCTIONS OF THE BOARD

1. Introduction:

On the recommendations of the ad hoc Committee appointed by the Govt. of India in 1945, the Rubber (Production and Marketing) Act, 1947 was passed, which came into force on 19 April 1947. The Indian Rubber Board was constituted under this Act, "to promote by such measures as it thinks fit the development of the rubber industry" in India. The Rubber Production and Marketing (Amendment) Act of 1954 made certain changes in the constitution of the Board and its name was changed as 'Rubber Board'. This Act came into force on Ist August 1955. The Rubber Act of 1947 was further amended by the Rubber (Amendment) Act 1982 to enable the Central Government to appoint a part time Chairman/whole time Chairman for the Board and an Executive Director on whole time basis (if considered necessary by the Central Government) to exercise such powers and perform such duties under the direction of the Board as may be prescribed or as may be delegated to him by Chairman.

2. Constitution.

The Rubber Board is attached to the Ministry of Commerce of the Central Government. The Board has at present a full time Chairman appointed by the Central Government. He is the principal executive officer and is responsible for the proper functioning of the Board and implementation of its decisions and discharge of its duties under the Rubber Act. There are 25 other members of the Board consisting of -

1. two members to represent the State of Tamilnadu one of whom shall be a person representing rubber producing interest

2. eight members to represent the State of Kerala, six of whom shall be representing the rubber producing interests, three of such being persons representing the small growers;

3. ten members to be nominated by the Central Government of whom two shall represent the manufacturers and four labour;

4. three members of Parliament of whom two shall be elected by the Lok Sabha and one by the Rajya Sabha;

5. the Executive Director (ex officio); and

6. the Rubber Production Commissioner (ex officio).

The list of members as on 31.3.1987 is given at the end of this report.

One of the members of the Board is elected as Vice Chairman. Sub Committees are formed to scrutinise various affairs affecting the rubber industry and make recommendations to the Board. Eight such Committees, namely, Executive Committee, Research and Training Committee, Development and Extension Committee, Planting Committee, Statistics & Import-Export Committee, Market Development Committee, Labour Welfare Committee and Staff Affairs Committee are constituted.

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Chairman. Sri PC Cyriac, IAS continued to be the Chairman of the Board.

Vice Chairman. At the 105th meeting of the Board held on 5 May 1986 Sri K Padmanabhan was elected as Vice Chairman for one year from 7.6.1986, and he continued to hold the office.

3. Functions:

The functions of the Board as defined under clause 8 of the Act are -

"(1) To promote by such measures as it thinks fit the development of the rubber industry.

(2) Without prejudice to the generality of the foregoing provision, the measures referred to therein may provide for:

(a) undertaking, assisting or encouraging scientific, technological or economic research;

(b) training students in improved methods of planting, cultivation, manuring and spraying;

(c) the supply of technical advice to rubber growers;

(d) improving the marketing of rubber;

(e) the collection of statistics from owners of estates, dealers and manufacturers;

(f) securing better working conditions and the provision and improvement of amenities and incentives for workers, and

(g) carrying out any other duties which may be vested in the Board under rules made under this Act.

(3) It shall also be the duty of the Board -

(a) to advise the Central Government on all matters relating to the development of the rubber industry, including the import and export of rubber;

(b) to advise the Central Government with regard to participation in any international conference or scheme relating to rubber;

(c) to submit to the Central Government and such other authorities as may be prescribed, half yearly reports on its activities and the working of this Act; and

(d) to prepare and furnish such other reports relating to the rubber industry as may be required by the Central Government from time to time".

4. Meetings of the Board and its Committees.

The following meetings of the Board and its Committees were held during the year.

(a) Board meetings - On 3 occasions during the period viz., on 5.5.1986, 8.10.1986 and 30.3.1987.

(b) Committee meetings:

(i) Executive Committee - on 5 occasions

(ii) Labour Welfare Committee - on 4 occasions.

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(iii) Planting Committee and Dev. & Extension Committee — Combined meeting on 4 occasions.

(iv) Market Development Committee - on 4 occasions

(v) Research & Training Committee - on 2 occasions.

(vi) Statistics & Import/Export Committee — on 5 occasions

(vii) Staff Affairs Committee - on 3 occasions.

5. Organisational set up.

The activities of the Board are classified under five Departments, viz., Administration, Rubber Production, Rubber Research, Rubber Processing and Finance & Accounts, headed respectively by the Secretary, the Rubber Production Commissioner, the Director of Research, the Project Officer and the Financial Adviser.

The headquarters of the Board, including the Administration, Rubber Production and Finance & Accounts Departments are located at the Kottayam Public Library building, Sastri Road, Kottayam-1. There are six Sub/Liaison Offices under the Administration Department. The Rubber Production Department has 26 Regional Offices, 109 Field Stations, 17 Nurseries and 6 Tappers Training Schools, located at different rubber growing regions. The Rubber Research cum Development Station in South Andamans, the Zonal Office in Guwahati, Assam, the Nucleus Estate cum Training Centre at Agartala in Tripura and the Zonal Office at Bhubaneswar in Orissa also come under the Department of Rubber Production. The Research Department and the Department of Rubber Processing function in the Board's own building at the campus of the Rubber Research Institute, Kottayam-9. The Research Department runs two Experiment Stations in Kerala, one at Kottayam and the other at Chethackal, a Regional Research Station in Tripura, a Trial Plantation at Dapchari in Maharashtra and Regional Research Stations in Assam, Meghalaya and Mizoram and Orissa. The Pilot Crumb Rubber Factory located at Kottayam is run by the Department of Rubber Processing.

The Chairman exercises administrative control over all departments and offices of the Board.

The total number of officers and staff under the Board as on 31.3.1987 was 1616. Group-wise break up is given below:

	Group				
	A	B	C	D	Total
Administration	11	51	149	27	238
Rubber Production	47	199	676	44	966
Research	47	90	96	23	256
Rubber Processing	14	20	21	3	58
Finance & Accounts	7	16	68	7	98
	126	376	1010	104	1616

The above is exclusive of worker category employed in Board's farms, nurseries, etc.

Very cordial relations existed between the staff and the management. The good work turned out by them as a whole has resulted in the impressive record of achievement during the year.

Advance steps were taken to reconstitute the Board as its 3year term was to expire in April, 1987, which included election to the large growers constituencies in Kerala and Tamilnadu, nomination by the Government, etc. The progress on the activities of the Board is documented through two half-yearly reports and one annual report and presented to the Government after scrutiny by the Board.

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PART III - RUBBER PRODUCTION

1. General:

An important function of the Rubber Board is to promote natural rubber production in the country. The demand for rubber isgoing up year after year. Production and consumption of NR during the past 5 years were as given below:

	Production	Consumption
	(in tonnes)	
1982/83	165,850	195,545
1983/84	175,280	209,480
1984/85	186,450	217,510
1985/86	200,465	235,440
1986/87	219,520	257,305

The gap between demand and domestic production was about 30,000 to 35,000 tonnes a year. It was met by imports from other rubber producing countries.

Achieving self-sufficiency in NR production is the main objective of the Board. The development strategy adopted by the Board for improving NR production consists mainly of the following:

(a) Modernisation of existing plantations to improve productive efficiency, increaseoverall output and reduce the cost of production; and

(b) Increasing production through expansion of rubber cultivation in traditional and non-traditional areas.

2. Organisational set up:

The development and extension activities are looked after by the Department of Rubber Production, which has the following functions:

1. Licensing and registration of rubber estates.
2. Formulation and implementation of schemes for development of rubber plantations,
3. Carrying out advisory and extension work, imparting training in rubber cultivation and production, arranging supply of estate requisites and rendering other services,
4. Managing of Rubber Research cum Development Station, South Andamans, and
5. Conducting field investigations for collection of statistical data on production, sale and stock of rubber in small holdings.

The Department is headed by the Rubber Production Commissioner. He is assisted by 4 Jt. Rubber Production Commissioners, 7 Deputy Rubber Production Commissioners and a complement of other officers and staff. At the Central Office, the Department functions under two wings, Development and Extension.

The field activities are managed through 27 Regional Offices grouped under four Zones, as shown below:

South Zone	North Zone	East Zone	North-east Zone
Nagercoil	Ernakulam	Bhubaneswar	Guwahati
Trivandrum	Trichur		Agartala
Punalur	Palghat		Silchar
Pathanamthitta	Nilambur		Tura
Changanacherry	Calicut		Diphu
Kottayam	Tellicherry		
Kanjirappally	Taliparamba		
Palai	Kanhangad		
Thodupuzha	Mangalore		
Moovattupuzha	Ponda (Goa)		

The Regional Office at Port Blair is managed direct from the Central Office.

Under the Regional Offices there are 106 field offices, 16 Regional Nurseries and 7 Rubber Tappers' Training Schools.

Management, control and supervision at the Zonal level are exercised by Dy. Rubber Production Commissioners excepting for the North-eastern Zone which is under a Jt. Rubber Production Commissioner assisted by a Dy. Rubber Production Commissioner. The two Dy. Rubber Production Commissioners in charge of North and South Zones operate from the Central Office. A Jt. Rubber Production Commissioner is in charge of the Nucleus Rubber Estate and Training Centre (NRETC) project in North Eastern Region and is stationed at Agartala. A Dy. Rubber Production Commissioner manages the Rubber Research cum Development Station (RRDS) in South Andamans.

The progress achieved under the various schemes implemented by the Department is summarised below.

3. Rubber Plantation Development Scheme, Phase II.

The main instrument adopted to achieve modernisation of existing plantations to improve productive efficiency and to increase production through expansion of rubber cultivation is the Rubber Plantation Development Scheme, the biggest scheme of the Board. Its Phase I programme was implemented during the VI Plan period, when the target of planting up 60,000 hectares was exceeded. The Phase II programme approved for the VII Plan period envisages a target of newplanting and replanting 40,000 hectares. The target originally proposed at 135,000 hectares was scaled down owing to resource constraints.

To promote rubber planting the scheme provides for cash subsidy at the rate of Rs.5,000 and additional assistance for use of polybagged budgrafts at the rate of Rs.2,700 per hectare. Growers in the non-traditional areas all over India and those who possess rubber area of 5 hectares and below in the traditional areas comprising of Kerala and Tamilnadu alone are eligible for the cash subsidy. To supplement the cash assistance in meeting the full cost of cultivation, the growers can avail of the bank loan under the NABARD Refinancing scheme. In such cases the Board pays 3% interest out of the 12.5% interest charged by the banks. Free advisory and extension assistance is also extended to the growers at all stages of planting and maintenance.

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The cash subsidy is given in seven annual instalments, after completion of the cultural operations for each year of the pre-bearing period. The progress of the scheme during the past two years of the VII Plan is given below.

1985/86. The total number of applications received for 1985/86 was 27,640. Of this subsidy permits were granted to 15,748 units covering an area of 10,788.51 hectares. Several applicants did not meet the eligibility criteria. Many others did not plant up the area even though applications were filed. Processing of applications is still in progress.

1986/87. The number of applications received for the year amounted to 22,274. As on 31.3.1987, the subsidy permits granted came to 7,302 covering an area of 5,592.44 hectares. Majority of the applications were still under processing. Here too ineligible cases and cases where plantings were not carried out are not uncommon.

The total expenditure under the Rubber Plantation Development Scheme Phase II programme was Rs.526.94 lakhs.

The other developmental activities were the following.

4. Rubber Plantation Development Scheme Phase I.

This scheme envisaged payment of subsidy during the VI Plan period at the rate of Rs.5,000 per hectare for replanting and newplanting of rubber for growers possessing rubber area upto 20 hectares and at Rs.3,000 per hectare for other growers. The target set for planting/replanting was 60,000 hectare, but this was surpassed and the total area planted during the Plan came to 70,385.84 hectares. The expenditure under the Phase I programme during 1986/87 was Rs.607.54 lakhs. The total expenditure under the programme until 31.3.1987 amounted to Rs.2,062.81 lakhs. A statement showing progress in implementation of the scheme is appended (App. I).

5. Bank credit.

The growers participating in the Phase II programme were also eligible for the bank credit under the NABARD refinance Scheme. However, only 3,180 growers had availed of the credit facilities till 31.3.1987. The area covered under bank finance came to 4,523.87 hectares. The Board's scheme envisages subsidising 3% interest of the 12.5% interest charged by the bank.

6. Rubber Newplanting Subsidy Scheme, 1979.

This was a forerunner to the integrated Rubber Plantation Development Scheme of 1980. The scheme introduced for the first time cash subsidy support for new rubber plantation. Cash subsidy was offered at the rate of Rs.7,500 per hectare for taking up fresh plantings by petty small growers upto 2 hectares and at Rs.5,000 per hectare for planting between 2 and 20.23 hectares by other small growers. The target fixed for planting under the scheme was 4000 hectares. However, an area of 6,938.56 hectares was actually got planted. Payments in some cases had spilled over to later years since the planters concerned could not complete the cultural operations in time. An amount of Rs.32.26 lakhs was granted during 1986/87 in such cases. The total amount of subsidy paid under the scheme till 31.3.1987 was Rs.435.59 lakhs. The beneficiaries were also eligible for long term credit from the banks under the NABARD's

Refinance credit scheme in order to supplement the financial assistance from the Board.

7. Replanting Subsidy Scheme.

The scheme was in operation from 1957 to 1979 with varying rates of subsidy ranging from Rs.250 to Rs.400 per acre on a slab basis from 1957 to 1959, Rs.1,000 per acre (Rs.2471 per hectare) from 1960 to 1974 and Rs.3,000 to Rs.7,500 per hectare on slab basis from 1975 to 1979. Since the inception of the scheme, a total amount of Rs.19.13 crores was sanctioned upto 31.3.1987 for replanting a total area of 53,605 hectares. Payments in certain cases had spilled over to later years since the planters concerned could not complete the cultural operations in time. An amount of Rs.25,73,000 was sanctioned during 1986/87 in such cases. A statement showing the subsidy sanctioned since the inception of the scheme is appended (App.II).

8. Licensing and registration:

During the yaar 10,293 new rubber plantations were registered covering a total area of 6,924 hectares. Replanting licences were issued to 6189 units for an area of 6,530 hectares. The amount realised as fee for planting licences amounted to Rs.16,482.00.

9. Developments in the non-traditional region.

Scope for extensive cultivation of rubber in the traditional region is steadily coming down. Almost the entire arable land in the region has been put under one crop or another, though isolated pockets may still be available for cultivation. However, the non-traditional region has enough potential for large scale cultivation of rubber. The Sub Group on Rubber of the Working Group on Plantation Crops set up by the Government of India to formulate the VII Plan proposals had suggested expansion of rubber in about 2.5 lakh hectares in the non-traditional areas. The break up is as given below:

	Hectares
Assam ..	50,000
Orissa ..	50,000
Karnataka ..	30,000
Tripura ..	30,000
Goa and Maharashtra ..	30,000
Andaman islands ..	20,000
Other States & Union Ter. ..	35,000

The Central Government had approved the North Eastern Rubber Development Project with an outlay of Rs.6.18 crores for planting up 24,000 hectares with rubber in a period of 6 years from 1984. The total area planted till 1986 was 5,600 hectares. The tempo of planting will be intensified in the coming years to attain the target of 24,000 hectares by 1989.

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The development component of the scheme envisaged strengthening the organisation machinery in the region. This has been done. A Zonal Office was set up in Guwahati, in addition to strengthening the Regional Offices at Agartala and Guwahati. Regional Offices were also established in Silchar and Diphu (Assam) and in Tura (Meghalaya).

The credit linked subsidy scheme to promote rubber cultivation, i.e. the Rubber Plantation Development Scheme, coupled with the extension work ofthe Board's officers, motivated many a farmer in the small sector to take up rubber cultivation. The area planted during 1986 under the scheme throughout the non-traditional region is given below.

		Hectares
Tripura	..	1026.71
Karnataka	..	399.55
Assam	..	150.63
Goa	..	55.63
Meghalaya	..	44.35
Andaman Islands	..	12.96
		1689.94

9.1. Nurseries:

High yielding plant material plays a significant role in the commercial success of any agricultural crop. In order to ensure supply of high yielding varieties to the north-east, about 6.3 lakh of such budded stumps were sent from Kerala for distribution to the planters in the region to raise polybag plants for 1987 planting. To ensure regular availability of such materials, four Regional Rubber Nurseries were set up in the north-east, in Ballacherra and in Diphu (Assam), in Tulakona (Tripura) and in Tura (Meghalaya) Assorted seeds were procured from Kerala and sent to the region to raise stock seedlings for eventual budding in 1987. A total of 280,000 stock seedlings have been raised in these nurseries.

9.2. Demonstration plots.

There is good scope for development of rubber plantation in Tripura in the small scale sector. But rubber is not a popular crop in the State since the farming community is not conversant with the techniques in its cultivation. In order to demonstrate the correct techniques in planting rubber, establishment of 5 demonstration plots in the private sector was encouraged in the State, each of less than one hectare in extent (total 3.54 hec). A total of 2120 polybagged plants of RRIM 600 and GTI varieties were given free for cultivation in these plots. The owners receive cash subsidy under the Rubber Plantation Development Scheme and in addition, half the cost of fertiliser mixture. The Board's technical officers assisted the owners in doing in time the cultural operations properly. The plots are coming up well.

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9.3. NRETC.

The North Eastern Rubber Development Programme envisaged establishment of a Nucleus Rubber Estate and Training Centre in a 1000 hectare plot. There were local problems for the Tripura Govt. to identify a suitable plot for allotment to the Board, because of which establishment of the NRETC was delayed. Eventually the Government could locate and hand over 1000 acres (402 hec) of land to the Board on 25.2.1987. But eviction of a few tribal families from the plot remained to be done. Because of local resistance preliminary operations like preparing the land for planting were started in 35 hectares under police protection. The National Building Construction Corporation, a Govt. of India undertaking, has been entrusted with construction of Office buildings, Training Centre, Processing centre, Staff quarters, Labour liones, etc. for the NRETC.

9.4. Orissa.

Orissa holds good potential for expansion of rubber cultivation. Now the State has 50 hectares under rubber, 45 hec. in the public sector and 5 hec. in the private sector. The Board has set up a Zonal Office in Bhubaneswar and two Field Offices, one in Dhenkanal and the other in Berhampur. To supply high yielding plant materials, a nursery in 2.4 hec. has been started. About one lakh budded stumps were sent to Orissa from Kerala for polybagging by about 12 voluntary organisations which will supply the polybagged plants to small growers for planting in 1987.

