

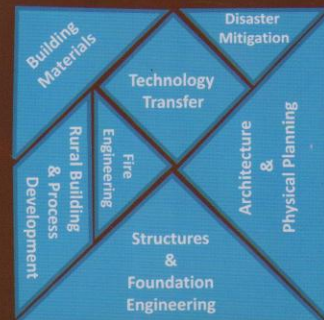
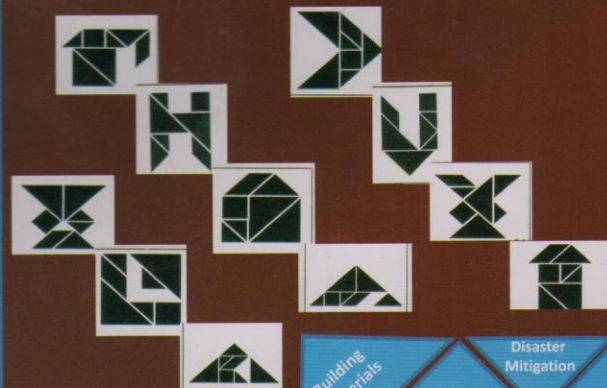
वार्षिक प्रतिवेदन Annual Report 2009-2010

by Co-ordination



Progress

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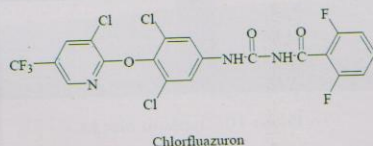
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Evaluation of Chlorfluazuron 0.1% based Termite Bait for Termite Management in Buildings (SSP-6717)

B S Rawat and Team

The 'green building' concept is gradually gaining momentum and acceptance in India. They are also designed to meet certain important objectives such as protecting occupant's health and improving employee productivity, thus reducing the overall impact to the environment. "Green Buildings" might be excellently good for keeping out cold air in the winter and hot air during the summer, but they often warm welcome various building pests. These building pests not only contaminate our inbuilt environment but also spread several types of dreaded diseases and damage valuable properties. Termite baiting system is an alternative approach and newly emerged termite management tool for buildings. Small amount of bait material is deployed to eliminate the whole termite colony present in structures. Foraging termites consume bait material and share it with their nest-mates, resulting in a gradual decline in numbers. In the present study, a baiting system containing Chlorfluazuron 0.1% in termites food was studied in different climatic and soil conditions in India. Chlorfluazuron is a benzoyl phenyl urea insecticide, which requires ingestion by target



pests to be efficacious. It disrupts the formation of chitin at the time of moulting, resulting in the failure of termite to complete the moulting process and eventually kills the affected termites.

This baiting system has two main components: (i) In-Ground Bait Stations (IGBS): Each IGBS consisting of two interlocking halves with horizontal slots to allow the entry of termites and a lockable plastic lid. On inside wall of the station are a series of vertical slots that house six wooden interceptors used to facilitate contact between the termites and bait material. The bait stations are placed in the ground around the exterior of buildings. Each IGBS has a capacity of 700gm bait material. (Photo 11-13) (ii) Above Ground Bait Stations (AGBS): It is a plastic box measuring 180mm x 80mm x 80mm, with an approximate capacity of 500gm bait material. AGBS are made of rigid plastic with a removable cover, without any wooden interceptor. It is mounted directly on the termite infested spot of building with the help of screws. Bait material is placed inside AGBS at the time of installation. The cover is held in place with six tamper-resistant screws (Photo 14).



Photo 11: Internal view of an IGBS with wooden interceptors



Photo 12: IGBS filled with bait material



Photo 13: Complete IGBS before installation



Photo 14: AGBS after installation on wall

Three experiments were carried out in the project:

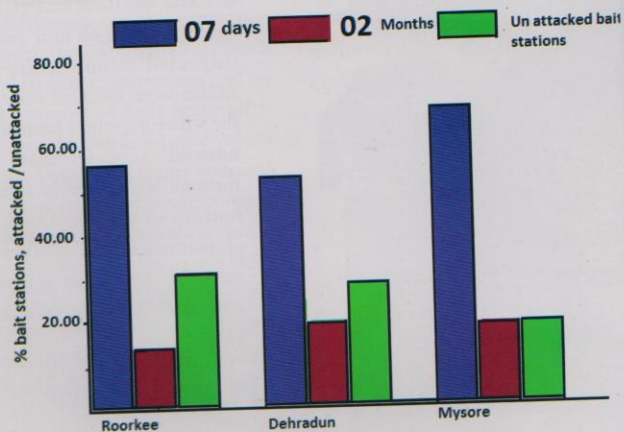
- (i) **Elimination of termite colonies from termite infested buildings:** Eight infested buildings were selected in each experimental site. Bait stations were installed at a distance of 1.5ft to 2ft away from the structure and the perimeter linear distance between IGBS to IGBS was three metres. IGBS were placed strategically at or near points of known or suspected termite entry into structures. AGBS were installed only on the points in the structure, where termite activity is already noticed. Termites enter the bait station through termite entry holes formed in the bottom of station. Once bait material is consumed it was refilled with fresh bait material. Each bait station was inspected regularly till the end of experimental period. (Table 2).



