



CROP-PEST MAP IN TEAK AGAINST TEAK SKELETONIZER AND DEFOLIATOR UNDER HEAVY RAINFALL ZONE OF SOUTH GUJARAT CONDITION

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Abstract

Result revealed that teak defoliator leaf damage was highest during July, coinciding with emergence of new leaves and maturity of leaves while, it remained low during October – November when tree species passed through foliage maturity. The teak skeletonizer oriented leaf damage was highest during July coinciding with emergence as well as maturity of leaves followed by lowest damage during December. On the basis of data of different elevation during present studies the Crop-Pest Map for teak defoliator and skeletonizer were prepared.

Key words : Teak, defoliator, skeletonizer, map.

Introduction

Teak (*Tectona grandis* L.) is one of the most important hardwood tree commercial timbers in tropics. In India, the major teak growing states are Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, Uttar Pradesh, Orissa and Gujarat (Tewari, 1992). The pests attacking teak are grouped into root and stem feeders, sap suckers, defoliators, tree borer, fruit borers and gall formers. There are two species of defoliator's i.e. *Eutectona machaeralis* Walker and *Hyblea pura* Cramer. These are the most pernicious pests of teak responsible for epidemic defoliation regularly in nurseries, plantations and natural forests of all teak growing areas (Beeson, 1941). It caused 25 to 35.79% loss in annual growth in teak nursery (Anonymous, 2001). No such attempt has been made in Gujarat. With this intension the present investigation was undertaken to study Crop-Pest Map against teak skeletonizer and defoliator under heavy rainfall zone of south Gujarat condition.

Materials and Methods

Abundance of defoliating pests of teak was recorded at different elevations viz., Sarvar and Subir representing upper elevation and Waghai and Shamgahan representing lower elevations in Dangs district and N.A.U. Farm, Navsari (Gujarat), India; representing plane elevation. At each location, five trees of teak showing uniform

growth pattern and age were selected. On each tree, five terminal twigs were randomly selected from the lower canopy, from which leaves on each twigs was sampled for observing number of healthy and damaged leaves, thus per cent infestation of defoliating pests was worked out. Based on data of infestation at different growth stage of the crop throughout the year, a Crop-Pest Map was prepared both for defoliator and skeletonizer.

Results and Discussion

The data on different stages of teak clone are presented in table 1 and shown in fig. 1. It is evident from the data that in south Gujarat at all three elevations, the crop phenology exhibited almost similar pattern in different clones of teak. In the month of January, the leaves became completely matured along with the matured fruits. The mature leaves started to shed in the month of February and by end of March, partial shedding of leaves could be seen in teak forest. In the month of April, there was complete defoliation of leaves and simultaneously, new buds started appearing which remain folded in the month of May-June. These folded leaves where open up and fully grown during the rainy month of July and at the same time inflorescence were also emerged out. In the month of August, whole tree was crowned by fully grown leaves. The tree fully bloomed with inflorescence and which also bear tender fruits. Thus, during the month of July to September ample food in the form of leaves made available to the pest like to

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Table 1 : Stages of teak in relation to damage of defoliator and skeletonizer.

Month	% leaf damage by		Stages of clone
	Defoliator	Skeletonizer	
January	0.00	0.00	Complete maturation of leaves and fruit
February	0.00	0.00	Initiation of leaf shedding
March	0.00	0.00	Partial defoliation
April	0.00	14.10	Complete defoliation , and emergence of new leaves
May	0.00	22.73	Unfolding of new leaves
June	22.46	39.78	
July	47.69	66.78	Maturity of new leaves and flowering
August	42.57	53.35	Full foliage, flowering and fruiting
September	23.84	37.31	
October	11.14	24.49	Flowering and fruiting
November	5.06	11.68	Final maturation of fruits
December	0.00	6.78	Final maturation of leaves

