

Socio-economic Profile of lac growers in Ranchi and Khunti District of Jharkhand

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Abstract

The study pertains to data collected from purposively selected 60 farmers in Ranchi and Khunti district of Jharkhand for the year 2007-08 and 2008-09. The study resulted that 93.3 per cent farmers have family members up to 9 and lived as joint family. More than 50% farmers of the study area were marginal and small farmers. The total income of lac growers shows that around 6.7 per cent farmers have total income less than Rs. 12000, 68.3 per cent have total income Rs. 12001 to 20,000, 18.3 per cent have total income Rs. 20,001 to 30,000 and only 6.7 per cent farmers have total annual income more than Rs. 30,000. With respect to lac around 30.0% farmers have annual income from lac was up to Rs. 5,000 and 3.3 per cent farmers have annual income from lac was more than Rs. 20,000. The improved lac cultivation implements were not available with farmers. Palas and ber trees were available with 100% of the farmers, while kusum host trees were available with 66.67 per cent of farmers for lac cultivation. The utilization of host trees for lac cultivation in the study area were 4.34 per cent for palas, 41.36 per cent for ber and 22.41% for kusum. The utilization of palas host was very less due to rangeeni lac insect mortality in the area. Improved techniques i.e. pruning of lac hosts, selection of good quality broodlac, broodlac bundling and tagging on plant, spray of insecticide and fungicide have been adopted by the farmers in lac cultivation operations. There is greater scope for increasing lac production by utilizing more hosts and adoption of improved techniques in lac cultivation. Implications of the present study will be helpful in strengthening the socio-economic condition of lac growers in the study area in particular and in the state in general.

Key words: lac cultivation, *kusum*, *Palas*, *ber* trees

Introduction

Lac is a natural, renewable, bio-degradable, versatile and non-toxic resin produced by the colonies of a tiny insect known as *Kerria lacca* (Kerr). These insects thrive on the tender twigs of specific host trees viz., palas (*Butea monosperma*), ber (*Zizyphus mauritiana*), kusum (*Schleichera oleosa*), *Ficus spp.* etc. It serves as an important source of income to more than one million tribal families in India as well as foreign exchange earner for the country. The export earnings of lac and its value added products during 2009-10 was Rs. 11002 Lakh (Pal *et al.*, 2010). Cultivated by poor, marginal and tribals in the sub-hilly tracts of Jharkhand, Chhattisgarh, Madhya Pradesh, West Bengal, Maharashtra, Assam and Orissa, lac is grown in and outside of forest areas contributing 20-30% of the grower's annual income. As a renewable source of resin, dye and wax lac has a bright future. World demand of this natural resin of insect origin is increasing due to enhanced awareness on use of safe, natural products for human contact and consumption.

The total geographical area of Jharkhand was 7.97 m ha. out of which about 2.7 m ha lands are

suitable for agriculture. These agricultural lands are distributed in upland, medium land and lowland. Out of the total agricultural land, only about 2.15 m ha are under rain-fed agriculture and 0.3 m ha under irrigated agriculture (Singh, 2003). Due to small size of land holdings and poor fertility of uplands, most of the tribal cultivators do not produce marketable surplus of agricultural crops for earning cash (Lal *et al.*, 1976). The tribal population mainly depends on agriculture and forest for their livelihood and lac was an important source of cash income for these families. Lac cultivation also generates employment opportunities, particularly in the off-agricultural season. Jharkhand is the largest producer of lac in the country contributing around 42 per cent of national production and it was 6925 tons during 2009-10 (Pal *et al.*, 2010).

Works on agri-commodity based socio-economic study have been reported by a number of workers (Seema and Manoharan, 2002; Singh, 2003). Pal *et al.*, 2009 and Lal *et al.*, 1976 have studied the socio-economic condition of lac growers in Jharkhand. However, less information on this aspect was available.

Keeping in view the above facts, it was felt necessary to find out the existing level of socio-economic condition, income level, lac production status, improved techniques adoption level and utilization percentage of lac host trees.

Research Methodolog

Ranchi and Khunti district of Jharkhand have been selected purposively for the study as these are two leading lac producing districts in the state. Considering the lac host *viz. kusum, palas* and *ber* trees availability and lac host holding of lac growers one village in Ranchi district and four villages in Khunti district were selected purposively for the present study. The total sample size of village and lac growers was 5 and 60 respectively. The relevant informations were collected from selected lac growers through a pre- tested questionnaire / schedule by survey method for the year 2007-08 and 2008-09.

