



Uninvited Guests: Lady Beetles



Courtesy Maryann Frazier, Penn State

Lady beetles are known to be beneficial insects and, some say, good luck. But many people panic at the sight of the small, reddish colored beetles covering the outside of their homes in the fall, especially when they start making their way inside.

The beetles, called multicolored Asian lady beetles, are native of eastern Asia and came to North America by accident on imported freight from Asia, and introduced on purpose by the U.S. Department of Agriculture years ago as a biological control agent for crop pests such as aphids and scale insects.

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Agrochemicals Impair Learning in Honey Bees



Courtesy Maryann Frazier, Penn State

Honey bees exposed to agrochemicals used on farms may develop learning impairments that prevent them from being able to forage or even find their way back to the hive, say researchers at Penn State's College of Ag Sciences.

Former entomology graduate student LTJG Tim Ciarlo, U.S. Navy, professors of entomology Chris Mullin and Jim Frazier, and graduate research assistant Dan Schmehl recently published their research in PLoS ONE, an online open-access journal for the communication of all peer-reviewed scientific and medical research.

According to their research, pesticide spray adjuvants could be contributing to Colony Collapse Disorder (CCD), which continues

to threaten honey populations since its emergence in 2006. "Previously, active ingredients has been the focus of pesticide-driven CCD research, but not much attention has been placed on the other agrochemicals that are used in addition to and in combination with them," says Ciarlo, whose research work became the focus of his master's thesis.

These other agrochemicals are classified as 'inert ingredients' and include spray adjuvants that are either included in the pesticide formulations or tank-mixed and sprayed along with the pesticides. Adjuvants are designed to boost the efficacy of active ingredients and are largely assumed to be inert; therefore they are not usually included in risk assessment trials required to register a pesticide or its formulations. Additionally, the

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These insects are beneficial in gardens and farm fields during the summer months. They are slightly larger than native lady beetles, measuring 0.2 to 0.3 inches long. They vary in color from yellow to red and may or may not have black spots on their wing covers.

The beetles become nuisance pests in October during sunny, warm afternoons after a cold snap. Lyn Garling, PA IPM program manager, explains that the cold snap tells the beetles to get busy and find a good place to hide for the winter. "Like all insects, they need warmth to move, so they gather on the south sides of houses, sheds and other buildings looking for warmth."

Once they get warm, they are on the go. If there are openings in your home, it's not uncommon for hundreds or even thousands of beetles to make their way onto walls, ceilings and attics. "Their tendency is to go up into the attic and ball up to wait out the winter," says Garling. "However, they might get stuck in the kitchen and drive you crazy crawling on windows or falling in your soup."

If disturbed, they can give off a stinky, yellow defensive chemical. "Most people are only annoyed by their odor and the spotting that can occur on walls and ceilings, but some individuals can experience an allergic reaction to these chemicals," says Garling.

Helpful Tips

It's important to seal cracks and openings in your home before lady beetles find their way inside. The following pest-proofing measures can help:

- Seal cracks around windows, doors, siding, utility pipes, and other openings using weather stripping or a good quality silicone or silicone-latex caulk. Larger gaps can be sealed with urethane foam, copper mesh, or stainless steel wool, etc.
 - Install tight fitting door sweeps or thresholds at all exterior entry doors.
 - Around garage doors, install a rubber seal rather than vinyl, which seals poorly in cold weather.
 - Install insect screening (20-mesh maximum) over attic and exhaust vents to prevent lady beetle entry.
 - Replace and repair damaged door and window screens.
- (Courtesy of Ohio State Cooperative Extension)

In general, the beetles are harmless and they do not carry diseases. While over wintering, they do not feed or reproduce.

So, how do you deal with these pests? Follow these steps:

1. Keep them out. Take a look around your house and seal cracks around windows, doors, siding, utility pipes and other openings.
2. If you still find them in your home, don't use pesticides. In-

door use of aerosol insecticides presents a respiratory health hazard, especially with the house locked up tight as it typically is preparing for winter.

