Record of a new hyper-parasitoid, *Trichomalopsis* sp. (Hymenoptera: Pteromalidae) of silkworm uzi fly, *Exorista bombycis* (Louis) from Karnataka

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*Exorista bombycis* Louis (Diptera: Tachinidae) commonly known as the silkworm uzi fly is a major pest of the silkworm, *Bombyx mori* L., which prefers late age silkworms for parasitization/oviposition and further progeny production. In the course, the silkworm will be killed causing loss to sericulturists. The silkworm crop damage due to this larval endo-parasitoid is estimated to be around 15 to 20% which accounts to the tune of about 400 crores per annum (Dandin *et al.*, 2000).

Biological method of insect pest suppression have of late gained increasing acceptance and popularity, as this method is safe, eco-friendly and specific to the target insect pest. Although in excess of twenty hyper-parasitoids have been reported to parasitise the uzi fly, *E. bombycis*, few hymenopterans such as *Nesolynx thymus* Girault (Eulophidae), *Trichopria* sp., (Diapriidae) and *Exoristobia philippinensis* Ashmead (Encyrtidae) are regarded as potential gregarious ecto-pupal hyper-parasitoids of *E. bombycis* (Pradip Kumar *et al.*, 1986).

Now *Trichomalopsis* sp., another gregarious pupal parasitoid of filth flies has also been observed to parasitize pupa of silkworm uzi fly in Karnataka. This is the first record of a new hyper-parasitoid on *Exorista bombycis* from India. However, Singh and Thangavelu (1995) have recorded *Trichomalopsis apanteloctena* on uzi fly pupae of *Blepharipa zebina*, which attacks tasar silkworm *Antheraea mylitta*.

The Pest Management Laboratory division of Central Sericulture Research & Training Institute (Central Silk Board) at Mysore as a part of searching for new hyper-parasitoids, if any, is regularly collecting uzi fly pupae from Govt. Cocoon Markets of Kollegal, Ramanagaram, & Channapatna (Karnataka state) and maintaining the same in the laboratory in order to observe for emergence of new parasitoids. All most on all the occasions, there use to be emergence of *Nesolynx thymus*, which happens to be the recommended bio-control agent in sericulture against uzi fly, besides *Trichopria* sp. In a similar process, during the month of March-April 2014, few samples of old pupae of uzi fly from the above cocoon markets were collected and maintained. As a surprise, in addition to *Nesolynx thymus* and *Trichopria* sp., adults of a new species of hyper-parasitoid, *Trichomalopsis* sp. (Hymenoptera: Pteromalidae) also emerged from few pupae of uzi fly.

Preliminary observations made in the laboratory on *Trichomalopsis* sp. revealed that they are gregarious parasitoids and poor fliers which complete their life cycle in 14.5 days on uzi fly pupa (range: 13 to 16 days) at a room temperature of 29±3°C & RH 57 to 78%. But they preferred to parasitize only 25% host pupae even when more pupae were made available, however, all the rest
were just stung from which neither uzi fly nor the hyper-parasitoid emerged. This clearly indicated the host killing behaviour which is observed to occur in a very few hymenopteran parasitoids. The preliminary studies also revealed that, on an average from each parasitized uzi pupa, 9 parasitoids emerged (range 8 to 12). The longevity of the parasitoids was observed to be 6.1 days (range: 4 to 8 days) without any food. Investigations on the biology and other aspects of the hyper-parasitoid are in progress.

CONCLUSION

Biological control is a vital component in the IPM of crop pests. However, in sericulture where insecticides can hardly be used owing to hazardous effect on silkworms, biological control plays a significant role. Altogether in excess of twenty hyper-parasitoids have been reported to parasitize the pupal stage of the uzi fly, *E. bombycis*. Among them, *N. thymus* has been identified to be having the potential to serve as an effective bio-control agent. But now, identification and reporting of *Trichomalopsis* sp. as a hyper-parasitoid of uzi fly has created an opportunity to explore the possibilities as to whether it could be exploited as a potential bio-control agent alongside *N. thymus* or as a suitable alternative to the same.

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