



Biodiversity Conservation



Waste & Barren Land Development through Agro-lac host plantations

What is Lac

In a general sense, lacquer is a clear or coloured varnish that dries by solvent evaporation and often a curing process as well that produces a hard, durable finish, in any sheen level from ultra matte to high gloss and that can be further polished as required. The term lacquer originates from the Portuguese word for lac, a type of resin excreted from certain insects. Regardless, in modern usage, lac-based varnishes are referred to as shellac, while lacquer refers to other polymers dissolved in volatile organic compounds (VOCs), such as nitrocellulose, and later acrylic compounds dissolved in lacquer thinner, a mixture of several solvents typically containing butyl acetate and xylene or toluene. While both lacquer and shellac are traditional finishes, lacquer is more durable than shellac.

The French word *lacre* "a kind of sealing wax", from Portuguese *lacre*, unexplained variant of *lacca* "resinous substance", from Arabic *lakk*, from Persian *lak*, the verb *lac* meaning "to cover or coat with laqueur". According to Encyclopædia Britannica, varnish resin derived from a tree indigenous to China, species *Toxicodendron vernicifluum* (formerly *Rhus vernicifluum*), commonly known as the varnish tree. The manufacturing process was introduced into Japan and remained secret for centuries. These lacquers produce very hard, durable finishes that are both beautiful and very resistant to damage by water, acid, alkali or abrasion. The active ingredient of the resin is urushiol, a mixture of various phenols suspended in water, plus a few proteins.

The process of lacquer application in India is different from China and Japan. There are two types of lacquer: one obtained from the *T. Vernicifluum* tree and the other from an insect *kerrialacca*. In India the insect lac was once used from which a red dye was first extracted; later what was left of the insect was a grease that was used for lacquering objects. Insect lac was introduced to India from Persia (Iran). The fresh resin from the *T. vernicifluum* trees causes urushiol-induced contact dermatitis and great care is required in its use. The Chinese treated the allergic reaction with shell-fish. The trees must be at least 10 years old before cutting to bleed the resin. It sets by a process called "aqua-polymerization", absorbing oxygen to set; placing in a humid environment (called "furo" or "muro" in Japanese, meaning "a bath" or "a room") allows it to absorb more oxygen from the evaporation of the water.

Project Background

Lac – Lac culture is an economically viable, socially acceptable, eco-friendly vocation practiced by millions of farmers, particularly in the states of Jharkhand, Orissa, Chhattisgarh, Maharashtra and West Bengal in India. The product of lac is from an insect namely 'kerrialacca' and is converted into a dye. The Local NGO BIOVED approached the GEF/UNDP Small Grants Program (SGP) for a more hands on conservation-cum livelihoods approach. Through several meetings with CEE a more community led program developed.

Lac has many useful industrial applications as in paint and varnish, perfumery and pharmaceuticals, dying of textile yarn, ink, printing etc. Besides this, lac is very much used in the jewellery-diamond & crystal cutting, polishing stone, high efficiency Ignite-cum-fuel, slow release bio-fertilizer and bio-pesticide, proofing and stiffening in hat making bangle making, sealing wax manufacturing and preparation of polish. These products being natural are also environment friendly to the eco-systems. Many cottage/small scale lac based rural and urban industries act as means to better livelihood for many millions of people.

List of Lac host plants

- Palas (*Butea monosperma*) •Ber (*Zizyphus mauritiana*) •Kusum (*Schleichera oleosa*) •Babool (*Acacia arabica*)
- Pipal (*Ficus religiosa*) •Khair (*Acacia catechu*) •Akashmani (*Acacia auriculaeformis*)
- Galwang (*Albizia lucida*) •Flemingia semialata •Bhalia (*Flemingia macrophylla*) •Pigeon pea (*Cajanus cajan*)



Geographical area	: 36 Villages From Holagarh, Kaurihar Meza, Koraon, Shankargarh Blocks of Allahabad, Uttar Pradesh
No of Beneficiaries	: 15,600 farmers
SGP Grant	: Rs. 13,96,000/-
Co Financing	: Rs. 77,00,000/- (DST, Govt. of India, Banks, Communities)
Project Time Period	: 2007-2010



