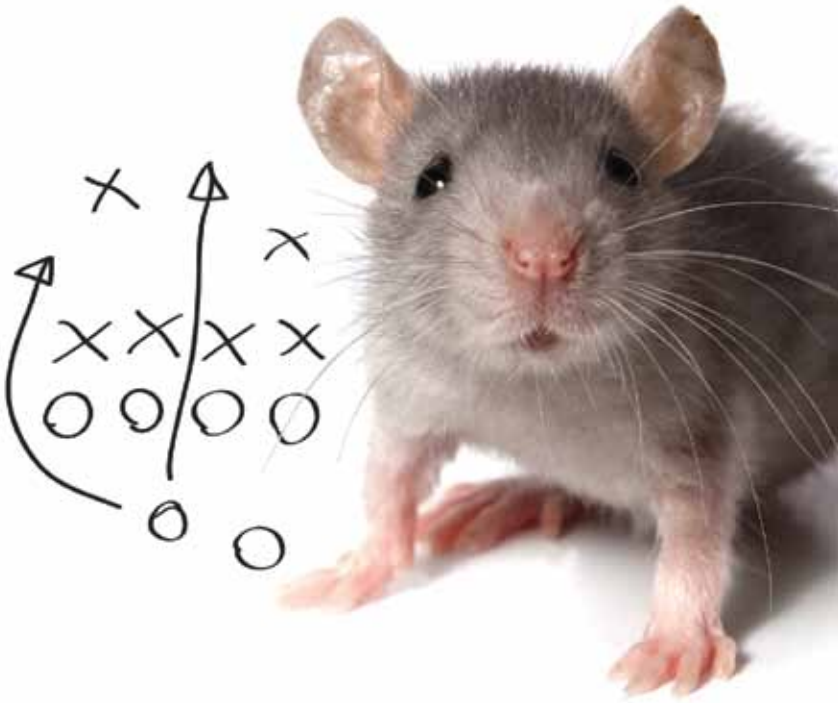
THE MONITOR

BECAUSE PEST PREVENTION MATTERS TO FOOD SAFETY

WINTER 2016

A WINNING PLAYBOOK FOR RODENT DEFENSE

The Science Behind Rodent Control



Rodents can be a major problem for food and beverage processing facilities any time of year, but the adverse conditions of winter can accelerate the problem as mice, that lived outdoors throughout the temperate months, enter buildings in search of food and warmth.

Although the challenges of rodent control for food plants are in no way new, the success of control efforts continues to increase in efficacy as research reveals new understandings of rodent behavior. This is because the more we can understand rodents, the better we can apply this knowledge to the advancement of equipment and service protocols to develop the winning playbook to apprehend rodents in their tracks.

Two findings from Ecolab scientists that have significant impact on rodent control success are:

1. The behavioral differences between a rodent's first venture into a new environment and once they become established, and
2. The "force field" impact of rodent whiskers (or vibrissae) that play an important role in their movement and search behaviors.

When a rodent enters into a new environment, its first instinct will be to find a place to hide from which it can scope out its new surroundings. Additionally, while it is often said that rodents have poor vision, this is true only in relation to human eyesight in the light. Rodents actually have an impressive ability to see contrast and shadows in the dark and they use this to find shelter.

"The high-contrast hole is a big attractant for mice in new situations," said Ecolab Senior Scientist Douglas Gardner. "When they first enter a building, they will dart into holes, especially those closest to the door by which they entered." So, he explained, you will be playing right into rodent behavior by putting multi-catch and wind-up traps near doors – which they will see as ideal holes in which to hide.

Research reveals new understandings of rodent behavior.