The Board has persuaded the Govt. of Orissa to encourage rubber cultivation on a large scale in the public sector. Accordingly, three public sector corporation viz., the Orissa Plantation Development Corporation and Similipahar Development Corporation have been asked to plant up rubber in 1000 hectares each in the next 5 years. The Orissa Govt. have also issued orders to encourage large scale cultivation of rubber in the State in the joint sector.

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The Board has approached the State Government to allot 250 hec. of land to establish a Nucleus Rubber Estate and Training Centre.

9.5. Other States:

There is scope for introducing rubber cultivation in Andhra Pradesh and Madhya Pradesh. The Board has started a nursery at Indukuripetta in Andhra Pradesh where 54,000 stock seedings have been raised out of the seeds sent from Kerala, for budding during 1987.

Bastar District of Madhya Pradesh also offers potential for rubber cultivation in certain areas. The Board has started a trial plantation in 2 hectares in the State in collaboration with the State Horticultural Department.

10. Extension and Advisory Services.

A factor of basic importance to the modernisation of any agricultural crop is exposure of the farming community to the new developments in the production technology. The Board's extension and advisory services are geared to meet this objective. Successful cultivation and production of rubber involve application of sophisticated techniques

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developed out of long years of studies, observations and experience. Years of research work has yielded good results in the form of high yielding planting materials, discriminatory fertiliser application techniques after soil and leaf analysis, and establishment of leguminous ground cover to achieve soil moderation, retention of soil moisture and getting fixed atmospheric nitrogen in the soil. Proper plant protection measures to protect the crop from pests and diseases and correct crop harvesting methods and processing techniques were also developed to assist the planter to reap maximum return from rubber cultivation. These developments have to be practised in the farmers' fields, for which the extension and advisory network educate and train the planters, providing where necessary financial assistance and incentives for adoption of the modern technology.

The Board's extension officers made over 1.5 lakh visits to the rubber plantations throughout India during the year - both to small and large holdings - of which over 3400 visits were exclusively for advisory work. Seminars, study classes and radio broadcasts are useful media for reaching the planters in this educational endeavour. During the year 619 seminars/study classes were conducted in addition to arranging 35 radio broadcasts on rubber cultivation. Over 21,000 growers participated in the seminars.

10.1. Planting material. For any successful agricultural operation easy availability of quality planting material is an important element. The Rubber Board has a Central Nursery and 10 Regional Nurseries in the traditional region and six nurseries in the non-traditional region, from where healthy budded stumps and budwood of high yielding clones are distributed to the growers at reasonable price. From the nurseries in the traditional region 10 lakhs of brown budded and 2.77 lakhs of green budded stumps and 20,350 metres of budwood were distributed to the growers. Considering easy establishment and uniform growth, production of polybag plants is encouraged in the non-traditional region. The Board's nurseries in the region intend to raise polybag plants, mainly for free supply to the farmers under the SC/ST category.

As part of the advance action to raise budded stumps for the next year, 66.08 lakhs of assorted rubber seeds were procured to raise stock seedlings in the nurseries. The area utilisation in different nurseries was as follows:

Name of nursery	Total extent in ha.	Seedling area in ha.	Budwood area in ha.	Area utilised for buildings, roads footpath et. in ha.
1. C.N.Karikkattoor	20.23	16.20	2.15	1.88
2.R.N.Kadackamon	4.04	2.80	0.55	0.69
3. " Perumpulickal	5.50	1.80	0.60	3.10
4. " Neriamangalam	6.07	4.60	0.87	0.60
5. " Kanhikulam	3.32	2.16	0.43	0.73
6. " Ulickal	5.15	2.30	0.79	2.06
7. " Manjeri	2.02	1.28	0.36	0.38
8. " Peruvannamoozhy	3.60	2.30	0.36	0.94
9. " Alackode	3.42	2.25	0.75	0.42
10 " R.R.D.S. (South Andamans)	1.00	0.80	0.20	..
11 " Thonnackal	4.05	1.00	..	3.05
	58.40	37.49	7.06	13.85

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New nurseries in Non-traditional areas:

1.	Tulakona (Agartala)	5.30	1.30	0.74	0.61
2.	Balachera (Assam)	13.00	2.50	0.30	..
3.	Diphu (Assam)	6.00	1.00	..	0.11
4.	Tura (Meghalaya)	5.00	1.55	..	..
5.	Khandagiri (Bhubaneswar)	1.24	1.10	..	0.14
6.	Indukuripetta (A.P.)	1.21	1.00	..	0.26

10.2 Cover Crop. Well established leguminous ground cover in rubber plantations keep the fields free from weed growth. Getting fixed atmospheric nitrogen into the soil, retention of soil moisture and achieving soil moderation are other advantages of leguminous ground cover. It has been noticed that yield is comparatively better in plantations where there is good soil moisture. In order to popularise establishing leguminous ground cover in plantations of small growers from the very start, 12.53 tonnes of cover crop seeds was procured and distributed to the growers with an element of subsidy in price.

10.3. Sprayer-cum-duster. The rubber plantations are affected by abnormal leaf fall disease every year during the monsoon season. Spraying of fungicides prior to the onset of monsoon is a prophylactic measure adopted to protect the trees from the attack of the disease. Oidium heveae also affects the plantations early in the year, against which sulphur dusting is adopted as a remedial measure. These two diseases bring about significant crop loss in rubber plantations. Though large planters adopt protective measures against the diseases, small growers in majority of the cases leave the rubber trees unprotected. To help them adopt protective measures, purchase of low volume power operated sprayer-cum-duster is subsidised by the Board. Cooperative societies and individual planters are offered financial assistance to purchase the machine. During the year 25 cooperatives purchased 52 sprayer-cum-dusters with 50% subsidy on price from the Board. They lend the machines for spraying/dusting the plantations of their member growers. Subsidy limited to 25% of the price was granted to 25 growers for indivudually owning the machine.

10.4. Tapping demonstration. Modern techniques in exploitation of the rubber tree involve tapping the trees in correct depth, use of chemical yield stimulation, tapping panel protection, collection of crop and systematic processing. The Board has established 7 Tappers Training Schools in different places throughout the important rubber growing tracts, where 537 workers/smallgrowers were trained in 23 batches in correct techniques in tapping, crop collection and processing. The Tappers Training School at Punchappadom was closed in December, 1986, and a new one was started instead at Manickassery from January 1987.

10.5. Rubber Sheeting Rollers. As a measure to assist the small growers for making quality sheet rubber, they were encouraged to own hand operated rubber sheeting rollers offering 50% subsidy on cost of the roller subject to a ceiling of Rs.3500 per roller. Purchase of 57 such rollers was assisted during the year.

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10.6. Beehives. Honey is a byproduct of the rubber plantations, but most of the growers do not exploit the potential owing to ignorance of the economics and the method of collection of the honey. In order to popularise production of honey in the smallholdings as a means of additional income, 13 sets of beehives were supplied free to small planters and arrangements were made to have them trained in bee-keeping and extraction of honey.

10.7. Assistance to SC/ST farmers. Special assistance to Harijans who form the weaker section in the planting community is rendered by the Board from time to time. The settlers of the Harijan Colony in Thommackal came forward to plant rubber in their settlement. The Board gave them necessary extension and advisory support by deploying special extension staff. They are also eligible for the Cash subsidy assistance as available under the Rubber Plantation Development Scheme. A planting material nursery was maintained exclusively for their aid, and the Harijan workers were given job in the nursery for raising polybag plants. Good quality polybag plants thus raised numbering 53,651 were supplied free to the Harijan planters. After their full requirements were met, the nursery was closed on 1.1.1987.

Under the Special Component Plan/Tribal Sub Plan to assist rubber growers in the SC/ST category, 7.67 lakh budded stumps and 16.3 lakh polythene bags were procured and supplied free of cost to the farmers coming under the SC/ST category in the north-eastern States and Orissa. The farmers are expected to use the stumps and bags for raising polybag plants for their planting operations during 1987.

10.8. Training of field staff. Newly recruited field workers are given thorough training before they are posted to field stations for extension and advisory activities. During the year the Board recruited 52 Junior Field Officers. They were given training for a period of 40 days on all aspects of rubber cultivation. Senior officers of the Board formed the faculty for the training course. The trainees were posted to different Regional Offices for field training before their posting to independent field stations.

11. Rubber Research-cum-Development Station.

The Rubber Research Cum Development Station is a 202.55 ha. rubber plantation maintained by the Board in South Andamans, originally conceived as a pilot project for promoting rubber plantation in A & N Islands and for rehabilitation of repatriates from Burma and Sri Lanka. Until 1975 when the project was handed over to the Board, expenditure for the project was met by the Ministry of Rehabilitation, Govt. of India.

In March 1985, the Board proposed conversion of the station into a Nucleus Rubber Estate and Training Centre to serve the training and demonstration requirements of the entire A & N Islands and the proposals were approved by the Govt. of India in June, 1986. Consequently a Dy.Rubber Production Commissioner and a Dy.Development Officer have been posted to the station as a first step for the implementation of the NRETC project. Various civil works including setting up of a processing factory have been initiated. An amount of Rs.30 lakhs has been deposited with the National Building Construction Corporation, New Delhi, for undertaking

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the civil construction works in the station.

Due to prolonged labour disputes, production and maintenance of the station during the last two years have faced severe setbacks. Efforts to settle the issues through negotiations and conciliations having failed, the matter is pending before the Industrial Tribunal, Port Blair. The centre has at present 114 permanent workers and 8 casual workers of whom 80 are tappers and 13 factory workers. 206 blocks of rubber trees present in the station are tapped as follows:

S/2	d/2	- 68 blocks
S/2	d/3	-138 "
		206 "

Tapping is not fully effective since the labour is following various unproductive tactics to demonstrate their discontent. During the year under report, a total of 70,823.8 Kg. of rubber was produced from the station.

Sheet rubber from the station is now being sold to the Kerala State Cooperative Rubber Marketing Federation and the scrap rubber is brought to the Board's Crumb Rubber Factory at Kottayam, to be processed into block rubber and marketed.

The price realised by sale of rubber during the period 1986-87 was Rs.10,97,840.60 and the total price realised since commencement of tapping in 1972 was Rs.87,48,757.00.

An amount of Rs.44.86 lakhs was incurred towards expenditure during 1986-87 and the total expenditure incurred in the station since inception is Rs.170.86 lakhs.

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Annexure - I

Statement showing progress of disposal of applications under RPD Scheme

		1980	1981	1982	1983	1984	Total
1.	Total No. of applications received	33418	33737	30010	31108	34072	162345
2.	No. of applications wherein planting actually materialised.	26053	27175	27024	29804	33202	143338
3.	No. of cases inspected out of (2)	26053	27168	27003	29696	32895	142815
4.	No. of cases rejected/withdrawn	8618	8162	8475	8995	9697	43947
5.	Total No. of cases pending final action	8	75	104	693	1302	2342
6.	No. of permits issued	17427	18940	18365	20116	22203	97051
7.	Area covered by permits (ha.)	12250.68	13663.16	13641.71	14913.97	15916.32	70385.84
8.	Amount of subsidy sanctioned (Rs.lakhs) (from the inception of the scheme)	550.53	575.75	546.92	574.34	615.27	2862.81

Annexure - II

STATEMENT SHOWING RP SUBSIDY SANCTIONED SINCE THE INCEPTION OF THE SCHEME AS ON 31.3.1987.

Year of planting	Target in ha.	Small Growers (A+B)			Large Growers (C)			Total (A+B +C)		
		No. of permits	Area in ha.	Amount	No. of permits	Area in ha.	Amount	No. of permits	Area in ha.	Amount
1957	2833	406	595	931726	45	553	778969	451	1148	1710697
1958	2833	643	848	1455197	56	843	1371414	699	1691	2826611
1959	2833	725	876	1664397	56	728	1265310	781	1604	2929707
1960	3035	572	687	1655486	48	590	1433696	620	1277	3089182
1961	3237	919	1094	2642302	88	1178	2923800	1007	2272	5566102
1962	3440	908	1083	2647045	83	1191	3012037	991	2274	5659082
1963	3443	918	929	2119064	89	1299	3142848	1007	2228	5261912
1964	4047	752	805	2004149	94	1815	438912[illegible]	846	2620	6393276
1965	4047	900	1172	2970935	112	2362	563644[illegible]	1092	3534	8607376
1966	4047	1184	1303	3367096	98	1954	468906[illegible]	1282	3257	8056163
1967	4047	760	869	2202039	74	1553	354533[illegible]	834	2422	5747374
1968	4047	552	749	1656692	62	1080	263763[illegible]	614	1829	4294323
1969	4047	888	767	2376508	67	933	230753[illegible]	955	1700	4604045
1970	4047	978	917	2885930	65	1074	271826[illegible]	1043	1991	5604193
1971	4047	595	584	2024745	46	887	225515[illegible]	641	1471	4279895
1972	4047	677	647	2700098	60	987	248956[illegible]	737	1634	5189659
1973	4047	1010	942	4277297	60	661	1851621	1070	1603	6128918
1974	4047	1597	1427	7614020	38	632	1899648	1735	2059	9513668
1975	5000	2994	2267	14561132	36	706	2257574	3030	3053	16818706
1976	4000	3437	2609	16230097	37	638	1046740	3474	3247	18000837
1977	4000	3675	2587	17428041	40	727	2180050	3715	3314	19608091
1978	4000	4025	2955	18701604	40	727	2294440	4065	3682	20996052
1979	5000	4104	3149	18429724	29	546	1854305	4133	3695	20284109
Total	88171	33399	29861	132549326	1423	23744	58780652	34822	53605	191329978

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PART IV - RUBBER RESEARCH

In pursuance of Clause (8) of the Rubber Act, the Rubber Board is undertaking, assisting and encouraging scientific, technological and economic research through the Rubber Research Institute of India.

The Research Institute was engaged on research work on Agronomy/Soils, Botany, Plant Physiology, Mycology/Plant Pathology, Chemistry, Physics and Technology, Economic Research and Biotechnology, in addition to giving training on various aspects of rubber culture, crop processing and product manufacture.

The Agronomy Division conducted several field trials for assessing the nutritional requirement of mature and immature rubber, investigated the effect of density on growth and yield of rubber plants and assessed the effect of irrigation on mature and immature rubber. Field trials on weedicides and intercropping, forms and methods of fertiliser application, characterisation of rubber growing soils and advisory functions formed the other major activities of the Division.

Breeding and selection work and investigations on propagation, cytogenetics and anatomy formed the important items of work of the Botany Division.

The Plant Physiology/Exploitation Division initiated work on dry farming techniques, including contact shading and irrigation. Biochemical studies to identify the factors responsible for drought resistance and cold tolerance, studies on in situ rubber biosynthesis, yield constraint analysis of Hevea in different agro-climatic zones and multilocation clone trial to study the growth, yield performance and other aspects of rubber under varying agroclimatic conditions were continued. Young rubber plants were grown in solution culture upto four months. An ayurvedic preparation is being tried against brown-bast.

The Mycology/Plant Pathology Division conducted research work on abnormal leaf fall disease, pink disease, powdery mildew disease of rubber, crown budding, panel protection compounds and effluent treatment. Assessment of yield loss due to disease and studies on the pathogens causing diseases were continued. Selection, testing and introduction of cover crops and Rhizosphere studies were undertaken. Insect and non-insect pests of rubber and beekeeping were also investigated, in addition to studies on Meteorology.

Rubber Chemistry/Physics and Technology Division conducted research work on graft polymerisation, utilisation of waste materials from latex goods manufacturing industry, development of chemical and heat resistant natural rubber, work on depolymerised natural rubber, blending of natural rubber with synthetic rubber and compression set of natural rubber vulcanizates. Investigations on polybag collection of latex, blends of natural/ rubber, development of a solar dryer and adhesive compound for precured tread and effect of plasticisers on engineering properties of rubber were also carried out. The Economic Research Division undertook studies on rubberwood utilisation, rubber seed oil, evaluation of planting materials under commercial planting etc.

/ rubber with other compounds, epoxidation of natural

Biotechnology Division commenced work on culturing shoot tip/meristem. Suitable medium was developed and the tissue cultured plants were developed which were planted in ploybags after hardening. Callus culture was also attempted.

AGRONOMY/SOILS

1. Nutritional Studies - Mature Phase

Out of the six experiments in progress, one was discontinued after completion of the study. Three new experiments were started during this period. The eight experiments currently in progress are distributed in five different locations. The pre and post monsoon fertilizer applications, annual girth recording and monthly yield recording were undertaken in the trial areas. Soil and leaf samples were collected from the three experimental areas newly started. In one of the experiments, it was indicated that the ratio between nitrogenous and potassic fertilizers is important in obtaining optimum yields.

2. Nutritional Studies - Immature Phase

Four long term experiments were in progress and two more were started during the period. These six experiments are distributed in five different locations. The pre and post monsoon application of fertilizers and annual girth recording were undertaken in these trial areas. Soil samples were also collected from the two experiment areas newly started.

3. Effect of Density of Planting on growth and yield of rubber

There is one experiment under this project. The pre and post monsoon fertilizers applications and girth recording were undertaken during this period.

4. Irrigation and Soil Moisture Studies

There are altogether three experiments under this project of which one was initiated during the period under report. Two experiments are on immature rubber and one on mature. The newly started experiment envisages to compare different doses of drip(micro)irrigation with basin irrigation and pot-drip irrigation. Growth measurement of rubber plants was carried out in all the three trial areas. Monthly yield recording was also undertaken in the trial area with rubber under tapping.

5. Trial on weedicides

There are five trials under this study. Imposition of herbicide treatments, and recording of observations were carried out in all these trial areas. Of these one was newly started in seedling nursery where preemergence herbicides are tested.

6. Trials on Intercropping

Pre and post monsoon fertilizer applications, monthly yield recording and annual girth recording were undertaken in the trial area where annual intercrops were tested. Twomore experiments were started where perennial intercrops are proposed. Three seedlings envisaged as standards for pepper and shade for coffee were planted and maintained in the field. Coffee and cocoa seedlings to be planted in 1987 season were raised in polybags.

7. Forms and Methods of Fertilizer Applications

In the trial area where different forms of phosphatic fertilizers are tried, fertilizer application was undertaken as per the treatment. Girth recording was undertaken at regular intervals. In a glass house study where different combinations of water soluble and water insoluble forms of phosphatic fertilizers are tried, final growth measurements were taken. The plants were uprooted and the chemical analysis of various plant parts is in progress.

