



# NON - MULBERRY SILKWORM REARING

**Dr. Mahesha H B**  
**Professor and Head**  
**Department of Sericulture**  
**Yuvaraja's College,**  
**University of Mysore, Mysore, India**

## REARING OF NON MULBERRY SILKWORMS

TASAR	MUGA	ERI
WILD	SEMI DOMESTICATED	DOMESTICATED
<b>Tropical tasar silkworm</b>  <i>A. Mylitta</i> , (India) Temperate Silkworm <i>A. Proyli</i> , (India) <i>A. Pernyi</i> , (China, USSR) <i>A. Yamamai</i> , Japan)	<i>A. assamensis</i>	<i>Philosamia ricini</i>

# Tasar Rearing

- **Outdoor rearing account for losses of 50-55%, during the early instars.**
- **Besides, the mortality from disease (35-40%).**
- **Losses can be substantially decreased by a more rational approach to rearing**



# Rearing operations

The fate of the crop largely depends on choice of rearing site and food plants, brushing, supervision and maintenance of larval population and other rearing operations.



## Selection of rearing site and food plants

**The traditional tasar rearers usually utilize the sparsely distributed food plants on the bunds of paddy fields**

**Fairly thick patches of food plants of 3.0-3.5 m tall are ideal.**

**The bushes must not be utilized for two successive crops in a year.**

# Rearing preparations

- **Before the onset of rearing, the site should be cleared of weeds.**
- **Apart from removing the unsuitable foliage, care should be taken to free the bushes of insects, particularly ants nests.**
- **A band of straw with a little ash should be tied around the trunk to check the downward movement of larvae. The trunk base should be encircled with a thin band of gammexane to prevent attack by ants and other insects.**



# Quality of leaf

**The younger larvae thrive on juicy, tender leaves.**

**The latter instars require medium to mature leaves.**



# Brushing

**Brushing is the placing of the hatching larvae on the leaves. The traditional cultivators tie the leaf cups containing the eggs on the bushes for hatching. Both the developing embryo and the newly hatched larvae are thereby exposed to fluctuating temperature and humidity heavy rain, storms and other hazards. This results in poor hatchability and heavy losses of larvae.**

- **A small twig should be placed over each of the newly hatched larvae**





**TASAR EGGS  
AT HATCHING**



**NEWLY HATCHED  
TASAR SILKWORM**

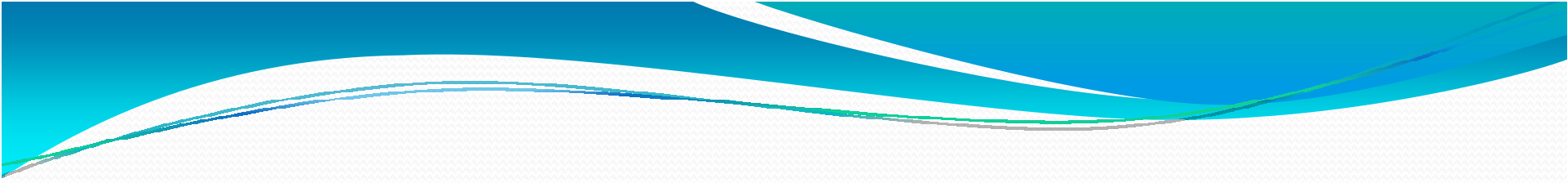


**FULLY GROWN  
TASAR SILKWORM**



**Supervision and maintenance of larval population:**  
**Outdoor rearing calls for dawn-to-dusk vigilance against pests and predators.**

**Traditional cultivators brush the larval population too densely without regard to the quantity of foliage. This high density decreases effective yield owing to the higher disease mortality and also adversely affects the economic character of the cocoon.**



**Frequent direct handling of the larvae causes considerable injury to their health and contaminates the population. It is therefore desirable to transfer the larvae only once or twice by cutting off the small branches bearing larvae and attaching them to unused food plants. A secondary advantage of this system is light pruning of the plants.**



## **SHIFTING OF TASAR SILKWORMS TO NEW TREE**



**Moulting and spinning larvae should not be disturbed and enough foliage to form the hammock properly.**

**Dead larvae hanging on the bush or fallen to the ground should be collected every morning and evening & for microsporidiosis.**

