

# ROLE OF *TERMITOMYCES* Sp. IN THE TERMITARIUM OF *ODONTOTERMES OBESUS*—RAMBUR

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One of the possible roles of *Termitomyces* sp. present as white spheres in the live termitarium of mound building termites is to maintain suitable humidity in the termitarium.

The exclusive dominant presence of the fungus *Termitomyces* sp. as innumerable white balls (Fig. 1) spread all over the fungus garden (or termite comb) in the live termitarium of the mound building termite, *Odontotermes obesus* Rambur, has been described by many workers<sup>1-5</sup>. The majority of workers are of the opinion that the fungus is used as food by termite nymphs and the royal pair<sup>6-9</sup>. Studies made in this laboratory indicate another possible role, namely, the maintenance of suitable humidity inside the termitarium.

## EXPERIMENTAL PROCEDURE

Measurements of temperature and humidity in the termitarium located outside the premises of the Defence Research Laboratory (M), Kanpur have been carried out<sup>10</sup> over a period of four years, 1960-63. It was observed that after a heavy downpour, when atmospheric and ground humidity was high the termites weeded out the white fungal balls from the termite comb and deposited them on the surface of the mound where they germinated into sporophores (*pileus*-like structures, 7 to 11 cm in dia.—Fig. 2) akin to those of *Collybia albuminosa*. The atmospheric humidity at Kanpur during this period ranged from 70 to 95 per cent. Other termitaria in the vicinity of DRL (M), as also within the compound were opened and examined during monsoon. All termite combs during this period, in all the four years, were completely denuded of fungal balls of *Termitomyces* sp. Even the innermost galleries of the comb, showed no white balls (Fig. 3).

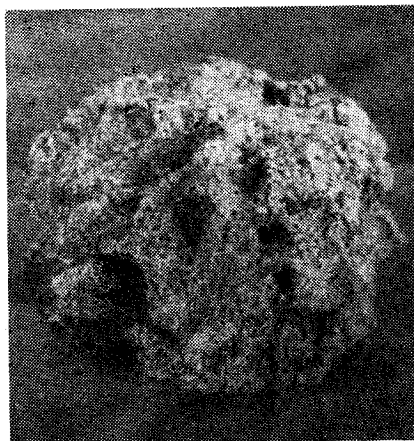


Fig. 1—Normal termite comb covered all over with white fungal balls.

*Examination of Termitaria during post-monsoon months:* Visual examination of termitaria in September, when R.H. ranged between 48 and 58 %, revealed that all the combs were covered with white fungal balls. Monthly examination of termitaria in succeeding winter and summer months showed full covering of termite combs with white fungal balls.

*Effect of drying the outer surface of the Comb:* A number of termite Combs (all with white fungal balls) were dug out from different mounds and transferred to the laboratory (room temp. 28-30° C; R.H. 65-90%). On examination after 24 hours, it was observed that the termites had moved the white balls from the external surface to the inner galleries. The termites were also seen huddled together in those galleries.

#### RESULTS AND DISCUSSION

The observation reported above suggests that besides serving as food for the colony the fungus helps in maintaining high humidity (84-100% R.H.) inside the termitaria.<sup>10</sup> During the monsoon months when the atmospheric humidity goes up (70-95% R.H.) and remains above the optimum conditions required for the live termitarium, the termites weed out the balls. In the succeeding months of September/October, when the atmospheric humidity goes down, the white spherical balls reappear on the Combs. The renewed crop remains active during the comparatively dry seasons of winter and summer till the monsoon sets.

The downward movement of the termite colony during the dry weather as described by Cheema *et al.*,<sup>10</sup> suggest that in order to maintain the efficient working of the humidity mechanism, the termites physically remove the fungus gardens to the deeper layers of the ground. This observation indirectly supports our explanation that apart from serving as food for the termites, the white bodies also help to maintain the humidity needed for the colony's survival.



Fig. 2—Termitarium after heavy shower; white spheres germinate into sporophores.

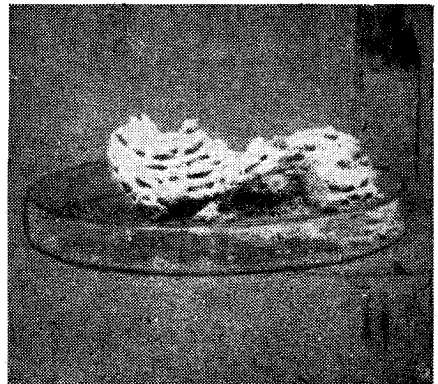


Fig. 3—Broken comb showing collection of white spheres in inner galleries after 24 hours, exposure to low humidity.

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