

SCIENTIFIC NOTES

**INTEGRATED MANAGEMENT OF UZI FLY,
EXORISTA BOMBYCIS (LOUIS) (DIP.: TACHINIDAE) IN
MUGA SILKWORM, *ANTHERAEA ASSAMENSIS* HELFER
(LEPI.: SATURNIIDAE) UNDER OUT DOOR REARING
CONDITIONS OF ASSAM (INDIA)**

S. G. Eswara Reddy*

* Central Muga Eri Research & Training Institute, Central Silk Board, Ministry of Textiles, Govt. of India, Lahdoigarh, Jorhat -785 700 Assam, INDIA. E-mail: ereddy2001@yahoo.com

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Muga silkworm, *Antheraea assamensis* Helfer (Lepidoptera: Saturniidae) is semi domesticated, polyphagous, multivoltine and endemic to Assam, yields golden yellow silk. The present production of raw silk in Assam is 117 million tonnes accounting to 0.65% of raw silk produced in the country, while rest of the production contributed by other North-Eastern states (Anon, 2009). The muga silkworm is reared in 5-6 seasons in the year. The *Jethua* (April-May) & *Kotia* (Oct.-Nov.) rearings are commercial crops, *Chotua* (Feb.-Mar.) & *Bhodia* (Aug.-Sept.) as seed and *Jarua* (Dec.-Jan.) & *Aherua* (June-July) as pre-seed crops.

Muga silkworm is attacked by a number of parasitoids (*Apanteles* sp., *Exorista bombycis*) and predators (ants, wasps, birds etc.). Among these *E. bombycis* is one of the serious endo-parasitoid particularly during *Jarua* (Dec.-Jan.) and *Chotua* (Feb.-Mar.) crop seasons and reported 20-90% loss in winter & post winter (Dec.-Mar.) (Anon, 2007) and 50-70% cocoon rejection during Feb.-March (Anon, 1996). Single female *E. bombycis* prefers to lay eggs directly at inter segmental region of the larval body. After hatching, the maggots penetrates into the larval body and starts feeding on inner tissues/fat bodies then maggots comes out from the body and pupates in the soil. The silkworm parasitized by Uzi fly in early instars are killed before attaining spinning stage, while those parasitized in the late 4th & 5th instars spin cocoons of weak built and from such cocoons Uzi maggots emerge by piercing, thus rendering cocoons unfit for reeling and reduces the market value of the cocoons. Presence of egg(s) or black scar on the body of the silkworm larvae and maggot emergence hole in the cocoons indicates uzi infestation. This parasitoid was also reported on 95 species of insects belonging to 20 families of Lepidoptera and one family of Hymenoptera worldwide in the absence of silkworm (Narayanaswamy & Devaiah, 1998).

As per the recent survey results indicates that, maximum infestation of uzi fly was recorded in 5th instar larvae (43.0%) and at harvesting of cocoons (35.0%) during *Chotua* crop (Mar.-Apr.2010) followed by *Jarua* crop, Dec. 2009-Jan. 2010 (19.0% infestation at larval stage & 27.50% at harvesting stage of cocoons) reported in Upper Assam (Eswara Reddy, 2010). To reduce the infestation level of uzi fly, the following integrated management practices to be recommended.

Integrated management practices to be followed for *Exorista bombycis*:

1. Cultural methods:

- Plough or dig the soil in rearing plots to expose the maggots/pupa for predators/strong sun light to reduce the infestation.
- Avoid rearing of muga silkworms continuously (monocropping) from Dec.-April to minimize the uzi fly infestation.

2. Mechanical methods:

- Rear muga silkworms under nylon net to minimize the infestation.
- Collect and destroy uzi maggots which come out at three days after spinning in the Jali (mountage).
- Dried leaves should be used for Jali (mountage) to facilitate quick spinning of cocoons to minimize the time for emergence of uzi maggots to emerge out.
- Reeling cocoons should be stifled properly within 2-3 days after spinning which helps to kill uzi maggots and pupae noticed sometimes inside the cocoon.
- Install electrically operated stifling chambers for cocoons to check the emergence of uzi maggots from infested cocoons at 3-5 days after spinning.

3. Quarantine method:

- Restrict the transport of seed cocoons from one location/state to other to reduce the infestation (Ex: private cocoon markets/grainage/reeling units should be kept under regular vigilance).

4. Biological control:

- Inundative release of pupal parasitoid, *Nesolynx thymus* Girault (Hymenoptera:Eulophidae) to reduce the infestation of uzi fly in muga culture.
- Release the parasitoids once in 2nd, 3rd, 4th & 5th instar and once in spinning and grainage @ 10000/release for six releases in the centre of the rearing field.

Note: The number of pupal parasitoids can be increased/decreased depending upon the infestation of uzi fly.

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