**The cocoons should be harvested and the cocoons are graded.**



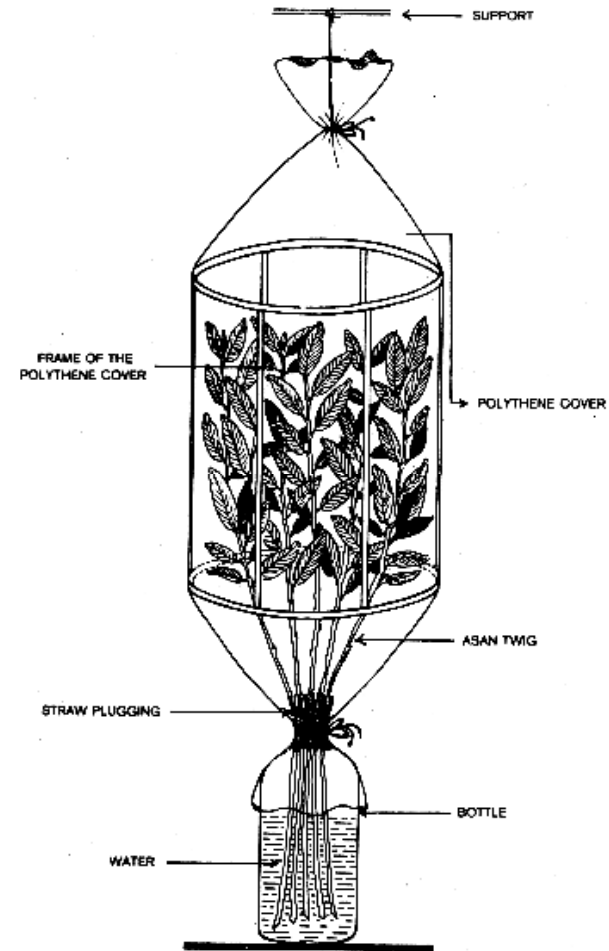
# Improved rearing techniques

# Controlled rearing:

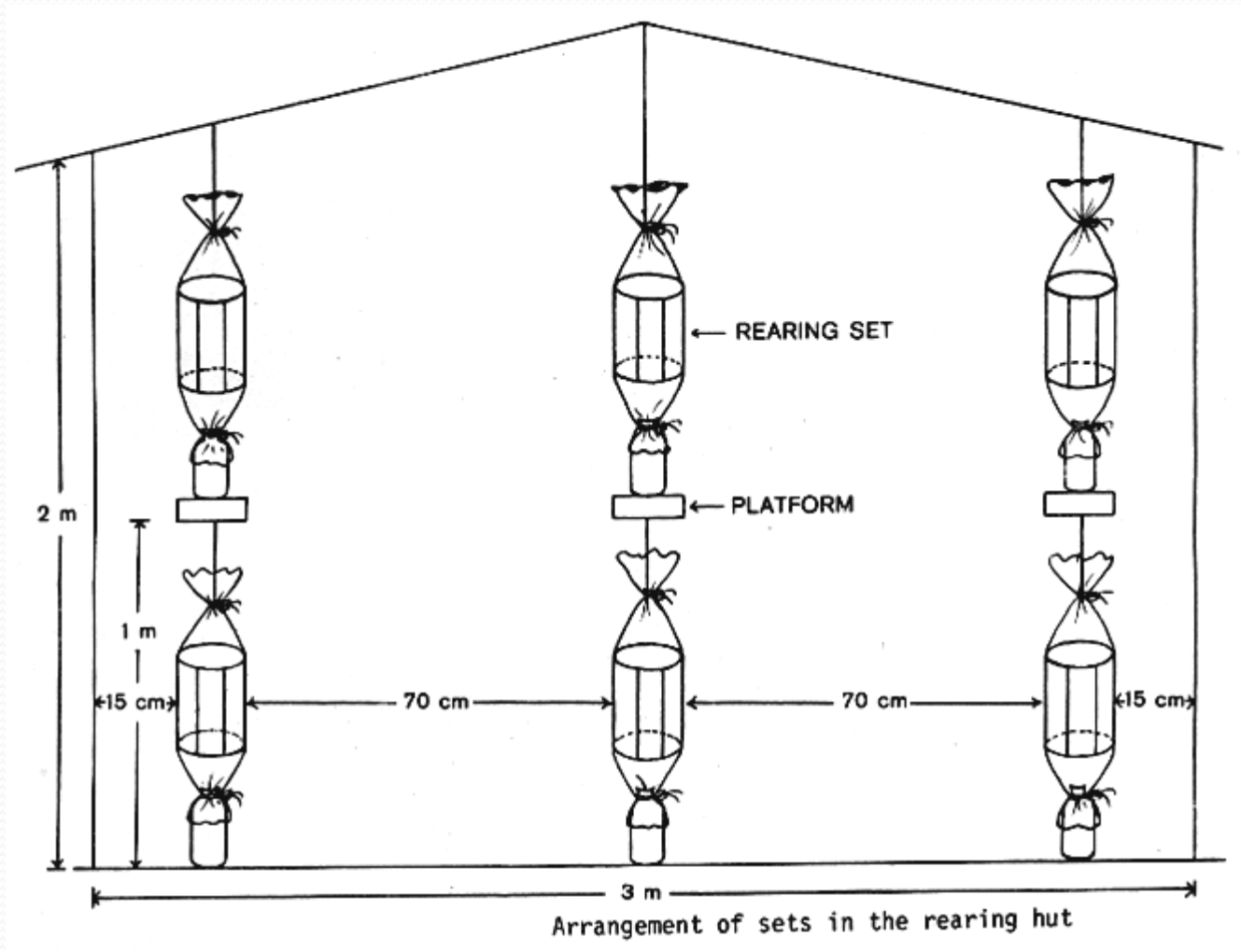
## Rearing set



Indoor chawki rearing technology



Controlled rearing set for early-instar larvae





**Benefits of control rearing: Traditional rearing method the loss in the first instar 30%.**

**+ 45 to 50% in later ages**

**Natural calamities 10%.**

**Controlled rearing reduces not only the first-instar losses to as low as 5%.**

**The effective yield thereby increases to 50 to 60 cocoons per disease-free laying (dfl) against 15 to 20 with the traditional method**

**Early-instar rearing centres:**

## Early-instar rearing centres



**Integrated Package for chawki**



Integrated Package late age silkworm rearing

## **DIFFERENT ECORACES TASAR SILKWORM**



## **COCOON SPINNING BY TASAR SILKWORM**



## **COCOON HARVESTING**

## **Early-instar rearing centres:**

**Rearing up to the third instar is conducted on economic plantation, preferably under nylon netting.**

**As soon as the larvae have passed the second or third moult, the twigs bearing them are cut and transferred to forest or block plantation for rearing in the advanced stages.**

**About 4000 dfl can be reared up to the third instar on one hectare of economic plantation.**

**The loss during the early instars is reduced to 5 to 6% against 40 to 50% .**

**The yield is stable and rich i.e., 80 to 100 cocoons/ dfl**



# **MUGA REARING**

## **Rearing period**

***A. assamensis* is polyvoltine - five or six crops annually.**

**The larval span varies by season.**

**Kotia and lethua are large-scale crops for the production of reeling cocoons, whereas the remaining crops are used only for stock maintenance and seed purposes.**

**The muga silkworms have a high humidity requirement, is satisfied by the high annual rainfall (2000-2100 mm) throughout the rearing belt.**

**The optimum temperature and relative humidity ranges are 24-25° C and 75-80%.**



eggs on kharika



