Rubber Wood Consuming Units in Kerala

Technical Facilities and Problems

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Introduction

In recent years there has been an increase in the demand for timber for wood-based industries in India. The shrinking of forests has lead to a short fall in the supply of wood. The excess demand over supply of timber has resulted in the search for alternative sources or wood. Studies in India and abroad have shown that rubber wood after appropriate treatments could be used as a substitute for quality timber.

Rubber tree is perennial, growing to a height of about 30 m with prolific branches. It yields an average of 198.22 m^3 of wood per hectare of which 60% will be trunk wood and the rest branch wood. Until the 1950's rubber wood has been used only as firewood. Increasing demand for wood in recent years has turned the attention of entrepreneurs to rubber wood. Under the plantation development scheme of the Rubber Board, on an average 4000 ha. of old and uneconomic rubber trees have been replanted with subsidy annuelly during the last five years. In addition, approximately 1000ha. of old and uneconomic rubber areas are also being replanted without the Rubber Board's financial assistance. Therefore, the total annual replantings will be around 5000ha. By the end of the seventh five year plan, the area to be replanted annually is targetted at 7000ha. The replanting at the current rate of 5000ha. per annum will give 991108m^3 of rubber wood which can be converted into value added products.

Available literature on rubber wood utilization in India shows that about 438900m^3 is used in packing case industry, 49800m^3 in small scale plywoods, 39600m^3 in veeners and splints for safety matches and 3100m^3 for other miscellaneous uses (Haridasan, 1985). It has been found that over 400 rubber wood consuming units are functioning in Kerala State. But their problems and technical facilities have not been studied in depth and the survey was taken up in this context.

Method of study

The study was based on the data collected from a sample of 100 rubber wood consuming units selected randomly from a list of 400 units obtained from the Directorate of Industries. Date, relating to the year 1986-87 were collected by Interview method using a pre-tested questionnaire. The rubber wood consuming units thus selected were classified into different groups according to the line manufacturing. The data in each group were then tabulated and analysed. Furniture manufacturing units and saw mills handling rubber wood were not included in the present study.

Finding

According to the line of manufacturing seven different groups were identified. The major products manufactured out of rubber wood are (1) packing cases, 2) veneers and splints for safety matches 3) teachest panels 4) general plywoods 5) seat and back for chairs. The distribution of the sample according to the final product is given In table-1.

Table-1. Distribution of sample according to their final product

Line of manufacturing	percentage of the total no.
1. Packing cases	23.65
2. Veneers only	25.81
3. Veneers and splints	6.45
4. Splints only	3.23
5. Tea-chest panels/ plywood	31.18
6. Seat and Back for chairs	3.23
7. General plywood	6.45

The tea chest manufacturing units accounted for 31.18% of the total sample size followed by units manufacturing veneers and packing cases. The unit manufacturing splints, seat and back and general plywoods accounted only a lower percentage.

Annual inputs

The average annual consumption as reported by the sampled units among the different groups are given in table 2.

Table-2. Average annual consumption of rubber wood by different groups of rubber wood consuming units

Line of manufacturing	Average annual consumption (tonnes/year)
1. Packing cases	1623.36
2. Veneers only	510.00
3. Veneers & Splints	1445.00
4. Splints only	768.00
5. Tea-chest panels & plywoods	774.42
6. Seat and back for chairs	279.60
7. General plywoods	459.10

The above figures as reported by the sampled units may not be fully true and an underestimate is likely in many cases. However, a comparative analysis of the different groups shows that the units manufacturing packing cases ranked first in the average consumption which is only to be expected. Haridasan (1985) also found that packing case units consume the largest share of rubber wood produced in the country. The average consumption was the lowest in the case of those units manufacturing seat and back for chairs and general plywoods. Most of the plywood manufacturing units reported that they use rubber wood only as the inner plies and the outer veneers are made of better quality wood.

Machinery and impliments

List of machinery available with the different groups of sampled units are given below.

Type of product	*Machinery and impliments*
1. Packing cases	Band saw, Resaw, Circle saw, Cross cutter, Plainer and Electric motor
2. Veneers	Peeling machine, Cutting machine, Grinder, Leveller saw board and Electric motor.
3. Splints	Peeling machine, Chopping machine, Grinder and Electric motor.
4. Tea-chest panels	Peeling machine, Trimmer Splicer glue mixer, Glue spreader, Circle saw, Hand press, Hand/Hydraullic press, Grinder, Wood cutter, Veneer cutting table, ordinary saw and Electric motor.
5. General plywoods	Peeling machine, Trimmer, Splicer, Cutting table, Hydraulic/Hand press, Circle saw, clamp set and Electric motor.
6. Seat and back for Chairs	Peeling machine, Cutting machine, Glue mixer, Glue spreader, Clipper, Hand press, Hand saw and Electric motor.

