

A COMPUTER-BASED, TRACK-FOLLOWING SYSTEM to DETERMINE the PALATABILITY of IMIDACLOPRID BAITs to ANTS (HYMENOPTERA: FORMICOIDEA)

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High palatability is an essential requirement for ant baits. They should not exhibit repellency and the ingredients need to be acceptable to the ant species. Since various ant species react differently to ingredients such as solvents, preservatives, or food in a bait, the determination of the palatability of the ingredients is the first step in the development of ant baits.

For the evaluation of the palatability of ingredients for Imidacloprid ant bait formulations, a convenient computer-based track-following system was used that achieved both a high throughput of experiments and reproducible results with all tested ant species.

The system used, MOTIS (**M**oving **O**bject **T**rack **I**nspection **S**ystem of ViDiSys company, Germany), allows the automatic recording and analysis of tracks of moving objects in real time. A camera (connected with the computer) is mounted above a rectangular test arena with the test ingredients. Up to four compounds can be tested simultaneously, after an area around each substance has been labeled to be computer-surveyed. The arena is connected at the long side via a hole to a second one containing the ants, harborage, food, and drinking source.

The number of ants approaching the experimental formulation containing the test substance in the labeled area and the duration of contact with the formulation were recorded and further processed by Excel. The data of the test formulations are set into relation to a standard formulation (=1) and plotted on a logarithmic scale. Values > 1 indicate attractiveness, values < 1 repellency. Only high attractive food compounds (ratio > 3) are taken into further evaluation.

The reliability of MOTIS was tested with forest honey, which has proven over many years to be a very powerful attractant for *Lasius niger* (L.). The computer system analyzed a ratio of 9.4 for this species compared to the control. Ratios of 4 to 5 were analyzed for *Linepithema humile* (Mayr), *Tapinoma melanocephalum* (F.), and *Monomorium pharaonis* (L.).

These results have indicated a good correlation between laboratory and field tests.

More than 500 ingredients have been screened for Imidacloprid ant bait formulations within 12 months and the presentation will discuss the results obtained.