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Lac Cultivation in India

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SUMMARY

Lac insect, commonly known as Kerria lacca is one of the most important commercially used insects like honey bee and silk worm. They mostly like to colonize in Kusum plant (Schleichera oleosa) and Palash plant (Butea monosperma). The strain developed in Kusum plant is better than strain developed in Butea monosperma due to its light color. Lac resin (75%) and Albuminous material (12-13%) are two major ingredients of lac. Large white moth and Small black moth are considered as major enemies of lac cultivation.

INTRODUCTION

Lac insect commonly known as *Kerria lacca* belongs to family Kerriidae under the super family Coccoidea under the order Hemiptera. The family is popularly known for constituting mostly scale insects having more than 2000 insect species found globally. *Kerria lacca* is used for commercial production of Lac, which is sold as Shellac in market (Raman, 2014). The lac insect is native to Asia (Ahmad, 2012). India occupies the leading position in production of Lac, Gum, and Resins along with Myanmar, Thailand, Malaya, Lao and Yuan province of China (Mohanta *et al*., 2012).

Biology of *Kerria lacca*

The female reproduces ovoviviparously and lays about 200-500 eggs in the brood chamber. The eggs hatch within few hours and crimpson red color first instar nymphs known as "Crawlers" came out. The emergence of first instar nymph is known as "Swarming". After emergence the neonate nymphs, they start to colonize on the soft, succulent twigs and start to suck the plant sap and secrete resinous secretion over the body (Mohanta *et al*., 2012). The resinous compound known as lac which is secreted by the dermal glands present throughout the body except mouth parts, breathing pores and anus. The nymphal stages go for three times moulting and develop into adult. After completion of first moult, both male and female lose their antennae, legs and eyes. Female remain in this degenerate form and continuing feeding as well as secreting resin. The male and female can be distinguished by their body shape. Male is slipper like and having an operculum at the rear end female is globular. Male emerged as alate or non-alate adults after the final molt and mate with adult female and then die.

Lac Strains and Cultivation

There are basically two strains of lac insects throughout the India which are commonly known as Kusumi and Rangeeni. Kusumi strain can be reared on Kusum (*Schleichera oleosa*) and Rangeeni strain depends on *Butea monosperma*, *Ziziphus mauritiana* and *Shorea talura*, *Acacia nilotica* and *Acacia catechu*. Kusumi strain can be cultivated on other alternate host plants Jethwi (June or July to January or February) and Agani (January or February to June or July) each having six months duration and similarly Rangeeni strain have two alternate host plant Katki (June or July to October or November) Baisakhi (October or November to Jun or July) having four and eight months duration (Kumar *et al*., 2002; Sharma, 2007 and Sharma *et al*., 2007). Agani and Baisakhi are considered as main host plant and contribute more than 90% of total lac production. Pruning of trees were done with a sharp instrument to give neat cut at 6 and 12 months before inoculation of lac insect (Sharma and Jaiswal, 2002). Most suitable temperature for lac cultivation is 27-30 degree Celsius.

Composition of Lac

Lac is mainly composed of Lac resin (75%), Albuminous material (12-13%), Waxes (6%) and Dyes (6%)

Propagation of Lac cultivation

The twigs encrusted with brood lac are cut from the trees and then they are tied with the branches of their respective host plants. The neonate nymphs are emerged from the brood lac called "swarming" and after their emergence the left part is known as "stick lac" or "phunki". The lac coated sticks are kept in water for 3-4 days for extraction of raw lac. The raw lac is used for releasing the "seed lac" or "chowri" after removing the all impurities. The chowri is melted by hanging over a charcoal fire to extract the pure lac. Pure lac is cooled down to solidify and it takes in the form of discs or button shaped called "button lac" and when it stretched into thin sheets called "shellac". After drying the sheets, they are broken into thin small flakes called "flake lac". Shellac or Button lac is used for commercial purpose and Shellac Aleuritic acid is used in the manufacturing of perfumes. The early harvested lac is known as "Arilac".

Enemies of Lac insect

Lac insect is mainly attacked by two types of enemies' viz. Parasites and Predators.

Parasites:

Parasites are the organism which nest in other living bodies and depend on their host for their nutrition, growth and development. In case of Lac insect, small tiny winged parasites belongs to the family Chalcidae under the order Hymenoptera is reported which oviposit inside the lac cells and newly hatched larva consume the living lac cells for their nourishment.

Predators:

Predators which directly involve in the consumption of their host. The following predators for the lac insect have been reported:

1. Larger white lac moth (*Eublemma amabilis*; Noctuidae) and Smaller black lac moth (*Holocera pulverea*; Gelechiidae): Both the lepidopteran insect pests lay eggs on or near the lac encrusted branches. The larvae on hatching bite their way into lac encrustation and feed on the lac insects and lac encrustation. *Microbracon greeni* has reported as good biocontrol agent against the both lepidopteran insect pests.
2. Lac wing fly (*Chrysopa* sp.): The maggots move about the lac encrustations and feed on the body contents of lac insects.

CONCLUSION

Lac cultivation can be popularized among small farmers by improving the facilities and utilization of natural resources in an appropriate way. The present text has been highlighted to expose the general recommendations and constraints in the lac cultivation and it will be helpful to get a superficial idea about the lac culture.

REFERENCES

Ahmad, A. (2012). Mouthparts and stylet penetration of the lac insect *Kerria lacca* (Kerr) (Hemiptera: Tachardiidae). Arthropod Structure and Development. 41: 435-441.

Kumar, K. K., Ramani, R. and Sharma, K. K. 2002. Recent Advances in Lac Culture. ILRI, Namkum, Ranchi. p. 290.