

## LAC CULTIVATION: AN OPTION FOR LIVELIHOOD SECURITY IN ASPIRATIONAL DISTRICTS OF INDIA

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### ABSTRACT

*Raw lac is the source of three valuable products, i.e. resin, dye and wax. Lac cultivation is an important source of income for the livelihood of the forest and sub-forest dwellers of different Indian states. Lac production is a highly labour-intensive process and employs both men and women dwelling in forest and sub-forest areas of these states. It is a highly remunerative crop, paying high economic returns to the farmers and foreign exchange of the country through its export. With the recent policy interventions by the government there is abundant opportunity for entrepreneurs as well as farmers to operate the lac production and have the livelihood security.*



### INTRODUCTION

Millions of people around the Earth depend on forests for medicine, raw materials, fuel, income and food. Food and Agricultural Organization (FAO) reports that about 500 million people inhabit in or near forests, and in some places, forests are the primary source of food supply. But forests supplement people's diets almost everywhere, particularly in lean seasons. In many developing countries, forest foods represent a much-needed safety net, helping people get by between harvest seasons, when crops fail or during droughts, famines or social strife. In some areas, forests support livestock production by providing fodder, and in others, for example, coastal mangrove swamps – they support local fisheries.

Forest ecosystems supply many important products and services to society. Wood is a key forest product, but many other forest products exist. These products are often called Non-Wood Forest Products (NWFPs). The global demand for NWFPs has increased due to the current trends in lifestyle and consumption. Consequently, the commercial utilization of NWFPs is increasing in World forestry. Timber-oriented Forest management is transitioning towards sustainable joint-production of timber and NWFPs and maintenance of other ecosystem services. Different types of NTFPs differ in abundance, ecology, origin, yield periodicity, harvesting rights, frequency and methods, end-use and economic importance. Further, domestication varies considerably, from opportunistically collected wild resources to products actively enhanced or cultivated.

NWFPs are utilized on a small and medium enterprise level but can also frequently be found as internationally established mass-market products. The identification and ecology of NWFPs concern recognizing a species to use as an NWFP and the specific conditions that the resource requires within the forested environment to flourish. Over past decades the increased utilization and production of NWFPs have ensured that Natural Resins and Gums (NRGs) represent one of the principal NWFP groups within Indian forests and have an immense role in the livelihood security of tribal communities due to their high economic and social and ecological value.

### NATURAL RESINS– A FAUNA (*KERRIA LACCA* (KERR)) BASED RESIN

*Kerria lacca* (Kerr), an Indian lac insect which thrives on the tender twigs of specific host trees viz., *palas* (*Butea monosperma*), *ber* (*Ziziphus mauritiana*), *Kusum* (*Schleichera oleosa*), *Flemingia semialata*, *Ficus spp.* etc. secretes resin (known as lac). It is cultivated mainly by the tribal communities and the forest dwellers in India collect a little quantity. *Rangeeni* and *Kusmi* are the two strains of lac insect which are classified based on the preference of the insect for specific host plants. Raw lac is the source of three valuable products,



**Photo 1. The encrustation of natural resins in the exhibition pavilion**

*i.e.* resin, dye and wax. Lac cultivation is an important source of income for the livelihood of the forest and sub-forest dwellers of Jharkhand, Chhattisgarh, Madhya Pradesh, West Bengal, Maharashtra, Odisha and parts of Uttar Pradesh, Andhra Pradesh, Gujarat and NEH region. Lac production is a highly labour-intensive process and employs both men and women dwelling in forest and sub-forest areas of these states. It is a highly remunerative crop, paying high economic returns to the farmers and foreign exchange of the country through its export. Lac is mainly produced in India, Thailand, Indonesia, and other parts of China. India is the largest producer of lac in the world.

### LAC PRODUCTION IN INDIA

Tree species in agro forestry are very important and vital for lac cultivation. It reflects the choice of farmers and, in some sense, market demand. There are 49.2 crores of *palas* (*Butea*

**Table 1. Current use of existing resource base for lac cultivation and the possibility of employment generation across disadvantaged areas in India.**

