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A Preliminary Study for the Conservation and Sustainable Utilization of Erankol and Koorankolly of the Western Ghats






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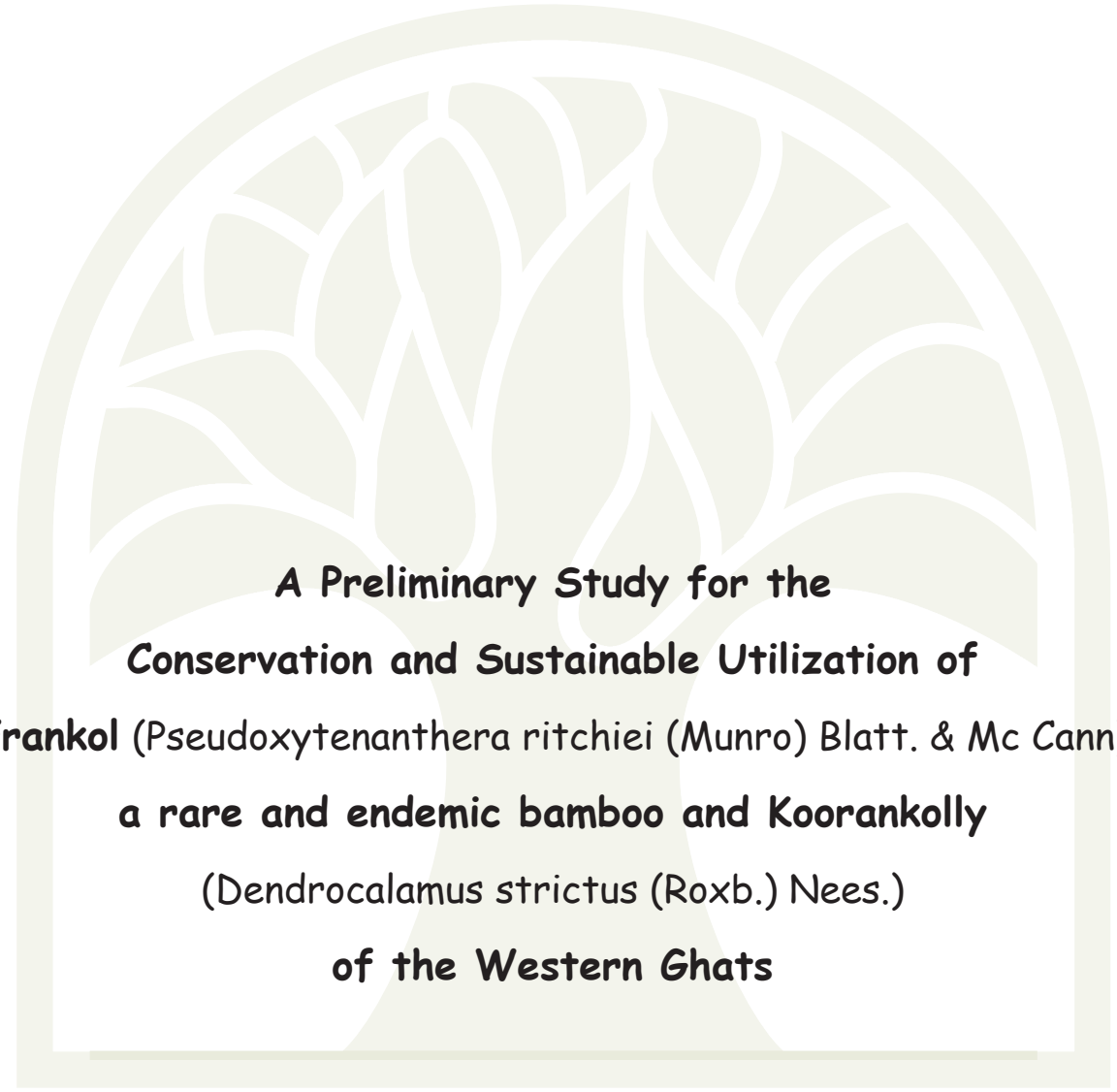
INDIA

