

Conservation of *Pseudoxytenanthera ritcheyii* in the forests of Kerala and potential for its cultivation outside forests

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Abstract: *Pseudoxytenanthera ritcheyii*, a rare endemic bamboo species locally known as 'erankol', occurs sporadically in the natural forests of Nilambur, Kerala, India. Due to concern over the depletion of this rare bamboo resource, harvesting was banned by the Government of Kerala since 2005. Before the ban, erankol was being harvested by the traders on behalf of the Tribal Cooperative Society employing tribals. Erankol harvesting provided hardly any revenue to the State or substantial employment to the tribals or value addition after its extraction. Its markets are mostly in the neighbouring State of Tamil Nadu, where it was being sold through retail bamboo depots. Due to non-availability of erankol from Kerala since 2005, bamboo retailers in Tamil Nadu sourced a substitute, *P. monadelphoides*, from Andhra Pradesh. It is argued that it is not imperative to continue harvesting of erankol from the forests of Kerala so that the remaining wild population can be conserved for maintaining its genetic diversity. The assured markets for erankol make it an ideal species for promotion and propagation in suitable areas outside forests by the National Bamboo Mission and the State Forest Departments in their agroforestry programmes.

Keywords: *Pseudoxytenanthera ritcheyii*, erankol, thin bamboo, end-uses, markets, conservation, cultivation.

INTRODUCTION

Natural forests are the abode of Non-timber forest produce (NTFP). Tribals and other forest dwellers continue to depend on NTFP for their livelihood in Kerala State, India. The right of collection and removal of NTFP is given by the State Government, free of charge, to the Tribal Cooperative Societies who gather the produce using the labour of the tribal households. When the Societies collect the produce and market them through the Scheduled Caste Scheduled Tribe (SCST) Federation, the tribal collectors get a wage income (collection charge in the form of subsistence wages) fixed by the Societies. *Pseudoxytenanthera ritcheyii* Munro is a rare and endemic bamboo found sporadically in the forests around Nilambur in Kerala. It is a thin and solid bamboo,

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locally known as erankol. Although erankol is a minor forest produce, it is not included in the list of NTFP approved for harvesting from the forests of Kerala. However, when the traders approach the Society for erankol, the Society in turn approach the Kerala Government for special permission for harvesting. After obtaining permission from the government, harvesting of erankol was being done by the traders on behalf of the Society by engaging cutters many of whom are tribals. The tribal cutters get only a nominal wage as collection charge fixed by the Society. Substantial quantity of erankol was harvested from the forests during the last several years. Due to concern regarding depletion of the resource, harvesting of erankol in the forests was banned by the Kerala Government since 2005. In this context, it is necessary to identify the nature of demand and markets of erankol, and to examine whether the ban on harvesting is appropriate. Although studies on bamboo (*Bambusa bambos*) marketing and resource development in home gardens are available (Krishnankutty, 2001; 2004; 2005), no studies on erankol are found in the literature (Sarojam, 2003). In this paper, the level of employment generated in harvesting, markets and end-uses of erankol from the forests around Nilambur are discussed. The need for conservation of erankol in the forests and potential for its cultivation in areas outside forests are also examined.

MATERIALS AND METHODS

Data on the quantity of erankol 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 as part of a larger study by the Kerala Forest Research Institute. Discussions were held with bamboo traders in Nilambur for information on the pattern of trade of erankol and its end-uses. Data on the number of truck-loads of erankol that moved out of Kerala and its destination were compiled from the registers maintained at the inter-State border Forest check-posts. The average weight of erankol per truck-load was 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 erankol harvesting in Kerala, it was one of the 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 was being marketed. Such bamboo depots were visited and discussions were held with the retailers on nature of demand and end-uses of erankol which was sold in the depots before the ban on harvesting. Information on substitutes of Kerala erankol due to its non-availability from Kerala was also gathered during the survey of retail bamboo depots in Tamil Nadu.

