

8.3 LAC CULTURE

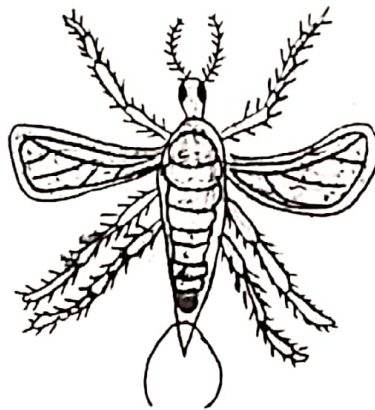
The art of rearing lac insects for the production of lac is called lac culture or lac cultivation.

T.N: *Kerria lacquer*

(Kerriidae; Homoptera)

Lac: A product of lac insects, native to Indo-Pakistan. Crude lac contains resin and lac dye. Previously, lac was valued for its dye but after discovery of synthetic dyes, there is no demand of lac for dyes and now it is valued for resin.

- Resin is used for manufacturing of varnishes, paints, etc.
- Ships and aeroplanes are painted with lac to save from water and climatic effects.
- It is used for coloring wooden articles.
- No successful substitute for lac has been discovered so far.



Male

8.3.1 Biology of lac insects: It has two broods i.e. Kharif and Rabi. Total duration of Kharif is 3 and Rabi is 8 months. Rabi is commercial crop and Kharif is a brood crop. In one inch there are 100-150 cells of lac insects and from one cell about 250 larvae emerge out. Duration of swarming period is 2 weeks in Kharif and 3 weeks in Rabi. Larvae are scarlet-colored. They crawl on tree branches and then fix their stylets in tissues and suck sap. After second instar, it undergoes a pre-pupal and a pupal stage, each of about 1 week duration.

8.3.2 Environmental Requirements:

Prefer to live at 25-37°C, 50-70% Relative Humidity. Cultivation of lac in dry areas is

not possible. Sub-mountains of Punjab are best localities. Salt range, river belts and thick forests are also good.

8.3.3 Lac Hosts: There are 77 hosts plants but only followings are proved successful:

1. *Zizyphus jujuba* (Ber)

Lac is of superior quality. Respond to pruning. Brood of this lac can be tried on all other hosts.

2. *Ficus* spp. (Fig)

Best species is *Ficus carica*. Lac produced is light weight and of superior quality. It affords protection to brood in summer.

3. *Acacia arabica* (Kiker)

Inferior quality lac is produced. In Hyderabad, it is most important host.

Time of growing lac: As the insect has two generations in a year, so there are two crops i.e. Kharif and Rabi.

a) **Kharif:** Pruning is done from January-March and it is essential because tissue becomes succulent and sap is easily sucked. Pruning should be done 6 months before inoculation. Inoculation is done in July. Crop matures in October and healthy seed is taken for propagation.

b) **Rabi:** Inoculation is done in Oct. Crop matures in July.

8.3.4 Methods of propagation:

A. Natural: Swarming takes place on mother plants and larvae settle on the growth of infested branches. Infection is not uniform. This method is not to be practiced for commercial purposes.

B. Artificial: This method is practiced under semi-controlled conditions. After pruning, 2-3 kg of brood lac is inoculated on each tree. Stick method of inoculation is the quickest and the most efficacious and economical. Healthy branches of infected trees i.e. brood sticks 9-12" long are cut and tied below the fresh branches to be inoculated. Larvae travel underside of branches in 24 hours and then fix at a suitable place and start sucking sap. First fortnight of July and second fortnight of October are the best inoculation seasons in Punjab.

Harvesting: Harvesting of Rabi crop is done in August and of Kharif crop in February.

Harvesting or cropping should be done when shifting of larvae is over. Infested branches are cut and lac is scraped off. Lac is dried in shade and stored. Raw lac should not be stored for more than 6 months.

8.3.5 Lac products:

1. **Stick lac (Raw lac):** It is freshly scraped lac. It is crushed, washed and impurities are separated. Quality depends upon host, time of removal and scraping equipments.
2. **Seed lac:** It is washed stick lac. Average recovery of seed from stick lac is 50%. It is pure form of lac. By washing, lac dye is removed. Alcohol solubility confirms purity. It is used in wood articles, lithographic ink, cement, sealing wax and lac dyes.
3. **Shell lac:** Seed lac is molded in furnace and acquires the forms of flakes called shell lac and it is commonly used form.

In Rawalpindi, only Kharif crop is recommended and thus leaves could be fed to cattle during Rabi as there is shortage of fodder.

In Lahore, Gujranwala and Sialkot only Rabi crop is recommended. Insect does not suck and hibernates in winter up to 15th March and by then Ber fruit is matured which can be consumed.

8.3.6 Lac insect enemies:

- i) **Predators of lac insect:** Fig wax scale is a common predator. As a remedy, removal of brood sticks just after ripening has proved effective.
- ii) **Pests of lac hosts:** Fig borer, fig mite, ber beetle, mealy bug, hairy caterpillar and leaf roller attack various host plants and thus affect lac insects.