Storage of Raw materials and Final products

The methods of storage will affect the quality of the final product considerably. All the units surveyed were found to store the raw material in the open yard and are, therefore, exposed to the vagaries of nature. However, the finished products are stored in closed or partially closed sheds to protect them from sun and rain. The duration of storage of the raw material and the finished product was found to vary among the different groups. The average duration of storage of raw material and the finished product among the different groups is given in table-3.

Table-3. Average duration of storage of raw material and finished product among the different groups.

Type of unit	Duration of storage (in days) Raw material	Finished product
1. Packing cases	7-15	8-16
2. Veneers	5-13	7-15
3. Splints	5-9	7-11
4. Tea chest panels	9-14	18-25
5. Seat aud Back for chairs	9-13	20-40
6. General plywoods	7-15	28-30

The variation in the duration of storage was found to depend on the demand for the final product; the duration of storage being shorter during periods of high demand. Since the product cannot be stored for long periods and also due to the poor liquidity position of the owners, the manufacturing units will have to report to distress sales during periods of low demand in order to reduce losses.

It may be recalled that all the sampled units store logs in the open ground. Though the storage of logs in the North-South direction prevents cracking and end-splitting to a certain extent, only 2 per cent of the respondents adopted this practice. By and large, the manufacturers did not know this elementary precaution. The internal loading and transportation of logs was found to be manual.

Sawing and Recovery

Input: output ratios will influence to a large extent the profitability of business and are indicators of productivity. Tapping wound and consequent callous formation and the presence of tension wood are serious problems which affect rubber wood. The wood can be peeled only up to a certain diameter (around 6cm) equal to the diameter of the shaft of the peeling machine. The remaining core portion will thus become a waste which is discarded as firewood. Suitable cost-effective technologists which can be adopted at the small scale level may have to be developed to convert this into value added.

The average recovery as reported by the sampled units is given in table-4.

Table-4. Average recovery of the final product from raw wood

Line of manufacturing	Recovery (%)
1. Packing cases	83.58
2. Veneers	81.54
3. Splints	72.50
4. Teachest panels	79.08
5. Seat and back	72.00
6. General plywoods	73.00

One m^3 of rubber wood was found to yield 1060-1765 sq. m. of plywood for tea chest panels. Similarly, 1 m^3 of wood when peeled yields 700-850 gross sets of veneers (1 gross = 100nos)

Technical Problems with the use of rubber wood

1. Tension wood

The common occurrence of tension wood, a natural defect, creates a variety of problems in rubber wood working. In the case of packing cases, while sawing, the tension wood fibres (gelatinous fibres) will come up and stick to the saw blade preventing its free movement. During plaining the curly tension wood fibres make the surface rough and fuzzy. Warping and twisting are other problems associated with tension wood.

Problems associated with tension wood are more pronounced in the case of veneers used in safety machines. The veneers peeled from the tension wood zones are very rough. Hence, while folding, the tension wood fibres will be projected out. This will also create problems while pasting the labels on the match box. Severe warping and twisting of the outer and inner veneers will prevent the free movement of the inner veneer of the match box in which splints are placed.

The presence of tension wood also causes warping of splints which, as a results, get distorted. The problems due to tension wood are not so serious in the case of general plywoods, tea chest panels and seat and back for chairs.

2. Tapping wound

Callous formation, discolouration and wood damage due to tapping wound results in severe losses. Losses due to tapping wound are much pronounced in the case of veneers, general plywoods and tea chest panels. Veneers when peeled from such portions for match boxes and tea chest panels will be brittle and break soon:

Discolouration

Discolouration of wood when peeled affects the quality of veneers, splints and tea chest panels considerably. Respondents to the survey reported that discolouration is low if veneers can be dried immediately after peeling. Some of the units were found to fumigate the splints with sulphur to retain the original wood colour. The units manufacturing veneers, splints, and tea chest panels were found to sun-dry them immediately after peeling to retain the original wood colour.

Borer attack

Attack of borers was reported to be the most serious problem in storage of the finished products. The products made out of rubber wood cannot be stored for long periods in Kerala due to the attack of wood borers. However, the respondents pointed out that this is not a serious problem in high altitude regions and North India. The study showed that its attack is more serious during periods of dry spells after occasional rains.

Sap stain fungus infection

When the finished products are stored under moist conditions, especially during rainy season, infection by sap stain fungus causes a bluish black discolouration. Veneers when stored, due to fungus infection will stick together and form a lamp which in turn will result in deterioration in quality of the final product as well as reduction in the rate of recovery.

