



SOCIO-ECONOMIC PROSPECTIVE AND SUSTAINABLE CONSERVATION STRATEGY

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Canes have been distributed in the Western Ghats in parts of Hassan, Chikkamagalore, Dakshina Kannada, Udupi, Kodagu, Belgaum and Shimoga districts of Karnataka. The evergreen forest, semi-evergreen forest and moist deciduous forest contain the natural cane population. Till 1970 the extraction of canes was carried out through contract system. However, from 1971 onwards the extractions of cane are being handled departmentally through the staff of Range Forest Offices.

The extractions either by contract system or through department are being carried out by the specially trained tribal population living in the fringes of the forest areas. The tribal population of Kurubas, Jenu Kurubas, Yeravas and Alakki Vakkaligas etc., is concentrated in Kodagu, Hassan, Dakshina Kannada, Udupi, North Kanara, Belgaum & Chikkamagalore districts. As per the date for the year 2001-02 published by Government of Karnataka, 1,89,586 tribals are residing in the fringes of the forest areas. Even if we presume that 40% of this populations are adult members the forest has to support this population for their livelihood and engage substantial manpower. These tribal populations are well versed with traditional methodology regarding the extraction, processing and removal of the matured canes from the forest areas.

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The extraction of canes in Karnataka from the year 1988-1989 to 1997-1998 are listed below which clearly indicates the amount of generation of income from the extraction of canes by the tribal population.

Extractions of Canes from 1988-1997 in Karnataka Forest Department

Sl. No.	Year	Canara Circle		Belgaum Circle	Kodagu Circle		Total
		Honnavar Division	Karwar Division	Belgaum Division	Mangalore Division	Madikeri Division	
1.	1988-90	2,88,848	8,300	--	--	--	2,97,148
2.	1989-90	2,56,177	32,000	54,800	--	--	3,42,977
3.	1990-91	2,19,616	49,913	1,55,050	--	--	4,24,977
4.	1991-92	3,00,500	3,700	1,00,600	--	--	4,04,800
5.	1992-93	6,12,711	2,25,700	87,500	20,058	--	9,45,969
6.	1993-94	3,75,000	2,18,000	20,600	--	--	6,13,600
7.	1994-95		3,69,870	42,000	11,466	14,000	4,37,336
8.	1995-96	2,73,100	81,380	---	---	6,000	3,60,480
9.	1996-97	1,98,000	1,34,000	---	10,000	6,000	1,50,000
10.	1997-98		2,38,595	1,35,000	---	15,000	5,86,595
	Total	25,23,952	13,61,458	5,95,550	41,524	41,000	45,63,484

It is evident that the forest department is spending an amount of Rs. 9.15 for each big cane and Rs. 4.60 for each small cane. This alone works out to generating substantial income to the tribal population. Apart from extraction of canes they are also engaged in collection of Minor Forest Produce available in the natural forest areas. This clearly indicates that there is a substantial amount of income being generated to the tribal population residing in the fringe of the forest areas through forestry activities.

Canes extracted in Karnataka state are totally consumed by the local cottage industry and in fact due to control of extraction by the forest department the cottage industries are getting the canes from Assam and Arunachal Pradesh.

The activities of the rattan based Industries are mainly under the purview of the cottage industries board. According to a rough estimate about 20,000 people are employed in Karnataka in these industries and many in rural areas and they earn their livelihood through extraction of canes.

Canes do occur in the natural vegetation in the evergreen, semi-evergreen and moist deciduous of Western Ghat spreading over an area of 500 sq. km. alone in Karnataka. The actual extent of natural occurrence of cane cannot be easily assessed. Due to large scale hydel projects coming in the Western Ghat region, about 2,04,000 ha. of Forest have been lost in Karnataka since 1956 onwards which had substantial amount of natural canes. Thus the net area under cane distribution has shrunk and with the left out area, we have to go for intensive management for higher production by supplementing the natural re-generation areas with the plantations to be raised in areas suitable for cane growing in evergreen, semi-evergreen moist deciduous forest of Western Ghats.

The major reasons for the depletion of canes from the natural forest are:-

- a. Indiscriminate extraction of rattans
- b. Imbalance between demand and supply.
- c. Large scale clearance of natural forest for Hydel projects.
- d. Unscientific exploitation in the past.

Even at times the immature canes are also being extracted before they could mature and also the flowers to produce seeds which are an essential factor in getting the natural re-generation in forest areas. In some of the compartments of Kodagu and Virajpet forest divisions which were the cane bearing areas earlier as per the working plan documents, are now totally devoid of the cane species due to over exploitation and smuggling of this material to Kerala State.

