

Scientific Lac Cultivation for Poverty Alleviation and  
Environmental Conservation – A PACS-Udyogini Model in  
Gumla District, Jharkhand

Working Paper 2

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## Abbreviations

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ATMA	Agricultural Technology Management Agency
BC	Backward Class
BDSPP	Business Development Service Providers
DFID	Department for International Development
GMT	Grassroots Management Training
ICAR	Indian Council of Agricultural Research
ILDPP	Inclusive Livelihoods Development Programme
IINRG	Indian Institute of Natural Resins and Gums
JASCOLAMPF	Jharkhand State Co-operative Lac Marketing & Procurement Federation Ltd
JSLPS	Jharkhand State Livelihood Promotion Society
KVK	Krishi Vigyana Kendra
MSP	Minimum Support Price
MoU	Memorandum of Understanding
NGO	Non Governmental Organisation
NTFP	Non Timber Forest Produce
PACS	Poverty Areas Civil Society Programme
PMC	Project Management Committees
PSCL	Package of Scientific Cultivation of Lac
SOP	Standard Operating Procedures
UK	United Kingdom
VLSC	Village Level Service Centre
SHG	Self Help Group
SC	Scheduled Class
ST	Scheduled Tribe

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# Scientific Lac Cultivation for Poverty Alleviation and Environmental Conservation – A PACS - Udyogini Model in Gumla District, Jharkhand

## ABSTRACT

Jharkhand is blessed with abundant natural and mineral resources. Despite the rich natural wealth, ironically, World Bank identified Jharkhand as one of the most poverty-stricken states in the country with low average income, very high incidence of poverty and little social development. The farming with lack of irrigation facilities and improved production technologies hardly generates any income to bring the small and medium farm households out of poverty. Jharkhand with rich forest biodiversity and endowment of diverse NTFPs can effectively contribute to poverty alleviation than the subsistence, seasonal and precarious agricultural sector.

A well known NGO Udyogini has designed a Lac livelihood model with the support from PACS Programme, New Delhi, to address important issues of scientific approach and fair market arrangements in the Lac value chain involving 8184 tribal women in five blocks of Gumla district in Jharkhand. The project has demonstrated the potential and scope to increase incomes to the growers manifold through scientific methods of cultivation and market refinement. The Lac model revealed unambiguously that Lac activity is an important income generation source not only for the tribal communities but also to other social groups having interest and access to host trees. This all women Lac model has further proved amply that women could acquire technical skills, capable of handling Lac cultivation on gender unfriendly host trees and they could play different roles effectively in technology dissemination and control over market arrangements in the Lac value chain as BDSPs and VLSCs, if gender sensitive enabling environment coupled with hand holding support is provided to them. The attitudes and behaviours of communities, particularly women, have visibly changed on Lac host trees, which are being protected and viewed as productive economic assets with least engagement. This change may have positive impact on conserving the vegetation, ultimately the environment in the long run.

Udyogini should proactively share the successful experiences and lessons of the model with the government agencies like the JSLPS, KVKs, ATMA, and other rural development schemes to dovetail the promotion of scientific Lac cultivation in their capacity building programmes and explore mechanisms to provide credit support for inputs supply to Lac growers and providing institutional support for fair market practices.

**Key Words:** Non-timber forest products, Lac Livelihood Model, Poverty Alleviation, Environmental Conservation, , sustainable livelihoods

## Introduction:

Jharkhand is a 28<sup>th</sup> state in India. It is blessed with abundant natural and mineral resources, hard working human population of majorly tribal origin with a rich cultural heritage and traditional knowledge. The tribal communities comprise of 28 percent in Jharkhand and, therefore, it enjoys the status of a 'tribal state' in the country. Out of a total geographical area of 7.9 million ha, nearly 2.6 million ha are cultivated, while 2.3 million ha are under forests. The area under assured irrigation is less than 10 percent. Out of a total population of 27 million, 21 million (78%) live in villages, while about 6 million (22%) reside in urban areas. Nearly 49% of the population lives below the poverty line. The most important rural occupations are crop and animal husbandry, fisheries and agro-forestry. About 60% of schedule caste and schedule tribes are still below the poverty line. It may be said that agro-ecological and social factors are the main causes for rural poverty in Jharkhand. Poor infrastructure, difficult terrains, high population pressure on arable land, low coverage of irrigation, limited in-situ employment opportunities, social customs and traditions, natural calamities like drought are some of the important factors that inflict poverty in the state.

