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Impact of Lac Cultivation on Economic Strengthening of Tribal Women

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ABSTRACT: *The study aims to project the impact of lac cultivation on economic strengthening of tribal women of Jharkhand. Agriculture is the main occupation, but it provides employment only for 3-4 months and creates the problem of seasonal unemployment. Male members of the family migrate for daily wage labour work, and women and children forced for collection of forest produces for livelihood security. Lac cultivation provides great scope for socio-economic upliftment of women. There is tremendous natural resource in the form of lac host trees in this region. For economic strengthening of tribal women, lac cultivation was promoted in SHG mode. Critical inputs for establishment of plantation and lac cultivation, training on lac cultivation and value addition, technical guidance and advisory services were provided. A total of 35 women SHGs from 50* tolas *of 14 villages of the district were chosen for intervention and 10 SHGs were chosen randomly for impact assessment of the intervention. All the SHGs showed an increase in the annual income of their members with average increase above 35%. Minimum household income was raised by almost 7% and maximum up to 113%. As an impact it was also noticed that women in study area became more participatory and decisive.*

Key words: *Economic uplifment, Lac cultivation, SHG, tribal women.*

INTRODUCTION

Jharkhand is known for the rich forest area including lac hosts. About 40% of the people live below the poverty line [8] and as per the National Family Health Survey 2005-06, about 25% of the child population is observed to malnourished in Jharkhand. Though rich in forest resources there has been lack of natural resource management in the state which have the potential to develop the economy of the state and increase the employment status. The livelihoods among tribal communities in India is complex, dynamic and multidimensional phenomenon, the perception of which varies with geographic location, type of community, age, gender, education, fluctuations in resources, services and infrastructures and social, economic, cultural, ecological and political determinants [2]. Agriculture is the only source of income; attain food security, growth, employment and development for the tribal communities in Jharkhand as there is mono-cropping system. In this way they only mange to achieve food security for 3-4 months of the year for their family as there are small land holdings and during lean agricultural season they migrate out to other cities for daily wage employment for their needs, and women and children involve in collection and trading activities of the forest produces [1] which provide some financial help, but merely sufficient for fulfilling the needs of family.

In this situation lac cultivation may play a vital role for economic strengthening of the tribal women. Cultivation of lac is exploited for its products of commerce, *viz.* resin, dye and wax. It not only provides livelihood to millions of lac growers [4] and earns foreign exchange [12], but also provide great scope for socio-economic upliftment of women. Economic upliftment of women is one of the thrust areas in today's social scenario. This is a necessity for improving the social stature of women. Both intrinsic and extrinsic factors are responsible for it. This situation exists in the whole world including India. Similar condition exists in tribal dominated Khunti district of Jharkhand. The demand for lac and its products is increasing in the local, national and international markets, thus extrinsic factor does not seem to affect lac cultivation adversely. There is tremendous natural resource in the form of lac host

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tress available in the district [5]. Further, the time and skill required for lac cultivation is much less as compared to other agricultural occupations. This is very important as the tribal women in this district are not much educated and skilled. They are poor and generally look after the household. Keeping this in view, present programme was initiated to promote lac cultivation for an additional source of income and study was done to investigate the impact of lac cultivation on economic strengthening of tribal women at faster pace.

MATERIAL AND METHODS

General

The present development programme and research study was undertaken to promote lac cultivation as an additional source of income among the tribal women in Khunti district of Jharkhand. Critical inputs for establishment of lac host plantation and lac cultivation, training on lac cultivation and value addition, technical guidance and advisory services were provided to women in SHG mode in collaboration of Torpa Rural Development Society, Torpa, Khunti and and Bioved Lac Resource Centre for Training with funding support from District Innovative Fund by District Planning Office, Khunti, Jharkhand during 2012-13 and 2013-14. A total of 35 Women SHGs from 50 *tolas* of 14 villages of the district were chosen for intervention and ten SHGs were chosen randomly for impact assessment of the intervention. Survey for the generation of base line information was carried out on 5 members from each SHG chosen for this study. Production of lac by the surveyed SHGs, number of lac host trees utilized were noted through interview of the SHG coordinators. The data thus collected was used for analysis. R "Frisbee Sailing" was used for data analysis.

