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Marketing of bamboo (*Bambusa bambos*) in South India

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Abstract—Bamboo production in home gardens far exceeds the production from forests in Kerala State, India. Forest bamboo is exclusively being consumed by the paper mill in the State. Although bamboo from home gardens is being utilised by growers themselves or purchased directly by users, most of the bamboo (*Bambusa bambos*) is being marketed through a few private depots based in Palakkad District in the State. The market study reveals that those bamboo depots are well established and have been operating as a unique wholesale market in South India since 1960. Over the years, about 85% of the annual quantity traded through the depots has been moving out of the State. The steady retail markets are in different places in Tamil Nadu and other States in South India. Market analysis shows that the wholesale price of bamboo during 2002 was US$ 73 per tonne green weight. Of the wholesale price, farm price accounted for 40%, harvesting and other marketing costs 46%, and net margins of the intermediary and wholesaler 14%. The farm price of US$ 29 per tonne, the net income received by an average bamboo grower, indicates relatively fair returns even from poorly managed clumps. The net annual profit of an average wholesaler of US$ 7600 during 2002 is also modest, considering the goodwill created and markets served. Retailers are being attracted to Palakkad for bulk purchase of bamboo mainly due to the existence of the wholesale market. Such marketing advantage needs to be exploited by bamboo growers for enhancing their farm income through resource development in home gardens and thereby sustainable availability of bamboo to the depots. Therefore, there is an urgent need to popularise among growers a package of practices for improved management of bamboo clumps in home gardens and disseminate marketing information. This package will improve resource, ensure sustainable availability and enhance farm income as well as rural employment.

Key words: *Bambusa bambos*; home gardens; marketing; prices; farm income; profitability.

INTRODUCTION

Bamboo has been and will continue to be an important natural resource in India. Bamboo resources are available from forests as well as home gardens. *Bambusa bambos* (L.) Voss is one of the bamboo species found in the wild throughout India and in home gardens in South India [1]. Among the Southern States in India, Kerala

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State has more bamboo in home gardens. Although species like *B. vulgaris* Schrader ex Wendl. and *Dendrocalamus strictus* (Roxb.) Nees are rarely found in some home gardens, the thorny *B. bambos* is the most commonly found and commercially important species in the State [2]. *B. bambos* is more common in home gardens in Palakkad, Malappuram and Thrissur Districts [3] which have traditionally been the major regions having bamboo in home gardens in the State. Bamboo production in home gardens far exceeds the production from forests in Kerala. The estimated total production of bamboo during 1994 was 169 000 tonnes, of which 63% came from home gardens and the remaining 37% from forests. Forest bamboo is exclusively being consumed by the paper mill in the State, whereas bamboo from home gardens is being used in industry, construction, agriculture and handicrafts sectors within and outside the State [4]. This shows the extreme importance of home garden bamboo resource in Kerala's economy.

Although bamboo from home gardens is being utilised by growers themselves or purchased directly by users for a variety of purposes, most of the bamboo (*B. bambos*) from home gardens is being marketed by a few private wholesale bamboo depots based in Palakkad District in Kerala. Prior to 1960, bamboo traders in Kerala were dependent on forest bamboo which was cheaper and abundantly available in the forests of Nilambur in Malappuram District in the State. Forest bamboo traders had several bamboo collecting centres at Nilambur during the 1940s. Later, a few depots were established by the traders for the storage and sale of forest bamboo. Substantial quantities were harvested and sold to users mostly in different places in the neighbouring State of Tamil Nadu. In the late 1950s, the Kerala Government granted a private pulp mill the exclusive right of harvesting bamboo from forests [5]. This had resulted in considerable shortage of bamboo supply to the depots for meeting the demand. In this situation, the traders searched for non-forest source of bamboo and started collection from home gardens. Since bamboo was abundantly available in home gardens in Palakkad District, the wholesale depots were shifted to different places around Palakkad. Availability of bamboo in home gardens and nearness to consumption centres in Tamil Nadu were the main reasons for establishing such depots by wholesalers around Palakkad [4].