Poverty is wide spread in Jharkhand. World Bank identified Jharkhand as one of the most poverty-stricken states in the country with low average income, very high incidence of poverty and little social development having a sharp contrast between rural and urban poverty (World Bank report, 2013). The rural poverty arises from a number of factors like low agricultural production, population increase, health hazards, low income, illiteracy, and lack of accessibility to natural resources and inadequate employment opportunities (Ali, 2007). In Jharkhand, about 92% of the cropped area is under paddy, wheat, maize, pulses and oilseeds like Niger, linseed and mustard. The productivity of crops is low and the deficit with reference to demand and supply is as high as 52% in the case of cereals, 65% in the case of fruits, 51% in the case of milk and 34% in the case of fish. Only one crop is taken during the kharif season in most parts of the state and current fallow and other fallow lands contribute 2.0 million ha (about 25% of the area). It is thus clear that accelerated agriculture development holds the key to poverty eradication and employment generation in the state (Singh, K, M, Meena, M and et al, 2012).

However, the subsistence farming with lack of irrigation facilities and improved production technologies hardly generate any income to bring the small and medium farm households out of poverty. Therefore, it can be concluded that provision of assured non-farm employment is imperative to mitigate the widespread poverty in the villages of Jharkhand as agriculture alone cannot alleviate the poverty. Jharkhand is endowed with rich forest diversity covering about 30 percent of the geographical area of the state. There is considerable potential for developing and reviving the forest produce based supply chains

and industries, which can provide employment to rural people and improve family incomes to reduce poverty and contain the widespread migration phenomenon, thereby improving the livelihoods of rural poor in Jharkhand.

## 2. NTFP – Alternate Source of Sustainable livelihoods

Jharkhand with rich forest biodiversity is endowed with many non-timber forest products (NTFP), which have high economic value and potential to meet the needs of various industries and services. Improvement in value chain management of NTFPs will be beneficial to industries as well as improving livelihoods of people living in and around the forest fringe areas. The forest resources play a vital role in the livelihoods of tribal people through direct paid employment and NTFPs based self-employment. The NTFPs like Sal leaf, Lac, fuel wood, fodder, tooth brush, Mahua flower and seed, Chironji, Mango, Tamarind, Ber, Jamun, Bamboo corn, Kachnar flower, Koinar tender leaf, Kusum seed, Chiraita, toont, tendu fruit, jackfruit, phutkal leaf buds, sal seed, karanj seed, etc., are integral part of day-to-day livelihood activities and traditional life style for tribal people in the area. These NTFPs sustain millions of tribes by providing alternate source of food and income (Ajaz-ul-Islam, M, Quli, S, M, Rai, R and Sofi, P, 2013). Therefore, the livelihoods promotion among tribal people needs a shift of paradigm focusing on forest resources to keep pace with current development and future challenges in the area.

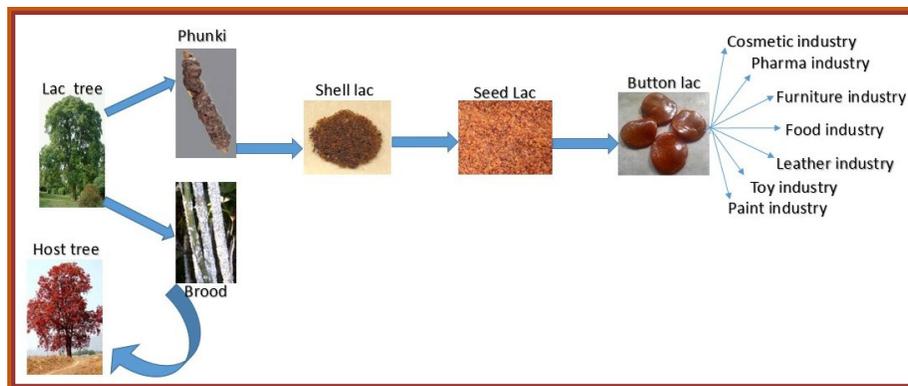
Tribes own small land holdings and low productivity provides income for barely 3-4 months in the year. These private lands have NTFP providing trees abundantly and there is a need to improve the performance of markets for these NTFPs to boost better methods of their collection, aggregation, processing and value addition for augmenting the incomes of poor households. This will contribute to the emergence of a situation where forest resources will be conserved and the livelihoods of people are improved. The studies indicate that the economic potential of NTFPs for poverty alleviation is very high compared to rainfed agriculture. Any initiative towards developing NTFP sector will directly contribute to poverty alleviation in Jharkhand in the same way as it does to the development of the agricultural sector.