Scientific lac cultivation operations

Lac is a natural resin secreted by the tiny lac insects (mainly *Kerria lacca* Kerr) for protection of young ones and self. The insects are cultured on tender shoots of specific host trees/plants *viz.*, *palas* (*Butea monosperma*), *ber* (*Ziziphus mauritiana*), *kusum* (*Schleichera oleosa*), *Flemingia semialata*, *Ficus spp. etc.* It derives its nutrition by sucking the saps from the host plants. There are two strains (biotype) of the lac insect namely- *rangeeni* and *kusmi*. Each of these strains completes its life cycle twice in a year, thus producing two crops in a year (Table 1). Scientific lac cultivation operation includes six steps-pruning of the tree, inoculation of broodlac, removal of *phunki*, spray of pesticides and fungicides, harvest of the lac crop and scraping of the lac. To ensure availability of good, healthy and succulent (tender) shoots, pruning is done at proper time. Inoculation is done six months after pruning in *palas*, *ber* and *Flemingia semialata* and eighteen months after pruning in *kusum*. Inoculation is tying of broodlac bundles (lac stick with mature female insect) on host twigs for release of young lac larvae (crawlers), which is done normally in the month of January-February and June-July for *jethwi* and *aghani* crop of *kusmi* strain, respectively. For *baisakhi* and *katki* crop of *rangeeni* strain, it is done in the month of October-November and June-July, respectively. Normally one metre long broodlac is sufficient for 10-15 metre long inoculable shoots. Used-up broodlac sticks after complete emergence of lac larvae from female cells (*phunki)* is removed as soon as emergence of lac crawlers is over (normally swarming is completed within 3 weeks of inoculation) to prevent access of the insect predators and parasitoids of lac insect to new lac crop and to avoid wastage of lac after drying up of *phunki* and prevent its falling on ground. Spraying of recommended insecticides and fungicides at proper time (2-3 times) in lac culture is an important operation for controlling predators and parasites of lac insects. Spraying should be done only before male emergence period or when fertilization is completed. Harvesting of lac crop is done by cutting of mature (broodlac) or immature (*ari)* lac crop from the host along with host sticks. *Phunki* is scraped immediately after the removal to avoid the weight loss and eradicate the existing pests. Immature lac is also scraped with the help of scrapping knives. Scraped lac is marketed soon after the scraping to get better price. Further, processing results in variety of lac based products and by products. Resins are largely used in surface coating formulations and are very good source of several bio-active compounds of various uses.

Table 1
Various seasonal crops of lac on different host plants and duration

Strain	*Crop name / season*	*Period*	*Duration (months)*	*Popular host plant*
Rangeeni	*Katki* (Rainy season)	June-July to October - November	4	*Palas*
	Baisakhi (Summer)	October - November to June - July	8	*Ber, palas,*
Kusmi	*Jethwi* (Summer)	January-February to June-July)	6	*Kusum*
	Aghani (winter)	June-July to January-February	6	*Kusum, ber, Flemingia semialata*

RESULTS AND DISCUSSION

Socio-economic profile of the region

Major population in Jharkhand state is dominated by tribal population. Study area has 60-90% tribal population which is dominated by Munda tribe followed by Oraon and other SC and OBC communities. Scheduled Tribes (STs) in the region are indigenous, have their own distinctive culture, geographically isolated and are low in socio-economic conditions. For centuries, the tribal groups have remained outside the realm of the general development process due to their habitation in forests and hilly tracts. After independence, Government of India has scheduled the tribal groups in the Constitution and provided special provisions for their welfare and development as in the case of SCs. There are about 654 ST communities in India and 75 of the STs are most backward and are termed as Primitive Tribal Groups. Most of the tribal areas are hilly, inaccessible undulating plateau lands in the forest areas resulting in the bypassing of general developmental programmes. Due to this, infrastructure and development facilities in tribal areas for education, roads, healthcare, communication, drinking water, sanitation etc. lagged behind compared to other areas which has resulted in further widening the gaps of development between the tribals and the general population for a long time. Tribals constitute 8.61% of the total population of India, numbering 104.28 million (2011 Census) and cover about 15% of the country's area while in Jharkhand the population of scheduled tribe is 86,45,042. Of them, 78, 68,150 live in rural and 7, 76,892 in urban areas. In terms of proportion, scheduled tribe population constitutes 26.2% (rural 31.4% and urban 9.8%).The highest proportion of tribal population has been recorded in Khunti where 73.3% of the total population is scheduled tribe. In the state Jharkhand sex ratio (number of females per 1,000 males) has improved in the state with the count at 949 in 2011 as against 941 in 2001, while in the sample district (Khunti) it stood at 994 in 2011 compared to 2001 census figure of 992. Average literacy rate of Khunti in 2011 was 64.51% compared to 52.92% of 2001. Gender wise male and female literacy is 75.33% and 53.71%, respectively, while in 2001 it was 67.40% for male and 38.40% for female. Khunti is listed as red corridor /naxal affected IAP district which has adversely impacted the socio-economic development of the region, in particular it has been very distressing for the youth of the region.

