

## **Conditions of and Distressing Factors of Lac Agriculture in Purulia District of West Bengal**

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### **Abstract**

Lac cultivation is eminently suited to the farmers in the Purulia District for their livelihood as lac is regarded as an important source of cash flow to the marginal, small and medium farmers. This type of classification made on the basis of land size holding. Using three stage stratified sampling 50 sample farms consisting of 21 marginal farms, 18 small farms and 11 medium farms, are chosen from three prominent lac cultivating blocks Baghmundi, Jhalda-1, Balarampur. The present chapter is endeavour to through light on cost, return, net return (profit) of different group of farmers. There are two strains of lac production; one is *Kusumi* which is obtained from Kusum host tree. Other is *Rangeeni*, which is produced from hosts other than Kusum like Ber, Palas etc. The cost of production, return and net return from each crop has been determined for marginal, small and medium size of farms. The comparative study shown us total cost of production was higher on medium size group compared to marginal and small size groups of the farms for each crop. Return as well as net return also higher for medium size group of farms. 't' test was performed at 5 percent level of significance the result was found to be significant, meaning thereby the average net income per grower from *Rangeeni* crop was actually higher than that of *Kusumi* crop which was higher in each group. It was found during the survey that lac cultivators are lying in distressed condition. A lot of distressing factors is there, few are being discussed such as insufficient and partial govt. supply of brood lac, insufficient and partial govt. supply of instruments, monopsonistic nature of the market, old method of lac cultivation etc.

### **I. Introduction**

The forest and sub-forest dwellers of the Purulia district having only limited areas for cultivation, meager irrigated land and limited scope of irrigation systems mainly depend on rainfed agriculture and forest for their livelihood. But forest of the district is blessed with the plenty of lac host trees such as *Kusum*, *Palas*, *Ber* and *Babul*. Lac cultivation is simple with no involvement of high technology and very low investment. It is eminently suited to the farmers living in the vicinity of the forests including women as it

demands only their part time attention. In the district its cultivation provides an important additional income next only to the agriculture. Farmers are also dependent on lac cultivation for their livelihood and Lac is regarded as an important source of cash flow to the marginal, small and large farmers in the district. In fact the district produces highest quality of *Rangeeni* lac, whose trade name is Manbhum Baisakhi. The present study deals with the condition of lac production and is concerned with the collection of the primary data from the selected farmers for the year 2016-17. Over the year a comparative analysis of cost, return in lac cultivation with other activities is attempted in this segment.

The study adopts the multi-stage stratified purposive sampling method to select lac growers in Purulia district. In stage I the major lac producing blocks are chosen while in stage II major lac producing villages from previously selected blocks are chosen. In stage III specific number of sample growers has been selected with an aim to make study over 50 lac growers.

## **II. Selection of the Areas:**

We found from the survey that the major lac producing areas in Purulia district are: Ayodhya Pahar, Baghmundi, Jhalda-1, Arsha-I, Balrampur, Barabazar, Purulia-I, Manbazar-I & II, Kashipur, Bandwan and Hura. Baghmundi, Jhalda and Kalimati markets in Purulia district are the lac markets with annual arrival of over 500 tons during 2016-17. Again the surrounding areas of the markets are covered with forests having natural lac host trees which provide essential food plant for lac and are largely inhabited by scheduled castes and scheduled tribe population whose one major subsidiary occupation is lac cultivation. Baghmundi, Balarampur and Jhalda-1 blocks of Purulia District, West Bengal were therefore purposively selected for the present study. In the hills north of Jhalda and in lesser degree in Baghmundi hills large number of Palas trees exist. Lac cultivation is an ideal avenue of sizeable subsidiary employment. On the other hand Ber trees are chiefly found in these areas and lac is cultivated on the host trees in orchards and homestead lands. Kusum is plentiful in most parts of the Jargo panchayet samity in Jhalda-I Block.

