

Utilization pattern of lac host trees under different socio-economic environments: A case study in Jharkhand

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ABSTRACT : A study was carried out with a view to examine the utilization pattern of lac host trees across different categories of households and its relationship with various socio-economic characteristics of lac farmers in the Jharkhand. The study was based on primary data for the agriculture year 2012-13 and collected from 100 farmers from Ranchi, Khunti, Jamtara and Saraikela Kharsawan districts. The data were analyzed categories wise, based on land holding size by using tabular analysis and percentage. Average number of lac host trees per households across various categories varied from 43 to 82, while the number of lac host trees utilized ranged from 33 to 55 among categories of households. It was observed that 51 per cent households owned *Palas* (*Butea monosperma*) trees, 78 per cent *Ber* (*Zizyphus mauritiana*) and only 33 per cent owned *Kusum* tree (*Schleichera oleosa*) and involved in lac cultivation. Based on the land holding size; about 44 per cent lac farmers belonged to the marginal category (<2.5 acre), 43 per cent from small and semi medium category (2.5-<10 acre) and rest 13 per cent belonged to medium and large category. The proportion of the trees utilized by the farmers of small category (95 %) was highest, followed by medium and large category (84.6%), marginal farmers (79.6%) and semi medium category (62.2%). Thus, low land holding households are more inclined towards Lac cultivation (Jaiswal *et al.*, 2006). The average family size of the households was found to be 6.34 and only 16 per cent of them were illiterate. Illiteracy was highest in case of the semi-medium category (30.4%), followed by medium and large category (23.07%) of households and also showed less number of trees utilized by them for lac cultivation. About 90 per cent of the marginal and small category households were literate. Thus, proportion of host plant utilized for lac cultivation influenced by various socio-economic factors but, magnitude of the number of host plants utilized by lac farmers was not influenced much by the different socio-economic factors.

Key Words: Lac host tree, literacy, land holding size, lac cultivation.

India is the largest lac producing country in the world and Jharkhand state alone contributing more than 50 per cent of total lac produced in the nation. Lac cultivation in parts of Jharkhand, West Bengal, Madhya Pradesh, Chhattisgarh, Maharashtra, Andhra Pradesh and other states in India is the source of livelihood for majority of tribal farmers. In the remote villages, most of the Lac host trees are either on wasteland or bunds of fields, which hardly interfere with other agricultural operations. The most common host trees for lac cultivation are *Butea monosperma* (Palas), *Zizyphus mauritiana* (Ber), and *Schleichera oleosa* (Kusum), besides

several trees of regional importance (Roonwal *et al.*, 1958; Roonwal and Singh, 1958; Varshney and Teotia, 1967; Sharma *et al.*, 1997, Pal *et al.*, 2012). In addition of this, *Flemingia semialata* is popularizing for lac cultivation and rural youths are interested for lac cultivation on this bushy plant as it supports the both *kusmi* and *rangeeni* lac cultivation like *Ber* plant.

Materials and Methods

The study was based on primary data for the agriculture year 2012-13 and collected from 100 farmers from Ranchi, Khunti, Jamtara and Saraikela

Kharsawan districts. Information on socio-economic background, utilization pattern of lac host plants across various categories of households were collected from the respondents on pre tested interview schedules. The households have been classified based on land holding sizes as marginal (<2.5 acre), small (2.5-<5 acre), semi medium (5-<10 acre) and medium and large (10-<25 acre) categories. In the state of Jharkhand the average land holding size is lower than national averages and very few respondents belonged to large category. Hence, medium and large group clubbed together. The data were analyzed category wise, based on land holding size by using tabular analysis and percentages.

Results and Discussion

Average number of lac host trees per households varied from 43 to 82, while the number of utilized lac host trees ranged from 33 to 55 among various categories of households. Socio-economic background of the sampled households is presented in Table-1. The highest number of households belonged to the marginal (44%) category, followed by semi medium (23%), small (20%), medium and

large (13%) categories of households. Average family size across the all household categories varied from about 6 to 7 members. Thus, majority of households endowed with the limited resources and have to manage the livelihood for a big family. Literacy rate was observed highest in case of marginal and small (90%) category of households, followed by medium and large (70-75 %) categories of households. Overall, the averages family size was observed 6.34 and 84 per cent lac growers were found literate. Out of them, about 70 per cent reached up to 10th standard, 13 per cent crossed this standard and only one per cent could afford for college level education. Family size was lowest at marginal category and it decreases as the land holding increases from 2.5 to 25 acre. This may be happened due to the fact that the as holding size decreases from the marginal level of 2.5 acre, the structure of family changes to nuclear family and as the land holding size increases from 2.5 acre to 25 acre, the average family size declined from 7.1 to 6.23. Educational level in terms of the schooling years was higher in case of small and semi-medium categories of households.