Project Achievement

- Average income per member of SHG's was found Rs.24,725 per annum.
- 3,06,700 lac host plants have been planted in 250 acre waste land of the target area.
- 250 acre waste and barren land have been developed through agro lac host plantation.
- 56 Training camps have been organised during the year for mass awakening about Scientific method of lac cultivation.
- Training for preparation of lac based value added products is organising regularly in two places in the whole months of the year.
- 26 SHG's are involved in the nursery farming of lac host plants and they have deposited their saving amounts in the bank i.e Rs. 201,195 during this year.
- Primary lac processing and ware unit has been established at village Mohrab, Block Kaurihar, Tehsil-Soraon, Distt. Allahabad which is situated at Allahabad- Lucknow high way 35 km. away from the head quater of Allahabad district.
- 450.1 quintal scraped lac has been collected from lac growers of 20 villages (40 SHG's) of Meja and Koraon Tehsil for primary lac processing (seed lac, Button lac and value addition etc) during the year 2008-09
- 222.3 quintal seed lac and 151.5 quintal button lac have been prepared after the processing of the scraped lac, which was collected from the 381 poorest families involved in lac cultivation through the framing of SHG's during the year 2008-09.
- 50 resource person are being trained for primary processing of the lac. These trained person charge @ Rs.100/Q for seed lac and Rs.1,000/Q for button lac preparation.
- Net profit after processing the scraped lac has been increased between Rs.9,500 -38,800 of the involved beneficiaries of the target areas, excluding the cost of scraped lac.
- 418 member of 40 SHG's of 20 villages of Meja and Koraon Tehsil was being trained for preparation of lac based value added products (350 items).
- These trained members are earning Rs.3,000 -5,000 per month through the adoption of lac based value added products preparation technology.
- 603.9 quintal scraped lac has been collected from 18 villages of Allahabad, Chitrakoot, Mirzapur and Sonbhadra for primary processing of lac during the year 2009-10.
- 325 Q seed lac/ 290.6 Q button lac have been prepared by trained women by taking processing charge @ Rs.100/Q for seed lac and Rs.1,000/Q for button lac

during the year 2009-10.

- Net profit after processing the scraped lac has been increased between Rs.11,400-2,01,600 during the year 2009-10 excluding the price of scraped lac.
- 48 Lac Krishak Goshthi, 5 Lac Kisan Mela, Exhibition at Rastriya Ramayan Mela, Kisan Mela, Magh Mela were being organised as well as during the Ravi, Kharif and Zaid Goshthi in each and every year.
- Two training centre are running continuously for preparation of lac based value added products since April 2008 to till today. 1st is situated at Bioved Krishi Prodyogiki Gram- Mohrab, Block- Kaurihar, Tehsil-Soraon, Distt.- Allahabad and 2nd is in the training hall of Bioved Research and Communication Centre at 103/42 M.L.N. Road, Allahabad.
- 14 SHG's of women have been identified and selected from lac growing areas after application of PRA method and on the basis of collected data on prescribed questionnaire.
- 156 Women have been trained for production of different lac value added products i.e different type of Bangle, pen stands, lac laminated different items viz pen, steel, brass and wooden sindurdani, different types of mirror, necklace, cigarette tray, candle stand, paper weight, mementoes, key rings, dairy, steel boxes, jewellery box, ear rings, gobar based pots of different sizes, gobar and lac based mosquito quail, floor cleaner, biophos and different type of idols of God & Goddess etc.
- 28. Newly trained 14 SHG's have opened their Bank account in the Nationalised Bank for depositing their savings, so that they can achieve Govt. subsidy and Bank loan for its better performance.
- 29. Total savings of these groups are between Rs.3,950 to 12,400 upto December 2009.
- 30. Nehru Yuva Kendra Sangathan, GOI and DRDA, U.P. Govt. have shown their interest to train their volunteers for self employment and for increasing their additional income through the adoption of lac culture technology and lac based value added products preparation technology.
- Every trained woman is earning @ Rs.3,000-5,000 per month without any investment.
- Soil, water, forest and environmental conservation have been started automatically in a sustainable manner.
- 10-20% yield of other crops has been increased due to self pollination by honey bee because lac cultivation is very help ful for honey production.
- Amway company Pvt. Ltd, RCM and Tajna Shellac Private Ltd, Ranchi are purchasing lac based value added prepared products without any hesitation. Thus there is no any problem in its marketing.



BIOVED RESEARCH & COMMUNICATION CENTRE

103/42, Motilal Nehru Road, (Near Prayag Station),
Allahabad-211 002, U.P. India
Ph : 2465678, 2467122, 2645368,
Mob: 09839619729, FAX : (0532) 2465959,
Email : bioved2003d@yahoo.com Web site: bioved.org

Regional Co-ordinator Centre for Environment Education

19/323, Indira Nagar, Lucknow 226016 U.P.
Ph : 0522-2716570, FAX : 2716628
Email: ceenorth@ceeindia.org

National Co-ordinator

GEF UNDP Small Grants Programme
CEE Delhi,
C-40 South Extension-II,
New Delhi-110049 Ph.: 011-26262878-80
e-mail : sgpdelhi@ceeindia.org
www.ceeindia.org



Ministry of Environment &
Forests (MoEF), India



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET



CEE
Centre for Environment Education