Particulars	<i>Butea monosperma</i>	<i>Ziziphus mauritiana</i>	<i>Schleichera oleosa</i>	Total
Total number of lac host trees (in millions)	491.70	93.00	36.70	621.40
Number of lac host trees excluding the 33% forest reserve (in millions)	163.90	31.00	12.23	207.13
Number of available lac host trees/annum (in millions)	54.63	10.33	2.45	67.41
Number of lac host trees used for lac cultivation (in millions)	10.50	3.44	1.37	15.31
Per cent Utilization	19.22	33.30	55.80	22.70
Employment generation on current use (million human days)	28.35	16.51	5.80	50.67
Employment generation on potential use (million human days)	147.51	49.60	10.40	207.51
New employment opportunities (million human days)	119.16	33.09	4.60	156.84
Total population of major lac producing states (in millions)	NA	NA	NA	377.00
All India population (in millions)	NA	NA	NA	1210.19

**Source:** Forest Survey of India Report 2013; 15th National Census Survey, 2011; NRG Information Cell, ICAR-IINRG, Ranchi, 2013.

*monosperma*), 4.5 crores of *ber* (*Ziziphus mauritiana*), and about 3.7 crores of *Kusum* (*Schleichera oleosa*) stems spread in various Agro forestry Systems over the country (FSI, 2017), which is about 3% of the total number of available trees. India has about 621.4 million lac host trees, and not more than 5% of this huge inoculable area is utilized for production (Table 1). Recently, the Government of India has initiated the Minimum Support Price (MSP) for 11 NWFPs as a marketing strategy on the top priority to boost up the sector. Selected modules of livelihood generate enough employment opportunities varying from 300 to 800 human days/ha at the production level. The lac sector also supports more than 150 resin-based labour-intensive industries and more than 1000 small-scale units/outlets across the country. India is leading in supplying the NWFP-based raw material for food, paint, varnish, cosmetic and pharmaceutical industries worldwide. The most common host trees for lac cultivation are *Butea monosperma* (*Palas*), *Zizyphus mauritiana* (*Ber*), and *Schleichera oleosa* (*Kusum*), besides several trees of regional importance (Roonwal *et al.*, 1958; Roonwal and Singh, 1958; Varshney and Teotia, 1967; Sharma *et al.*, 1997, Pal *et al.*, 2012). In addition, *Flemingia semialata* is popularizing for lac cultivation and rural youths are interested in lac cultivation on this bushy plant as it supports both *Kusmi* and *Rangeeni* lac cultivation like the *Ber* plant (Yogi *et al.*, 2014). Data published by the Forest Survey of India shows the great scope and potential for growth in the NRG sector. The agenda for food security has been addressed for consumers, and high-value low, volume crops like lac, pine resins and gums may be a key component for the livelihood security of the small holders.

Current lac production estimates revealed that less than 10% lac host trees are utilized for lac cultivation. The government, lac-based industries, lac traders, entrepreneurs and exporters require the estimation of lac production. The cultivation of lac on a large number of hosts of different kinds, its collection by numerous small growers, variations in the yield depending on the type and size of the host, cultivation practices and climatic conditions are the major factors influencing the estimation of lac production. Production estimates of this commodity would help plan overseas as well as domestic trade regulations, price fixation and reliability in the supply of lac-based products.