A Preliminary Study for the Conservation and Sustainable Utilization of **Erankol** (Pseudoxytenanthera ritchiei (Munro) Blatt. & Mc Cann) a rare and endemic bamboo and Koorankolly (Dendrocalamus strictus (Roxb.) Nees.) of the Western Ghats



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A Preliminary Study for the Conservation and Sustainable Utilization of Erankol (*Pseudoxytenanthera ritchiei* (Munro) Blatt. & Mc Cann) a rare and endemic bamboo and Koorankolly (*Dendrocalamus strictus* (Roxb.) Nees. of the Western Ghats

Final report of the Research Project No. KFRI 497/2006

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CONTENTS

PROJECT PROPOSAL

Project code : KFRI 497/2006

Project Title : A preliminary study for the conservation and sustainable utilization of erankol [*Pseudoxytenanthera ritchiei* (Munro) Blatt. & Mc Cann] - a rare and endemic bamboo and koorankolly [*Dendrocalamus strictus* (Roxb.) Nees.] of the Western Ghats

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Objectives

1. To assess the quantity and raw material available for extraction
2. To recommend a rest period for re-couping the area
3. To develop strategies for regeneration and evaluate growth performance
4. To identify the nature of demand and the retail market

Project period : January 2006 - December 2007

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ABSTRACT

Erankol (*Pseudoxytenanthera ritchiei*) is a rare and endemic bamboo of Western Ghats is distributed in northern Kerala and Karnataka. In Kerala, it is distributed in Palakkad, Malappuram, Kozhikode and Kannur districts. Koorankolly [*Dendrocalamus strictus*] is also limited in distribution in the forests of Kerala. This is distributed mainly in semi-dry and dry zones along the plains of Attappady, Nelliampathy, Chinnar Wildlife Sanctuary and Nilambur.

In the Nilambur Forest Division, Pothukkallu and also part of the Erankolkunnu adjoining the cultivated areas had a good population of erankol, but, due to large scale extraction, the natural population is considerably reduced and therefore, there is no scope for large scale extraction. However, though the present regeneration status is satisfactory, any commercial extraction may be considered only after five years. The survival percentage recorded of the rhizome cuttings collected from Erankolkunnu was 82% while that for Pothukal was 64% in the nursery. Field establishment was better for the propagules from Erankolkunnu (85%).

Market survey indicated that most of the erankol was moved out to different places in Tamil Nadu whereas koorankolly was used in both Kerala and Tamil Nadu. As the markets are mostly in Tamil Nadu the native community is not benefited from the product and hence it is not imperative to continue harvesting of erankol and koorankolly. The harvesting of erankol from the forests has hardly any economic benefit to the tribals or the State, although traders make a good profit. Therefore, it is advisable that the remaining patches of erankol in the forests are reserved for conservation.

1. INTRODUCTION

Bamboos are one of the important groups of plants with multifarious uses. Due to their high utilization potential they are closely linked with the economy of the rural people. *Pseudoxytenanthera ritchiei* (Munro) Blatt. & Mc Cann [erankol] and *Dendrocalamus strictus* (Roxb.) Nees [koorankolly] are the best examples from Malappuram District of Kerala. Erankol is a rare and endemic bamboo of Western Ghats with solid culm being exploited for the manufacture of umbrella handles, walking sticks, lathi and furniture. It is also used as a support for growing betel plants in northern Kerala. Due to the potential uses, this species is being extracted by the local people in large quantities, which has led to the depletion of the natural stock. Moreover, the cultivation is very limited. It has been noted that some private agencies are also exporting the valuable culm pieces of this species. Both the species are with limited and scattered distribution.