Seasoning

There is no evidence in the survey as to the treatment of raw material for preservation. However, some manufacturers subject the final product to simple methods of treatment. The producers of splints were found to fumigate it with sulphur to retain the original wood colour. While borax-boric acid treatment was practised by two plywood manufacturing units, one treated it with a chemical formulae supplied by the indian Plywood Research Institute. Only 16 per cent of the surveyed units followed some form of chemical treatment of the finished products.

General problems of Rubber wood consuming units in Kerala

Technical problems with the use of rubber wood and the consequent low quality of the product generate problems for rubber wood consuming units in Kerala. The poor quality of the final products results in low demand for products made out of rubber wood.

The units manufacturing veneers and splints are now facing a slump, in the market due to the emergence of card-board boxes as a substitute for the outer veneers of safety matches. They also face severe competition from units in Tamil Nadu procuring rubber wood, mostly from Kerala, as fire wood from which logs of appropriate sizes are converted into veneers and splints for safety matches at comparatively much lower wages. Thus these units in Tamil Nadu have a clear edge over those in Kerala in the comparative cost of production. The reduction in the excise duty for card-board boxes have accelerated the substitution of veneers by card-board boxes. The above factors have resulted in poor demand for veneers and splints manufactured in Kerala which in turn resulted in accumulation of inventories. Since the product cannot be stored for long periods, accumulation of stock will result in distress sales.

Producers of tea chest panels also face similar problems. The recent introduction of gunny bags with plastic coatings as a substitute for tea chest panels has eroded the demand for tea chests. The poor quality of the final product made out of rubber wood and the emergence of substitutes have resulted in poor demand and consequent distress sales.

There is therefore, necessity to improve the quality of the raw materials and the final products for sustained development of rubber wood based industries. To sum up the technical problems revealed from the survey are presence of tension wood, warping tapping wound, discoloration, borer attack and infection by sap stain fungus. Most of these problems can be tackled by an extension activity from the Rubber Research institute of India and developing cost effective and viable technologies which can be adopted at the small scale level. prospects of using rubber wood in sectors other than those mentioned above also deserve investigation.

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References

1 Haridasan, V. and Sreenivasan, K. G. (1985). Rubber wood-A study of supply and demand in India. Rubber Board Bull. 20 (4), April-June, 19-21.

2 Haridasan, V. (1986). A study of rubber wood market Rubber Board Bull. 22 (1) July-Sept. 14-17. □

RUBBER CULTIVATION IN VIETNAM

Will the already crowded market for natural rubber soon have more competition? According to Agence France Presse, the Paris-based news organisation, Vietnam, with massive support from the Soviet Union, expects to begin tapping this year or next the first of 50000 hectares of rubber trees planted in 1980/81. However, this joint USSR-Vietnam project faces tremendous obstacles because of the lack of trained plantation workers and an NR processing industry that dates back to the French colonial time. A separate report from the West German Handelsblatt newspaper, said initial tapping began last year, but the quality of the latex wasn't high enough to be offered on the world market. In the AFP interview, Vietnam's Rubber Ministry Director Huynh Van Nghia, said, "This (processing) is our weakness. We will concentrate our efforts on acquiring processing machinery, not only from socialist countries. We will suggest exchanging raw rubber for machinery. "Nghia noted that the Plantation workers, many of whom were "resettled" from Ho Chi Minh City (formerly Saigon) in the early 1980s to help clear the jungle for the plantations, have one of the toughest jobs in Vietnam and yet receive low wages. Vietnam's "new" NR Industry dates back to 1978, following North Vietnam's occupation of South Vietnam. At that time, the Soviet Union and Vietnam agreed to redevelop an NR industry that in its heyday coverad 142000 hectares; in 1978, though, rubber trees covered only 70000 hectares (of which only half were cultivated) and annual production was about 24000 tonnes, according to the AFP article. A similar agreement was reached with Cambodia, the Handelsblatt article stated, for planting rubber trees in the 10-13 degrees N. latitude zone. In Vietnam, the plan calls for 300,000 hectares by the year 2000. In return for its financial assistance in setting up the plantations, the Soviet Union is to receive natural rubber. The Handelsblatt article states that the USSR already has reduced its planned purchases on the open market in anticipation of the plantations coming on stream. Nghia sees grand plans for the Vietnamese rubber industry. "With Soviet assistance, we want to produce goods like foam rubber or bicycle tyres, and later even more valuable products like truck tyres, "Nghia was quoted as saying. The nation's only processing facility is a 66-year old factory built by the French in Dau Tieng, 100 km north of Ho Chi Minh City. (European Rubber Journal)