PESPWire

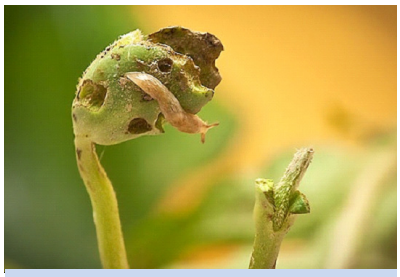
The Quarterly e-bulletin of EPA's Pesticide Environmental Stewardship Program Winter 2014

EPA Awards Regional Agricultural IPM Grants

On January 8th, 2014, EPA announced the award of its Regional Agricultural Integrated Pest Management (IPM) Grants. By promoting areas like research, development, training, and public education, these grants further the adoption of IPM approaches to reduce pesticide risk in agriculture settings in the U.S. The grants were awarded to:

Pennsylvania State University, *Developing an IPM Program against Slug Populations in Mid-Atlantic No-Till Grain Fields* - $159,632

This project will protect the environment by reducing reliance on neonicotinoid pesticide seed treatments and exploring the benefits of growing crops without them. IPM in no-till grain fields will be used to control slugs and other pests that damage corn and soybeans. Researchers will share their findings with mid-Atlantic growers and agricultural professionals. *continued on page 3*



Slug feeding on soybean seedling

Photo: Nick Sloff, Penn State Univeristy

In This Issue:

EPA Awards Regional Ag IPM Grants..... 1
EPA Supports IPM in Louisiana... 1
Featured Member: Cascade Pest Control, In Praise of PESP..... 4
Winter IPM by Cascade..... 5
Cherry Growers Face New and Familiar Pests..... 6
Indoor Ant IPM..... 8
EPA Grantee Develops Ant IPM Strategies..... 11
EPA Spreads Word About School IPM..... 12
Tick Quest..... 13
Upcoming Events..... 13

EPA Supports IPM Efforts in Louisiana

On January 8th, Jim Jones, Assistant Administrator for EPA's Office of Chemical Safety and Pollution Prevention, made two stops in Louisiana in support of EPA grants funding Integrated Pest Management (IPM) efforts in agriculture and schools.

Jim Jones, EPA Assistant Administrator

Assistant Administrator Jones first visited Baton Rouge to present Louisiana State University's Agricultural Center with a "big check" for their newly awarded grant to develop IPM methods to protect pollinators from the insecticides used in mosquito control. He then travelled to New Orleans to learn more about the success of the New Orleans Mosquito, Termite, and Rodent Control Board (NOMTCB) in implementing a school IPM project in the Orleans Parish school system. *Continued on page 2*

EPA Supports IPM in Louisiana

Continued from page 1

Protecting Bees While Controlling Mosquitoes

In Baton Rouge, Assistant Administrator Jones presented a "big check" to Dr. Kristen Healy, primary investigator (PI) on the grant, and collaborators for $167,874 to fund their two-year project titled *Assessing the Impact of Mosquito Control Adulticiding Practices on Honey Bee Health to Improve Current Best Management Practices for Mosquito Control and Honey Bee Domestication*.

One of three 2013 Regional Agricultural IPM grant awardees, Dr. Healy of LSU's AgCenter aims to assess the effects upon pollinators of the insecticides used to control mosquitos.

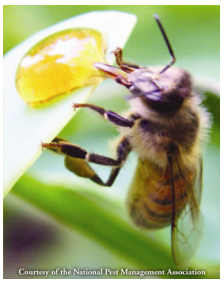
Jim Jones presents check to LSU AgCenter's Principal Investigator, Kristen Healy; LSU Vice President for Agriculture, Bill Richardson; Director of East Baton Rouge Parish Mosquito Abatement and Rodent Control Program, Todd Walker; and LSU AgCenter Professor, Jim Ottea.

Photo: Johnny Morgan

She will then develop IPM-based best management practices for use by both mosquito control districts and beekeepers that protect honeybees.

