

# Safety & Sanitation

PEST CONTROL UPDATE

## Advancements in Pest Control

Greener services, scientific progress, and technical developments are contributing to the concept of 'Next Generation' Pest Management | BY **STOY A. HEDGES, BCE**



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Unlike most businesses, pest management professionals have access to the most sensitive areas of food processing facilities. Depending on the size and scope of the facility being managed, the pest professional will be on the premises from one to five days each week, conducting a range of services. Yet most everything in food safety from a pest management standpoint is not achieved through trap checks or treatments. Rather, the process requires focus on prevention for early detection and prompt attention to conditions that contribute to pest entry and survival.

### Food Plants: The Original 'Green' Pest Control Service

Food plants were one of the original types of commercial facilities to make use of a

"green" pest strategy. This equates to minimal use of pesticides to control pests that might occur and addresses the causes of problematic activity. The concept is now being applied in other kinds of structures, such as office and retail buildings.

The first step in the "green" pest control process is to define and adjust the conditions that might contribute to pests—i.e., maintaining good sanitation practices, sealing up cracks, and eliminating the types of vegetation that attract pests, keeping doors closed, and having tight-fitting doors. Green pest management in food safety also addresses the causes of infestation related to product spillage, damaged packaging, incorrect product rotation and non-standard storage practices in warehouses.

In food processing, pest management has always been and will continue to be

about prevention, which can entail interception, sanitation, habitat modification, monitoring, and exclusion. Interception involves spot inspections of incoming supplies to look for pest activity and rejecting infested products. During this step, suppliers may need to be examined to determine whether a consistent pest risk is involved. Some species of stored product beetles target whole grains and may be delivered with the corn, wheat, or barley, while others may develop in the facility, breeding in spilled grains, grain dust, or other accumulations. Along these same lines, truck trailers, box cars, etc. used by facilities shipping their finished products should have periodic inspection to help prevent shipped products from becoming infested in route to the customer.

Meanwhile, a proactive sanitation program should include training employees on recognition of the key pests and awareness of conditions that support pests or may allow pests to enter. Lines of communication need to be established where any employee can report not only pest activity, but items that may need to be checked and addressed. Your pest professional is a great resource for identifying such conditions, but the facility's employees spend far more time in all areas of the building and will notice more items that may need attention.

Monitoring pest activity through programs, traps, and recorded data helps pest professionals be more predictive when recommending which service options might be financially prudent for the customer. In the past 20 years, the pest control industry has introduced additional nonchemical methods such as vacuuming; a carbon dioxide technology that freezes small insects on contact; and pheromone strategies that help reduce the need for fumigations or space treatments.

Pest prevention needs to be incorporated as the raw food ingredients reach a facility following through the production

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process on to the packaging, storage, and shipment of finished products. It is vital that pest prevention is built into every step of this habitat modification to deny pests the things they need to survive—food, water, harborage, and access.

Prevention is proactive which is critical to the Hazard Analysis and Critical Control Points (HACCP) program. HACCP is designed to prevent biological, physical, and chemical contaminants from adulterating food products. The federal program mandates companies to analyze where their products become contaminated and institute procedures and guidelines to minimize or prevent any adulteration.

Since pest management is required under Good Manufacturing Practices (GMPs), it serves as an ancillary component of HACCP. Pest professionals help serve as an additional set of eyes in uncovering conditions that affect pest activity and thus one part of the food safety process.

### Science Continues to Improve Management

Pest professionals work with the facility staff to detect, monitor, and analyze data in order to prevent pest activity. Yet one of the challenges of pest management in food processing is the variability in the data that different facilities want collected and the kind of trend reports they desire. Technology advancements in barcoding and handheld devices have allowed pest professionals to deliver facility-specific data recording and reporting more proficiently as facilities and auditing agencies require more and more information.

Science has led to the development of new pheromone applications, such as mating disruption for Indian meal moths. Mating disruption involves introducing so much pheromone into the environment that the female moths cannot find a male with which to mate. Unmated females then lay nonviable eggs resulting in the crash of Indian meal moth populations over time.

The implementation of mating disruption in many cases can result in reducing the need for space treatments, which saves money and helps better protect stored food products. Fewer space treatments also means the facility avoids shut-down time necessary to do such treatments, thus helping productivity. Studies continue to research the application of mating disruption to cigarette bee

and potentially other pests for which pheromones exist.

