

Seasonal Fluctuations in Population of the Spindle Bug *Carvalhoia arecae* M. and C. (Heteroptera : Miridae)

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Abstract

The spindle bug Carvalhoia arecae is one of the major pests of arecanut palm. The bugs suck sap from the tender tissues of the spindle leaf and cause necrotic lesions. Seasonal fluctuation in population of the spindle bug studied at three locations revealed that the pest occurred throughout the year. The peak period of the pest abundance was found to vary at different centres. The peak period of occurrence was in January and November at Krishnapuram, in July at Palode and in February at Sullia. High pest population was noted at Krishnapuram and Palode whereas it was quite low at Sullia. Among the weather factors, positive correlation was observed with rainfall and pest population.

Introduction

The spindle bug *Carvalhoia arecae* Miller and China is the most serious and widely distributed pest of arecanut palm occurring all along the west coast of Kerala, Karnataka and in certain parts of Tamil Nadu. *C. arecae* was first recorded as a major pest of areca palm in Dakshina Kannada, Karnataka by Khandige (1955). Miller and China (1957) recorded this as a new genus and species from *Areca catechu*.

Nymphs and adults of *C. arecae* live in colonies in the innermost leaf axils surrounding the unopened spindle and

suck the sap from the tender tissues. Characteristic linear dark brown lesions appear in the infested area and the damaged tissues gradually dry up and drop off leaving shot holes in the opened leaf. Badly damaged spindle never unfolds fully and in many cases it dries up. Severe infestation results in tapering of crown, reduction in number and size of leaves, loss of vigour of the palm and the consequent reduced yield. Nair (1964) estimated that more than 80% of the arecanut gardens in southern Kerala are infested by this pest, with nearly 25% loss in yields.

A thorough knowledge of the seasonal fluctuations in population density is imperative for evolving effective control schedules against the pest. Nair (1964) observed that it occurs in abundance during June to October with maximum populations in August and September in southern

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Kerala. However, information on the population density of the pest in other tracts is lacking. The present paper summarises the results of studies on the population fluctuation of the pest carried out during 1976 - 1978 at Krishnapuram and Palode (Kerala) and Sullia (Karnataka).

Materials and Methods

Observations were recorded from three locations viz., Krishnapuram (Alleppey district, Kerala), Palode (Trivandrum district, Kerala) and Sullia (Dakshina Kannada district, Karnataka). Data on the population density of the nymphs and adults of the bug were recorded at monthly intervals from fifty palms of uniform age at each location. Weather data such as

temperature, relative humidity and rainfall were recorded at Krishnapuram and temperature and rainfall were recorded at Palode. They were correlated with the fluctuations in pest population.

Results and Discussion

C. arecae occurred at all three locations almost throughout the year. The intensity of pest population varied at different locations. Pest population was high at Krishnapuram and Palode and low at Sullia (Fig. 1).

At Krishnapuram, pest abundance was observed from September to January. Maximum population of the bug was recorded in January and November. Pest population remained at a significantly

lower level during the period from February to August. Minimum pest population was observed in March and April. At Palode pest incidence occurred at its peak in July. A decline in pest population was observed during August - September. But the population remained at a high level during February and October. Pest population was low in March and April, the lowest level being in March. However, no significant difference in the level of population was seen during the different months of the year at Sullia. As compared to Krishnapuram and Palode the intensity of spindle bug population was quite low at Sullia. Maximum population at Sullia was recorded during July and February and minimum during August.

No significant correlation was observed between temperature, relative humidity and pest population. However, a positive correlation was noticed between rainfall and population of *C. arecae* (Table 1; Figs. 2 and 3)

FIG. 1 SEASONAL FLUCTUATIONS IN POPULATION OF *C. ARECAE* AT KRISHNAPURAM, PALODE AND SULLIA.