Mosquito control is critical for public health, and pollinators are critical for environmental health, agricultural production, and a healthy food supply.

Protection of bee populations is among EPA's top priorities. Some of the factors that contribute to the decline in pollinators include: loss of habitat, parasites and disease, genetics, poor nutrition and pesticide exposure.



Courtesy of the National Pest Management Association

EPA is engaged in national and international efforts to address these concerns. The agency is working with beekeepers, growers, pesticide manufacturers, the U.S. Department of Agriculture and states to apply technologies to reduce pesticide exposure to bees. IPM grants such as this one supplement these efforts as well as providing solutions to maximize crop production while minimizing the unintended impacts from pesticides.

More information on the Regional Agricultural IPM Grants can be found here: http://epa.gov/pesp/grants/regionalaggrants.html

Protecting New Orleans Students from Pests and Pesticides

On the second leg of his Louisiana trip, Assistant Administrator Jones met in New Orleans with Claudia Riegel, school IPM grantee and Director of NOMTCB, to learn more about the success of their project titled *Verifiable School Integrated Pest Management in the New Orleans Parish School System*. Additional participants in the event included EPA's Center of Expertise for School IPM, EPA Region 6, Louisiana Department of Agriculture and Forestry, the Louisiana State University, and Texas AgriLife, which is co-investigator for the grant.

In addition to discussing the overall success of the program, NOMTCB took participants on a tour of John McDonogh High School, illustrating the improvements that IPM has made on the school. NOMTCB has been working diligently to implement programs to provide healthier environments for nearly 40,000 children in 88 public schools.

NOMTCB's work through the grant in John McDonogh was

From left to right: Ken McPherson, EPA Region 6; Claudia Riegel, NOMTCB; Jim Jones, EPA; Janet Hurley, Texas Agrilife; Timmy Madere, NOMTCB; Sherry Glick, EPA; Kimberley Pope, Louisiana State University

recently featured in the NPR article *New Orleans' Rat Fighters Go Beyond Baiting Traps*, which can be viewed here: www.npr.org/2013/12/10/248506088/new-orleans-rat-fighters-go-beyond-baiting-traps

EPA's Sherry Glick (left) and Ken McPherson (right) discuss School IPM with John McDonogh Principal Dr. Marvin Thompson (center)

"We need to learn from those who have successes in school IPM programs," Jones said. He added, "We can figure out how to replicate this and get school districts and municipalities to follow your example. EPA recognizes the fabulous work you've done here."

Protecting childrens' health is a top priority for the EPA. Our Nation's children, teachers, and educational staff spend a considerable amount of time at school. Over 53 million students are taught by 6.5 million adults in more than 120,000 K-12 schools. IPM in schools is a national effort to make safe, effective pest management standard practice in the Nation's schools.EPA is working with an extensive network of partners to bolster IPM adoption in schools, and the School IPM Grants are an important part of this initiative.

For more information on the SIPM Grants, please visit: http://epa.gov/pesp/ipminschools/grants/index.html

Regional Agricultural IPM Grants Awarded

continued from page 1

University of Vermont, *Integrated Pest Management for Hops in the Northeast* - $131,758

This project will reduce pesticide use and improve pest control while increasing crop yields on 75 acres of hops in the Northeast. The awardee will also develop and distribute outreach materials to help farmers adopt these practices. The project's goal is to reduce herbicide and fungicide applications while protecting crops from downy mildew, potato leafhoppers, and a variety of weeds.