The policies in Jharkhand on NTFPs management and trade also have ensured a number of rights and concessions in accessing of forest resources for tribal people. However, issues related to transportation of NTFP products, price fixing by small traders and businessmen, lack of facilities for storage and processing, etc., have contributed to the general lack of interest in commercialization of NTFPs (Gharai, A and Chakrabarti, S, 2009). Therefore, these issues need to be addressed before any NTFP based livelihood interventions are planned in Jharkhand.

### 3. Lac - An important NTFP for livelihoods improvement

Lac is the most preferable NTFP considering its profitability and very low labour requirement in cultivating it on diverse host trees. Lac cultivation has been an important source of income for livelihoods of small and marginal farmers and forest dwellers. It is a highly remunerative crop fetching high returns to the farmers as well as foreign exchange to the nation through export. India is a major producer and exporter of Lac and contributes 60% of the world's requirements, of which Jharkhand alone contributes about 42% of the total Lac production in the country. Limited labour involvement, less drudgery, assured market and high returns are the motivating factors for the communities to pursue Lac cultivation as a traditional livelihood option for thousands of tribal families living in the forest fringes of Jharkhand. However, issues like limited availability of broodlac, scattered Lac hosts, poor institutional linkages, climate change and extremist activities are limiting the growth of Lac production in the state (Bharat, R, 2010).

**Fig 1: Lac Value chain**



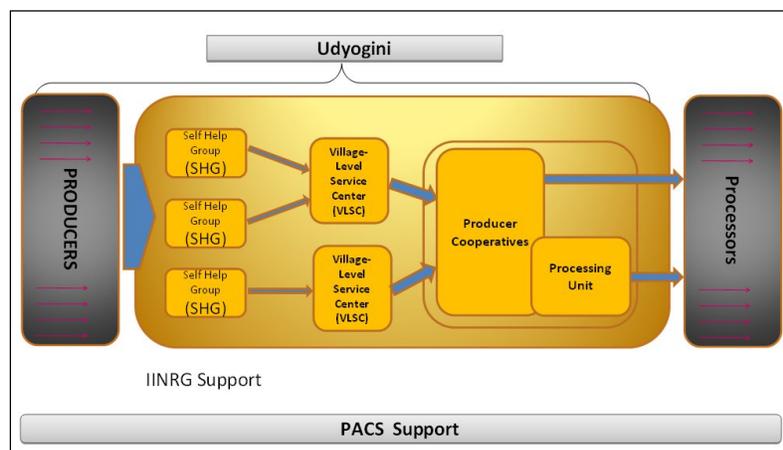
Lac is secreted by a specialized group of plant bugs, *Laccifer lacca*, commonly known as Lac insects. It has two strains – Kusumi and Rangini. Lac insects are basically sap suckers and secrete a resin to make its home on the host trees. They can thrive on the tender branches of many tree species, but three tree species - Kusum (*Schleichera oleosa*), Palash (*Butea monosperma*) and Ber (*Zyziphus mauritiana*) are commercially important. Lac has very good market because it has many uses in paint, jewelry, pharmaceutical coating, food, electric industry and so on (Fig.1). Lac crop can be cultivated four times in a year combining two strains and different host trees of Lac, which grow primarily on the fallows and wastelands. The promotion of Lac has on one hand contributes to the environmental conservation and on the other brings in reasonable high economic returns to those involved with it. It can be a good source of livelihood of tribal and the poor, particularly those who inhabit the forest and sub-forest areas. The overall demand supply situation for Lac suggests that the demand for Lac is increasing in multiple industries, while the production is falling. This demand and

supply mismatch establishes the case for promotion of scientific methods of Lac production for ensuring assured source of incomes to the farmers for alleviating poverty.

#### 4. PACS-Udyogini's Lac model for Poverty Alleviation

Poorest Areas Civil Society (PACS) Programme, which is an initiative of the UK Government's Department for International Development (DFID) in partnership with civil society, has partnered with Udyogini to replicate and scale up its Lac based livelihood model to revive and support livelihoods of socially excluded poverty stricken tribal women families in insurgency affected Gumla district in Jharkhand through scientific Lac cultivation practices. The partnership of Udyogini and PACS has been formalized through a MoU that supported and guided Udyogini's efforts to provide a strategic intervention in the naxal hit area of Gumla district for ensuring poverty reduction of tribal communities through scientific approach in Lac value chain.