Bamboo growers (farmers), supplying agents (intermediaries) and wholesalers (depots) are the agencies involved in bamboo marketing. Mature bamboo clumps in home gardens are purchased by the agents from the growers. Agents are financed by the wholesalers to buy bamboo clumps, harvest and supply to their depots. The purchasers of bamboo from the wholesale depots are either retailers or direct users. Existence of the depots mainly depends on bamboo availability from home gardens. To ensure sustainable availability of bamboo to the depots, the resource should be developed through better management techniques. Lack of information on the market situation is a stumbling block to growers for improved management. An understanding of bamboo market and availability of marketing information are important driving forces for developing bamboo as a worthwhile crop in home gardens. Such information provides the basis to bamboo growers for future planning

in sustainable resource management. No published studies are available on bamboo markets or marketing aspects of bamboo from forest and non-forest sources [6]. This paper presents the market situation of bamboo from home gardens focusing on marketing through wholesale depots in Palakkad. Market structure, pattern of trade, retail markets, farm price, marketing margins and profitability in bamboo trade are also analysed in this paper.

METHODOLOGY

Marketing of bamboo involves a series of activities consisting of movement of bamboo from the point of harvest in home gardens to the point of use. For describing the trade channels, a market survey of bamboo from home gardens was conducted during 1994 [5]. The survey covered bamboo growers, supplying agents, wholesalers and retailers or end-users. Since this study was focussed on bamboo wholesale marketing, a census survey of wholesale bamboo depots in Palakkad District was conducted during 1994 and 2003 to collect data on the quantity of bamboo sold in different sectors, mode of collection, number of supplying agents and workers. For identifying the retail markets, data on number of truck-loads of bamboo transported from the depots to different destinations were compiled from the registers maintained at Kerala State border forest check-posts. Average farm price, marketing costs, margins and wholesale price of bamboo were estimated based on data collected through a series of independent sample surveys for analysing the grower's income and profitability in bamboo trade. Farm price of bamboo was referred to as the lump sum amount at which standing bamboo clumps in home gardens were bought by supplying agents for harvest. It was the price of the standing utilizable portion of the bamboo culms (poles and residue) available in the clumps. Poles are straight, mature and green coloured pieces of 3 m and above. Pieces below 3 m, bent, dry, split and immature culms were termed as residue which is used mostly for pulping. Marketing costs included two components: (i) costs incurred by supplying agent from the point of harvest to the point of supply at the wholesale depot and (ii) costs incurred by wholesaler from the point of buying bamboo (poles and residue) from the agent to the point of wholesale at the depot. Costs of harvesting, transport, permit for cutting, travel and miscellaneous expenditures were included under the costs incurred by agent. Rent of office building and storage yard, interest on working capital, salary and other expenses of the wholesaler himself, wages, expenses of export-way permit and miscellaneous expenditures were included under the costs incurred by wholesaler. Bamboo (poles and residue) was collected from several home gardens in a locality to make up full truck-loads of bamboo for transportation. Price received by agent from wholesaler was also in terms of full truck-loads containing poles and residue. Although residue was sold in weight, it was transported to paper mills in full truck-loads. Further, as transport costs were high, buyers collected their requirement of poles from a wholesale depot in one or more truck-loads full. Therefore, an average

truck-load of bamboo was taken as the unit during data collection and green weight in metric tonnes as the unit in the market analysis.

