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Impact of lac production on livelihood of farmers

¹Roshana Hukare, ²MK Rathod, ³Suchita A Adate and ³Pooja D Limbhore

¹PG Student, College of Agriculture, Nagpur, Maharashtra, India

²Professor & Head, Extension Education Section, College of Agriculture, Nagpur, Maharashtra, India

³Ph.D. Student, MPKV, Rahuri, Maharashtra, India

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Corresponding Author: Roshana Hukare

Abstract

This study has been undertaken to study the impact of lac production on livelihood of farmers in the Gondia district for the year 2019-20. The Gondia district was selected purposively due to maximum area coverage under lac cultivation. Total 120 lac growers from 12 villages were randomly selected. The study shows that in case of human capital, the major hike of 45.76 per cent impact was observed. In case of physical capital, 21.95 per cent impact was observed. As regard to natural capital, 26.65 per cent impact was observed. It is found that 29.80 per cent impact was observed in case of social capital. In financial capital 27.35 per cent impact was observed. 43.07 per cent impact was observed in food security. All the livelihood indicators of respondents were significantly increased during the period of lac production. The overall impact of lac production on the livelihood of farmers was 35.43 per cent which was found highly significant.

Keywords: Impact, lac cultivation, livelihood, lac growers, tribal farmers

Introduction

Lac is a natural, renewable, bio-degradable, versatile and non-toxic resin produced by the colonies of a tiny insect known as *Laccifer lacca*. These insects thrive on the tender twigs of specific host trees viz., palas (*Butea monosperma*), ber (*Zizyphus mauritiana*), kusum (*Schleichera oleosa*), *Ficus spp.* etc. Lac 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. It is a high remunerative crop, paying high economic returns to the farmers and also foreign exchange to the country through its export. Lac is mainly produced in India, Thailand, Indonesia, parts of China, Myanmar, Philippines, Vietnam, Cambodia etc. India is the largest producer of lac in the world. India contributes about 60% followed by Thailand in world lac trade. Jharkhand, Chhattisgarh, West Bengal, Maharashtra, Orissa and Andhra Pradesh are the lac producing states in the country. Lac cultivation is the traditional practice in the district. Since ancient period Gondia district is known for lac cultivation. Periodically the production declines and people from the district have stopped lac cultivation. The decline is due to lack of technical knowledge, marketing facilities etc. The tribals have also chopped down the trees which affected the lac cultivation. Forest department in collaboration with tribal development department has initiated the Lac production programme in forest area. Mainly the tribals are the focus for upliftment and also as source of livelihood for the tribals.

Lac production itself, in the older times required a minimum investment in form of cultivation implements as the growth is on the host trees. Only labor was the economic factors to be taken care of. Recent research has actually shown that lac

culture has number of beneficial effects on the conservation of biodiversity, which is an aspect of great concern as the loss of biodiversity has put a question mark to the ultimate survival of human race on this planet. Hence, it is necessary to know about the lac production, their benefits and proper methods of production to the farmers for the security of their life. Livelihood is defined as the ways and means of living to meet the basic minimum necessities of the individual farmers as well as the family.

Given huge prospects of lac-industry in Gondia district, this study has been undertaken to study impact of lac production on livelihood of farmers.

Methodology

The present study was based on the exploratory research design and carried out in Goregaon and Sadak Arjuni tahsils of Gondia district. This area is selected purposively because lac production especially in the forest side villages is predominant in this region and also because of ample availability of quality natural resources as a host plant. From each selected tahsils namely Goregaon and Sadak Arjuni, 6 villages were selected randomly according to number of trees holding and from each selected tahsils 10 growers who were producing lac on minimum 10 host trees were selected by random sampling method and thus total 120 lac producers were selected for the study. In this way 120 respondents were selected randomly from 2 tahsils of Gondia districts. Data were collected from the respondents by the personal interview method. Arithmetic mean, standard deviation, correlation coefficient, Z-test statistical techniques were used in the present study for analysis of data.

Results and Discussion

Present study was impact on livelihood of lac producers, the

data regarding dimensions are presented as follows.