Mature hops in trellis hop yard

Louisiana State University, *Assessing the Impact of Mosquito Control Adulticiding Practices on Honey Bee Health to Improve Current Best Management Practices for Mosquito Control and Honey Bee Domestication* - $167,874

Photo: James Gathany, CDC

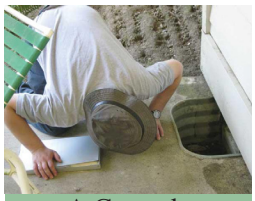
Mosquito control is critical for public health; however, insecticides can be hazardous to bees. As awareness of the effects of pesticides on bees increases, along with recognition of the essential role bees play in agriculture, there is also interest by mosquito control personnel on the effects on honey bees of their adulticiding. This project will assess risk of mosquito adulticides on honey bees by examining toxicity and exposure and assessing long term impact on honey bee colonies located inside and outside of mosquito control districts. Practices and guidelines resulting from the project to protect bees from adulticides will be distributed to mosquito control districts and beekeepers throughout the U.S.

For more information on current and past Regional Agricultural IPM Grants, please go here: www.epa.gov/pestwise/grants/regionalaggrants.html

In Praise of PESP: *IPM in the Pest Control Industry*

Kurt Treftz, Co-Founder, Cascade Pest Control, PESP Silver Member

In the 1980's the world was rapidly changing. People were being bombarded with information about serious threats such as smoking, and the fast food diet: that pinnacle of "modernism" of the 50's and 60's had stricken us with clogged arteries. Many of us had witnessed the rapid expansion of suburbs and the loss of forests or farmland in the process. We had also watched televised coverage of the negative impacts of pollution. The pest control industry was also watching, adapting to these changes and the rapid changes in products. Chlorinated hydrocarbons were replaced with organophosphates, and then many organophosphates were taken off the market, to be replaced with pyrethroids. Questions from clients increased about the products being used to treat and prevent pests.



A Cascade technician looks for signs of infestation.

Photo: Cascade Pest Control

As the world was rapidly changing in the 1980's, the pest control industry was watching and adapting to that change. Those of us in the industry watched products change - from chlorinated hydrocarbons to organophosphates, to losing many of the organophosphates, to the rise of pyrethroids. Increasingly, our clients were asking questions about the products we used to prevent and treat against pests.

Dealing with new information and concerns can change the way people think. Many of us running pest control companies in the 1980's used these shared experiences to inform our pest control practices, and started to lean toward Integrated Pest Management (IPM)-type practices before we'd heard of IPM. We felt responsible to the public, and wanted to treat them with utmost concern and regard for their homes or properties. This also meant that limiting their unnecessary exposure to pesticides would be a high level priority in our work

Today, one may automatically expect this kind of holistic, comprehensive approach from a pest management professional. However, in the 1980's it was a completely new concept. Pest controllers who used IPM-type thinking and practices received mixed reactions from customers. While some prospective customers appreciated the due diligence in providing them with a careful application approach and upfront information on the products being applied, other clients objected to our approach as being "too laborious" or "expensive". They wanted the pest dead, and now! Along with hesitation from consumers, those of us in the industry who were experimenting with IPM techniques were met with a general public that was very skeptical of anything our industry presented. They were concerned that anyone who used any pesticides at all was either ignorant or carried disregard for people and the planet while focusing only on profit. The public was being inundated with news reports of products that had turned out to be unsafe. Although EPA had been improving upon the pesticide regulation process since the 1970's, public opinion about pest control products was negative, and there was trust to be rebuilt.

I recall that in those days, many pest control company owners spoke rather sharply of 'environmentalists'. Many in the industry felt that 'environmentalists' were a problem and didn't understand what they did. The legacy of the pest control industry was full of mixed messages. On a larger scale, the public as a whole started to demand safer living spaces, workplaces, products, and food. The pest control industry needed to meet the new demands of the public with a new way to approach pest control. Unfortunately, much of the public was already cynically slanted towards these methods before they gave them a chance. When we went beyond the normal call of duty, we were met with resistance, and it was a little demoralizing.

In those days there were no organizations I knew of to turn to. Nothing like PESP, the Pesticide Environmental Stewardship Program, existed. In the early 1990's I took a risk. I decided to that my Seattle-area company,

Cascade Pest Control, would reach out to a couple of environmentally-oriented groups. Having heard all the shop talk at industry association meetings I was surprised by most of the groups I approached: they were delighted to collaborate with a pest control company, to learn what we do and share their knowledge.