The main economic activities of the people of the area are agriculture and collection of forest produces. Paddy and maize are the two main crops. The agro-climatic conditions are suitable for cultivation of fruits like mango, guava, jack fruit, papaya, *jamun* etc. But in the absence of assured irrigation facility, agriculture in the district is primarily rainfed and as a result, mono-cropping and subsistence farming is practiced in the area. Moreover, due to very small holding and very low productivity of the land most households have a diversified pattern of occupations; no single activity provides sufficient resources to entirely ensure their livelihood. Women's work is critical for the survival of tribal households both in terms of provisioning food and income as well as in the management of resources [1]. Distant migration among the men and youth are most prevalent but local wage-earning is practiced by the staying families in the area. Women and children are mainly involved in collection and trading of forest produces in the season. They are mainly involved in collection of *mahua*, *char*, *tendu* leaves, *ber*, *kusum* and *karanj seeds*, tamarind etc. In the study it is found that contribution of different sources in the family income is 43.72% from agriculture, 24.36% from collection and trading of forest produces, 9.68% from labour work, 7.13% from service and remaining from small scale enterprises, livestock and others (Figure 1). The contribution of income from collection and trading of forest produces has more potentiality, but due to lack of knowledge of correct market valuation of the produces, they receive not as much. It could be supported by better institutional and infrastructure support for natural resource management.

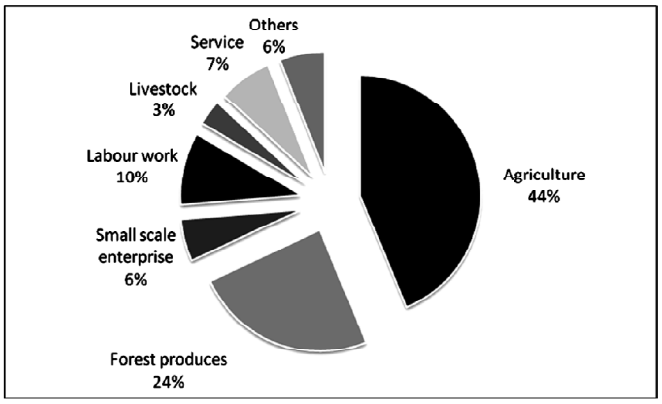

Figure 1: Contribution of different sources in total family income

Impact of lac cultivation

A total of 35 self help groups (SHGs) were covered in this study with the number of SHG members ranging from 10-13 (Table 2). The SHG members surveyed were tribal women and had 7271 number of lac host tress including *kusum* (377), *ber* (2658) and *palas* (4236) trees, respectively. The present study was able to tap about 7% of the available lac host plants (Table 3). All

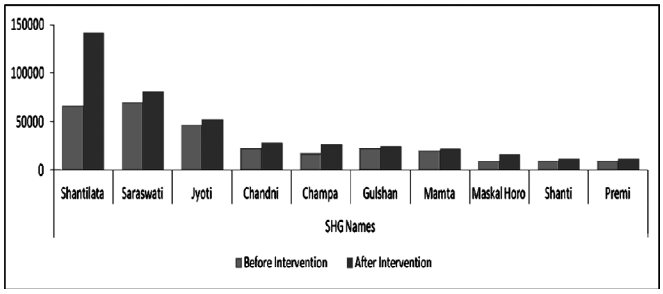

Figure 2: Crude income of the SHGs before and after the lac cultivation intervention