## **III. Selection of the Villages:**

In Jhalda-I block we selected 13 villages surrounding Jhalda town namely Het-jargo, Karamadi, Udaysiru, Telidih, Putidih, Jargo, Pardih, Bandhadih, Kula-janga, Darpa, Chandai, Sarenghutu, Birudih. Five villages viz. Kurupahar, Saldih, Chirubera, Kuchrirakha and Vitpani under Baghmundi block were selected. The only village of Balarampur block, Jasudih was taken for conducting our study. In all villages lac is cultured mainly on traditional host trees: Palas, Ber and Kusum. Besides several trees of regional importance also have little bit contribution in lac production in those villages.

#### IV. Selection of the Cultivators:

For the selection of ultimate units (the farms), the households had been classified on the basis of land holding sizes such as marginal (<2.5 acres land), small (2.5-5 acres land), medium (> 5 acres). Since only a few farms belonged to large category (10-25 acres) we did not include this category in our analysis. In the final stage, a sample of 50 farms was selected for this study on the basis of stratified random sampling. The selected sample farms according to their respective size groups are given in Table-1.

**Table-1: Size Group-wise Distribution of Selected Sample Farms**

Size Group	No. of Available Farms	No. of Selected Sample farms	From Jhalda-1 Block	From Baghmundi Block	From Balarampur Block
Marginal Farms (<2.5 acres)	456	21	15	5	1
Small Farms (2.5-5 acres)	294	18	12	4	2
Medium Farm (> 5 acres)	118	11	8	2	1
Total	868	50	35	11	4

Source: From the Researcher's Survey

#### V. Method of Enquiry:

Survey method was followed for the detailed enquiry of individual farmers to arrive at the exact problems and prospects of lac cultivation in this area. The survey method or personal interview with head of the farms on the basis of specially designed schedule was used to collect primary data. The primary data were collected for the commercial 'Rangeeni' crop and 'Kusumi' crop for the year 2016-17. These are the stages when survey was made: a) At the time of pruning, b) During and after brood lac inoculation and c) Prior to harvesting. The database of this discussion will include both published sources and primary data collected in course of sample survey.

#### VI. Cultivation Procedure of Lac

a) **Lac Insect:** Indian lac insect, *Kerria lacca* (Kerr) is the most commonly used insect in our country. Two strains of this lac insect namely- Rangeeni and Kusumi complete two life cycles each in a year, producing two crops annually.

b) **Pruning:** Removing (cutting) of unsuitable shoots of host plant to facilitate growth of new shoots.

c) **Inoculation:** Putting the bundles of broodlac (lac sticks with mature gravid female insects) on host twigs for allowing young lac larve crawlers to come out of their mother cells and settle on host plants.

d) **Removal of Phunki:** Used up broodlac after complete emergence of lac larve from female cells is called *phunki*.

e) **Spray of Pesticides:** Insecticides Endosulfan 35 EC (e.g. Thiodan) for control of *Eublemma amabilis* and *Pseudohypatopa pulvereana*; Dichlorvos 76 EC (e.g. Nuvan) for control of *Chrysopa spp.* Fungicide Carbendazim 50% W P (e.g. Bengard/Bavistin) for control of fungi.

f) **Harvesting:** Cutting of mature or immature (*ari*) lac crop from the tree. Harvest ari lac of Baisakhi crop in April or May and prune the trees simultaneously. Harvested lac should be sold at the earliest or dried for storage.

## VII. Cost of Production, Gross Income and Net Income from Lac Activities

In this analysis we have taken into consideration costs of various items entering in the cost structure. The expenditure incurred on broodlac and human labour constituted the major share of cost of cultivation. The human labour is required at the time of pruning of the trees, at the time of inoculation followed by the time of harvesting. For constant watching of the mature crop also human labour is needed. While adoption of coupe system\*, pruning of host, and selection of good quality broodlac, broodlac bundling and tagging on plant, Phunki removal and spraying of insecticide more labour is required by the lac growers. Other elements that go into the cost of production are the nylon nets, pesticide and implements. Cost of cultivation and returns in lac cultivation obtained from survey data, are presented in Table-2. This table also provides information on net profit, profit per tree, net profit per acre output-input ratio etc.

