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Seasonal incidence of cashew pest complex in Tirumala hills of Andhra Pradesh

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Abstract: Seasonal incidence of cashew pest complex was correlated with weather parameters. The incidence of shoot and blossom webber was more from July to October and February to March with a peak during first fortnight of September exhibiting a negative correlation with maximum temperature, while non-significant relationship with minimum temperature, relative humidity and rainfall. Leaf miner was severe from September to December with a peak during first fortnight of November. Relative humidity and rainfall had positive correlation with leaf miner incidence while maximum and minimum temperature had no significance. Weevil population was severe from first fortnight of August to second fortnight of October with a peak during first fortnight of September having positive correlation only with rainfall.

Key words : Cashew, Shoot and blossom webber, Leaf miner, Weevil.

Introduction

Cashew (*Anacardium occidentale* L.) is one of the most important commercial plantation crops of India and considered as a wasteland crop. Hence not much attention is paid towards its cultivation. It is a dollar earner through the export of cashew kernels. India is the world leader in the production of cashewnuts and also in its export. Though India enjoys a formidable position in acreage and production, the productivity is substantially very low due to inadequate protection offered against dreaded insect pests and diseases.

More than 150 species of insect pests are attacking cashew at different stages of its growth (Pillai, 1980). As many as 32 insect pests have been recorded in North and South coastal districts of Andhra Pradesh by Ayyanna *et al.* (1985). Different insect pests that cause damage to cashew by feeding different plant parts at various stages of its growth are the shoot and blossom webber (*Lamida moncusalis* W.), leaf miner (*Acrocercops syngramma* M.), stem and root borer (*Placaederus ferrugeneus* L.), and tea mosquite bug (*Helopeltis antonii). A. syngramma* alone was reported to cause 75-80 per cent leaf damage (Basu Choudhuri, 1962). Climatic conditions of different seasons result in the appearance of pests at different times in a particular year. Information on occurrence of different pests on cashew was not known in the Rayalaseema region of the Andhra Pradesh Hence, the present study was undertaken t study seasonal incidence of pest complex o cashew to evolve suitable strategies for th control of the pests.

Materials and Methods

Seasonal incidence of cashew shoot and blossom webber, *L. moncusalis* W. leaf miner *A. syngramma* M. and weevil, *Amblyrhinus poricollis* Boheman were recorded at fortnightly intervals during the year 1998-99 at cashew gardens (12 years aged) in Tirumala Hills of Tirumala Tirupati Devastanams (T.T.D.) of Chittoor district, Andhra Pradesh. Observations were made at fortnightly intervals starting from June to May. Total number of caterpillars of *L.moncusalis* and *A.syngramma* were recorded on ten randomly selected leaders on four sides at different heights in a tree. In case of weevils, the population was recorded on three randomly selected trees. The selected cashew trees were not sprayed with any insecticides during the period of study.

Weather data such as maximum and minimum temperatures, relative humidity and rainfall were also recorded at fortnightly intervals.

Results and Discussion

Cashew shoot and blossom webber

The incidence of cashew shoot and blossom webber, started from June month onwards (Table 1).

le 1. Seasonal incidence of cashew shoot and blossom webber leaf miner and weevil during 1998-99

Period of observation (fortnightly interval)		Average no. of shoot and blossom webber caterpillar/10 leaders	Average no. of leaf miner caterpilars/ 10 leaders	Weevils/ three trees	Mean maximum temperature °C	Mean minimum temperature °C	Relative humidity (%)	Rain fall mm
2		3	4	5	6	7	8	9
June	I	8.67	4.33	4.00	37.81	25.27	45.10	1.84
	II	10.33	6.67	3.33	37.39	26.58	42.45	0.85
July	I	14.67	8.33	4.33	36.22	24.39	60.93	6.55
	II	16.33	10.67	5.00	35.71	26.17	67.97	4.66
August	I	10.33	6.33	6.66	34.27	24.31	66.30	6.99
	II	16.67	10.67	9.33	34.72	24.88	75.40	6.21
September	I	22.67	12.33	14.66	33.49	22.85	72.67	7.33
	II	16.67	14.67	10.33	31.96	24.31	68.80	5.86
October	I	12.67	16.67	8.00	32.97	22.54	68.53	4.00
	II	10.33	20.33	8.33	36.48	20.13	58.43	-
November	I	8.33	24.67	5.66	29.13	17.59	77.37	11.32
	II	6.67	18.33	4.33	30.63	13.90	58.90	-
December	I	7.33	14.67	2.33	29.09	14.28	71.73	3.09
	II	4.33	10.33	1.00	31.07	15.14	77.00	-
January	I	8.33	6.67	0.00	29.70	12.95	68.03	-
	II	10.33	4.33	0.00	32.75	13.16	66.50	-
February	I	20.67	3.67	2.33	33.34	11.14	44.57	-
	II	18.33	2.00	3.66	25.36	11.29	36.77	-
March	I	14.67	0.00	4.00	35.46	15.91	49.43	-
	II	8.33	3.33	5.66	39.87	19.37	53.21	-
April	I	4.33	0.00	3.66	39.64	20.57	45.07	-
	II	2.00	2.00	4.00	39.85	24.12	48.77	-
12. May	I	0.00	6.33	2.00	41.34	26.22	50.47	-
	II	0.00	8.67	0.00	43.07	29.83	42.50	-

