



DAMAGE CAUSED BY EXORISTA SORBILLANS TO SILK WORM (BOMBYX MORI) FROM NIZAMABAD DISTRICT (T.S.) INDIA

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ABSTRACT

Bombyx mori rearing is done in indoor conditions but is threatened by some pests and diseases from time to time. One of the major problems in mulberry rearing is an insect pest known as uzi fly belonging to the family Tachinidae of order Diptera. The uzi fly infesting mulberry silkworm is known as *Exorista sorbillans* (Wiedemann). In Telangana people rear the silkworms mainly in bamboo houses and the doors and the windows are without screens so the uzi flies can easily enter the rearing houses. The female uzi laid their eggs on the intersegmental region of the silkworm body. After hatching, the maggot entered the silkworm body, leaving behind a black scar, the main identification mark of the uzi fly infestation. Only 1 or 2 mated adult female is sufficient to infest 200 to 300 numbers of *Bombyx mori* silkworms. The total life span of the uzi fly was found to range from 25 to 40 days in the case of males and on average of 35 days and 28 to 40 days in the case of females and on average of 37 days.



KEYWORDS : Uzi fly, Tachinidae, silkworm, maggot, pupa.

INTRODUCTION

Sericulture is an agro-based industry. It involves rearing of silkworms for the production of raw silk, which is the yarn obtained out of cocoons spun by certain species of insects. The major activities of sericulture comprise of food-plant cultivation to feed the silkworms which spin silk cocoons and reeling the cocoons for unwinding the silk filament for value added benefits such as processing silk being the queen of textiles has a great importance even before prevedic era. The term silk was

Mentioned in Rig-Veda, Ramayana and Mahabharata. Silk has been intermingled with the life and culture of the Indians. India as a rich and complex history in silk production and its silk trade dates back to 15th century. Sericulture is the term which denotes production of silk through silkworm. It was discovered in China and later spread to other parts of the world. The History of the Silkworm, also the story of Silk, goes back to ancient times in China. The most common tale on the origins of the Silkworm begins in 2640 B.C. when Si-Ling-Chi, a Chinese Empress was simply walking through her garden, when a 'cocoon' (of a Silkworm) dropped into her tea. Upon picking it up, she found the cocoon begun to unravel, forming a beautiful string of what is now known as 'Silk'.

After looking for the origin of this cocoon, Ling-Chi studied the Mulberry tree above her, and couldn't help but notice all of the small caterpillars (Silkworms) crawling around. She came to the conclusion that the Cocoon had come from the small caterpillars.

MATERIALS AND METHODS:

For present study different localities of sericulture farm were observed from Nizamabad district. Infected silkworms were isolated and collected to the laboratory and they were examined for diseases and pests. Samples were stored for further studies.

RESULTS AND DISCUSSION:

Uzy Fly:

The parasitoid insects belongs to order Diptera and family Echinidae. This pest incidence is very high in tropical countries like Bangladesh, China, India, Tamil Nadu is pest of silkworm, the life cycle has four stages which are 1. adult, 2. egg, 3. maggot, and 4. pupa.

