FORAGING ACTIVITIES OF SUBTERRANEAN TERMITES, *CAPTOTERMES CURVIGNATHUS* (ISOPTERA: RHINOTERMITIDAE) IN A SUB-URBAN AREA

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Introduction

Termites are common insects in the tropics and majority of them is beneficial. Some species, however, are pests of many trees and structural timber. one of them is *Coptotermes curvignathus*, the most economically important termite in Malaysia (Tho, 1992). This termite attacks structural timber in and outside buildings (Sajap and Yaacob, 1997). Like in other species of Rhinotermitidae, *C. curvignathus* colony does not build nest and its cryptic habit makes its presence very difficult to detect. Its could only be realised when the damage done had been too severe for treatment. Before a termite infested structure can be treated, some assessment on the extent of the infestation must be made. Thus this study was conducted with objectives (i) to establish the foraging pattern; and (ii) determine the feeding activity of *C. curvignathus* in sub-urban area. This information is essential in formulating control strategies for the subterranean termites.

Materials and Methods

Study sites: Four sites known for *C. curvignathus* infestation were selected for the study. These sites, designated as A, B, C and D, were located in the campus of Universiti Putra Malaysia, Serdang, Malaysia. *Stake preparation: Pinus caribaea*, being one of the most susceptible wood to *C. curvignathus* was used in this study. Stakes, 3 x 4 x 30 cm, were cut from freshly felled *P. caribaea* logs obtained from Batu Arang Forest Reserve. They were oven-dried at 80°C for 24 h, cooled, weighed and kept in a dry place before use. *Experimental procedure:* At sites A and D, the survey stakes were driven into the ground approximately every 2 to 3 m adjacent to and around the perimeter of the buildings. At sites B and C, stakes were placed in a grid at intervals of 3 m. Stakes with termites at each site were selected for the monitoring traps, modified from a method as described by Su and Scheffrahn (1986). Termite foraging territory and population at sites A, B and C were estimated using a triple marked-recapture method (Su and Scheffrahn, 1988).

Results and Discussion

The first attack by the termites, *C. curvignathus*, came within 1 to 4 weeks after installation of the survey stakes.

Site A: Twenty survey stakes were installed around the building. Two stakes adjacent to where the termites damaged the building wall were attacked. The colony had foraging population estimated at 166,288 in January 1997 and territory approximately 15 m^2. The wood consumption rate was 305.9 ± 28.4 g per month. Site B: Out of 120 survey stakes installed, and three stakes were attacked by *Coptotermes* termites. Two stakes had *C. curvignathus* and one had *C. travians*. The foraging distance was about 85 m and an estimated population in January 1997 of 553,589. The wood consumption rate was 1108.2 ± 159.7 g per month. Site C : Fifty survey stakes were installed at this site. Eight stakes were attacked and two were replaced with monitoring traps. The foraging population of this colony was estimated at 709,052 in May 1997 and the territory extended to a distance of 30 m. The wood consumption rate was 977.4 ± 84.5 g per month. Site D: Four out of 20 stakes installed at the back yard of the apartment where two *Araucaria* trees had been killed by termites were infested. Foraging territory, determined by the presence of dyed termites in the infested stakes, was approximately 50 m^2 and the wood consumption rate was 587.9 ± 86.4 g per month. The activities of *C. curvignathus* were reflected in their feeding pattern and foraging area. As expected a very active colony, indicated by a high rate of wood consumption, had a large foraging area with a high population of termites. Even though the feeding activities fluctuated over time, they were not affected by little changes in the environmental conditions such as soil moisture content or rainfall. Irrespective of the external environmental conditions, termites invariably maintain a relatively constant environment in their nests. Such pattern of activities had also been seen in *C. curvignathus* foraging in a rubber plantation (Sajap, 1999). Their activity could be disrupted by extreme environmental conditions such as flooding and colony disturbances by human and animals. The fluctuation in the feeding activity could be related to the changes in the numbers of foraging population.

Conclusion

Regardless of the population fluctuation, foraging activity of *C. curvignathus* could be detected and monitored by baiting with susceptible stakes. While its population and foraging area could be estimated using dyed termites in triple marked-recapture method.

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