Table 1: Impact of lac production on human capital of the family of respondents

Sl. No.	Human capital	Average percentage	
		Before lac production	After lac production
1	Health		
1.1	Food intake as per the requirement	50.87	70.83
1.2	Nutritious food consumption	42.50	61.11
1.3	Consulting doctors in tq/dt. Hqs for minor ailments	25.83	36.39
1.4	Consulting doctors in tq/dt. Hqs for major ailments	36.67	49.17
2	Education		
2.1	Ability to educate members as desired by the family	45.83	63.89
2.2	Encouraging the women members for education/continuation of education	30.83	37.78
2.3	Ability to send children to send to tq./Dist. Hqs for studies	37.50	53.89
2.4	Functional literacy of the members	45.83	73.60
3	Employment generation		
3.1	Man days of employment		
A	Head of the family(days)	170	200
B	Women members(days)	90	140
C	Other members(days)	67	107

It is evident from Table 1 that when employment and income was generated due to lac production so that the respondents were financially able to provide necessary health facilities to their families through the food intake as per requirement (50.87 to 70.83%), nutritious food consumption (42.50 to 61.11%) and consulting doctors at taluka and district headquarters even for minor ailment (25.83 to 36.69%) and major ailment (36.67 to 49.17%). Increase in employment means increase in the annual income of family which increases the ability of lac producer to educate members desired by family from 45.83 to 63.89 per cent, encouraging women members for education increased from 30.83 to 37.78 per cent, increase in annual income of family enable the lac producers to send their children to the school at tehsil or district headquarters for

studies, the percentage of respondents is this regard was increased from 37.50 to 53.89 per cent, the functional literacy of the family members of respondents (45.83 to 73.60%) was also found improved due to respondents used scientific method for lac production instead of traditional method after attaining training.

Due to the lac production employment generation of family head per annum was increased from 170 to 200 days, employment of women was increased from 90 to 140 days and other member had 67 to 107 days per annum it is due to scraping of lac is mostly done by women members and other members of family. Therefore, it is concluded that human capital of lac producers was quite improved from all the angles as an impact of lac production (Dhakad 2014, Dolli 2006, Hardeep 2007, Sharma 2004) [3, 4, 12].

Table 2: Impact of lac production on physical capital of the family of respondents

Sl. No.	Physical capital	Average percentage	
		Before lac production	After lac production
1	Farm energy		
1.1	No. of bullocks	14.58	09.44
1.2	other farm machineries (Power tiller, thresher)	09.58	17.50
2	Dwelling place		
2.1	Renovation of the house	29.17	36.10
2.2	Construction of the house	13.33	18.06
3	Entertainment material		
3.1	TV	43.75	62.50
3.2	Others(mobile)	50.83	68.06

The findings from Table 2 showed that in physical capital the farm energy was increased. The respondents having farm animal before lac production were 14.58 per cent which were decreased to 09.44 per cent it is due to the use of other farm machineries like power tiller, thresher etc. were increased from 9.58 per cent to 17.50 per cent so that mechanization increases number of bullock decreases. Regarding dwelling place, it is observed that 36.10 per cent of respondents had renovated their house as an impact of lac production which was 29.17 per cent before the adoption of lac production. Similarly, the activity of construction of house was also increased from 13.33 per cent to 18.06 per cent due to increase in financial status of lac producers. In the entertainment, television and mobile was the major

source of respondents, which were increased from 43.75 to 62.50 per cent and 50.83 to 68.06 per cent respondents, respectively. It could be inferred from farm energy that mechanization was increased due to increase in income of lac producers as a result number of bullock was decreased. The increases in renovation of house as well as construction house by few respondents have also done. Majority of respondents have also acquired the entertainment facilities in the form of TV and mobile. The probable reason for overall improvement in physical capital might be due to the increase in level of income of lac producers. Financial enhancement also increases the capability to go for expenditure of allied matter (Madiwalar 2012) [8].

Table 3: Impact of lac production on natural capital of the family of respondents

Sl. No.	Natural capital	Average percentage	
		Before lac production	After lac production
1	Land improvement activity		
1.1	Levelling	25.00	34.17
1.2	Manuring (FYM, vermicomposting)	36.67	44.44
1.4	Bunding	37.50	46.39
2	Water source creation		
2.1	Reconstruction of local water storage (bodies)	37.08	54.44
2.2	Digging of the new open/bore well	20.42	28.06
2.3	Creation of water storage structure	29.17	40.56
2.4	Establishing pipe line system	19.17	25.00
2.5	Establishing high tech irrigation system	05.00	06.67
3	Plantation (Hort/forest)		
3.1	Maintenance of existing plants	54.17	76.39
3.2	Plantation of new plants	41.67	56.94
4	Livestock		
4.1	Cows/Bufaloes	40.42	60.28
4.2	Goats/sheep	22.08	28.61
4.3	Poultry	28.33	40.00

