

Uzi Fly (*Exorista bombycis*) – A Major Endo-Larval Parasitoid Pest of Silkworm and Its Management

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Sericulture plays a vital role in rural livelihoods, and the success of silkworm (*Bombyx mori*) rearing depends largely on effective pest management. Among the insect pests, the uzi fly (*Exorista bombycis*), a dipteran tachinid parasitoid, is considered the most serious and destructive. It is also synonymously known as *Exorista sorbillans* and *Trycolyga bombycis*. The pest is widely distributed across major sericultural countries such as India, China, Japan, Bangladesh, South Korea, Thailand, and Vietnam. In tropical regions, its incidence is particularly high, causing economic losses ranging from 10–30%. Historically, parasitization of silkworms by uzi fly was first reported in Japan in 1868. In India, it was initially recorded in West Bengal and later observed in Karnataka (Bylanarasipura village, Hosakote Taluk) during May 1982.

Systematic Position

Kingdom : Animalia

Phylum : Arthropoda

Group : Invertebrata

Class : Insecta

Division : Pterygota

Subdivision : Endopterygota

Order : Diptera

Sub-order : Cyclorrhapha

Family : Tachinidae

Genus : *Exorista*

Species : *bombycis*

Life Cycle of Uzi Fly

Egg Stage: The female uzi fly lays about 300–400 eggs over a period of 9–25 days depending on seasonal conditions. Eggs are deposited on the intersegmental regions of the silkworm larval body. They are creamy white, oblong, and possess a reticulate chorionic pattern. Each egg measures about 0.45–0.56 mm in length and 0.25–0.30 mm in width. Hatching occurs within 2–5 days depending on climatic conditions.



Larval (Maggot) Stage: The maggot undergoes three instars. During the first and second instars, it remains just beneath the host skin, while in the final instar it migrates into the body cavity. Maggots are yellowish-white and segmented. They feed on internal tissues, especially fat bodies. Mature maggots emerge by piercing the host integument using prothoracic hooks within 5–8 days, ultimately killing the silkworm.



Adult Stage: Adult uzi flies are blackish-grey in color with a triangular head and aristate antennae. The dorsal side of the thorax bears four longitudinal black bands, and the abdomen is conical. Males (≈ 12 mm) are slightly larger than females (≈ 10 mm). Adult lifespan varies with season—males live 10–18 days, while females survive slightly longer. Longevity is reduced during summer.



Sexual Dimorphism

Male and female uzi flies can be distinguished by several morphological features. Males possess external genitalia with brownish-orange hairs on the ventral side of the abdominal tip, lateral region of the abdomen covered with bristles more dense in male than in female, Male Uzi fly have a narrower frons compared to female., distinct longitudinal lines on the dorsum of the thorax and larger pulvilli compared to females.

Factors Responsible for Outbreak

Outbreaks of uzi fly are influenced by multiple factors, including large-scale and overlapping silkworm rearing, favorable climatic conditions (20–30°C temperature and 60–90% relative humidity), increased adult longevity, higher fecundity, and reduced activity of natural enemies like predator and parasitoids.

Period of Occurrence

In southern sericultural states like Karnataka, Andhra Pradesh, and Tamil Nadu, the pest occurs throughout the year. Infestation is highest during the rainy season, followed by winter, and lowest during summer.

Nature of Damage

The uzi fly prefers late instar larvae (4th and 5th instars) for oviposition. Eggs hatch within 48–62 hours, and the maggots penetrate into the host body forming a black scar at the entry point. Internal feeding weakens and eventually kills the silkworm. Mature maggots exit and pupate in cracks and crevices.



Management Practices

a. Cultural and Mechanical Methods: Maintaining strict hygiene in the rearing house is essential. Infested larvae, maggots, and pupae should be promptly collected and destroyed. Cracks and crevices in floors must be sealed to prevent pupation. Use of nylon or wire mesh on windows, nylon net enclosures around rearing stands, and construction of anterooms help prevent fly entry. Care should be taken while bringing mulberry leaves into the rearing house.

b. Physical Methods:

1. Uzitrapp: It is used to attract and kill adult uzi flies. One packet containing 12 tablets is sufficient for rearing 100 DFLs. The product is available in the form of yellow, round tablets, each weighing approximately 2.5 g. One tablet should be dissolved in one litre of water to prepare a yellow-coloured solution. This solution should be placed in white-coated trays both inside and outside the rearing house, particularly near doors and at the base of windows. Uzitrapp is used from the



third instar stage up to spinning. It is safe for silkworms, eco-friendly, and effective in attracting both male and female uzi flies.

2. Light and sticky trap: Adult uzi flies are attracted to a light source in the rearing room after keeping the room dark for about two hours. A sticky board is placed below the light source to effectively trap the attracted adult uzi flies.



c. Chemical Method

1. Uzi Powder: Uzi powder is an ovicidal dust formulation used to kill the eggs of uzi fly on the body of silkworm larvae. It was developed by KSSR & DI. The powder is applied by dusting over the silkworms at a dosage of 3 g per square foot. It should be used from the second day of the third instar up to the spinning stage on alternate days, except during moulting. Dusting should be carried out after bed cleaning, and the silkworms should be fed about half an hour after application. Approximately 5 kg of uzi powder is required for rearing 100 DFLs.

2. Uzicide: Uzicide is an ovicidal liquid formulation based on benzoic acid, developed by CSR & TI, Mysuru. It is sprayed on the body of silkworms starting from the second day of the third instar up to the spinning stage on alternate days, except during moulting. The spray should be applied after bed cleaning or 2–3 hours after feeding. Silkworms should be fed about half an hour after spraying. Approximately 5 litres of uzicide is required for rearing 100 DFLs.

d. Bio control Agent

Nesolynx thymus is an ecto-pupal parasitoid that effectively targets and kills the pupae of the uzi fly. Its adults are released in the rearing house, mounting area, and mountage storage room at a rate of 1 lakh adults per 100 DFLs. The release is carried out in three split doses: 8,000 adults on the third day of the fourth instar, 16,000 adults on the third day of the fifth instar, and 76,000 adults on the day of cocoon harvest.



Conclusion

The uzi fly (*Exorista bombycis*) is a major constraint in silkworm rearing due to its destructive endo-larval parasitic behavior and high reproductive potential. Its management requires a comprehensive and integrated approach combining cultural, mechanical, physical, chemical, and biological methods. Adoption of timely and effective control measures not only minimizes infestation but also ensures better cocoon quality and higher productivity. Sustainable management of uzi fly is thus essential for the economic success and stability of the sericulture industry.

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