**Table-2: Economics of Lac Cultivation and Returns (per 10 Host Trees)**

Particulars	Palas		Ber		Kusum	
	Quantity	Value (Rs.)	Quantity	Value (Rs.)	Quantity	Value (Rs.)
<b>Cost</b>						
Labour	106 MD	16,000	100MD	15,000	151MD	22,650
Broodlac	30 Kg	3,600	50 Kg.	6,000	100 Kg.	22,000
Other input		1,200		1,000		2,400
Depreciation on fixed		1,040		1,720		1,870
Interest on Total		960		774		1326
<b>Total Cost</b>		<b>22,800</b>		<b>24,494</b>		<b>50,246</b>
<b>Return</b>						
Broodlac	350 Kg	42,000			300 Kg	72,000
<i>Phunki</i>	6 Kg	900	10 Kg	1,500	20 Kg	3,800
<i>Ari-sticklac</i>	40 Kg	5,200	350 Kg	52,500	80 Kg	14,400
<b>Gross Return</b>		<b>48,100</b>		<b>54,000</b>		<b>90,200</b>

\* Coupe System: Under this system the area to be used for cultivation is divided into four equiproductive coupes (A,B,C and D), which will be worked in rotation, the various operations in different stages of lac cultivation .

Net Profit		25,300		29,506		39,954
Profit per tree		2,530		2,950.6		3,995.4
<b>Output Input Ratio</b>		<b>2.11</b>		<b>2.20</b>		<b>1.78</b>
Number of Trees per Acre.		310		200		110
Number of Operated Tree per Acre.		155		200		45
Net Profit per Acre		Rs3,92,150.00		Rs. 5,92,120.00		Rs. 179,793
Cost of Production of Broodlac		Rs. 62.58/Kg		-		Rs. 176.10/Kg
Cost of Production of Sticklac		Rs. 122.58/Kg		Rs. 127.30/Kg		Rs. 253.20/Kg

MD- Man Days valued @ Rs. 150 per day; Rangeeni broodlac cost @ Rs. 120 per Kg; Kusumi broodlac cost @ Rs. 220 per Kg; Rangeeni Phunki rate Rs. 150 per Kg.; Kusumi Phunki rate Rs. 250 per Kg.; Rangeeni (Palas) Ari-sticklac rate Rs. 130 per Kg.; Rangeeni (Ber) Ari-sticklac rate Rs.150 per Kg.; Kusumi Ari-sticklac rate Rs. 240 per Kg.

In estimating cost of production and income generation we consider input and output during two complete cycles such as Baisakhi & Katki for Palas and Ber trees while Jethwi and Aghani for Kusum tree. The main component of cost, requirement of broodlac per tree, is 3kg, 5kg and 10kg for Palas, Ber and Kusum respectively. For every 20 host trees (Rangeeni) for sticklac cultivation, 8 to 9 trees will be utilized for broodlac production, average production of broodlac per host tree being 40 kg. Estimated production of sticklac is 40 Kg. @ 4kg. /tree for Palas tree, for Ber tree it is 350 kg. (yield @ 35kg. /tree). In the case of Kusum tree it is 8 kg. per tree. Estimated income from selling broodlac @ Rs120/Kg and sticklac @ Rs. 130(Rs. 150 for Ber trees) is shown in Table 2 as Rs. 48,100 for Palas tree (Rs. 54,000 for Ber Tree). As price of Kusumi broodlac and sticklac both are higher compared to Rangeeni crops the estimated income from Kusumi trees is also much higher compared to Rangeeni host trees. If production of broodlac is considered, estimated production of broodlac in Rangeeni crop is 35 kg per tree, while in case of Kusum trees it was 30kg per tree. Output to input ratio is significantly higher in lac cultivation on Palas and Ber trees (i.e. 2.11 and 2.20 respectively), whereas this ratio is 1.78 for lac cultivation on Kusum tree. Ultimately net profit earned per tree is Rs.2,530 for Palas tree, Rs.2,950.60 for Ber tree and for Kusum tree it is Rs 3,995 (with captive use of broodlac produced by trees under the study). The pooled results showed that percentages of operated trees per acre are 50% for Palas, 100% for Ber and 32% for Kusum tree. Low percentage of utilization of Kusum tree is due to its large size and higher input in the form of broodlac which the farmers are generally unable to procure because of high price at the time of scarcity.