Regarding natural capital data from the Table 3 revealed that land improvement activity such as levelling of land done by respondents was increased from 25.00 per cent to 34.17 per cent of the respondents, while 36.67 per cent increased from 44.44 per cent was observed in using FYM/vermicomposting produced on their own agricultural farm. Respondents improved their water sources by reconstruction of local storage (37.08 to 54.44%) due to increase in paddy cultivation, digging of the new open/bore well (20.42 to 28.06%), creation of water storage structure (29.17 to 40.56%), establishment of pipeline system (19.17 to 25.00%) and establishment of high tech irrigation system (5.00 to 6.67%) before and after lac production, respectively. In plantation, maintenance of existing plants

for lac production is increases from 54.17 per cent to 76.39 per cent and planation of new plants 56.94 per cent increases from 41.67 per cent. It could be due to at least one training attended by lac producers and got knowledge of scientific method of lac production.

It was obvious that inclusion of livestock increases from 40.42 per cent to 60.28 per cent who had purchase cow/bufaloes, slight increase in the respondents of having goat and poultry (22.08 to 28.61% and 28.33 to 40%) was also recorded, respectively. It is concluded from the above findings that lac production shows significant improvement in the natural capital of the farmers (Geetha 2007, Madiwalar 2012, Singh 2015) [5, 8, 13].

Table 4: Impact of lac production on social capital of the family of respondents

Sl. No.	Social capital	Average percentage	
		Before lac production	After lac production
1	Organizational participation		
1.1	Membership in SHG	29.17	39.73
1.2	Group participation	23.33	33.61
1.3	Others	29.17	38.33
2	Social status		
2.1	Financial contribution in community work	14.58	21.67
2.2	Involvement in community work	18.75	27.78
3	Extent of trust		
3.1	In self	25.00	37.23
3.2	In peer group	10.42	16.94
3.3	In society	18.33	30.00
3.4	In local leader	12.92	14.73

The results from Table 4 revealed that in organizational participation of the farmers, majority of respondents i.e. 39.73 per cent increased from 29.17 per cent membership in SHG. Increase in SHG due to the scheme of NABARD that provide subsidy regarding lac technology only to SHG followed by respondents who had group participation which increased from 23.33 per cent to 33.61 per cent followed by respondents increased from 29.17 per cent to 38.33 per cent membership in others means in cooperative societies, etc. It could be the effect of increase in knowledge of respondents. In the social status, financial contribution of respondents in community works was increased from 14.58 per cent to 21.67 per cent as rise in financial status of respondents. Due

to the lac production involvement of respondents in community work was also found increased from 18.75 per cent to 27.78 per cent as increase in their knowledge regarding lac production and due to increase in ability to educate their children's. Regarding extent of trust, lac production had enabled the respondents to supports the livelihood of family, hence their trust on themselves increased, extent of trust in self, peer group, in society and in local leaders was increased from 25 to 37.23 per cent, 10.42 per cent to 16.94 per cent, 18.33 to 30 per cent and 12.92 to 14.73 per cent before and after lac production, respectively.

There was an improvement in the social asset status of the

respondents; lac production itself was the key intervention for the development of social status through participation in self-help group, cooperative society etc. due to participation in these institutions the interaction of respondents among the member was improved. Such participation not only

improved the social interaction, but also improved their financial contribution in community works as well as involvement in community works. This had enabled them to trust in self, they had earned trust in peer group, in society and in local leaders also (Kale 2012)^[7].

Table 5: Impact of lac production on financial capital of the family of respondents

Sl. No.	Financial capital	Average percentage	
		Before lac production	After lac production
1	Savings		
1.1	In banks	08.33	14.44
1.2	In SHGs	06.25	13.89
2	Debts		
2.1	In banks/co-op society	30.00	46.67
2.2	Others (friends, neighbour)	01.67	03.06

The data regarding financial capital from Table 5 indicated that saving of majority farmers in bank was increased from 8.33 to 14.44 per cent of the respondents due to increase in financial status of lac producers and increase of saving in SHG was recorded from 6.25 to 13.89 per cent it could be due to the subsidy provided by NABARD for lac producers. As usual majority of respondents have taken debt from bank or co-operative society which was slightly increased from 30 per cent to 46.67 per cent. Debts taken from others i.e.

from relatives, friends are increased from 1.67 to 3.06. The small or marginal farmers might have taken loan for their crops.