From the trial area where Mineralisation pattern of Nitrogen is tried, samples were collected at regular intervals and they were analysed for various forms of Nitrogen.

In the trial area where the effect of ammonium sulphate and urea is tried, fertiliser application was carried out as per the treatments. Girth and height of plants were recorded at regular intervals.

8. Physico-chemical and Mineralogical characteristics of rubber growing soils

Profile samples were collected from major rubber growing regions for estimating different forms of Manganese in soils. The chemical analysis is in progress. A pot culture trial was started to study the soil test crop response of phosphorus.

9. Advisory

During the report period 1536 soil and 966 leaf samples were analysed for offering discriminatory fertiliser recommendations for estates. From small holdings 567 soil and 109 leaf samples were analysed and recommendations offered. The Mobile Soil and Tissue Testing van attached to RRII visited various rubber growing regions and analysed 3380 soil and 133 tissue samples and offered fertilizer recommendations.

Three Mobile Soil and Tissue Testing vans were procured and they were pressed into service in February, 1987. They were attached to three Regional Laboratories located at Nagercoil, Thodupuzha and Calicut. 962 soil samples were analysed and recommendations offered.

The follow-up study of discriminatory fertilizer usage maintained in three estates was extended to six more estates. Soil and leaf samples were collected and analysed. The evaluation is in progress.

BOTANY

1. Breeding and Selection

Monthly yield recording was continued in the mature small scale trials of various hybridisation programmes. Annual paint marking, numbering, recording of girth and other secondary characters were carried out in the different trials. In the small scale trial of the 1958 H.P. series, RRII 300 continued to be a high yielder. The data on immature and mature yield and girth of 1970 H.P. seedlings were summarised. Ten second selections were made from 1970 H.P. progenies and seven from 1971 H.P. progenies. The 1983 H.P. seedlings were maintained in the nursery.

The seedlings resulting from 1986 hybridisation programme (1394 numbers belonging to 56 cross combinations)were established in a seedling nursery at RRII. A set of growth parameters viz., plant height, stem diameter at the base, number of leaves number of flushes etc were recorded from the seedlings of selected families. The 1987 hybridisation programme was planned, parents selected and a total number of 15988 hand pollinations involving 71 cross combinations, were attempted. All the immature small scale trials (1979, 1980 and 1982 H.P. Progenies) were properly maintained. Statistical analysis of the data on nursery evaluation of the 1982 H.P. Progenies for yield and related characters was carried out.

Forty three ortet clones collected from small holdings and also from CES, Chethackal were vegatatively multiplied and the budded stumps planted in polybags at Hevea breeding station Nettana(Karnataka)for laying out field trial. Seven ortet clones maintained at the RRII nursery were test tapped and yield for five cycles (10 test tapping each)were recorded and the yield data compiled. Two hundred and eleven potential seedling mother trees were identified from a large estate after screening an area of 176.09 ha. comprising 44364 seedling trees. From these primary selections, 71 high yielding mother trees were selected. Fortysix of the clones were budgrafted for establishment in the budwood nursery. Bark samples of the selections were sectioned and anatomical characters studied. A total of 33222 seedling trees were screened from another large estate of 106.75 ha and 213 potential mother trees were selected for further observation. Yield of these selections were recorded during five different seasons. Yield and drc of an ortet from a small holding was recorded for different months, the data compiled and a report was prepared. Girth of another ortet clone from a small holding was recorded. Visits were made to five small holdings to observe the reported high yielding mother trees.

A block trial including eight modern clones was laid out in a large estate. Three large scale trials of ten modern clones were taken up, one at Gauhati and the other two in Meghalaya of the North-Eastern Research Complex. Nucleus materials of ten clones were supplied to the Central State Farm for multiplication and subsequent blockwise planting. Budwood of three clones were supplied to another estate in Palghat for multiplication and block planting. Budded stumps of 25 clones were prepared and planted in polybags at Hevea breeding station, Paraliar for laying out and establishing a breeding orchard. Data on yield, girth and virgin bark thickness from a 12 clone trial in an estate were summarised. Regular yield recording was carried out in the various clone trials including indigenous and introduced clones as well as block trials under tapping. Annual paint marking, numbering and recording of girth and secondary characters were carried out in 1966 and 1968 clone trials, 1968 space cum clone trial, 1971 foreign clone trial, 1976 Sri Lanka clone trial, 1981 mixed clone trial etc. and in block trials at Manikkal, Malankara, Ceasermudy, New Ambadi, Nedumkunnam, Aryankavu, and Desamangalam. Demarcation of plots, numbering and ring marking were done in block trials at Chithelvetty and Thahnitho Vacancies were supplied in the 1985 clone trial at the Regional Research Station, Dapchari. Paint marking and demarcation of plots were also done. All the immature trials were properly maintained.

Open pollinated progencies of three clones viz., Tjir 1, RRIM 600, and GT 1 were planted in the field at CES, Chethackal. Progencies of ten more clones were raised in the nursery for field planting during 1987, for genetic studies.

Fruit counts were recorded at different intervals following hand pollination for the nine different treatments imposed to increase fruitset following hand pollinations. Statistical analysis of the data showed two treatments to be significantly better than the conventional method of hand pollination with respect to initial fruit set. The experiment was repeated during the 1987 flowering season and 200 hand pollinations each were carried out for each of the treatments. The data pertaining to the nutrient and growth regulator spray treatments to improve fruit set under open pollination carried out in January-March 1986, were analysed. Three rounds of treatment sprays were given at fortnightly intervals following refoliation and leaf samples have been collected for nutrient analysis.

2. Propagation

The budding trial laid out at Tripura during last year had to be discarded owing to the large scale destruction of stock plants and budwood by a heavy hailstorm in April, 1986. Fresh stocks and budwoods were made ready and a new trial was commenced. Green budding has been initiated in January 1987 and brownbudding will commence in April.

A trial was laid out at Cheruvally estate for studying the effect of high budding and deep planting on the establishment, root development, anchorage and growth of budded stumps, in a randomised block design. Plants required for filling the vacancies are raised in bags. A few plants are raised on the earth to observe root development pattern by destructive sampling. The plants are being maintained properly and are growing well. Data on establishment success and scion growth are recorded regularly.

A small scale study was conducted using five clones to compare the budding success under bench grafting and normal budding. The former though satisfactory was found to be slightly inferior to the latter. Both benchgrafted and normal budded plants are raised in polybags and their morphological characters like height, girth, number of leaves etc., are recorded. Attempts will be made to perfect this method by further studies.

Attempts are also made to develop a suitable method for producing three part bag plants, by crown budding. Budded plants have been raised in polybags for this purpose. They are maintained well and will be crown budded on reaching the required height.

The trial laid out for assessing the genetic basis of stock-scion relationship is continued. Plots in the area were demarcated with ring marks and the trees were numbered. Data on height, girth, leaves, branching etc., were recorded.

3. Cytogenetics

Monthly yield recordings and annual girth measurements were carried out in the trials on irradiated and polyploid materials. Vacancies were supplied in 1985 irradiated trial.

Four clones from the irradiated trial (1977) are showing more vigour compared to RRII 105. The VM4 plants resulting from colchicine application are showing morphological variations. Incorporating the tetraploids as male as well as female artificial pollination were carried out. UV as well as gamma irradiated pollen grains were utilised for hand pollinations. The in-vive growth of pollen tubes in the pollinated flowers of polyploids are studied.

Investigations on the meiotic behaviour of RRII 17 have elucidated partial asynapsis. Orientation of anaphase chromosomes is quite irregular resulting in formation of varying number of microspores with different shapes and sizes. The growth attributes of the progenies of the natural mutant have shown that intermediate types are more vigorous and the dwarf types show less petiole length and interflush length. Incorporating the four segregating types along with Tjir 1 seedlings as control a trial was initiated at CES Chethackal. Hand-pollinations were carried out in RRII 33 and RRII 15 to confirm its fruit bearing nature. Artificial pollinations carried out in RRII 33 have shown that it is a shy seeder. Studies on pollen storage and pollen germination were initiated. Polynological studies have confirmed that the colchiploid of RRII 116 is a tetraploid.

4. Anatomy

Studies on bark anatomical characters and their influence on yield and secondary characters of Hevea clones were continued. Recording of yield and yield factors like total volume and drc of latex, duration of flow and plugging index were done with regard to ten clones planted in 1976 at the CES, Chethackal. Collection of bark samples and recording of girth, panel length and the angle of branch insertion have also been done. Compilation of data with regard to bark anatomical studies with 1984 collection of bark samples have been done. The yield data collected in 1985 and 1986 have also been summarised. RRIC 36 recorded the highest number of laticifer rows followed by Nab 17. Higher proportion of bat shaped and triseriate rays were common for all clones although the proportion of other types varied from clone to clone. The highest laticifer area index was recorded for RRIC 100 followed by RRIC 36 and Nab 17. For detailed structural studies samples of petiole, leaf blade and one year old stems were collected and fixed in FAA. Epidermal peelings were separated and fixed in 70% alcohol. Assessment on wintering and disease incidence with regard to the ten clones was made.

Microscopic studies for the seasonal variations of bark anatomical characters and comparative anatomy of virgin bark and renewed bark were continued. Observations on the bark samples of ten clones, planted in 1968 trial were completed and the data are being summarised. During theperiod under report bark samples were collected from 1976 Sri Lanka trial, 1977 irradiated trial, 1978 clone trial and 1979 clone trial for processing and observations.

Paraffin blocks of dormant buds collected from ten clones were prepared for sectioning and observations. Relationships among the characters of petiolar stomata and leaf retention after the incidence of Phytophthora leaf fall disease was examined by correlation studies which revealed significant negative correlation of the frequency of petiolar stomata and aperture length with leaf retension percentage.

Wood anatomical investigations were initiated in one clone (PB 86). Occurrence and distribution pattern of tension wood and diamensional variations of wood fibres were studied. The wood discs cut at different heights showed prominent growth eccentricity with well developed tension wood zones distinguish as white wooly lustrous zones in contrast to the dull normal wo zones. The proportion of tension wood to normal wood was asse-ssed. The study revealed the size variations of wood fibres at radial positions and height positions of the tree.

5. Germplasm

Introduction of the Brazilian germplasm from the Malaysian Source bush nursery has been continued. Six Hundred genotypes were introduced and diverted to NERC. Materials obtained are maintained well in the nursery.

Vacancy filling was carried out using polybag plants belonging to 111 genotypes. Germplasm materials numbering 854 were conserved in various gardens and nurseries. These include indigenous and exotic clones, experimental clones, popular clones etc. Action was taken for opening the second germplasm garden. Observations on yield, floral biology, girth, disease aspects etc were recorded in the first garden.

Annual girth measurements of the second germplasm garden was carried out and it was found that over 67% of the trees have attained a girth of 45 cm and above.

Test tapping was carried out on 100 genotypes belonging to the first consignment of Brazilian germplasm. These genotypes were screened for various morphological characters also. The stem at a height of nine cm was prick-tapped and the drops of latex were collected and quantified after drying. The genotypes exhibited wide variability with respect to all the characters studied.

6. Collaborative projects

Vacancies were supplied in the two trials on studies on early evaluation, one for yield and the other for drought. The trials were well maintained and observations were taken on plant height, diameter, number of flushes of leaves etc. Plants were selected for the laboratory studies as well as field investigations on different parameters.

RUBBER CHEMISTRY/PHYSICS AND TECHNOLOGY

1. Graft polymerisation of vinyl monomers on to NR

Acrylonitrile graft NR of different Acrylonitrile content were prepared using Gamma Radiation and used for evaluating the technological properties. Results show that as the acrylonitrile content is increased oil and solvent resistance of NR is increased, but the increase is not upto

that of nitrile rubber. A drop in properties such as tensile strength, elongation at break, compression set resistance etc. are also observed as the acrylonitrile content is increased.

2. Studies on blooming

Studies so far conducted showed that gum and non black filled NR vulcanizate shows no tendency for blooming if covered in polythene sheet.

3. Development of chemical and heat resistant natural rubber compound

Studies on the ageing characteristics of NR vulcanizates in different media at different temperatures showed that the deterioration in properties is in the descending order; air, distilled water, acid, alkali.

4. Preparation and properties of depolymerised NR

An equipment was fabricated for the preparation of liquid rubber. Trials are in progress to standardise a condition for the preparation of depolymerised natural rubber.

5. Studies on NR and 1,2. polybutadiene blends

A paper entitled "Studies on natural rubber - 1,2 polybutadiene blends with special reference to the ageing and ozone resistance characteristics" was presented at the International Rubber Conference held at Jamshedpur.

6. Studies on compression set of NR vulcanizates

Gum and different filled compounds were prepared using different cure systems and used for studying the compression set at different temperatures. The studies are in progress.

7. Polybag collection of latex

A new project was started with a view to reduce the harvesting cost of rubber. Instead of processing latex on the same day of tapping, latex was collected for a number of days in polythene bags and converted to crepe rubber. The properties of these samples are being evaluated.

8. Studies on NR/Synthetic rubber blends for engineering applications

Specifications for engine mountings have been collected. Studies using acrylonitrile graft NR as a combatabiliser in the production of NR/NBR blends have been initiated.

9. Studies on NR/EPDM blends

The results obtained so far, indicated that EPR is better than EPDM in imparting ozone resistance to NR.

10. Epoxidation of natural rubber

Preliminary work on the preparation of epoxidised natural rubber from latex using performic acid prepared in situ has been started. Trials are in progress to standardise a method for the preparation of epoxidised natural rubber.

11. Development of solar dryer for sheet rubber

The civil work for the solar dryer has been awarded and the work is expected to start soon. The fabrication of solar components has been completed by the Energy Society. Fabrication of trollies had also been completed.

12. Development of adhesive compound for precured tread

An adhesive compound for precured tread has been developed by us which showed much better adhesive strength than the one available in the market. 5 kg of this compound was prepared and supplied to M/s.Midas Precured Tread, Kottayam, for commercial evaluation.

13. Effect of plasticisers on engineering properties of rubber

Based on the preliminary studies using six different plasticisers, two plasticisers were selected. Further trials using the selected plasticisers are in progress.

Miscellaneous

1. Trials were conducted to enhance the reinforcement capacity of clay by the use of Maleic anhepdride as coupling agent. No significant improvement could be observed.

2. To study the effect of incorporation of mica as a filler in NR compounds, six compounds were prepared and the properties are being evaluated.

3. Determination of DRC using specific heat was tried for latex, sheet and crepe rubber. The DRC values obtained are comparable with those obtained using the oven drying method for sheet and crepe rubber. For latex, the result obtained was not satisfactory.

4. Trials were conducted to study the possibility of using microwave oven for coagulating field latex and for preparing liquid rubber.

5. Further studies on the use of sulphamic acid as a coagulant for the preparation of sheet rubber, confirmed that the physical and technological properties of sheet rubber prepared using sulphamic acid, are comparable to that prepared using formic acid.

PLANT PATHOLOGY/MYCOLOGY

1. Investigations on diseases of rubber caused by Phytophthora Spp. and their control

Abnormal leaf fall disease

Aerial spraying trials for testing KCIC 40% and solcop 40% paste formulations of copper oxychloride and IPCL spray oil, indicate that these products can be recommended for large scale use in rubber.

In the small scale defoliation experiment, 1% Ethephone caused 100% defoliation in 7 days. Similarly cacodylic acid 10% caused 95 to 100% defoliation. Five percent and 10% urea did not cause any defoliation.

A new trial on chemical fruit thinning in Hevea was started with the treatments, 800, 1000, 1500 and 2000 ppm of Ethephon, 2% urea and 300 ppm GA 3. In the previous trial with lower concentration of Ethephon, no effect was achieved.

Concluding three year trial on spray fluid requirement in high volume spraying, a spray volume of 3000 litres per ha. was found to be adequate for optimum leaf retention.

The experiment for comparing the efficacy of different copper fungicide formulation and methods of spraying indicate maximum leaf retention in Bordeaux spraying. The data is being analysed.

Panel protectants/wound dressing compound

As in the previous trial, the field trial on the control of bark rot indicated that Dithane 14-45 at 0.75%(10 g/l)is most effective. Oxadixil 2 PA and 4 PA are equally effective following Dithane. Less effective were Emisan 0.03% followed by 0.015%.

Crown budding of susceptible high yielding clones in the disease resistant/tolerant clones

Yield recording and leaf retention assessment were carried out in 3 locations of crown budding experiment. As in previous years leaf retention was more in crown budded plants and yield more in RRIM 600 and 628 and less in GT 1.

2. Pink disease and its control

In the field experiment to compare prophylactic treatment and the detection and treatment, it was found that disease appeared in prophylactic plot and in some cases on the treated portions. Out of 151 plants in the prophylactic plot 16 had infection and in 146 plants in the non-prophylactic plot 24 has infection.

Propiconazole 0.1%, Thiride 0.75% and Tridemorph 1% were found to be as effective as Bordeaux paste.

Clonal susceptibility study indicated that RRIM 600 is more tolerant to pink disease than GT 1. The experiment will be repeated for confirming results.

3. Powdery mildew disease and its control

The results of the powdery mildew disease control experiment in young areas indicate that Bavistin 0.2% is significantly superior to all other treatments. Topsin 0.14% is next effective and all other treatments calixin 0.2%, 0.4% and wettable sulphur are on par and less effective. Calixin 1.5% dust field tested gave better control than sulphur dust.

4. Studies on minor diseases of rubber and unconventional methods of control of disease

An experiment on the control of dry rot disease was concluded. The indications are that incorporation of fungicides in Pidivyl China Clay compound is ineffective. But incorporation in wound dressing compound produced better results. Emisan is found to be promising for the control of this disease.

A field trial to study the effect of fertilisers on leaf spot disease incidence was completed. Soil and leaf analysis are in progress.

Stem injection with streptomycin 10 gr. per tree produced good leaf retention and less pink disease in high pressure injection studies. The effect lasted even upto 2 years. Brush on application of Bordeaux paste at forking region also gave good leaf retention. The results are to be further verified.

5. Pollution due to fungicides and pesticides and rubber factory effluents

Microbial population and nodulation by Pueraria are poor in soils having high copper content. Copper content in soil was found to increase steadily in regularly sprayed areas and in 8 years it increased from 17 to 77 ppm in full dose application.