Erankol is endemic to Western Ghats. It is distributed in northern Kerala and Karnataka. It grows as a component of moist deciduous forests or as pure patches (Fig.1). In Kerala it is distributed in four districts namely Palakkad, Malappuram, Kozhikode and Kannur. The species is abundant in Mannarkkad and Nilambur Forest Divisions. The associated plants are moist deciduous floristic elements namely, *Xylia xylocarpa*, *Holarrhena pubescens*, *Helicteres isora*, *Wrightia tinctoria*, *Terminalia elliptica*, *Terminalia paniculata*, *Cipadessa baccifera*, *Pterocarpus marsupium* and *Schleichera oleosa*.

Fig.1 *Pseudoxytenanthera ritchiei* (Munro) Blatt. & McCann- Erankol

Koorankolly is another species with limited distribution in forests of Kerala (Fig.2). It is used for props, agricultural implements and other handicrafts and is distributed in semi-dry and dry zones along the plains of Attappady, Nelliampathy (Palakkad Dt.), Chinnar Wildlife Sanctuary (Idukki Dt.) and Nilambur (Malappuram Dt.) (Kumar 2002, 2006).

Fig.2 *Dendrocalamus strictus* (Roxb.) Nees – Koorankolly

Both the species are found on well drained hill slopes at altitude of 200-1100 m. The extraction of erankol is periodical in Mannarkkad and annual in Nilambur Range. Due to high utilization potential erankol is cultivated in homesteads of Mannarkkad, Nilambur and adjoining areas. *D. strictus* is cultivated in large scale by the Kerala Forest Department under various schemes.

In view of the high demand both erankol and koorankolly are extracted year after year from the forests of Nilambur without any sustainability of the resource. In this context Kerala Forest Department suggested Kerala Forest Research Institute to conduct a preliminary study for conservation and sustainable utilization of these two species.

The main objectives of this study were:

- To assess the quantity and raw material available for extraction
- To recommend a rest period for re-couping the area
- To develop strategies for regeneration and evaluate growth performance
- To identify the nature of demand and the retail market

2. MATERIALS AND METHODS

The area selected for the study is Nilambur North Division of Malappuram District and Mannarkkad Division of Palakkad District.

To take stock of the quantity of the material available, field survey was conducted for demarcating the boundary with the help of GPS. Since the distribution of erankol in the natural population was scattered and sparse the transect method was not used during the present study.

Natural regeneration status, productivity and growth performance were also recorded using appropriate methods (Pandalai *et al.*, 2002). Vegetative propagules were collected and planted in Nilambur and Field Research Centre nursery at Velupadam, for plantation trials.

Erankol rhizome cuttings were collected from Pothukal and Erankolkunnu of Nilambur Forest Division where as koorankolly rhizome cuttings were collected from KFRI Sub Centre Campus, Nilambur. The propagules were transported to the Field Research Center nursery at Velupadam. The rhizome cuttings were immediately shifted to gunny bags filled with a potting mixture of sieved soil, sand and farmyard manure in 3: 2: 1 ratio. The rhizome cuttings were kept under shade and watered twice daily. The watering frequency was brought down gradually and soon after sprouting the propagules were shifted to an open place and watered once daily.

The sprouted rhizome cuttings were processed after six-months growth in the nursery for field planting. The field planting was done during the pre monsoon showers in the month of June, 2006. The spacing provided was 6m X 6m and planting done in square pits of 45cm X 45cm X 45 cm. The experimental plot was protected against grazing and fire. The survival rate and field establishment was evaluated after a period of 6 months growth in the field.

Market survey was conducted through various depots/forest divisions and private agencies to identify the nature of demand, price and markets within and outside Kerala.