Brushed muga silkworm on  
Som Leaves

**The kharikas are tied with straw rings on the main trunk of the trees 1.5-2.0 m above the ground.**



Som plants covered by net to protect the muga silkworms from birds/bees



Chawki rearing plot of Som







## **MUGA SILKWORM MOVING DOWN FOR SPINNING AND COLLECTED FOR MOUNTING**





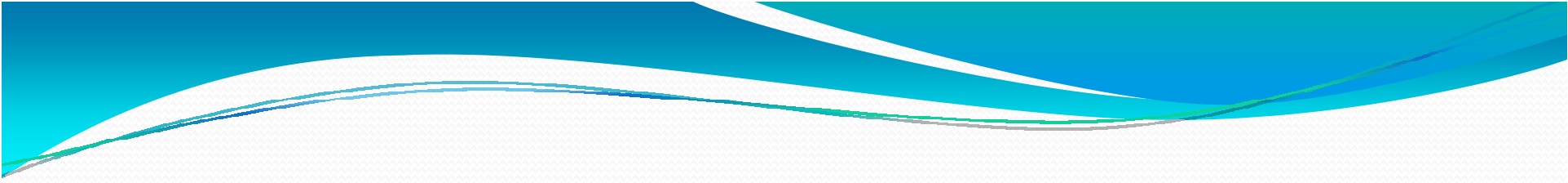
## **SHIFTING OF MUGA SILKWORMS ON A NEW TREE TRUNK**



## **SHIFTING OF MUGA SILKWORMS ON A NEW TREE**



**FULLY GROWN MUGA SILKWORMS**



**The ripened muga larvae have the peculiar habit of moving collectively toward the trunk base at dawn for cocooning. The ripening may commence at any time of the day. The larvae have to be picked up, as otherwise they travel long distances in the grass in search of a suitable cocooning place. Cocoon formation starts in the evening and is completed within 3 to 4 days, depending on the season. As in *A. proylei* the ring and peduncle are quite weak and almost rudimentary.**



Gravid worms placed on *Jali*



Harvested Muga cocoons ready for market



# **ERI REARING**

## **Rearing house**

The rearing house should be ideally located and protected against rats. It should have verandah on all the four sides and an adequate number of doors, windows and ventilators to ensure cross circulation of air and good light. Glass panes on the outside wire-mesh fitted panels on the inside

effectively prevent the access of various pests and parasites. Naturally, the size of the rearing house is adjusted to the rearing capacity.