**(a) Per Kg. Cost of Production of Lac:**

**Table-3: Per Kg. Cost of Production of Rangeeni and Kusumi Crop**

Farm Size Group	Cost of Production Per Kg. of Rangeeni (in Rs.)	Cost of Production Per Kg. of Kusumi (in Rs.)
Marginal	130.6	211.8
Small	131.8	211.6
Medium	130.4	211.2
All Farm Average	131.4	211.6

Source: Compilation of primary data gathered through survey

It was found that the cost of production per kilogram was almost the same in each size group for both the crops. Overall picture revealed that, the average cost of production of Kusumi crop was higher as compared to Rangeeni crop which were Rs.211.6 and Rs. 131.4 respectively. This was mainly due to the higher brood cost of Kusumi crop as compared to Rangeeni crop.

**(b) Total and Per tree Cost of Production of Lac:**

Rangeeni Crop: It was found that the total cost of production was higher on the medium size group as compared to other size groups because this size group possessed larger number of trees. It was found that per tree cost of production was higher on medium size group as compared to the marginal and small size group of the farms. The possible reason might be that the utilisation of labour was more on medium size group as compared to other size group of the farms.

**Table 4: Total and Per tree Cost of Production of Rangeeni and Kusumi Crop**

Crop		Farm Size group			Total/ Average
		Marginal	Small	Medium	
Rangeeni	Number of Trees	525	526	752	1803
	Cost of Production (in Rs.)	11,68,145 (28.46%)	11,71,928 (28.56%)	17,62,927 (42.98%)	41,03,000
	Cost of Production Per Tree (in Rs.)	2,225	2,228	2345.60	Avg-2,276
Kusumi	Number of Trees	147	145	196	488
	Cost of Production (in Rs.)	6,66,327 (29.90%)	6,61,677 (29.69%)	9,00,658 (40.41%)	22,28,662
	Cost of Production Per Tree (in Rs.)	4,532.80	4,563.20	4,595.20	Avg-4,566

(Figures within the parentheses indicate percentage to total. Avg- Average)

Source: Compilation of primary data gathered through survey

**Kusumi Crop:** It is also evident from the table that the shares of marginal, small and medium size groups of the farms constituted about 29.90, 29.69 and 40.41 percent of the total cost of production. It was found that total cost of production was higher on medium size group compared to marginal and small size groups of farms. Average cost of production per tree incurred by all farm size groups depicted that, per

tree cost of production was higher on medium size group as compared to marginal and small size groups of farms. The possible reason might be that the labour utilization on medium size group of the farms was higher as compared to other size group of farms.

Overall picture revealed that the cost of production for Rangeeni and Kusumi crops incurred by medium size group was higher as compared to the other size groups. This may be because of the fact that the medium size group of the farms possessed larger number of trees as compared to marginal and small size group of the farms.

### (c) Total and Per Tree Gross Return of Lac

**Rangeeni Crop:** Per tree average gross return was directly related with the average yield per tree and the rate of sale per kilogram. It can be seen from Table 5 that the total gross return from Rangeeni crop earned by all size groups was Rs.86,54,400 and the share of marginal, small and medium size group of the farms were constituting about 29.12, 29.18 and 41.70 percent of the total gross return. It was observed that gross return earned by medium size group was higher as compared to marginal and small size group of the farms. This was because of the fact that larger numbers of trees were found on medium size group as compared to other size groups of farms. Gross return earned per tree by each size group was the same that is Rs.4800. This may be because of the fact production per tree was same in each size group and market price was also same in the study area.

