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Cockroach Allergens, Baits and the Sweet Science of Glucose-Aversion

Cockroach Allergens, Baits and the Sweet Science of Glucose-Aversion, one of a series of Integrated Pest Management (IPM) webinars hosted by EPA's Center for IPM, was presented on November 14, 2017. Included here is information on the presenter and responses to participants' questions.

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Speaker

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Questions and Answers

The questions below were posed by webinar participants. The questions, and Dr. Schal's responses, may have been refined for clarification or to include additional resources.

1. Can insect growth regulators (IGRs) be used in conjunction with baits?

It's perfectly fine to use IGR's with baits but I would not put the IGR on the bait. IGRs are generally used as residual sprays and there are components of the formulations that may deter the cockroaches from eating the baits if you apply the IGR directly on the bait. Apply the bait near the IGRs, just not on the IGRs.

2. We've seen cockroaches that are white. What kind are they?

Ah! The albino cockroaches! That's a joke. All cockroaches and insects molt in order to grow from one stage to the next. When they molt, they are generally white. Then, their exoskeleton tans over time.

3. You mentioned a number of pathogens carried in cockroach feces found in swine production operations and antibiotic resistance. Can this resistance be carried to those consuming pork products?

No, I don't want to blow this out of proportion. This was a very controlled study. We looked at pig feces and we looked at cockroach feces. We did not look at pork products. So, the critical thing is that the meat be treated in a clean way. As long as there are no cockroaches, the meat should be clean and perfectly safe. There is no reason to suspect either the pig or the cockroaches would transmit those antibiotic-resistant microbes or pathogens to the meat.

4. Are some cockroach allergens more specific to one species of cockroach compared to another or are they mostly concentrated in the German cockroaches?

We mainly talk about the German cockroach because most of the work on allergens has been done on the German cockroach. It's the most important cockroach certainly in the U.S., but there's some really good work coming out of Asia now because the American cockroach is quite important in Asia. Some Asian researchers have identified a bunch of allergens associated with the American cockroach. What's interesting is that the allergens produced by these two cockroaches are very similar. If a child is allergic to the American cockroach, they will also be allergic to the German cockroach and vice versa.

5. Other than the over-application of foggers, what is the most common pesticide misuse when it comes to controlling cockroaches?

I haven't done a formal study but, based on our experience looking under people's kitchen sinks, aerosol cans lead to the most misuse. You know the cans you buy at big box hardware stores and supermarkets. People often apply aerosols directly to the insect.

6. There have been some concerns about over-use and pet poisoning risks related to boric acid. Any thoughts on this and the use of diatomaceous earth or silica gel as alternatives?

Those products should be used in completely different environments. Silica gel and diatomaceous earth are quite repellent to cockroaches, so we usually use those products where we want to keep cockroaches out and in places we cannot see. We usually use silica gel and diatomaceous earth in wall voids and in pre-construction application. As a wall is being built, you apply a little of this material to the wall void, and it stays there forever because it's inorganic and doesn't degrade.

Boric acid is used to treat cockroaches where you see them and where they harbor. Pets should not be exposed to boric acid because it should not be applied in areas where pets have access to it. Boric acid should be applied inside cabinets and under the kitchen sinks, where pets have no access. The other thing that is critical about boric acid is that many people use gobs of it. Instead, you should puff a very light dusting that you can barely see and, in many cases, you can't even see it. If you use a lot of boric acid, the cockroach will just walk around it. So, you want to put boric acid where the cockroach will find it, walk over it, and eat it.

7. Is there a difference in the consumption of bait placed on horizontal, vertical, or underside surfaces?

To my knowledge, no one has explicitly looked at that question. Another way to ask that question is, instead of asking about vertical versus horizontal, to ask where are the cockroaches. My answer would be to put the bait where the cockroaches are.

8. Why are cockroaches attracted to computers and do you have suggestions on keeping them out of computers?

Remember the earlier slide when I said cockroaches like food, shelter and water? Part of the definition of shelter is warmth. Cockroaches are cold-blooded and a lot of the home environment can be quite cold. Electronic equipment generates heat and, even when it's off, the electronic circuitry generates a little heat. How do you keep cockroaches out? Short of putting sticky traps around the equipment, the best way is to put bait near the electronic equipment so that the cockroaches stay away.

9. How quickly does boric acid act and are there problems with resistance to it?

There is absolutely no evidence of resistance to boric acid. There are different formulations of boric acid. The dust formulation is very difficult to answer because we don't know the size of the population and how disbursed the population is within the home. If you have a small amount of cockroaches and you put boric acid near their location and the cockroaches walk over the boric acid dust, you can probably kill them in a week or two.

10. Do the seasons of the year play a part in when you see cockroaches?

Absolutely. Cockroaches are cold blooded and basically stop growing and reproducing when the temperature is low. They like warm weather and do much better at 80°-90°F than they do at 60°-70°F.

11. Do you advise people to discard corrugated boxes?

Yes. That's a very important point, especially in food handling facilities, restaurants and kitchens. Baby cockroaches absolutely love corrugated cardboard and love to be in the crevices of the corrugate.

12. Have you done work on controlling low-level infestations of brown-banded cockroaches in an office or university laboratory?

Yes. [On my website](#), there's a paper that we published in *Pest Control Technology* that give you a how to on controlling those cockroaches. We went to a museum in North Carolina, which is very similar to a university setting, and massively reduced the cockroach population - basically eliminated it. But those populations come back from nearby office buildings. My university has the brown-banded cockroach in a bunch of labs. We control them using baits - nothing else. There is no reason to spray any insecticide.