MASTO CONTROL IN NEW GUINEA

THE GIANT TERMITE, MASTOTERMES DARWINIENSIS FROGGATT (ISOPTERA: MASTOTERMITIDAE), IS THE MOST DESTRUCTIVE SPECIES OF TERMITE IN TROPICAL AUSTRALIA.

In the Northern Territory this species potentially accounts for several million dollars in annual production losses within horticultural tree crops and is also responsible for losses in vegetable and agricultural crops.

Mastotermes can also cause major damage to buildings, wooden structures, electrical cables and a variety of other materials.

The giant termite was inadvertently introduced to Lae, Papua New Guinea, during or soon after World War II. Eradication was attempted in the infested areas in the 1960s-'70s.

Persistent organochlorine insecticides were used as barriers in the soil to kill the termites on contact and, while this method gave good control and containment, the fact that the toxicants were not transferred by the termites through the colonies, meant that not all individuals were killed and eradication was not achieved.

These treatments ceased in the 1970s and during the past few years the termite has reappeared and has spread from the confines of the infrastructure at the main hospital site and become established in the nearby Lae Botanic Gardens, where trees of a range of species have been destroyed.

The pest has recently rapidly extended its range to adjoining residential areas, government buildings and other infrastructure and there is now a major infestation in the Papua New Guinea Forest Research Institute (PNGFRI) building.

Authorities in PNG had requested assistance from the Australian Centre for International Agricultural Research (ACIAR).

Since the Entomology Section of Diagnostic Services, Northern Territory Department of Primary Industry, Fisheries and Mines (NT DPIFM), has wide experience of this pest in horticultural and forestry situations it was contracted to define much more precisely the current extent and nature of the incursion, develop a prognosis of likely rate of spread and of the potential impacts, if no management strategies are adopted and propose longer term management options.

The survey was carried out by Dr Brian Thistleton and Michael Neal (DPIFM) and Dr Mex Peki, John Dobunaba and other staff of PNGFRI.

The survey more clearly defined the boundaries of the first area and located a new area at the Police Barracks about 2km from FRI. The present infested area was estimated to be approximately 0.6 km2 at the hospital/FRI area and 0.8 km2 at the Okari Campus/Police Barracks area, a total of 1.4 km2.

This is seven times larger than the area at which the previous (1960-70s) eradication attempts were carried out (0.2 km2). An eradication attempt on the current infestation is therefore likely to be a long term and expensive operation, but this is offset by the very large amount of potential damage to crops and infrastructure if the termite establishes in drier areas of PNG.

There was no evidence that dispersal had occurred through termite flights and the distribution was consistent with spread by budding-off from the main colony and transport in infested timber which is probably how the termite was able to colonise a new area.

Mastotermes is common across the low rainfall areas of northern Australia but is absent from high rainfall coastal rainforest localities in Queensland. Its establishment in Lae with a rainfall of 4500mm is therefore unusual.

This high rainfall and the very wet soils in Lae are probably the reasons for the slow build-up, and the situation could change dramatically if the termite ever reaches the drier areas elsewhere in PNG.

Mangoes, coconuts and many large forest trees (rain trees, Terminalia etc.) have already been killed in Lae. If the termite gets to the much drier and more favourable areas of the Markham Valley, cocoa, forestry plantations, coconuts and mangoes will all be at risk.

There is also the danger to food plants such as cassava, which in Australia is a favoured host and has been used as a trap crop for the species. In addition village houses, which are mainly constructed of timber, are at high risk.

The termite is likely to survive at Bulolo (700m) where large forestry plantations would be at risk.

While coffee (robusta in the lowlands and arabica in the highlands) and tea have not yet been shown to be hosts, the wide range of other plants attacked makes it highly likely that these will also be attacked.

Coffee, in particular, is a major crop in PNG and while there are large commercial plantations, most coffee is produced in village plots where termite control would be difficult.

In view of the still limited distribution of the termite in PNG, the potential for large scale damage to horticulture, forestry and infrastructure should it move to more favourable areas, the availability of more efficient termiticides and the commitment of the PNG authorities, it was recommended that funding is sought for a program to at least contain the termite and substantially reduce the population in Lae town, and preferably to eradicate it completely.

MICHAEL NEAL DEMONSTRATING THE SETUP OF AN AGGREGATION DRUM TO JOHN DOBUNABA AND TOM.

DAMAGE AT THE POLICE BARRACKS

A COCONUT KILLED BY MASTOTERMES

A MANGO RING-BARKED BY MASTOTERMES