Dilution of effluents with water in the proportion 1:1 to 1:3 increased algal growth. Reduction in pollution load was noticed when the retention period was increased in anerobic tank. Comparative studies on effluents of 4 types of rubber processing factories was made. Maximum pollution was from centrifuge latex factory. Variation in pollution load on each day was noticed.

6. Yield loss due to diseases of rubber

Yield loss experiments due to Abnormal Leaf fall Disease was conducted in Boyce Estate, Kumbazha estate and Central Experiment Station, Chethackal in 25, 15 and 10 year old trees and the loss recorded was 15.75, 9.57 and 9.27 per cent respectively. Quantitatively the loss varied from 110-225 kg/ha/year of dry rubber.

Yield loss due to powdery mildew disease, estimated in experiments at Ramamangalam estate varied from 17.35 to 27.29 per cent. No yield loss was recorded at Vaikundam Estate.

7. Biology, Epidemiology, Physiology and pathogens causing diseases of rubber

Phytophthora oospores could be separated by wet seiving from field soil. Soil collected at a distance of 50 metres from mature rubber plantations contained a number of oospores, but only a few were found at a distance beyond 50 metres. Two isolates of P. meadii were screened by detached petiole inoculation method for identifying races. On studying the mode of penetration of pink disease pathogen, it was found to enter through lenticells. Definite climatic regimes are identified for triggering the infection of Phytophthora, to cause leaf fall. Five day rain spell with overcast sky for one day triggered the disease.

8. Selection, testing and introduction of leguminous cover crops of rubber

Ten leguminous vegetable plants were collected to study their suitability as cover crops in rubber.

Enhanced microbial activity was found in soils under Mucuna compared to Pueraria. Non-symbiotic nitrogen fixing bacteria was also more in the former. Soil moisture estimated in January 1987 indicate more moisture in Mucuna areas. Two isolates of Rhizobium was found to enhance growth and nodulation. Mussoorie rock phosphate was found to support more population of Rhizobium as seed pelleting material.

Beijerinckia alone in the half dose of recommended nitrogen showed favourable response in attaining better girth of rubber plants.

9. Rhizosphere studies and isolation and testing of antogonistic micro organisms against plant pathogens of rubber

Presence of Azospirillum was noticed in rubber and Pueraria roots. The majority of Mycorrhizal spores found in rubber growing soils were Glomus and Gigaspora group. An actinomycete highly antogonistic to pink disease pathogen was identified.

Herbicides at higher doses were found to exhibit useful soil micro-organisms like Rhizobium, Beijerinckia etc. Grammaxone showed maximum inhibition and Dalapon the least.

10. Insect pests of rubber

Field trials conducted indicate that for root grub control phorate 10G is equally effective as sevidol 4:4G. Population estimation of root grubs indicate maximum population during July to August. Entomogenous fungi are being cultured for control of root grubs. The attack of bark feeding caterpillar is on the increase in Punalur area.

11. Non-insect pests of rubber

For the control of slugs and snails, painting the base of plants with a slurry of 0.1% Temik 10G, and 'maida' proved to be very economic and effective. The population of plant parasitic nematodes in rubber nurseries was found to be high. The single dose blood anticoagulant, Brodifacoum 0.005% is found to be more effective for burrowing rats.

12. Studies on bee-keeping and other by-products of rubber

Bee forage plants were established and maintained at RRII and CES, Chethackal. Predators of bees are being recorded.

13. Meteorology

Establishment of Meteorological Stations in CES, Chethackal and Regional Research Centres is in progress. From completed stations the data are being recorded. Weather parameters associated with major diseases of rubber are being recorded.

PLANT PHYSIOLOGY/EXPLOITATION

Research

The research programmes of the division were reviewed and reformulated in to 21 research projects. New projects on dry farming techniques including contact shading and irrigation were initiated at Regional Research Station, Dapchari. Action was also taken to raise two blocks for demonstration purposes of RRS, Dapchari. One block will be with irrigation and the other without irrigation. A new project for yield-cum-exploitation study of different

clones was initiated in the Hevea Breeding Station at Karnataka. Study was also initiated to raise young rubber plants in solution culture for nutritional and stress research purpose. Studies were also started for clonal characterisation with reference to lipid and protein compositions in the leaves.

A small nursery was established in RRII campus for conducting various physiological studies. It includes a budwood nursery of selected clones (11 clones).

Levels of triglycerides, glycolipids and sterols were found to be high in drought and cold tolerant clones compared to drought susceptible clone. There was no clonal difference with reference to phospholipid contents. Then study was done on leaves. Study was also initiated to elucidate clonal variations in protein types. The method of disc electropluresis has been standardised for this purpose.

In situ studies on rubber biosynthesis has shown that B-HMGCOA reductare, a key regulatory enzyme in rubber biosynthesis activity in the bark, is high during night hours and low during day time. Similar studies on the enzyme in the leaves of two clones were also undertaken and data are being processed. Leaf rubber contents of different clones were also determined to see if it can be related to clonal variations in latex yield.

With reference to the study on pattern of assimilate distribution and its incorporation into rubber hydrocarbon, it was found that assimilates of current photosynthesis get converted into rubber in the bark. However, girdling near the bud union results in earlier incorporation into rubber.

With reference to drought studies, in mature trees it was found that the pre-dawn leaf water potential latex vessel turgor and latex solute potentials were similar in drought resistant and susceptible clones in the pre-dawn hours whereas in the afternoon water potentials were much less in susceptible clones. The estimated turgor pressure of latex vessels was close to the calculated values derived from leaf water potentials and latex solute potentials. This is a new finding. The xylem sap flow rates were found to be much higher in RRII 105 clone compared to other low and medium yielders.

A regression equation was developed for comparing the values of water potentials measured by pressure chamber apparatus with those obtained by thermocouple psychrometer. Electralyte leaching method was standardised for assessing stress injury in Hevea. A regression was developed for estimating leaf area of Hevea from length and breadth of leaflets or from leaf dry weights.

Data collection for yield constraint analysis of Hevea in different agroclimatic zones was continued during this period. In addition to data on yield and yield components, data on soil and leaf chemical compositions and meteorological parameters were also collected. The major factor associated with yield differences in different agroclimatic zones was found to be plugging index. The multilocation clone trial has shown that of the 12 clones planted in 1982, Tjir 1 and RRII 300 have

maximum girth increments at Central Experiment Station in Kerala. At RRS, Dapchari (North Konkan) clones RRIM 612, PR 1 and RRIM 600 have better girth increments. At Tripura RRII 118 and RRII 300 were superior. At Mudigera (high elevation) RRIM 600 and RRIM 612 were better than other clones. In general the plant growth was better at CES.

Studies on high elevation trials at Wynad and Poonoor have revealed that clones RRII 203, RRIM 600 and RRIM 612 had better girth at high elevation.

At RRS, Dapchari it was found that basin irrigation with sub-surface water supply system was more effective and economical than pot irrigation.

A new trial was initiated at RRS, Dapchari on dry farming techniques and the data are being collected. Around 1500 budded stumps were planted at RRS, Dapchari in polybags for 1987 plantings for new trials on drip irrigation, contact shading and for commercial evaluation.

Young Hevea plants could be grown in solution culture upto four months. This is a new finding which can be used for many laboratory studies on Hevea, particularly nutrition and stress.

Elaborate field trials were laid out at Pullengode and Cheruvally Estates to study the effect of an ayurvedic oil preparation on preventing the incidence of brown bast. The experiment is being continued with statistical design of RBD.

For old trees after BO11 stage upward tapping(½ S d/1 t, t) was found to yield more than 2000 kg. dry rubber even in the absence of stimulation. The study is in progress.

Though not statistically significant, S/2 d/3 system of tapping was found to considerably reduce the incidence of brown bast in RRII 105. The incidence was high with S/2 d/2 system of tapping.

It was also observed that puncture tapping does not affect the girthing of trees (puncture tapping done one year before normal tapping).

Around 3200 budded stumps were planted in polybags at Hevea Breeding Station in Karnataka for field planting in 1987 for a new yield-cum-exploitation trial of 10 popular clones.

A nursery of medicinal plants, which could be grown as intercrops in mature rubber plantations, was established in Central Experiment Station. Preliminary survey was made of the market potential of medicinal plants in Kerala and a glossary of medicinal plants was prepared.

BIOTECHNOLOGY

During this period, the activities of the Division was two fold: (a) increasing the facilities in the Division and (b)initiating research programmes using the available facility. The following were the research programmes undertaken.

Shoot tip/meristem culture

The need for an in vitro propagation system has been felt since some time ago, in many rubber producing countries. In order to meet that objective, one of the initiated programmes was shoot tip/meristem culture study. Short tips and meristem tissues of several commercially successful clones were tried. Solid and liquid media cultures were evaluated for the establishment of shoot tips and meristem tissues in cultures. Factorial design covering several variables involving types of explants, different media constitutents and concentrations, different growth regulators such as IAA, IBA, 2-4D, BA, Kinetin, Zeatin, 2--ip, 6A etc were tried in numerous combinations to study their relative influence singly or collectively on shoot tip and meristem cultures. Several commercially successful clones were used as explant source. Subsequently a solid medium was formulated where successful establishment of several commercial cultivars was possible. Four days after explant inoculation leaf primordia enlargement was visible. Rhizogenesis was observed 4 to 5 weeks after explant inoculation. Further development of the tap root was followed by secondary roots. After adequate root development all rooted plants were transfered to sterile sand: soil mixture and planted in small polybags. They were kept for "hardening" in the glasshouse for several weeks. Thereafter they were transplanted into bigger polybags containing soil. All tissue culture derived plants looked similar to their original clonal source.

Organogenesis and somatic embryogenesis

These are two other areas where work is being done for in vitro plant development. The primary source of this study is called cultures. Callus induction on several explant sources covering several clones was tried. The induced calli were inoculated on numerous media combinations for plant development. After successful plant regeneration, these two avenues can be utilised as alterative or supplementary in vitro propagation systems in addition to shoot tip culture technique.

ECONOMIC RESEARCH

1) Study of production, consumption and utilisation of rubber wood

The estimated consumption of rubber wood in Madras in 1985 is placed at 3.1 million cft. The rubber wood consumption in the plywood, veneers and splinters sector was 3 million cft. The estimated consumption in Bombay and Bangalore were placed at 4 and 265 million cft respectively.

2) Study of production, consumption and utilisation of rubber seed oil

The estimate of rubber seed oil production based on the data collected from Virudhunagar, Madurai and other important places in Tamil Nadu, is placed at 4000 tonnes during 1985.

3) Study of Farm Gate Price obtained by small rubber growers

A sample of 50 dealers was selected from Kanjirappally and Changanacherry Taluks for the study. Data from 40 dealers have been collected.

4) Study of the evaluation of planting materials under commercial planting

During the period, data of monthly yield were collected from the participating estates. Pending data were also collected from these estates.

5) Productivity of replanted small holdings

The project is meant for finding out the performance of replanted small holdings with respect to their productivity. In order to enhance the coverage of the study, steps have been taken to identify more units replanted with RRII 105.

6) Economics of different levels of fertilizer application

Preliminary work on this project has been initiated. Verification of the manuring practices in certain estates indicated that they are following the Board's recommendations. It is proposed to analyse the manuring practices followed by many more growers especially those who do not follow the Rubber Board's recommendations.

7) Study of intercrops in small holdings

During the reporting period details were collected from 63 small growers. It is proposed to increase the sample size to 75 growers.

8) Study of the extent of area planted with RRII 105

During the reporting period relevant data were collected from Nagercoil, Pathanamthitta, Punalur, Changanacherry, Kottayam, Palai, Thodupuzha, Muvattupuzha, Trichur, Palghat, Kanjirappally, Ernakulam, Calicut, Nilambur, Tellicherry and Taliparamba Regional Offices of the Board. The data from the remaining Regional Offices will be collected in 1987. The basic data will be made available to other divisions of the RRII for laying out studies.

9) Small holding management at different levels of input

A questionnaire for the study has been prepared. The sample of small growers was selected from the list of rubber growers in Palai region. It is proposed to undertake the study by interviewing the selected small growers.

10) Study on commercial production of honey

A study was initiated at the end of the year to estimate the commercial production of honey from rubber plantations. The study is in progress.

11) A study of the technical facilities available in rubber wood consuming units was taken up at the end of the financial year.

NORTH EASTERN RESEARCH COMPLEX

Studies on the performance of selected clones on the various agro-climatic conditions of the North Eastern region was the main areas of research. Investigations on the nutritional and cultural aspects were also in progress. The details of on-going and newly laid out experiments are as follows.

	Long-term trials		Short-term trials
	Ongoing	New trial	(New trials)
RRS, Tripura	13	2	3
RRS, Gauhati	1	2	1
RRS, Tura	1	1	1
HARS, Darechickgre	1	1	-
RRS, Kolasib	1	-	-
Onfarm research	-	1	-
	17	7	5

Collection of the isolates of the fungus of leaf spot disease was in progress. Survey of soil fertility and leaf nutirent status was initiated. Seedling and budwood nurseries were expanded in all the Regional Stations to produce about two lakh budded stumps. Six Hundred genotypes received from Malaysia towards gemplasm collection were budded and raised in polybag/budwood nursery.

A severe hailstorm hit the Regional Station, Tripura which has resulted in damages to the rubber plants. An area of 10 ha. covering 5 experiments had to be replanted. The older plantations showed recovery in due course. The damage to the seedling nursery was total, while the damage to budwood nursery was limited to the loss of budwood which would have matured by May 1986.

The investigations in progress at various stations revealed the following observations.

1. The girth data recorded at the advanced stages of immaturity showed that RRIC 105 recorded maximum girth. Other clones which recorded satisfactory girthing are RRIC 52, RRII 118 and PB 235.

2. Studies on the response to N,P and K revealed appreciable response to all the three nutrients tried.

3. Among the different planting techniques tried, 14 months old green budded plants recorded maximum girth which was about 7 cm higher than the conventional stump. However, girth increment was comparable in all the technique tried.

4. Optimum time of recording of physiological observations could be standardised based on the data on diurnal rythems of physiological parameters.

Regional Research Station, Gauhati

1. Clones GT 1 and RRIM 600 recorded higher girth than the other clones tried.
2. A survey of diseases affected rubber revealed that powdery mildew and leaf spot diseases were very severe during winter season among very young plants.

Regional Research Station, Tura

RRII 118 recorded maximum girth closely followed by RRIM 600, GT 1 and RRII 203.

High Altitude Research Station, Tura

All the 10 clones tried showed varying degree of susceptibility to low temperature. However, defoliation was late for the clone RRII 118.

Regional Research Station, Mizoram

Clones RRIM 600 and RRII 105 performed better than other clones.

Laboratory and Equipment

A pathology laboratory was equipped at Gauhati for collection and culturing fungus.

Agreement observatory

Installation of the Agreement observatory was completed at two stations in Tura.

REGIONAL RESEARCH STATION, DAPCHARI

The area of the Regional Research Station, Dapchari is 50 ha. of which 16.50 ha. has been planted under various field trials. Seedling polybag budwood nurseries cover an area of 2 ha. Field trials are being conducted in this Station by the Plant Physiology, Botany and Agronomy Divisions of the Rubber Research Institute.

Regional Research Station, Orissa

Among the non-traditional regions where rubber cultivation is being introduced, Orissa with large chunks of rolling land offers good potential for cultivation of rubber. With an extended drought period and moderate rainfall, the constraining factors for cultivation of the crop in Orissa have to be identified and a suitable agro-technology is to be developed for the region. With this end in view, an area

of 40 hectares was taken over by the Rubber Board in Annapurna, Dhenkanal District to establish an experimental farm. Of this, 2 hectares was cleared of the vegetation and preliminary steps were taken for preparation of a nursery to raise rubber seedlings. Top soil was collected and trenches were taken for preparing and stocking polybag plants. Of the 22,050 budded stumps brought from Kerala by truck, only 17,798 could be planted as the remaining succumbed to the humidity in transportation. Percentage of germination among the budded stumps put in the field is likely to be poor because of quality deterioration in long distance transport, lack of watering facilities and comparatively high temperature. However, the polybagged plants were given proper attention, including shading to shelter them from the scorching sun.

RRII EXPERIMENT STATION

The Station is 33.20 ha in extent of which 22.95 ha is under rubber. An area of 15.33 ha is under mature rubber, 5.39 ha under immature rubber and 2.23 ha under nurseries. It has 37 regular workers and 38 casual workers. Labour employment for the year was 13512 man days. The rainfall during the period was 2427 mm in 106 rainy days. The total production of rubber from RRII Experiment Station was 13.270 tonnes. Different Divisions of the Rubber Research Institute are carrying out field trials in this Station. All cultural operations were carried out in time for the immature and mature rubber.

CENTRAL EXPERIMENT STATION, CHETHACKAL

The Central Experiment Station, Chethackal is 254.86 ha in extent. The area under planting is 185.06 ha while the mature area under tapping is geographically 145.30 ha, the effective area calculated according to the stand per hectare came to only 125.30 ha. The Central Experiment Station received 2966.70 mm in 155 rainy days. The Experiment Station is employing 207 regular workers and 258 casual workers. The labour employment was 70374 man days during the period under report. The total production during the period was 182.611 tonnes. Field trials are being conducted in the Central Experiment Station by the various Research Divisions of Rubber Research Institute. All cultural operations were carried out in time for the immature and mature rubber.

HEVEA BREEDING STATIONS

Preliminary works for establishing Hevea Breeding Stations one at Kanyakumari District, Tamil Nadu and another at South Canara District of Karnataka State were carried out. In Kanyakumari District an area of 23.1 ha and in South Canara an area of 50 ha were taken in possession and preplanting operations carried out.

A seedling nursery was established in the Hevea Breeding Station in Kanyakumari District. A drip drain was constructed for drainage. For watering the plants a deep well is also being dug in the nursery area. Polybag plants are being raised for establishing a budwood nursery. The programme is to plant 4 ha during the next planting season.

In South Canara also a seedling nursery was established. A budwood nursery having 286 points of 12 different clones was also established. Polybag plants for planting in the field are also being raised. All cultural operations were carried out in time.