### Technical Strides Lead to Efficiency

Where science has elevated pest control capabilities in food processing facilities, technical advances have created more user-friendly and efficient modes of action against infestations both indoors and outdoors. For instance, nonlethal exclusion devices like voltage shocks, spikes, and netting that provide long-term displacement of pest birds and other wildlife have become easier to install and far more sophisticated in nature. As an example, a tape with wires running through it can be connected together and hooked up to a solar-powered device that sends the high-voltage, no-amp current through to shock the birds.

## More on Next Generation Pest Management

BY PATRICIA HOTTEL

For many years, programs have utilized set distances for installation of monitoring and control equipment like multi-catch rodent traps and exterior rodent bait stations. Although standard distancing offers some benefit from an auditing system, it doesn't always equate to a program in the best interest of food facilities. Facilities with low rodent pressures can end up with the same amount of equipment as facilities with heavy pressures. In addition, some facilities may have heavy pressures on one side or area of the structure and little to no activity on another side of the building but have the same amount of equipment coverage in all areas. In the future, equipment will be utilized where it is needed and not based on set spacing. It is commonly called "Next Generation" Pest Management. Next Generation shifts from a set number of traps to a facility analysis and the development of a customized program placing equipment only where needed. Under this new form of pest management, visual inspections are still performed in all areas for pests and new services with specific value to facilities are substituted for the equipment removed. Additional services may include items like web removal, fecal dropping removal, pest proofing, or other monitoring programs or services. Next Generation Pest Management works well with the GFSI-based auditing standards

which do not require set pest management equipment spacing, but measure whether or not the program is functioning as it should.

In addition, future technology will likely change the ability to monitor a wider variety of pests and monitor remotely. For instance, the wildlife industry and companies monitoring bulk grain storage have been able to monitor pest activity in traps remotely for several years. Electronic grain probes for grain bins are one example where technology can be used to count pests and send numbers electronically to a computer. In the near future, these grain probes will detect specific species and numbers of insects in bins. Wildlife professionals have utilized electronic systems based on cellphone technology to notify them when live traps have captured an animal. Several trap manufacturers have looked at similar technology for the structural pest management market. Although such remote monitoring and notification systems have not been perfected for the structural pest management industry, availability is expected sometime in the near future. The ability to determine exact date and time of capture can be beneficial in analysis for developing control plans.

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Further evidence of technical progress in food safety and pest control may be found in light technology. By replacing bright white lighting with yellow sodium vapor lamps, far fewer insects are attracted to the exterior of a building. In fact, the broader impact of lighting adjustments on a facility may surprise some food plant operators.

I once dealt with a food processing customer in the Southeast that was experiencing an issue with various beetles being found inside certain areas, especially offices and warehouse areas. Upon inspection, the beetles were found to be various species of water beetles and ground beetles which live and breed in aquatic environments and fields. The facility was located in a rural area, was surrounded by fields, and had marshy land and waterways not far away. The cause of the issue was the bright white metal halide lamps used to light the building's exterior. Such lighting is highly attractive to night flying insects such as these beetles, drawing large numbers to its exterior every night. Exterior doorways that were opened frequently or had gaps in their weather-strips on the bottom allowed some beetles to enter. Once inside, beetles could crawl or fly to other areas before expiring due to the drier interior of the building.



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The solutions involved a recommendation to change the metal halide bulbs to sodium vapor lamps which produce a yellow spectrum that is far less attractive to insects. Although insects would still be attracted to the facility, the numbers would greatly be reduced. Weathers-strips on exterior doors were replaced with tight-fitting strips and employees advised to be mindful about how long doors would remain open, particularly at night when such insects were most active.

### Crystal Ball

Ultimately, data collection and analysis is headed into a concept that some in the industry are calling, "Next Generation" Pest Management. In this emerging approach to pest control, providers analyze data to figure out where time is best spent on services.

Innovations in handheld technology and barcode scanning will play a role by answering such questions as, "How many rodent devices are truly necessary?" and "Where should pest monitoring and inspection efforts best be spent?" Converting the time spent checking and maintaining unnecessary devices into more proactive inspections contributes to better early detection of pest activity, thus helping to reduce the need for treatments and, as a consequence, even less use of pesticides.

The future of Integrated Pest Management will rely on more data collected from internal facility sources in addition to that generated by the pest professional. Focusing efforts on determining where pest activity is most likely to occur in a given facility or warehouse focuses more effort on prevention and may, over time, reduce costs. ■

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