1. **Adult:** It is blackish gray in colour and distinguishable in to head, thorax and abdomen. Male is longer than female. The Head is triangular in shape. On the dorsal side of the thorax, there are four longitudinal black bands. The abdomen is conical. Of the abdominal segments, the first one is black and the rest grayish-yellow. Life span of adult flies varies with sex and season. Males survive for about 10-18 days. Females live 2-3 days longer than the males. Survival period is less during summer months. Generally males strike the resting and walking female mating strike is following by agitated stages of the female before successful genital contact this pre-mating period prolongs for about 4-6 hours the polygamous adult mate 1-2 times after emergence and 3-7 times within 24hrs in entire life but it require a minimum of one hour mating for full fecundity and maximum hatchability. A single female lays about 300-1000 egg over a period of about 9-25 days but egg laying decreases with advantage age female fly lays eggs throat its life.
2. **Egg:** The eggs are creamy white measuring 0.45-0.56 mm in length and 0.25 -0.30 mm in width with oblong shape. The egg is the first stage in the life cycle of most insects. Eggs can be laid singly, in clusters or in specialist structures called oothecae. Insect eggs are very small and often susceptible to drying out (desiccation) so the female insect often selects the site to lay her eggs on very carefully. In species where the larval food plant is very important then the female will often lay her eggs on or near the food plant. The egg is covered by a protective "shell" of protein secreted before oviposition by accessory glands in the female's reproductive system. This egg shell, called the chorion, is often sculptured with microscopic grooves or ridges that may be visible only under the high magnification of an electron microscope. The chorion is perforated by microscopic pores that allow respiratory exchange of oxygen and carbon dioxide with relatively little loss of water.

Insect eggs develop within the ovaries, the reproductive structures of the female that are composed of tapering units called ovarioles. The oocytes differentiate from stem cells at the tip of the ovarioles, and as they begin their downward movement in the ovariole they are first completely surrounded by a monolayer of follicle cell the egg through the reproductive tract is coordinated by hormones called myotrophic. Myotrophins are secreted been neurosecretory in the brain once the central nervous system has received the physiological confirmation that mating has occurred and that the eggs are mature Parasitic insect eggs are variable in size and shape. This variability is a consequence of the enormous number of taxa involved and the developmental requirements of the insect embryos contained in these eggs.

3. **Maggot:** It hatches out through operculum of egg shell which is generally towards silkworm body the maggot penetrates into the silkworm which is surrounded by a sheath formed by granulocytes and proliferating tissue at the site of wound. with the growth of maggot, the size of the sheath increases and becomes thick and black which finally seen as a black lesion or scar on the silkworm body. This is a good identification of uzy infection. The first and second instar maggots are yellowish white in color measuring 0.7 -1.5 mm and 2.75 mm width and length respectively. soft-bodied grub that is the larva of dipterous flies. About half of fly species produce larvae that would be categorized as maggots; other flies beget more specialized and distinct larvae. Of the fly species with maggots, the larval form persists through several stages of their life cycle. This pest of germinating seeds and seedlings attacks a wide range of large-seeded horticultural and agronomic crops, including corn and soybean. This fact sheet provides information on seed corn maggot identification, life cycle,

crop damage and management. The first two instars develop just below the skin and final instar maggots move into the body cavity and grow in size. After a lapse of 5-8 days the mature maggot escapes by piercing the host integument by its prothoracic hooks. The maggot feeds on the body tissues of silkworm and the host dies by the time maggot escapes.

4. **Pupa:** Maggot pupates in about 10-20 hours in the darker area in and around the silkworm rearing house like rearing beds, crevices, corners, below ant wells and rearing stand or in the superficial soil. The body becomes motionless and shrinks before pupation it takes 10-12 days to metamorphose into adult which emerges out. Pupae may further be enclosed in other structures such as cocoons, nests, or shells (Borror et al. 1989). A cocoon is the silk protective covering that moth caterpillars and other insects spin prior to becoming a pupa. Silk harvested from the cocoon of the silkworm species *Bombyx mori* has been a source of fine and beautiful fabric for more than two millenniums. The butterfly pupa, or chrysalis, is rarely enclosed in a cocoon, but the caterpillar of some butterfly species may spin a silk thread to suspend the chrysalis. Although the pupa of most species appears externally to be an inactive stage, a great deal of metabolic activity is taking place as the insect is transformed into an adult, with some organs deteriorating and new structures and organs developing.

