



Short Communication

Performance of Lac Cultivation on Kusum (*Schleichera oleosa*) Tree in Non Traditional Areas of Karnataka State

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ABSTRACT

Lac is a commercial crop produced by lac insect, *Kerria lacca* (Kerr) (Homoptera: Tachardiidae) as a protective covering on its body and is exploited mainly for resin, dye and wax. Lac cultivation is mainly concentrated in Jharkhand, Chattisgarh, Madhya Pradesh, West Bengal states of India. Karnataka being non-traditional area, efforts were initiated in collaboration with ICAR-Indian Institute of Natural Resins and Gums, Ranchi, to introduce kusmi strain lac. KVK Uttara Kannada, Sirsi studied the performance of lac cultivation on Kusum tree, *Schleichera oleosa* for a period of three years. Results showed that yield levels were slightly higher in rainy season crop compared to winter season.

Key Words : Lac cultivation, Kusum tree, *Schleichera oleosa*, Uttara kannada, Karnataka.

INTRODUCTION

Lac, the resinous protective secretion of the tiny insect, *Kerria lacca* (Kerr) is exploited mainly for three valuable products viz, resin, dye and wax. There is a great demand for natural products especially in pharmaceutical and food industry. Although lac enjoys plethora of uses and high export potential, current international trade in lac based products is about half what it was in the 1950's. The state, Karnataka which contributed significantly to the national lac production during 1950's, now the share is almost negligible due to varied reasons. There are reports on availability of lac insects on jallari (*Shorea talura*), ber (*Ziziphus* spp) and rain tree (*Albizia saman*) in Karnataka (Krishnaswami, 1960) and the conventional host plants kusum, (*Schleichera oleosa*), palas (*Butea monosperma*), *Ficus* spp, *Acacia* spp, *Albizia saman*, etc. are widely distributed in Karnataka. Many farmers, forest and sub forest dwellers especially tribal people are quite habitual to these hosts. Promotion and encouragement of lac culture will not only check environmental degradation

and help rebuild the ecological balance but also conserve endangered lac insects, associated fauna and flora (Sharma *et al*, 2006). There is an ample opportunity for lac cultivation as one of the subsidiary occupation in Karnataka for the benefit of farming community. The lac (resin) production is greatly influenced by the climatological factors, like temperature, rainfall, humidity, wind etc. Out of all these factors temperature is most important (Bhagat and Mishra, 2002 ; Sharma, 2007). A study was undertaken to assess performance of lac cultivation on Kusum (*Schleichera oleosa*) tree in non- traditional areas of Karnataka State.

MATERIALS AND METHODS

ICAR- Krishi Vigyan Kendra, Uttara Kannda, Sirsi in collaboration with ICAR-Indian Institute of Natural Resins and Gums (IINRG), Ranchi organized workshop on “opportunities for lac cultivation” in Uttar Kannada district in June 2013 for the benefit of farming community. Preliminary survey indicated the availability of lac host trees viz, Kusum, Palash, *Ficus*, *Acacia* spp etc.

in plenty. A team of 15 farmers/farm women of Uttar Kannada district and faculty were trained in scientific method of lac production, processing and utilization at IINRG, Ranchi from 30.9.2013 to 05.10.2013. Later many training programmes / seminars / workshops were organized jointly with Kadamba Charitable Foundation, Sirsi, an NGO in the district for promotion of lac cultivation. In this regard, KVK conducted on farm trials (OFT) from 2015 to 2018 to study the performance of lac cultivation on Kusum trees for both seasons viz, rainy also referred as Aghani (June-July to January - February) and summer also referred as Jethwi (January - February to June- July) in Uttara kannada district by adopting the technology developed by IINRG, Ranchi on pruning of host trees and method of inoculation, management of natural enemies, forecast of larval emergence and crop harvesting (Jaiswal and Singh, 2015). The OFT was implemented in Chetnalli village of Siddapur taluk and Koodambi, Arishinageri, Hirehalli village of Mundagod taluk. Initially the kusumi brood lac was procured from IINRG, Ranchi and inoculations were done on 3 Kusum trees which were pruned earlier. Observations on lac yield, natural enemy population and constraints if any were recorded regularly for both seasons.