**Table 5: Total and Per Tree Gross Return of Lac**

Farm Size Group	Rangeeni		Kusumi	
	Gross Income (in Rs.)	Gross Income Per Tree (in Rs.)	Gross Income (in Rs.)	Gross Income Per Tree (in Rs.)
Marginal	25,20,000 (29.12%)	4,800	12,34,800 (30.12%)	8,400
Small	25,24,800 (29.18%)	4,800	12,18,000 (29.71%)	8,400
Medium	36,05,600 (41.70%)	4,800	16,46,400 (40.17%)	8,400
Total/Average	86,50,400	Avg.-4,800	40,99,200	Avg.-8,400

(Figures within the parentheses indicate percentage to total and Avg.- means Average.)

Source: Compilation of primary data gathered through survey.

**Kusumi Crop:** It may be observed from table that the shares of marginal, small and medium size group of the farms were Rs.6,17,400.00, Rs.6,09,000.00 and Rs. 8,23,200.00 respectively which constituted about 30.12, 29.71 and 40.17 percent of the total gross return. It was found that gross return earned by medium size group was higher as compared to other size groups of farms because this size group possessed larger number of trees as compared to marginal and small size group of the farms. Gross return

per tree earned by marginal, small and medium size groups of the farms was the same that is Rs. 8,400. This may be because of the fact that production per tree was same in each size group of the farms and market price was also same.

Overall picture revealed that gross return per tree from Kusumi crop was nearly double that of Rangeeni crop. This was because of the fact that the market price of the product of the Kusumi crop was higher than that of Rangeeni crop. It was also found that the various size groups of farms had no effect on the gross income per tree for both the Rangeeni as well as Kusumi crops. It was observed that there was no effect of more investment in different size group of the farms Table 5 shows that gross income remained same in all the cases.

#### **(d) Total and Per Tree Net Return of Lac**

The net returns represent the difference between the value of total return and total cost incurred in the production process. In other words, it is the difference between receipt and total expenses. It measures the combined return of the cultivator's resources for his labour, capital and management. The net profit reflects upon the returns to the cultivators over cost incurred.

Rangeeni Crop: From Table 6, It is observed that net return was higher on the medium size group of the farms as compared to marginal and small size group of the farms. It was also found that the number of trees was higher on the medium size group of the farms as compared to small and marginal size group of farms. Average net return per tree earned by all farm size groups was Rs. 2,523.80. It was found that although total net return was higher on the medium size group of the farms but net return per tree was slightly higher on the marginal size group as compared to other size groups of farms because this size group incurred lower cost of production as compared to small and medium size group of farms and also because gross return per tree was same in each size group of farms.

**Table 6: Total and Per Tree Net Return of Lac**

Farm Size Group	Rangeeni		Kusumi	
	Net Income (in Rs.)	Net Income Per Tree (in Rs.)	Net Income (in Rs.)	Net Income Per Tree (in Rs.)
Marginal	13,51,844 (29.71%)	2,575.00	5,68,472 (30.39%)	3,867.20
Small	13,52,872 (29.73%)	2,572.00	5,56,322 (29.74%)	3836.80
Medium	18,45,672 (40.56%)	2,454.40	7,45,741 (39.87%)	3804.80
Total/Average	45,50,388	Avg.-2,523.80	18,70,535	Avg.-3833.06

(Figures within the parentheses indicate percentage to total and Avg.- means Average)

Source: Compilation of primary data gathered through survey.

**Kusumi Crop:** The table further revealed that the marginal, small and medium size groups of farms shared about 30.39, 29.74 and 39.87 percent of the total net return. It was found that net return was higher on the medium size group as compared to other size group of the farms. This was due to the fact that higher gross return was found on medium size group of the farms as compared to marginal and small group of the farms. It was due to the fact that number of trees was higher on the medium size group of the farms as compared to other size groups. It was observed that net return per tree was slightly higher on the marginal size group although total net return was more on medium size group as compared to the other size groups. This was mainly due to the fact that the cost of production incurred by marginal group of the farms was lower as compared to small and medium size groups of the farms.