Findings and Discussion

General Profile

Access of facilities- Accesses to household needs were available in only four villages and the shops were very small and provides very limited items In case of flourmill, this facility was available in three villages only. Basic health facilities *viz.* PHC and private clinic were not available in any of the surveyed villages. The public distribution system (PDS) was available for 4 villages. Access to both agro centre and veterinary clinic facilities were not available for all 5 villages. No cottage and small industries were found in the all 5 surveyed villages. Access to facility of Post Office was available for 3 villages within 2 km of area. The access to facility of PCO was available for 1 village. Primary cooperative society, veterinary services and financial facility were not available in any of the surveyed villages. The facilities which were not available in the villages, people have to travel nearby town or city.

Educational institutions- Out of five villages surveyed, four villages have primary education facilities. The other educational Institutes *i.e.* Secondary schools, Sr. Secondary schools, ITI, College were not available in the surveyed villages. Students travel 2 to 12 km for education above primary level as these institutions available in nearby area or town.

Transportation facilities - All the villages were not well connected by tar roads to approaching town and district head quarters for marketing of their produce. Marketing depends upon the crop which the farmers were cultivating. In case of lac, the harvesting and transportation was done by the farmers themselves. Generally stick lac was marketed in small quantity (2 to 10 Kg) in nearby "*haats*". Farmer used bicycle or by walking approaches the *haat*. Broodlac

was marketed in bulk quantity. The major means of transportation for broodlac was truck or tempo, while bullock cart were seldom used. In the case of marketing of cereals and vegetables, most of the farmers marketed their produce through middle man or wholesaler. Some of the farmers marketed their produce by using tractors, tempos or truck as a means of transport. In case of cereals and pulses, farmers market their produce either to the nearest local market or *mandi* located in the nearest town or district which ever was nearest from the village.

Family size and type of family- Family size of the surveyed respondents varied from 2 to 14 members. The Table 1 shows the categorization of number of farmers into different family sizes. The farmers falling in group < 4, 5-9 and > 10 members were 40.0 per cent, 53.3 per cent and 6.7 per cent respectively. In case of type of family 58.3 per cent families lived as joint and 41.7 per cent families as separate family.

Table 1: Family size and type of family

Family size	No. of farmers	Type of family	No. of farmers
< 4	24 (40.0)	Joint	35 (58.3)
5-9	32 (53.3)	Separate	25 (41.7)
> 10	4 (6.7)		

Figures in parentheses are the percentage of farmers
Agriculture and economic profile

Leasing system - Leasing system of land was prevailing in the study area and the rent was half of the total crop produce. This practice was followed in both the cases *i.e.* agricultural land and lac host plants.

Cropping pattern - There was wide variation in the cropping pattern depending on the climate, soil type and water availability. In the surveyed villages, during *kharif*, crops like paddy, maize, *madua*, brinjal, clusterbean, okra, gourds *etc.*, were grown and that during *rabi* wheat, cauliflower, cabbage, chillies, tomato, potato *etc.*, were being cultivated. Lac was used as cash crop and two crop of each strain *i.e. rangeeni (baisakhi and katki) and kusmi (jethwi and aghani)* are taken in a year.

Milk production- Jharkhand was poor state in production of milk. There were 52 per cent deficits of milk in relation to demand in the state (Anonymous, 2011). In the villages surveyed, the production of milk was also poor and very few farmers have milch animals and the whole produce was consumed in household requirements.

Irrigation - About 9 percent of the area in Jharkhand was irrigated. The state receives rainfall 1200-1600mm/ annum at rainfall. Winter season precipitation was meager and highly variable. The state has an average 130 rainy days in a year and on 75

days rainfall was below 2.5 mm. In 55 rainy days evaporation level was more than 2.5 mm per day (Singh, 2003). In the villages surveyed there are no source of irrigation like canal and tube-well. There were open dug wells but hardly used for irrigation purpose. Sometimes these wells were used to give life saving irrigation to vegetable crops. Agriculture in these villages was mostly rain-fed.

Farm Equipments and Machinery- The mechanization level in the surveyed village was very poor. The irrigation equipments (diesel engines) were available only in two villages. Wooden plough was used to a maximum extent as compared to iron plough. Iron plough was mainly used in heavy textured soils and wooden plough in light/ shallow soils.

Land Holding - Land holding of selected growers shows that 18.3 per cent have marginal holding (< 1 ha.) with average size 0.68 ha, 41.67 have small holding (1-2 ha.) with average size 1.52 ha. and 40.0 per cent have large holding (> 2.0 ha) with average size 4.72 ha.(Table 2).

