



THE PATH TO PEST-FREE

How your service specialist identifies issues to provide solutions.

It is a well-established fact that accurate pest identification is the critical first step in developing successful pest management solutions. But how does your pest elimination service specialist find and identify the pest to determine the root cause and provide a solution? In this issue, we take you “behind the scenes” to provide insights on how pests are identified, and a solution determined.



Before a facility is ever put in the hands of a service specialist, he or she is trained in pest identification, biology, and behavior; treatment options and best practices; and personal and customer safety. Specialized training also is provided – such as that focused on food safety and the regulations and nuances of food processing facilities.

When called out to a facility for an issue – or noticing signs of a pest during service, the service specialist uses his/her knowledge, pest guides and resources, and – when needed – a good magnifying lens to discern the distinguishing features of the insect that enable proper identification.

Then, with his/her understanding of the specific pest’s behaviors, the service specialist can further inspect the facility. This not only provides specific information on where the pests are harboring, it enables a determination of conducive conditions that allowed the pest entry and survival. “Frequently,” said SPS Technical Team Member Rufus S. La Lone, M.S., Entomologist, “This second step will lead to a successful resolution.”

When further detection is needed, the service specialist calls on his/her experience and training to think beyond the normal areas and sites typically visited on a service call and determine not only where the pest is but why it is there. He or she may think about where other customers failed to adequately clean or maintain during sanitation inspections or consider incidents discussed in training that are applicable to the situation. For example, is there old grain or aging products that may be attracting and harboring stored product pests? Are poor storage or sanitation conditions enabling mice to hide and survive? Is there a lack of timely sanitation of high risk areas; water leaks inside the facility; poor drainage along exterior walls or truck docks; or even inattentive leadership that fails to focus on these seemingly incidental issues?



The service specialists should also be able to turn to their company’s expert entomologists and tech specialists to answer additional questions and concerns to better serve their customers.

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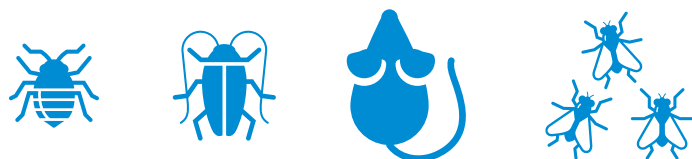
THE PATH TO PEST-FREE (CONT)



"Pests take advantage of our weakness - be that equipment design, facility maintenance, or quality management teams working on other issues and missing areas of conducive conditions," La Lone said. And once a weakness is detected, the presence of a pest - particularly a stored product insect - can lead to further issues, such as the presence of a secondary pest.

Rectifying pest issues through corrective action and/or approved treatments not only helps to correct and prevent pest infestations, it improves the overall food safety and quality of the products being produced. Knowledge of areas needing attention also will assist in the development or updating of the facility's preventive controls required by FSMA.

"It is understandingly boring and seemingly inconsequential to keep nooks and crannies clean and dry, yet attentiveness to that level of detail transfers to all employees," La Lone said. "A culture of attentiveness becomes a quiet recognition that management truly cares about food safety and quality."



Building Out Pests

Just as the onset of autumn carries with it falling temperatures, so too does it bring pests seeking shelter from the increasing cold. That shelter could be your food facility.

What can you do to dissuade and prevent those outdoor pests from coming in? In partnership with your pest elimination service specialist, you can build them out through a three-step plan:

1. Inspect. A thorough inspection should be made of all exterior walls, doors and windows, foundation, roofing, and vents to determine if there are any gaps, holes, or even cracks through which pests can enter. Be sure that incoming pipes, cables, and wires are checked, as gaps around these are commonly missed points of entry.

2. Seal. Close off those entry points with pest-resistant sealants. Although expanding caulk does fill holes, it will not necessarily keep pests out, as rodents can chew right through it. Instead, gnaw-proof materials should be used such as steel wool and copper mesh. All vents should have 1/4-inch mesh inserted as well to keep pests from slipping through the larger openings of these structural components.

3. Treat. To serve as a barrier, your service specialist also can apply a perimeter pesticide treatment around the facility. This application, placed three to four feet out from the building and up from the foundation, serves as your first line of defense to help keep pests away. Exterior rodent stations should also be standard around food facilities - particularly in rural areas where rodents can be living in adjacent fields.

PEST OF THE QUARTER: MICE



The House Mouse (*Mus musculus*)

- Mice are small - about 2 to 3 inches (5-7 cm) long with a tail that adds another 3 to 4 inches (7-10 cm).
- Their slender bodies are usually light brown to gray; they have small black eyes, a pointed snout and large ears.
- The female can reproduce 6 to 10 litters in a single year.
- Mice cause more economic loss through damage to food than by eating it.