Data on the quantity of erankol and koorankolly harvested from the forests in Nilambur for the period from 1998-99 to 2003-04 were compiled from the files maintained at the office of the Nilambur North Forest Division. Data on the employment generated by way of harvesting during the above period were also compiled. Discussions were held with bamboo traders in

Nilambur for information on the pattern of trade of erankol and koorankolly and their end-uses. Data on number of truck-loads of erankol and koorankolly that moved out of Kerala and their destination were compiled from the registers maintained at the inter-State border Forest check-posts. The average weight of erankol and that of koorankolly per truck-load were determined based on the available weight data in the registers. The data for the period from 1996-97 to 2004-05 were used to estimate the quantum of outflow outside the State. For bamboo (*B. bambos*) from Kerala home gardens, there is a well established wholesale market in Palakkad and the major buyers of different types of bamboo poles are the bamboo retailers in different places in Tamil Nadu (Krishnankutty, 2004). Before the ban on harvesting of erankol and koorankolly in Kerala, these were also items for sale in the retail bamboo depots in Tamil Nadu. A survey of retail bamboo depots in different places in Tamil Nadu was conducted during 2008 to identify the depots where erankol and koorankolly were being marketed. Such bamboo depots were visited and discussions were held with the retailers on nature of demand and end-uses of erankol and koorankolly which was sold in the depots before the ban on harvesting. Information on substitutes due to their non-availability from Kerala was also gathered during the survey of retail bamboo depots in Tamil Nadu.

3. RESULTS AND DISCUSSION

Maps showing the range boundaries and area under forest cover are given for both the species and the species distribution is indicated by an asterix (Figs 3 & 4).

3.1 Mannarkad Forest Division

3.1.1 Distribution: The distribution of erankol, was highest in Mannarkkad and Nilambur Forest Divisions.

In Mannarkad Forest Division erankol is known as 'Korna' among the local people due to the solid nature of its culms. The distribution of the species was scattered but large populations were located at Adankulam, Koranakkunnu, Karimala ridge, hill slopes of Melamuri Thathengalam, Anamooli and Varakkallu. Koorankolly is known as 'Kallanmula' or 'Kurathimula' among the locals and was found distributed only in Kathirampathy, Agali and Goolikkadavu of Agali Range (Fig.3).

3.1.2 Regeneration: As regards to the natural regeneration status, both the species showed a satisfactory natural regeneration. There was no report on the flowering of erankol recently;

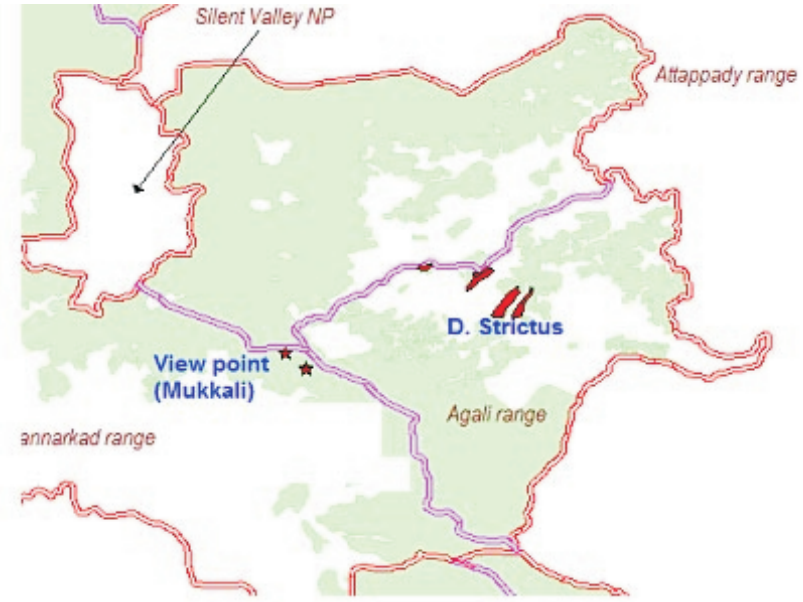

Fig. 3 Distribution of koorankolly in Agali Range, Palakkad Dt.

however, the species has been propagated from the rhizome cuttings by the locals and planted in homesteads. Irregular flowering in Agali and adjoining areas was observed in 1999, 2001, 2002, 2004, 2005, 2006 and 2007, which supported natural regeneration from seed source. Vegetative propagation from the rhizome was also found to be successful.

