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Uzi Fly in Mulberry Silkworm Rearing: How Farmers Can Prevent and Control It

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Uzi fly (*Exorista bombycis*) is often called the silent killer of silkworms. Unlike leaf-eating pests, it goes straight for the worms, laying eggs on their bodies. The maggots feed inside, leaving the worms weak, unable to spin, or dead before cocooning. What makes it worse is that the attack often goes unnoticed until the final stage, when the damage is beyond control. In severe cases, farmers can lose more than half of their crop.

This article explains how the pest multiplies so quickly, what early signs farmers should watch out for, and the most practical ways to stop it. From disinfecting rearing rooms and sealing windows, to using low-cost traps, botanicals, and biological agents, several solutions are within easy reach. Regular hygiene and vigilance are the keys. By breaking the uzi fly's cycle in time, farmers can protect their silkworms, improve cocoon quality, and secure their earnings from this hidden menace.

Introduction — why this matters

Uzi fly (*Exorista bombycis* or *Exorista sorbillans*) is a relentless enemy in silkworm farming. It kills late-stage larvae silently, spoiling batches and hurting your income. Farmers often lose up to 70 % of a crop if they miss signs early (Makwana *et al.*, 2023). Research shows the fly's larvae suppress silkworm defense systems, making infections stealthy and devastating.

Unlike other pests that attack mulberry leaves or equipment, uzi fly targets the silkworm itself. This makes it especially dangerous because even well-fed and healthy worms can be destroyed at the last stage, just before cocooning. Studies confirm that outbreaks are worst during humid months, when adult flies multiply quickly (Sowmya and Rajitha, 2021). That's why knowing how the fly works, spotting it fast, and acting simply can make or break your rearing season.

Farmers often underestimate the pest because worms look normal in the beginning, but by the time symptoms appear, the damage is already done. Even a single female uzi fly can parasitize hundreds of larvae in her lifetime, making the threat multiply very quickly. That is why extension workers call uzi fly the "silent killer" of sericulture.

Life cycle made simple

Uzi fly lays tiny eggs or larvae on or near late-instar silkworms. The larvae burrow inside, feeding on the host internally, then exit to pupate, silkworm becomes weakened or dies in the process (Makwana *et al*., 2023).

Parasitized silkworms usually don't show external changes until it's too late. Studies show the fly manipulates the worm's hormones, raising ecdysone and juvenile hormone levels, causing premature wandering and weak cocooning (Wang *et al.*, 2023). In some cases, larvae never spin cocoons at all.

The fly develops faster in warm, moist conditions, and a single generation can build up in just weeks. This explains why infestations can explode suddenly, especially in rainy seasons (Sowmya and Rajitha, 2021). All this happens inside the larva, out of sight. That's why early detection and preventive steps are your best defense.

In favorable weather, one uzi fly generation can complete in just 18–20 days, creating multiple overlapping generations in a season. Field studies report that even a 5% infestation at the start of a crop can grow into a 50% loss if left unchecked. Because the larvae develop inside the host, external chemical control becomes almost useless, stressing the need for preventive action.

Spotting early infestation (what to watch for)

We should carefully observe silkworms at least twice a day, particularly during the late instars when they are most vulnerable. Infested larvae often behave differently from healthy ones they stop feeding earlier than usual and start wandering around the tray or rearing room too soon (Wang *et al.*, 2023). This unusual wandering is one of the first hints that the uzi fly may have attacked.

When checking trays, pay attention to the larvae's skin. Small dark spots or tiny pinholes on the body are common signs that fly maggots have already entered or exited. In some cases, farmers may even notice small white maggots wriggling in the rearing trays or near dead worms on the floor.

Sometimes, it can be difficult to tell the difference between normal silkworm behavior and early signs of parasitism. Healthy larvae do wander before spinning, but they usually do so at the right stage and with steady movement. In contrast, parasitized larvae begin wandering much earlier, appear weaker, and look restless or sluggish at the same time. Once these symptoms are spotted, we should immediately isolate the affected trays to prevent further spread (Qadir *et al.*, 2024).

Another clear sign shows up during spinning. Healthy silkworms produce strong, uniform cocoons, while infested larvae often spin thin, weak, or irregular cocoons. Dead larvae collected at the bottom of trays, especially those showing tiny round exit holes, almost always indicate uzi fly infestation.

Since early detection is the key to saving the remaining crop, everyone involved in rearing should be trained to recognize these signs. Farmers who act fast at this stage often manage to limit damage and protect a good portion of their crop. To make these early signs clearer for farmers, Figure 1 provides a simple illustration showing how to inspect silkworm trays, recognize possible uzi fly symptoms, and remember safe practices.