Financial assets acquisition was found increased among the lac producers. This was plausibly realized by the members of SHG about the saving habit, easy access to loan, and loan at low rate of interest and bank contacts etc. which are related to financial asset (Reddy 2001, Singh 2015)^[11, 14].

Table 6: Impact of lac production on food security of the family of respondents

Sl. No.	Food Security	Average percentage	
		Before lac production	After lac production
1	Grain availability		
1.1	During production season	46.67	63.33
1.2	During the slack season	45.83	56.94
2	Feed enrichment		
2.1	During the production season	52.08	66.67
2.2	During the slack season	50.00	60.83
3	Vegetables/milk and other items		
3.1	During the production season	64.17	74.44
3.2	During the slack season	54.17	64.17

It can be observed from Table 6 that grain availability was found among 46.67 per cent respondents before lac production which was increase over period of lac production to 63.33 per cent. During slack season it was increased from 45.83 to 56.94 per cent respondents. Regarding feed enrichment for the animals, increase of respondents from 52.08 to 66.67 per cent. But during slack season all have made arrangement of feed which was increased from 50.00 to 60.83 per cent respondents as an effect of lac production.

Feed availability may due to financial security.

It regards with availability of vegetables/milk and other items, during production season increased from 64.17 to 74.44 per cent and during slack period it was increased from 54.17 to 64.17 per cent. Here in this study lac is the direct produce, but generation of income through lac production could increase the purchasing power of respondents (Chapke 2013)^[1].

Table 7: Distribution of respondents according to level of livelihood provided through lac production

Sl. No.	Overall livelihood of lac producer	Respondents(n=120)	
		Frequency	Percentage
1	Low (Up to 33.33)	3	2.5
2	Medium (33.34 to 66.66)	112	93.33
3	High (Above 66.66)	5	4.17
	Total	120	100
	Mean = 52.45		

The data regarding the extent of overall livelihood of lac producers in Table 7 indicated that majority i.e. 93.33 per cent lac producer were in medium level, while remaining 4.17 per cent and 2.5 per cent respondents were in high and

low level of livelihood. It indicated that lac production can provide support for livelihood of farmers (Dhanasree 2012, Rathod 2007)^[2, 9].

Table 8: Impact of lac production on livelihood of lac producers

Sl. No.	Livelihood indicators	Index mean		% change	Z value
		Before the project	After the project		
1	Human capital	33.91	62.66	45.76	26.26**
2	Physical capital	30.42	38.98	21.95	11.19**
3	Natural capital	32.86	44.80	26.65	14.79**
4	Social capital	28.58	40.71	29.80	15.83**
5	Financial capital	21.01	28.92	27.35	12.27**
6	Food security	35.83	63.29	43.07	22.15**
	Overall livelihood impact	30.33	48.72	35.43	20.86**

** Significant at 0.01 level of probability

The data with regards to the impact of lac production of livelihood of farmers is furnished in Table 8 revealed that all the livelihood indicators of respondents were significantly increased during the period of lac production. The major hike of 45.76 per cent was observed in case of human capital, followed by food security with the hike of 43.07 per cent, whereas 29.80 per cent increase was recorded in social capital. These three indicators have major impact of lac production. Further, increase was noted regarding financial capital (27.35%), natural capital (26.65%) and physical capital (21.95%) all the indicators have shown significant increase at 0.01 level of probability. The overall impact of lac production on the livelihood of farmers was 35.43 per cent which was found highly significant (Dolli 2006)^[4].

Conclusion

It was clearly indicating that all the capitals of livelihood were increases before to after the lac production. It was clearly indicated that human capital before lac production was an average 33.91 and after project was an average 62.66 and the per cent change was increased by 45.76. In the physical capital before lac production was an average 30.42 and after 38.98 and the per cent change was increased by 21.95.

In natural capital before lac production was an average 32.36 and after project was an average 44.80 and the per cent change was increased by 26.65. In the social capital before lac production was an average 28.58 and after the project was an average 40.71 and the per cent change was increased by 29.80. In the financial capital before lac production was an average 21.01 and after the project was an average 28.92 and the per cent change was increased by 27.35. In the food security before lac production was an average 35.83 and after the project was an average 63.29 and per cent change was increased by 43.07.

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