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PEST STATUS AND LARVAL FEEDING PREFERENCE OF *SPODOPTERA LITURA* (FABRICIUS) BOURSIN (LEPIDOPTERA : NOCTUIDAE) ON TEAK

Teak (*Tectona grandis* L.f.) is undoubtedly one of the most important and valuable commercial timber species. This potential tree species has a rich complex of insect fauna and is one of the most extensively studied timber species for its entomology. Teak suffers regularly from insect damage in most of the teak growing areas in the Indian sub-continent. All the stages in the growth of teak from seed to mature trees are attacked by the insects. The damage occurs from an association of group of insects, comprising chiefly defoliators, gall-formers, root-feeders, together with combination of many species of foliage feeders, stem borers, etc. of about 280 and odd species (Mathur, 1960; Mathur and Singh, 1960), which the teak is reportedly supporting, great majority of them are casual visitors, a few of them, however, are source of real menace and concern to the forest managers (Tewari, 1992).

Defoliation is a chronic feature in teak plants and defoliators are the main enemy of teak. About 139 defoliators have so far been recorded on teak which includes 80 Lepidopterans, 41 Coleopterans and 18 Orthopterans (Mathur, 1960); Mathur and Singh, 1960). Among the Lepidopteran defoliators, *Spodoptera litura* (Fabricius) Boursin (syn. *Prodenia litura* Fabricius) (Lepidoptera : Noctuidae) has been reported to feed on teak (Beeson, 1941; Browne, 1968). Surprisingly, enough information is not available regarding its pest status and larval feeding preference on teak. The present study clarifies these aspects unequivocally and the present account is based on the field observations of authors.

To study the insect pests damaging teak seedlings at nursery stage, periodical surveys were carried out at Jabalpur (M.P.), during the year 1993-94. During the course of study, it was observed that teak seedlings suffers seriously from the attack of an insect larvae which was later identified as *S. litura*. This insect is commonly called as tobacco semi-looper (Browne, 1968). This wide spread species is a very general feeder on agricultural and garden crops and a pest particularly of cotton and tobacco (Chari and Patel, 1983). This insect has been recorded to feed on many forest trees and shrubs such as *Artocarpus integra, Casia tora, Casuarina equisetifolia, Diospyros montana, Hevea brasiliensis, Lantana camara, Mangifera indica, Morus alba, Populus* spp.; *Randia dumetorum, R. uliginosa, Solanum indicum, S. torvum, Terminalia tomentosa, Thuja orientalis* and *Tristania conferta* in India and its neighbouring countries (Beeson, 1941; Browne, 1968), and recently also recorded as a pest of *Jatropha curcas* (Meshram and Joshi, 1994) and *Sesbania* spp. (Roychoudhury *et al.*, 1995a).

The present study reveals that eggs are laid in a mass on the under surface of

the leaves of intermediate (medium) quality just below the tender leaves. The egg clusters remain covered with ovipositor scales, shed from the tip of the mother's abdomen. The fecundity is very high, which varies from 300-400 eggs in a mass. After nearly 4-5 days of egg period, the hatching takes place. The young larvae feed gregariously and later on disperse. They are voracious feeder, consuming the whole of the leaf surface including the veins. The full grown larvae are dull, olive green coloured with light side stripes, which attain a maximum length of about 35 mm. The pre-pupae are 23-26 mm in length and the prepupal period varies from 1-2 days, The pupation occurs in a loose silken cocoon in soil. The pupae are 14-15 mm in length and the pupal period varies from 5-8 days. The moths are nocturnal and medium sized. The forewings have beautiful golden and grayish brown patches. Hindwings are greyish white in colour.

This insect has been found in abundance only during the month of June-July. About 56% of teak seedlings are recorded to be damaged by this insect pest. To control the population outburst of this insect, Fletcher (1914) has suggested hand picking of egg masses and batches of young larvae before lossing their gregarious habit. Ram *et al.* (1988) recommended foliar spraying of endosulfan 0.08% against the larvae of *S. litura* as effective control measure.

Larval feeding preference

During the present work, it has been recorded that the early larval instar feed on the leaves of intermediate (medium) quality which are in between tender and mature older leaves. The late larval instar prefer mature leaves. These findings show that larvae avoid soft tender leaves which clearly indicate that in *S. litura*, larvae exhibit feeding preference in relation to leaves of different maturity particularly on teak. The results show some parallelism with the findings of earlier workers on the same insect and host plant (Beeson, 1941). This is possible because ubiquitous variation in leaf quality alter the performance of leaf eating insects in all feeding guilds including the palatability (Scriber and Slansky, 1981). Further, leaf allelochemicals may also serve as nutrients or toxins, depending on many factors, including its environment, its concentration, and the physiological state of the receiver (Maiorana, 1979). Recently, unequivocal clarifications have been made on the chemistry of teak leaves of different maturity which revealed that tender leaves contained relatively high percentage of moisture, nitrogen and polyphenol contents followed by a rapid decline in intermediate and mature leaves (Roychoudhury *et al.* 1995 b). The huge concentration of polyphenols in tender leaves is possibly responsible for non-preference by the larvae of *S. litura* because phenolic compounds have antibiotic effects on insects (Singleton and Kratzer, 1969).

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