Urban Entomology Program

The Urban Entomology Program focuses on the study of termites, which have caused extensive damage to housing stock in the Greater Toronto Area. The program has developed new, environmentally friendly methods of controlling termites, tested termite-resistant building materials, identified new termite species, investigated the biology of termites, and studied termite intrusions into buried nuclear waste.

Since its introduction to Toronto from the United States in 1938, the eastern subterranean termite has spread to more than 1,000 city blocks. These cellulose-digesting insects damage wood frame structures and represent a growing threat to the housing stock in the Greater Toronto Area, since termite damage can be severe enough to cause structural failure.

The cost of traditional soil barrier methods of control is expensive, typically more than $1,500.00 per property, and the large amounts of toxic pesticides used for such treatments pose environmental and health risks. In addition, such property-specific approaches do nothing to address the spread of the infestation throughout urbanized areas. As termites spread, they wreak havoc on property resale values, and lower the property tax revenue base of municipal governments.

In 1985, Toronto City Council resolved to establish a chair in Urban Entomology at the University of Toronto. With sponsorship from the Ontario Ministry of the Environment, the Ontario Ministry of Housing, Canada Mortgage and Housing, and several termite-infested municipalities, the Urban Entomology Program (UEP) was created in the Faculty of Forestry in 1987. In 2002, the program moved from Forestry to the Centre for Urban and Community Studies.

Research conducted by the UEP has led to the development of termite control methods that are more effective and more environmentally friendly than traditional methods. Two physical barrier systems that do not use pesticides – sand barriers and copper sheet metal shields – have been used in new housing built in termite infested areas of Toronto.

The most significant innovation has been the development of the Trap-Treat-Release (TTR) system. TTR involves trapping thousands of termites, treating them with minute doses of topically-applied, slow-acting chemicals, and releasing them back into the parent colony, where they transmit to other termites, leading to the death of the colony. The TTR system has been patented and UEP is now pursuing Canadian registration and commercialization.

UEP's other activities include:

- research on termite biology, control, ecology, and systematics, including the use of the entomopathic fungus, *Metarhizium anisopliae*, as a biocontrol agent;
- tests of termite-resistant building materials;
- studies of the risk of bio-intrusion by termites into buried nuclear waste at the Nevada Test Site;
- research on the systematics of North American termites, which has led to the discovery of 15 new termite genera and more than 60 new termite species.
- studies on termite digestive processes.

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