Fig 2: PACS-Udyogini's Lac Model



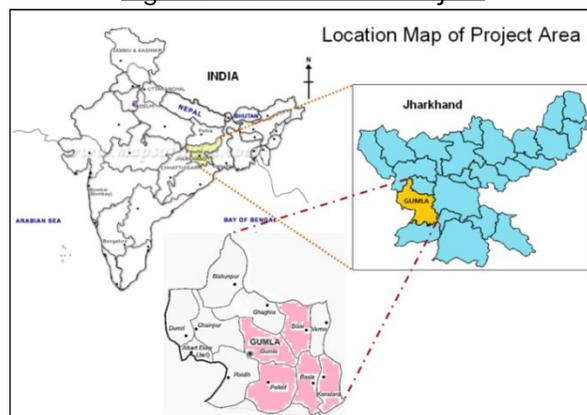
Udyogini works exclusively with women and specialized in developing micro-enterprises for poor women. Its main mandate to develop and undertake piloting and scaling up of micro-enterprise development models in their field programs. Lac is one of such micro-enterprise models that Udyogini intervened in 2008 in Jharkhand through Rural Business Hubs program of the Ministry of Panchayati Raj and over the years Udyogini has acquired considerable knowledge and experience of women centred Lac value chain and designed a set of institutional and input based strategies to address the critical issues hampering Lac cultivation in the region, which has gradually transformed itself into a model. An alternate Lac value chain model of Udyogini is shown in figure 2, which aims to promote scientific Lac cultivation and improved market linkages through a set of institutional arrangements for collectivization and sustainability.

Udyogini's approach mainly consists of organizing tribal women having access to Lac host trees into Women Enterprise Groups (WEGs), providing scientific technical know-how to nurture Lac insects on host trees and promotion of a cadre of Business Development Service Providers (BDSPs) for training and monitoring and establishing Village Level Service Centres (VLSCs) for aggregation and marketing. Udyogini has added another institutional innovation, i.e., Cooperatives to the model in Gumla district for handling Lac value chain at a higher scale mobilizing government and financial institutional linkages for maximising the services and benefits to its members.

## 5. Project interventions in Gumla district

Gumla district has more than 80 percent of its population under poverty line with rural poverty is greater than the urban poverty. Though there are three major rivers, the agriculture is still in primitive stage due to lack of irrigation facilities, scientific inputs, marketing, etc. Udyogini partnered with PACS to extend and replicate its Lac model in Gumla district, which is one of the forest rich districts in Jharkhand. The project mainly focused on capacity building of target women in scientific Lac practices and establish a fair trade value chain for systematic procurement and marketing in two and half years of project period (March 2013 – August 2015). Later the project got extended to till January 2016 after the midterm review due to slow progress constrained by both the internal and external factors.

Fig. 3: Location of the Project



The project is aimed to improve the livelihoods of 8000 socially excluded tribal women in five blocks – Kamdara, Gumla, Basia, Palkot and Sisai of Gumla district in Jharkhand through sustainable Lac cultivation practices. The project comprised of five components, viz., (1) Introduction of Scientific Practices for Cultivation, (2) Lac Business Development Service Providers (LacBDSPs) for training and monitoring of PSCL applications, (3) Brood Farm promotion, (4) Establishment of Village Level Service Centers (VSLCs), and (5)

Institutionalization through Cooperatives. The project has laid down a set of results / outcomes to achieve by the end of the project, which include a. income of 8000 producers increased so that they can earn additional income from baseline of Rs.2,000 to Rs.5,000 through Lac cultivation and will earn about Rs. 20,000 per annum, b. income of 50 BDSPs increased through delivering trainings and handholding producers (approximately Rs. 1,000 for 7 to 8 days of technical assistance), c. the targeted 8000 producers have sufficient brood to sustain the Lac activity by end of the project period, d. they are organised in the form of Co-operatives, and e. host trees enhanced and protected for preserving biodiversity. These outcome parameters guided the project not only in the implementation but also its monitoring and evaluation subsequently.

## 6. Findings and Discussion

### 6.1. Scientific Approach to Lac Cultivation

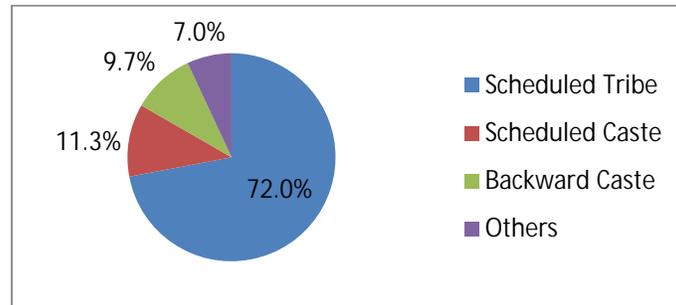
Lac cultivation is a traditional activity among the tribal households of Gumla district due to its endowment with abundant host trees on private lands. Everyone is familiar with host trees and handling of general Lac cultivation process steps. The traditional ways of Lac cultivation are, however, plagued with many lacunae in terms of pruning pattern, optimum brood quantity, inoculation method, and disease and pest management. As a result, the quantity of production is too little to neither sustain the interest of producer nor generate appreciable income to attract for serious adoption and care. It was reported that most of the households in the project area were either given up Lac cultivation or doing it indifferently not paying serious attention towards Lac proliferation and productivity.