My "risk" snowballed into mutual understanding and improved practices at our company. These groups became increasingly sympathetic to what some pest control companies were trying to do. In the process Cascade gained some very helpful public recognition, such as winning EPA Region 10's Evergreen Award in 1998.

As I met with other pest management leaders from around the country, I learned that there were few, if any, ways for them to participate with environmentally-oriented groups as I had. The availability of environmental advocacy agencies or groups that were willing to work with pest management professional was not universal.

Thankfully, in 1994, Pest Wise and PESP were ramping up to provide collaboration with pest management companies and other interested organizations who wanted to conscientiously participate in integrated pest management practices. Those who formed the program insightfully provided members opportunities for recognition for high levels of IPM practice. Moving forward from skepticism and solitude, pest management professionals nationwide could now receive guidance in implementing sound IPM practices and gain recognition in the process. This meant so much when the public was understandably doubtful of private companies and the use of pesticides.

Today, PESP continues to champion companies and organizations that make substantial changes to their pest management practices and solidly implement IPM. I thank those who were part of early PESP formation, and I thank Carolyn Gangmark, EPA region 10, for her early efforts with the Evergreen Award. I truly hope and desire that more of my industry will fully participate in PESP, as it is a measure of high values of care and concern for our clients and our environment.

For more information, please visit: www.cascadepest.com/

Winter IPM by Cascade Pest Control

Maxine Luna, IPM Liason, Cascade Pest Control

When rodents have been driven into a structure because of cold weather, wintertime pest management service is the obvious solution to clients. However, clients who are primarily concerned with insect populations are often tempted to skip service during this time of year as pests are not as active or easy to spot.

The winter is the perfect time to implement IPM and take preventative measures to ensure pests do not become a problem during warmer months when they begin to emerge.

One of the most important aspects of winter services at Cascade Pest Control is the attic and crawlspace checks. Yet it is the part of winter service that is most often overlooked by customers. Statistically people get into their attic or crawlspace once every 14 years. That is a long time for problems to go unnoticed, which is often the case with customers with rodent issues. By the time the customer suspects or notices the problem, the damage is so far gone that it ends up being extremely costly. As the weather begins to chill rodents like to make their way into warm, protected harborage areas which often end up being in customers' attics and/or crawl spaces making winter the perfect time to perform these checks.

Inspector pointing out rodent entry point

Photo: Cascade Pest Control

Checking for rodent activity during other times of the year can be difficult due to decreased rodent activity during warmer months, as they tend to stay outdoors where there is an

abundance of food. Checking attics and crawl spaces also allow our PMP's to check for pest-conducive conditions as well as structural problems.

"Because we spend less time applying material we have more time to look at the actual structure during the winter" said Cascade Pest Control Service Manager, Kirt McLaughlin. "We have a chance to take a look at any wood to soil contact or which if left unattended leaves the structure susceptible to infestations from moisture ants or termites for example. It is also a good time to check if there is any potential for vegetation overgrowth and get that trimmed back to prevent easy harborage for rodents or access into the structure by ants."

Rodent damage in an attic

Photo: Cascade Pest Control

Pest prevention during the winter months is a crucial element in an effective integrated pest management service. It is a great opportunity for deeper inspections and monitoring checks, and for the evaluation of cultural and other conditions that could invite or enhance pest populations. Our preventative pest management strategy pays off handsomely by protecting our client's property and maintaining the environmental awareness that we at Cascade Pest Control have become known for.

Cherry Growers Face New and Familiar Pests

The pest management issues facing cherry producers continue to change rapidly, requiring responses from researchers, pest managers, and growers alike. The regulatory requirements for pesticides, along with considerations of non-target impacts, invasive species, resistance management, maximum residue limits, and the re-emergence of formerly suppressed pests have forced significant changes in cherry pest management. Here we examine the challenges presented by a familiar cherry pest, the plum curculio, and a new invasive pest, the spotted wing drosophila.

