

# Bait Technology and Application

There are several termite baits on the market that add to the arsenal of tools available for managing termite populations and protecting structures. Baits work on the principle that foraging termites will feed on a treated cellulose material, which eventually kills the termites and possibly the colony. The toxic material in the bait must kill slowly enough to allow foraging termites to return to the colony and spread the bait through food sharing (trophallaxis). Because dead termites repel other termites, the toxic material also must kill slowly enough so that dead termites do not accumulate near the bait.

Baits control a colony locally; either eliminating it or suppressing it to the point that it no longer damages a structure. To be successful, the products must be nonrepellent, slow acting and readily consumed by termites. There are three main types of bait products available:

1. Ingested toxicants or stomach poisons
2. Biotermiticides or microbes
3. Insect growth regulators (IGRs)

Each type has unique features and is used differently in termite control programs. Ingested toxicants have the quickest effect. However, dose dependency and learned avoidance may limit this type of product to termite reduction in localized areas.

Biotermiticide, which is derived from fungi, bacteria or nematodes, is injected into active gallery sites. It then develops on the infected foraging termites and spreads among the colony. Suitable temperature and moisture, early detection and avoidance are factors that determine this treatment's success. It may provide localized area control or, with optimum conditions, may suppress a colony.

Among the insect growth regulators are juvenile hormone analogs (JHA), juvenile hormone mimics (JHM), and chitin synthesis inhibitors (CSI). These products disrupt the termites by causing a specific response or behavior within the colony or by blocking the molting process. Remember that all insects, including termites, have an exoskeleton made primarily of chitin. In order to grow, they must periodically shed their chitinous exoskeletons and form new ones. This process is called molting. A chitin

synthesis inhibitor slowly builds up in the termite and, the next time a molt should occur, prevents proper formation of the cuticle. IGRs are the slowest of the bait types but have greater impact on the colony,

Some of the major baits available to the pest control industry are discussed below. Note their use for either colony elimination or for colony suppression.

## Commercial Baiting Products

### Sentricon™ System

Sentricon™ System, developed by Dow AgroSciences for professional use, combines monitoring with the use of permanent stations. Stations are installed in areas where termites exist and around the perimeter of a structure and in the yard. Each station contains a wood stake and must be periodically monitored for termite activity. After termites attack, the wood is removed and replaced with a bait tube. Termites from the wood must be transferred to the bait tube, which is left in the station until termite activity ceases. Then the bait tubes are replaced with new wood stakes and monitoring for new infestations resumes. Thus, the Sentricon™ System protects property through an integrated program of monitoring, baiting when termites are present, and resuming monitoring when termites are no longer present. The active ingredient in the Sentricon™ System is hexaflumuron, a chitin synthesis inhibitor. The philosophy behind the Sentricon™ System is that foraging pseudergates will feed on the bait, return to the colony and pass the bait to other colony members through trophallaxis. Dow AgroSciences claims that with the Sentricon™ System, colony elimination is possible.

### FirstLine™ Termite Bait Stations

FMC Corporation manufactures bait stations for suppression of subterranean termite colonies. The FirstLine™ aboveground termite bait station is applied directly to active termite infestations. It is placed above ground, inside or outside, at the leading edge of active termite mud tubes. Another product, the FirstLine™ GT in-ground bait station, is placed in the ground in areas conducive to termite attack and acts as

a first line of defense against termite invasion of a structure. There are two types of these in-ground bait stations. One type has wood stakes for monitoring the presence of termites. The other type has cardboard treated with sulfluramid. Bait stations are placed in areas where termites are present or very close to monitoring stations that have been attacked by termites.

The active ingredient in FirstLine™ termite bait stations is sulfluramid, a slow-acting stomach poison. The philosophy behind the FirstLine™ products is that many termites will feed on the bait and over time will die. Research with these bait stations demonstrates that reduction of the termite population is possible, but not elimination.

FMC Corporation also markets Interceptor™, an on-the-wall application. This product is placed over a termite tube. The tube is broken open to allow termites to have access to the bait. The active ingredient is sulfluramid.

## **Exterra® Termite Interception and Baiting System**

Ensystex Incorporated manufactures a termite baiting system called Exterra® Termite Interception and Baiting System. The in-ground stations are designed to permit visual inspection without removing or disturbing the stations. The chitin synthesis inhibitor diflubenzuron (Labyrinth®) is the active ingredient in the bait matrix, a shredded paper towel material.

## **Subterfuge® Termite Bait**

BASF manufactures Subterfuge® termite bait with hydramethylnon as the active ingredient mixed into bait matrix. This baiting system places the active ingredient in the ground at the same time the station is placed in the ground. Hydramethylnon is a member of the amidinohydrazone family of chemistry and is primarily active as a stomach poison. It is also non-repellent to termites. It works on the mitochondria of

cells and ultimately shuts down energy production resulting in death in a manner similar to chlorfenapyr.

## **BioBlast™**

An example of a biotermiticide is BioBlast™, manufactured by EcoScience. BioBlast™ is an EPA registered wettable powder containing live spores of the insect killing fungus *Metarhizium anisopliae*. This product is injected into the termite galleries. The spores germinate, penetrate the cuticles of termites and kill them. Spores are carried throughout the colony in a manner known as “horizontal transfer.” BioBlast™ controls termites in localized areas if conditions are right for the fungus to grow.

## **Bait Technology Summary**

When deciding whether or not to use baits, it is important to remember that this is a relatively new technology. Baits are still being evaluated and their long-term success is unproven. However, the concept of controlling termites with baits is promising. You, the termite control professional, must determine which approach, colony elimination or suppression, will succeed in each situation.

Baits may require from a few weeks to several months to control termites, depending on such factors as the product selected, application timing, the time to discovery by the termites, the amount of feeding the colony does, colony size and other control measures used.

Baits fit well in an integrated pest management (IPM) control program, along with eliminating conditions conducive to termite infestation, judicious use of liquid soil products as a spot or limited barrier application and use of wood treatment products. An IPM program will require more frequent visits to the site for monitoring and to provide ongoing service. Applicators are strongly encouraged to familiarize themselves with bait technology and future products.