Udyogini selected the producers from existing SHGs in the target villages formed by either another NGO Pradhan or SHGs formed by the villagers on their own to access the government support. This approach has saved the time and resources for community organization considerably, but Udyogini has not concentrated subsequently to promote SHG concept for these groups seriously. Promoting Lac activity through empowered SHG groups could ensure effective adoption and monitoring by the group leaders and long term sustainability of the initiative.

The data figures in Fig. 1 show that Lac cultivation is being practiced not only the tribes but also households from other communities, which suggest that Lac activity is not a tribal activity alone but it is influenced by availability of host trees, interest of households belonging to any social category for additional income for the family, knowledge on Lac cultivation and availability of family labour. Therefore, it can be concluded that promotion of Lac cultivation by establishing support systems for scientific knowledge inputs and better market creation through value chain refinement can be an appropriate poverty alleviation

intervention for all castes and classes in Lac growing states in India in general and Gumla district in particular.

Fig. 4: Social status of households covered by the project



Capacity building on PSCL was the major activity in the project. Trainings were organized by technical experts cluster wise in all villages and panchayats to women groups covering 8184 producers, more than the target achieved due to good response from the communities. The module was designed to cover all aspects of Lac production cycle for two strains, kusumi and rangini. A Standard Operative Procedures (SOP) document has been prepared in English by Udyogini with the inputs from IIRNG for knowledge dissemination. However, a Hindi version of it would have been more useful to the beneficiaries. The season wise trainings were done continuously with handholding support and covered 4413 women producers in the first year while 3771 were covered in the second year. All the beneficiaries have been provided hand holding support to cultivate Lac through scientific methods at least once during the project period; while majority have got the chance of cultivating in two seasons with kusumi strain on Ber and Kusumi hosts. Due to unfavourable climatic conditions, the rangini crop on Palash trees was a disastrous experience with total crop loss, which highlights the importance of climatic factors like rain, temperature, etc., on Lac production.

Fig.5: Women Lac producers sharing experiences of Scientific methods



The producers were given 3 kgs of brood Lac from the project to address the issue of brood insufficiency and encourage good participation and PSCL adoption by them. They were also given producer cards to record the data for key steps of Lac cultivation including production, investment and profits details, which is not the normal practice by producers, and it highlights the need for professional business approach to Lac activity for the producers as a viable business entity by keeping record of costs and profits. The project has provided supply of critical inputs such as secateurs, spraying machines and pesticides, which are very critical for scientific approach in Lac cultivation. This activity has had both demonstrating effect of using such inputs as well as emphasising the role of implements in PSCL practices in increasing Lac production.

It was found that all the producers have internalized the key process steps very well in PSCL such as pruning of branches with secateurs, estimation of optimum brood quantity based on host tree age and canopy size, tying the brood to branches with thread, and spraying the pesticides twice for insect and disease control. Swabbing of tree base with insecticides to prevent climbing of termites is also recommended.

Udyogini has adopted well designed strategies and approaches to achieve the objectives and outcomes of the project, which are identified as a. selection of field staff from the project villages, b. selection of producers from the existing SHGs, c. conducting base line survey and market assessment and analysis study in the beginning, d. close collaboration and Formal MoU with IINRG as knowledge partner, e. establishment of brood farms, f. initial brood supply to the selected producers (@ 3kg per producer), g. keeping the implements strategically at the custody of PRIs to involve them in the project, h. formation of management committee, and i. krishi melas for attracting other large non project producers. These strategies have helped to achieve the targets within the project period.

