Figure 1. Argentine ants tending mealybugs for honeydew. Photo: Dong-Hwan Choe, UC Riverside

On Target

A recent survey says pest management professionals working to control ants near structures should consider the micro-environments that are present in the landscape for even better control.

By Herb C. Field, John H. Klotz, Michael K. Rust and Ken Kupfer

Ants are ranked the No. 1 urban pest in the United States by the structural pest control industry, generating an estimated $1.7 billion annually for pest management professionals (Curl 2005). Most pest management professionals are aware of the difficulties involved in controlling structure-infesting ants: their ability to colonize almost any outdoor environment along with their propensity to invade structures in order to forage or nest makes them particularly challenging.

THE SURVEY. A year-long survey coordinated by the University of California, Riverside and utilizing about 150 pest control technicians from Lloyd Pest Control in San Diego, Calif., was conducted to determine the species of urban pest ants, locations of infestations, and types of control treatments that were applied in residential and commercial settings. The objective was to provide pest management professionals with information that might help them to use their servicing time more wisely and maximize the effectiveness of their treatments.

The survey revealed 18 species of structure-infesting ants, 85 percent of which were Argentine ants *(see Figure 1 above)* (Field et al. 2007). The second most common species was the California harvester ant, which

made up 2 percent of the 380 samples that were collected by pest management professionals. In an earlier statewide ant survey of California that was conducted by Knight and Rust (1990), Argentine ants were also the most commonly encountered ant pest by pest management professionals. For example, they found about 40 percent in the San Francisco Bay Area. Undoubtedly Argentine ant numbers and distribution will continue to rise in conjunction with ever-increasing urbanization. Their overwhelming success as an invasive species is due to their ability to produce large supercolonies that through their massive numbers enable them to out-compete other species for limited resources.

Our survey results showed that the majority of the Argentine ant infestations were located in and around residential structures *(see Figure 2 below)*. This may be due to heavy watering and the diversity of plants that homeowners typically grow in southern California. The plants support honeydew-producing insects that flourish in this lush urban environment and provide the Argentine ants with a year-round food supply.

In southern California, full-yard treatments using power sprayers are still a common method to control Argentine ants. However, based on our survey, a better alternative would be sprays directed

Fig. 4. The KM AntPro Sentinel Bait Dispensing System provides 24/7, long-term insect activated low-toxicity bait delivery and monitoringRust 2004).

at specific areas around the outside of a structure. Our survey showed that Argentine ants nest and trail primarily along sidewalks and driveways *(see Figure 3 on page 78)*, possibly indicating sources of moisture in these areas — an extremely important resource for ants to survive in the hot, dry summers that are characteristic of this region. Other nesting sites included areas of the lawn adjacent to the foundation, porches, patios, and trees and shrubs. These areas certainly must be part of a treatment program but soil near concrete appears to be critical.

THE TEST. We tested this hypothesis by evaluating several different treatments that were each applied around five homes with heavy infestations of Argentine ants (Klotz et al. 2007). One treatment was liquid bait containing 1 percent disodium octaborate tetrahydrate. We used six to seven KM AntPro bait dispensers *(see Figure 4 above)* with 20-ounce capacity placed around the outside perimeter of each home and in the yard. After six weeks there was an average of 73 percent reduction of ants tapering off to 58 percent at eight weeks *(see Figure 5 on page 80)*. The increase in ant activity was probably due to ants migrating onto the property from surrounding areas to feed on the bait. This baiting program is designed to be target-specific with no residual by taking advantage of the food-sharing behavior of ants to distribute the insecticide throughout the colony. It is a long-term management strategy due to the low concentration of borate being used so the short duration of this study does not adequately reflect its efficacy.