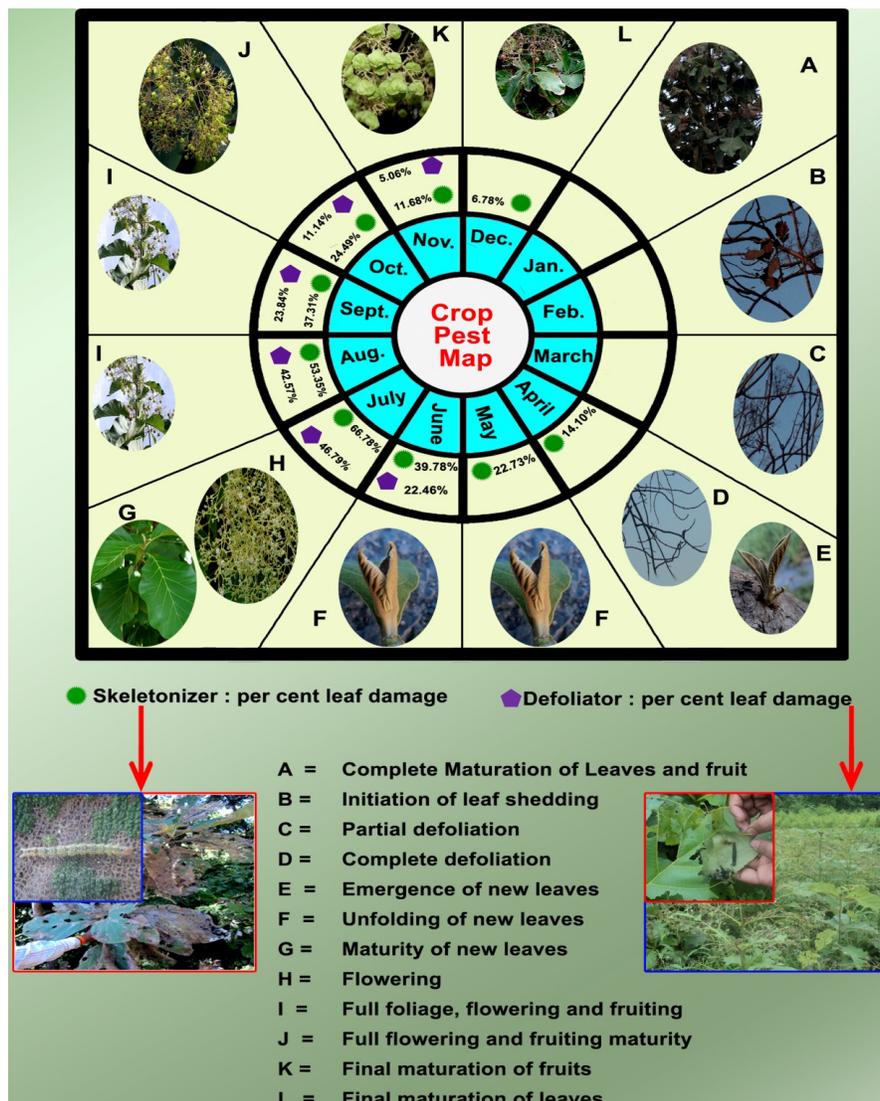


Fig. 1 : Crop-Pest Map in teak against skeletonizer and defoliator.

defoliators. During the month of September-October, the tree has matured leaves and growing fruits. Thereafter, fruits became matured in the month of October and the old aged leaves could be seen in the month of December.

Teak defoliator

Looking to the average data in presented table 1 indicated that the per cent damage of teak defoliator started appearing in the month of June *i.e.* at the time of emergencies of new leaves. The damage found with increasing trend till August. It was maximum >40 per cent in the month of July and August during which fully grown leaves in abundance was available on the teak tree. The damage of defoliator was found increased with availability of ample food on host crop. Thus, the crop stage played significant role to aggravate the pest like defoliator, which ultimately turned out in more damage. While, Baksha and Crawley (1998) from Bangalore reported that teak defoliator appeared during second fortnight of April to July and was seen for the last time during first fortnight of the October. However, Javaregowda and Naik (2007) from Karnataka reported incidence of *H. puera* from second fortnight of May onwards in all the divisions except in Sirsi Forest Division, where the incidence was observed from first fortnight of September. Similarly, Pandey *et al.* (2009) from Faizabad reported that teak defoliator appeared during second fortnight of June and was seen for the last time during first fortnight of the October. Thus, the above findings on incidence of teak defoliator support the present findings, however the reports on coincidence of pest and crop stage are not available from the literature.

Teak skeletonizer

The damage of another foliage feeders *i.e.* teak skeletonizer was started in the month of April soon after complete defoliation and at the time of emergence of new leaves. The damage found increasing till August and >50 per cent damage was recorded during July-August. This damage was fully coincided with the availability of ample of food *i.e.* leaves. After August, there was a decreasing trend in damage of skeletonizer till December, which also found coincided with maturation of leaves. The pest remained active for longer time *i.e.* from April to December from which it is inferred that the pest could have completed 3 to 4 overlapping generations in a year in south Gujarat.

Earlier, Patil and Thontadarya (1983) observed larval occurrence of *E. machaeralis* throughout the year. Whereas, pest population was negligible during the deciduous period of teak (January to March). Similarly, Khan *et al.* (1988) noted peak incidence of *E. machaeralis* during September and the pest completed

4-5 overlapping generations during its active period from August to October in forest areas of Madhya Pradesh. Longanathan *et al.* (2001) reported occurrence of *E. machaeralis* throughout the year with two peaks, which did not correspond to any specific time of the year and they further reported that there was no any specific correlation found with skeletonizer incidence. Whereas, from Jabalpur in Madhya Pradesh, Bhowmick and Vaishampayan (2001) noted that mean per day catch of *E. machaeralis* at 50 m elevation and ground level was 194 and 149 individuals, respectively. Thus, the findings of above workers support the present studies to some extent, however damage in relation to crop phenology has not been reported so far.

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