3. Use sticky fly strips made to fit on edges of window panes that can trap the beetles and be thrown away.
4. You can also try vacuuming the beetles, just make sure to empty the bag after each vacuuming
5. Black (ultra-violet) light traps may also provide relief from beetles flying or crawling around the interior of homes. These traps are available for purchase from pest control companies and pest control supply companies.

For more information on the Asian lady beetle, see Penn State's Department of Entomology's fact sheet at <http://ento.psu.edu/extension/factsheets/multicolored-asian-lady-beetle-factsheets/multicolored-asian-lady-beetle.htm>.

Educational Tools for Safer Pest Control in Childcare Centers



New training modules are now available to help directors and staff in childcare centers better manage pests in their facilities. The development of these modules was funded by the U.S. Environmental Protection Agency's (EPA) Office of Children's Health Protection.

The ten-part PowerPoint modules present step-by-step methods for dealing with common pests using an integrated pest management (IPM) approach. IPM aims to identify, prevent and manage pests safely and effectively. IPM uses knowledge of pests' habits and needs to help implement pest prevention tactics as a first line of defense. Pesticides are used as a last resort, and only pesticide products that pose the least toxic, least risk of exposure to building occupants are chosen.

"Children's bodies are small, still developing, and they eat, drink and breathe relatively more than adults do," says Lyn Garling, director of programs for the Pennsylvania IPM Program. "Thus, potentially harmful substances will affect children more strongly than adults."

Recent studies indicate pests and possibly pesticides can cause and aggravate asthma and other health issues, especially in children. Indoor air quality is severely impacted by high pest popu-

lations and repeated use of pesticides that leave chemical residues. "Millions of young children across the country spend a large portion of their day in child care and early learning settings. Once staff and administrators learn about risks due to pests and pesticides and safer solutions, new approaches and steps can be implemented to reduce risks in these environments," Garling explains.

The modules are geared towards childcare directors, maintenance staff, teachers, care givers and nurses, focusing on pest reduction and prevention and why it is important. Module topics include an introduction to IPM, mice and rats, cockroaches, bed bugs, flies, ants, and head lice. They are available as downloadable PDFs from the EPA website at <http://epa.gov/childcare/training.html>.

The modules were created as part of a grant from the EPA's Office of Children's Health Protection to the Pennsylvania IPM Program at Penn State University in collaboration with EPA Region II; the New York City Department of Health and Mental Hygiene; and Dr. Jody Gangloff-Kaufmann, entomologist and a senior extension associate for the New York State IPM Program, Cornell University.

For more information on IPM in child care settings, including training materials, guidelines and more, go to the PA IPM's Child Care and Early Learning Environments web site at <http://extension.psu.edu/ipm/childcare>.

New IPM Manual for Growers



The University of California Agriculture and Natural Resources (UCANR) recently published a second edition of *IPM in Practice: Principles and Methods of Integrated Pest Management*.

This manual from the University of California State-wide IPM Program is the most comprehensive, practical field guide ever developed for setting up and carrying out an IPM program in any type of crop or landscape. It is also the official study guide for individuals preparing for the California Department of Pesticide Regulation's Pest Control Adviser exam.

Now completely in color with more than 160 color photos, 100 hand-drawn color illustrations and more than 290 pages, this manual is now available for purchase for \$35.00 at <http://www.ucanr.edu/ipmpractice>. Volume discounts will apply on orders of ten or more.

Back to School Means a Return for Head Lice

Each year as children head back to school, find their friends, and play in close-knit groups, head lice also make their return and spread quickly.

According to the Centers for Disease Control and Prevention (CDC), 6 to 12 million people a year are infected with head lice, most of them children between the ages of three and twelve. And with head lice increasingly becoming more resistant to traditional chemical treatments, IPM strategies are needed more than ever before to safely and effectively eliminate these pesky infestations.