Thus, overall picture revealed that per tree net return of two crops (Rangeeni and Kusumi) differed slightly whereas per tree gross return of two crops was same in case of all size groups. The reason for the marginal differences was due to cost of production which made slight variation in net return. Thus Table 6 revealed that the net return per tree from Rangeeni crop was lower than that from Kusumi crop. The result indicated that the marginal groups of the farmers were getting more remuneration from each crop as compared to that of small and medium size group of the farms. This may be because of the fact that resources were better utilised on the marginal size group as compared to other size groups. This finding confirms as expected because marginal farms own only limited land resources and they don't have other alternative for income generation and thus such category of farmers give more emphasis on lac cultivation. These farmers may be called regular lac growers.

**(e) 't' Value**

It was found from Table 7 that net return from Rangeeni crop was higher in all the farm size groups than that in the Kusumi crop. To find out whether the average net income per grower derived from Rangeeni crop ( $\bar{R}$ ) was higher than the average net income derived from Kusumi crop ( $\bar{K}$ ), 't' test was performed for two independent variables. At 5 percent level of significance the result was found to be significant, meaning thereby the average net income per grower from Rangeeni crop was actually higher than that of Kusumi crop which was higher in each group.

Thus the average net income from Rangeeni crop was two and half times more than average net income derived from Kusumi crop. It was found during the survey that the larger number of trees was put under production of Rangeeni crop by all size groups of the farms as compared to Kusumi crop.

**Table-7: Mean Net Income per grower in the Three Holding Sizes**

Farm Size Group	Crops Rangeeni	Crops Kusumi
	Mean Net Income (in Rs.)	Mean Net Income (in Rs.)

<b>Marginal</b>	64,373.52	27,070.10
<b>Small</b>	75,159.54	30,906.78
<b>Medium</b>	1,67,788.36	67,794.54

Source: Table 6, Table 1

(For example Mean net income from Rangeeni crop of marginal farm  $13,51,844/21= 64373.52$ ). Here we have to test null hypothesis  $H_0 : \bar{R} = \bar{K}$  Against, the alternative  $\bar{R} \neq \bar{K}$

**Table-8: Calculation of ‘t’ Value for Differences of Mean Net Income Derived from Rangeeni Crop and Kusumi Crop.**

<b>Marginal</b>	<b>Rangeeni</b>	<b>R*R=R<sup>2</sup></b>	<b>Kusumi(K)</b>	<b>K*K=K<sup>2</sup></b>
1	57022	3251508484	21604	466732816
2	65302	4264351204	29842	890544964
3	58912	3470623744	22442	503643364
4	64666	4181691556	28822	830707684
5	58224	3390034176	23808	566820864
6	64604	4173676816	28892	834747664
7	60892	3707835664	25044	627201936
8	65816	4331745856	29810	888636100
9	61804	3819734416	25624	656589376
10	69092	4773704464	29292	858021264
11	60666	3680363556	24422	596434084
12	69822	4875111684	26892	723179664
13	63608	4045977664	29504	870486016
<b>Marginal</b>	<b>Rangeeni</b>	<b>R*R=R<sup>2</sup></b>	<b>Kusumi(K)</b>	<b>K*K=K<sup>2</sup></b>
14	69022	4764036484	26804	718454416
15	63070	3977824900	29692	881614864
16	69804	4872598416	27666	765407556
17	63866	4078865956	29422	865654084
18	68606	4706783236	27822	774063684
19	63090	3980348100	29004	841232016
20	64682	4183761124	23060	531763600
21	69274	4798887076	29004	841232016
	1351844	87329464576	568472	15533168032
Mean of R ( $\bar{R}$ ) =	64373.52		Mean of K ( $\bar{K}$ ) =	27070.10

Variance of R ( $S_r^2$ ) = 15325132.76

Variance of R ( $S_k^2$ ) = 7228843

source: Compilation of primary data gathered through survey

As we know  $t_{cal} = (\bar{R} - \bar{K}) / \sqrt{(S_r^2 / 21 + S_k^2 / 21)}$

Here  $t_{cal} > t$  with  $(n_R + n_K - 2)$  degrees of freedom at 5% level of significance=1.96

Since calculated 't' is much greater than tabulated 't', it is highly significant at 5% level of significance. So there is a significant difference between the net profit earned from Rangeeni crop and from Kusumi crop for marginal group of farms. If we calculate 't' values for finding out differences of mean income derived from each crops for small farm and medium farm, the same result will be obtained. Over all we can conclude that the analysis of 't' value was found to be significant at 5% level of significance which indicated that the net income derived from Rangeeni crop was actually higher than that of Kusumi crop (t value=35.99539).