RESULTS AND DISCUSSION

Employment generation

Table 1 presents the data on erankol harvested from the forests in Nilambur and the employment generated thereby annually during the period from 1998-99 to 2003-04. Average quantity of erankol harvested was 570 metric tonnes per annum. Harvesting provided to the tribals an average employment of 3,107 worker-days per annum during the period from 1998-99 to 2003-04. The number of workers per household was reported to range from two to four persons. From the average annual employment generated, the average number of tribal households who were formerly engaged in harvesting was estimated under different assumptions. If the number of tribal cutters per households was two, then 31 households would have got employment for 50 days. If it was three cutters per household, 31 households would have got employment for 33 days with the wage income from harvesting. This indicates that the annually generated employment was not only marginal but also seasonal to a very few tribal households. This marginal employment from erankole harvesting was not at all sufficient for the simple livelihood of the tribal households who were also depending on other means for income. It is thus important to provide alternate employment opportunities for the tribals who were formerly engaged in seasonal harvesting of erankol in the forests.

The lack of value addition or employment generation in its processing does not benefit the economy even in the short term. The implications of its extraction in the long-term in the context of sustainable management of this endemic species are serious. It is only a very small group of traders operating in an unauthorized manner having very little stake in long term conservation who benefit from this process. The Tribal Cooperative Societies or the SCST Federation hardly benefit from their business. The cutters, of course, may get a subsistence wage income during a brief period, which in total value, is quite small. Now the National Rural Employment Guarantee Programme, which covers the entire country, assures 100 days of work in a year at the rate of Rs 160 per day in Kerala, can make up for any loss of employment for those poor tribal households who were engaged by the traders as seasonal cutters. It would be unfortunate if this useful species, which has been widely depleted, is decimated in its natural habitat bringing neither revenue to the State nor substantial employment in its extraction.

Table 1. Quantity of erankol harvested from Nilambur forests and employment provided to tribal households

Year	1998 - 99	1999 - 00	2000 - 01	2001 - 02	2002 - 03	2003 - 04	Average per annum
Quantity (metric tonnes)	640.0	499.2	896.0	460.8	396.8	524.8	569.6
Employment (worker-days)	3,510	2,700	4,915	2,500	2,167	2,852	3,107

Markets and end-uses

Erankol harvested from Nilambur forests was used in the agricultural and other sectors within and outside Kerala. Of the average quantity of 570 metric tonnes per annum during the period from 1998-99 to 2003-04, 165 metric tonnes (26%) was used within Kerala and 405 metric tonnes (74%) was used in different places outside Kerala (Tables 1, 2). The major buyers from outside Kerala were the bamboo retailers in Tamil Nadu. Erankol was one of the items sold through the retail bamboo depots. Tables 2 shows the retail markets of erankol in Tamil Nadu. Erankol was sold through the retail bamboo depots in Salem, Coimbatore, Athur, Anthiyoor and Nadupuni in Tamil Nadu. It was sold to places in Puducherry State also. The steady sale of erankol in the retail bamboo depots in Tamil Nadu before 2005 clearly indicates the prominence of the Kerala erankol in that market. As the markets are mostly outside, it is not imperative to continue harvesting of erankol from the forests in Kerala. 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.

Erankol culm is one of the most preferred support for betel vines cultivation which is carried out on a large-scale in Salem District of Tamil Nadu. Erankol from Kerala was extensively used by the farmers there. The outer skin of the erankol culm is soft so that the aerial roots of betel vines can easily cling when used as its support. Erankol, although small (around 2 to 3 cm diameter) has certain features that are superior in comparison with the more common *B. bambos* (the thorny bamboo), *Dendrocalamus strictus* (thorn less bamboo), *Ochlandra travancorica* (reed) and cane species. Erankol is solid and is as strong as cane. It is sturdy and does not bend or buckle easily. Erankol is thin and has a uniform diameter, unlike the larger hollow bamboo which is bulky and tapering. The culms can be handled, bundled and transported easily by farmers. After the ban in 2005, bamboo retailers in Tamil Nadu sell another variety of erankol (*P. monadelphus*) from Andhra Pradesh as a substitute known as 'Andhra