Most effective were the treatments

HOME SWEET HOME

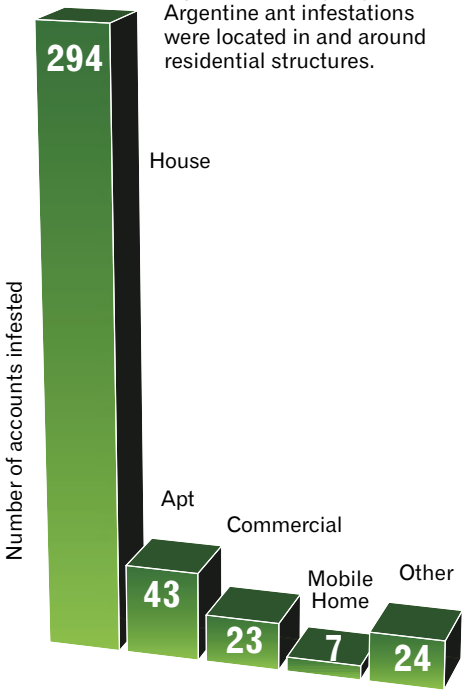


Figure 2. The majority of the Argentine ant infestations were located in and around residential structures.

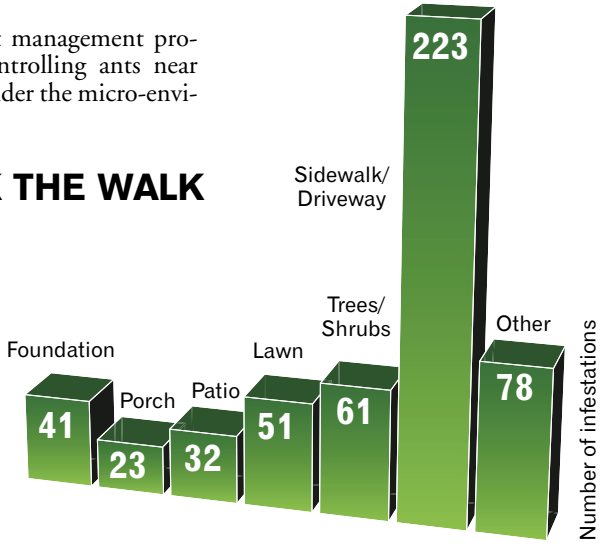
that included Termidor. For example, one treatment consisted of a perimeter spray using 3 to 4 gallons of Termidor (0.06 percent) applied with a backpack sprayer 1 foot up and 1 foot out from the foundation plus along the edges of the sidewalks and driveway. Within one week after treatment, there was a 93 percent reduction in ants, which increased to 98 percent at one month, and then tapered off to 81 percent at two months. Even better control (90 percent reduction at eight weeks) was obtained when this treatment was combined with an application of Talstar granules that was broadcasted into foliage located outside the Termidor zone. But most surprising was the performance of a spot application using only 1 gallon of Termidor applied to active trails of Argentine ants. On average there was a 90 percent reduction of ants eight weeks after treatment.

These results demonstrate the potency of fipronil especially when it is applied to foraging ants, and illustrates the point that ant activity maximizes its effect. This unique compound is non-repellent and sufficiently slow-acting to allow for its pickup and transfer to other ants. This horizontal transfer of active ingredient is similar to trophallactic exchange of a bait toxicant, except in this case it is due to physical contact with contaminated surfaces, either the substrate the ants are crawling on or another live or dead ant that is contacted (Soeprono and Rust 2004).

CONCLUSIONS. Pest management professionals that are controlling ants near structures should consider the micro-environments that are present in the landscape. Selection of colony sites by ants is specific to their food and moisture requirements and should be taken into account in the treatment plan. In pest control we can exploit these factors along with the social behavior of ants to our advantage by applying slow-

ANTS WALK THE WALK

Figure 3. The survey showed that Argentine ants nest and trail primarily along sidewalks and driveways.



acting insecticides to the areas frequented by ants so that the active ingredient is picked up and transferred to the rest of the colony.

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ANT TREATMENTS OVER 8 WEEKS

Figure 5. Ant numbers are based on the average weight removal (0.3 mg/ant visit) of 50 percent sucrose water from 10 monitoring vials place around the house for 24 hours. After six weeks there was an average of 73 percent reduction of ants tapering off to 58 percent at eight weeks.