

IPM Challenges and Solutions in Migrant Worker Housing

The Cornell Farmworker Program (CFP) addresses the needs of farmworkers and their families through research, education and extension. This includes on-farm tutoring in English as a Second Language, emergency planning and preparation, as well as workshops on chemical safety on dairy farms and driving in New York State. One gap in the education of farmworkers is information on how to manage pests in their living quarters. This is complicated by language and literacy barriers against comprehension of written documents, and inaccurate translation of materials that result in confusion and unintended outcomes. Therefore, new methods are needed to communicate accurate and reliable pest management information to farmworkers whose primary language is not English.

To address this issue, the CFP collaborated with the New York State IPM Program to develop new, highly visual outreach materials to help farmworkers manage pests in their living quarters. A skit was created using a simple scenario of two farmworker parents discussing pest problems in their homes, and recorded in both Spanish (“Las Plagas Molestosas”) and English (“Those Pesky Bugs”). The resulting video covers identification of pests, life cycles, and successful ways to manage cockroaches and bed bugs. This management information is useful to reduce problems with rodents, flies and other pests because of their similar requirements for food, water and shelter. The video is being produced on DVD, and segments will be shown during our presentation. The CFP is exploring opportunities to show the educational skits in locations frequented by farmworkers, including waiting areas in farmworker health clinics, immigration clinics, and visits of the Mexican and Guatemalan mobile consulates.

Key Ideas: Pest Requirements

Like all living things, pests require food, water and shelter to survive. In agriculture, pests are recognized as organisms that damage crops or compete with them for resources. However, in indoor environments, sources of pest food, water and shelter are not always obvious. Knowing what conditions support pest development and how to change those conditions can lead to successful pest management. The information below provides tips on identifying food, water and shelter for pests common in housing.

- I. **German Cockroaches** are most often found in kitchens associated with moisture. They are approximately $\frac{1}{2}$ long, golden brown with two black strips near the head.
 - a. *Food*: human food, including crumbs below refrigerators and toasters, splattered grease near stoves, wet food particles near the sink
 - b. *Water*: standing water from sinks and condensation, or water from food items
 - c. *Shelter*: tight hiding spaces, such as cracks or gaps in furniture/walls, especially near electronics and electrical outlets.
 - d. *Resources*:
 - i. *New York State IPM Program Cockroach Page*:
www.nysipm.cornell.edu/whats_bugging_you/cockroaches/default.asp



II. Bed Bugs are biting insects that feed on human blood. They do not live on human bodies, and tend to feed on people that are quietly resting or sleeping. The young stages of bed bugs (nymphs) are cream-colored, while adults are reddish brown, approximately ¼ inch long and flatted from above.



Adult bed bug

- a. *Food:* feed exclusively on the blood of animals, and the common bed bug prefers to feed on humans. Unlike other blood-feeding organisms (mosquitoes, body lice, ticks), bed bugs are not known to transmit any diseases
- b. *Water:* bed bugs acquire fluids when feeding on blood
- c. *Shelter:* tight spaces near the bed, especially gaps on the headboard and under the seams of a mattress. After feeding or when disturbed, bed bugs might hide in personal belongings (luggage), which is how they are transported from one location to another
- d. *Resources:*
 - i. *New York State IPM Program Bed Bug Resources:* this page includes traditional and image-based factsheets that use pictures to describe the steps in bed bug management. Image-based factsheets are available in English and Spanish, and can be viewed as presentations using Prezi. www.nysipm.cornell.edu/whats_bugging_you/bed_bugs/default.asp
 - ii. *Virginia Tech Factsheet: Bed Bug Action Plan for Migrant Farmworker Housing:* www.vdacs.virginia.gov/pesticides/pdffiles/bb-migrantworker1.pdf
 - iii. *Virginia Tech Bed Bug Factsheets:* www.vdacs.virginia.gov/pesticides/bedbugs-facts.shtml
 - iv. *University of Minnesota Let's Beat the Bed Bug Page:* www.bedbugs.umn.edu/

III. Rodents have similar food preferences as cockroaches, and may feed in the same locations. Common indoor species include the smaller house mouse (about 5 inches with the tail) and the larger Norway rat (about 16 inches with the tail).