Table 2: Classification of farmers on the basis of land holding

Land holding	%tage of lac growers	Average holding size(ha)
Marginal (<1 ha.)	18.33	0.68
Small (1-2 ha.)	41.67	1.52
Large (>2 ha.)	40.00	4.72

Family household incomes- With respect to information on different income source (Table 3), there was wide variation in income considering only agriculture occupation of all the farmers. Agriculture was the main source of income for majority of the farmers. It ranged from less than Rs. 10.0 thousand to more than 30.0 thousands per annum. The income from animal husbandry and business was comparatively lesser in comparison to agricultural income. Around 6.7 per cent farmers have total income less than Rs. 12000, 68.3 per cent have total income Rs. 12001 to 20,000, 18.3 per cent have total income Rs. 20,001 to 30,000 and only 6.7 per cent farmers have

Table 3: Classification of farmers under different income class

Agril.(Rs.)	No. of farmers	Ani. Husb.(Rs.)	No. of farmers	Business(Rs.)	No. of farmers	Total(Rs.)	No. of farmers
< 10000	23 (38.3)	<1000	17 (28.3)	< 1000	0	<12,000	4 (6.7)
10000-20000	28 (46.7)	1000-2000	13 (21.7)	1000-2000	0	12001-20,000	41 (68.3)
20001-30000	8 (13.3)	2000-3000	22 (36.7)	2001-5000	0	20,001-30,000	11 (18.3)
> 30000	1 (1.7)	> 3000	8 (13.3)	> 5000	2 (3.3)	>30,000	4 (6.7)

Figures in parenthesis are the percentage of farmers.

Table 4: Classification of farmers on the basis of income from lac cultivation

Annual income from lac (Rs.)	No. of farmers	%tage of farmers
0	33	55.0
Up to 5000	18	30.0
5001-10000	4	6.7
10001-20000	3	5.0
> 20000	2	3.3

total annual income more than Rs. 30,000.

Income of selected farmers from lac crop only was given in Table 4. In the study area around 55.0 farmers have no income from lac because of complete lac crop failure in the previous years. Around 30.0 per cent farmers have annual income from lac was up to Rs. 5,000. Around 3.3 per cent farmers have annual income from lac was more than Rs. 20,000.

With respect to occupation, of the total 60 farmers surveyed, 17 were dependent only on agriculture while rest of the farmers have subsidiary source of income in addition to agriculture. Agriculture also include lac cultivation. 38 farmers' families were engaged in both agriculture and animal husbandry. Families of 2 farmers were involved in all the three occupations *i.e.*, agriculture + animal husbandry + business and three in agriculture + business (Table 5).

Table 5: Occupation of the farmers

Type of occupation	No. of farmers	%tage of farmers
Agriculture	17	28.3
Agriculture + Animal Husbandry	38	63.4
Agriculture+Animal Husbandry+Business	2	3.3
Agriculture + Business	3	5.0
Agriculture + Service	-	0.0
Total	60	100.0

Agriculture also includes lac cultivation

Lac Profile

Tools in lac cultivation- Majority of lac growers (more than 60 per cent) in the study area used secateur,

dauli, pruning knife, axe for lac cultivation operations (pruning and harvesting). *Gatur* sprayers were used by the farmers for spraying of insecticide and fungicide and used on group basis (generally group of 5 families used one sprayer). The lac cultivation related implements like tree pruner, *phunki* hook, scraping machine etc., were not in practice in the study area (Table 6).

Table 6: Lac cultivation tools availability with farmers

Implements	%tage of lac growers	Average number
Tree pruner	0.00	0.00
Secateur	80.00	1.31
<i>Dauli</i> / pruning knife	91.66	2.03
Axe	66.67	1.11

Lac host holding- Regarding availability of lac host trees with farmers, *palas* (*Butea monosperma*) and *ber* (*Zizyphus mauritiana*) trees were available with 100 per cent of the farmers, while *kusum* (*Schleichera oleosa*) host trees were available with 66.67 per cent of farmers. Regarding availability of *palas* trees for lac cultivation, 60.00 per cent lac growers have host holding less than 50 trees with average holding 16.5 trees. 26.67 per cent lac growers have host holding in the group 50-100 with average holding 66.25 trees (Table 7). Around 13.33 per cent lac growers have host holding more than 100 with average size holding 222.20 trees.

