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Status of Lac Production and Marketing in West Karbi Anglong District of Assam

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

West Karbi Anglong district of Assam State is historically a major lac producing area in the North Eastern India from where lac was used to be exported to China and Japan during 17th and 18th. The farmers in these areas have been cultivating making lac (cultivation)delete since time immemorial. .Among several indigenous communities inhabiting West Karbi Anglong district, Karbis are rearing lac insects (*Kerria lacca* Kerr), locally called Laha, on naturally growing host plants in forests and on pigeon pea (*Cajanus cajan*) in a traditional practice. The present investigation attempted to examine the present status of production and marketing of lac in West Karbi Anglong. The primary data was collected from 75 lac farmers to find out the present status of production and marketing of lac. More than 35tons of lac are exported to other states from West Karbi Anglong districts annually. Due to their traditional practice these producers are receiving a low price for their product as low as compared to the market rate. The product is marketed to local intermediaries,

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local traders and distant traders. Lack of awareness and knowledge on value addition and the prevailing market price, marketing agencies and industries resulted in lower price of the product. Lack of scientific knowledge on production and processing of lac is the major problem encountered by the farmers. Lack of processing unit is another major problem for which the lac producers received a low price for their product.

Keywords: Lac; shellac; host plants; non-timber forest product; sticklac; market; traders.

1. INTRODUCTION

Shifting cultivation refers to the 'slash and burn' agriculture and it is also commonly known as 'Jhumming' or 'Jhum cultivation'. This system is mostly practiced in the hilly regions consisting of cyclic nature and continues to be a predominant agricultural practice in North East India, (Table 1). "This agro-ecosystem, once considered ecologically and economically sustainable, is gradually becoming untenable under increased anthropogenic and other pressures. However, it is not to deny the fact that shifting cultivation in its distorted forms poses potential threat to the rich biodiversity of NE India" [1], particularly to the unique faunal diversity [2]. "In Karbi Anglong district including West Karbi Anglong District, about 65% of the people are dependent oh Jhum cultivation" [3]. "The people cultivate on the same plot of land after an interval of 8-10 years. But at present, due to population pressure on land, the jhum cycle has been reduced to 4 to 5 years and even in some areas, the jhum cycle has been reduced to 2-3 years" [3]. In present years there are increasing indicators of the impact of Shifting Cultivation for depleting forest on the environment such as loss of biodiversity, change of climate, degradation of watershed, deforestation. The FAO, in 1957, declared shifting cultivation as the most severe land use crisis in the tropical world. Further, environmental degradation obviously leads to poverty and reduces livelihood security [4]. "This agro-ecosystem in the uplands of NE India, requires a concerted eco-technology backstopping to be sustainable, as access to technology in the region is grossly inadequate, given the constraints of terrain and limitations of prospective line departments" [5]. "Technologies for this agro-ecosystem need to be adapted to local conditions and based on the principles of low external input for sustainable agriculture (LEISA).The technologies should also be based on locally available resources and be essentially simple, low-cost and appropriate so as to enhance sustainable agricultural production and generate employment opportunity by setting up entrepreneurships" [5]. Promotion of lac cultivation is one of the alternative enterprises for sustainable livelihood and rejuvenation of abandoned and degraded land where host trees can be planted for production of lac.

The lac insects *Kerria lacca* belongs to the scale insect family *Kerriidae* and considered as one of the non-timber forest products (NFTP). The family contains nine genera and approximately 100 described species [6]. The name 'lac insect' comes from the well-known varnish called shellac. The lac insects were known as "Laksa" (In Sanskrit which means a hundred thousand) in ancient India.. Diverse medicinal uses of lac are cited in the Atharvaveda. Mahabharata were also refered to „"Laksagriha" or "House of lac" [1]. Lac is a resinous secretion and when processed (shellac) is used as raw material for manufacturing of bi-products such as paints and varnishes, glazing of fruits, coating of medicines, electronic appliances, hair lacquer, nail polishes, jewellery, sealing wax and confectioneries. Shellac demand has been increasing in these industries since last few decades due its eco-friendly and nontoxic properties. "The demand for lac and lac products across the world far exceeds supply. On an average, India produces about 21,000 metric tonnes of lac annually, and contributes around 55% of the total world demand. Other key lac producing countries are Thailand, Indonesia and China. According to market estimates, the world demands around 40,000 metric tonnes of lac annually. India, China and Thailand's production totals only about 32,000 metric tonnes" [7]. Therefore there is a huge gap between demand and supply in the global market which clearly indicates that there is a good potential for lac cultivation.