Norway rat

- a. *Food:* human food that is spilled or in the garbage. Rodents may also chew through packages of stored food items.
- b. *Water:* for the most part, rats require standing water (condensation on pipes, water left in the sink, puddles, etc.), whereas mice can obtain water from the food they eat.
- c. *Shelter:* rodents prefer to nest in dark, quiet, undisturbed areas. For both mice and rats, this can include walls and furniture voids, especially near a heat source (electricity, hot water heater, furnace). As a species capable of digging, rats may also be found in burrows that they create in the soil.
- d. *Resources:*
 - i. *Oregon State University House Mouse Factsheet:* <http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/38106/em9062.pdf>
 - ii. *New York City Guide To Preventing Rats on Your Property:* http://www.nyc.gov/html/doh/downloads/pdf/pest/rodent_control.pdf

- iii. *New York State IPM Program Rodent Management Video Series:*
www.youtube.com/watch?v=pug3kOQIbrY

IV. Flies come in many shapes, sizes and colors, and may be a problem indoors even if they develop outside.

- a. *Food:* sources vary for different fly species, but wet, decaying food items are often a breeding site (sink drains, compost and manure piles, rotten food items). Adult female flies lay eggs that hatch into legless and wingless larvae or maggots. After completing their development, maggots crawl away from food sources and undergo changes to become an adult fly.
- b. *Water:* fly larvae develop in wet, decaying food sources that provide sufficient moisture.
- c. *Shelter:* most flies enter homes when they are attracted to food smells, heat, or light, and enter through open doors, or windows with damaged screens. Indoors, flies might be observed at light fixtures at night and windows during the day. One exception is the cluster fly, a 3/8 inch long dark gray insect with golden hairs, which enters homes in the fall in large numbers to spend the winter and leaves when temperatures rise in the spring. These flies are often found in the corners of attics or other upper parts of a home.
- d. *Resources:*
- i. *UC IPM Fly Management:*
www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7457.html



Blow Fly



Fruit Fly

Management Recommendations

Management of pests indoors is achieved by removing the conditions that support their populations (food, water and shelter), and exclusion to prevent pest entry. Referred to as “housekeeping” and “pest proofing”, the responsibility of these two components in an integrated pest management program can be shared by farmworkers and farmers.

- I. **Farmworkers:** Because farmworkers eat, sleep and spend personal time inside housing, helping them understand how their housekeeping can contribute to successful pest management is important. This can include:
- Clean up spilled food (surfaces such as table tops and counters; under refrigerators, microwaves and other appliances; grease on and around stoves; residue inside garbage cans).
 - Empty the sink at night (do not leave dirty dishes)
 - Unclog sink and shower drains
 - Report broken/leaky pipes, or pipes with condensation
 - Keep doors and windows closed and protected by a screen
 - Rinse cans and bottles before discarding
 - Remove garbage from the home regularly and store it away from the home until pickup in secure garbage cans with a tight-fitting lid
- II. **Farmers:** If farmers provide housing, maintaining the structural integrity of the dwelling can help farmworkers be successful in managing pests.

- Ensure that housing is structurally sound: without leaks, breaks, or entry points
 - Openings larger than a dime permit entry by mice
- Housing should have functional doors and windows that close completely, and have screens without holes to prevent pest entry
- Broken/leaking pipes and other structural issues should be addressed in a timely manner
- Secure garbage cans with a tight-fitting lid should be available for trash removed from the home. Open containers are attractive to rodents, flies, and cockroaches, as well as squirrels, raccoons and bears.

Special Considerations: Bed Bugs

Bed bugs are expert hitchhikers, and can be transferred from one person to another on personal items such as backpacks and luggage. They are not an indicator of poor hygiene, and can be a problem for the rich, poor, young and old. However, the migrant nature of farmworkers puts them at risk for picking up bed bugs in one location, or in a vehicle, and transferring them to another location. Items such as clothing, bedding, and duffle bags of newly arrived farmworkers can be cleared of bed bugs by placing them in a hot dryer for 30 minutes to sustain a temperature of at least 125 degrees Fahrenheit. Importantly, items should be dried first before they are washed. Other options to treat personal items include the creation of a heat chamber, as seen here: www.youtube.com/watch?v=W0CGXbZYmCA. See Resources in the bed bug section above for more information on preventing and managing bed bugs.

Additional Resources

Cornell Farmworker Program: <http://www.farmworkers.cornell.edu>

New York State IPM Program Factsheets: Factsheets are available on a variety of pest species found in and around homes. www.nysipm.cornell.edu/factsheets/buildings/default.asp

Cornell University Insect Diagnostic Laboratory Factsheets: Factsheets are available on a variety of pest species found in and around homes. <http://idl.entomology.cornell.edu/factsheets/>

University of Maryland Key to Pests Around the Home:
http://extension.umd.edu/sites/default/files/_images/programs/hgic/Publications/HG41_Keys_to_Pests.pdf