For estimating average farm price, marketing costs incurred by supplying agent and price received from wholesaler, a sample survey was conducted during 1994 [5]. The sampling plan adopted was a systematic sampling design. Localities where bamboo clumps were purchased to harvest for supplying to the depots, were treated as the sampling units. Such localities in Palakkad, Malappuram and Thrissur Districts were identified and classified on the basis of distance to the depots. Localities in the region within a radius of 25 km from the depots were serially numbered and subsequently those in the regions between 25 to 50 km and more than 50 km from the depots. From the sampling frame prepared, 30 localities were selected circular systematically. The selected localities were visited at the time of harvest and data collected on farm price, harvesting expenses and quantity harvested in number of truck-loads. Other marketing costs incurred for the same quantity of bamboo by supplying agent and the price received from the wholesaler were also assessed. Total quantity harvested in a locality was calculated by multiplying the number of truck-loads with the average net weight of 10.8 tonnes per truck-load. Average farm price per tonne (P_F) was estimated as the ratio of the sum of purchase prices of standing clumps to the total quantity (tonnes) harvested from all the selected localities. Average marketing costs per tonne (C_A) incurred by agent was estimated as the ratio of the sum of all the costs to the total quantity (tonnes). Average price per tonne (P_A) received by the agent from wholesaler was computed by dividing the average price received from wholesaler per truck-load with the average net weight of 10.8 tonnes per truck-load. Net margin per tonne (M_A) of an average supplying agent was calculated as $M_A = P_A - (P_F + C_A)$, in which: M_A is the net margin per tonne, and P_A, P_F and C_A are defined above.

Average marketing costs per tonne (C_W) incurred by wholesaler was estimated as the ratio of the sum of all the costs incurred in selected depots during 1993–1994 to the total quantity of bamboo (in tonnes) sold through those depots during the same year. Total marketing costs per tonne (C_T) was given by

$$C_T = C_A + C_W.$$

Average wholesale price per tonne (P_P) of poles was computed by dividing its average wholesale price per truck-load with the average net weight of 9.6 tonnes per truck-load. Due to non-availability of data on retail price of poles per tonne, analysis of marketing was limited to the point of sale at the wholesale depots.

The wholesale price of bamboo (poles and residue) per tonne was required to link with the farm price and marketing costs of bamboo (poles and residue) per tonne. For estimating the average wholesale price of bamboo per tonne, the method adopted was as follows. When truck-loads of bamboo arrived at the selected depots, residue contained in each load was separated and weighed. Based on the net weight of bamboo and that of residue alone, average proportion of poles and that of residue contained in 1 tonne green weight of bamboo were estimated as 0.859 and 0.141,

respectively. Since residue was taken by the paper mills, price of residue per tonne (P_R) at the depots was calculated as the difference between average price of residue at the companies and average cost of transportation from the depots to the companies. Average wholesale price per tonne (P_W) of bamboo was estimated as

$$P_W = 0.859P_P + 0.141P_R.$$

Net margin per tonne (M_W) of an average wholesaler was calculated as $M_W = P_W - (P_A + C_W)$, where $P_A = P_F + C_A + M_A$. $P_W = P_F + C_A + M_A + C_W + M_W$, from which the percentage share of each component in the wholesale price was computed. The wholesale price of bamboo per tonne during 2002–2003 has also been estimated after updating the average wholesale price of poles and price of residue per tonne for the same year. Farm price, marketing margins and profitability in bamboo trade during 2002–2003 were estimated based on the wholesale price during 2002–2003 and the 1993–1994 percentage shares.

RESULTS

Marketing channels of bamboo from home gardens

Figure 1 shows the marketing channels of bamboo from Kerala home gardens. Bamboo is used for making house, shed, gallery, supports for concrete form-work in construction and scaffolding. It is used by the paper mill in the State for pulping. Weaver households mostly depend on bamboo from home gardens for weaving mats, baskets and handicrafts [7]. Fruit plucking, implement, fence and prop of banana plants are some uses in the agricultural sector. Poles are also used for making fish-net frame, fishing rod, frame-work for earthen bunds, ladders, cattle stays, platforms of bullock-carts, gates, punts for country boats, etc. For many uses listed above, bamboo goes to users directly. However, most bamboo is marketed through primary as well as wholesale depots in Kerala. Primary depots are very few and cater only the local requirements, whereas the wholesale depots sell bamboo to retailers, banana farmers and other users within and outside the State. *B. bambos* is the only species of bamboo collected and traded by the wholesale depots which dominate the wholesale market for bamboo [4]. Uses of poles outside Kerala are the same as discussed above. Demand from construction and other sectors in Tamil Nadu State is being met from the retail depots there which purchase bamboo from the wholesale depots. Poles are directly purchased by Tamil Nadu farmers for using as props of banana plants to protect against wind. Green middle portions are used for weaving baskets to keep fruits such as tomato, orange and grapes. Poles are used in smaller quantities by industrial units for manufacturing ice-sticks and incense-sticks. Considerable quantity of residue was being sold to the paper mill in Karnataka State. Bamboo is being purchased by retail depots in Karnataka for sale in very small quantities to users there. Marginal quantities are also being

