

A study of Microbial composition and Lignocellulose degradation in the mound soil of Macrotermes bellicosus Smeathman.

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Abstract

Mound soil samples of *Macrotermes bellicosus* Smeathman and the adjacent soils were examined for total heterotrophic bacteria, yeasts, moulds, actinomycetes, nitrogen fixers and cellulose decomposers. There were higher populations of the various microbial groups in the mound soil than in the adjacent soils with the exception of yeasts. In the mound soil were *Klebsiella*, *Micrococcus*, *Aeromonas*, *Flavobacterium*, and *Bacillus*. The yeasts were *Candida*, *Rhodotorula* and *Torulopsis*, whilst the moulds were capable of utilizing lignin and cellulosic substrates for growth with the production of cellulolytic enzymes. Growth of *Aspergillus oryzae* and *Mycelia sterilia* on wood dust resulted in substantial weight loss, carbohydrate and lignin depletion of the wood residues. The significance of fungal delignification in relation to termite nutrition is emphasized and discussed.

Keywords: *Aspergillus oryzae*, *Mycelia sterilia*, *Macrotermes bellicosus*, *Klebsiella*, *Rhodotorula*, *Aeromonas*

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