Table 2. Retail markets of erankol in different places in Tamil Nadu

Retail markets	Quantity (metric tonnes) of erankol sold through the retail bamboo depots									
	1996 - 97	1997 - 98	1998 - 99	1999 - 00	2000 - 01	2001 - 02	2002 - 03	2003 - 04	2004 - 05	
Salem	358.4	358.4	422.4	166.4	320.0	76.8	192.0	140.8	38.4	
Coimbatore	12.8	25.6	51.2	25.6	12.8	0	0	38.4	12.8	
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	
Nadupuni	12.8	51.2	0	0	12.8	64.0	0	25.6	25.6	
Other places*	51.2	25.6	25.6	166.4	12.8	204.8	38.4	102.4	64.0	
Puducherry	0	12.8	12.8	25.6	12.8	0	25.6	0	0	
Total	448.0	473.6	512.0	435.2	448.0	358.4	332.8	345.6	243.2	

*Thrissinappilly, Rasipuram, Chennai, etc. in Tamil Nadu.

erankol' in Tamil Nadu bamboo depots. Andhra erankol has a narrow hole in culm and reportedly is not as durable as Kerala erankol.

Conservation of natural stands

It is evident that the quantity of erankol moved out from Kerala to Tamil Nadu had been declining considerably. This was mainly due to the shortage in supply from the forests (Tables 1, 2). There are clear indications from field visits and discussions with the people involved that the growing stock of erankol had been declining rapidly over years. Therefore, the existing resource needs to be conserved and managed sustainably. The ban on harvesting of erankol in the forests implemented in Kerala since 2005 was a critical step in the conservation of this species which is excessively depleted in the forests. To preserve this species, it is important to protect the wild population from further exploitation. The mandate of biodiversity conservation also compels the Forest Department to manage these resources without depletion and degradation. The Kerala Forest Department has wisely stopped extraction of erankol from the forests of Nilambur which is in conformity with the Supreme Court Order on prohibitions of green felling in the forests. The natural vegetation in Nilambur forests has been extensively modified for agriculture or rubber plantations in the post- independence period and it has a long history of expansion of teak plantations. This has resulted in converting much of the natural bamboo areas including erankol into other land uses. What remains are small and scattered patches of erankol that need protection. Erankol is a natural food species of elephants and the remaining scattered patches of erankol in the Nilambur forests may be conserved in the newly declared Nilambur Elephant Reserve which forms part of the Multi-State, Regional Nilgiri Biosphere Reserve, comprising the forests around Nilgiri Mountain in Kerala and Tamil Nadu.

Potential for cultivation in areas outside forests

Considering the market demand for erankol and its wide acceptance among the farmers and in the housing sector, it is important to propagate erankol as an agroforestry crop wherever space and moisture permit. When erankol is cultivated, harvesting can start usually in the third year and regular outflow can be expected subsequently. This will assure continuous supply to the markets and a steady income for the farmers. Although clump forming, erankol spreads laterally and evenly so that there is no crowding at the base as in the case of *B. bambos* or *D. strictus* clumps. The thorn free nature of erankol is an added attraction. It is certain that if erankol is cultivated in the home gardens of Kerala, it will have a ready market in the betel vines cultivation areas in Tamil Nadu due to its superiority. Farmers in the Northern District of Kannur in Kerala are successfully managing erankol as a crop on the boundaries of their home gardens. Their experience can be shared to propagate this useful species in other moist or irrigated areas. Kerala Forest Research Institute has demonstrated, at its Subcentre at Palappally, that erankol can be successfully cultivated using rhizome cuttings. The National Bamboo Mission can take note this demand and take the

initiative to propagate this valuable species outside forests. The assured markets for erankol, among the farmers of betel vines and banana and for construction of temporary sheds make erankol an ideal species for promotion and propagation by the National Bamboo Mission. The Forest Departments can also propagate this species in their agroforestry programmes.

CONCLUSIONS

The employment generated through harvesting of erankol in the forests was marginal and therefore it is important to provide alternate employment opportunities for the tribal cutters. The erankol traders used to make a good profit in the business using their opportunity of getting the resource almost free from the forests. The ban on harvesting of erankol in the forests implemented in Kerala since 2005 was a critical step in the conservation of erankol, a useful species, which has excessively depleted in the forests. To preserve the natural and genetic qualities of erankol, it is important to protect its wild population from further exploitation. Considering the market demand and wide acceptance among farmers, it is important to propagate erankol as an agroforestry crop wherever possible. The National Bamboo Mission must take initiative to propagate this valuable species in areas outside forests particularly in the home gardens in Kerala.

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