The population was more from July to October and February to March. The caterpillar population increased from the first fortnight of August to first fortnight of September and second fortnight of January to first fortnight of February. The peak population of shoot and blossom webber was noticed during first fortnight of September (22.67 caterpillars/10 leaders) when average monthly maximum temperature, minimum temperature, relative humidity and rainfall were 33.49°C, 22.85°C, 72.67 per cent and 7.00 mm, respectively existed during this months. However the population tended to decline from second fortnight of Septembr and was low up to second fortnight of December. The pest rebuilt from first fortnight of January to first

fortnight of February and gradually decreased, and was nil in the month of May.

The correlation of shoot and blossom webber larval populations (Table 2) with maximum temperature (r=-0.448) was negative and significant while it was non-significantly negatative with the minimum temperature (r=-0.187). At same time it was positive and non-significant with relative humidity (r=-0.174) and rainfall (r=+0.393). These results are in agreement with the findings of Ramadevi and Radhakrishna Murthy (1983). Basheer and Jayaraj (1964), and Pillai (1975) who noticed severe damage of shoot and blossom webber, *Lamida moncusalis* at the time of emergence of new flush and blossoming stage. However Chatterjee (1988) observed peak period of activity of shoot and blossom webber from December to February and moderate from November to March and low in April to October. The difference in the occurrence of the pest may be due to the variations in climatic conditions during that period.

and 11.32 mm respectively. In contrary Anu Bhatnagar *et al.* (1996) recorded the peak intensity of leafminer in June-July, January-February an January-March under east coast conditions. Thi may be due to variation in weather factor of the area under experiment conditions. Th peak period of activity of cashew leaf mine *A.syngramma* was observed from September t December. Similar findings were reported b Ramadevi and Radhakrishna Murthy (1983) Jena *et al.* (1985) and Chatterjee (1988). Th population tended to decline from second fortnigh of December and was low upto secon fortnight of May. No population was recorde on first fortnight of March and first fortnigh of April.

Table 2. Correlation coefficients (r) between *Lamida moncusalis* Walker *Acrocercops syngramma* M *Amblyrhynus poricollis* S. and weather factors

Sl.No.	Particulars	Correlation coefficient (r) of *Lamida moncusalis*	Correlation coefficient (r) of *Acocercops syngramma*	Correlation coefficient (r) of *Amblyrhynu poricollis*
1.	Maximum temperature	-0.448*	-0.360 NS	-0.75 NS
2.	Minimum temperature	-0.187 NS	+ 0.034 NS	+ 0.317 NS
3.	Relative humidity	+ 0.174 NS	+ 0.626*	+ 0.360 NS
4.	Rainfall	+ 0.393*	+ 0.459*	+ 0.601

NS : Non-Significant
* : Significant

Cashew leaf miner

A. syngramma was more from September to December (Table 1) with a maximum population during first fortnight of November (24.67 caterpillars/10 leaders) at maximum temperature, minimum temperature, relative humidity and rainfall of 29.13°C, 17.59°C, 77.37 per cent

The correlation (Table 2) between larva population of leaf miner and maximum temperatur (r=-0.360) was negative and non-significant whil positive and non-significant with minimun temperature (r=+0.034). However relative humidity (r=+0.626) and rainfall (r=+0.459) had positive significant effect on the leaf miner.

Cashew weevil

The weevil population (Table 1) was more from second fortnight of August to second fortnight of October with a peak during firs fortnight of September (14.66 weevils/3 trees, when average of monthly maximum temperature minimum temperature, relative humidity and

nfall of 33.49°C, 22.85°C, 72.67 per cent d 7.33 mm respectively prevailed during the iod. Population of weevil tended to decline m second fortnight of October and was low to second fortnight of May.

The correlation (Table 2) between weevil pulation and maximum temperature (r=-0.075) s negative while positive with minimum nperature (r=+0.314) and relative humidity +0.360) but non-significant. Significant positive rrelation was observed between weevil population d rainfall (r=+0.601).

It can be concluded that the peak incidence these insects under investigation varied. Rainfall d a positive signal on the insect incidence. nagement practices may be planned well advance to combat the insect at its peak ivity period. The build-up of shoot and blossom bber, leaf miner and weevil were more from y to October and February to March, September December and August to October respectively. ather factors *viz.* rainfall and relative humidity re positively correlated whereas the maximum nperature negatively correlated with the incidence all these three insects. At the same time nimum temperature had non-significant effect the incidence of all these insects.

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