TRAINING PROGRAMME

Two Short-term Training Courses of four weeks duration in Rubber Culture, Crop Processing and Estate Management were conducted from 14.7.86 to 8.8.86 and 23.2.87 to 20.3.87 for 59 trainees including 15 officers from Rubber Production Department 8 candidates from Meghalaya, 6 trainees from Tamil Nadu Arasu Rubber Corporation, one from Salt Trading Corporation Ltd., Nepal and 29 candidates from Kerala. Training including theory and practical classes was given to participants of the UGC sponsored training programme and for one M.Tech student of the Cochin University. Training was also given to one batch of B.Tech students from Cochin University for a period of three months. One FAO Fellow from Vietnam was given training in the Physiology of Hevea. Preparations were also made to commence a Short-term Training Course in Malayalam for small rubber growers for a period of ten days.

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PART V - RUBBER PROCESSING

Introduction

Crop processing is a complex operation in natural rubber. The different kinds of crop harvested are highly susceptible to bacterial action due to contamination on keeping. The consumer requires raw rubber free from impurities and uniformity in quality. Poor properties in raw materials will tell upon the quality of the finished products. The small producers running into lakhs and the trading links that runs into thousands make it extremely difficult to present a uniform raw material to the consumer. The Department of Rubber Processing has been functioning to improve the quality of the processed rubber and to ensure a fair price to the producer.

The Department of Rubber Processing established during 1977 was reorganised to cover all activities connected with provision of technical consultancy, processing, specification and marketing during the year covered by this report. Two new Divisions, namely Technical Consultancy and Marketing were organised headed by a Deputy Director(Technical Consultancy)and Deputy Director(Marketing)respectively. The Specification and Rubber Promotion Sections of the Research Department were brought under the Technical Consultancy Division, for rendering a package of advisory, training and technical consultancy services geared to improve processing and marketing of natural rubber. The Market Research Section and the Section dealing with Co-operative activities in the Department and the Price Collection and Monitoring Section of the Administration Department were brought under the Marketing Division for undertaking co-ordinated activities connected with co-operative marketing, price support operation, and price collection and reporting.

A. Engineering Services

Engineering services for the completion of civil works, machinery erection, electrification and commissioning of three, 10 tonnes/day crumb rubber factories, at Mannarghat, Muvattupuzha and Thodupuzha, were provided. All the eligible claims for reimbursement from the World Bank connected with the establishment of these 3 factories, were also made. Also rendered engineering services for improving the performance of the 3 factories at Palai, Kanjirappally and Calicut established as Phase-I factories, besides undertaking the following:

(a) Initiated action for the construction of 6 different items of work costing Rs.68.7 lakhs through CPWD and prepared layout for labour lines, farm house, farm office, training centre and crumb cum sheeting factory for the Nuclear Rubber Estate and Training Centre, Andamans.

(b) Prepared plan and estimates for 3 different types of smoke houses for the construction of which subsidies are proposed to be given by the Board and for the establishment of a latex centrifuge factory, at CES, Chethackal.

(c) Got done departmentally works costing Rs.6.1 lakhs and tendered/awarded works costing Rs.3 lakhs.

(d) Provided engineering consultancy services to 12 institutions for modernising and or establishing processing facilities.

(e) Prepared schemes for procurement and erection of Diesel Generators at the Pilot Crumb Rubber Factory, Indian Crumb Rubber Factory of the Palai Society and the centrifuge factory of the Meenachil Society.

(f) Inspection of all the leading Rubber Roller Manufacturing units and making recommendations for approval to become a participant of the Board's scheme for distribution of rollers at subsidised rates.

(g) Provision of engineering services to the various departments of the Board in the repair and maintenance of vehicles, electrical installations and buildings.

B. Quality Control and Analytical Services

A Central Laboratory was established during the year. It has got recognition as an approved laboratory for testing of effluent and water samples by the Kerala State Pollution Control Board. A total of 9717 analytical determinations on latex, dry rubber and effluent samples were made in the lab during the year as against 6852 determinations during 1985-86. Assisted development and commissioning of the quality control laboratories of the Mannarghat, Muvattupuzha and Thodupuzha crumb rubber factories and trained the Chemists and laboratory technicians of the 3 laboratories.

C. Technical Consultancy Services

A package of consultancy services was provided to rubber producers, processors and rubber goods manufacturers. The most important achievements in this regard are the following :

(1) Developed 20 detailed project reports for establishment of rubber processing/Rubber products manufacturing units.

(2) Testing of 172 rubber/rubber compound samples for various parameters and provision of advisory assistance based on the test results for quality improvement and for solving technical problems of processors/product manufacturers.

(3) Development of Natural Rubber and Silicone Rubber Chords for Naval Physical Oceanographic Laboratory as an import substitution work and technology for the production of heat resistant elastic thread.

Besides the above, the services required for implementing the I.S.I certification scheme for raw rubber and latex concentrates were also provided during the year. A total of 117 inspections of crumb rubber and or latex concentrate factories were done, samples were collected and tested in this connection. Analytical determinations numbering 6023 were done on the samples collected and test results communicated to I.S.I. Also a total of 51 samples of latex foam/coir foam/surgical gloves were tested for various parameters to ascertain conformity with I.S.I specification, realising modest charges. Technical assistance for the formation and working of 22 Rubber Producers' Societies, and for the grading of sheet rubber in connection

with the procurement of rubber by the State Trading Corporation of India for price stabilization, was provided. In this connection, trained 254 persons in latex collection and DRC estimation and/or in grading of sheet rubber. A total quantity of 6735 M.Tons of rubber procured by STC was involved in the grading operation. With a view to assist determining correct grades, developed reference sample books for the different grades of sheet rubber and made arrangements for their distribution. In addition to these, inspections were carried out for assessing the suitability of applicants for issue of Processors' Licence, and trained 27 prospective entreprenuers in the manufacture of latex rubber products. Also a work shop for the benefit of rubber band manufacturers and an industrial clinic for the benefit of small rubber goods manufacturers were organised.

D. Factory Management

The Pilot Crumb Rubber Factory of the Rubber Board was operated successfully during the year. A total quantity of 318 M.Tonnes of technically specified block rubber in different grades was produced. Marketed 325 M.tons costing Rs.57.14 lakhs to selected rubber goods manufacturers as market promotional efforts. Also preserved field latex with 91.369 M.Tons of dry rubber content was produced and marketed out of it 44 M.Tons valued at Rs.8.06 lakhs. Besides these, developed sample consignments of viscosity stabilized rubber and technically specified rubber conforming to ISNR-5 grade from offsheets and marketed for evaluation porposes. Steps for procurement and erection of a Diesel Generator and an electric drier for improving the viability of the PCRF and for setting up a centrifuge factory to produce speciality latex concentrates were also taken during the period covered by this report.

E. Marketing Activities

The rubber prices slumped below remunerative level at the onset of the peak production season in September, 1986. Owing to the concerted efforts of the Board, the State Trading Corporation of India could be brought to the support picture for price procurement and mopping up the surplus from the market. To ensure successful procurement by the STC, two schemes namely 'Scheme for payment of interest subsidy' and 'Scheme for reimbursement of incidental charges to organisations who took part in the procurement operations' were chalked out and implemented. An amount of Rs.9.55 lakhs was released as payments under these two schemes. As a result, STC could procure and store 4785 M.Tons of RMA IV and 1950 M.Tons of RMA 5 grade rubber, and arrest the downtrend in rubber price during the peak production season. In addition to these, various schemes for the benefit of small rubber growers were developed and or implemented through the Co-operative Societies/Rubber Producers'Societies. The important activities undertaken in this connection are summarised below :

(1) Provided financial assistance of Rs.5.63 lakhs as share capital contribution cum working capital loan to 8 co-operative societies for improving their activities in rubber marketing.

(2) Implemented the scheme for subsidising rainguarding materials to small growers through Rubber Producers' Societies as well as through the Rubber Marketing Federation.

(3) Prepared schemes for subsidised supply of estate inputs, plastic cups, rainguarding materials, smoke houses, sieves and paranitrophenol to small growers and completed all preliminary works for their implementation.

(4) An amount of Rs.6.71 lakhs has been recovered from co-operative societies against earlier financial assistance given to them.

The other activities undertaken during the period include promotion of market for technically specified natural rubber and for latex rubber products, conduct of studies relating to marketing, collection and compilation of rubber prices, and preparation of weekly and monthly price averages, 15 days moving average prices and reporting of the same to the Government. Calculation and dissemination of natural rubber subsidy payable to rubber goods exporting manufacturers to compensate them for the higher prices of indigenous rubber was also undertaken.

A paper on "Prospects for ensuring remunerative prices for Natural Rubber in the Asian Producing Countries" was prepared for presentation in the ANRPC/UNCTAD/ESCAP Workshop on Co-operation among Asian producing countries in Trade and Marketing held in Thailand in February, 1987.

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PART VI- ADMINISTRATION

1. Functions:

The functions of the Department of Administration mainly consists of constitution/reconstitution of the Board and its Committees, i.e., the bodies that give policy directions to the various activities to achieve the objectives envisaged in the Rubber Act, maintenance of Board's establishment, collection of cess, licensing and market intelligence activities, collection of statistics, publicise Board's schemes and activities, carry out labour welfare measures, attend to vigilance and legal functions, training of employees, etc.

The functions of the Department are carried out through the following sections/divisions/offices.

i) Establishment (General & Personnel Administration)
ii) Board's Secretariat.
iii) Excise Duty.
iv) Market Intelligence
v) Licensing
vi) Statistics & Planning
vii) Publicity
viii) Labour Welfare.
ix) Internal Audit.
x) Legal
xi) Vigilance
xii) Hindi
xiii) O & M and Training
xiv) Sub/Liaison Offices.

The Statistics & Planning Division and the Vigilance Section are functioning directly under the Chairman. The other Sections are functioning under the Secretary. The Liaison Officers in charge of Sub Offices in Madras, Bombay, Calcutta, Delhi and Jalandhar continued to function under the Secretary in the Administration Department. At the end of the year two more Sub Offices were opened, at Ahmedabad and Kanpur to serve the trading/consuming interests.

1.1 General Administration/Staff Welfare/Labour Welfare.

The activities of the Board were documented through half yearly and annual reports and presented to the Government after scrutiny by the Board at its meeting on 18.10.86. The children of rubber plantation workers were granted educational stipend amounting to Rs.12.39 lakhs as a labour welfare measure. Towards staff welfare measure, eligible employees were granted childrens' educational allowance/reimbursement of the tuition fee, etc. A total of 46 employees were assisted in their house construction by advancing Rs.9,71,215 as per the scheme approved by the Government. Vehicle advance of Rs.2,54,700 was paid to 33 employees. Maintenance works of the Office buildings and of the staff quarters were done as necessary and uninterrupted water supply/electricity facilities were ensured to all Headquarters offices/staff quarters. To make the concerned officers and staff mobile in their bid to serve the producers and consumers of rubber, the Board owned 65 vehicles, which were maintained in good condition. The services of posts, telegraphs, telephone and telex were harnessed to the Board's advantage in providing good communication facilities between the Board and its clientele.

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1.2. Personnel Administration

Selection of suitable personnel is very essential for the successful functioning of any organisation. This was ensured in the Board by following recognised recruitment processes and statutory provisions relating to reservation of posts for candidates from the SC/ST category. There were properly constituted Selection Committees/Departmental Promotion Committees for selection of personnel by evaluating the merits/skills and other credentials of the candidates while vacancies on the Board's establishment were filled up.

1.3. Board's Secretariat.

The Board's Secretariat convened from time to time meetings of the Board and of the Committees. Preparation of agenda and issue of notes, preparation of minutes of the meetings, communication of Board's decisions to the Government and other authorities as necessary, monitoring implementation of the decisions and reporting back to the Board steps taken in implementing the decisions, etc. were done in time.

2. Excise duty (Cess) on rubber.

Under Section 12(1) of the Rubber Act, a duty of excise on all rubber produced in India is to be levied, not exceeding 50 ps. per Kg. This has to be collected by the Board under Section 12(2)- The Cess is collected from the users of rubber, excepting for sole crepe which is levied from the producer. Every manufacturer is issued licence to acquire rubber. Half yearly returns showing the purchase and consumption of rubber are obtained from the manufacturers. Based on the quantity of rubber acquired/consumed cess is levied from each manufacturer.

The details of licences issued during the year 1986-87 are given below:

	For 1986-87	For 1987-88
a) Fresh licences	494	4
b) Renewal licences	594	3045
c) Supplementary licences	35	-
d) Emergency licences	4	-
Total	1127 *	3049 *
*(Includes short period licences	332	405)

There were 4009 licensed rubber goods manufacturers all over India as on 31.3.1987. Statewise distribution is shown below:-

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Sl.No.	Name of State	No. of units.
1	Kerala	630
2	Maharashtra	492
3	West Bengal	445
4	Punjab	397
5	Uttar Pradesh	379
6	Tamilnadu	358
7	Delhi	344
8	Gujarat	273
9	Haryana	213
10	Karnataka	169
11	Andhra Pradesh	121
12	Madhya Pradesh	54
13	Rajasthan	47
14	Bihar	34
15	Orissa	15
16	Goa, Daman	15
17	Himachal Pradesh	11
18	Pondicherry	7
19	Tripura	3
20	Assam	2
	Total	4009

2.1. Assessment of Excise Duty on rubber.

During the financial year 1986-87, 8004 half yearly returns were obtained from the various rubber goods manufacturers and Sole Crepe Producers. On the basis of the discrepancies detected in the books of accounts of manufacturers and cross checking of their monthly returns with their half yearly returns and the monthly returns of dealers, etc. additional assessments were made in 114 cases on a quantity of 302715 kgs. of rubber involving a cess amount of Rs. 1,47,055.30. The total amount of cess assessed during the period was Rs.9,85,82,388.10.

2.2. Collection of Excise Duty on rubber.

The amount of cess collected during the year was Rs.9,41,91,107.59. This was remitted to the Bank for credit to the Consolidated Fund of India.

2.3. Inspections.

791 nos. of individual reports on inspection of the books of accounts of manufacturers were received from the various Liaison Officers and other inspecting officials. These reports were scrutinised and appropriate action taken. Apart from this, the Asst. Secretary (ED) visited the factory premises of 10 manufacturing units and inspected their records.

2.4. Court Cases.

During the year, an Auto Tyre Unit had filed a petition in the District Court, Kottayam challenging the order of assessment of excise duty.

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3. Licensing of Rubber Dealers.

According to Section 14 of the Rubber Act no person shall sell or otherwise dispose of rubber except under and in accordance with the terms of a general or special licence issued by the Rubber Board. Special licences are issued for dealing in rubber and for acquiring rubber. Dealers function as a link between the producers and consumers in rubber transactions.

1. Issue of Dealer's Licence.

The total number of licences issued during 1986-87 was 4973. Of the above, 2287 licences are for one year, i.e. for 1986-87, 10 licences for a period of 2 years, i.e. for 1986-88, and 2676 licences for a period of 3 years, i.e. for 1986-89. Twenty licences were suspended on account of serious irregularities in their rubber business.

There were thus 4924 licensed rubber dealers all over India. The state wise/district wise distribution of dealers as on 31.3.87 is shown in the following table.

Kerala State			Outside Kerala		
Sl. No.	Name of District	No. of Dealers	Sl. No.	Name of State/ Union Territories.	No. of Dealers
1	Alleppey	13	1.	Assam	2
2	Cannanore	181	2	Andamans	4
3	Ernakulam	628	3	Andhra Pradesh	2
4	Idukki	264	4	Bihar	2
5	Kasargode	17	5	Chandigarh	1
6	Kozhikode	127	6	Gujarat	11
7	Kottayam	1,706	7	Haryana	20
8	Malappuram	119	8	Karnataka	27
9	Palghat	57	9	Maharashtra	66
10	Pathanamthitta	399	10	Madya Pradesh	3
11	Quilon	460	11	New Delhi	134
12	Trichur	37	12	Orissa	1
13	Trivandrum	263	13	Punjab	78
14	Wynad	34	14	Tamilnadu	149
			15	Tripura	5
			16	Uttar Pradesh	44
			17	West Bengal	70
		4,305			619
	Grand Total	4,924			

2. Issue of Processor's Licences.

In order to encourage production of technically specified rubber, 72 processor's licences were issued for the year 1986-87. However, one licence was cancelled on account of changes in the constitution of the firm. There were thus 71 licensed rubber processors as on 31.3.1987. The District wise/state wise distribution of licensed processors are as shown below:

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Kerala State			Out-side Kerala		
Sl. No.	Name of District	No. of Licensed Units.	Sl. No.	Name of State	No. of Licensed Units.
1.	Cannanore	1	1	Karnataka	4
2	Ernakulam	5	2	Tamil nadu	5
3	Idukki	2			
4	Kottayam	37			
5	Kozhikode	1			
6	Kasaragode	2			
7	Malappuram	6			
8	Palghat	2			
9	Quilon	1			
10	Trichur	4			
11	Trivandrum	1			
	Total	62			9
	Grand Total	71			

3. Supply and distribution of declaration forms regarding interstate transport of rubber.

The declaration forms regarding interstate transport of rubber, i.e. N1,N2,N3 & N4 were supplied to various estates, dealers, processors and manufacturers situated within the jurisdiction of the Cochin Office as requested for by them. The details of forms supplied during the period are given below:

Sl. No.	Type of Declaration forms	No. of Units to whom supplied.	No. of books
1	N1	154	560
2	N2	923	1174
3	N3	2	2
4	N4	1357	2113
	Total	2436	3849

4. MARKET INTELLIGENCE

As part of the work in enforcement of licensing regulationsin rubber, inspections were conducted to ascertain the suitability of issuing licence to deal in rubber, shifting of business premises/opening branch premises, and verified transactions of the dealers as shown below:

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1.	Number of inspections regarding issue of fresh licence.	970
2.	Number of surprise inspections at the premises of rubber dealers	333
3.	Number of inspections for registration of branches/approval of godown.	241
4.	Unlicensed dealing in rubber	17
5.	Number of dealers whose accounts and records were verified in detail.	21
6.	Number of Manufacturers' whose premises were inspected.	34

1. Seizure of Rubber

On receiving information about illegal possession of rubber, petitions were filed before the Sub Inspector of Police and the rubber unauthorisedly possessed by the persons (9950 Kgs. in one case and 6078.5 Kgs. in another case) was seized by the police and produced before the concerned court. Subsequently the Board filed petitions before the concerned court for forfeiture of the rubber under section 16(2) of the Rubber Act 1947. Board also filed another Criminal Miscellaneous petition for disposing of the rubber and deposit the amount in the court pending disposal of the original petition which was allowed by the court.