The Science Behind Control

Of all the pests that seek shelter from the cold, mice are one of the most common - and most destructive - with the house mouse as the most commonly occurring of all mice.

Exclusion (as detailed in Building Out Pests, page 2) is a critical component of keeping pests out. However, it should be performed in conjunction with or after interior rodent control, so as to not trap rodents in the facility. While there are some general, common aspects of control, a long-term successful program will focus on the proven science behind it.

For example, Ecolab research has found that a rodent's behavior will vary between the time it enters a new environment and once it becomes established. That is, upon entering, the rodent's first instinct is to find a place to hide and scope out its new surroundings. But mice are characteristically curious and will investigate new things. So, once it feels comfortable in the new environment, it will venture out to seek food and, potentially, a more permanent home.

How is this applied to control? First, it proves that placing multi-catch and snaptraps near doors plays right into mouse behavior, as they will see these as ideal holes in which to hide. In case a mouse gets past this defense, comes in with supplies or gets through other gaps or holes, it is then important to have traps within the building and regular inspection to ensure it is detected and captured - and unable to breed and start an infestation.

The incorporation of new technologies into the rodent program also can increase success. One of these currently making inroads is that of digital monitoring systems, which integrate a sensor in rodent traps to provides alerts of rodent entry. Once alerted, the service specialist can take action, not only to remove the rodent but to determine the root cause. "Such technologies increase the value of our service specialists' time, enabling them to spend more of their time in high-risk areas and provide increased consultation to customers," said Ecolab Senior Director of Marketing for North America Meg Carr. As such the Internet of Things (IoT) technology helps to provide increased insight. But, she added, "It is just one tool in our science-based program of advanced elimination and it is still evolving. Once its network connectivity becomes more reliable and the 'bugs' are worked out, I would foresee an opportunity to leverage the technology."



REGULATORY UPDATE

FSMA's Intentional Adulteration Rule

With compliance required for the final of the seven major rules of the Food Safety Modernization Act (FSMA) in less than a year, FDA published the first of three guidance documents on the Intentional Adulteration (IA) rule in June. The rule, which requires that covered facilities develop and implement a food defense plan, is designed to address hazards that may be intentionally introduced to human foods to cause wide-spread harm to public health. Unlike the other FSMA rules, the IA rule focuses on risks in process rather than in specific foods or hazards.

The required food defense plan is to include five main components, to be conducted or overseen by trained or experienced personnel:

1. A vulnerability assessment (i.e., finding the points in processes that pose the greatest risk for intentional adulteration).
2. Mitigation, or prevention, strategies to address these vulnerabilities.
3. Implementation of a system for food defense monitoring, corrective action, and verification.
4. Recordkeeping.
5. Training. Personnel, and their supervisors, who work at the most vulnerable points in a facility must take food defense awareness training and have the education, training, or experience to implement mitigation strategies.

General compliance is due by July 26, 2019; with small businesses complying by June 27, 2020; and very small by July 26, 2021

DID YOU KNOW

- There are more than 30 known species of mice, of which the house mouse is one of the most economically destructive rodents in the United States.
- Fungal-feeding stored product pests can fly and/or "balloon" on the wind in search of food and harborage.
- Mouse whiskers aren't simply hairs—they have muscles at the base and are very sensitive. The mouse uses its whiskers to feel its surroundings in the dark and find holes in which to shelter.

ECOLAB PEST ELIMINATION

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ASK THE PEST EXPERT



QUESTION: It seems that there have been more pests in grain than usual the last couple years. Why is this?

ANSWER: We started seeing an abundance of fungal-feeding stored product insects being reported in grain producing/storage states last fall due to the high amount of rain followed by long periods of warm to hot temperatures. Unfortunately, all indications are showing this fall as following a similar track in many areas.

Such environmental conditions favor the growth of molds and fungi, which triggers the presence of the fungal-feeding insects seeking a food source. Not only can these insects complete their reproductive life cycle in less than a month when temperatures and humidity are high, but they never sleep - remaining active in temperatures above 60°F. Additionally, residual grain left in fields post-harvest, along with decomposing grasses and weeds around grain storage and milling operations can provide the insects with an abundance of food. Thus, the combination of environmental conditions and available food can cause an explosion of these fungal feeders.

The economic impact of fungal-feeding stored product pests can be mitigated by combining a working knowledge of the specific pests, along with attentive sanitation programs, moisture management, and timely targeted treatments.



About the Expert

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Beidle received his Bachelor of Science degree in Entomology from Iowa State University, specializing in insect behavior and integrated pest management. He has 16 years of commercial pest management experience, particularly in rodent, bird, cockroach, and small fly control. Beidle is a member of the Entomological Society of America and carries licenses in Indiana, Ohio, Michigan, Illinois, and Kentucky.

To submit questions to Brian Beidle, [email here](#).

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