West Karbi Anglong district of Assam State is historically a major lac producing area in the North Eastern India from where lac was used to be exported to China and Japan during 17th and 18^{th} [3,8]. Among several indigenous communities inhabiting Karbi Anglong district, *Karbis* are rearing lac insects (*Kerria lacca* Kerr), locally called *Laha*, on naturally growing host plants in forests and on pigeon pea (*Cajanus cajan*) in a traditional practice. More than 35tons

of lac are exported to other states from West Karbi Anglongdistricts annually.

The farmers in these areas have been cultivating making lac (cultivation) delete since time immemorial. Due to their traditional practice these producers are receiving a low price for their product as low as Rs 350-Rs410 per kg of lac as compared to market rate of Rs1000 per kg. The product is marketed to local intermediaries, local traders and distant traders. Lack of awareness and knowledge on value addition and the prevailing market price, marketing agencies and industries resulted in lower price of the product. Through secondary information Lac has been reported determined to be cultivated in Amri Block and Chinthong Block of West Karbi Anglong district of Assam.

Due to the increased in demand for shelllac the present investigation was carried out in West Karbi Anglong District with the main aim to find out the status of production and marketing of lac in the District [9-11].

2. METHODOLOGY

The secondary information on areas of production of lac was collected from the District Agriculture Office. From the information collected lac was found to be cultivated in large scale in Amri and Chinthong Bloc of West Karbi Anglong District. The primary data on lac cultivation and marketing was collected from 75 lac farmers selected from both the Blocks. The data on the existing production practiced by the farmers as well as cost of production and type of marketing for the produce was collected through personal interview method using a well prepared questionnaire.

3. RESULTS AND DISCUSSION

The area under lac cultivation ranges from 0.06 bighas to 5 bighas in Chinthong Block while it ranges from 0.13 to 3.5 bighas in Amri Block (Table 2).

In the study area it was found that the *Karbis* rear lac insects twice in a year (April-October and October-April) on a total of 6 six different types of host plants which were used for lac production by the farmers. These different types of host plants along with their beneficial uses are presented in Table 3.

3.1 Cost of Production of Lac

Lac production is of 6 (six) months duration and production is done twice a year. Harvesting operation is carried during the month of May/June and Oct/Nov. every year. The average production of lac in Chinthong Block is 30-55 Kg/tree for small trees and 50- 100Kg/tree for big trees while in Amri Block the average production is 100-200Kg/bigha for arhar crop and 300-400Kg/bigha for big trees like peepal tree (Table 4).

The cost and return of lac production was estimated on the basis of input cost involved and the average prevailing market price was taken to calculate the return from lac. The cost and return analysis of lac production is shown in Table 5. From the table it is observed that the average cost of cultivation of lac is ₹19200/bigha/year which indicated that production cost of lac involved is expected to be very minimal. The major cost involved is only labour cost at the time of harvesting and post-harvest operations. The average gross returns received from production of lac is ₹1,22,875 per bigha per year and the net return is ₹1,03,675 per bigha per year. The benefit cost ratio was found to be 6.40 which is very high indicating a high profitability of lac production.

Table 1. Area under shifting cultivation in different states of North East India

States	Abandoned Jhum (km2)	Current jhum (km2)	Total jhum land (km2)	Total jhum land (km2)	Per cent change in area
		2008–09		2005–06	Over 2005–06
Arunachal Pradesh	961.04	1078.52	2039.6	1531.5	+33
Assam	258.86	136.33	395.6	239.56	+65
Meghalaya	272.52	268.11	540.6	448.99	+20
Manipur	270.31	201.32	471.6	852.2	–45
Mizoram	612.71	1049.47	1662.1	2617.6	–37
Nagaland	1514.95	842.47	2357.4	2827.7	–17
Tripura	33.20	68.99	102.2	254.11	–60
Total	3923.59	3645.11	7568.7	8771.6	–13.7

