

Ahimsa Silk: A Journey from Castor Leaf to Compassionate Cocoon

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ABSTRACT

Eri silk, *Samia ricini* (Donovan) often referred as "Ahimsa silk," is one the important sources of livelihood in North Eastern states. Eri culture involves rearing of food plants viz., castor, kesseru, and tapioca, indoor rearing of eri worms, cocooning and raw silk production. Blend of indigenous and scientific advancements made eri culture sustain over long period of time. Sustainable management of pest and diseases of larvae, host plants and more scientific intervention helps boost eri culture to reach worldwide. For that to happen it becomes vital to study the activities undertaken in eri culture, which is dealt in the present article.

INTRODUCTION

The science and art of rearing non-mulberry silkworms is referred as vanya sericulture. India holds monopoly in rearing all four silkworms viz. mulberry, eri, tasar and muga, of which mulberry and eri are completely domesticated while tasar and muga are semi domesticated. Eri is multivoltine popular in North Eastern states, West Bengal and Bihar. It is called *Ahimsa silk* because of the open-end cocoons

produced, which allows the moth to emerge naturally without being harmed, unlike other silks where the cocoons are boiled to kill pupa inside. Therefore, eri silk is spun and not reeled (Reddy and Shankar, 2008). Eri is top vanya silk producer contributing 79.62% (7183 MT) of total Vanya silk produced (9021 MT) and 18.45% of total raw silk (38,913 MT) (Ministry of Textiles, GOI, 2025).

Life cycle of Ahimsa silk

The eri moth lays around 450-500 ovoid eggs, measuring 1.5×1.0 mm in 3-4 days, maximum being on day one. Incubation period is 9-10 days (summer) and 14-15 days (winter). Hatching starts from 6:00 AM to 9:00 AM at optimum temperature and relative humidity (22-24°C 75-80%). The worms do not eat eggshell nor cast-off skin after moult like other silk worms. Newly hatched worms are greenish yellow gradually change to pure yellow in third instar, after which segregates into green, blue or white. Larval period ranges from 20 to 50 days in summer and winter, respectively with four moults. Late age rearing is undertaken either by bunch, platform or tray rearing. Ripe worms are picked and mounted on mountages. The commonly used mountages include chandrike, jali (a bundle of dry leaves of mango, banana leaves, jack fruit and ornamental plants) (Jolly *et al.*, 1979). Recently, a simple bamboo strip type mountage has been fabricated. Mature worms spin discontinuous filaments leading to open end cocoons. Pupa is obiect. Cocoon period is completed in 13-18 days. Depending on ecoraces colour polymorphism is witnessed. Kokrajhar produces brick red whereas Borduar and Titabar ecoraces form white cocoons, weighing about 8g (Mahesh and Arunkumar, 2020). Moth emergence takes place early morning 3:00 AM to 6:00 AM. Female moths are tied to kharika and males allowed to mate for four hours. Decoupling is done and females are allowed to lay eggs on kharika. Total of 44 (summer) to 85 days (winter) needed to complete life cycle.

Post cocoon activities in Eri culture

Cocoons should be harvested after 5-6 days of spinning in summer and 8-9 days in winter. Sorting is carried out to remove melted, dead, melted, stained, dead, inferior, pierced, cocoons. Healthy cocoons are stifled under sun or in hot air oven. Degumming is done to

dissolve sericin (11%) during which cocoons are tied in porous cotton cloth and immersed in solution for an hour (20% soap solution + 2% soda) in the ratio 1:6 of cocoon and solution. Degummed cocoons are washed in fresh water and used for spinning. Spinning is done by hand using Takli or pedal operated N. R. Das spinning wheel and Triwedi and Chowdary spinning wheel. Finally, spun silk is cross reeled on reeling frame to make hanks, which are packed in bundles, pressed into bales and marketed (Jolly *et al.*, 1979). The eri silk known for providing warmth and durability, is used to make sweaters, blankets, chaddars or wrappers and other suiting materials (Tamta and Mahajan, 2021).



Fig. 1: Life stages of *S. ricini*. From left: eggs, larva, pupa, cocoon and moth

Pests and diseases of *S. ricini*

Eri silkworms are known for hardiness and tolerance to pest and diseases which may be attributed to certain compounds present in castor leaves which when ingested, provide strength to worms to fight against various ailments. However, pebrine disease occasionally create problem. Therefore, mother moth examination must be carried out. Flacherie and grasserie (NPV) can be managed by proper disinfection of room and use of bed disinfectants. Among pests, uji fly *Exorista sorbillans* menace can be managed using ante rooms, nylon nets and fixing mesh to windows, doors etc.

Host plants and feeding of larvae

The name eri is derived from sanskrit word “eranda” and Assamese word “era” meaning Castor oil plant, focusing on the primary host,

the castor (*Ricinus communis*) whereas Tapioca (*Manihot utilissima*), Kessuru (*Heteropanax fragrans*) and Papaya (*Carica papaya*) act as secondary host plants (Sarmah *et al.*, 2008). Castor is propagated through seeds and yield around 14MT/ha/yr in rainfed conditions. Larvae feed on entire leaf except midrib and petiole. A non-bloomy red variety of castor, NBR-1 is recommended for eri silkworm rearing in North Eastern region of India. Sufficient tender (glossy) leaves are fed to chawki worms while bunch feeding taken up for late age worms (Sarmah and Chakravorty, 2008). Four or five feeds should be given per day at regular intervals during the young age rearing. In late age worms, five feeding per day are essential (Ahmed *et al.*, 2012).

Pests and Diseases of Castor

Insect pests are accountable for 35-40 % of yield loss in castor. Hairy caterpillar *Amsacta albistriga*, *A. morie*, *Porthesia scintillans*, *Euproctis fraternal*, *Dasychira mendosa*, capsule and shoot borer *Conogethes punctiferalis*, semilooper *Achaea janata*, castor butterfly/spiny caterpillar *Ergolis merione*, slug caterpillar *Parasa lepida* are the major pests whereas leafhopper, thrips, whitefly and gallfly are minor. Among diseases Alternaria leaf blight *Alternaria ricini*, root rot/die back *Macrophomina phaseoli*, grey rot *Botrytis ricini*, rust *Melampsora ricini*, powdery mildew *Leveillula taurica*, cercospora leaf spot *Cercospora ricinella* and *Xanthomonas campestris* pv. *ricini* causing bacterial leaf spot are major ones (Sarmah, 2004) Therefore, it becomes vital to control the spread of pest and diseases for success of eri crop.

CONCLUSION

Eri silkworm rearing is beyond just rural livelihood. It is a compassionate craft rooted in tradition and sustainability. Unlike other silk

production, Ahimsa silk honours the natural life cycle of the silkworm, allowing it to emerge peacefully from cocoon. Through scientific rearing, proper host plant management techniques and eco-friendly practices, eri rearing offers an ethical base in vanya culture. As awareness grows around cruelty-free and sustainable textiles, Ahimsa silk stands out as a symbol of harmony between nature, culture, and commerce. Empowering the rural and tribal communities, especially women and protecting biodiversity, eri silk truly weaves threads of peace into the fabric of modern life.

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