

8. Cockroaches

8.1 Entomopathogenic fungi for control of *Blattella germanica*

In the final year of this project focus was put on transmission studies with selected fungal pathogens and on the importance of high humidity for fungal infection of German cockroaches. Non-choice experiments in which fungal spores were applied to water tubes showed that this was a potential means of transmitting inoculum of *Paecilomyces fumosoroseus* and *Metarhizium anisopliae* to cockroaches. However, the infection rate was low, and it is not yet known whether cockroaches are able to detect the fungal spores and thus avoid fungus contaminated water tubes in choice situations. A number of transmission studies included live, fungus-inoculated cockroaches or sporulating cadavers placed in the harbourages. It was shown that it was possible to transmit *M. anisopliae* within the cockroach populations, although the mortalities never reached the high mortalities reached in previous infection experiments (Annual Report 1996). *Paecilomyces fumosoroseus* did not spread among cockroaches in these experiments.

Previous infection experiments were conducted at very high relative humidity (RH) in order to optimize the effect of the entomopathogenic fungi. We showed that the best effect of the fungi was obtained at 100% RH during the first day after inoculation of the cockroaches. An RH of 85% limited the effect of the fungi, even though it was still possible to infect cockroaches under these conditions. Based on these results it can be concluded that RH in cockroach harborages will not always be optimal for germination and sporulation of fungal pathogens.

T. Steenberg and K.-M. Vagn Jensen