It has been seen that the production of medium farm size group is large. Again maintenance, overseeing and overhead charges are kept low by this farm size group. Most of all farms retained a portion of his previous crop for use as brood for the next crop. Since brood is not purchased and crops are successful it would be possible to make large profit even at the prevailing lower price of sticklac. As previous three years 2013-14, 2014-15 and 2015-16 had been very adverse; the purchase of brood is very much expensive in the year under study, and may even be unobtainable for the small and marginal farmers. The necessity of purchasing brood for the group of farmers at high rate swallowed any profits they might have made. The sale of broodlac on the other hand is remunerative and thereby medium farm size gets comparatively high return. Loss of weights by sticklac on storage as much as 30% or more goes against the interest of small and marginal cultivators. The group of cultivators either cannot afford, or is not prepared to risk, the amount of brood necessary to infect fully all the trees under their possession. Therefore optimum infection to obtain the maximum return is not of great importance to them.

### **VIII. Distressing Factors Faced by Lac Cultivators in Purulia District**

Lac in India as well as Purulia district is generally cultivated by the people of so-called poor communities who carry on their livelihood with much distress. There are many problems in lac cultivation and it becomes too much because of the poverty of the lac growers. Based on the survey analysis we categorized the problems into following fifteen heads:-

1. *Insufficient and partial Govt. supply of broodlac:* There is no sufficient and free govt. supply of quality broodlac and as the lac growers are poor, they cannot purchase quality broodlac from the market in time, specially for Kusumi broodlac which is highly costly compared to Rangeeni broodlac. Sometimes partiality is seen in the course of distribution. Broodlac obtained from harvest of one lac crop is the seed for lac cultivation in the successive crop. The practice commonly prevalent among lac cultivators is cutting lac immature either due to their adverse economic condition or inability to protect the lac to maturity from thieves. The severe summer heat also causes heavy

mortality in the lac crop. The over-all result naturally is that the supply of broodlac becomes irregular and the production of lac is unsteady.

2. *Insufficient and partial Govt. supply of instruments:* Poor lac growers sometimes cannot purchase instruments from the market. Sometimes Govt. supplies free instruments, but the supply is insufficient to meet the needs of farmers and partiality is seen at the time of distribution. On the other hand there is a problem of non-availability of improved cultivars to lac farmers who has ability to purchase it. Mostly traditional cultivars are being used.
3. *Damage of lac cultivation by fog and rain:* Adverse weather sometimes causes damage of lac cultivation and it occurs by extreme fog and rain. Even, there may be total destruction of lac cultivation in some specific areas.
4. *Damage of lac insects by parasites and predators:* Sometimes lac insects as well as lac pests are affected by parasites. Predators also can affect the lac insects. In such cases, lack of careful watch and careful timely measures may cause serious damage of lac insects and damage of lac insects means damage of lac cultivation. High insect mortality after settlement still exists. Apart from the theft of lac, there are insect enemies and non-insect ones such as squirrels, rats, birds and monkeys which cause loss of lac. Forests fire also often destroys lac crops raised in the forest area.
5. *Illiteracy and ignorance of lac growers:* Most of the lac growers are illiterate and it is needless to say that the illiteracy begets ignorance. Due to ignorance, they sometimes neglect to take care in proper time in the whole course of lac cultivation. They have also lack of knowledge on scientific method of cultivation. Actually the primary producers do not receive the full benefit of their labour due to ignorance.
6. *Storage problem:* Poor cultivators of lac somehow live in huts. So they do not have sufficient room to store the sticklac after harvest. And in the absence of resources to hold stock they have to sell their goods at cheap rates immediately after harvesting. Again the major problem faced during storage is the tendency to form lumps, forming hard blocks of lac.
7. *Monopsonistic nature of the market:* The farmers do not get due sale price of lac sticks because there is no regulated market. Generally a group of middlemen purchase sticklac from the growers who control the whole market and the growers are often deceived in rate as well as weight. There are no cooperative societies which can break the monopoly of middlemen. Again lack of effective Govt. or other machinery for procurement and lack of effective minimum support price for the growers makes the growers dependent highly on middlemen for marketing their produce.
8. *Fluctuation in price of lac:* Due to seasonal and unpredictable nature of the lac crop, this trade is strongly influenced by speculative operators and prices fluctuate violently, from season to season,