Head lice are tiny insects; the adult is only about the size of a sesame seed. They thrive on the warmth, food and moisture a scalp provides and spend their entire life on the human head. While they are irritating, they pose no known health risks.

Since head lice are easily transmitted in schools and child-care settings where children have close contact, children in these situations should be inspected regularly for active lice. They are not caused by poor hygiene and do not “jump” from one person to another. They can be transferred between people who share items such as hats, hair-brushes and combs and can also walk from one child’s head to another if their heads come into contact.

Combing is a safe, non-toxic and effective method of lice control. Use a metal lice comb specially designed for lice



Adult head louse, Steve Jacobs, Penn State

and nit removal to help remove nits. See Web site <http://www.headlice.org/licemeister> for more information.

1. Find a well-lit area and seat the child just below eye level.
2. Cover the hair with any type of hair conditioner. Remove tangles with a regular hair comb.
3. Separate a mass of hair about the width of the metal lice comb. It is important to separate the hair into small sections so you can more easily see lice and nits.
4. Hold the mass of hair with one hand. Insert the lice comb as close to the scalp as possible and gently pull the comb slowly through the hair several times. Check the hair carefully.
5. After combing each section, dip the comb in a bowl with a solution of soapy water and use a tissue to remove lice and debris. Make sure the comb is clean before you use it on the hair again. Continue combing.
6. Comb one section at a time and check each section again. If hair is long, pin it up in a curl flat against the head.
7. After combing, flush the contents of the bowl down the toilet. Shampoo the hair at least twice to remove the conditioner. When the hair is dry, check for

stray nits and remove those hairs individually with a pair of small, pointed scissors. It is VERY important to remove all of the nits. 8. Boil the metal comb for 15 minutes in water only. Use an old toothbrush to clean the comb. The comb can now be used on another family member.

Do not use shampoos with pesticides. Most of the shampoos intended to treat head lice have pesticide active ingredients in them such as lindane and permethrins, which can be hazardous to human health. Children are generally more susceptible to chemicals than adults, and increasingly many of these over-the-counter treatments are becoming non-effective as head lice develop resistance. Instead of chemicals, try using the skin cleanser Cetaphil, which recent research suggests is both safe and effective. See Web site <http://nuvoforheadlice.com> for detailed instructions.

While treating a child for head lice, safely remove head lice from the rest of your home:

- Wash bedding, towels and recently worn clothing when you are treating your child in hot, soapy water in a washing machine – it doesn’t have to be done daily. Dry in a 140 degree Fahrenheit dryer to kill both lice and nits. Items like stuffed animals, pillows, headphones and hats that are not washable can be dry-cleaned or stored in tightly sealed plastic bags for 24-48 hours.

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Agrochemicals Impair Learning in Honey Bees (continued from page 1)

specific ingredients that make up spray adjuvants are considered trade secrets of the chemical companies that manufacture them and are not included on the label. “This is the first time the impact of spray adjuvants on honey bee behavior has been studied,” Ciarlo explains.

To examine the effects of spray adjuvants on honey bees, researchers utilized learning assays much the same as Pavlov’s dog experiments in which he presented dogs with a ringing bell followed by food. The food caused the dogs to salivate, and after repeated bell-food pairings, the bell alone also caused the dogs to salivate. In Ciarlo’s experiments, honey bees were presented with a cinnamon odor (the ‘bell’) while being fed adjuvant-infused sucrose (the ‘food’) to mimic a nectar-feeding event at an adjuvant-sprayed flower.

Ciarlo says they used sublethal doses of the most widely sprayed adjuvants on almonds in California. “We chose this crop because hundreds of thousands of pounds of organosilicone adjuvants alone are applied each year to the almonds, and it is the largest pollination event in the world.” Additionally, California requires growers of all important food crops to report their pesticide use, and since adjuvants are considered pesticides in the state and are reported the same way, an abundance of preexisting data was readily available.

