INTERNATIONAL JOURNAL OF ADVANCES IN PHARMACY, BIOLOGY AND CHEMISTRY

Research Article

Seasonal incidence of chiku bud borer (*Anarsia achrasella* Bradley) on sapota under hill zone of Karnataka

Ravulapenta Sathish*, D. Jemla Naik, Niranjana Kumara B.

Department of Entomology, College of Horticulture,
Mudigere, UHS, Bagalkot, Karnataka, India.

Abstract

Studies on seasonal incidence of chiku bud borer, *Anarsia achrasella* Bradley (Gelechidae: Lepidoptera) infesting sapota *Manilkara achras* (Mill.) Forsberg were carried out at College of Horticulture (RHREC farm), Mudigere, University of Horticultural Sciences, Bagalkot during 2012–2013. The bud borer was active throughout the year with a varying degree of infestation. It was recorded from a minimum of 2.14 per cent (first fortnight of October) to maximum of 11.29 per cent (second fortnight of March). 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 *viz*., minimum temperature, relative humidity and rain fall had no influence on pest population during the period of study.

Key words: Chiku bud borer, *Anarsia achrasella*, seasonal incidence, sapota, weather.

INTRODUCTION

India is considered to be the largest producer of sapota in the world with an area of about 1.60 lakh hectares and production of 1424 metric tonnes[1]. Karnataka ranks first in sapota production in India, contributing 26.5 per cent out of the total production[1]. Sapota tree is attacked by more than 25 insect pests which includes bud borer, chiku moth, midrib folder, leaf miner, fruit flies and sucking pests[4]. Among these, chiku bud borer is a major and regular pest causing damage to the sapota crop under hill zone of Karnataka. Excessive use of chemicals to control this pest not only causes the economical restrain on farmers but also produces the harmful side effects on the environment as well as human being. The best way to overcome this situation is to destroy the pest at its initial stage of the life cycle. This is possible if timely prediction of the occurrence of the pest can be made. Hence, an investigation on seasonal incidence of the bud borer on sapota in relation with different meteorological parameters was carried out.

MATERIALS AND METHODS

To study the seasonal incidence of chiku bud borer on sapota, observations were done in sapota orchard of RHREC (Regional Horticultural Research and Extension Centre) farm, Mudigere, University of Horticultural Sciences, Bagalkot, Karnataka, India. Ten sapota plants of twenty years old were selected randomly to record the incidence of bud borer in sapota orchard. Observations were done at fortnightly interval from February 2012 to January 2013. No insecticidal measures were taken in the field selected for present studies during the entire period of study. Total number of buds and buds damaged by bud borer on three selected branches from each selected plant was recorded and per cent infestation was worked out by using below formula. In order to study the effect of weather parameters, the simple correlation coefficients were worked out.

$$\text{Per cent infestation} = \frac{\text{Total no.of infected buds}}{\text{Total no.of buds}} \times 100$$

RESULTS AND DISCUSSION

The larva of *A. achrasella* was observed boring into flower buds of sapota. All stages of larvae were found boring young and full grown buds resulting in feeding on corolla as well as ovary of buds (Plate). The damage of bud borer remained more conspicuous by having holes with latex on the buds. The damaged buds later drop down resulting direct impact on fruit yield. The data on per cent buds damaged caused by bud borer (*A. achrasella*) is presented in table 1. The data shows a varying degree of infestation throughout the year. It was recorded from a minimum of 2.14 per cent (first fortnight of October) to maximum of 11.29 per cent (second fortnight of March) during the present investigation. These results are in line with the findings of Dongre[2]. Correlation studies (Table 2) revealed that, there was a significant (r= +0.55) and positive correlation between bud borer damage and maximum temperature, which is in agreement with the findings of Sushil Kumar and Bhatt[5]. Rest of the weather factors *viz.*, minimum temperature, relative humidity and rain fall had no influence on pest population during the period of study. Parvathi and Belavadi[3] reported there was no influence of abiotic factors on the population of bud borer, which supports the present findings.

CONCLUSION

The activity of bud borer observed throughout the year with peak activity during second fortnight of March. There was no influence of weather factors on bud borer population except maximum temperature.

Symptoms of damage, larva and adult of *Anarsia achrasella* on sapota

Table 1. Seasonal incidence of insect pests of sapota during 2012-13 at fortnight interval

Month	Fortnight	Per cent infestation*	Month	Fortnight	Per cent infestation*
February- 12	I	8.07	August- 12	I	7.07
	II	9.64		II	5.42
March -12	I	10.37	September- 12	I	7.84
	II	11.29		II	8.02
April- 12	I	9.68	October- 12	I	2.14
	II	8.30		II	2.58
May- 12	I	6.67	November- 12	I	4.68
	II	6.07		II	5.78
June- 12	I	5.16	December- 12	I	6.82
	II	5.87		II	6.12
July- 12	I	6.13	January-13	I	7.75
	II	5.40		II	8.23

N = ten plants;
*No. of buds damaged/shoot/plant

Table 2. Correlation co- efficient values between insect pests of sapota and weather parameters during 2012-13

Weather data / Insect pest	Temperature (°C)		Relative humidity (%)		Rain fall (cm)
	Maximum	Minimum	Maximum	Minimum	
Bud borer	0.55*	0.04	-0.48*	-0.36	-0.13

N = 24
*Significant at 5 % level r= 0.404

REFERENCES

1. Indian Horticultural Data Base, National Horticultural Board, Gurgaon, India. 2011, pp. 125.
2. Dongre MS, Biology of chiku moth, Nephopteryx eugraphella Ragonot (Lepidoptera: Phycitidae) , extent of damage caused by major pests and framing of crop pest map on sapota. M.Sc. (Agri.) Thesis submitted to Navsari Agricultural University, Navsari, Gujarat, 2011.
3. Parvathi C and Belavadi VV, Seasonal incidence of Anarsia achrasella Bradley (Lepidoptera: Gelechidae) and the significance of its damage to sapota, International journal of pest management. 1994, 40(1): 18-22.
4. Shukla A, Insect pests of sapota and their management, Rashtriya Krishi. 2011, 6(1): 51-52.
5. Sushil Kumar and Bhatt RI, Seasonal incidence and population dynamics of major lepidopterous insect pests of sapota in relation to major abiotic factors, Journal of Applied Zoological Researches. 2002, 13(1): 6-9.