2. Prosecution under the Rubber Act.

Steps for prosecution in seven cases for unlawful possession of rubber in violation of section 16(1) of the Rubber Act were taken.

Cross checking of monthly returns in respect of 572 dealers and manufacturers was done and discrepancy in their transaction to an extent of 6034 tonnes of rubber was detected

Obtainment of dealers licence by a person by impersonation was detected and his licence was suspended and thereafter the case was referred to the concerned Superintendent of Police for investigation. Further, on receiving information about the bogus transportation of rubber in the name of a manufacturer without his knowledge and the consignment was taken delivery by an unidentified person, the concerned Superintendent of police was informed of the position for investigation.

A meeting of the Salestax Officials of Kerala State and Tamilnadu with Board's Officers was convened at the Head Office of the Board and various problems connected with illicit transport of rubber and consequential loss of cess, salestax etc. were discussed. Discussions were also held with officials of Kanyakumari Market Committee to prevent issue of benami permit and transport of unaccounted rubber from Kanyakumari District to other parts of the country.

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5. STATISTICS & PLANNING

Collection of statistics is one of the functions of the Rubber Board as per clause 8(2)(e) of the Rubber Act, 1947. It is also the duty of the Rubber Board to advice the Central Government on all matters relating to the development of the industry including import and export of rubber. Furnishing of reports to the Government on rubber industry is another function of the Board.

1. General Statistics.

The statutory monthly returns collected from rubber growers, dealers, processors and manufacturers were compiled and analysed every month. Sample studies/in small holding sector in order to ascertain the monthly variation in production, stock, etc. The data collected from various sources were compiled and production, consumption, import and stock of rubber were worked out on monthly basis. These details are presented in tables attached as part VIII of the report.

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During the year, under report the Statistics and Import/Export Committee constituted by the Board met four times and the Board three times. Supply, demand and price of rubber/periodically reviewed and appropriate recommendations were made to the Govt. to meet the gap between demand and supply./ "Rubber Statistical News" (monthly) was published periodically. This publication covers among other things details of production, consumption, import and stock position of natural, synthetic and reclaimed rubber and price of natural rubber. The "Indian Rubber Statistics" has been updated by incorporating the 1986-87 data.

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The Statistical Inspectors of the division continued to carry out physical checks in estates/dealers/small holdings/ manufacturers premises with a view to improve the accuracy of statistics. During the half year period they visited 233 estates/holdings, 100 dealers/processors, 4 co-operative societies and 215 manufacturers and detected 6 unlincensed units. They also visited the various Regional Offices of the Board to collect registered area figures as on 31.3.1986, to prepare list of sample small holders for sample survey and for up-dating the list of medium and large growers.

2. Planning.

'Monthly report' pertaining to the rubber plantation industry were sent to Government of India periodically. These reports interalia include trends in production, consumption, import, stock and price of rubber, progress of assessment and collection of excise-duty and progress of important Plan Schemes. Materials were prepared and presented to the Government for answering 48 Parliament Questions pertaining to various aspects of the rubber industry. A 'Commodity Note' covering developments of the rubber industry and progress of various schemes implemented by the Board was prepared and forwarded to the Government. The Annual Plan for 1987-88 was prepared.

3. Supply of information to World Organisations:

World Organisations like the International Rubber Study Group (IRSG) and Association of Natural Rubber Producing Countries (ANRPC) were supplied information about the rubber industry in India. The 96th Group meeting of the IRSG was held in London from 16th to 20th June 1986. An Officer from the HICOMIND of India, London represented India at the meeting. A 'National Statement' on the rubber industry in India was prepared for presentation at the meeting, along with a brief for the use of the Indian representative.

Relevant information required by the ANRPC in connection with the 6th Seminar and Workshop on 'Progress and Development of rubber small holders' held in Indonesia from 22nd to 26th July 1986 was supplied. A detailed 'Country Report' on the 'progress and development of rubber small holders in India' was also prepared for presentation at the Seminar. Sri PC Cyriac, Chairman and Sri MO Joseph, Jt. Rubber Production Commissioner, Rubber Board represented India at the meeting.

The 16th meeting of the ANRPC Executive Committee was held in Kuala Lumpur on 11th and 12th September, 1986, for which brief for the Indian Delegation was prepared and sent. First Secretary, High Commission of India represented India at the meeting.

A paper on 'Status of NR industry in India' was prepared for presentation at the 'ANRPC/UNCTAD/ESCAP/Workshop on co-operation among Asian producing countries in trade and marketing of NR' held in Thailand in February 1987. The Chairman, Rubber Board represented India at the Workshop.

6. PUBLICITY

1. Publication

The Rubber Board is now bringing out 4 regular publications, the details of which are given below:

	Title	Periodicity	Circulation
1.	Rubber	Malayalam - Monthly	10,000
2.	Rubber Board Bulletin	English - Quarterly.	1,000
3.	Rubber Statistical News.	English - Monthly	600
4.	Rubber Grower's Companion.	English - Yearly	5,000

A scheme for enrolling perpetual subscribers was continued during the year and 1256 subscribers have been enrolled so far. Printing of the book 'Vithu Muthal Vipani Vare' is completed and it is expected to be released in May 1987.

2. Farm Features & Press Releases.

Various channels of mass media were utilised for propagating the innovations on scientific rubber cultivation. Press Releases were issued on various topics to newspapers besides Farm features and display advertisements. Classified advertisements were also released occasionally.

3. Exhibition & Seminars

Participated in Exhibitions at Coonoor in Nilagiri District of Tamil Nadu and Silchar in Cachar District of Assam where the various advantages of rubber cultivation were depicted and explained. Rubber growers seminars were arranged in prominent rubber growing centres with the active cooperation of the local people, cooperatives and other organisations.

4. General:

Over 100 Rubber Producers Societies were organised in different rubber growing centres during the period and 2.0 lakh poly bags were distributed at subsidised rate to 45 rural cooperatives in Kerala & Karnataka for raising poly bag plants.

7. LABOUR WELFARE MEASURES.

Under Section 8(2) (f) of the Rubber Act, 1947 one of the main duties of the Board is to promote measures for securing better working conditions and provisions and improvement of amenities and incentives for rubber plantation labourers. To realise this objective the Board is implementing the following three schemes.

1. Educational stipend scheme.
2. Capital Grant Scheme
3. Distress and prolonged illness relief scheme.

Budget sanction for 86-87 Rs.12 lakhs.

1. Educational Stipend Scheme.

The Educational stipend scheme is implemented to provide financial assistance to the children of rubber plantation workers for prosecution of studies in recognised institutions for recognised courses. The children of workers and staff in registered rubber estates and holdings receiving not more than Rs.1600 towards pay and allowances per month, are eligible for stipend.

and wholly dependent close relatives

The stipend is awarded for High School Education Degree and Post graduate courses and courses in Technical subjects, such as Engineering, Agriculture Engineering, Agriculture, Medicine, Surgery, Cost Accountancy (Intermediate and final) and other technical courses and vocational training in professional courses. Lumpsum grant at the stage of High School Education and tution fees and mess charges for all other courses are reimbursed at the prescribed rates.

On Ist April, '86, 3563 applications were pending for final disposal. In addition 7170 applications were received for the year 1986-87.

A sum of Rs.12,39,669 was paid to 6975 applicants towards lumpsum grant, tuition fees and hostel charges. Non compliance of the requirements resulted in rejection of 1274 applications.

2. The Capital Grant Scheme.

The Capital Grant Scheme was introduced to grant financial aid for construction of special wards (for reservation of beds in Hospital) in important plantation centres for the benefit of rubber plantation workers. The Board at

its 97th meeting held in May 1982 decided to discontinue the scheme. It has not been in operation after 1982. However, left-over payment totalling to Rs.75,000/- (Rupees Seventy five thousand only) was made to N.S.S.Medical Mission Hospital, Kummannoor, Kidangoor and Good Samaritan Hospital, Vellarada whose application were accepted prior to the above decision of the Board.

DETAILS OF PAYMENT DURING THE YEAR 1986-87

Name of Institution/ course	No.of stude- nts benefited	Lumpsum grant	Tuition fees	Mess charge	To- tal
High School	5768	8,58,938			8,58,93
Parallel College	462		59,426		59,42
Regular College	289		43,031	69,759	1,12,79
Technical	456		1,50,210	58,305	2,08,51
Total	6975	8,58,938	2,52,667	1,28,064	12,39,66
Capital Grant					75,00
			Grand Total		13,14,66

Distress and Prolonged Illness Relief Scheme

This scheme was implemented in 1977 with the approval of the Government of India according to which plantation workers not coming under the provision of the Plantation Labour Act are made eligible. The scheme was not attractive to the workers.

It has since been simplified with the approval of the Board. According to the simplified/modified scheme the ceiling limit of monthly emoluments has been enhanced to Rs.1600/-. The lumpsum grant has been increased to Rs.1000/- which is payable once in five years. In addition the beneficiary is eligible for reimbursement of consultation fee paid to the Doctor/Specialist.

Pilot Scheme for Group Insurance-cum-Deposit for the Rubber Plantation Workers in the unorganised sector.

A new scheme called Pilot Scheme for Group Insurance-cum-Deposit for the Rubber Plantation Workers in the unorganised sector has been put into operation.

Objects of the above scheme is to encourage workers in the Rubber Estates in the unorganised sector to develop the habit of saving on a long term basis and to cover the risk against accidents. The scheme enables them to work with a better sense of security as it provides insurance coverage in a variety of circumstances. The scheme came into effect from the last quarter of 1986-87. The total number of workers enrolled in the scheme during the period was 173.

8. VIGILANCE

Anticorruption work, handling of disciplinary cases etc. in the course of enforcement of CCA Rules and Conduct Rules form the major functions of this Wing in addition to the work of Preventive Vigilance.

1. Complaints:

During the year, the Vigilance Division dealt with 26 complaints containing allegations against 17 officers of Class I & II status and 9 employees of Class III & IV status. The allegations in these complaints pertained to malpractices in the sale of fire-wood, delay in payment of subsidy/incentives to rubber growers, removal of Board's properties for personal gain, dereliction of duties in not ensuring proper maintenance of accounts/records, recommendation of financial assistance/subsidy to ineligible growers, etc. Appropriate action was initiated against corrupt/erring officers and grievances of the parties concerned were redressed.

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2. Cases: Major proceedings were instituted against 13 officials of the Board during the year, and 8 officials were dealt with under minor penalty proceedings. Administrative action was also initiated against 2 officers.

3. Property statements and acquisition/disposal of immovable/movable property.

Annual statements of immovable property as on 31.12.86, were collected from officers of Class I & II status.

9. LEGAL MATTERS.

The Rubber Act, is the main statute governing the functions and responsibilities of the Rubber Board. Interpretation of the Act and the Rubber Rules, 1955 framed thereunder in the light of the constitutional provisions formed the major function of the legal section. Legal advice has to be tendered to different departments in the discharge of their functions, especially with regard to contracts and agreements, labour disputs, prosecution for contravention of the provisions in the Rubber Act, etc. Litigation by or against the Board has to be promptly handled in order to safeguard the interests of the Board.

Two OPs filed by the concerned Board's employees one challenging circular on recruitment to the post of Gestetner Operator and the other alleging discrimination and irregularity were defended. The OPs are pending for disposal.

Writ appeal filed by a former Field Officer of the Board before the High Court of Kerala challenging the order of the Single Judge passed in the OP 1860/86, was contested.

1. Special Leave Petition (Civil)No.12707 of 1986.

This SLP was filed before the Supreme Court of India by a manufacturer, challenging the judgement of the High Court of Kerala in WA 414/82 upholding the orders of the Board in assessing the cess on scrap rubber without excluding milling waste. To protect the interest of the Board, we have filed a caveat in the Supreme Court. The Supreme Court after hearing the Board's Counsel, dismissed the Special Leave Petition.

2. Indigent OP No.66 of 1986.

A former employee of the Board filed the OP before the Sub-Court, Kottayam claiming the amount allegedly due to him by way of subsistance allowance, gratuity, Provident Fund and other terminal benefits. The Board is contesting the OP.

3. Prosecutions

Four criminal complaints for prosecution under Section 26 of the Rubber Act was filed by the Board through the Legal Assistant against rubber dealers for the violation of Section 20 of the Rubber Act and Rule 43(2) and 43 A of the Rubber Rules, 1955.

4. CC 150 of 1986.

The prosecution was filed by the State against a dealer before the First Class Judl. Magistrate Court, Changanacherry for the offences under Section 420 of the IPC and for violation of the provisions of Rubber Act and the rules made thereunder. The case is posted for evidence.

5. Crl. MP 3216 of 1986.

The case was filed by a person before the Judl. First Class Magistrate Court, Neyattinkara, claiming the custody of rubber seized, pursuant to a raid conducted by the Sales Tax Department (Intelligence Officer, Trivandrum and SI of Police, Vellarada in Building No.VPX/508 at Arattukuzhi, Vellarada). The Board entered appearance in the petition and filed objections for releasing the rubber seized to the petitioner and as suggested by the Board, the Court after hearing both the parties and by taking into account of the balance of convenience, ordered the custody and sale of rubber through the Neyattinkara Agricultural Producer's Co-operative Society, Trivandrum. The case is pending before the Court.

6. CMP 3025/06 in Crime No.162/06.

The crime was registered by the Nemom Police in respect of the seizure of 10,000 Kgs. of rubber from a lorry by the Sales Tax Intelligence Squad. CMP 3025/06 was filed by one licensed dealer claiming ownership of the goods and for release of the same. The Board entered appearance in the matter and objected the release of goods to the third petitioner and as suggested by the Board, the Court after hearing both the parties and by taking into account of the balance of convenience ordered the custody of rubber with the Neyattinkara Agricultural Producer's Co-operative Society Ltd., for sale and deposit of proceeds in the Court till the disposal of the case.

7. Implementing Assistance to RPS.

Drafted agreement forms and took steps to execute the various agreements between the Rubber Producers' Society and Processing Societies.

8. General: Tendered considered opinion on more than 300 files during the year on service matters, labour issues between the Board and its workers of PCRF, RRDS and CES.

10. INTERNAL AUDIT:

The auditing unit visits various offices of the Board and verifies whether the expenditure incurred has been according to provisions in the schemes and the rules and regulations governing incurring of public funds.

During the period under report the unit conducted inspection of accounts and made reports on the functioning of 6 Regional Offices, 3 Regional Nurseries, the Central Experiment Station, Chethackal, the Rubber Research cum Development Station, Andamns and the Civil Engineering Unit.

Reports on inspection during the previous years were pursued. The monthly returns of the Board's vehicles regarding the consumption of fuel and of advances outstanding were sdrutinised and defects were pointed out for rectification. Replies to the inspection report of the Accountant General, Kerala on the accounts of the Board from 1968/69 to 1985/06 were prepared and sent.

Various offices were assisted in their proper functioning by verification of stock certificates and pointing out descrepancies for rectification.

11. Organisation development programmes

1. O & M Training. Human resource development through training of inservice personnel has been adopted by the Board to improve the skills of the employees. During the year four training courses were run for the functionaries in the clerical services, each of one month's duration. Three courses of ten days' duration were run for the clerical supervisory personnel at the level of Superintendent/Assistant Superintendent. Administrative Officers and Accountants were also trained in two batches, each of ten days duration. The faculty for the training were drawn from subject experts in different departments of the Board.

2. Orientation programme. The Growth Centre, Madras conducted three programmes of one week's duration during April, May and June 1986, in which over 80 officers and staff participated. The object of the programme was to give an orientation to the participants in organisation development through participative management, and making the employees mentally strong to withstand the stresses and strain in daily work.

3. Computer appreciation. As part of the programme in introduction of electronic data processing in the Rubber Board identification of suitable in-service personnel for training was attempted through a computer aptitude test. The test was open to any employee. The Pallavan Transports Consultancy Service, the Board's consultants for EDP in the Rubber Board, interviewed the successful candidates and 10 of them were selected for 3 weeks' training at the Consultants works at Madras, during April 1986. After the training a Computer Analyst and four Computer Programmers were selected for the work in computer programming.

4. Management by objective. A study for improving the functioning of the Board using the technique 'Management by Objective' was entrusted with M/S. AF Ferguson & Company, Madras. A Management Expert of the Company visited the Rubber Board on many occasions and had discussions with the Chairman and Heads of Departments on the Board's functions and activities. The study will be continued and completed during the next year.

5. Work Study. The Internal Work Study Unit of the Ministry of Commerce visited the Board's Head Office at Kottayam for two weeks from 10 to 21 November 1986 to undertake a study of the Department of Administration and Finance & Accounts of the Rubber Board. They furnished a report to the Government in January, 1987.

12. HINDI WORK

Implementation of the official language policy of the Government was also one of the activity pursued by the Board. The annual report, the Audit Report and the statement of accounts for the year 1985/86 were got translated into Hindi. Quarterly progress reports on the use of Hindi in the Board's office were furnished to the Ministry.

Inservice training in Hindi was given to some of the employees of the Board. Classes in Prabodh, Praveen and Pragya were conducted. Training in Hindi typewriting was also started from January 1987.

As per Government's instructions a Hindi week was observed from 25 September to 3rd October 1986. Competitions in essay writing, translation, letter writing, noting and drafting, elocution, calligraphy, recitation, quiz, etc. were conducted and winners were given certificates and token prizes. A seminar was conducted on 'Hindi as Official language' which was inaugurated by the Secretary, Kerala Hindi Prachar Sabha. The valedictory session of the week was on 3rd October, when cash awards were given to 22 employees who had meritoriously passed the Hindi examinations.

Steps were also taken to print Hindi version of the book 'Rubber and its Cultivation'.

13. SUB/LIAISON OFFICES.

There are 5 Sub Offices in the major rubber consuming centres outside Kerala such as Madras, Bombay, Calcutta, New Delhi and Jalandhar for inspection work connected with issue of licences to rubber manufacturers and rubber dealers. These Offices are manned by Excise Duty Officers, who also work as a nexus between the Board and the Central/State Government offices and other institutions in the region. The offices assessed suitability of rubber dealers and manufacturers for possession of licences to purchase/deal in natural rubber and cross-checked as necessary the statutory returns with their books of accounts and records to ensure that all rubber purchases are accounted for and cess is paid on the entire quantity of indigenous natural rubber. In order to see that the dealers abide by the provisions in the Rubber Act and Rules in their transactions so that there occurs no leakage in the cess on rubber collected, these offices arranged surprise/squad inspections at dealers manufacturers premises and verified their books of accounts and records. Similarly the manufacturers were followed up to send purchase returns in time with audit certificates and those who tend to delay payment of cess were contacted and persuaded to remit the cess arrears. Detecting unlicensed dealing/procurement of rubber in contravention of the Rubber Act and the Rules framed thereunder, enquiring about the manufacturers who stop renewing their licenses to acquire rubber and pursuing cases of revenue recovery of cess arrears also formed part of the functions of these offices.

