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A NEW STEM BORER INFESTING TASAR SILKWORM FOOD PLANTS

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ABSTRACT

The tropical tasar silk is produced by the tasar silkworm, *Antherea mylitta* Drury. Since the rearing is conducted on the trees of Arjun, *Termilalia arjuna*, Asan, *T.tomentosa*, Sal, *Shorea robusta* etc. the qualitative or quantitative production of the silk or seed directly dependent upon the quality or amount of foliage available and utilized for tasar silkworm rearing. With the infestation of the food plant by any pests, the production of foliage and thereby, production of tasar silk and quality seed are liable to be affected.

The round headed stem borers and the flat headed stem borer are most common. These borers affect Arjun (*T. arjuna*), Asan (*T. tomentosa*) and Sal (*Shorea robusta*). Most of the borers attacking tasar food plants belonging to family Cerambycidae and Buprestidae of order Coleoptera.

The stem borer infesting *T. arjuna* reported now is belonging to a new species *Sphenoptera aerosa.* The new species belongs to the family Buprestidae and the order Coleoptera.

Various parameters were studied like symptoms of infestation, survival of plants and damage type. The infestation of this new species ranged from 19 to 31 % in different blocks of plantation.

KEY WORDS: Tasar food plants, Arjun, Asan, pest, stem borer, grub, infestation and control.

INTRODUCTION

The Arjun, *Terminalia arjuna* ., Asan, *T. tomentosa* and the Sal, *Shorea robusta* are the primary food plants of the tasar silkworms. The stem borers have been reported as a threat to the survival of a number of plants species since its first report in 1889 from Sal *(Shorea robusta*) and Asan (*Terminalia toemntosa*) by the Director, Imperial Forest School, Dehra Dun (Khan and Abdul, 1942).

Round headed stem borer, *Aeolesthes holosericea*, is the most damaging species among the stem borers belonging to the family Cerambycidae. This stem borer affects Arjun (*T. arjuna*), Asan (*T. tomentosa*) and Sal (*Shorea robusta*) (Mandal *et al.,*1989). *Psiloptera fastosa* (flat headed borer) is also very common stem borer of tasar host plants. The most of the borers attacking tasar food plants belonging to family Cerambycidae and Buprestidae of order Coleoptera.

The tropical tasar silk is produced by the tasar silkworm, *Antherea mylitta* Drury (Lepidoptera: Saturniidae). The insect is wild in nature and three of its eco races are under commercial exploitation (Tripathi and Pande, 1999). The rearing part is passed on the food plants in nature and the cocooning is also done on the trees in open atmosphere. Grainage activities are conducted in door. Since the rearing is conducted on the trees of the farm plantation or in the forest plantation, the qualitative or quantitative production of the silk or seed production directly dependent upon the quality or amount of foliage available and utilized for tasar silkworm rearing. With the infestation of the food plant by any pests the production of foliage and thereby, production of tasar silk and quality seed are liable to be affected.

A sizeable portion of the tropical forest of India is covered by the tasar food plants and prevalent occurrence of stem borers there, causing considerable loss. In Chhattisgarh state endemic and serious infestation of borers have been observed. We are trying to solve the problem of this severe menace. The present study is a part of this investigation. During the course of this investigation a new species infesting *T. arjuna* was found first time.

MATERIAL AND METHODS

The plantation of about three years old of Arjun, *T. arjuna* raised at the farm of Basic Seed Multiplication & Training Centre, Bilaspur were found infested and because of this there was heavy mortality in the plantation. The entire plantation of the farm was divided into four blocks for this study. After observing closely it was known that there was heavy attack of stem borers. Plants dead were counted in entire plantation area and observations were made. Different biological stages were

Figure-1.Stem borer infested plant of *T.arjuna.*

Figure-2.Grubs of *S. aerosa* feeding on to the tissues of *T.arjuna*

Figure-3. Adult of *S. aerosa* ready to come out from the stem of *T.arjuna*

collected and studied. Samples were sent to the Director, Zoological Survey of India, Kolkata (West Bengal) for identification of the insect.

RESULTS AND DISCUSSION

The data indicates (Table-1) that stem borer infestation ranged from 19 to 31% in the different blocks of plantation and on an average 26% infestation was recoded in the farm plantation of Arjun, *T.arjuna*. Similar results were obtained by Singh *et al*., 1987 for round head stem borer, *Aeolesthes holosericea* infesting T*. arjuna* (24.49%) and *T. tomentosa.* (34.69%). Reddy *et al.,* 1996 also reported that damage by stem borers in tasar food plants ranged from 15-30%.

Table-1. Stem borer infestation in the farm plantation of T. arjuna

S.No.	Block	Stem Borer Infestation (In %)
1	A	19
2	B	31
3	C	29
4	D	25
Average		26

Figure-4. Adult *S.* aerosa

It was observed that during early phase of the infestation the leaves started wilting and during later stages stem desiccated indicating that plant is dead but actually the mortality related with the seriousness of the infestation.

It was interesting to note for those plants having two stems and one of them is infested while other in

Figure-5. Regeneration of a new plant of *T. arjuna.*

without infestation and because of this, the affected stem was dried up while other is normal having normal leaves (Figure-1).

The stem borer infesting *T. arjuna* reported now belonging to a new species *Sphenoptera* aerosa. The new species belongs to the family Buprestidae and the order Coleoptera. The grubs make irregular tunnel inside the stem and feed on to the tissues of xylem, phloem, cambium and pith in irregular manner. In a single stem one or more grubs were observed (Figure-2).The adult emerges from the hole (Figure-3&4). This infestation leads to dryness and even death of the plant.

The control measures recommended till now against stem borers are not sufficient and therefore, the problem is not solved. In this study the affected portions were cut from the basal region (Figure-5) and burnt immediately. By this way, existing grubs or adults present inside the stems were prevented to multiply further.

It was interesting to note that most of the plants where stems were cut in the early stages of the borer infestation, sprouting started during monsoon period giving new life to the plants (Figure-5).

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