Plum Curculio

Distribution and Biology

The plum curculio, *Conotrachelus nenuphar* (Coleoptera: Curculionidae), is a weevil pest native to North America. It is thought to have subsisted on native hawthorn and plum before the introduction of European cherries, which accelerated its spread throughout fruit growing regions East of the Rocky Mountains.

Adult plum curculio feeding

Photo: E. Levine, The Ohio State University, Bugwood.org

Adult plum curculio (PC) overwinter in or near orchards and emerge in the spring to feed on buds and leaves. Upon mating, the females lay eggs in immature fruit. When the larvae hatch they feed on fruit internally, maturing to exit the fruit and burrow into the ground to pupate and emerge as adults in late summer.

Pest status

Adult plum curculio feeding and egg laying activity produces scars on immature fruit that expand the fruit growth, resulting in visually unappealing and scarred fruit unsuitable for fresh market. Federal marketing standards mandate a zero-tolerance for worm-infested cherries that can cause the rejection of an entire crop and processor-inflicted clean-up fees associated with the shutdown of processing equipment.

Management strategies

Plum curculio management relies primarily on broad-spectrum insecticides (including synthetic pyrethroids and neonicotinoids) as well as insect growth regulators to control the adult weevils during the growing season. Organophosphate (OP) insecticides were historically relied upon as the principal PC control tactic, however regulatory restrictions under the Food Quality Protection Act have eliminated all but one.

Organic cherry producers have limited options for PC control. These include kaolin clay, that requires frequent re-application for even marginal control, and spinosad, which is more effective. With increasing scrutiny and restrictions on pesticide residues

in domestic and international markets, growers must be ever mindful of maximum residue levels when evaluating control options.

To determine the need for and timing of insecticide applications, PC populations should be monitored throughout the growing season, beginning in mid-April. Monitoring tools include pyramid and limb traps that incorporate attractive fruit volatiles. Cultural control tactics also play an important role in limiting PC population. Tactics include removing alternate hosts near orchards and maintaining good orchard floor sanitation to remove dropped fruit containing larvae.

Future research priorities
Improved monitoring techniques, phenology models, and behavioral information are necessary to ensure that monitoring and IPM tactics are used when PC are most susceptible. Continued development and assessment of chemical, cultural, mechanical, and biological controls for PC are necessary to provide growers with a diversity of effective tools.

Spotted Wing Drosophila

Distribution and Detection
The spotted wing drosophila *Drosophila suzukii* (Diptera: Drosophilidae), is an invasive pest native to Southeast Asia. Since its initial U.S. detection in California in 2008, it has quickly spread throughout North America. Commerce, together with national and international trade, has facilitated its dispersal. Widespread detection networks have helped track the spread of this fast-moving fruit fly.

Biology and Pest Status
The biology of the spotted wing drosophila (SWD) lends to its ability to be a serious pest of several fruit crops. A single female can lay up to 300 eggs with a new generation being produced every 12 days. Unlike most other fruit flies, the ovipositor of the SWD is serrated, giving them the ability to cut into and lay eggs in healthy fruit. The resulting larvae dramatically increase the risk of post-harvest rejection of the fruit. Due to the zero tolerance of larvae in processed cherries, the SWD is a recent and economically significant pest. Egg laying also increases the chance of sour rots and fungal disease in fruit that can dramatically diminish quality.

Adult spotted wing drosophila

Photo: Bev Gerdeman Washington State University

Management Strategies
Spotted wing drosophila management is based on three essential elements: field monitoring, proper identification, and quick control. Monitoring should occur prior to fruit ripening and last until the end of harvest. A simple monitoring trap consists of a plastic cup filled with a mixture of sugar, yeast, and water that ferments and attracts adult SWD. These traps also attract other species of fruit flies so correct identification is essential. Adult male SWD have a distinctive dark dot present on each wing. With practice, adult females may be identified using a hand lens or microscope to observe their serrated ovipositor.