A table showing the quantum of work done by each office is given below:

	Madras	Bombay	Calcutta	Delhi	Jalandhar
1. Inspection to issue fresh licence to manufacturers/ dealers and for branch authorisation.		67	80	122	
2. Inspections for verification of dealers/manufacturers accounts and follow up recovery of old arrears.	312	278	307		182
3. Surprise/squad inspections at dealers premises.		32	39	191	
4. Quantity of unlicensed purchase/ sale detected (in metric tonnes)	233	265	49	*	*
5. N Form books issued to manufacturers/ dealers-	*	230	37	384	*
6. Visits for liaison with Government/ other institutions.	49	167	94	464	*
7. Arrears of excise duty collected and remitted (Rs/lakhs)	2.16	7.77	16.91	4.87	24.86

* Position not reported.

Collection of arrears related mainly to long pending cases. The collection from Bombay Office included certain amounts which had eluded even revenue recovery proceedings and cess on unauthorised purchases made by a few unregistered units for which there were no documentary evidence.

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pvk/-

PART VII - FINANCE & ACCOUNTS

The Finance & Accounts Department of the Board controls and coordinates all functions of the Board relating to funds, budget, accounts, cost, computerisation etc. The Department has a central Finance & Accounts Unit, a Cost Accounts Division, a Computer Division and four Finance & Accounts Divisions administratively under the control of the Administration, Research, Rubber Production and Rubber Processing Departments. These Divisions are functionally coordinated by Financial Adviser. There are small accounts cells in Marketing Division and Pilot Crumb Rubber Factory under the Dept. of Rubber Processing and Excise Duty Section under the Administration Department. These cells are also functionally linked to the Financial Adviser. In addition the Internal Audit Division under the Admn. Department is closely associated with Finance & Accounts Department. The Internal Audit Reports of various units are passed on to Financial Adviser for corrective action. In addition the audit of the accounts of the Board is conducted in close association with the Finance & Accounts Division and Internal Audit Unit.

The important activities of the Department during the period under report are given below:-

1. Funds

The Board maintains two funds namely General Fund and Pool Fund. The Central Government releases to the Board, under sub section 7 of Section 12 of the Rubber Act, funds required for expenditure for the purpose of the Act. These funds are received as part of the General Fund of the Board. During the year the Board received funds to the tune of Rs.2048.98 lakhs as against Rs.1266.58 lakhs during the previous year. In terms of release of funds this increase constituted 62%. The details of receipts and payments of the Board are summarised below:-

		Rs.in lakhs
Opening Balance of cash in hand and at Bank as on 1.4.1986	..	55.66
Add: Departmental receipts	..	149.95
Add: Grant from Govt during 1986-87	..	2,048.98
Total :		2,254.59
Expenditure during 1986-87 - 2193.12		
Debt, deposit and remittance accounts. 18.05		2,211.17
Closing Balance	..	43.42

The Pool Fund comprised of Opening Balance, Receipts and transfer from General Fund only. This fund is used exclusively for the rehabilitation of small holders of rubber. The gross Pool Fund expenditure during the year was Rs.102.66 lakhs.

In addition to the General Fund & Pool Fund, the Board operates its own Pension Fund, General Provident Fund and Contributory Provident Fund. The Board also operates a Group Insurance Scheme through the LIC.

....2/-

2. Cess

Under Section 12(i) and (ii) of the Rubber Act the Board collects and remits to the Consolidated Fund of India a cess on indigenous production of natural rubber at the rate of Rs.0.50 per kg. As against budget estimates Rs.10.50 crores the collection during the year was Rs.9.42 crores. After deducting from this cost of collection at 2% as approved by the Government, Rs.9.23 crores was remitted to the Consolidated Fund of India during the year. The unspent balance of Cess collection with the Government stands at Rs.468.64 lakhs as indicated below:-

	Rs.in lakhs
Balance as on 1.4.1986 ..	1594.45
Add: Remittance of Cess during 1986-87..	923.17
Total ..	2517.62
Less: Grant from Govt.during 1986-87 ..	2048.98
Balance with Govt. as on 31.3.1987 ..	468.64

This does not take into account the releases in the form of Natural Rubber Subsidy made directly by the Govt. to exporting rubber goods manufacturers.

3. Budget

The Revised Budget Estimates proposed for 1986-87 in October 1986 was to the tune of Rs.733.99 lakhs under non-plan and Rs.1607.65 lakhs under Plan. Against this the Govt. sanctioned Rs.667.60 lakhs under Non-Plan and Rs.1496 lakhs under Plan. Releases made by the Govt. against budget allocation was fully spent by the Board.

4. Expenditure

The details of expenditure during the year 1986-87 are given below:-

Non-Plan	Rs.in lakhs
i) Administration	101.49
ii) Research	150.54
iii) Development	241.67
iv) Works	66.08
v) PCKF	15.88
vi) Labour Welfare	13.32
vii) Official Language implementation	0.13
viii) Advances to employees	12.28
ix) Contribution to Pension Fund	30.13
x) Buffer stock scheme	9.64
Total Non-Plan	641.16

...3/-

Plan

	Rs. in lakhs
i) Rubber Plantation Development Schemes including discontinued Spillover Schemes.	1189.60
ii) Scheme for accelerated development of Rubber in non-traditional areas:	
(a) RRDS, Andamans	44.30
(b) North East Rubber Development:	
1. Research Component	48.71
2. Development Component	16.04
3. NREPC	37.17
iii) Establishment of nurseries and distribution of planting materials.	9.43
iv) Extension Training & Supplies	28.45
v) Improving processing in small holdings:	
(a) Rubber Processing	19.46
(b) Share capital to co-operatives establishing processing units.	9.50
vi) Improving marketing of small holder's rubber - share capital/working capital to co-operatives.	5.64
vii) Continuing Research Schemes	43.91
viii) Special Component Plan and Tribal Sub Plan.	37.36
ix) Rubber Development to Orissa, A.P., M.P. and Maharashtra.	2.74
x) Distribution of inputs at subsidised rates.	42.40
xi) Scheme for improving processing of rubber.	16.45
xii) Research New Schemes (Orissa)	0.80
Total Plan	1551.96
Grand Total - Non-Plan & Plan	2193.12

5. Accounts

Accounts for the year 1986-87 have been audited by the Accountant General, Kerala. The accounts as audited are enclosed. The audit report is awaited. When received, these will be presented to the Board /Government along with replies/ remarks.

6. Cost Accounts

The Cost Accounts Unit of the Board assisted the Cost Accounts Branch of the Ministry of Finance, Govt.of India in collecting and compiling data on cost of production. The entire work of circulating questionnaire, selecting holdings and estates by strategic random sampling method and collecting data relating to small holdings were done by the Board. Compiled data relating to small holdings were discussed in the Cost Accounts Branch of the Ministry in July 1986 and the work of Cost Study for rubber could be completed during the original time schedule prescribed by the Government.

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Nursery costing was done for the 1987 season and arrived at the prices for planting materials including green budded stumps, brown budded stumps and budwood, collected and compiled figures on cost of cultivation, updating information with reference to the escalation in the input cost. Difference in cost of production in North East Region, Orissa, Maharashtra etc. were also collected.

All the works relating to Sales tax and Agricultural Income Tax including compiling data, filing returns etc. were handled representing cases with the assistance and guidance of Legal Section as well as the Board's Legal Advisers. The question of exempting rubber growers from capital gains tax on felled trees and exempting replanting subsidy from income tax and other general tax matters effecting rubber growers were taken up with the Government.

A management reporting system was introduced for the experimental stations of the Board namely CES Chethackal, RRII Kottayam and RRDS Andamans.

7. Electronic Data Processing

An Electonic Data Processing Division (Computer Centre) has been established in January 1987 fully manned by inservice personnel selected after due training. The computer system is from M/s.Electronic Corporation of India Ltd. and the software development is being done under the Technical Consultancy of M/s.Pallavan Transport Consultancy Services which is a Government of Tamilnadu undertaking. After the installation about 25,000 cases of subsidy payment could be successfully processed on the machine. It could also print out about 5,000 cheques. Preliminary work has been started for computerising complete information of Rubber Plantation Development Scheme Phase II. Programme development for computerising subsidy payment, financial accounting and statistical data processing has also been initiated.

8. Audit

The Receipt and Payment Accounts compiled in respect of all the Funds operated by the Board and for cess collection and remittances are audited by the Accountant General, Kerala. This audit is in addition to the pre-payment review by the Finance and Accounts Divisions and the post payment check by the Internal Audit Wing of the Board. The audit report of the accounts for 1985-86 have been placed before the Board and submitted to the Ministry. The audit of the accounts for 1986-87 have been completed by A.G,Kerala but the audit report is awaited (Sept.1987).

PART - VIII - STATISTICAL TABLES

TABLE - I

PRODUCTION, IMPORT & CONSUMPTION OF NATURAL RUBBER

(Tonnes)

Month		Production	Import	Consumption (Indigenous & imported)
April	1986	14,880	3,281	20,645
May	"	19,850	13,766	21,730
June	"	13,560	10,594	20,960
July	"	13,725	12,602	20,870
August	"	16,020	1,724	21,170
September	"	20,780	27	20,865
October	"	24,535	649	19,675
November	"	25,545	78	21,095
December	"	26,775	212	23,615
January	1987	22,265	191	22,685
February	"	9,735	1,432	21,725
March	"	11,850	572	22,270
Total		219,520	45,128	257,305

TABLE - 2

STOCK OF NATURAL RUBBER AT THE END OF EACH MONTH

(Tonnes)

		Growers & Dealers	Manufac-turers	STC	Total (Rounded
April	1986	31,530	20,870	330	52,730
May	"	35,470	22,660	6,468	64,600
June	"	36,950	23,338	7,472	67,760
July	"	36,405	21,935	14,838	73,180
August	"	39,975	20,735	8,990	69,700
September	"	42,340	22,175	5,204	69,720
October	"	47,470	21,935	5,815	75,220
November	"	52,290	20,250	7,166	79,700
December	"	51,180	22,185	9,648	83,010
January	1987	49,105	21,795	11,910	82,810
February	"	38,785	21,650	11,773	72,200
March	"	31,740	19,340	11,626	62,700

TABLE - 3

GRADE-WISE STOCK OF NATURAL RUBBER AT THE END OF EACH MONTH (TONNES)

	Apr.86	May 86	Jun.86	Jul.86	Aug.86	Sept.86	Oct.86	Nov.86	Dec.86	Jan.87	Feb.87	Mar. 8
RMA Grades	30,530	38,500	41,660	45,230	43,290	42,430	46,460	49,940	51,905	51,530	43,980	37,210
Estate Brown Crepes & Re-milled Crepes	6,390	6,645	7,650	7,505	7,030	7,565	7,980	9,335	9,850	9,975	8,160	8,910
Latex con-centrates (drc)	4,120	4,860	4,915	5,030	5,030	5,470	5,340	5,880	6,545	6,740	6,090	4,595
Pale Latex Crepes	690	665	700	715	740	795	840	970	1,185	1,235	1,090	1,000
Solid Block rubbers	5,050	7,020	6,445	7,870	6,510	5,670	6,280	5,715	4,860	5,035	5,100	4,770
Scraps(drc)	5,860	6,795	6,270	6,625	6,945	7,620	8,115	7,750	8,430	8,055	7,480	6,040
Other Grades	90	115	120	205	155	170	205	110	235	240	300	175
Total(Rounded)	52,730	64,600	67,760	73,180	69,700	69,720	75,220	79,700	83,010	82,810	72,200	62,700

TABLE - 4

PRODUCTION, IMPORT, CONSUMPTION & STOCK OF SYNTHETIC RUBBER

(Tonnes)

	Production	Import*	Consumption	Stock at the end of the month
April 1986	2,402	2,419	5,325	14,920
May "	3,354	3,315	5,590	16,345
June "	3,309	3,019	5,315	17,305
July "	2,993	2,644	5,330	18,100
August "	1,932	2,459	5,745	17,500
September "	3,586	2,361	5,890	17,050
October "	3,040	2,179	6,230	16,800
November "	3,357	2,385	6,350	17,300
December "	3,266	2,413	6,585	16,330
January 1987	3,779	1,553	6,335	16,165
February "	3,824	2,021	6,445	16,440
March "	3,974	1,368	6,645	15,100
T o t a l	38,816	28,136	71,785	

* incomplete

TABLE - 5

PRODUCTION, CONSUMPTION & STOCK OF RECLAIMED RUBBER

(Tonnes)

		Production @	Consumption	Stock at the end of the month *
April	1986	2,845	3,080	2,855
May	"	3,110	2,990	3,075
June	"	2,850	2,860	3,065
July	"	3,400	3,090	3,375
August	"	2,945	3,105	3,215
September	"	3,250	3,115	3,350
October	"	3,120	3,110	3,360
November	"	3,010	3,320	3,050
December	"	3,625	3,605	3,170
January	1987	3,855	3,685	3,340
February	"	3,430	3,415	3,355
March	"	3,555	3,260	3,650
T o t a l		38,995	38,635	

@ Indigenous purchase by manufacturers

* Stock with manufacturers

APPENDIX - I

LIST OF MEMBERS OF THE BOARD AS ON 31/03/1987

-1. Shri PC Cyriac, IAS Chairman, Rubber Board	Chairman, Rubber Board
-2. Shri TU Kuruvilla Chairman, Plantation Corporation of Kerala Government of Kerala Kottayam	Nominated by the Government of Kerala to represent that State
-3. Shri N Kaleeswaran Agricultural Production Commissioner Trivandrum	
-4. Shri S Kondas, Chief Conservator of Forest, Government of Tamilnadu, O/O Chief Conservator of Forest, Madras - 6	Nominated by the Government of Tamilnadu to represent that State
-5. Shri Varkey George C/o M/s.AV George & Co Ltd Kottayam	Elected by the large growers in the State of Kerala
-6. Shri MD Joseph, Mannipparambil, Kanjirappally	
-7. Shri Joseph Zacharias Akkarakalam, Kunnumbhagam Kanjirappally	
-8. Shri A Jacob, Managing Director, Velimalai Rubber Company Ltd Kottayam	Elected by the large growers in the State of Tamilnadu
-9. Shri MK Vidyadharan Uthamam LIC Lane Pattom, Trivandrum-4	Nominated by the Central Government to represent small growers of Kerala
10. Shri Aryadan Mohammed President, Kerala State Co-op. Marketing Federation Ltd., Cochin - 20	
11. Shri K Joseph Monippally General Secretary, Indian Growers Association, Near South Overbridge, Cochin-16	
12. Shri George Joseph Mundackal	Elected by the Lok Sabha
13. Shri Dilip Singh Bhuria	
14. Shri K Vasudeva Panicker	

15. Shri BS Kapoor, President Northern India Rubber Manufacturers Federation	Nominated by the Central Government to represent the Rubber Manufacturers
16 Shri OP Jalan, President All India Rubber Industries Association	
17 Shri A Kunheeran, General Secretary, Kerala Plantation Workers Federation, PO Kondotty, Malapuram (Kerala)	Nominated by the Central Government to represent labour
18. Shri TNC Panicker, General Secretary, Peerumedu Taluk Estate Workers Union PO Peerumedu (Kerala)	
19. Shri K Padmanabhan, General Secretary, All India Plantation Workers Federation C/o CPI(M)Office PO Trichur, Kerala	
20 Shri AP Kurien, Ayyampally House, PO Thuravur Via Angamally, Kerala	
21 Shri ET Varghese, President Rubber Dealers Association Kottayam	Nominated by the Central Government to represent other interests
22 President, United Planters Association, of Southern India, Coonoor	
23. Planning Adviser North Eastern Council Shillong	
24 Chairman, Automotive Tyre Manufacturers' Association New Delhi	
25. Rubber Production Commissioner Rubber Board, Kottayam	Ex - Officio

APPENDIX - II

THE RUBBER BOARD

CHAIRMAN
(CHAIRMAN OF THE BOARD AND CHIEF EXECUTIVE)
5900 - 6700

ADMINISTRATION DEPARTMENT	PUBBER PRODUCTION DEPARTMENT	RESEARCH DEPARTMENT (RRII)	RUBBER PROCESSING DEPARTMENT	FINANCE & ACCOUNTS DEPARTMENT
HEAD : SECRETARY 3700 - 5000	HLAD : RUBBER PRODUCTION COMMISSIONER 3700 - 5000	HEAD : DIRECTOR 3700 - 5000	HEAD : PROJECT OFFICER 3000 - 5000	HEAD : FINANCIAL ADVISER 3000 - 5000
Group A - 15	Group A - 48	Group A - 48	Group A - 15	Group A - 2
Group B - 54	Group B - 207	Group B - 92	Group B - 23	Group B - 2
Group C - 174	Group C - 704	Group C - 104	Group C - 28	Group C - 6
Group D - 29	Group D - 46	Group D - 25	Group D - 4	Group D - Nil
TOTAL - 272	TOTAL - 1005	TOTAL - 269	TOTAL - 70	TOTAL - 10

STATISTICS & PLANNING DIVISION	VIGILANCE SECTION	PERSONAL STAFF	TOTAL
Group A - 1	Group A - 2	Group A - 1	GROUP A - 126
Group B - 8	Group B - Nil	Group B - 1	GROUP B - 376
Group C - 18	Group C - 2	Group C - 2	GROUP C - 1010
Group D - 1	Group D - 1	Group D - 1	GROUP D - 104
TOTAL - 28	TOTAL - 5	TOTAL - 5	GRAND TOTAL - 1616

