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PEST CONTROL

Termite control today and tomorrow

By Dr. Kenneth Grace
College of Tropical Agriculture & Human Resources, University of Hawaii

There are 2,700 different kinds of termites in the world. The good news is that only about 80 of these termite species cause us problems. The bad news, of course, is that they can cause us very big problems since they feed on the wood holding up our buildings.

Most of the termites that attack buildings contain microorganisms like bacteria in their gut that help them digest cellulose (the main ingredient in wood). Scientists in Hawaii are studying these internal bacteria, and are using genetic engineering to modify them to create bacteria to help control termites, rather than helping them feed.

The main target of research at the University of Hawaii is the Formosan subterranean termite, *Coptotermes formosanus*. This termite is closely related to the most severe termite pests in Asia.

Termite prevention begins inside the building, with the use of either naturally durable construction timbers, or wood pressure-impregnated with wood preservative chemicals. Collaborative research by UH and Forest Research Institute Malaysia (FRIM) has identified a number of termite-resistant woods. It is important to remember, though, that only the heartwood (wood nearest the center of the tree trunk) of most trees is durable. Boards cut from the outside of the trunk or log are almost always very susceptible to termite attack. So, be sure to specify "heartwood" timbers if you choose to use a naturally-durable wood in construction.

Research in Hawaii has identified borate wood treatment as a good option for timbers to be used inside the building. Wood treated with borates needs to be protected from running water, though, so other less soluble treatments are advisable for wood to be used outside the structure or directly in ground contact. These treatments for exterior wood are referred to by names such as "CCA", "ACZA", and "ACQ."

Termites are major pests affecting structures of buildings

Traditionally, soil insecticides are injected into the soil beneath and around buildings to create a "chemical barrier" against tunneling termites. The newest soil insecticides used in the USA are not detected by the termites, and protect the building by killing termites rather than repelling them from the area. A more permanent approach used in Hawaii is to install a physical barrier under the house that termites cannot penetrate, rather than an insecticide. Common physical barriers used in new building construction are crushed rock (gravel) screened to a size that termites cannot tunnel through and a stainless steel mesh.

The latest termite control products are baits. The first termite bait to be introduced commercially, and the one for which the most research is available, contains a synthetic insect hormone called hexaflumuron that interferes with how termites grow. The goal with a termite bait is to protect the building by killing all the termites in the colony that is invading the structure.

Baits can be placed inside the building, as well as outside, but they must be monitored closely to ensure that termites are feeding on them, and to ensure that no new termite colonies invade the building after the original colony is eliminated.

Continued monitoring of the building after baiting is very important, since research has shown that after several months or years new termite colonies from surrounding areas may find their way into the tunnels left behind by the original termites, and use this as a highway system to enter and attack the building. However, so long as the pest control company is doing a good job of regular inspection, the new termites will also be found in the bait stations and can again be eliminated.

This is where termite control is today, with a hint of the direction in which it is going.

Professor Kenneth Grace discussed termite control at the Malaysian Pest Control Convention & Exhibition 2001 in Penang. For more details on the University of Hawaii's termite research programme, visit http://www2.hawaii.edu/~entomol.