Source: Current Science 2016 Vol.111 (2) :2

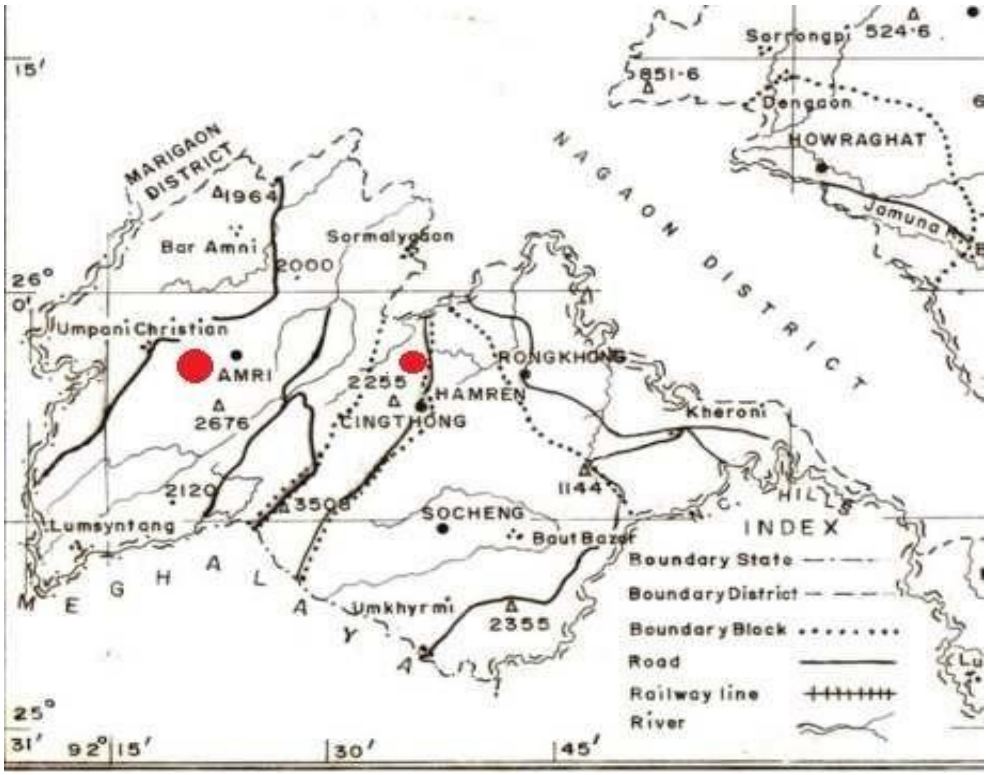

Fig. 1. Location map of Lac producing area

Fig. 2. Production of lac in West Karbi Anglong District

Table 2. Sample households and area under lac production

Block	Total household	Sample Household	Area under Lachost plants(bighas)
Chinthong	92	30	0.06 – 5
Amri	135	45	0.13 –3.5

Table 3. Type of host plants used for lac production

Sl. No.	Assamese Name	Karbi Name	Botanical Name	Parts used
1	Kouri Thengia	Soplipli	*Leea herta Roxb*	Tubers beneficial in worms, boilsdeafness, indigestionandjaundice
2	Sowra	Chire Theso		Toothache, piles, diarrheoa andtubercolosis
3	Peepal	Chire Kethe	*Ficus religiosa*	Treatment of gum bleeding, swelling of mouthand tongue,skin diseases, rheumatism andsmall pox
4	Moj	Inghok	*Archidendronbigeminum*	Used as firewood and medicinalpurposesi
5.	Bargachh	Bodh	*Ficus benghalensis*	Ulcer, vomiting, fever,inflammations
6	Arhar (AmriBlock)	Thekok	*Cajanas Sajan L*	Excellent source of protein, curesinflammation, protects skin.