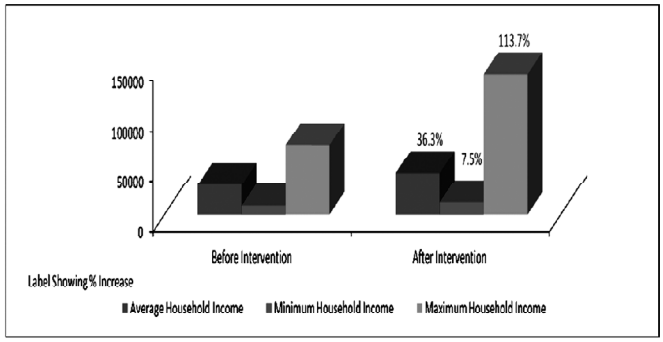

Figure 3: Average, minimum and maximum increase in family income (pooled over all SHGs)

the SHGs that were surveyed have registered increment in their household income due to increase in the income from lac cultivation (Figure 2). There has been more than 35% increase in the overall household income of surveyed beneficiaries. Minimum household income has risen by almost 7% and maximum by 113% (Figure 3). Income level before the technological intervention affects the income level of the benefitted households (Table 4). This may be due to the fact that the majority of the SHG members are dependent on agricultural income. Those who have higher land holdings have better income, more number of lac host trees and better available resources to tap lac cultivation for increasing their income. Therefore, *Shantilata* and *Saraswati* SHGs which have the highest number of available host trees among all the surveyed SHGs, registered the highest increase in household income. Both the number of available host trees and there utilization influenced the income of the SHG members. Availability and utilization of *kusum* trees enhanced the income of group on account of better production potential of lac on *kusum* trees in both pre monsoon and post monsoon season in comparison to that on other lac host trees. On an average, number of *palas* and *ber* host tree among different SHGs was more than *kusum* tree, except *Shantilata* group who had more *kusum* tree than *palas*. K*usum* tree was utilized for kusmi lac cultivation and it produced better lac production on account of higher productivity of kusmi strain of lac insect (in comparison to *rangeeni* strain) and huge canopy area of *kusum* tree. Quality of *kusmi* lac is also superior which fetches more market prices. *Palas* was utilized for rangeeni lac cultivation and *ber* for both *rangeeni* and *kusumi* lac cultivation. Proportionally, more number of *ber* trees was used for *rangeeni* lac cultivation (*ari* lac) than kusmi lac. *Rangeeni* lac crop on *palas* and *ber* could not be fruitful due to insect mortality during early stage of lac insect settlement in spite of adopting all recommended cultural operation, which needs attention of scientists to save the future of *rangeeni* crop. Although *kusmi* lac cultivation on *ber* was successful and this is now being promoted in the region on *ber*. This indicated clearly why income generation by *Shantilata* SHG was highest among the different groups.

Number of trainings received per SHG also has a positive influence on the income of the surveyed members. It has already been shown by Senthilkumar [10] that trainings increase the output. The number of members ranged from 10 to 18 with an average of 12 women per SHG. Number of SHG members did not have any significant impact on the income of the SHG as number of members in each SHG was kept small because larger groups have a management problem which retards their success [3, 7].

Female work participation rate was increased in different lac operations such as sorting and bundling of broodlac, scraping of lac and other management aspect of lac cultivation. Lac cultivation requires very lesser man force for lac cultivation and other mechanical inputs [4]; therefore it does not interfere with the family life of women. Moreover, it is helpful in efficient utilization of manpower, thus increasing the FWPR for economic growth of the country. The economic upliftment has been linked to increase in the social stature of women. Similar changes were observed among the beneficiary women under the study of Sanjeev [9]. Impact of lac cultivation was also noticed with regard to self respect of women and their decision taking power. Most of the SHG members were housewives and they realized more respect to their decisions in the household and at village level by the society. This has boosted the moral of these women and now they take part in all spheres of life including taking community decision with confidence. Apart from this, this programme become able to increase the number of lac host plantation in this region, particularly plantation of *Flemingia semialata*, a fast growing bushy and potential lac host which can be very well integrated in different cropping systems and utilization of

