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Vijayaraghavendra R and Basavanagoud K

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RESEARCH ARTICLE

SEASONAL INCIDENCE OF SAPOTA BUD BORER, *ANARSIA ACHRASELLA* BRADLEY ON SAPOTA DHS-2 HYBRID

Vijayaraghavendra R* and Basavanagoud K

Department of Entomology, College of Agriculture, PJTS Agricultural University Rajendranagar, Hyderabad-500030. Telangana, India

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ABSTRACT

The seasonal incidence of Sapota bud borer, *Anarsia achrasella* Bradley Gelechidae: Lepidoptera infesting *sapota Manilkara achras* (Mill.) Forsberg was carried out in sapota DHS-2 hybrido rchard of KVK, Saidapur farm, Dharwad, University of Agricultural Sciences, Dharwad, Karnataka, India during 2013 June–2014 May. Incidence of sapota bud borer revealed that the bud borer was active throughout the year with peak period of infestation 11.54 % in second fortnight of March and lowest of 1.27 % in second fortnight of October. Pest incidence was more during dry period (December to June) and less during remaining season (July to November).A study on correlation of bud borer with weather parameters indicated that there was a significant and positive correlation between bud borer damage and maximum temperature. Rest of the weather factors had no influence on pest population during the period of study.

INTRODUCTION

Sapota (*Manilkara achras* (Mill.) Farsberg, syn. *Achras zapota* Linn.) belongs to family Sapotaceae. Sapota is an important tropical fruit crop. It is called by several names such as Chiku, Sapodilla, Zapata or Sapodilla plum in different regions.It is popular in Sri Lanka, India, Jamaica, Philippines, Central America and Southern Florida. The fruit was introduced during 1888 in a village Gholwad of Thane district of Maharashtra in India, thereafter, it spread to Gujarat, West Bengal, Uttar Pradesh, Andhra Pradesh, Karnataka, Tamil Nadu, Punjab and Haryana (Cheema *et al.,* 1954). The first commercial sapota cultivation from Maharashtra was taken up in Gholvad area in 1898 (Sulladmath and Reddy 1990).India is considered to be the largest producer of sapota in the world with an area of about 163.9 thousand ha with a production of 1495.0 metric tonnes (Anon., 2014). Karnataka ranks first in sapota production in India, contributing 25 per cent out of the total production1. It is widely grown in Maharashtra, Gujarat, Karnataka, Tamil Nadu, Kerala, Punjab and Haryana. Earlier, insects and diseases were not a serious problem on sapota. The rapid expansion of this crop across the country mainly in the states *viz.*, Gujarat, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh and Kerala has seen a corresponding increase in the pest complex too (Somdutt, 2001).Sapota tree is attacked by more than 25 insect pests (Butani, 1979). Includes bud borer, chiku moth, midrib folder, leaf miner, fruit flies and sucking pests. Among these, chiku bud borer is a major and regular pest causing damage to the sapota crop. Jhala *et al.* (1986) recorded that pest was active throughout the year and damage ranged from 2.0 to 15.0 per cent on flower buds.

MATERIAL AND METHODS

To study the seasonal incidence of Sapota seed borer, five medium sized trees of Sapota were selected randomly at Sapota DHS-2 hybrid orchard of KVK, Saidapur farm, Dharwad, University of Agricultural Sciences, Dharwad, Karnataka, India. The observations were recorded at 15 days intervals from June 2013 till May 2014. From each of the tree ten twigs were selected and in each twig all the flower buds were observed for the incidence of bud borer. The numbers of healthy and damaged buds per twig were counted and percentage of infestation was worked out from the recorded observations by using formula. In order to study the effect of weather parameters, the simple correlation coefficients were worked out.

Corresponding author:* **Vijayaraghavendra R
Department of Entomology, College of Agriculture, PJTS Agricultural University Rajendranagar, Hyderabad-500030. Telangana, India

$$\text{Per cent flower buds damaged} = \frac{\text{Number of damaged flower buds}}{\text{Total number of flower buds observed}} \times 100$$

RESULTS AND DISCUSSION

The larva of *A. achrasella* was exclusively feeds on sapota flower buds and active throughout the year. During the study larva was found boring into flower buds at the base of the contents inside so that a bored hole is seen on flower buds. It feeds on unopened flower buds and contents of ovary (Fig.1). Usually one larva was found in each infested flower bud and all stages of larvae were found boring flower buds resulting in considerable loss of buds and flower buds of sapota were found to dry up and drop down.

Fig: 1 Symptom of damage and larva of sapota bud borer, *Anarsia achrasella*

The data shows (Table-1) a varying degree of infestation throughout the year. Highest incidence of 11.54 per cent was noticed in March (second fortnight) whereas it was lowest of 1.27 per cent in October (second fortnight). The data reveals that the pest incidence was more during dry period i.e. from December to May and less during rainy season (July to October). These results are in line with the findings of Dongre (2011) reported maximum bud damage during second fortnight of March and Sathish *et al.*, (2014) reported minimum incidence during first fortnight of October to maximum during second fortnight of March.

Table-1 Seasonal incidence of sapota bud borer, *Anarsia achrasella* damage during 2013-14 on different genotypes

Month	Fortnight	Per cent fruit damage	Month	Fortnight	Per cent fruit damage
June-2013	I	7.51	December	I	6.84
	II	6.58		II	5.21
July	I	4.23	January-2014	I	6.94
	II	4.86		II	8.95
August	I	3.21	February	I	7.16
	II	3.07		II	8.92
September	I	2.75	March	I	10.57
	II	2.04		II	11.54
October	I	1.52	April	I	8.56
	II	1.27		II	5.26
November	I	2.15	May	I	5.80
	II	4.26		II	7.62

Table 2 Correlation co- efficient between sapota bud borer, *Anarsia achrasella* and weather parameters during 2013-14

Weather data / Varieties	Maximum temperature (°c)	Minimum temperature (°c)	Morning relative humidity (%)	Evening relative humidity (%)	Rain fall (cm)
DHS-2	0.578**	-0.15	-0.728**	-0.676**	-0.412*

* Correlation is significant at 0.05 level (2-tailed)
** Correlation is significant at 0.01 level (2-tailed)

A study on correlation (Table 2) of bud borer with weather parameters indicated that there was a significant (r= +0.57) and positive correlation between bud borer damage and maximum temperature, which is in agreement with the findings of Sushil Kumar and Bhatt (2002). Rest of the weather factors *viz.*, minimum temperature, relative humidity and rain fall had no influence on pest population during the period of study.

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