Table 4. Average production of lac in West Karbi Anglong District

Block	Type of trees	Production	Price (₹/Kg)
Chinthong	Big trees	50 -100 Kg/tree	
	Small trees	30-55 Kg/tree	300-350
Amri	Big Trees(Bor Gach)	300-400Kg/bigha	310-350
	Arhar	100-200Kg/bigha	

About 25tons to 30tons of lac is marketed from Amri Block and less than 10tons fromChinthong Block

Table 5. Costs and Returns from lac production in West Karbi Anglong District

	Chinthong Block			Amri Block			
Particulars	**Yield**	**Rate ₹/kg**	**Gross Return ₹**	**Yield(Kg)**	**Rate ₹/kg**	**Gross Return ₹**	**Average TotalGross Returns(₹)**
Production(Kg/bigha)							
i) Arhar				150	330	49500	
ii) SmallTrees	300 400	325	97500				
iii) Big Trees			1,30,000	400	330	1,32,000	1,02,250
Seed Cost (₹/bigha)							1200
Labour cost (₹/bigha)							18000
Total Cost (₹/bigha)							19200
Net Return (₹/bigha)							83050
Benefit cost ratio							5.33:1.00

3.2 Marketing

From the present investigation it is found that lac producers sold their products to local Traders/intermediaries and other middlemen from Nellie, Jagi Road and Guwahati who either purchased directly from the farmers or from the local intermediaries. The flow chart of lac marketing is presented in Fig. 3.

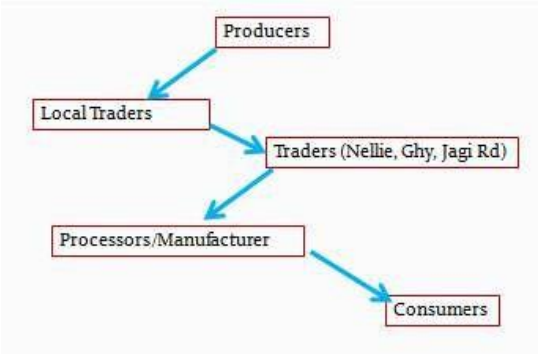

Fig. 3. Flow chart of lac marketing in West Karbi Anglong District of Assam

3.3 Constraints in Production and Marketing of Lac

1. Lack of scientific knowledge on production and processing of lac is the major problem encountered by the farmers.
2. Lack of processing unit is another major problem for which the lac producers received a low price for their product.
3. Poor infrastructure development like roads and communication is another hindrance faced by the farmers in marketing of their produce.

3.4 Policy Implications

Government and Non-Government institutional agencies should take up proper and effective measures so that the lac farmers can avail capacity building on scientific methods of rearing and processing of lac. An exposure visit for these farmers to ICAR-Indian Institute of Natural Resins and Gums (ICAR-IINRG) Namkun, Ranchi may also be undertaken by the Local Authority or any Government and Non-Government institutional agencies for linking up these farmers with marketing agencies of lac. Awareness needs to be raised on growing of lac in large scale in both East and West Karbi Anglong due to high demand of shellac in multiple industries especially paints and varnishes, pharmaceutical and electronics. Further, mechanisms are required to be explored that help adoption of modern practices of lac culture, provide minimum support price and insurance to indigenous lac farmers, develop organized marketing system and mobilize farmers to plant host trees to ensure increase in productivity and production of lac for socio- economic upliftment of the rural people and environmental sustainability of traditional lac culture in general and that of the *Karbis* in particular. Local Authority may also take up measures for infrastructure development in these remote areas.

4. CONCLUSION

From the present investigation it was found that the farmers of West Karbi Anglong District have been practicing lac cultivation since their forefathers. Lac cultivation was widely practiced by farmers in Amri and Chinthong Block of West Karbi Anglong District. More than 35 tons of lac were exported outside the district. Farmers are still adopting traditional culture for lac production and six different types of host plants were used for lac cultivation. The average net return from lac was found to be Rs83050 per bigha and the benefit cost ratio was very high at 5.33 per rupee investment. Lack of scientific knowledge on production and processing of lac and lack of knowledge on the market price were the major problems for which the lac farmers received very low price for their product. From the investigation it can be concluded that due to its high profitabitlity and high demand of shellac, lac production can be easily promoted as a profitable venture in the hilly districts of Assam to replace the widespread of shifting cultivation and combat its ill effects with respect to land degradation and climate change.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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