

Clever mice avoiding controls

Are intelligent mice outwitting pest controllers working in the food industry? Or, is it that pest controllers are no longer allowed to use the available tools effectively? Associate editor Helen Riby talked to Dr John Simmons of Acheta Consulting, who presented a paper on this topic at a Society of Food Hygiene & Technology event earlier this year.

Between 10 and 20% of all food manufacturing premises in the UK have an endemic mouse problem. That's a best estimate based on figures pulled together by Acheta Consulting, the independent pest control consultants specialising in auditing and inspections for the food industry. The figures come from the company's own records and those of two specialist pest control businesses also working in the food manufacturing sector.

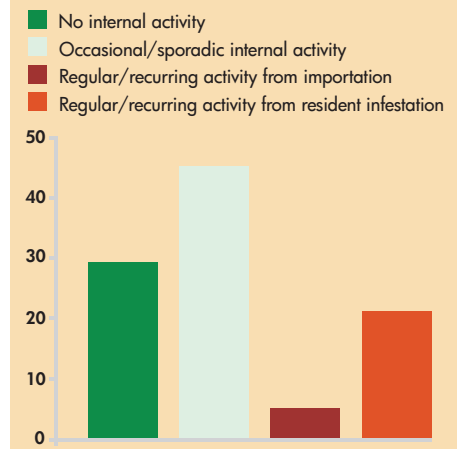
John Simmons explains: "Using our own client base we reviewed rodent activity and allocated each site to one of four categories. These were:

- 1 No internal rodent activity;
- 2 Occasional/sporadic internal rodent activity;
- 3 Regular/recurring internal rodent activity, due primarily to regular importation of rodents to the site;
- 4 Regular/recurring internal rodent activity, due primarily to infestation resident within the fabric of the building.

"The graph right shows that, amongst 180 food manufacturing sites which we had inspected during the past 12 months, slightly more than 20% had a resident rodent population. However, as we are often involved in troubleshooting, rather than contracted pest control, we wondered whether our figures might be painting too bad a picture. That's why we asked two contractors, who we know work with many food manufacturers, for their figures.

"The pest control company data, from 98 and 109 sites respectively, recorded around 10% in the first instance and, in the second it was, once again, 20%. Hence we consider an estimate of between 10 and 20% of food manufacturing sites with endemic rodent infestation to be a reasonable estimate."

Rodent infestations at 180 sites



The control of these rodents, primarily mice, is clearly critical to food safety and the reputations of the food companies concerned. So, why has the pest control industry failed to get on top of these infestations?

John felt it would be helpful to take a step back and to take a look at the key threats to food safety that food manufacturers face. He began with metal or glass contaminants. "These are physical threats, have no intelligence and are entirely predictable," he says. Allergens came next – a chemical threat but also with no intelligence and predictable. Microbiological contaminants are a biological threat but, again, predictable and possess no intelligence. Insects are also a biological threat with no



At each location, Acheta installed a GTO detector and a variety of 'bait stations' using non-toxic bait & traps



Evidence from the tracking dust that mice are avoiding all types of bait station



Only one of the plastic bait stations was entered and there was no bait take

real intelligence and again (usually) entirely predictable.

“But then we have rodents,” adds John. “A biological threat with intelligence and, probably, the most unpredictable threat manufacturers face when it comes to food safety.”

So what are mice doing that makes them so difficult to control? Using a remote monitoring system, GreenTrapOnline (GTO), which detects rodent movement using PIR detectors (the heat/movement detectors commonly found in burglar alarm systems), the Acheta team decided to look at what happens when conventional baits and traps are deployed in food manufacturing premises.

Selecting a retailer distribution centre with a long-standing mouse presence, Acheta chose 25 locations, encompassing a range of evidence of mouse presence, from none to plentiful.

At each location they installed:

- A GTO detector on a length of upturned guttering, with non-toxic bait and UV tracking dust underneath;
- A plastic bait station with non-toxic bait;
- A cardboard bait station with non-toxic bait;
- A plastic trapping station containing a break-back trap baited with a commercial rodent 'attractant'.

John explains: “The trial ran for two weeks and after one week the bait type was changed in case this was influencing the results. It wasn't!”

The results in week two showed that activations were recorded by nine of the 25 GTO detectors. These varied from a single activation in the week, to 105 at one location!

“At every location where an activation was recorded, evidence of mice moving through tracking dust supported the result, so we are confident there were no false positives,” says John. “No rodent movement was observed through tracking dust at locations where no activations were recorded, so we are also sure we had no false negatives.”

But how did the mice react to the baits and traps?

John takes up the story: “On the bait under the GTO guttering we found one full and one part take. In the plastic bait stations, we had no takes and evidence for mouse entry (UV footprints) in only one station. The cardboard bait stations didn't do much better. We had one part take and evidence



A break-back trap, peanut butter and no housing worked, but would it be allowed?

for mouse entry within only this one box. In the boxes containing traps we had no catches and, quite amazingly, tracking was observed only within one box where the trap had been accidentally activated!”

This last point brings up another concern. There is evidence that, in food manufacturing premises where there is plenty of food, mice are positively avoiding all bait stations. They will walk around, or even, over the top of the stations but it seems are not interested in entering them.

All is not lost though; there was actually one mouse caught in a break-back trap. Peanut butter was the bait, and the trap wasn't contained in a housing of any kind. Is that then the answer? Unfortunately not, peanut butter wouldn't be permitted in any nut-free

manufacturing site, and one major retailer has a standard for their suppliers which prohibits the use of traps which aren't contained in a housing!

The problem is that some food industry auditing standards tend to treat all threats to food safety in the same inflexible, some might say, dictatorial, way. They are prescriptive, which is fine when you are dealing with a threat that lacks intelligence but, as we have seen, rodents are clever and adapt to their surroundings.

On the evidence gathered by Acheta, intelligent mice will continue to make a comfortable home in 10 to 20% of all European food manufacturing premises. The inflexibility of some food standards will do nothing to help reduce this figure.

Rokill offers further evidence

Paul Westgate from Rokill says that his experience is entirely in-line with the findings from the Acheta experiment.

“Getting control of mice seems to become more and more challenging,” he says.

As these pictures from Paul clearly show, even if the mice enter a box armed with a trap, they carefully avoid the paddle so that they don't spring it.

In other cases they just don't go into the box – round it, over it but not in it!

Have you had similar experiences? Is this sort of behavioural resistance commonplace in the premises you are trying to protect?

Interestingly one of the findings teased-out from the fourth state of the nation survey conducted by BASF Pest Control Solutions and *Pest* publications suggests behavioural resistance is beginning to increase. If you've come across any similar problems do let us know.