## **Rearing appliances**

The important appliances are rearing racks, trays and chandrika. The wood or bamboo racks (Figure) are about 1.8 m high, 2.1 m long and 60 cm deep with six shelves spaced 25 cm apart. The feet of the rack rest on antwells. The rearing trays, made of split bamboo and preferably circular should have a diameter of nearly 90 cm so that two trays can easily be accommodated on one shelf.





**CONVENTIONAL ERI REARING HOUSE**



**REARING OF LATE AGE ERI SILKWORMS**

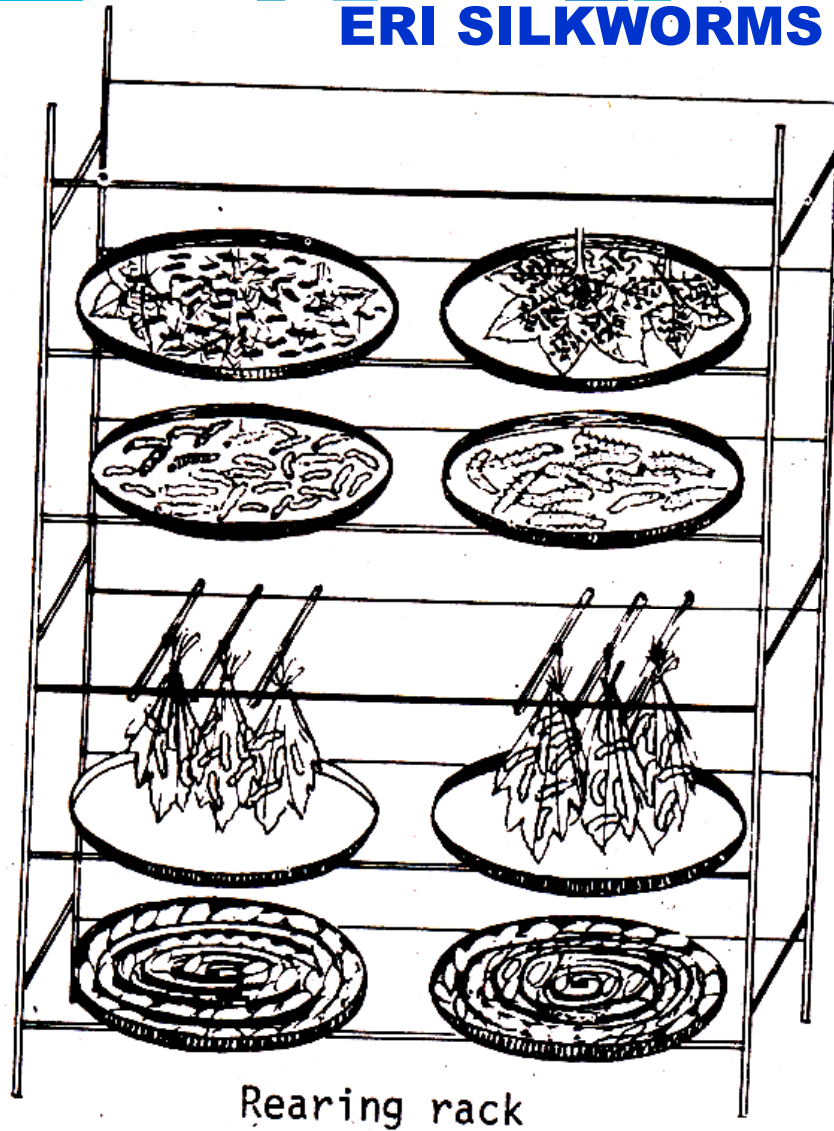


**ERI SILKWORMS AT DIFFERENT STAGES**



**ERI SILKWORMS WITH DIFFERENT COLOURS**

## ERI SILKWORMS - REARING METHODS



**LATE AGE ERI SILKWORM REARING**



**CLEANING OF ERI SILKWORM REARING BED**



**ANOTHER METHOD OF REARING**



**ERI SILKWORMS WITH DIFFERENT COLOURS**



**FULLY GROWN ERI SILKWORMS**



## **SPINNING OF ERI SILKWORMS**



**Acknowledgements  
to  
INTERNET  
FOR  
PICTURES and PHOTOGRAPHS**