Table 2
Details of the SHGs covered under the study

Block	*Panchayat*	*Revenue Village*	*No of Tolas*	*Selected Tolas*	*Tola Population*	*No of SHG*	*Name of the SHG*	*No of Members*
Torpa	Kamda	Kamda	8	Podotoli	343	1	*Saraswati*	15
	Tapkara	Tapkara	3	Beharatoli	350	1	*Ujala*	13
	Husir	Gopla	3	Kusumtoli	168	2	*Rajni*	11
							Kusum	11
				Pakartoli	346	1	*Suraj*	18
	Sundari	Bisunpur	2	Bishunpur	335	2	*Nari Jagriti*	14
							Nari Utthan	15
	Tapkara	Kocha	2	Barkatoli	195	2	*Jyoti*	10
							Chandni	11
	Garai	Digri	9	Podotoli	184	1	*Shantilata*	13
Rania	Banai	Koinara	3	Koinara	515	4	*Mamta*	12
							Gulshan	15
							Shanti	11
							Premi	12
	Tamba	Rania	4	Semartoli	120	1	*Champabaha*	13
				Koitoli	109	1	*Maskal Hora*	12
	Jaypur	Jaypur	3	Banda Jaypur	485	5	*Sital*	10
							Amritsir	13
							Prem	11
							Khusbu	13
							Daizy	12
	Banai	Jarakel	2	Jarakel	402	4	*Gulab*	16
							Chandni	10
							Jagriti	10
							Belli	13
	Sode	Bhaghia	3	Baghia	328	5	*Jiwan Jyoti*	10
							Karuna	11
							Nav Jyoti	10
							Uthan	10
							Deepak	10
	Sode	Titikel	3	Tutikel	538	5	*Jultan*	12
							Rashika	12
							Bashundhara	10
							Suryamukhi	11
							Kanayli	17
					4418	35	Total Number of members	427

Table 3
Details of the surveyed SHGs

		Number of available trees			*Number of trees in use (after project intervention)*		
Name of the SHG	*Number of members*	*Kusum*	*Ber*	*Palash*	*Kusum*	*Ber*	*Palash*
Saraswati	15	5	1800	3500	0	102	82
Jyoti	10	20	100	300	0	14	0
Shantilata	13	303	406	251	39	45	27
Mamta	12	4	38	10	0	12	0
Gulshan	15	5	62	33	0	13	0
Shanti	11	3	40	20	0	11	0
Premi	12	4	43	12	0	9	0
Champa	13	20	41	14	0	32	0
Maskal Hora	12	3	33	26	0	21	0
Chandni	10	10	95	70	2	25	0
Total	**123**	**377**	**2658**	**4236**	**41**	**284**	**109**

Table 4
Estimates for linear regression model for income after intervention with various variables of the surveyed SHGs

Variable	*Intercept*	*Parameter*	*r*	*t*	*p*
Number of members	-37599	6429.63	0.279	-0.387	0.709
Number of Available Trees	32638.5	12.17	0.488	2.479	0.038*
Number of Available *Kusum* Trees	27248.3	377.64	0.867	3.68	0.006**
Number of Available *Ber* Trees	31399.6	37.95	0.513	1.691	0.129
Number of Available *Palash* Trees	35142.4	14.973	0.399	1.232	0.253
Number of Trees Utilized	18764.2	523.53	-0.745	3.162	0.013*
Number of *Kusum* TreesUtilized	29838.2	2840.8	0.857	3.994	0.004**
Number of *Ber* Trees Utilized	17105	858.46	0.595	1.069	0.316
Number of *Palash Trees* Utilized	31342	930.56	0.603	2.138	0.065
Number of Trained Person per SHG	29906.3	3508.73	0.644	2.594	0.032*
Annual Income Before Intervention	-5413.8	0.271	0.901	5.872	0

* significant at the level of 0.05**; significant at the level of 0.01.

available lac host trees, thus promoting aforestation. Using SHG model for the economic upliftment has proved highly beneficial as also indicated in other studies [3, 11, 7]. This programme was undertaken like a micro financing system which has been shown to increase the individual household income of women. Similar observation has been made by elsewhere [11, 6] in different studies.

CONCLUSION

From the above study it may be concluded that lac cultivation requires much less man power than other agricultural crops, generates more earnings which helps in economic strengthening of women and social upliftment through lac cultivation for women was also evident. In lac growing areas of the country, the scientific lac cultivation may play a key role in economic strengthening of rural women. Hence, adoption of this should be promoted among women in SHG model in rural areas to maintain and enhance the flow of economic benefits towards women which may also help for social equality of women.

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