#### Innovations in Lac cultivation

The project has introduced new practices in the region. Inoculation of kusumi strain on the Ber tree was totally not known to the community, though Lac cultivation has been a traditional practice for centuries in the region. They were aware of only the rangini strain being cultivated on Ber. Udyogini staff convinced and trained the producers having Ber trees to inoculate kusumi strain in July'14 – Jan '15. Very good kusumi crop was obtained on Ber trees in all the villages during that season. The producers expressed happiness over this new discovery that has enabled two Lac crops in a year viz., kusumi in July – Jan cycle and rangini in June – Oct cycle now, leading to higher incomes. Introduction of this new knowledge about Ber is a noteworthy achievement by the project as almost all households have Ber trees and everyone could grow two crops now. Among three major Lac hosts, Ber is preferred to take up plantation to increase the number of tree hosts due to its less gestation

period (4 years) to host Lac insects and capacity to take two crops on rotation with kusumi strain, which high commercial vale. Moreover, it is hardy plant and easy to propagate through direct sowing of seeds on the field bunds. Wherever space is available, Kusum can also be planted for its high value kusumi crop that gives better production in quantity and quality, though it takes longer years to be ready for Lac cultivation.

Introduction of perennial shrub *Flemingia semialata* is another important innovation in the project areas. This plant has high coppicing ability and suitable for production of good quality Kusumi Lac crop during July – Jan season with under rainfed conditions. More importantly, having short height and bushy nature, it is easy to handle and hence it is women friendly unlike the tree hosts. It was proposed to introduce semialata in all project villages for demonstration covering 150 acres in total, but achieved 157.73 acres indicating the good response from the producers. The project supplied the seeds and polybags and guided the producers to raise their own nursery and plant; this approach helped to take it seriously by producers to raise and grow the plants into plantation. The cultural practices recommended by IIRNG have guided this activity. However, cultivation of *Flemingia* is constrained by two factors, viz., availability of water requirement and protection from grazing, as it is highly browsed by animals and producers have to make good fencing arrangements and guard the plantation closely.

Fig.6: Women Lac producers climbing & pruning Ber trees



#### Women Lac Producers

Traditional Lac cultivation practices are majorly done by men like climbing host trees to prune shoots, tying brood packets to branches for inoculation and harvesting the crop. Other activities, such as carrying brood packets and equipments (secateurs, spraying machine, ladder), can also be constraining. Traditional host trees, such as Kusum and Palash, are tall and hence women's participation used to be lower for the activities to be carried out

on these trees. The training on new technologies and practices at IINRG in Ranchi is also accessible to only men for the most part because it takes place on its campus at Ranchi. Therefore, women were peripherally involved in the traditional Lac cultivation.

In this context, the project has brought many important changes in the male dominated Lac cultivation by conducting trainings to women exclusively at their door steps as per their convenience and empowered them carry out majority of the above activities by women themselves through capacity building and encouragement to use their skills. The Udyogini staff trained in gender sensitive approaches in project implementation has facilitated active participation and provided hand holding support to encourage women carry out tasks like climbing trees, mainly Ber, for pruning, inoculation, etc., and handle all other activities. Crèches were provided for baby care when women were involved in Lac activities. It was found that they were aware of the ill effects of early, premature harvests, delayed harvests leading to self inoculation on the same branches affecting the production as well as benefits of the scientific methods coupled with matured insect cycle harvests.

#### Impact on household Incomes

The random case studies of Lac producers revealed many success stories emphasizing the potential role of Lac cultivation in poverty alleviation through improved incomes. Mrs. Sangeeta Devi, who hails from Nathpur village of Palkot block, was not utilizing her ten Ber and one kusum trees due to lack of knowledge of Lac cultivation. Udyogini encouraged her to take up Lac cultivation through scientific approach by providing 4 Kg of brood Lac and training on PSCL. She harvested 39 Kgs of broodlac, about ten times of the brood used. She returned 4 Kgs back to Udyogini for further rotation and sold 30 kgs of scraped lac and inoculated 5 kgs on Kusum tree.

Fig. 7: Woman producer harvesting scraplac



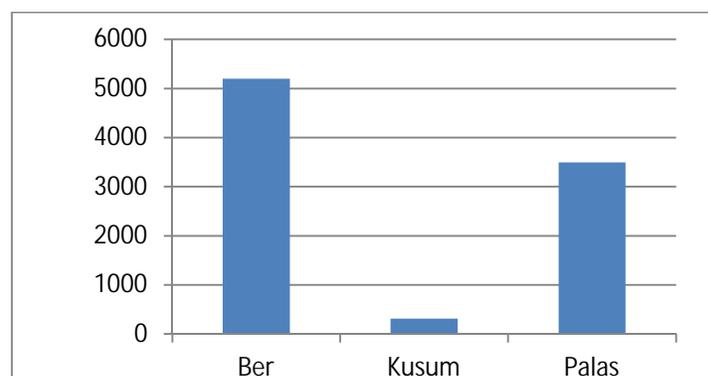
The story of Mrs. Tevari Devi, mother of three children hailing from Olmunda village of Olmunda panchayat, Sisai block, is quite interesting. She has 12-15 Ber host trees and she

