



## Lac cultivation - A sustainable livelihood security for farmers in Eastern Vidarbha zone

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### ABSTRACT

The studies on lac cultivation was conducted was conducted in Goregaon taluka of Gondia district in the year 2011-12. Gondia is the major lac producer district in Eastern Vidarbha zone (EVZ). Lac crop is extensively grown in Gondia district on palas (*Butea monosperma*). In the studies package of improved practices were implemented on farmers field and it was observed that flow of knowledge level of beneficiaries in before and after training shows the vice-versa effect. About 46 % respondents shows high level of effectiveness of lac cultivation training, followed by 31% in medium level of beneficiaries. Only 23 % shows low level of effectiveness of the said training. The respondents having high satisfaction level-45 %, followed by 39 % medium satisfaction. Also reported that 16 % beneficiaries shows low satisfaction level of lac cultivation training. The beneficiaries obtained 4.23kg (Rs. 443.80) of lac before Training, while it was increased upto 8.34 kg (Rs. 891.45) after the completion of training programme from 10 Palas Trees. The yield of lac from the same number of trees was increased upto 13.67kg (Rs.1470.45), this yield was reported after the beneficiaries was given the Training Programme + demonstration regarding improved lac cultivation practices. The same respondents reported their yield of lac was increased to 24.83 kg (Rs.2756.40) after the beneficiaries was provided the Training + Demonstration of improved lac cultivation practices along with the Inputs for cultivation of lac.

**Keywords:** palas (*Butea monosperma*), Eastern Vidarbha zone (EVZ), Gondia, Lac crop, training.

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### I. Introduction:

Gondia district is the main lac producer district in eastern vidarbha zone and also in India. The district has about 250km<sup>2</sup> forest area with abundant palas (*Butea monosperma*) plants. The livelihood of the farmers in Eastern Vidarbha Zone (EVZ) mainly depends upon the forest products such as Tendu collection, Lac cultivation, Gum collection etc alongwith paddy cultivation.

In EVZ Gondia district is a paddy growing district, but as the productivity of the paddy is low the farmers were poor and lack economic stability. Hence if any supportive farming alongwith paddy farming is necessary such as floriculture, Backyard poultry, Dairy, Horticulture, Apiculture, Lac culture etc. Amongst these Lac cultivation can be done with great ease with lowest investment. As there are abundance of palas (*Butea monosperma*) trees which is one of the well known host for lac cultivation.

Lac is a commerce product from which resin, dye and wax can be obtained. *Laccifera lacca*; *Kerria lacca*. Lac is naturally occurring secretion of female Lac insect. The lac insect secrete a resinous covering for protecting itself and young ones. It derives its nutrition by sucking the juices from the host plants. Complete one generation from crawler stage to fully matured female ready to give birth to young ones is one matured crop. Lac culture is the process of culturing lac insects on host plants to obtain lac.

### Host plants –

**Major Hosts:**- 1. Palas (*Butea monosperma*) 2. Kusum (*Schleichera oleosa*) 3. Ber (*Ziziphus mauritiana*)

**Potential Hosts :-** 1. Galwang (*Albizia lucida*) 2. Akashmani (*Acacia auriculiformis*)

3. Semialata(*Flemingia semialata*)4. Pipal (*Ficus religiosa*) 5. Putri(*Croton oblongifolius*)

**Regional hosts:-** 1.Ber( *Ziziphus mauritiana*) 2. Khair( *Acacia catechu*)3. Arhar(*Cajanus cajan*) 4. Rain tree (*Samanea saman*)

## II. Material And Method:

Seacateur, Billhook, Gator pump for spray, Insecticide, Fungicide, 60 mesh Nylon bag etc.

### Basic and General operations of Lac culture:

1. Pruning of host trees:

it is removing of unsuitable shoots of host plants. To ensure new tender, succulent juicy and healthy shoots. To ensure availability of large number of shoots(larger area for insect settlement)

To provide rest to host trees for maintaining its vigour and potential. Top remove dead, cracked and broken branches.

Tree	Crop	Pruning time
Palas	Ketki	Mid February
Palas	Baisakhi	April
Ber	Baisakhi	April
Kusum	Aghani	Jan/Feb
Kusum	Jethwi	June/July
Galwang	Jethwi	June/July
Galwang	Baisakhi	April

2. Inoculation of Lac brood:

Putting the bundles of broodlac ( lac sticks with mature female insects) on host twigs for allowing young lac larvae(crawlers) to come out of their mother cells and settle on host plants.Remove leaves and unwanted portion and cut lac brood sticks 15-20cm long.Put the brood sticks in a 60 mesh nylon bag and keep plastic sutli a bit long at both ends for tying to the shoots.Place the bundles on the shoots and plant with 6 cu.feet diameter should be inoculated approx. 1kg brood lac.

Strain	Crop	Normal Inoculation period
Rangeeni	Ketki	June/July
	Baisakhi	Oct/Nov
Kusmi	Aghani	June/July
	Jethwi	Jan/Feb

3. Removal of empty brood sticks(phunki):

To minimize early attack of the predators and parasitoids to new crop. To avoid wastage of lac after drying of phunki and prevent from falling on ground,3-4 weeks after emergence phunki can be removed.Use small dauli or removal hook mounted on the top of bamboo stick without climbing on tree.

4. Spray of Insecticides/fungicides:

**Insecticide:-** Ethofenprox 10 EC (Nukil)0.02% **Fungicide:-** Carbendazim 50%WP 0.01% for the control of *Chrysopa* spp., *Eublemma amabilis*(White caterpillar and *Pseudohypatopa pulvereana*(Black caterpillar).