3.1.3 Utilization: Erankol is mainly used for umbrella handles, walking sticks lathi and props. The culms were extracted in large quantities from Adankulam area in 2003. However, the natural population in this area was found to have regenerated from the rhizome stock. Koorankolly is used by the tribal and locals for house construction. The tribals also use the young shoot of this bamboo as a vegetable.

3.2 Nilambur Forest Division

3.2.1 Distribution: In Nilambur, erankol was found distributed in Manikyamudi, Pothukal, Erankolkunnu and Edavanna Range (Fig.4). Though there were large patches of erankol in these areas, now they are considerably reduced due to over-exploitation. The distribution of koorankolly was observed in Nadukani and Manikyamudi.

3.2.2 Regeneration: The Pothukal population adjacent to a former eucalypt plantation, consequent to the removal of trees, showed a satisfactory regeneration. However, the area showed a recent growth with very immature culms.

Fig. 4 Distribution of erankol in Malappuram Dt.

3.2.3 Utilization: Erankol is one of the important bamboos among the rural and tribal communities of the Nilambur and adjoining areas, which provides income for their livelihood. They could earn four to five rupees per culm after extraction. The extraction is restricted through registered societies and other organised sectors. The extracted culms are used mainly for the manufacture of umbrella handles, walking sticks and lathi by the small scale industries.

3.3 Survival and growth of erankol in the Nursery

The survival percentage recorded for the rhizome cuttings brought from Erankolkunnu was higher (82%) while those from Pothukal showed slightly lower survival of 64% in the nursery (Table1).

It took around 58 days for the first sprout to appear and once the sprouts emerged, the growth was fast for the next four months. At six months the maximum number of 10 sprouts emerged from an established rhizome cutting (a clump) brought from Pothukal. However, cuttings from Erankolkunnu, produced only a maximum of 7 sprouts from a clump (Table1). During the six months growth in the nursery, some of the rhizome cuttings produced only a single sprout, probably due to the smaller size of the rhizome piece collected for the propagation work.

The rhizome cuttings from Pothukal produced sprouts which attained a maximum height of

268 cm and those from Erankolkunnu recorded a maximum growth of 222cm during the six month's growth in the nursery (Table 1).

Vegetative propagation of erankol through rhizome cuttings was successful as evident from the study. However, the process of collection, transportation and getting the rhizome cuttings sprouted in the nursery and again shifting the propagules to the planting site was labour intensive and cumbersome. The sprout mortality was also comparatively much less in this species.

Table 1. Growth of rhizome cuttings of erankol in gunny bags in the nursery after six months of planting

Place of collection	No of cuttings bagged	No of cuttings sprouted	Survival in gunny bags (%)	Total No of sprouts produced	Height of the tallest culm.(cm)
Pothukal, Nilambur	11	7	64	8	232
Pothukal	12	7	58	10	268
Pothukal	14	9	64	9	242
Erankolkunnu, Nilambur	17	9	53	6	196
Erankolkunnu	11	9	82	7	216
Erankolkunnu	14	8	58	7	222

3.4 Survival and growth of erankol in field

The survival and field establishment was good and fast for erankol. After six months, growth was monitored in the field, and it was observed that more number of sprouts was produced and the rhizome cuttings showed better establishment (Table 2). Field establishment was better for the propagules from Erankolkunnu (85%) while it was slightly lower for those from Pothukal (Table 2).

Maximum number of sprouts (21) was observed in the rhizome cuttings collected from Erankolkunnu. However, growth parameters like maximum culm length (510 cm), maximum culm girth at the fifth internode (6 cm) and maximum internodal length (13 cm) was observed in clumps developed from Pothukal cuttings (Table 2).

Erankol could be successfully propagated through rhizome cuttings and two srouts emerge out in about two months in the nursery. The survival rate and field performance showed satisfactory result as is evidenced from the present study.

