

#### IV. Development of Egg into Pupa -

- As the resinous secretions come in contact with the air, it becomes hard & forms a coating over the body of the larva and now this covering is called cell.
- Within the cell various life processes like the growth of larva and morphological changes takes place.
- Inside the cell larva undergoes three moults.  
(3 stages of metamorphosis)
- After the first moult, both the female and male & nymphs lose their appendages, eye & become degenerate.
- The female once inside the cell will never come out through the operculum of the anal opening.

#### V. Formation of the Adult -

- After about 6-8 weeks the stationary life of larva metamorphoses into adults having cast-off the second and the third moults.

- Only the male undergoes complete metamorphosis, it loses its proboscis, develop antennae, legs & a pair of wings.
- The female undergo incomplete metamorphosis. They retain her mouth parts but fail to develop any wings, eyes or appendages.
- Female becomes an immobile organism with little resemblance to an insect.
- They become little more than egg producing organisms.
- The sex can be determined even during the early stages of development.
- As in the case of males the growth is more on the longitudinal axis and in females growth is more in the vertical axis.
- The life span of the female is longer than that of the males.
- Most of the lac is secreted by females
- The life cycle occurs twice in one year on the same plant.

### Host trees -

- Pongam or Honge (Millettia pinnata) is a native of India & grows in profusion, planted by forest department.
- Ex: Dhak, Bel, Kasam

## Steps of lac culture -

• There are following steps in lac culture -

- i) Cultivation and pruning of host plant
- ii) ~~To~~ Inoculation
- iii) Identify or forecast of swarming
- iv) Harvesting or reaping of crop
- v) Processing of Lac

### i) Cultivation and pruning of host plant -

- The quality of lac depends upon the quality of host plant
- So there should be suitable host plant according to environmental condition.
- When the host plant reach proper height, they undergo pruning. Branches less than 2.5 cm diameter are selected for pruning. Branches less than 1.2 cm in diameter are cut at a distance but branches more than 3.8 cm from their base.

### ii) Inoculation -

- The process by which lac insects are introduced to the new host plant is called inoculation or injection
- It may be of 2 types -
  - i) Natural inoculation
  - ii) Artificial inoculation



a) Natural inoculation -  
occurs by natural movement of swarming larvae from one plant to other.

b) Artificial inoculation

Lac insects are introduced to new host plant in a planned & scientific manner by the cultivators.

- About two weeks before swarming, the lac bearing sticks are cut into pieces & kept for two weeks in cool place.
- When the larvae starts emerging, the sticks are tied with the help of strings to the branches of new host tree.

iii) Forecast of swarming -

- Cultivators must have accurate knowledge of time of swarming because methods are directly related with the swarming of larvae.
- The eggs become ~~orange~~ orange coloured before hatching.
- At the time of swarming the upper surface of female cell has yellow spot on the anal region.

#### iv) Harvesting or reaping of crop.

• The process of scraping lac from branches of host trees is called harvesting or reaping.

• Harvesting is of two types -

a) immature harvesting

b) Mature harvesting.

a) Immature harvesting - scraping of lac before swarming, collected lac is called *shri lac*.

b) Mature harvesting - scraping of lac after swarming, obtained lac is called *Phunki lac*.  
It is the most common method.

• Lac bearing twigs are cut in to pieces called *stick lac* (brood lac for next generation)

• Then the lac incrustation is scrapped from the stick with the help of knife.

#### v) Processing of lac.

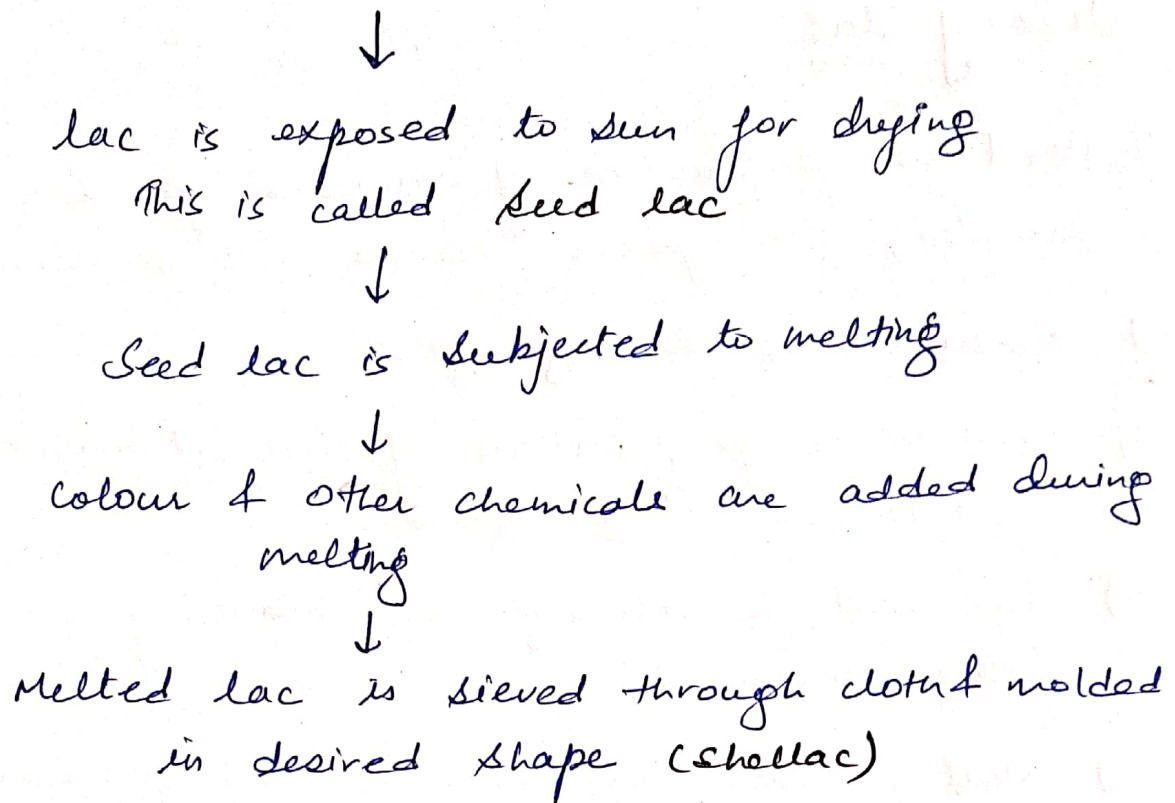
• Processing of scrapped lac into commercial lac is given below in graphic manner.

scrapped lac is grinded into stone mill

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grinned lac is repeatedly washed with cold water to remove the dirt

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### Lac enemies -

- Small winged insects called chalcid are common predator, their larvae feed on lac insect causing death.
- white moth & gray moth are major predators
- Rats, bats, squirrel, monkeys & some birds also destruct the lac crop in many ways
- climatic factors such as cause damage to lac crop such as -
  - excess heat
  - excess cold
  - heavy rain
  - high humidity
  - storm

## Uses of lac

- i) Used in preparation of varnishes, paints, toys, bangles, gramophone records and buttons
- ii) consumed as sealing agents
- iii) Used in the preparations of electrical goods; lac is used as insulating agents.
- iv) Also used for silveing the back of mirror & filling ornaments.
- v) Nail polishes and dyes are by products of lac industries.