BAITING for SUCCESS

By Changlu Wang, Narinderpal Singh, Richard Cooper and Clay Scherer

Research from Rutgers finds a one-time application of gel bait can achieve **nearly 100 percent reduction** in cockroach numbers within a month even without changing the apartment sanitation conditions.

Which urban pest is the most difficult to control? Most PMPs say ants.

But the answer to this question has shifted completely over the past 20 years — from cockroaches to ants. Today, few people consider the German cockroach a difficult pest to manage. What made the change is the invention of highly effective baits, in particular, gel baits. Then, the question is, why is the German cockroach still common in urban areas? The German cockroach's small size, short life cycle, high reproductive potential and resistance development are well-known factors accounting for their success. However, a frequently ignored factor is poor pest control practices. Despite the plethora of effective tools and methods available, it is not uncommon to find people, including professionals, relying on ineffective materials or methods to treat cockroach infestations.

Studies have shown that an Integrated Pest Management (IPM) approach incorporating bait and other non-chemical methods can provide a high level of cockroach control (Miller and Meek 2000, Wang and Bennett 2009). Baiting alone resulted in a more than 95 percent reduction of cockroaches in heavily infested apartments (Wang and Bennett 2006, Wang 2011). The high efficacy of gel bait is due to the palatable bait matrices, non-repellent active ingredients, and, to some degree, the transfer of bait active ingredients among individuals (Buczkowski et al. 2008).

Sadly, these simple and effective strategies are ignored by or are unknown to communities that still suffer chronic cockroach infestations. Some professionals are not properly trained to use these control strategies correctly. To demonstrate how cockroach bait can be effectively used to control cockroach infestations, we conducted a study in an apartment building. In the study, we showed that one-time application of a gel bait product provided 99 percent reduction in German cockroach counts after a four-week period.

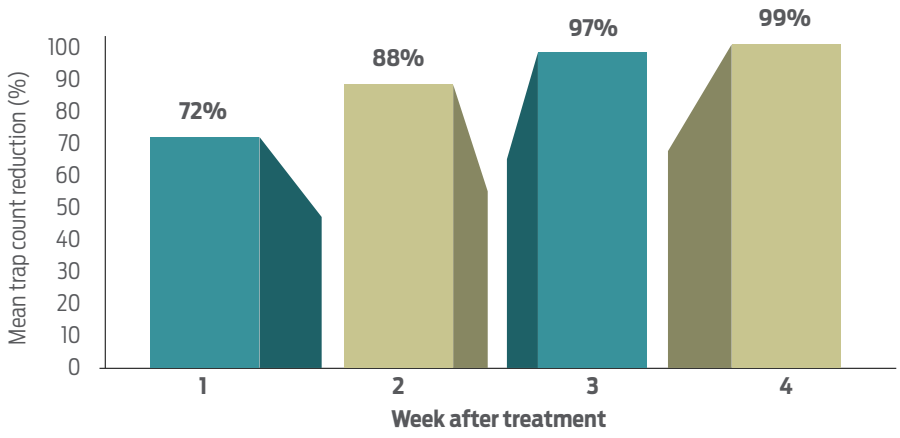

Figure 1. Efficacy of Advion gel bait treatment on German cockroach populations in apartments.

STUDY METHODS. We selected eight apartments from a high-rise apartment building in Newark, N.J. The sizes of the apartments were 450 square feet (a studio apartment) or 600 square feet (a one-bedroom apartment). A contractor hired by the property management office serviced the building monthly and used insecticide sprays for cockroach complaints. All apartments were occupied by low-income senior citizens. Old cockroach bait residues existed in four apartments. Six apartments used aerosol sprays for cockroaches.

Prior to the treatment, we placed six Trapper Monitor & Insect Traps (Bell Laboratories) in each apartment. Locations of the traps were: 1) inside the cabinetry under the kitchen sink, 2) in the cabinetry above the kitchen sink, 3) beside the stove, 4) beside the refrigerator, 5) the living room corner near the dining table or where food was served and 6) on the floor behind the toilet. The pre-count trapping interval varied between one and eight days due to difficulties in gaining access to two apartments, coupled with low trap count in one apartment. The average daily trap catch of these apartments ranged from 6 to 150 cockroaches with a median count of 16.

One to two researchers from Rutgers University applied Advion Cockroach Gel Bait (Syngenta Professional Products) in each apartment using a baiting gun or plunger into cockroach harborages following the same pattern as that by Wang (2010). The size of each bait placement was about 0.1 g. The amount of bait used in each apartment ranged from 18 to 87 g with a median of 44 g. Median technician time (time in each apartment × number of technicians) spent treating each apartment was 23 minutes. To evaluate efficacy, we placed sticky traps at one, two, three and four weeks post treatment and

collected the traps after one-to-eight days as we did in the pre-treatment monitoring. The total number of cockroaches found in traps in each apartment was compared with the pre-treatment count to calculate percent reduction.

STUDY RESULTS. One application of Advion Cockroach Gel Bait resulted in 72, 88, 97 and 99 percent mean cockroach count reduction at one, two, three and four weeks post-treatment, respectively *(see Figure 1 on page 62)*. Among the eight apartments, only two apartments still had cockroaches after four weeks. There were no noticeable changes in the residents' housekeeping practices. A few apartments had clutter, spilled drinks and accumulation of garbage in kitchens and bedrooms throughout the study period. These conditions created numerous cockroach harborages and affected the control efficacy. All residents were very satisfied with the results.

CONCLUSIONS. Application of gel baits is still the most effective chemical method for managing German cockroach infestations. A one-time application of gel bait can achieve nearly 100 percent reduction in cockroach numbers within a month without changing the apartment sanitation conditions. The efficacy is dependent on the applicator's knowledge, experience and using sticky traps for monitoring cockroach distributions. An IPM approach incorporating client education, sanitation, decluttering, monitoring traps and baiting is the key to long-term control of German cockroaches. **PCT**

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