**Table 2. Lac production in India during 2019-20 (in tons)\***

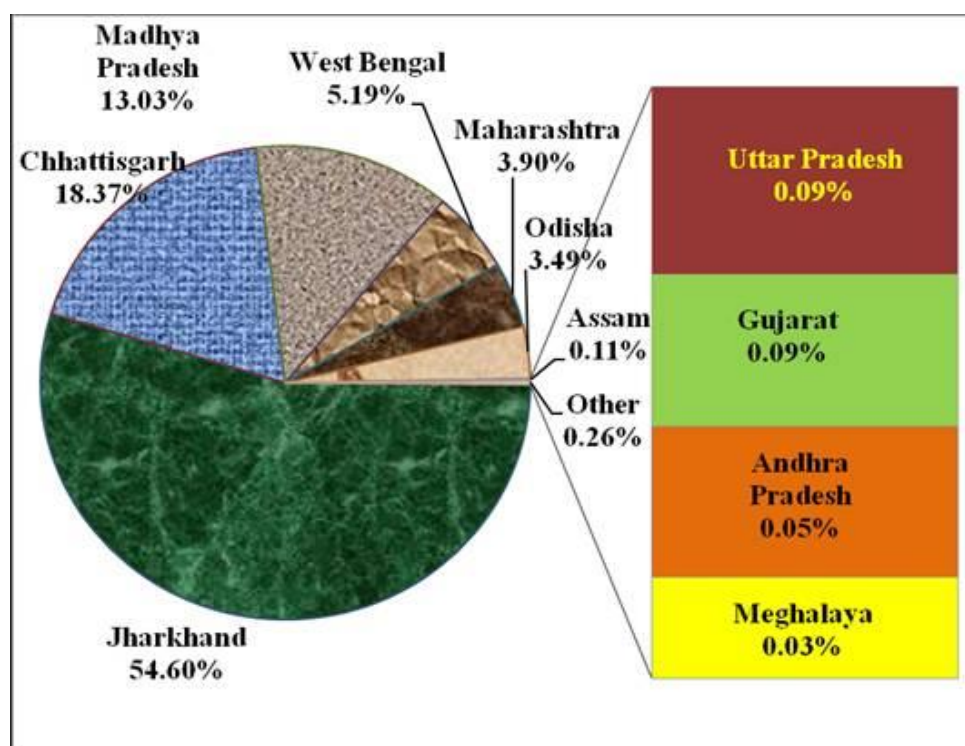
Name of states / Districts	Name of lac crop/strain <sup>@</sup>						Total (% share)
	<i>Baisakhi</i>	<i>Katki</i>	<i>Rangeeni</i>	<i>Jethwi</i>	<i>Aghani</i>	<i>Kusmi</i>	
Jharkhand	554	282	836	4947	4560	9507	10343 (54.60)
Chhattisgarh	703	512	1215	741	1522	2263	3478 (18.37)
Madhya Pradesh	1539	814	2353	50	65	115	2468 (13.03)
West Bengal	112	640	752	59	245	304	1056 (5.57)
Maharashtra	380	445	825	15	12	27	852 (4.50)
Odisha	13	10	23	155	495	650	673 (3.55)
Gujarat	4	1	5	15	7	22	27 (0.14)
Assam	5	10	15	0	0	0	15 (0.08)
Uttar Pradesh	10	2	12	0	0	0	12 (0.06)
Andhra Pradesh	5	1	6	1	5	6	12 (0.06)
Meghalaya	6	2	8	0	0	0	8 (0.04)
Total	3331 (17.58)	2719 (14.36)	6050 (31.94)	5983 (31.58)	6911 (36.48)	12894 (68.06)	18944 (100.00)

**@Baisakhi:** - Summer season crop of *Rangeeni*; **Jethwi:** - Summer season crop of *Kusmi*; **Katki:** - Rainy season crop of *Rangeeni*; **Aghani:** - Winter season crop of *Kusmi*; <sup>§</sup> Andhra Pradesh including Telangana; \* See Annexure I for details.

Based on a survey in the local weekly markets of different lac-producing districts, the estimated national production of sticklac during 2019-20 was approximately 18,944 tons comprising *Rangeeni* (6050 tons) and *Kusmi* (12894 tons) sticklac. Among the lac-growing states, Jharkhand state ranks first (54.60%), followed by Chhattisgarh (18.37%), Madhya Pradesh (13.03%), West Bengal (5.57%), Maharashtra (4.50%) and Odisha (3.55%). These six states contribute more than 99 % of the total lac production in India (Figure 1).