The best conservation measures that could be adopted in conserving this rare endangered species of canes in the Western Ghats are:-

- a. To go for massive afforestation programmes in the traditional cane growing areas where the species of canes have vanished due to various reasons.
- b. To control grazing activities in the evergreen and semi-evergreen areas in order to encourage natural re-generation of canes.
- c. Restrict extraction of matured canes only in certain areas so as to meet the demands of the cottage industries who are solely dependent on Rattans for their furniture manufacturing.
- d. Involving Village Forest Committee formulated in the fringes of the forest area for preserving, developing and sustainable utilization of the cane materials grown in the forest area and also use the self help groups for creating value added products from canes.

- e. Formation of protected areas in cane growing region to preserve the gene pool.

Efforts are being made to conserve rattans in Karnataka from 1979 onwards and as on today we have atleast more than 5,000 ha. of cane plantation in the Evergreen, Semi evergreen and moist deciduous forests in the Western Ghats.

It is very interesting to note the aspects of sustenance of cane plantations which has been reported from Borneo. Rattan cane is being planted in shifting cultivation areas, where this practice is allowed. The tribals will get the benefit out of such practice. They clear section of forests, cultivate and before vacating the area to another place, have a tradition of planting rattans in that area. After 7-10 years when the land is again ready to be used for shifting cultivation, the farmer returns not to an empty land but to mature rattan garden. The rattan is harvested and sold (Weinstock, 1985).

Rattan as a plantation crop has several advantages over other economically important perennials. Rattan industry is highly labour intensive and the quantum of capital required to generate employment in the industry is very low. Rattan is easy to grow and have a wide altitudinal range. The trees growing in the area serve as support to this climbing palm. Since there is no need to disturb the natural forest for raising rattans, forest cover will be conserved. The clump forming rattans makes it an excellent plant which can regenerate by itself after harvesting and continuously can generate revenues.

In order to go for massive afforestation of rattans, seeds are to be obtained from the matured stems grown in the natural forests and raise them in the nursery. The nursery and planting techniques have also been standardized (Renuka 1990).

The Forest Department has also gone slightly ahead in order to augment the natural re-generation of canes which are totally absent in certain compartments and large extent of cane plantations have been raised from the year 1981 onwards even though the first cane plantation was taken up by Sri. A.C. Lakshmana, during the year 1973 in Madikeri division. As on today the Karnataka Forest Department has raised more than 5,000 ha. of cane plantations mostly concentrated in Mangalore, Kundapur, Virajpet, Madikeri, Honnavar, Karwar, Shimoga, Chikkamagalore & Belgaum divisions. The afforestation activities started in a small scale and picked up the momentum from 1985 onwards. In Mangalore division large scale cane plantations of commercially important species viz., *Calamus prasinus*, *Calamus nagabettai*, *Calamus dransfieldii*, *Calamus Vatayila*,

Calamus thwaitesii are being raised in Puttur, Uppinangady, Panja, Subramanya and Sullya ranges. Some of the older plantations are also due for harvest in this division.

In Karnataka state the under farm forestry model there is no demand for canes even in cane growing areas. Lot of awareness has to be created in order to encourage the farmers to go in for cane under planting in rubber plantations and also in the farm bund areas. The economics of the cost involved in raising pure crop of rattan plantation and revenue expected is given below:-

I. Cost Benefit Analysis

- Cost of raising 4m x 4 m plantations including 3 year maintenance per ha. Rs. 15,000.00
- Cost of raising each seedling is Rs. 21.00 per plant
- On an average the cane puts on MAI (mean annual increment) of 0.903 Meters thus resulting a yield of 47.25 Running feet per plant at the end of 15th year.
- At the prevailing Government rates from each cane of length 47.25 Running feet it will give a revenue of Rs. 59.06.
- From the seeds an annual revenue of Rs. 150.00 is derived after 6th year of the plantation expecting 2 kgs. per plant per year at the rate of Rs. 15.00 per kilo.
- Thus a total amount of Rs. 209.00 is expected from each cane plant.

However, as per the market rates ascertained from cane manufacturers the rates per big canes is Rs. 3.00 for running feet and small canes is Rs. 1.50 for running feet. Thus an amount of Rs. 291.00 is expected from each plant in addition to the indirect benefits accrued to the forest area.

From the field and laboratory studies it is clear that soil moisture nutrient requirement in the soil and comparative performance of growth between 9 month and 18 month old seedlings along the Western Ghats area are having a strong linkage. Using this primary data it is now possible to extend the research to the field by suggesting suitable areas for extension of cane cultivation, conservation methods for sustainable yield to the livelihood dependent stakeholders, who can

successfully depend on this crop. The area that are available for extending further plantation activities in different locations need to be further explored. The Joint Forest Planning & Management concept initiated in such areas definitely will conserve Gene Pool and also utilise this natural resource in a judicious manner.

The comprehensive field and laboratory data has provided needed inputs to enhance the growth performance, area of operation and yield utility points of view. This knowledge should be used to improve the social forestry sector to reach the wider stakeholder base of the rural population.