used to practice traditional method for Lac cultivation with very low outputs in the past. Then she heard about Udyogini in 2013 and came forward to undergo training on scientific techniques of Lac cultivation for maximizing the production. Besides training, she got 3kg of brood Lac from them to resume her Lac cultivation. With the support of her husband, she inoculated 3 kgs brood Lac in the first cycle on her Ber trees and earned about 10,000. She spent part of the income on her child's education and bought cell phone too. She aspires to intensify Lac cultivation using all host trees for better and assured incomes for the family. Likewise, every woman producer has a success story to share. The field enquires and progress reports revealed that scientific methods ensured a minimum of 3 times of output compared brood Lac used and a maximum of 20 times of Lac production were also reported where Kusumi tree hosts are more in number. These case studies demonstrate the potential of income augmentation through Lac cultivation model for the poor households.

### Conservation of Trees

Majority of the villages in Gumla district have abundant host trees naturally growing on the bunds and fallows. An effort has been made to enumerate the host trees in two Panchayats of Kamdara block selecting them randomly to understand the host availability, density and their diversity. As shown in the Fig. all three major host trees such as Ber, Kusum and Palash are found available in all the villages. However, Ber is the most commonly found host trees and almost all families possess them, while Kusum are found with only few families. This shows not only the potential to intensify the Lac activity but also the scope to protect as well as increase the trees for increasing the Lac production for higher incomes.

Fig. 8: Host tree diversity in two Panchayats, Kamdara block



The Scientific methods and input support by the project have renewed the interest on protecting and nurturing of trees by tribal and non tribal communities involved in Lac cultivation. The impressive results in increased Lac production and higher incomes have perceptibly changed the attitudes and behaviours of people towards Lac host trees growing on their lands and in the vicinity. Empowered with scientific technologies and awareness on

Lac value chain, now women look at them as money making 'machines' and closely nurturing and guarding them for any theft. This behavioural change can in the long run improve the local vegetation and increase biodiversity contributing to protection of the environment.

## 6.2. Brood Farms

One of the main constraints of Lac activity is lack of brood availability, both the quantity and quality, which affects the Lac cultivation and overall production considerably despite availability of host trees. The project has addressed this important input gap by establishing brood farms, which has reasonably increased the access as well as ensured sufficient quantity and quality of brood availability locally. Under the component, some women producers were encouraged to develop their farms for brood production by providing brood and technical guidance. Availability of a group of host trees in a contiguous area was the criteria adopted by Udyogini. The target of total 20 brood farms were established in five Blocks (4 in each Block) and found very good standing crop in the brood farms. Entire brood required for the farms was initially met from the project with the understanding of returning 50% of the brood back to the project for rotating it to other Lac producers. The rest is for brood farm owners to reuse the brood and sell the scrap Lac. This component is fully implemented as proposed and the results are found to be encouraging. In general, brood production has been enhanced in the clusters by brood farms. However, brood sufficiency for entire 8184 producers is to be achieved to sustain the Lac activity beyond the project period.

The ideal combination of tree hosts in brood farms is Kusum and Ber, which would ensure cultivation of both the strains – kusumi and rangini to meet the regular demand from the Lac producers having all or any one of the tree hosts. Kusumi can be rotated in Kusum and Ber trees (Jan-July and July – Jan respectively) and rangini can be grown on some Ber trees (June- Oct and Oct-June) to supply rangini brood Lac both for Ber and Palash host trees of producers. Addition of semialata plantation to the brood farms further strengthens the brood farms and increases the scope for cultivating more kusumi strain (July - Jan) in terms of production and high value brood Lac in these brood banks.

## 6.3. Institutions for Sustainability

Udyogini Lac model has envisaged three types of institutions to address the needs of popularizing the scientific Lac practices among target communities and provision of alternate fair market arrangements in the Lac value chain to run the model on sustainable basis even after the external facilitators are withdrawn.

## Business Development and Service Providers (BDSPs)

A community based cadre of 60 BDSPs have been trained and retained in the project areas to provide technical inputs and troubleshooting support on payment basis. Udyogini designed a module that includes four days of class room training on PSCL and one day exposure to IINRG. The objective of BDSP cadre is appreciated because scientific Lac cultivation has potential to uplift the poor families out of poverty. Therefore, Udyogini should focus on strengthening the cadre on their roles and responsibilities and handhold them to remain as a functional resource for carrying forward Udyogini's Lac model to benefit larger section of communities in the area. However, self employment of cadre through income generation providing services on Lac is doubtful as the PSCL practices will be demystified soon and spread across the region. Therefore, the sustenance of the interest of the cadre on this portfolio and their continuance beyond the project is doubtful in the absence of support from Udyogini.

