

INTEGRATED PEST MANAGEMENT

Insights



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Signature Programs



How IPM Works as Risk Management

According to the Insurance Information Institute, risk management involves “taking steps to minimize the likelihood of things going wrong.” Risk management is different from insurance, however. For example, a farmer may purchase insurance to reduce the financial impact of adverse events on her operations—such as too little rain, flooding, or crop failure. The first step to manage actual risks, the Institute would say, is for the farmer to identify and understand the risks her organization faces.

Pest damage is certainly one of those risks any farmer faces. And pests cause harm not only on farms, but in schools, places of business, and in homes.

This is where IPM—integrated pest management—comes in, as a form of risk management. In this sense, IPM is the practice of taking steps to minimize pest populations, damage from pests, or harm from pest control methods—truly preventing losses.

Reducing Risk

IPM works as risk management in numerous ways. For example:

EPA regularly collects information to reach a risk-management decision for pesticides, say, imidacloprid or clothianidin. They gather details about usage, application rates, methods, and timing. They record key pests the materials are used to manage, and likely alternatives for managing them. They document the costs of switching to alternative pest control methods, including information on potential impacts to yield or quality. This information ultimately informs the policy that protects our food system and citizens.

To understand how this plays out in real-world practice, consider the following. In the fall of 2017, after the EPA said it wouldn’t further restrict the pesticide chlorpyrifos, California recently said it may.

The Department of Pesticide Regulation released an updated draft risk assessment for public comment, the start of a public and scientific review which could lead to increased restrictions on chlorpyrifos statewide.



Practice prepares an individual to manage risks. Source: iStock.

Real-World Application

IPM can reduce actual health risks—not just the financial effects of risks after a loss. IPM is being used by mosquito abatement districts to protect citizens from a long list of mosquito-borne illnesses and pathogens such as Zika and West Nile Virus.

“All three [mosquito abatement districts studied in California] use IPM to protect citizens from mosquitoes, limit exposure to chemical control agents and achieve both goals with limited funding. It’s absolutely an IPM success story,” said Matt Baur, the Western IPM Center associate director.

In short, IPM is the practice of taking steps to minimize risks associated with pests and pest control practices. IPM brings benefits not only on farms, but in schools, places of business, and in homes. This practice benefits human health, the economic bottom line, and the environment.



Risk Management Case Study: School IPM

Children are more sensitive than adults to pesticide exposure. Pests such as cockroaches can cause asthma and other health problems. Given the sensitivity of children during years of rapid growth, and since children spend much of their time at school, it makes sense to err on the safe side and use only least-toxic methods for pest control.

The EPA and most states recommend IPM practices on school grounds. Some states require it. Once the initial work and cost of establishing an IPM program is done, it usually costs less—and brings greater health benefits—than blindly using pesticides.¹

Best Management Practices for School IPM

A basic of IPM—and risk management—is to think **prevention**.

- Keep pests out: caulk and seal holes from the bottom up, foundation to roof vents
- Don't feed pests: keep it clean, inside and out, with proper sanitation
- Keep plants and lawns healthy so they resist pests better

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IPM Resources

Second Annual Integrated Pest Management (IPM) Online Conference



Root-knot nematode, *Meloidogyne* spp., Jonathan D. Eisenback, Virginia Tech, Bugwood.org

Recordings of the Northeastern IPM Center Online Conference are available online. The conference was held on November 9, 2016, and featured updates from projects funded by the Center's Partnership Grants Program,

Northeast SARE, and USDA-NIFA.

Sarah Pethybridge, Adrienne Gorny: Site-specific risk management for losses caused by plant-parasitic nematodes (Part 4)

Christy Hoepfing: Prevention of Brassica cover crop losses from new invasive species, Swede midge on at-risk small-scale organic farms (Part 4)

► <http://neipmc.org/go/hDTe>

Expression “New Entry Farmers” Includes Students, Too



Students in field look for pests. Source: Ana Legrand.

Through this program, students learn organic vegetable production and agricultural entrepreneurship.

“For the most part, participating students had little or no agricultural experience. The program emphasized training in botany, vegetable production, entomology, crop risk management, and IPM. Instruction was provided in a bilingual format with classes taught in Spanish but also included English terms as well.”

► <http://neipmc.org/go/beQQ>

Extension Risk Management Education Competitive Grants Program

Provides funding up to \$50,000 per project to help producers learn and use tools and approaches that can reduce the adverse effects of the uncertainties of weather, yields, prices, credit, government policies, global markets and other factors, including human resources and legal issues—all of which may result in

wide swings in farm income. The most recent deadline was this past November; watch this space for similar future announcements.

Video: Reducing Disinfectant Exposures in the Workplace



Take steps to reduce worker exposure to disinfectants and other harsh chemicals.

The National Pesticide Information Center (NPIC) has developed a video that provides important safety and risk management information for professionals who use antimicrobial

products in the workplace, including teachers and nurses.

► <http://neipmc.org/go/STMh>

Vector Borne Disease Prevention



In a recording of the first webinar of the IPM Toolbox series, we hear from Laura Harrington, Professor and Director, Northeast Regional Center of Excellence in

Vector Borne Diseases at Cornell University.

To better understand, prevent and treat diseases passed from insects to people, such as West Nile, Dengue, Zika and tick-borne Lyme disease, the Centers for Disease Control recently awarded a \$10 million grant to Cornell to lead the Northeast Regional Center for Excellence in Vector Borne Diseases. The Center is one of four established across the U.S. that will conduct applied research to better prevent, control, monitor, track and respond to vector-borne disease outbreaks. The center will offer a new master's degree in public health entomology with a goal to train the next generation to have the best possible knowledge and skills that they can apply to introduced threats or existing vector-borne disease threats.