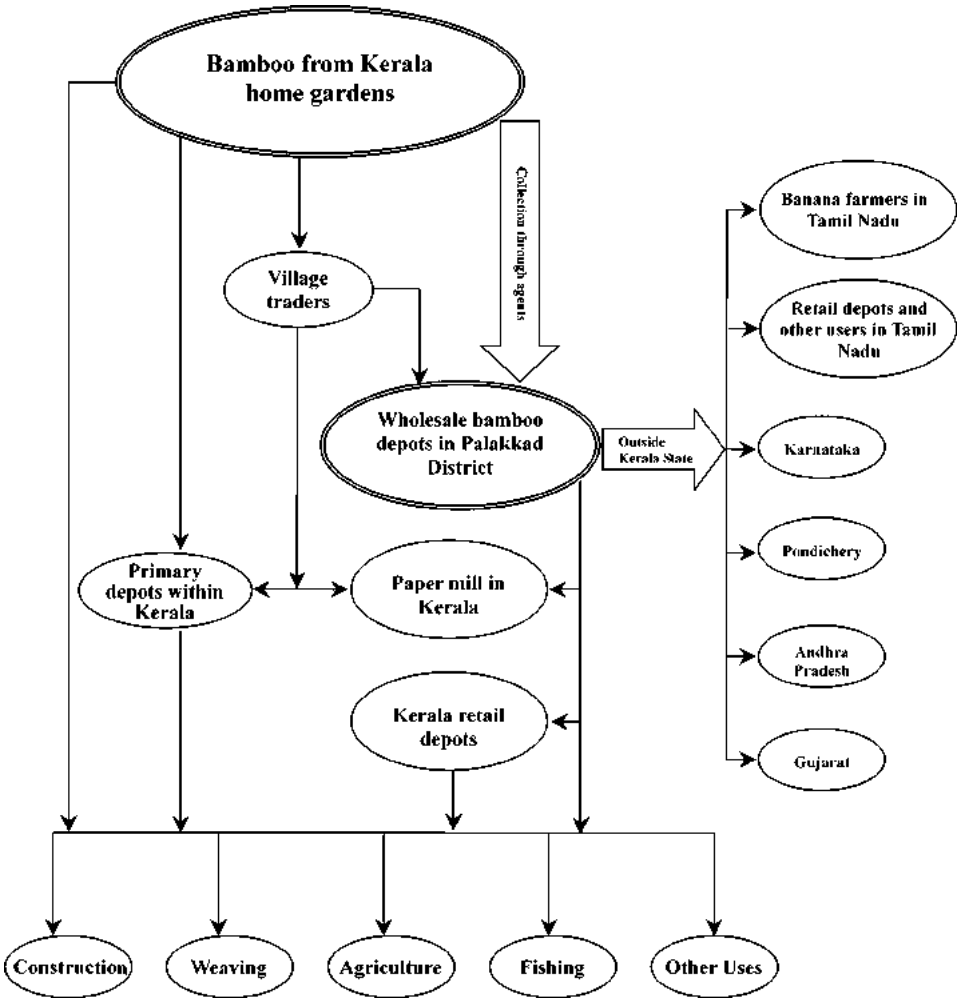

Figure 1. Marketing channels of Kerala home garden bamboo.

sold to other States of Andhra Pradesh, Pondicherry and Gujarat for industrial and agricultural uses [5].