Ciarlo says the results of the project were surprising. They found honey bee learning was impaired after ingestion of organosilicone-laced sucrose, but not by most other adjuvants including nonionics and crop oils, indicating agrochemicals previously believed to be benign can be harmful. “Learning is important for foraging honey bees because it allows them to find the most productive floral resources in an area at any given time, which is vital to the success of a honey bee colony.”

Learning also has other uses besides foraging for food. Bees use visual cues to find their way back to the hive. One of the symptoms of CCD and related bee decline syndromes is the rapid disappearance of adult bees away from the hive without any evidence of dead bees. “One hypothesis for the disappearance is that foragers are becoming disoriented while away on foraging trips and are unable to return to the hive,” Ciarlo explains. “Further study is needed to determine the actual level of adjuvant exposure for colonies in the field and the physiological changes occurring inside the bees.”

For more information on honey bee research, visit The Penn State Center for Pollinator Research web site at <http://ento.psu.edu/pollinators>.

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- Family combs and brushes should soak for at least 10 minutes in hot water (130 degrees Fahrenheit). If they don’t already have them, it might be a good time to get every member of the home their own comb and brush. Tell your child not to share these items with others.
- Vacuum carpets, pillows, mattresses, car seats and overstuffed furniture. It is recommended that you vacuum these items instead of using insecticidal sprays. (Courtesy of University of Nebraska Cooperative Extension)

For more information about treating head lice, see the Pennsylvania IPM Program’s brochure “Got Head Lice” available as a downloadable PDF from <http://extension.psu.edu/ipm/resources/factsheets/lice.pdf/view>. For tips on treating head lice in childcare settings, see the EPA’s Healthy Child Care Information for Child Care Providers module on head lice at <http://epa.gov/childcare/Module10.pdf>.

Useful Web Sites

PA IPM Program Blog

<http://extension.psu.edu/ipm/news>

Rutgers Bed Bug Website

<http://njaes.rutgers.edu/bedbug/>

EPA's Sensible Steps to Healthier School Environments Booklet

<http://www.epa.gov/region8/humanhealth/children/SensibleSteps.pdf>

Integrated Pest Management: A Guide for Affordable Housing

<https://stoppests.wufoo.com/forms/ipm-guide-request/>

University of Minnesota's Lets Beat the Bed Bug Website

<http://www.bedbugs.umn.edu/>

UPMC's Mr. Yuk Educational Materials Online Store

<http://www.upmc.com/Services/poison-center/Pages/store.aspx>

Upcoming Events

November 7, 2012 -- **Integrated School Health Tools for Districts Webinar**, 2 - 3 p.m.

<http://extension.psu.edu/ipm/events/integrated-school-health-tools-for-districts-webinar>

November 13, 2012 -- **Western Pennsylvania Vegetable & Berry Growers Seminar**, 8 a.m. - 3 p.m. Butler, PA.

<http://www.cvent.com/events/western-pennsylvania-vegetable-berry-growers-seminar-butler/event-summary-18f7823feeb-d4e38a718eb43b32691c8.aspx>

December 12-14, 2012, 2012 - **Lead and Healthy Housing East Conference**, Philadelphia, Pa.

<http://www.healthyhousing-conferences.com/website/who-should-attend-2012-east>

Journal of IPM Now Accepting Submissions

The *Journal of Integrated Pest Management* is an open-access, peer-reviewed, extension journal covering the field of integrated pest management and is now accepting submissions.

The journal is multi-disciplinary in scope, publishing articles in all pest management disciplines, including entomology, nematology, plant pathology, weed science, and other subject areas.

The editors request submissions of original, extension-type articles about any aspect of pest management in the broadest sense, including, but not limited to, management of pests that affect row crops, forage and grasslands, horticultural crops, forests, urban landscapes, structures, schools, households, livestock and pets, and human health.

For more information on the journal and submissions, go to <http://www.entsoc.org/Pubs/Periodicals/jipm>.

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