

## Biocontrol Agents of Uzi Fly: A Potential Solution for Silk Industry

**Bhupen Kumar Sahu<sup>1</sup> and Ipsita Samal<sup>2</sup>**

<sup>1</sup> M.Sc. (Ag.), Department of Sericulture, Assam Agricultural University, Jorhat, Assam

<sup>2</sup> Ph.D. Scholar, Division of Entomology, Indian Agricultural Research Institute, New Delhi

### SUMMARY

Sericulture is the practice of rearing of silkworm with an aim of commercial production of silk. It emphasizes the growth and development of silk weaver's community and recognise their image at global level. Silkworm are the pioneer known silk producing agent for mankind. India accounts a major share in silk production and leads as the second largest silk producer next to China. Among several factors that hinder the good silk yield, insect pest infestation plays a vital role, Uzi fly menace in particular. Several chemical control methods have been developed by various scientific community but found to be ineffective due to its ill impact on silkworm. So, different IPM methods are developed and among them, biological method is found to be effective. The present article briefs about some of the most potent biocontrol agents to control Uzi fly

### INTRODUCTION

Sericulture has been a powerful tool for the rural employment in India. Silk being popularly known as "Queen of Textiles", it paves a way for the reallocation of money from rich and urban market to the poor and rural producers. The role of sericulture in putting the country in its present position in the global scenario cannot be overlooked by any policy maker due to its huge potential and enormous growth in silk industry. India enjoys the unique status of being the only country in the world to produce all the four commercial varieties of silk – Mulberry, Tasar, Eri and Muga. It is the second largest producer of silk next to China and has been recording persistence growth in silk production and productivity. Among several factors that influence the seed cocoon yield and quality silkworm insect, non-insect pests and diseases form an important component. The mulberry silkworm, *Bombyx mori* is attacked by insects such as tachinid parasitoids, dermestid beetles, ants, earwigs etc (Narayanaswamy and Devaiah, 1999). Among the insect pests of mulberry silkworm, the Uzi fly, *Exorista bombycis* (Louis) (*Exorista sorbillans* Wiedmann) is a primary larval endo-parasitoid of the silkworm, *Bombyx mori*. There are more than 55 alternative hosts been recorded for this fly in nature but mulberry silkworm is the most preferred one to which the extent of damage ranges from 10-30 percent.

### Life Span of Uzi Fly

Uzi fly belongs to family Tachinidae of order Diptera. The longevity of adult fly varies with sex and season. Generally, females survive longer than the males in any given season but, a pronounced seasonal variation is recorded in the longevity of both sexes. Both the sexes exhibit shorter life span during summer as compared to other seasons (Kumar, 1987). There are four distinct stages in the life cycle of the Uzi fly viz., egg, maggot, pupa and adult. Males survive for about 5-15 days while females live for 20-25 days (Patil and Govindan, 1984).

### Biological Control of Uzi Fly

Biological control method of pests is the most safe and eco-friendly approach in the pest management strategy. In the biological control method, biocontrol agents called natural enemies are used. These natural enemies are having high searching ability, synchronous with host life, well adapted to field conditions and high host specificity. A natural enemy with ease rearing and multiplication methods are highly preferred (Devanathan *et al.*, 1982). Many natural enemies have been identified to control Uzi fly viz., *Nesolynx thymus*, *Nesolynx dipterae*, *Exoristobia philippinensis*, *Dirhinus anthracia* etc (Kumar *et al.*, 1989; 1993).

**Table-1: Natural enemy complex of Uzi fly**

Sl. No.	Parasitoids	Family	Order
<b>SOLITARY PUPAL ENDO-PARASITOIDS</b>			
1.	<i>Brachymeria intermedia</i>	Chalcididae	Hymenoptera
2.	<i>Dirhinus</i> spp.		
3.	<i>Brachymeria lugubris</i>		

4.	<i>Brachymeria</i> spp.			
5.	<i>Dirhinus anthracia</i>			
6.	<i>Dirhinus philippinensis</i>			
7.	<i>Marmoniella vitripennis</i>			
8.	<i>Pachycrepoideus veeranai</i>	Pteromalidae	Hymenoptera	
9.	<i>Pachycrepoideus vindimmae</i>			
10.	<i>Pleurotropis</i> spp.			
11.	<i>Spalangia cameroni</i>	Eulophidae		
<b>GREGARIOUS PUPAL ENDO-PARASITOIDS</b>				
12.	<i>Nesolynx thymus</i>	Eulophidae		
13.	<i>Nesolynx dipterae</i>			
14.	<i>Tetrasticus howardii</i>			
15.	<i>Spalangia endues</i>			
16.	<i>Trichopriya khandalus</i>	Diapriidae		
17.	<i>Trichopriya</i> spp.			
18.	<i>Exoristobia philippinensis</i>	Encyrtidae		
19.	<i>Trichospilus diaptraeae</i>	Chalcididae		

(\* Source: Silkworm crop protection: Concepts and Approaches)

Among all the parasitoids, *Nesolynx thymus* is the most popular biocontrol agent discovered so far. It is well known among the scientific community for the management of Uzi fly due to its high reproductive rate and higher female ratio. For effective utilization of biocontrol agents, parasitoids should be released immediately after sunset in the rearing houses, mountage storage places and near the manure pits.

## CONCLUSION

For effective suppression of Uzi fly infestation, an IPM package consisting of different sustainable methods have already been developed. Among all these methods, biological control is exceptional in managing the pest population as it can reach out to the hidden and unconventional places of Uzi fly pupation. Biocontrol based IPM practices comprising of an ovicide (Uzicide) against eggs, augmentation or insinuate release of indigenous gregarious *N. thymus* and solitary *Dirhinus* spp. against pupae and dusting of Dimilin on maggots to suppress the reproductive efficiency of adults has been recommended. However, the use of biocontrol agents should be reached out at the grassroot level to the farmers so that they can make an effective use of it. Research, extension and technical knowledge dissemination at the ground level to increase the silk yield by eradicating the Uzi menace will make boost the financial strength of silkworm rearers.

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