Even during the day when its eyesight is less keen, the rodent gets around and finds holes quite easily by using its whiskers. Extending about 1-1/2 inches from its head, the rodent's whiskers aren't simply hairs – they have muscles at the base and are very sensitive. So the mouse can

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RODENT DEFENSE CONTINUED FROM COVER >>>

move its whiskers in broad sweeps, side to side, or hold them straight out in front to feel the wall against which it is running or the hole into which it wants to go. "Their vibrissae are sensitive enough to pick up even shape and texture," Gardner said. "So they can use this 'force field' to investigate new things, recognize what it is, and choose whether or not to go further."

If, with all this, the rodent gets past the first defense and gets established in the building, it will have found shelter and not need to seek out additional holes. Thus, an additional control strategy needs to be implemented to focus on this new behavior. This next layer of defense involves snap traps and temporary placement of glueboards along runways and against walls, which are regularly inspected and removed if a rodent is caught.

"Integrating the research into rodent control programs has validated Ecolab's Outside-in approach which provides three layers of protection," said Ecolab Senior Scientist Dr. John Barcay. This includes:

- Exterior rodent equipment to reduce the pest pressure.
- Multi-catch traps inside the door as a barrier and new entry capture.
- Regular inspection of interior traps for quick reaction and removal.

INSPECTING WINTER DELIVERIES

Whether your food facility is located in the frigid north or hot south, winter months mean cooling weather which can significantly impact pest behavior. You need to take steps to make your facility rodent-resistant (filling holes and gaps, keeping doors closed, etc.), and ensure you are inspecting all incoming deliveries for stowaway pests and other issues.

Winter Pest Problems

In winter weather, the insides of non-temperature controlled trucks can get nearly as cold as the outside air. While this could kill off some pests that sought shelter, it can cause others to burrow deeper into the goods being transported – making it more difficult to spot them when the truck arrives at your loading dock. This doesn't mean that temperature-controlled trucks are safe from pests, however; any shelter from the elements can be attractive to pests – particularly one with readily available sources of food and/or water.

Excessive cold can also be a problem for perishable goods, such as fruits and vegetables, with any resulting deterioration potentially drawing pests that are attracted to decaying organic matter, such as small flies.

And if farmers are not regularly inspecting stored grains through the winter, infestations can build up undetected. While some stored product pests will remain active year round, others will overwinter in sheltered sites or foods. For example, some, such as maize weevil larvae, will remain within corn or grain kernels during the cold months of winter, meaning that it will be more difficult to spot pest presence.

It also is important to consider the origination source of the delivery. Even if your facility is in a temperate area, a shipment coming from the north could have pests that took refuge from the cold, while a shipment from the south could be harboring southern-bred pests that you don't expect this time of year in the North.

What to Look for...

Inspect all deliveries before they are brought into the food facility. Using a flashlight, look around, on, and in (where possible) boxes, crates, and pallets. When lots are plastic-wrapped, look under the clear plastic – if you see small flies, moths, larvae, webbing, or eggs, it is likely that there is an infestation of some type.

Live or dead insects or rodents are the most visible sign of pest presence, but other signs include droppings and piled nesting material in and around product and in corners of the truck; gnaw marks and damaged packaging that can mean rodents are taking refuge; and off-odors and musty smells in grains which can indicate mold, while high temperature, moisture, and hot spots can be indicative of a pest infestation.

Closing dock doors when not in use is particularly critical in winter. Not only are you losing heat from within the building, but that heat and the food smells it likely carries will be very attractive to any pests that have been caught out in the cold. For this reason as well, the density of bait placements may need to be increased to deter rodents that seek winter harborage inside buildings.

PEST OF THE QUARTER

RODENTS

House Mouse *(Mus musculus)*
Small, with a slender body, the house mouse is about 2-3 inches long with a tail that adds another 3 to 4 inches. Usually light brown to gray, this mouse has small black eyes, a pointed snout and large ears.

Norway Rat *(Rattus norvegicus)*
With a large, bulky body and small eyes and ears, the Norway rat is brown with coarse fur and a grayish-brown belly. Its tail is scaly and shorter than the approximately 16-inch length of its head and body.

