

PROGRESS TOWARDS THE USE OF *METARHIZIUM ANISOPLIAE* IN BAIT SYSTEMS FOR CONTROL OF URBAN TERMITES IN AUSTRALIA

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Some strains of the hyphomycete fungus, *Metarhizium anisopliae*, are highly virulent for various species of Australian termites. One of these, FI-610, has been selected for control of *Coptotermes* spp. and *Nasutitermes exitiosus*, and shown to kill mound and tree nests when sufficient dry conidia are applied to the nursery area (Milner *et al.*, 1998). The nests of urban *Coptotermes* spp., however, are often difficult to find and may be inaccessible for direct treatment. Indirect treatment by means of treating termites *in situ* in structural timbers, where they are feeding, has often provided protection for over one year, but our studies suggest that the nest is rarely killed by this type of treatment.

Delate *et al.* (1995) showed that agar-saturated filter papers inoculated with *M. anisopliae* were not avoided and showed promise as baits for control of *C. formosanus*. We have found that while FI-610 conidia are highly virulent, they are also repellent. Therefore, we have evaluated various *Metarhizium* isolates for repellency using an agar-tube technique. Isolate FI-1186 was found to have reduced repellency combined with a reasonable level of virulence.

These two isolates, together with another highly pathogenic isolate FI-1248, are now being assessed using a bait-box system, in which termites are trapped using moist wood and cardboard, dusted with fungal formulations and replaced into the trap to transfer the disease back to the nest. Mark-recapture studies have shown that *Nasutitermes exitiosus* workers and soldiers treated with pure conidia of FI-610 or FI-1248 do not return to the nest-mound. Those dusted with pure conidia of FI-1186 returned to the mound in similar proportions to the controls. Formulated conidia of FI-1248 were returned to the nest-mound just as effectively, showing that the more virulent strain could be used in baiting systems if diluted with suitable formulating compounds.

Formulated conidia of both repellent and less-repellent strains are also being tested against *Coptotermes lacteus* (a non-pest mound builder being used in laboratory model systems) using baits accessed via agar-filled tubes). Formulated conidia in these baits have been shown to be accepted by termites and remain viable over several weeks at 28 °C.

Investigations are underway to determine whether such bait systems provide effective control of termites in the field.

Delate K. M., Grace J. K. and Tome C. H. M. 1995. J. Appl. Ent. 119, 429-433

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