Table 2. Growth of rhizome cuttings of erankol in the experimental plot at Field Research Center, Velupadam after six months of field planting

Source of the propagules	Total No. of cuttings planted in the field	No. of cuttings survived in the field	Survival in the field (%)	Max No. of sprouts	Max culm length (cm)	Girth at 5th internode (cm)	Internodal length (cm)
Pothukal, Nilambur	20	13	65	18	510	6	13
Erankolkunnu Nilambur	20	15	75	21	420	4	11

3.5 Survival and Growth of koorankolly in the nursery

The new sprouts appeared in about 13 days and the growth was steady and fast. Unlike erankol the number of sprouts produced was much lesser and on an average only six sprouts were produced per rhizome cutting. At six months the mean survival rate of the sprouts in the nursery came down to four per clump (Table 3).

Table 3. Growth of rhizome cuttings of koorankolly in gunny bags in the nursery after six months of planting

Place of collection	No. of cuttings bagged	No. of cuttings sprouted	Survival in gunny bags (%)	Mean No. of sprouts produced	Mean No. of sprouts survived	Height of the tallest culm(cm)
KFRI Sub Center, Nilambur	25	16	64	6	4	168

3.6 Survival and growth of koorankolly in the field

The field survival of koorankolly was better (93%) when compared to that of erankol. However, growth parameters like number of new sprouts produced in the field (5) girth at the

5th internode (2.9cm) and the internodal length (9cm) recorded by the propagules was lower than that of erankol (Table 4).

Sprouts from rhizome cuttings of koorankolly took only around 13 days for the emergence of shoots and propagation through rhizome cuttings. However, the mortality rate of the new sprouts was also observed.

Table 4. Growth of rhizome cuttings of koorankolly in the experimental plot at Field Research Center, Velupadam after six months of field planting

Source of the propagules	Total No. of cuttings planted in the field	No. of cuttings survived in the field	Survival in the field (%)	Max No. of sprouts	Max culm length (cm)	Girth at 5th internode (cm)	Internodal length (cm)
KFRI Sub Center, Nilambur	15	14	93	5	310	2.9	9

3.7 Nature of demand and retail markets

The right of collection and removal of minor forest produce are given to the Tribal Cooperative Societies. Minor forest produces are traditionally gathered by the tribal households. When the Society collected minor forest produce and marketed it through the SCST Federation, the collectors got the collection charges fixed by the Society. These were in the form of subsistence wages. Erankol and koorankolly were not included in the list of minor forest produce. When traders approached the Society for these bamboos they in turn approached the Government of Kerala for special permission for harvesting. Erankol and koorankolly were harvested by the contractors on behalf of the Society by engaging skilled cutters many of whom were tribals belonging to Malamuthan and Paniyan communities. The cutters got only a nominal wage as collection charge which was also fixed by the Society. Since 2005, harvesting of erankol and koorankolly in the forests was banned by the Government due to concern regarding depletion of the resource.

Quantities of erankol and koorankolly harvested from the forests in Nilambur and the employment generated thereby are presented in Table 5. Average quantity of erankol harvested was 570 metric tonnes per annum during the period from 1998 to 2004 and that of

koorankolly was 528 metric tonnes per annum during the period from 2001 to 2004. Harvesting of erankol and koorankolly from the forests in Nilambur provided an average direct employment of 3,985 worker-days per annum for the tribals during the period from 1998 to 2004.

Table 5. Quantities of erankol and koorankolly harvested and employment generated

Year	Quantity (in number) harvested		Employment generated (worker-days)
	Erankol	Koorankolly	
1998 - 99	3,51,000 (640.0)*	-	3,510
1999 - 00	2,70,000 (499.2)	-	2,700
2000 - 01	4,91,000 (896.0)	-	4,915
2001 - 02	2,50,000 (460.8)	1,37,200 (411.4)*	3,872
2002 - 03	2,16,700 (396.8)	2,35,550 (713.9)	4,522
2003 - 04	2,85,200 (524.8)	1,53,650 (459.8)	4,388
Average per annum	3,10,650 (569.6)	1,75,467 (528.4)	3,985

*The figures in brackets are equivalent weight in metric tonnes.
Source: Letter from the DFO, Nilambur North, to the CCF (Protection) dated 21.06.2005.