Brood lac sticks were dipped in Flubendaimide 0.0079 % (0.2 ml/l) and Carbendazim 0.01 % (3g in 15 l of water) of solution for 10m against predator and fungal attack. Treated brood lac sticks were inoculated with 60 mm nylon mesh bag in summer season and mesh was not used in rainy season. Three sprays were given at 25-30, 38-40 and 60-65 days after inoculation (DAI) in rainy season whereas during summer sprays were given

at 30-35, 60-65 and 90-95 DAI. Major predator noticed during 2015-18 is *Eublemma amabilis* and in 2017-18 negligible damage by *Pseudohypatopa pulverea* was observed. The per cent infestation by *E. ambilis* is presented in Table 2. Among three years the infestation was high in 2015-16 with 10.5 per cent in rainy season crop followed by 9.80 per cent in 2016-17 summer season crop.

RESULTS AND DISCUSSION

Uttara Kannada district of Karnataka is a non-traditional area for lac cultivation. Farmers were unaware about the possibility of lac cultivation on existing Kusum trees. The performance of Kusumi lac strain were studied for both rainy and summer season. The results (Table 1) showed that an average 10.75 kg lac yield was obtained per kg of inoculation during rainy season and 8.40 in summer season inoculation. The yield levels in rainy season were slightly higher compared to summer season in 2015-16 and 2017-18. This may be due to less rains received during both seasons which facilitated for complete emergence of crawlers and further settlement. In 2016-17, trial was vitiated due to poor emergence of crawlers. Similar were the findings by Bhagat and Mishra (2002).

General constraints noticed in lac cultivation in Uttara Kannada district

Since Uttara Kannada district is high rainfall area, heavy and continuous rainfall during inoculation of rainy crop (*aghani*) and harvest of summer crop (*jethwi*) in July resulted in poor emergence of crawlers and high incidence of fungal growth on lac encrustation. Even though lac cultivation is less labour intensive but requires timely applications like inoculation, harvest and plant protection measures.

Table 1 .Performance of kusumi lac strain on Kusum tree in two seasons.

Technology Assessed	Lac crop yield (yield ratio of input/ output)			
	2015-16	2016-17	2017-18	Average
Inoculation in Rainy season	1 : 12.5	Vitiated due to poor emergence of crawlers	1 :9.0	1 :10.75
Inoculation in Summer season	1:8.20	1: 10.75	1 : 6.25	1 : 8.40

Lac Cultivation on Kusum

Table 2. Natural enemy population associated with Kusumi lac strain in two seasons.

Technology Assessed	Per cent infestation by Eulemma		
	2015-16	2016-17	2017-18 *
Inoculation in Rainy season	10.5	-	5.5
Inoculation in Summer season	5.4	9.80	4.58

*Negligible population of Pseudohypatopa was also noticed.

One of the most important constraint is fluctuating prices of lac and the other subsidiary occupation is bee keeping which is highly remunerative.

CONCLUSION

Lac cultivation during rainy season involved high risk due to heavy and continuous rains which is very common in Uttara Kannada district. But, Kusum trees can utilized for summer season. The judicious use of this tree for lac cultivation not only provide additional source for livelihood but also ensure saety of trees indirectly. In transitional areas of Uttara Kannada, lac cultivation can be highly remunerative either on flemingia or Ber during rainy season. Since lac cultivation is assured source of income during drought years, can be a good source of livelihood resource for poor farmers.

REFERENCES

- Bhagat M L and Mishra Y D (2002). *Abiotic factors affecting lac productivity*. In: Recent Advances in Lac Culture. Kumar K K, Ramani R and Sharma K K (Eds.). ILRI, Namkum, Ranchi, pp 64-68.
- Jaiswal A K and Singh J P (2015). *Schleichera oleosa* and Lac cultivation. Indian Institute of Natural Resins and Gums, Ranchi (Jharkhand), Extension Bulletin No. 06, pp 1-38.
- Krishnaswami S (1960). *Lac cultivation in India*. Ministry of Food and Agriculture, New Delhi. Farm Bulletin No. 60, pp 1-36.
- Sharma K K, Jaiswal A K and Kumar K K (2006). Role of lac culture in biodiversity conservation: issues at stake and conservation strategy. *Curr Sci* **91** (7) : 894-898.
- Sharma K K (2007). Lac insect-host plant interaction: Implications on quantity and quality of lac.. In: Model Training Course on Advanced Lac Production, Storage and Application Technology for Employment & Income Generation (19-26 Feb.). Bhattacharya A, Jaiswal A K, Prasad N and Pal G (Eds.). ILRI, Namkum, Ranchi, pp 41-48.

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