The Roof Rat *(Rattus rattus)*
Black in color with a grayish belly and prominent eyes and ears, the roof rat is sleek and slim. Averaging about 14-1/2 inches long, it is a bit shorter than the Norway rat, but its hairless tail is longer than its head and body. As its name indicates, it is more likely to be found high in the facility.

EDUCATING YOUR EMPLOYEES ON RODENTS

Because rodents are prolific breeders and rarely seen during the day or when the plant is in full swing, an infestation can develop quickly. Thus, not only is a good rodent management program critical, but all employees should be aware of how rodents can enter your facility, the signs of rodent presence, and the damage they can cause.

Rodent Entry
Rats and mice can be wily creatures, attracted to food facilities by the warmth and odors emitted, then scurrying in through open doors or small gaps – or hitchhiking in on incoming goods. And once in the facility, they can consume and contaminate foods and be a source of audit and inspection failures and fines.

Signs of Rodent Presence
Live or dead rats or mice are, of course, the most obvious sign of rodent presence. But all workers, particularly those on the sanitation shift or other off-hour duties, should also be aware of – and inform management immediately if they see any – droppings, piled nesting materials, gnawed packaging, or oily-looking smudge marks and/or hairs along walls and in corners. Presence may also be evidenced by a skittering sound on floors or rafters or even a fetid odor if an infestation has grown large.

Rodent Damage and Contamination
Rodents will urinate and drop feces as they scurry around the facility, spreading bacteria and contamination – from beneath equipment and behind walls to across food surfaces, packaging, and even food itself. While rodents don't necessarily consume great amounts of food, they will damage and contaminate packaging in their gnawing to get to the food, rendering the product adulterated.

According to CDC, rodents can transmit more than 35 diseases to humans through direct handling or contact with their urine, feces, or saliva; and this same contact with food can be a source of foodborne diseases, such as salmonellosis.

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The Monitor is published by Ecolab to provide general information on pest prevention in Food and Beverage facilities.

Did You Know...

- If you can fit a pencil into a gap or hole, a mouse will be able to wiggle its way through that 1/4"-diameter hole as well! (Illinois Department of Public Health)
- Ever wonder why rodents gnaw? Because their incisors never stop growing, they need to chew and gnaw on things to keep their teeth from growing into their skull. (Michigan State University)
- In 6 months, a single pair of mice can eat 4 pounds of food and contaminate 10 times that amount with urine and droppings. Also contaminating packaging and food-contact surfaces with the 18,000 droppings they produce in the 6 months. (Univ. of Alaska Fairbanks Cooperative Extension Service)

IN THIS ISSUE

2017 BRINGS CONTINUED REGULATORY AND STANDARDS CHANGES

The new year will continue to bring changes for the industry in standards and regulations. Following are a few:

FSMA. With the first of the Food Safety Modernization Act's compliance dates having occurred in September 2016, for the Preventive Controls rule, 2017 will be bringing a few more deadlines including the first of the compliance dates for the Sanitary Transportation, Intentional Adulteration (Food Defense) rule, Foreign Supplier Verification Program (FSVP) rule, and the sprout provision of the Produce Safety Rule; the second round of compliance for Preventive Controls for Animal Food (GMPs were due in 2016) and for Human Food (for small businesses); a shift of the compliance date for Third Party Certification from 2017 to spring 2018.

AIB International has released a new series of updated Consolidated Standards that will go into effect on January 1, 2017. The standards were updated primarily to adjust them to clients' needs such as eliminating parts that have become unnecessary to maintain the inspection focus, to make the requirements more accurate and current, and to add requirements and clauses related to best practices for food safety. A main aim of the new standards is to reinforce the risk-based approach. In relation to the Integrated Pest Management, the main changes include new requirements for an in-house technically responsible person to monitor execution of IPM activities; more detail in the facility assessment; and a risk-based approach to placement and frequency of inspection for monitoring devices.

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