Structure of the bamboo wholesale market

The market study of bamboo reveals that there is a well established wholesale market consisting of a few private wholesale depots which are located at nearby places in Palakkad District in the State. The depots have steadily been operating as a wholesale market since 1960. The census survey of depots conducted in 2003 shows that there are thirty three registered wholesale depots. No such wholesale depots exist in other districts of Kerala. Of the total number of registered depots, there are 12 small, 10 medium and 11 large depots. Furthermore, there are a few unregistered

very small depots which operate only during sale seasons of four months. During 2002–2003, there were about 15 such unregistered depots. Size of a depot does not seem to greatly affect the nature of trading. Small depots conduct a similar percentage of their sale with retailers and farmers in other States as that of the large depots. All depots are under individual proprietorship. A depot consists of a small office building or shed with a storage yard where bamboo poles and residue are stacked after sorting. Medium and large depots have a manager. The number of employees including the proprietor (wholesaler) per depot ranges from 2 in very small depots to 12 in large depots. There are 3–40 supplying agents per depot during sale seasons and 1–12 per depot during slack seasons, depending on the depot size.

Bamboo is purchased by wholesalers to their depots in large lots and sold in bulk. Major buyers come from different places in the neighbouring State of Tamil Nadu and other States in South India. In the wholesale trade, there is difference in prices charged by various depots for the same length, diameter and quality of poles. Availability of poles also varies among depots. Due to the personal relationship of retailers or users with the wholesalers, there is no great price competition among depots. Number of wholesale depots is also small. Further, as transport cost is heavy, retailers or users buy their required quantity from a single depot for each truck-load. Due to all these imperfections and nature of the trade, the wholesale bamboo market in Palakkad can be considered as oligopolistic. During interviews with retailers from outside the State, it has been reported that such wholesale market does not exist elsewhere in South India. Moreover, no published literature has reported the existence of any other wholesale bamboo market in India [6]. It reveals that the bamboo wholesale market in Palakkad District is unique in South India.

Pattern of bamboo trade and retail markets

The annual quantity of bamboo traded through the depots is shown in Table 1. The quantity of bamboo sold within Kerala was below 15%. Over the years since 1960, around 85% of the annual quantity traded through the depots has been moving out of the State. Figure 2 shows the wholesale market and the retail markets within

Table 1.
Destination-wise trade of bamboo through the wholesale depots in Kerala

Year	Quantity sold (metric tonnes)			Total
	Within Kerala	Outside Kerala State		
		Tamil Nadu	Other States	
1989–1990	8586	33 340	10 383	52 309
	(16.4)	(63.7)	(19.9)	(100.0)
1993–1994	5896	28 718	8771	43 385
	(13.6)	(66.2)	(20.2)	(100.0)
2002–2003	7309	44 197	5596	57 102
	(12.8)	(77.4)	(9.8)	(100.0)

Values in parentheses are percentages of annual total.