From the average annual employment of 3,985 worker-days, the number of tribal households who were engaged in harvesting in the forests in Nilambur was estimated. Table 6 shows the estimated number of households. If the number of cutters ranged from one to three persons per household, the number of working days would have ranged from 50 to 100 days per

Table 6. Estimated number of tribal households engaged in harvesting

Different scenarios	No. of households
One cutter per household in 100 working days per year	40
Two cutters per household in 100 working days per year	20
Three cutters per household in 100 working days per year	13
Two cutters per household in 50 working days per year	40
Three cutters per household in 50 working days per year	26

annum and 13 to 40 households would have benefited with the collection charge through harvesting. This indicates that only marginal employment was being generated annually at the time of harvest. That is harvesting of erankol and koorankolly generated only seasonal

Table 7. Retail markets of erankol in Tamil Nadu

Retail markets	Quantity (metric tonnes) of erankol sold through retail bamboo depots in different years								
	1997	1998	1999	2000	2001	2002	2003	2004	2005
Salem	358.4	358.4	422.4	166.4	320.0	76.8	192.0	140.8	38.4
Nadupuni	12.8	51.2	0	0	12.8	64.0	0	25.6	25.6
Athur	12.8	0	0	51.2	64.0	12.8	76.8	0	0
Anthiyoor	0	0	0	0	12.8	0	0	38.4	102.4
Other places	64.0	64.0	89.6	217.6	38.4	204.8	64.0	140.8	76.8
Total	448.0	473.6	512.0	435.2	448.0	358.4	332.8	345.6	243.2

employment to a very few tribal households. It is, therefore, important to find out alternative employment opportunities for the seasonal cutters who were engaged in the collection of erankol and koorankolly from the forests.

Erankol and koorankolly from the forests were used in construction and agricultural sectors within and outside Kerala. The quantity of erankol used within Kerala was only marginal whereas koorankolly was used within Kerala in the agricultural sector mainly as props for banana plants. The major buyers from the State of Tamil Nadu were the bamboo retailers. For bamboo (*Bambusa bambos*) from the home gardens in Kerala, there is a well established wholesale market in Palakkad and the corresponding retail markets are in different places in Tamil Nadu. Over the years since 1960, about 85% of the annual quantity traded through the wholesale bamboo depots has been moving out of the State (Krishnankutty, 2004). Erankol and koorankolly were sold through the retail bamboo depots. Tables 7 and 8 show the retail markets of erankol and koorankolly respectively in Tamil Nadu. Erankol was sold through the retail bamboo depots mainly in Salem, Nadupuni, Athur and Anthiyoor. Koorankolly was sold through the retail bamboo depots mainly in Salem, Nadupuni and Anthiyoor.

Erankol was mostly preferred for props of betel and grape vines, walking sticks. Till the imposition of ban of erankol harvesting, 25-50 metric tonnes of erankol from Nilambur forests were annually sold as climbing sticks to climb up to the Vellangiri Temple on a hill near Madhukarai, Coimbatore. Koorankolly was preferred for props of banana plants, fruit pluckers, agricultural implements, platform for bullock-carts, mats, baskets, handicrafts and making sheds, fence, etc. After the ban in 2005, bamboo retailers in Tamil Nadu sell erankol collected from Andhra Pradesh. Kerala erankol is fully solid, very strong and quite durable, most suitable for props of betel vines. The retail price of erankol in 2005 in Tamil Nadu was Rs 7.5 per pole. Erankol from Andhra Pradesh has a narrow hole and is not as durable as Kerala erankol and the retail price in 2008 was Rs 10 per pole.