Table-1: Education level and average family size across various categories of households.

Category of households	Number of households	Average family size	Illiterate	Literate [@]			
				1-5	6-10	11-12	>12
Marginal(<2.5)	44	5.8	9.08 (4)	29.55 (13)	54.55 (24)	6.82 (3)	0.00 (0)
Small (2.5-<5)	20	7.1	10.00 (2)	10.00 (2)	60.00 (12)	20.00 (4)	0.00 (0)
Semi-Medium(5-<10)	23	6.78	30.43 (7)	13.04 (3)	30.44 (7)	26.09 (6)	0.00 (0)
Medium+Large (10-25)	13	6.23	23.08 (3)	23.08 (3)	46.15 (6)	0.00 (0)	7.69 (1)
Overall	100	6.34	16.00 (16)	21.00 (21)	49.00 (49)	13.00 (13)	1.00 (1)

@ Education in number of schooling years, Figure in parenthesis indicates the number of households

Availability of host trees for lac cultivation across various categories of households is presented in Table-2. The results showed that out of 100 sample households, irrespective of farmers categories have trees of *Butea monosperma*, followed by *Zizyphus mauritiana* and *Scleichera oleosa*. Overall, proportions of utilization of available host plants for lac cultivation was found highest for *Scleichera oleosa* (80 %) followed by *Butea monosperma* (61%) and *Zizyphus mauritiana* (59%) while utilization pattern of host trees across various categories of households was observed about 50 per cent in case of small and semi medium categories of households and it was observed more than 75 per cent at both extremes sides of land holding size categories (marginal and medium plus large category). Marginal farmers were found using more proportion of the lac host trees. Hence, the marginal farmers engaged in lac cultivation may be supported thorough various government schemes as they utilize more proportion of host trees than the other categories of households. The inference also supports the previous studies (Jaiswal *et al.*, 2006).

Utilization pattern of lac host trees *palas*, *ber* and *kusum* across various categories of households is presented in the Table-3. Out of 100 number of households about 90 per cent were found owing the *palas* host tress with them but only 51 per cent were engaged in lac cultivation on *palas*. Out of these 51 per cent households about 53 per cent were found to utilize the full potential of available host trees and 27 per cent utilizing more than 50 per cent host plants. Similarly, 98 per cent households were found owing the *ber* host tress with them and 78 per cent were using *ber* for lac cultivation. Out of these 78 per cent households about 50 per cent were found to utilize the full potential of available host trees and 32 per cent utilizing more than 50 per cent host plants.

About 58 per cent households were found owing the *kusum* host tress with them and 29 per cent were engaged in lac cultivation on *kusum*. Out of these 29 per cent households about 59 per cent were found to utilize the full potential of available host trees and 31 per cent households utilizing 50 to 74

Table-2: Availability of host trees for lac cultivation across various categories of households.

Category of households	Available tree				Tree in use			
	<i>Kusum</i>	<i>Ber</i>	<i>Palas</i>	Total	<i>Kusum</i>	<i>Ber</i>	<i>Palas</i>	Total
Marginal(<2.5)	1	12	30	43	1 (100)	7 (58)	25 (83)	33 (77)
Small (2.5-<5)	2	21	38	62	1 (50)	12 (57)	21 (55)	34 (55)
Semi-Medium(5-<10)	3	25	53	82	2 (67)	13 (52)	23 (43)	38 (46)
Medium +Large (10-25)	23	15	20	58	22 (96)	8 (53)	15 (75)	45 (78)
Overall	5	17	36	58	4 (80)	10 (59)	22 (61)	36 (62)

Figure in parenthesis indicates percentage of host plants used for lac cultivation

Table-3: Utilization pattern of lac host trees across various categories of households.