Northeast Regional Center for Excellence in Vector Borne Diseases

► <http://neipmc.org/go/dTWL>

For the recording of the webinar, available for free, go to:

► <http://neipmc.org/go/ipmtoolbox>

To Stop Bed Bugs in Affordable Housing: Keys to Success

To stop bed bugs, there's no one-size-fits-all approach: buildings may gleam, made of concrete and glass with hundreds of units—or brick structures might accommodate just a dozen families. A handful of dedicated staff may carry out maintenance and sanitation tasks daily, or one person may be responsible for everything, on a part-time schedule. One thing every property has in common: managers need to take a proactive approach to pest control, especially for bed bugs.

Affordable housing and low-income communities have been hit hard by the bed bug (*Cimex lectularius*) resurgence of the last decade. The pests are well-adapted to human environments: we cannot easily apply the traditional integrated pest management (IPM) premise—remove the pest's food and shelter—to bed bugs. *We are* their food; meanwhile, they thrive in the cracks and crevices of our homes and furniture. Combine that with problems of bed bug resistance to chemicals, transient populations of humans and their bed bugs, and under-reported infestations, and you have a perfect storm. The good news is that a proactive approach, such as the one promoted by the StopPests in Housing Program at the Northeastern IPM Center, has been shown to reduce the frequency and severity of bed bug infestations. In addition, a proactive approach can eliminate or reduce the need for chemicals.

Below are two examples of success against bed bugs and how property managers achieved it.

Philadelphia, Pennsylvania

Megan, a regional property manager of an affordable housing site in Philadelphia, beat the bed bugs after



Entomologist Siavash Taravati demonstrates an inspection for bed bugs. Source: Ana Corbett.

attending an “IPM in Multifamily Housing” training from StopPests in November of 2015. Following the training, and with technical assistance from StopPests throughout the process, she revamped her bed bug protocols, including purchasing a portable heat chamber to treat furniture, wheelchairs, and other hard-to-treat items. Nine months later, she and her team saw a 50 percent reduction in bed bug infestations, going from 31 units being treated to 14. Over two years later, in February of 2018, Megan reports in the 11 buildings her organization oversees, there are zero cases of bed bugs. She attributes her success to having adopted an IPM approach to managing bed bugs, with its plan of proactive inspecting, monitoring, and addressing the education needs of her residents.

Lessons learned: 1) Aggressively inspect and monitor facilities, and educate residents. 2) Update service contracts to reflect IPM methods and best practices for bed bugs.

Southern Illinois

In 2014, the director of a small county housing authority in Illinois had 20 units with bed bug infestations in one of their 107-unit high rises. Working with StopPests, he discovered the heating system pipes were a conduit for bed bugs and other insect pests to travel through the walls and move to other apartments. Maintenance staff then put in days of work sealing each and every unit in the building. By July of 2016 they reported that according to their last building-wide inspection they had only two units with

See “Bed Bugs” Page 4 (Back Panel)



School IPM, continued

Stay alert. Scout regularly for pests. When does a few pests become too many?

In the cafeteria, kitchen, and storage areas, focus on **exclusion** and **sanitation**.

Exclusion

- Seal gaps where utilities enter (water, electricity)
- Seal all cracks in foundations, windows, door jambs, and vents
- Inspect incoming food and packaging for pests

Sanitation

- Wash fruits and vegetables
- Identify and eliminate water sources such as leaky pipes
- Store all food in pest-resistant packaging

For further details about school IPM see the Northeastern IPM Center website.²

¹ “Why Is IPM So Important in Schools?” Northeastern IPM Center. April 2014. <http://neipmc.org/go/mReK> (accessed January 18, 2018).

² “Best Management Practices for School IPM.” Northeastern IPM Center. April 2014. <http://neipmc.org/go/GMPE> (accessed January 18, 2018).



Property manager Megan and the staff pose in the portable heat chamber used to kill bed bugs in furniture. Source: Megan.

Bed Bugs

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Adult bed bug. Source: Susannah Reese.

low-level bed bug infestations. The director attributed their success to a thorough pest control technician, and resident and staff education. Exclusion made the biggest difference, however, backing up research by Richard Cooper and Changlu Wang of Rutgers University. Even when a food source is present, bed bugs are likely to spread to neighboring rooms, apartments, or across the hall.

Lessons learned: Bed bugs travel among units. Exclusion works!

Cooper and Wang point out that we cannot always rely on residents to report bed bug infestations. In fact, in a 2015 study, out of 358 units inspected, 55 were found to be infested, but management was not aware of 71 percent of the infestations in those 55 units. Waiting for residents to report problems is *reactive*, not *proactive*. Significant numbers of people don't react to bites or report infestations.

Proactive inspections two to four times a year and monitoring are important to gain and maintain control of bed bugs. Having a written policy on bed bugs and IPM in general can help maintain practices despite changes in personnel. Complete elimination of bed bugs may not be possible due to constant re-introductions, but these two examples

illustrate that proactive management can reduce or eliminate numbers and severity of pest infestations.

—Susannah Reese and Chris Gonzales

References

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Credits

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Photo by Lance Cheung / USDA

To assess the risks posed by pesticides, we need to consider their effects on beneficial insects such as pollinators.



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