To reduce SWD populations, alternative wild host plants, including the blackberry, raspberry, and wild grape, near orchards should be removed. The harvesting and removal of over-ripe cherries also helps prevent SWD population buildup within orchards. Once detected in orchards, an immediate response is necessary. Several insecticides, including pyrethroids and spinetoram, have demonstrated good adult knock-down and residual control. Organic-compliant options include spinosad and pyrethrum insecticides, as well as kaolin clay film coverage. Again, with increasing scrutiny on pesticide residues on harvested fruit in domestic and international markets, growers should follow the pesticide label directions to remain in compliance with maximum residue limits when treating for SWD close to harvest.

Future research priorities
Future spotted wing drosophila research will focus on the development, evaluation, and registration of effective insecticides, while ensuring that residues comply with limits set in domestic and international markets. Additional research will also involve developing improved monitoring systems and alternative control measures including attract and kill, natural enemies, and microbial control agents.

EPA would like to thank Drs. Mark Whalon and Pete Nelson of Michigan State University for their contributions to this article.

Managing Indoor Ants with Integrated Pest Management

Michael Merchant, PhD, BCE
Extension Urban Entomologist, Texas A&M AgriLife Extension Service

Ants are consistently ranked by the pest control industry as the number one nuisance insect pest in the United States, and generate over a billion dollars of income yearly for pest management professionals. Although most indoor-infesting ants are not directly harmful to people, fire ants being a notable exception, most people find ants in the kitchen or other indoor areas to be highly objectionable. In addition, some types of ants cause structural damage to homes, pose disease transmission risks and cause other problems, like damage to electrical equipment.

With so much at stake, ant management has become an important part of the pest control industry. Significant quantities of insecticides are used every year against ants, including applications in the most sensitive places including bedrooms, hospital wards and kitchens. That's why I believe an IPM approach to ant control makes the most sense.

Experience has shown that pests are controlled most effectively and safely using an integrated approach. An integrated approach means that pests are managed using both chemical and non-chemical controls. Non-chemical tactics might include modifying the environment to make it less favorable for pests, keeping pests out, or controlling pests with heat, cold, traps or mechanical means. Under IPM pesticides are used when needed, but with a strong commitment to protecting other wildlife, people and the environment. Sound confusing? Let's see how IPM might work with a tough bunch of pests like ants.

Identify the pest

The first step in any IPM program is proper pest identification. To most people, an ant is just an ant. But to a pest management professional, ants include a variety of very different species with diverse behaviors, varied potential for harm, and unique control methods. Although most people seem to know how to recognize ants instinctively, sometimes things get tricky.

Ant swarmers (above) can be distinguished from termites by their pinched waist, unequal-lengthed wings and elbowed antennae.

Photo: Texas A&M Agrilife Extension

Ants are sometimes mistaken for other insects, especially termites. The pre-reproductive stages of ants (ant teenagers) may have wings, and are sometimes mistaken for termite swarmers. But termites lack a distinct constriction between abdomen and thorax common to ants, and have front and hind wings of equal length. Some of the important ant species of indoor ants include carpenter ants, acrobat ants, pharaoh ants, odorous house ants, Argentine ants, crazy ants, dark rover ants, pavement ants and fire ants. And that's just the short list!

Each of these species has a characteristic nesting site, specialized food preferences, and susceptibility to different control methods. Pharaoh ants, for example, are best controlled with ant baits that are specially formulated for Pharaoh ant control. Carpenter ants nest in wood, insulation or wall voids and are finicky bait feeders. Odorous house ants and Argentine ants are sweet-lovers, and will readily accept sugary liquid baits. So you see it's not enough to know that you have an ant problem. You also need to know what kind of ant you have if you are going to successfully engage in IPM.