year to year, province to province and so on. The lac growers become puzzled specially when there is too much fall. They cannot determine their coming footsteps and are compelled to float themselves in the wave. Whatever the situation traders artificially keep the significant difference between market price and grower's price of sticklac. The exploitation by traders is also responsible for the decline of lac production. In the face of price fluctuation lac growers' co-operative society would be very beneficial to the cultivators but no steps have yet been taken for setting up such a society in our study area.

9. *Old method of lac cultivation:* Improved cultural practices for raising crops have not percolated to grass root levels in our remote study area. Traditional cultivation practices have not been sustainable due to high pest infestation and over exploitation of host plants. Therefore the old method does not give sustained supply of broodlac which is required twice in a year. The cultivator does not adopt any new scientific method which can enhance the intensity of lac cultivation. In this method production of lac is small quantity and there is absence of constant impetus for lac growers to produce more.
10. *No loan facilities from the Govt.:* There is no government provision to distribute subsidized agricultural loan to the needy cultivators. Growers have to depend on loan facilities from rural Mahajans for lac cultivation.
11. *No training programme arranged by the Govt.:* There is no provision of training programme for the lac cultivators arranged by the Govt. or any other non govt. organizations (NGOs) and so the cultivators are in darkness and do not get trace of new light about new processes of lac cultivation. As such they are deprived of scientific training facilities on lac cultivation.
12. *Miserable financial condition of the lac growers:* The lac cultivators are normally financially constrained and lack purchasing power for sufficient quantity of expensive and critical inputs like broodlac and improved implements for raising crops, fertilizers and pesticides. Growers are the marginal farmers who have small and fragmented holdings and cannot afford to adopt high cost technology. Dearth of cash to meet cultivation cost stands greatly in every steps of lac cultivation and marketing of sticklac also. These poor cultivators harvest immature lac and sell it in the market due to urgency in getting returns. This type of distress sale is a common feature among the lac growers. Financial constraints encompass lack of credit availability and crop insurance facility.
13. *Theft of lac crops:* Another very serious menace which is causing great anxiety is the problem of theft of the lac crops. The lac cultivator cannot afford to wait till the crop matures and the next life cycle of the lac insect starts, because he feels and knows by experience that he would be outwitted by the lac thief and thereby lose the whole crop.

14. *Climatic extremes*: In the year 2013-14 rainfall was delayed and draught condition prevailed, in our survey area. It happens that the cultivator is driven to the necessity of cutting the lac while still immature for selling for cash or for obtaining food and necessities to maintain their livelihood. The situations like these naturally lead to *ari* cutting of lac and thus another very serious type of problem crops up, causing frequent shortage of broodlac for the rainy season crops in wide areas of Baghmundi and Jhalda. The consequence is rising price level of broodlac and sticklac, which may produce in the coming year fatal result.
15. *Others*: Besides above problems lac growers face lack of dissemination of the correct knowledge with regard to systematic cultivation of lac, and lack of improved and easy methods of controlling insect pests by means of demonstration on farmer's field. Scarcity of the host plant at suitable places is one of the major constraints in lac cultivation.
16. A few problems are widespread over a large area whereas others are localized to specific areas only. But all the same, brood scarcity problem outweighs all the other problems combined. Climatic change and violent price fluctuation have come into next in the rating of the problem. Damage of lac crop by fog especially on Kusum and Ber also possesses important place in the rating.

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