THE RUBBER BOARD

GENERAL FUND

RECEIPT AND PAYMENT ACCOUNT FOR THE YEAR ENDED 31ST MARCH 1987

RECEIPTS			PAYMENTS				
Particulars	Sch. No.	Amount Rs. Ps.	Particulars	Sch. No.	Non-Plan Rs. Ps.	Plan Rs. Ps.	Total Rs. Ps.
1	2	3	4	5	6	7	8
To Opening balance:			By Administration	7			10149257.45
Cash in hand and at bank	1	3745629.23	" Research	7	15054117.77	4470780.93	19524898.70
Imprest and Special Imprest	2	57007.45	" Development	7	24166648.79		24166648.79
Contingent advances	3	439667.33	" Rubber Processing	7		1945819.37	1945819.37
R.R.D.S. Suspense	4	187097.66	" Works	7	6608198.61		6608198.61
To Grant from Government		204898000.00	" P.C.P.F. (Excess of expenditure over receipts)	7	1588149.10		1588149.10
" Licence fees	6	773482.20	" Labour welfare	11	1332069.00		1332069.00
" Sale of rubber	6	3936588.72	" Rubber Replanting Subsidy Scheme			2123661.02	2123661.02
" Planting materials - cash sales and adjustment	6	2896894.10	" Rubber Newplanting Subsidy Scheme 1979			3365701.70	3365701.70
" Cost of collection of cess on rubber	6	1919507.00	" Rubber Plantation Development Scheme (Phase I & II)			113448214.13	113448214.13
" Miscellaneous receipts	6	2912344.56	" North East Rubber Development Scheme (NERDS)	9		10191559.79	10191559.79
" Advance to employees bearing interest	8	941016.15	" RRDS Andamans			4429913.49	4429913.49
" Advance/Deposit from outside parties	13	831187.94					
" Recoveries/Deposits awaiting remittance/refund	15	145202.33					

Contd...2

1	2	3	4	5	6	7	8
To Amount B/F		223683624.67	By Special Component Plan and Tribal Sub Plan	10		3735859.60	3735859.60
			" Rubber Development in Orissa, AP & MP			274537.13	274537.13
			" Regional Nurseries			943511.06	943511.06
			" Official Language Implementation Scheme		13486.75		13486.75
			" Contribution to Rubber Board Pension Fund/CPF	11A	3012766.00		3012766.00
			" Advances to employees bearing interest	8	1227515.00		1227515.00
			" Buffer Stock Scheme		963664.38		963664.38
			" K.R.P.P. Adjustment				592886.49
			" Advance to staff not bearing interest	16			217323.94
			" Advance/Deposit with outside parties	14			525977.68
			" Transfer to Pool Fund	12		3917370.78	3917370.78
			" Pool Fund Adjustment	12			3297778.27
			" Closing balance:				
			Cash in hand & at bank				3959882.77
			Imprest & Special Imprest				51138.95
			Contingent Advances				487398.73
			R.R.D.S. Suspense				228021.15
			Departmental Advances	5			1360414.84
TOTAL:		223683624.67	TOTAL:				223683624.67

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SECRETARY

CHAIRMAN

RUBBER BOARD

POOL FUND

RECEIPT AND PAYMENT ACCOUNT FOR THE YEAR ENDED 31 ST MARCH 1987

RECEIPTS		Sch.No.	Rs. ps	PAYMENTS	Sch.No.	Rs. ps
To Opening Balance:-				By Malayalam Magazine		1,59.303.75
Cash in hand	20.00			" Supply of fertilizer at concessional rate		21,822.90
Cash at Bank:-				" Reimbursement of cost of Planting Materials		4,805.70
Current A/c with DCB,KTM	17,63,559.47			" Subsidy for Soil Conservation		322.00
" SBT "	22,212.15			" Supply of planting materials Free of cost or at concessional rate		5,81,801.00
" ICB "	33,704.53			" Loan scheme		332.60
P.D.A/c with District Treasury,Kottyam	100.00			" Crash Programme for development of Small Holdings.	5	6,20,199.10
Imprest/Temporary Advance	95,018.04 2,025.00			" Law charges		23,603.02
Amount receivable from General Fund	32,97,778.27		52,14,417.46	" Regional Tappers Training Schools	6	1,49,786.50
" Malayalam Magazine:-				" Assistance for Bee Keeping		13,650.00
Subscription during the year	22,842.25			" Subsidy to Rubber Rollers		1,83,037.00
Less: Transfer of perpetual Subscription received during previous year.	10,560.00			" Share Capital Contribution to Co-operatives for marketing		4,26,500.00
	12,282.25			" Working Capital Loan to Co-op. for marketing		1,37,700.00
Add:Other charges	35,500.00		47,782.25	" Share Capital contribution to Co-op.for establishing proces - ing facilities.		15,50,000.00
				" Distribution of rainguarding materials to small holders		11,37,641.72

To	Recovery of half cost of manure		2,61,546.00	By	Scheme for improving processing among small holders.	7	8,61,723.00
"	Loan repayments	2	3,26,440.71	"	Scheme for distribution of inputs through rubber producers societies	8	42,39,701.77
"	Receipt against distribution of rainguarding materials		1,56,064.48	"	Scheme for establishing Co-operatives through rural Co-operatives		1,52,500.00
"	Refund from Co-operative Societies	3	4,67,264.68	"	Miscellaneous expenses		2,154.50
"	Interest/Divident from Co-operatives		1,86,303.41		Closing balance:- 25.00		
"	Interest on deposits		2,733.48		Current A/c.with DBB KTM 95184.78		
"	Refund of subsidised cost of inputs		92,858.33		" " SBT KTM 264114.85		
"	Refund of cost of cover crop seeds		73,242.40		" " IOB KTM 23272.23		
"	Miscellaneous receipts		500.68		PD A/c.with Dist.Try. KTM 100.00		
"	Transfer from General Fund	4	39,17,370.78		Imprest/Contingent Adv. 97243.04	1	4,79,939.90
	Total		1,07,46,524.66		Total		1,07,45,524.66

FINANCIAL ADVISER

SECRETARY

CHAIRMAN

RUBBER BOARD

RECEIPT & PAYMENT ACCOUNT FOR THE YEAR ENDED 31ST MARCH 1987

EXCISE DUTY ACCOUNT

Receipts	Rs.	Ps.	Payments	Rs.	Ps.
To opening Balance			By remittance to C.F.I.	9,23,16,984	.69
Cash	8,059	.00	By cost of collection transferred to General Fund	19,19,507	.00
Bank SBT KTM	64,172	.18	By closing Balance		
Bank SBI COCHIN	13	.11	Cash	28	.00
To Excise Duty collected	9,41,91,107	.59	Bank SBT KTM	26,822	.08
			Bank SBI COCHIN	13	.11
TOTAL	9,42,63,351	.88		9,42,63,351	.88

FINANCIAL ADVISER

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CHAIRMAN

Note: 2% collection charges works out Rs.1883822/- . Where as the amount treated as collection charges and transferred to General Fund is Rs.1919507/-. The excess transfer of Rs.35685/- will be adjusted during 87-88.

RUBBER BOARD GENERAL PROVIDENT FUND

RECEIPT & PAYMENT ACCOUNT FOR THE YEAR ENDED 31ST MARCH '87

RECEIPT			PAYMENT		
To opening balance (Sch.I)		57,10,424.37	By GPF Advance	23,05,106.00	
To Subscription from members	42,22,816.70		By part Final withdrawal	9,48,352.00	
Add recovery of advance	14,61,768.00	56,84,584.70	" Final settlement	1,33,323.40	33,86,781.40
To interest on investment		78,231.11	" Interest credited to members A/C.		6,48,887.05
			" Establishment charges		35,813.00
			" Transfer to C.P.F.		400.00
			" Sundries		2.00
			" Adjustment A/C. with General fund (1)		72,133.67
			" Closing balance (Sch.II)		73,29,223.06
TOTAL		1,14,73,240.18			1,14,73,240.18

(Contd.....)

ANALYSIS OF CLOSING BALANCE

Subscription A/C.		84,17,075.92
Less Excess payment of interest over receipt	10,5T,637.86	
Establishment charges during the year	35,813.00	
Transfer to C.P.F. (being adjustment relating to previous year)	400.00	
Sundries	2.00	10,87,852.86
		73,29,223.06

(1) Note: Net payment under adjusting A/c. with General Fund works out as follows:-

Amount payable to General Fund being establishment charges for previous years :	85,335.98
Less amount receivable from General Fund in previous years	13,202.31
NET	72,133.67

FINANCIAL ADVISER SECRETARY CHAIRMAN

RUBBER BOARD PROVIDENT FUND

(Contributory Provident Fund)

RECEIPT AND PAYMENT ACCOUNT FOR THE YEAR ENDED 31ST MARCH 1987

To Opening Balance as on 1-4-1986				**By interest on Subscription**	6,329.00	
Cash at Bank S.B. A/c. SBT	5,000..0			" " " Contribution	15,616.00	21,945.00
" Current A/c. "	23,001.71			" Transfer to Pension Fund		0.53
Fixed Deposit with SBT Rt.056929	21,500.00			" Adj.A/c.with General Fund (Receivable)		6,114.00
" " 407999	10,000.00			" **Closing Balance as on 31-3-1987**		
" ICB " 1853	60,000.00			Fixed Deposit with S.B.T. 056929	21,500.00	
" SBT " 56909	5,000.00			D.C.B. 1853	60,000.00	
" ICB " 3809	40,000.00			SB T 056909	5,000.00	
" SBT " 056945	20,000.00	1,84,501.71		D.C.B. 3809	40,000.00	
To Subscription	28,589.00			S.B.T. 056945	20,000.00	
Add Interest credited	6,329.00			S.B.T. 056963	10,500.00	
Add Refund of advance	4,640.00	39,558.00		Cash at Bank SB A/c No.with SBT	71,105.78	
To Board's Contribution	11,093.00			Current A/c.with SBT	6,067.84	2,34,173.62
To Interest on contribution	15,616.00	26,709.00				
" Interest on investment		2,728.26				
Adj.A/c.with General Fund		8,736.18				
		2,62,233.15				2,62,233.15

contd...

ANALYSIS OF CLOSING BALANCE

	Subscription A/c	85,515.00
	Contribution A/c	1,59,801.69
		2,45,316.69
Less: i)	Excess interest paid over receipt 5029.07	
ii)	Amount receivable from General Fund6114.00	11,143.07
		2,34,173.62

Note: i) The receipt of Rs.8736/18 under adjusting A/c.with General Fund is the amount receivable from General Fund during previous year, adjusted during current year. The amount of Rs.6114/- shown under payment side is the Board's contribution credited to contribution A/c, pending adjustment from General Fund.

ii) Board's contribution for 86-87 (ie.Rs.11,093) includes Rs.4979/- relating to arrears of contribution for prior years, and Rs.400/- relating to contribution misclassified under GPF transferred during the year.

iii) Interest on contribution (ie.Rs.15616) includes interest of Rs.1410/- on arrears of contribution for prior years.

FINANCIAL ADVISER

SECRETARY

CHAIRMAN

RUBBER BOARD EMPLOYEES PENSION FUND

RECEIPT AND PAYMENT ACCOUNT FOR THE YEAR ENDED 31-3-87

RECEIPTS			PAYMENTS		
To opening Balance (Sch.No.I)		1,28,47,522.20	By pension	3,31,572.00	
Contribution from General Fund	30,00,000.00		By Family pension	57,542.00	
Pension contribution from Deputationists	34,942.00		By commutation of pension	2,14,817.00	
Pro-rata contribution	3,150.80	30,38,092.80	D.C.R.G.	2,34,120.40	8,38,051.40
Receipt from Rubber Board Provident Fund		0.53	By closing balamce(Sch.II)		1,55,39,414.83
Interest on investment	4,93,575.70	4,91,850.70			
Less I.T. deducted at source	1,725.00				
		1,63,77,466.23			1,63,77,466.23

FINANCIAL ADVISER

SECRETARY

CHAIRMAN

RUBBER PROCESSING DEPARTMENT

STATEMENT OF ASSETS AND LIABILITIES AS ON 31.3.87

LIABILITIES	Sch. No.	This year Rs.	ps.	Previous year Rs.	Ps.	ASSETS	Sch. No.	This year Rs.	ps.	Previous year Rs.	Ps.
Drawal from General Fund	I	111,44,106.69		94,69,008.88		Fixed Assets Gross Value	24,11,883.29				
						Less Depreciation	6,78,231.77	VII	17,33,651.52		16,42,602.10
Sundry Creditors For supplies & Services	II	68,872.81		7,514.84		Current Assets, Loans & Advance For supplies & Services		VIII	62,886.00		35,464.57
For Officers & Staff	III	1,24,443.29		2,739.05		For Officers & Staff		IX	15,216.28		11,194.28
Earnest Money Deposit	IV	15,645.00		13,300.00							
Security Deposits	V	73,846.55		66,527.23		Cash in Hand			2,159.30		4,103.53
						Cash at Bank			2,54,198.13		2,74,764.87
Recoveries awaiting Remittances	VI	55,547.92		79,619.57							
						Excess of Expenditure over Income upto previous year			76,70,580.22		59,46,177.04
						This year			17,43,770.81		17,24,403.18
		114,82,462.26		96,38,709.57					114,82,462.26		96,38,709.57

Financial Adviser

Secretary

Project Officer

Chairman

DEPARTMENT OF RUBBER PROCESSING

STATEMENT OF INCOME AND EXPENDITURE FOR THE YEAR ENDED 31.3.1987

EXPENDITURE	Sch. No.	This year	Previous year	INCOME	This year	Previous year
To Salaries & allowances	1	13,70,173.89	7,64,336.09	By fees for analaysis of samples	64,172.66	53,408.50
" Travelling allowance		2,10,991.96	51,590.29	Share of fees for ISI Marking	57,110.00	--
" Welfare Expenses	2	16,007.44	7,032.84	Consultancy Services	27,943.00	17,060.19
" Payments to Technical Consultants		--	6,64,789.81	Fee for training courses	6,854.78	--
" Overseas Training		--	23,058.00	Miscellaneous Receipts	13,816.58	4,497.50
" Repairs & Maintenance of vehicles		1,12,628.38	81,922.85			
" Other contingencies & Office Expenses	3	65,614.11	36,862.05			
" Laboratory Expenses	4	88,247.69	43,239.91			
" Depreciation		1,50,004.36	1,26,537.53			
				Excess of Expenditure over Income	17,43,770 .81	17,24,403.18
Total:		19,13,667.83	17,99,369.37		19,13,667 .83	17,99,369.37

FINANCIAL ADVISER SECRETARY PROJECT OFFICER CHAIRMAN

spn/

THE RUBBER BOARD

PILOT CRUMB RUBBER FACTORY

BALANCE SHEET AS ON 31ST MARCH 1987 (PROFORMA ACCOUNTS)

As on 31.3.1986 Rs. Ps.	LIABILITIES	Sch. No.	As on 31.3.1987 Rs. Ps.	As on 31.3.1986 Rs. Ps.	ASSETS	Sch. No.	As on 31.3.1987 Rs. Ps.
1	2	3	4	5	6	7	8
29,66,075.31	I. General Fund	V	45,28,282.31		I. Fixed Assets:		
	II. Current Liabilities				Gross Block 18,21,579.56		
9,781.49	1. Advance for sale of rubber	VI	12,429.20	8,65,743.80	Less: Depreciation 10,20,785.10	I	8,00,794.46
1,12,358.49	2. Sundry creditors for raw materials and supplies	VII	1,33,725.66		II. Current Assets, Loans, Advances		
52,208.44	3. Other liabilities	VIII	2,78,562.82		A. Current Assets:		
				1,49,133.12	i/ Closing stock:	II(A)	
				11,287.50	Raw materials		2,12,776.22
				10,86,882.50	Semi processed goods		11,052.05
				1,44,999.07	Finished goods		25,74,596.12
				54,612.31	Stores & spares	II(B)	2,80,955.91
					ii/ Sundry Debtors	III	2,11,538.51
				3,637.17	iii/Cash & Bank balances:		
				95,980.33	Cash in hand		1,966.24
					Cash at bank (CBI)		2,10,920.67
					Cash at bank (DCB)		42,910.66

Contd.....14

1	2	3	4	5	6	7	8
31,40,423.73	Amount B/F		49,52,999.99	2,34,910.01	B. Loans & Advances	IV	2,44,394.79
				2,875.00	C. Prepaid expenses		2,875.00
				85,316.00	D. Pool Fund Adjustment Account		--
					III. Miscellaneous expenses:		
				4,05,046.92	Net loss as per last Balance sheet 4,05,046.92		
					Add: Loss for 86-87 3,172.44		4,08,219.36
31,40,423.73	TOTAL		49,52,999.99	31,40,423.73	TOTAL		49,52,999.99

FINANCIAL ADVISER PROJECT OFFICER SECRETARY CHAIRMAN

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THE RUBBER BOARD

PILOT CRUMB RUBBER FACTORY

COMBINED PROCESSING AND PROFIT & LOSS ACCOUNT FOR THE YEAR ENDED 31ST MARCH 1987

As on 31.3.86 Rs.	Ps	Particulars			Sch. No.	As on 31.3.87 Rs.	Ps	As on 31.3.86 Rs.	Ps	Particulars	Sch. No.	As on 31.3.87 Rs.	Ps
		To Opening stock:-						60,58,390.83		By Sales		57,82,095.79	
1,15,727.63		Raw materials	1,49,133.12					63,044.43		" Misc. receipts including samples	5	46,764.16	
8,720.00		Semi processed	11,287.50					3,626.00		" Recovery relating to previous year		....	
11,31,826.29		Finished goods	10,86,882.50			12,47,303.12							
49,75,291.74		To Raw materials purchased				61,01,877.97				" Closing stock:-			
26,942.63		" Stores consumed				27,907.46		1,49,133.12		" Raw materials		2,12,776.22	
2,08,582.67		" Power consumed				3,15,733.70		11,287.50		" Semi processed goods		11,052.05	
46,876.59		" Packing charges				44,244.33		10,86,882.50		Finished goods		25,24,596.12	
94,278.80		" Carriage Inwards				70,327.90							
4,14,036.01		" Payment to employees			1	4,89,583.72							
1,56,351.66		" Repairs and maintenance			2	76,067.25							
12,870.60		" Rates, Taxes & Insurance			3	16,498.85							
41,642.50		" Testing & Specification				35,252.50							
1,314.76		" Printing & stationery				2,402.02							
3,557.55		" Misc. Expenses			4	4,676.42							
7,955.26		" PFL processing expenses				77,742.80							
81,399.61		" Description				70,838.74							
44,990.08		" Profit				----		---		" Loss		3,172.44	
73,72,364.38						85,80,456.78		73,72,364.38				85,80,456.78	

FINANCIAL ADVISER PROJECT OFFICER SECRETARY CHAIRMAN