Fig.9: Women entrepreneur in front of her VLSC



## Village Level Service Providers (VLSC)

This cadre is another important institutional innovation for better market linkages locally by women entrepreneurs to strengthen the forward linkages in the Lac supply chain. They help the primary produce to market at local level and on the other side to ensure an aggregation point at village level. These centres are envisaged to eliminate the intermediaries and undertake aggregation, value addition and marketing of Lac adopting ethical practices for fair weighing and pricing to the producers. VLSCs envisaged procuring Lac and other NTFPs from the primary producers and making spot payments. Further, they would also sell

grocery and other domestic goods and services to provide those services in the rmaote villages as well as sustaining these centres.

Udyogini designed a module of three phases training on enterprise development and produced 25 VLSCs by the end of project. VLSCs thrive through offering a two-way service for goods marketing in their villages. Eight VLSCs have started their shops recently in Kamdara and Sesai Blocks. However, they have not become fully operational with all expected roles and functional advantages in the Lac value chain locally. One serious challenge the VLSCs might face is that both the individual Lac producers and VLSCs would operate in the same nearby town market and unless the VLSCs offer higher price than the market the producers might not be encouraged to give to VSSCs. But VLSCs would not offer more prices for obvious reasons. Moreover, care should be taken to avoid this cadre becoming another exploitative layer along with existing intermediaries.

### Cooperatives

The third institution is Cooperatives for accessing the benefits from Jharkhand Lac Marketing and Procurement Federation (Jhascolampf), a Jharkhand state government body to support Lac Cooperatives. Udyogini has formed eight Cooperatives with a membership base of 3222. These Cooperatives have completed the statutory registration formalities but they are still in nascent stage in terms of governance and empowerment to leverage external linkages to access benefits from Jhascolampf and other financial institutions for the members benefit handling Lac supply chain. The roles of VLSCs and Cooperatives should not be competing and antagonistic to each other jeopardizing the very purpose of these institutions in Lac value chain. Moreover, the experience of Cooperatives elsewhere indicate that majority of these institutions are ineffective due to various reasons, which Udyogini need to study for strengthening them.

Udyogini should review and strengthen the above institutions in the model in order to make them accountable, non competitive and supporting to each other in a given Lac value chain establishing through enabling financial and government institutional linkages.

### 7. Conclusions and recommendations

Lac is one the most promising NTFPs that has potential to improve the incomes of all households, irrespective of caste and classes, having access and interest to make use of host trees for generation of additional incomes. Lac activity can become the primary source of livelihood for people of Jharkhand, particularly in Gumla district, over the precarious rainfed agriculture by adopting scientific methods. The model proves that purposive design of institutional mechanisms and interventions suitable for any NTFP is imperative for

promoting their respective value chains to address poverty of dependent communities while conserving its resource base.

Udyogini in partnership with PACS Programme has revived the forgotten and insignificant Lac based livelihoods in the trouble torn Gumla district and demonstrated that scientific Lac promotion could be a major intervention for addressing the chronic poverty of rural households in Jharkhand while conserving the biodiversity on private lands in the fringe and inside the forest areas as the producers becoming protectors of trees for their NTFPs. However, the institutions envisaged by Udyogini in Lac value chain are though in conformity with the gaps and needs of the existing Lac value chains, but they need to be critically reviewed and further capacitated for improving their functional efficiency, role clarity and make them accountable, non competitive and mutually supporting in the overall Lac value chain. The time and effort to prepare these institutional entities, particularly the Cooperatives, for developing professional management, democratic governance and abilities to access and handle financial and government institutional linkages is to be done to achieve their the real impact in the Lac value chain. However, the progress has been noteworthy compared to the time and resources spent till now.

The project can offer many lessons to policy makers and government machinery of Lac growing states to consider Lac cultivation as one of the main poverty alleviation means in the areas where host trees are found abundantly. Scientific Lac activity can be dovetailed in the government schemes like National Rural Livelihoods Mission (NRLM), Krishi Vigyana Kendra (KVK), Agricultural Technology Management Agency (ATMA) and other rural development schemes in their capacity building programmes and explore for resource allocation to arrange good quality brood supply through establishing brood farms as this model demonstrated, provide credit facilities to Lac growers for inputs purchase and create enabling institutional support for fair market practices. Udyogini should proactively approach and share the successful experiences and lessons of the model with the government and financial agencies to sensitize them of the potential and formulate projects to scale up the proven practices of the model.

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