Table 2. Total number of bait stations installed and summary of results

Name of Site	Total building treated	Total bait station installed			Number and % age of bait station attacked				Number and % of bait station not attacked
		IGBS	AGBS	Total	Months				
					0M	02M	04M	06M	
RKE	08	121	65	186	(105) 56.0%	(24) 13.0%	00	00+	(57) 31.0%
DDN	08	100	37	137	(73) 53.2%	(27) 19.7%	00	00+	(37) 27.0%
MYE	08	95	34	129	(82) 63.5%	(23) 17.8%	00	00	(24) 18.6%
TOTAL	24	316	136	452	(260) 57.5%	(74) 16.3%	00	00	(118) 26.1%

Abbreviations: RKE-Roorkee, DDN-Dehradun, MYE-Mysore,
+ One IGBS was found attacked on 6th month's observation



Graphic Representation of Results

Fig. 7: Graphic representation of data received from all the three sites.



- (ii) **Colony elimination of mound building termites:** The baiting system was studied directly on the active termite mounds. Eight active termite mounds were selected in each location- Roorkee, Dehradun and Mysore. There were fifteen treated and nine untreated (control) termite mounds in all the locations. The mounds were selected on the basis of their physical proximity, easy to access, and other subjective attributes. Four in-ground bait stations were installed in each mound. Keeping in view, the termite activity inside the mound, the bait material along with wooden interceptors has also been added in each bait stations. Approximately, each IGBS was replenished with 200 gm of bait material initially in all the mounds and in all site . (Photo 15-16)
- (iii) **Study on leaching effect of toxicant from Chlorfluazuron 0.1% termite bait :** In order to determine the residual toxicity of soil treated with Chlorfluazuron 0.1%; the IGBS

were taken out and 100 gms soil was collected from the bottom of three IGBS. The soil samples were collected from 0-15cms, 15-30cms and 30-45cms depth using augur. The mortality rate of termites were determined in the laboratory by bio-assay method.

Based on the results and observation of all the tests; the conclusion can be drawn as under: (i) 100% protection from termites was achieved within fifteen to seventeen weeks from the date of installation of bait stations (IGBS and AGBS) in all the treated buildings located in all the three distantly located experimental sites in Roorkee, Dehradun and Mysore.(ii) The termite bait containing Chlorfluazuron 0.1% as an active ingredient; was found 100% effective to control termites in active mounds of *Odontotermes obesus* species within six months in all the sites, (iii) There is no difference in mortality rate of termites on the soil collected from 0-15 cms, 15-30 cms and 30-45 cms depths underground the IGBS and with the untreated soil samples.

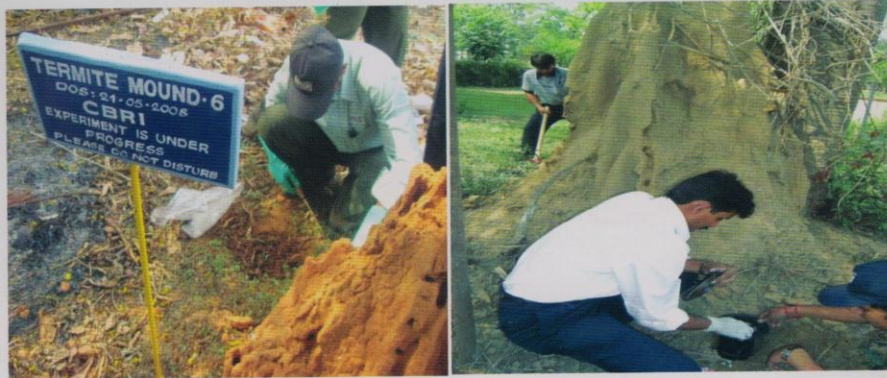


Photo 15-16 : Installation of bait stations on the termite mounds