Regarding availability of *ber* trees for lac cultivation, 63.33 per cent lac growers have host holding less than 25 with average holding 12 trees. 26.67 per cent lac growers have host holding in the group 25-50 with average holding 32.67 trees. 10.00 per cent lac growers have host holding more than 50 with average size holding 102.30 trees. Regarding availability of *kusum* trees for lac cultivation 33.33 per cent lac growers have no *kusum* trees for lac

cultivation. 40.00 per cent lac growers have host holding up to 5 with average holding 2.92 trees. 26.67 per cent lac growers have host holding in the group >5 with average holding 13.75 trees.

Utilization of lac host trees- The utilization of host trees for lac cultivation in the study area were 4.34 per cent for *palas*, 41.36 per cent for *ber* and 22.41 per cent for *kusum*. The utilization of host for *rangeeni* lac cultivation in the area was very less. The utilization of *palas* host was very less due to continuous *rangeeni* lac insect mortality in the area. Majority of *ber* and all *kusum* trees were used for *kusmi* lac cultivation. There was greater scope for increasing lac production by utilizing more hosts for lac cultivation. The reasons for low utilization of hosts were shortage of fund for purchase of broodlac, uncertainty in production, height of hosts, scattered host plant, high cost of broodlac and difficulty in management of large scale hosts.

Lac production status – Lac and per tree broodlac production have been presented in Table 8 and 9 respectively. The *rangeeni* lac production on *palas* tree in the study area was meager due to continuous *rangeeni* lac crop failure. Majority of production in the study area comes from *ber* and *kusum*. Lac production from *ber* constitutes 81.20 per cent of total production while *kusum* constitutes 18.10 per cent in total production. Farmers of the study area were more interested in production of broodlac as it was more profitable than sticklac production. Per tree production of broodlac from *palas*, *ber* and *kusum* was 3.0, 14.3 and 24.76 kg. respectively.

Adoption of technologies- As regards to adoption of improved techniques in lac cultivation, majority of lac growers had adopted improved lac cultivation techniques. More than 75 per cent farmers have adopted pruning of lac hosts, selection of good quality broodlac, broodlac bundling and tagging on plant, spray of insecticide and pesticide. About 50 per cent farmers have adopted coupe system and less than 10 per cent

Table 7: Lac host holding according to different size of host holding

<i>Palas</i> (<i>Butea monosperma</i>)			
Particulars	Host availability in number		
	<50	50-100	>100
Percentage of lac growers in different groups	60.00(16.50)	26.67(66.25)	13.33(222.20)
<i>Ber</i> (<i>Zizyphus mauritiana</i>)			
Particulars	Host availability in number		
	<25	25-50	>50
Percentage of lac growers in different groups	63.33(12.00)	26.67(32.67)	10.00(102.30)
<i>Kusum</i> (<i>Schleichera oleosa</i>)			
Particulars	Host availability in number		
	Nil	Up to 5	>5
Percentage of lac growers in different groups	33.33(00.00)	40.00(2.92)	26.67(13.75)

Figures in parentheses are average number of host holding

farmers have adopted broodlac treatment and use of synthetic net (Fig. 3). In the study area no farmers has planted lac hosts for the purpose of lac cultivation. Lac cultivation is done on naturally occurring host trees. Table 8: Production of broodlac

Name of host	Total production (in kg)	Share in total production
<i>Palas</i>	62	00.70
<i>Ber</i>	7224	81.20
<i>Kusum</i>	1610	18.10

Table 9: Per tree broodlac production

Name of host	Average production/tree (in kg)
<i>Palas</i>	3.00
<i>Ber</i>	14.30
<i>Kusum</i>	24.76

Cleaning, grading, processing and disposal- In case of lac crop, farmers try to sell the broodlac as such. In case when it was not sold on proper time, they scrap the lac from its stick and sell in the local market. Scrapped lac was cleaned and graded as per the impurities incorporated during harvesting and scrapping. Regarding processing no farmer was involved even in the processing that can be done at village level.

Suggestions

There is a greater scope for increasing lac production by utilizing more hosts and adoption of improved techniques in lac cultivation. Production of lac, income from lac and employment generation in lac cultivation can be increased in the area by adopting following measures:

1. Needs to increase exploitation of unexploited lac hosts.
2. More awareness, training programme on scientific

methods of lac cultivation and primary processing of lac to the lac growers.

3. Promotion of *kusmi* lac cultivation on *ber* as it is highly productive and better in quality.
4. Introduction of *Flemingia semialata* at locations where some irrigation facilities are available.
5. Adoption and promotion of lac cultivation as a plantation like horticulture.
6. There in need to motivate farmers to produce their own broodlac and form Self Help Group at village level
7. Need to promote lac production on mixed plantation basis (on barren land) for sustainable production of lac and to mitigate climate change.

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