Table 8. Retail markets of koorankolly in Tamil Nadu

Retail markets	Quantity (metric tonnes) of Koorankolly sold through retail bamboo depots in different years								
	1997	1998	1999	2000	2001	2002	2003	2004	2005
Salem	24.2	0	12.1	36.3	0	36.3	387.2	84.7	0
Nadupunni	48.4	84.7	0	0	0	0	0	60.5	121.0
Anthiyoor	0	0	0	0	0	0	48.4	133.1	84.7
Other places	12.1	48.4	0	121.0	157.3	108.9	205.7	72.6	72.6
Total	84.7	133.1	12.1	157.3	157.3	145.2	641.3	350.9	278.3

The steady retail markets for erankol and koorankolly in the retail bamboo depots in Tamil Nadu before 2005 clearly indicates the prominence of the Kerala erankol and koorankolly in that market. It is evident that quantity of erankol moved out from Kerala to Tamil Nadu has been declining considerably (Table 7). This was mainly due to the shortage in supply from the forests (see also Table 5). There are clear indications that growing stock of erankol had been declining rapidly over years. This factor suggests that the existing resource needs to be conserved and managed sustainably. As the markets are mostly in Tamil Nadu, it is not imperative to continue harvesting erankol from Nilambur Forest Division which forms part of

the Nilambur Elephant Reserve and Nilagiri Biosphere Reserve. The practice of giving a monopoly to the Tribal Cooperative Societies or SCST Federation for the collection of minor forest produce has now been stopped in Kerala. Since the ban on harvesting erankol from the forests in Nilambur, Tamil Nadu traders have already found alternate source to meet their local demand for thin bamboo poles by substituting with another variety of erankol known in Tamil Nadu as Andhra erankol (*Pseudoxytenanthera monadelpha*) from Andhra Pradesh.

4. CONCLUSION

Erankol is rare and endemic bamboo of Western Ghats and the distribution of the species is highly scattered. The regeneration is slow and hence this species has to be conserved with high priority. Where as the regeneration of koorankolly is found to be faster in nature and hence this species can be cultivated easily even in the highly extracted areas

Due to large scale extraction in the natural population of erankol is considerably reduced and therefore, there is no scope for large scale extraction. However, the present regeneration status is satisfactory and any commercial extraction may be considered only after five years.

Koorankolly is distributed throughout the country and also in North East India. The culms of this species are extracted mainly for construction works and for making supports for the plantains and pepper.

Both erankol and koorankolly can be successfully propagated through rhizome cuttings, the growth performance is also satisfactory

The employment generated through harvesting of erankol and koorankolly from the forests in Nilambur is marginal. Therfore, it is important to find out alternative employment opportunities for the seasonal workers engaged in extraction of these bamboos.

Most of the erankol was moved out to different places in Tamil Nadu whereas koorankolly was used in both Kerala and Tamil Nadu. As the markets are mostly in Tamil Nadu the native community is not benefited from the product and hence it is not imperative to continue harvesting of erankol and koorankolly.

The harvesting of Erankol from the forests has hardly any economic benefit to the tribals or the State, although traders make a good profit. Therefore, it is advisable that the remaining patches of erankol in the forests are reserved for conservation.

5. REFERENCES

Krishnankutty, C. N. (2004). Marketing of bamboo (*Bambusa bambos*) in South India. *Journal of Bamboo and Rattan*, 3 (3): 203-215.

Kumar M. (2002) Field identification key to the native bamboos of Kerala- *KFRI Handbook No. 9*, Kerala Forest Research Institute, Peechi. 38p.

Kumar M. (2006). Diversity and distribution of RET bamboos of Western Ghats and relevance of taxonomy in biodiversity conservation. Paper Presented in the National Seminar on Plant Resources of Western Ghats, Ecology, Economics and Conservation held at Bangalore. Karnataka.

Pandalai R.C., Seethalakshmi. K.K. and Mohanan C. (2002). Nursery and silvicultural techniques for bamboos. *KFRI Handbook No. 18*. Kerala Forest Research Institute, Peechi. 41p.

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