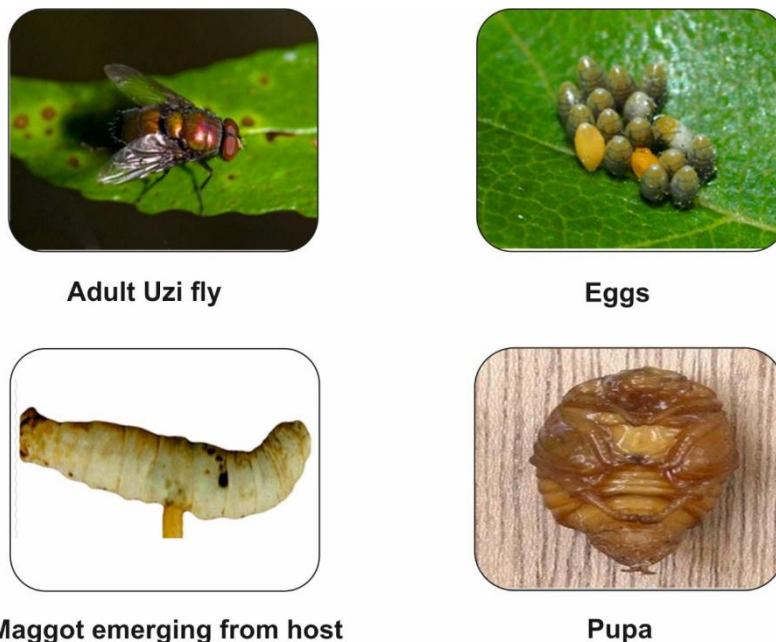


Fig.1 Showing *Exorista sorbillans* (uzi fly) stages of life cycle

Infested larvae up to early fifth instar die before spinning. If larvae are attacked in fifth instar the maggot comes out by piercing the cocoon. Uzy infected worms are identified by black scar at intersegmental region where the maggot penetrates into the silkworm body maggot pierced cocoon are unfit for reeling (as shown in fig.1).

CONCLUSION:

Good sanitary and hygienic conditions in and around rearing room are important. The holes and crevices in the rearing room are to be closed before rearing activity. Early spinning cocoons which are generally uzy infested, and are to be carefully separated from normal cocoons. These cocoons are stifled to kill the inside maggot of uzy. Use of uzinet (nylon net of fine mesh) all around the rearing shelf stand and on windows of rearing room. Fly leaf paper coated with Vaseline or insecticide on window can also

be used to trap the flies. Reproductive potential of adult Uzi fly can be reduced by releasing radiation-exposed sterile fly in the field, which would produce less viable eggs following mating with normal or other such fly. Chemosterilants like 10% dimilin, if applied topically on Uzi fly larvae can reduce the number of eggs laid by that adult fly.

REFERENCES

1. Cotes EC. Further notes on insects. Indian Museum Notes. 1889a;1(1):63-64
2. Cotes EC. Entomology notes. 1. *Tricholyga bombycis*. Indian Museum Notes. 1889b;1(2):77- 80 & 83-88.
3. Sriharan TP, Samson MV, Krishnaswami S, Dutta RK. Laboratory investigation on Uzi fly *T. bombycis* Beck. A tachinid parasite of silkworms (*Bombyx mori* L.). Indian Journal of Sericulture. 1971;10(1):14-22.
4. Dutta RK, Mukherjee PK. Life history of *Tricholyga bombycis* (Diptera: Tachinidae), a parasite of *Bombyx mori* (Lepidoptera: Bombycidae). Annals of Entomological society of America. 1978;71:767-770.
5. Kumar P, Jolly MS. Studies on the ovipositional preference of uzi fly, *Tricholyga bombycis* Beck. (Diptera: Tachinidae). Indian Journal of Sericulture. 1986;25(2):64-68.
6. Reddy BV, Lakshminarayana Reddy P, Shanthan Babu MA, Sujatha B, Naik S. Egg laying patterns of the uzi fly, *Exorista sorbillans* (Wiedemann) on the larvae of the silkworm, *Bombyx mori* L. Global Journal of Bio-science and Biotechnology. 2015;4(1):175-180.