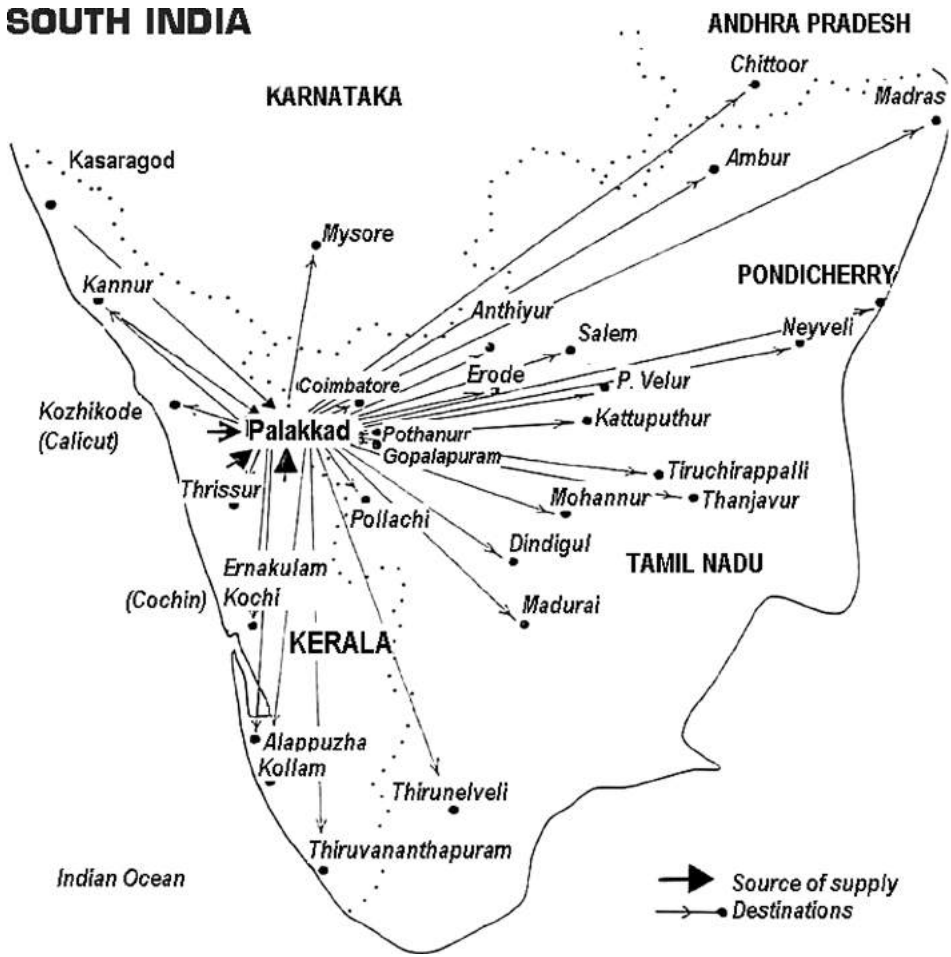

Figure 2. The bamboo markets in South India.

and outside Kerala. The steady retail markets are in different places in Tamil Nadu and other States in South India [8]. Most end-users of bamboo have very specified demand regarding quantity and quality. From the wholesale market in Palakkad bulk quantities of bamboo are available at any time. It has been reported by retailers that Kerala bamboo poles are preferred by users even when lower priced *Casuarina* poles are abundantly available outside the State. Excellent strength and durability are the important reasons for preferring *B. bambos* poles over *Casuarina* poles. The steady retail markets of *B. bambos* poles over years in different places in South India clearly indicate the prominence of bamboo from Kerala.

Table 2 shows the general uses of bamboo poles and average wholesale prices per 100 pieces of different varieties during September 2003. Although poles are priced per piece in the wholesale depots, they are bought in large number so as to arrange full truck-load transportation. Average wholesale prices of poles were US$

Table 2.
General-uses of bamboo poles and their wholesale prices during September 2003

Trade classification	End-uses	Price (US$)* per 100 pieces
6.6–7.2 m (22–24 f) bottom	Beams, fish-net frames, framework for earthen bunds	152–218
3.0–4.8 m (10–14 f) bottom	Beams, pillars	48–78
5.4–7.2 m (18–24 f) bottom	Beams, fish-net frame	131–218
3.0–6.0 m (10–20 f) bottom	Pillars, scaffolding poles	39–174
3.0–4.8 m (10–16 f) bottom	Props of banana plants	26–35
3.0–3.6 m (10–12 f) bottom	Supports for concrete form-work in construction, rafters, ladder	28–65
3.0 m (10 f) bottom	Ice-cream stick, incense stick, platform for bullock-carts, bamboo powder for polishing needles	28–48
3.0–4.2 m (10–14 f) middle	Mats, baskets, handicrafts, beams, rafters	22–68
5.4–6.6 m (18–22 f) middle	Mats, baskets, handicrafts, beams, rafters	39–98
3.0 m (10 f) middle	Ice-cream stick, incense stick	22–37
4.2–6.0 m (14–20 f) top	Rowing poles for country boats	24–35
3.0–4.8 m (10–16 f) top	Fruit pluckers, rafters	17–28

* 1 US$ = Indian Rs 45.91.