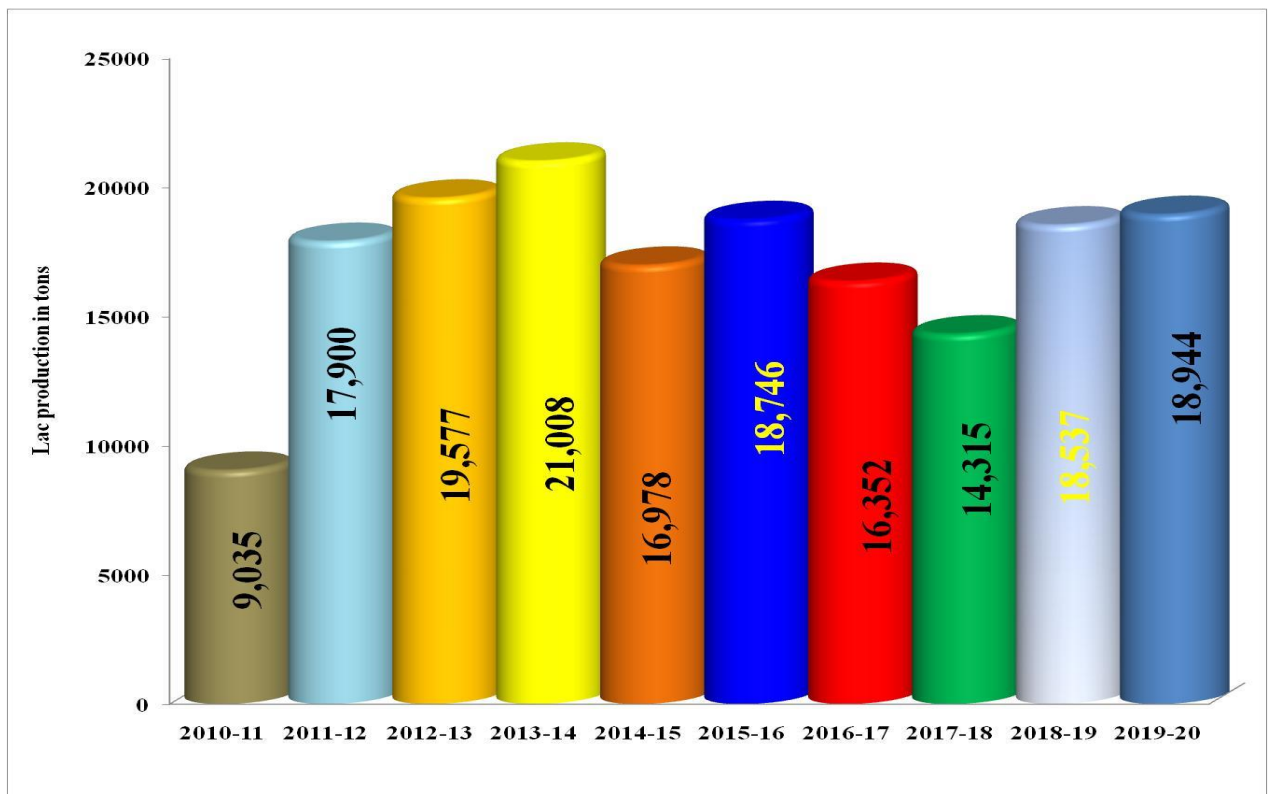
**Table 3. Top ten lac producing districts in the country**

District (States)	2018-19	Rank	2019-20	Rank
Ranchi (Jharkhand)	3170	1	3205	1
Simdega (Jharkhand)	2330	2	2210	2
Khunti (Jharkhand)	1470	3	1695	3
Gumla (Jharkhand)	1430	4	1512	4
Korba (Chhattisgarh)	885	5	1015	5
Kanker (Chhattisgarh)	855	6	775	9
West Singhbhum (Jharkhand)	845	7	935	6
Seoni (Madhya Pradesh)	820	8	929	7
Balaghat (Madhya Pradesh)	697	9	909	8
Gondia (Maharashtra)	570	10	602	10



**Figure 1. State-wise share in lac production during 2019-20**

Compared to the average production from 2010-11 to 2019-20, the current year (2019-20) of the Rangeeni crop has declined by 9.24% while the production of *Kusmi* crop enhanced by 23.11%, respectively. The increase in production was comprised of 13.64 % and 32.68 % for the *jethwi* and *aghani* crops, respectively. However, a decrease of 13.14% and 3.96% was observed in case of *baisakhi* and *katki* crops, respectively. Overall, the total lac production for 2019-20 has increased by about 3.28 % compared to the average production. The Lac production scenario in India during 2019-20 is presented in Table 2, and the country's top ten lac-producing districts are enlisted in Table 3. Lac production in India during the previous five years is depicted in Figure 2.



**Figure 2. Lac production in India during the previous ten years**

The overall lac production during 2019-20 has been estimated as 18,944 tons, which is higher than the country's previous year's production (18,537 tons). It is interesting to mention that the production level of lac is sustained at 14,315 tons during 2017-18, which is about 58 % higher compared to the lowest level of 9,035 tons during 2010-11. Although, it is about 11.53% lower than the highest level of 21,008 tons in 2013-14.

## CONCLUSIONS

Raw lac is the source of three valuable products, i.e., resin, dye and wax. Lac cultivation is an important source of income for the livelihood of the forest and sub-forest dwellers of Jharkhand, Chhattisgarh, Madhya Pradesh, West Bengal, Maharashtra, Odisha and parts of Uttar Pradesh, Andhra Pradesh, Gujarat and NEH region. Lac production is a highly labour-intensive process and employs both men and women dwelling in forest and sub-forest areas of these states. Being a highly remunerative crop with high economic returns to the farmers and foreign exchange of the country with recent policy interventions by the government there is abundant opportunity for entrepreneurs as well as farmers to operate the lac production and have the livelihood security.

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