**Harvesting of brood lac:** Cutting of mature or immature(ari) lac crop from tree along with host sticks

**Ari harvesting in Palas & Ber:-** Harvest ari ac baisakhi crop I April or 1<sup>st</sup> week of May and prune the trees simultaneously. Dry the scrapped lac in shade with sufficient ventilation

**Partial Harvesting:-**Perform partial harvesting only if there is surplus broodlac on host in the month of June/July from palas tree. And in Jan/Feb or June/july from Kusum tree. Use harvested brood lac for inoculation on other host trees or sell it in market.Use Secateur for harvesting of brood lac.Harvest lac encrusted shoot from places where there is no further space for insect settlement.

**Complete Harvesting:-** From Palas broodlac coupe trees in Oct/Nov and baisakhi crop from trees of ari in mid April.

In winter when 5% crawlers are seen over encrustation.Harvest broodlac from parent trees when all preparation of inoculation to new trees is complete.In Summer one week before appearance of yellow spot.

### Practices followed for lac cultivation by Farmers:

S. No.	Activities	Traditional Lac cultivation	Improved Lac cultivation
1	Pruning of host trees	Not done	Done periodically
2	Use of 60 mesh nylon bag	Brood inoculated as whole branches	Used for brood inoculation for filling pencil size brood sticks
3	Spray of insecticides/fungicides	No spray	Two sprays taken
4	Phoonki removal	No such activity	Removal of Phoonki done after 45 days of brood inoculation

5	Harvesting	Whole branches cut off and used for direct inoculation	Harvested branches were cut off in pencil size thickness for filling 60 mesh nylon bag which were used for brood inoculation.
6	Yield	About 50 kg lac per tree	150kg lac per tree

### III. Result and Discussion:

**Table :1 Distribution of Beneficiaries according to their change in knowledge about lac cultivation Training**

Sr.No.	Category	Before	After
<b>Change in knowledge:</b>			
1	Low	67 (67.00)	23 (23.00)
2	Medium	29 (29.00)	44 (44.00)
3	High	04 (04.00)	33 (33.00)
	Total	100	100.00

It is observed from table 1 that majority (67.00 per cent ) of the Beneficiaries were having low knowledge about lac cultivation, followed by 29.00 per cent found in medium knowledge and only 4.00 per cent in high knowledge category in pre evaluation of Training. After training it is observed that majority (44.00 per cent) of the Beneficiaries were found medium knowledge about lac cultivation training, followed by 33.00 per cent found in high knowledge category and 23.00 per cent only low knowledge about lac cultivation technology in post evaluation of Training. It is observed that the flow of knowledge level of beneficiaries in before and after training shows the vice-versa effect respectively.

**Table 2. Distribution of Beneficiaries according to their Effectiveness of Training.**

Sr.No.	Category	Beneficiaries	Mean Index %	SD
1	Low effective	23(23.00)	56.35	13.634
2	Some what effective	31(31.00)		
3	Most effective	46(46.00)		
	Total	100		

According to the result, 46 % respondents shows high level of effectiveness of lac cultivation training, followed by 31% in medium level of beneficiaries. Only 23 % shows low level of effectiveness of the said training.

**Table 3. Distribution of Beneficiaries according to their Satisfaction of Training.**

Sr.No.	Category	Beneficiaries	Mean Index	SD
1	Low	16 (16.00)	63.26	8.26
2	Medium	39 (39.00)		
3	High	45 (45.00)		
	Total	100		

**Result:** - The above categorization shows maximum number of respondents having high satisfaction level-45 %, followed by 39 % medium satisfaction. Also reported that 16 % beneficiaries shows low satisfaction level of lac cultivation training.

**Table 4. Distribution of Beneficiaries according to their overall extent of Yield**

Yield (Year)	Before Training		After Training		Percentage Yield increased
	Mean Yield (Kg)/ 10 Trees.	Rs.	Mean Yield (Kg)/10 Trees.	Rs.	
Before Training May-June 2011	4.23	443.80			
After Training Oct-Nov 2011	--	--	8.34	891.45	97.16 %
Training + Demonstration May-June 2012	--	--	13.67	1470.45	223.17 %
Training + Demo.+ Input Given Oct-Nov 2012	--	--	24.83	2756.40	487.00 %

### Economics of Lac cultivation

S. No.	Activities	Traditional Lac cultivation	Improved Lac cultivation
1	Pruning of host trees	---	Rs. 250/-
2	Use of 60 mesh nylon bag	---	Rs. 250/-
3	Spray of insecticides/fungicides	---	Rs. 1000/-
4	Phoonki removal	---	Rs.250/-
5	Harvesting	Rs. 250/-	Rs. 250/-
6	Transport	Rs. 750/-	Rs. 2000/-
7	Lac yield	5 quin @ Rs.80 per kg (500X80= 40000)	15 quin@ 100per kg (1500 x 100= 150000)
8	Expenditure	Rs.1000/-	Rs.4000/-
9	Profit	Rs. 39000/-	Rs. 146000/-

**\*\*The above calculations were done for 10 Palas trees about 8-10 years old**

### IV. Conclusion:-

It is concluded that, beneficiaries was obtained 4.23kg (Rs. 443.80) of lac before Training, while it was increased upto 8.34 kg (Rs. 891.45) after the completion of training programme from 10 Palas Trees.

The yield of lac from the same number of trees was increased upto 13.67kg (Rs.1470.45), this yield was reported after the beneficiaries was given the Training Programme + demonstration regarding improved lac cultivation practices by the Scientists of KVK, Gondia.

The same respondents reported their yield of lac was increased to 24.83 kg (Rs.2756.40) after the beneficiaries was provided the Training + Demonstration of improved lac cultivation practices along with the Inputs for cultivation of lac.

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