Fig. 1. Simple illustration for farmers: inspecting silkworm trays, identifying uzi fly infestation signs, and avoiding harmful insecticide use.

Prevention First — setting the stage before rearing

Stopping the uzi fly starts before a single silkworm enters the rearing room. A clean, well-prepared space makes it harder for the fly to establish.

The first step is deep cleaning between crops. Sweep out all leftover mulberry leaves, frass, and old materials. Sun-dry and air the room for a few hours. Disinfect floors, benches, and corners with a mild bleach solution or approved disinfectant. This simple step removes hidden pupation sites, breaking the pest's cycle and also lowering the risk of other silkworm diseases (Makwana *et al.*, 2023).

Next is securing the rearing environment. Uzi flies are most active at particular times of day and can squeeze through the smallest openings. Using fine mesh on windows, fixing torn nets, and ensuring doors close properly all reduce their entry. Even one overlooked crack can undo your hard work.

It's equally important to avoid carrying forward infested material. Don't start a fresh batch with trays, cocoons, or waste from a previous infested cycle. Dead or infested larvae must be destroyed immediately, burned or buried far from the rearing site.

Finally, natural botanical barriers offer an eco-friendly shield. Farmers in several states have found that spraying neem or karanj oil on rearing room walls and surroundings (never directly on worms or leaves) cuts fly landings by nearly half (Naan *et al.*, 2024). These repellents are low-cost, safe, and sustainable compared to chemical insecticides.

Control During Rearing — smart actions once worms are inside

Even the best-prepared farmers may still face uzi fly pressure during rearing. What matters is quick response and smart control once worms are in trays.

The golden rule is immediate isolation and destruction. If you see telltale signs, tiny eggs near the head, restless late-instar larvae, or maggots emerging, act fast. Remove and burn or deep-bury infested material away from the rearing house. Don't delay; even a few survivors can re-infest within hours (Makwana *et al.*, 2023).

Mechanical traps add another layer of defense. Sticky traps or fermented bait traps placed outside rearing rooms not only reduce fly populations but also serve as early-warning tools. When trap counts rise, farmers know to step up vigilance.

Eco-friendly botanical sprays can also suppress adult activity. Applied carefully on walls, doors, and rearing house surroundings, neem and other plant oils reduce fly survival and egg-laying without harming worms (Naan *et al.*, 2024).

For persistent problems, biological control with the parasitoid *Nesolynx thymus* offers long-term relief. This tiny wasp specifically targets uzi pupae, lowering fly emergence by over 60% in field trials (Chakraborty *et al.*, 2024). However, it requires proper guidance, timed releases, coordinated efforts, and follow-up monitoring. Farmers should consult their local sericulture office before attempting biocontrol releases.

Farmer's Quick Checklist — daily habits that make the difference

When uzi fly pressure is high, even small slips can cost an entire crop. A simple checklist helps farmers stay consistent:

Do

- Clean and disinfect rooms thoroughly between crops.
- Inspect larvae twice daily, especially in late instars.
- Train helpers or family members to spot early signs of infestation.
- Use nets, traps, and repellents consistently.
- Seek expert advice before releasing any biocontrol agents.

Don't

- Don't spray broad-spectrum insecticides inside rearing houses, they can kill silkworms or lower silk quality.
- Don't leave dead larvae, loose cocoons, or shed skins in the rearing area.
- Don't ignore small infestations; 5% today can become 50% tomorrow.

A little discipline goes a long way. Farmers who combine clean starts, quick responses, and steady habits often succeed in keeping uzi fly losses low without heavy chemical use.

Short troubleshooting guide (if infestation appears)

- Small infestation (<5%): Isolate affected tray, destroy infested larvae, increase monitoring, place traps (Makwana *et al.*, 2023). Often, this level can be controlled with strict hygiene and mechanical methods alone.
- Medium (5–15%): As above, plus expand trapping outside and consider targeted botanical sprays around room per label. Consult extension for options (Naan *et al.*, 2024). Failure to act quickly at this stage often results in major losses by the next crop.
- Large (>15%): Stop new crops, clear and deep-clean the room, destroy contaminated stock, and contact local sericulture authorities for assistance with possible biological control releases (Makwana *et al.*, 2023; Chakraborty *et al.*, 2024). This situation usually requires outside support and expert advice to recover.

Conclusion — the one message to remember

Uzi fly damage is preventable if we act before late instars and keep rearing houses clean and sealed. Daily checks, fast removal of infected material, local traps, and where available biological controls like *Nesolynx thymus* form a practical, low-chemical approach that protects both worms and your income. Farmers who follow preventive routines often report saving entire crops that would otherwise be lost. Simple daily practices are more effective than emergency treatments after damage begins. With awareness and vigilance, uzi fly can be managed without heavy chemical dependence.

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