Lac host	Category of households (land holding size in acres)	Number of households	Household with host trees	Household involved in lac cultivation	Utilization Pattern (in %)				
					100	75-99	50-74	1-49	
Palas	Marginal (<2.5)	44	86.36 (38)	43.18 (19)	78.95 (15)	5.26 (1)	10.53 (2)	5.26 (1)	
	Small (2.5-<5)	20	85.00 (17)	50.00 (10)	30.00 (3)	10.00 (1)	40.00 (4)	20.00 (2)	
	Semi-Medium (5-<10)	23	95.65 (22)	47.83 (11)	18.18 (2)	9.09 (1)	27.27 (3)	45.45 (5)	
	Medium +Large (10-25)	13	100.00 (13)	84.62 (11)	63.64 (7)	18.18 (2)	0.00 (0)	18.18 (2)	
	Total	100	90.00 (90)	51.00 (51)	52.94 (27)	9.80 (5)	17.65 (9)	19.61 (10)	
	Ber	Marginal (<2.5)	44	97.73 (43)	77.27 (34)	55.88 (19)	11.76 (4)	17.65 (6)	14.71 (5)
		Small (2.5-<5)	20	95.00 (19)	95.00 (19)	26.32 (5)	5.26 (1)	31.58 (6)	36.84 (7)
Semi-Medium (5-<10)		23	100.00 (23)	65.22 (15)	46.67 (7)	0.00 (0)	46.67 (7)	6.67 (1)	
Medium +Large (10-25)		13	100.00 (13)	76.92 (10)	80.00 (8)	10.00 (1)	0.00 (0)	10.00 (1)	
Total		100	98.00 (98)	78.00 (78)	50.00 (39)	7.69 (6)	24.36 (19)	17.95 (14)	
Kusum		Marginal (<2.5)	44	43.18 (19)	20.45 (9)	66.67 (6)	0.00 (0)	33.33 (3)	0.00 (0)
		Small (2.5-<5)	20	55.00 (11)	25.00 (5)	20.00 (1)	0.00 (0)	40.00 (2)	40.00 (2)
	Semi-Medium (5-<10)	23	78.26 (18)	30.43 (7)	57.14 (4)	0.00 (0)	28.57 (2)	14.29 (1)	
	Medium +Large (10-25)	13	76.92 (10)	61.54 (8)	75.00 (6)	0.00 (0)	25.00 (2)	0.00 (0)	
	Total	100	58.00 (58)	29.00 (29)	58.62 (17)	0.00 (0)	31.03 (9)	10.34 (3)	

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Overall	Marginal	44	100.00	79.55	45.71	14.29	17.14	22.86
	(<2.5)		(44)	(35)	(16)	(5)	(6)	(8)
	Small	20	100.00	95.00	10.53	10.53	26.32	52.63
	(2.5-<5)		(20)	(19)	(2)	(2)	(5)	(10)
	Semi-Medium	23	100.00	65.22	13.33	20.00	20.00	46.67
	(5-<10)		(23)	(15)	(2)	(3)	(3)	(7)
	Medium +Large	13	100.00	84.62	63.64	9.09	0.00	27.27
	(10-25)		(13)	(11)	(7)	(1)	(0)	(3)
	Total	100	100.00	80.00	33.75	13.75	17.50	35.00
			(100)	(80)	(27)	(11)	(14)	(28)

Figure in parenthesis indicates the number of households

per cent host plants for lac cultivation. Overall, about 80 per cent sample households were engaged in lac cultivation either on *kusum*, *ber* or *palas* during the year. Out of these 80 per cent households about 34 per cent were found to utilize the full potential of available host trees and 40 per cent households utilizing more than 50 per cent host plants with them. About 28 per cent households were showed very poor utilization (< 50 %) of available host trees. It was observed that in each category per cent of households utilizing *ber* trees for lac cultivation is relatively higher than that of corresponding figure in case of *palas* and *kusum*. As quality and quantity of lac produced on *ber* is better and higher than *palas* and thus it fetch the higher price. Hence, this may be possible reason to utilize more proportion of the available *ber* trees in comparison to other host trees.

Policy implications

Marginal farmers engaged in lac cultivation may be supported thorough various government schemes as they utilize the available host trees better than the other category of households. Farmers with host plants who are not involved in lac cultivation need to be targeted for motivation training programs and farmers who are using less than 50 per cent of the available host plants may be provided technical guidance to utilize more proportion of host plants for lac cultivation.

Majority of households endowed with the limited resources and have to manage the livelihood for a big sized family. However, family size was found inversely related to the land holding size, but as holding size decreases from the marginal level of 2.5 acre, the structure of joint family changes to nuclear family and family size is relatively smaller than other categories of households. Proportion of host plant utilized for lac cultivation influenced by various socio-economic factors but, magnitude of the number of host plants utilized by lac farmers is not influenced much by the different socio-economic factors. Educational level in terms of the schooling years was higher in case of small and semi-medium categories of households and the overall utilization of the host trees was lower in case of these categories. Both these categories need to be provided technical guidance to utilize more proportion of host plants for lac cultivation. Utilizing full potential of available host plants for lac cultivation with recommended technologies will enhance the income level and by thus standard of living of the farmers.

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