68 and US$ 81 per tonne during 1993–1994 and 2002–2003, respectively. Prices of bamboo residue realized at the depots were US$ 33 and US$ 24 per tonne during the same years, respectively, showing a decrease in residue price. Earlier, almost all the residue was taken by the paper mill in Karnataka. One of the reasons in the decrease in residue price was the decline in the residue demand in Karnataka State due to the availability of forest bamboo there. Another reason was the increased availability of forest bamboo within Kerala State due to the recent closure of a pulp mill which was exclusively consuming forest bamboo. Although availability of bamboo exerts a downward pressure on residue price, the wholesalers tend to see any income from residue as a bonus. Since bamboo residue is a by-product of the main trade of poles, the income from residue is considered as an added benefit to the wholesalers.

Farm price, marketing margins and profitability in bamboo trade

Estimates of average farm price (P_F), marketing costs (C_A and C_W), net margins (M_A and M_W) and wholesale price (P_W) of bamboo per tonne during 1993–1994 and 2002–2003 are presented in Table 3. Farm price, the net income received by an average bamboo grower, accounted for 40% of the wholesale price of US$ 73 per tonne green weight during 2002–2003. This indicates fair returns for the grower from a crop for which no inputs or expenditures were incurred. Total marketing costs ($C_T = C_A + C_W$) accounted for 46% of the wholesale price. About half of it was accounted by harvesting cost, including informal expenses for the Forestry Department's cutting permit, when the permit fee itself was very negligible.

Table 3.
Average farm price, marketing costs and margins in bamboo trade in Kerala (US$ per tonne green weight)

Components	1993–1994		2002–2003
	Amount	Percentage share	Amount
Farm price of standing bamboo clumps (P_F)	25.07	39.6	28.86
Marketing costs incurred by supplying agent (C_A)	23.34	36.8	26.87
Net margin of supplying agent (M_A)	4.64	7.3	5.34
Price received by agent from wholesaler ($P_A = P_F + C_A + M_A$)	53.05	83.7	61.07
Marketing costs incurred by wholesaler (C_W)	6.14	9.7	7.07
Net margin of wholesaler (M_W)	4.20	6.6	4.84
Wholesale price of bamboo ($P_W = P_A + C_W + M_W$)	63.39	100.0	72.98

Harvesting cost alone accounted for 18.1% of the wholesale price. 1 US$ = Indian Rs 31.40 during 1993–1994 and Rs 48.42 during 2002–2003.

Harvesting cost alone was US$ 11.5 per tonne, which accounted for 18% of the wholesale price. The bamboo market can be encouraged by liberalisation of the present permit system which seems to add to the marketing cost. Net marketing margins accounted for 14% of the wholesale price. This was the margin received by supplying agent (intermediary) and wholesaler. Net margin of an average supplying agent was US$ 5.34 per tonne (7.3% of the wholesale price) during 2002–2003. It was the net margin per tonne retained by him after meeting all his costs. On an average, 12.3 operational days were estimated to be required for collecting one truck-load of bamboo by an agent and 30 truck-loads of 324 tonnes could be collected during 2002–2003. Based on this, net annual profit of an average supplying agent was about US$ 1700. If the agent can collect more than 30 truck-loads in a year, he can enhance his net annual profit. Therefore, even the minimum net annual profit of US$ 1700 realized by an average agent during 2002–2003 is a reasonable amount.

The net margin of an average wholesaler was US$ 4.84 per tonne during 2002–2003. A wholesale price of US$ 73 per tonne during the same year resulted in a net margin to the wholesaler of 6.6%, after deducting his salary and all expenses incurred by him for depot management of US$ 7 per tonne. Based on an average number of 145 truck-loads of 1566 tonnes of bamboo sold per depot during the same year, net annual profit of an average wholesaler was estimated as about US$ 7600. As the smallest wholesaler handled a minimum of 60 truck-loads of 648 tonnes and largest wholesaler handled over 300 truck-loads of 3240 tonnes during 2002–2003, net annual profit ranged from US$ 3100 to US$ 16 000. The net annual profit of US$ 7600 realized by an average wholesaler is also modest, considering the amount of money advanced to the supplying agents, goodwill created and markets served.