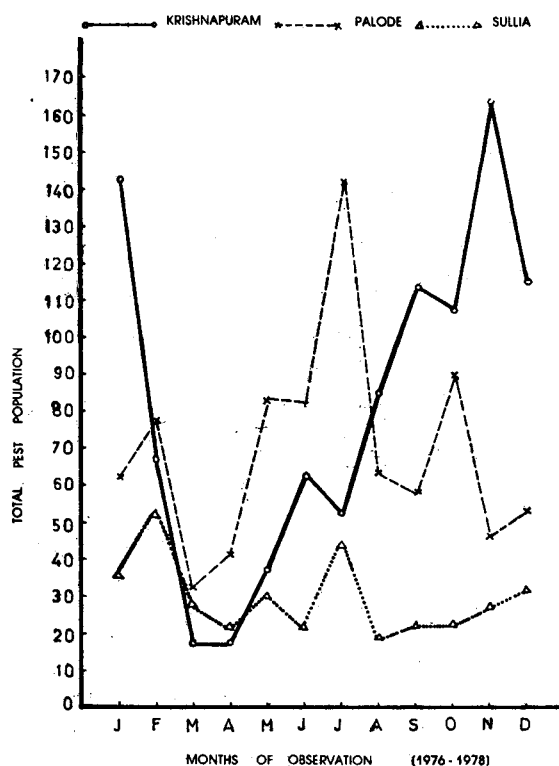


FIG. 2 SEASONAL FLUCTUATIONS IN POPULATION OF C. ARECAE
IN CORRELATION WITH RAINFALL AT KRISHNAPURAM

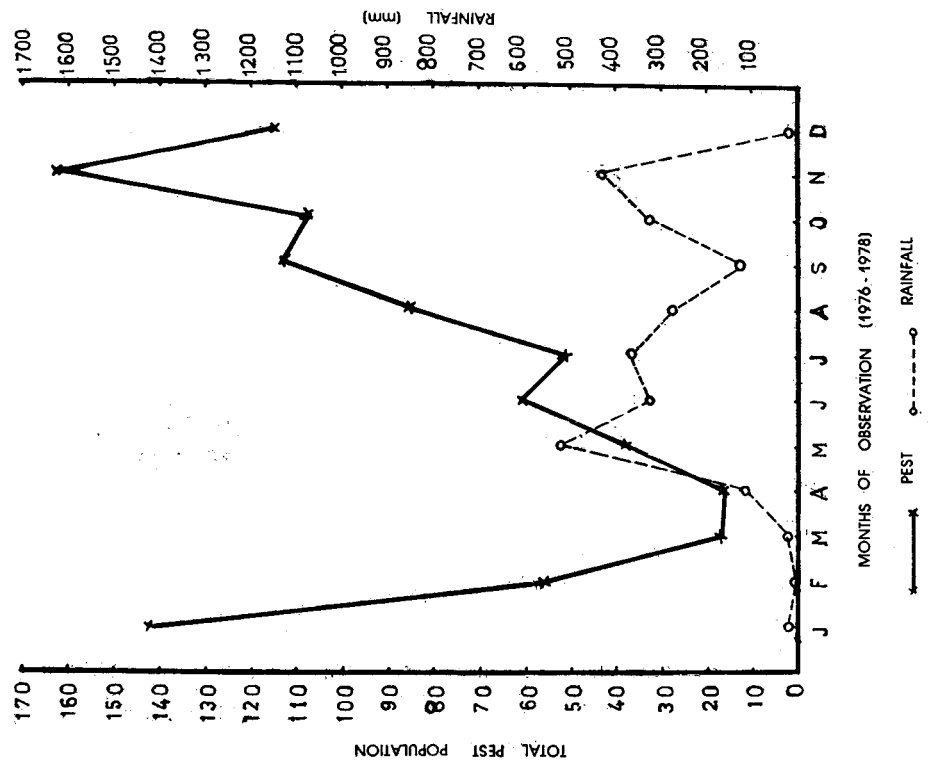
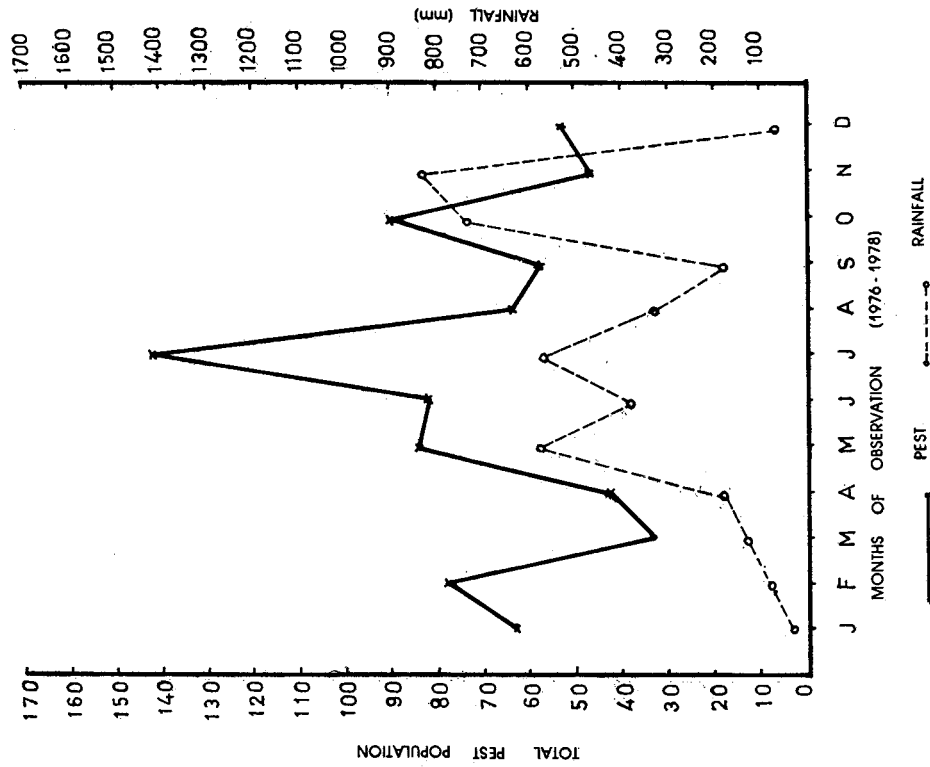


FIG. 3 SEASONAL FLUCTUATIONS IN POPULATION OF C. ARECAE
IN CORRELATION WITH RAINFALL AT PALODE.



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Table 1. Correlations between population of *C. arecae* and meteorological factors

Year / Factors	PALODE			KRISHNAPURAM				
	Temperature Max. °C	Rainfall (mm)	R ²	Temperature °C		Relative humidity (%)	Rain- fall (mm)	R ²
				Max.	Min.			
1976	-0.5797*	0.0596	48.77	-0.3721	-0.2964	0.1267	0.3135	60.58
1977	-0.3227	0.5031	25.85	-0.3740	-0.4401	0.0008	0.0038	47.86
1978	-0.2718	0.4484	24.84	-0.6825*	-0.7079	-0.1227	-0.2523	80.84
Overall	-0.5553	0.3452	32.87	-0.6022*	-0.2704	0.2963	0.0188	67.52

* Significant

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