DISCUSSION

Bamboo trade is profitable to both supplying agents and wholesalers. Bamboo growers also receive attractive income from bamboo clumps in home gardens. Substantial amount of employment is being generated from the point of harvest to the point of sale at the wholesale depots. During 1993–1994, direct employment generated was 409 000 operational days of which 54% was benefited by people belonging to socially and economically backward classes [4]. Profitability of a wholesaler depends on the quantity of bamboo sold, whereas grower's income depends on the quantity harvested from his home garden and supplied to the depots. It has been reported by veteran traders that bamboo harvesting in home gardens is not sustainable. Initially most of the bamboo coming to the wholesale market was collected from home gardens in Palakkad District. But of late bamboo has also been collected from the neighbouring districts of Thrissur and Malappuram. Traders have also been collecting bamboo from places in distant districts like Kannur and Kasaragod in the State. Of the total quantity of bamboo sold during 1993–1994, home gardens in Palakkad District supplied the major share (70.9%), followed by the neighbouring districts of Thrissur and Malappuram together (26.8%) and far away districts of Kannur and Kasaragod (2.3%). Dependence for bamboo from home gardens in far away places is an indication of decline in availability of bamboo in home gardens in and around Palakkad District [5]. It was reported by wholesalers during the census survey of depots during 2003 that the quantity of bamboo supplied to the depots was not enough to meet the demand. There is a slight increase in the wholesale price of bamboo poles at a compound rate of 2% per annum from US$ 68 in 1993–1994 to US$ 81 in 2002–2003. The increase in price is also an indication of the resource scarcity. During the survey of bamboo harvesting home gardens, it has been reported by growers that growing stock of bamboo in home gardens has been declining rapidly over the years [5]. It was also found during the survey that bamboo clumps in most home gardens were not properly managed and regeneration in almost all the previously harvested clumps was adversely affected due to inappropriate harvesting practices. This has resulted in the drastic depletion of the resource [5]. Most bamboo growers do not properly manage bamboo clumps in home gardens. Important reason for the poor management is the ignorance of the growers on species preference in the market, quality specifications for different end-uses, relative price, and management techniques for a better product-mix [5]. These factors suggest that the bamboo resource in home gardens needs to be developed through better management techniques. Bulk purchasers from other States are being attracted to Kerala mainly due to the existence and efficiency of the wholesale depots. Such marketing advantage needs to be exploited by bamboo growers for enhancing their farm income through developing the bamboo resource in home gardens and sustainable availability of bamboo to the depots. This can be achieved by disseminating market information among growers which will encourage them to improve the resource through better clump management. It is suggested to popularise among bamboo growers a package of practices for

better management of bamboo clumps in home gardens and disseminate market information. Since wholesalers and supplying agents are the main existing sources of market information available to growers, they can play an important role in extension efforts to improve the growing stock of bamboo in home gardens and thereby enhance farm income of the growers.

CONCLUSIONS

For bamboo from home gardens in Kerala State, India, there is a well-established wholesale marketing system dominated by a few private wholesale bamboo depots in Palakkad District in the State. This system extends beyond the border to the neighbouring State of Tamil Nadu and other States in South India. Excellent strength and durability are the important reasons for preferring *B. bambos* poles over *Casuarina* poles which are abundantly available outside the State. Bamboo becomes an important economic crop in home gardens, mainly due to the existence of the wholesale market. This study identifies the strength and vitality of the wholesale depots in enhancing bamboo grower's income through bamboo resource development in home gardens. The market situation together with the existence of a well established marketing infrastructure implies that there is considerable opportunity to increase the growing stock of bamboo in home gardens. It is therefore necessary to popularise among bamboo growers a package of practices for better clump management and disseminating marketing information. Wholesalers and supplying agents can play an important role in the extension efforts to improve the resource. It would provide significant economic benefits to the bamboo growers, ensure sustainable availability to the depots and generate substantial amount of employment to people belonging to socially and economically backward sections of the rural community.

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