Taking ant identification to the next level sometimes requires advanced skill with a hand lens or microscope, and good reference materials. By examining characters like size, the number of nodes between abdomen and thorax, and even smell, it's usually possible for a professional to identify an ant accurately. If you're not sure what kind of ant problem you've got, check with a local pest control company or your local Cooperative Extension office. Most Extension Service

offices have access to trained entomologists who can help.

Monitor and Assess the Problem

Monitoring is the process of measuring pest abundance over time. It's a critical part of any IPM program. Monitoring allows us to detect pests early, identify any areas of activity, and assess the effectiveness of our IPM program. Monitoring is also usually needed to assess whether critical pest thresholds have been exceeded. With ants, monitoring is usually quantified by the number of sites where ants are active rather than how many ants are present. Thresholds with ants are highly subjective, and must be determined on a case-by-case basis. Thresholds for ants in a health care facility are likely to be much lower than for a home, for example.

Monitoring is not as simple for ants as it is for some pests. For example, cockroaches can be monitored with simple sticky cards (roach hotels). Mice can be spotted via their droppings and other signs. But ants move quickly--often at night—and usually leave little trace. And they are not easily captured with sticky cards. The best ant monitoring method is usually a careful visual inspection, sometimes with the help of food lures.

Inspections sometimes tell us where nests are located. Carpenter ants may give away their approximate nest location by their fastidious nest cleaning habits. Special "kick holes" are chewed through a gallery wall

Ants attracted to honey on an index card, indicating an area of high activity. This trick for determining the best places to bait can reduce the amount of insecticide needed to control ants.

Photo: Texas A&M Agrilife Extension

to serve as a garbage dump for unwanted gallery waste. These debris piles often alert the inspector to the location of a nearby carpenter ant nest. Other nests may be identified by looking under bricks, leaves or other debris. Once located, ant nests are more easily treated.

Nearly all ants form foraging trails, along which worker ants travel between the nest and active feeding sites. Foraging trails usually follow what professionals refer to as structural guidelines. A skilled inspector knows to look along edges and corners for ant foraging trails. Indoors, ants are most commonly seen running along baseboards, counter edges, backsplashes, corners and electrical cords. Outdoors, common trail locations will be the trunks or branches of trees, garden hoses, sidewalk edges or gutters.

Once a nest entrance or foraging trail is located, a treatment plan can be designed. Carpenter ant nests can be baited, or insecticides applied directly into the suspected nest area. For carpenter ants and other ants, special liquid or solid baits can be placed along foraging trails. And, for outdoor ant species, points of access to the building can be treated with insecticides or sealed.

Control Safely

Ant control tactics are almost as diverse as ants themselves. For example, in a sensitive environment, like a school classroom with a crazy ant or fire ant problem (both of which usually originate outdoors), the best solution is usually to avoid indoor pesticide applications, seal off entry points and eliminate ant trail scents with a detergent or cleaning agent. A common strategy for outdoor ants is to apply a residual insecticide barrier outdoors, possibly along with a series of bait placements near areas of suspected activity. Indoors, baits can be applied close to ant foraging trails.

Baits are among the safest forms of insecticides. Baits are usually placed in cracks or void areas, or in special bait containers which minimize exposure risk to people or pets. Because baits are ingested by the pest, very little insecticide is usually needed to control the pest. And because baits can be designed to be attractive to certain insects, they can be highly selective for the target ant.

What about non-chemical control strategies? One of the most effective strategies for many pests is making the environment less hospitable, or preventing pests from getting into the sensitive area. Pest proofing and environmental modifications to control ants is challenging

since ants are so small and so adaptable. Here are a few things that can be done:

- Seal all cracks and crevices. onsider using screen inserts in brick weepholes to keep ants out of exterior walls. Replace worn weather stripping around doors and windows, and caulk wherever ants are seen entering.
- Remove firewood piles, dense vegetation or leaf piles from around the structure –places that ants find irresistible for nesting.
- Clean out rain gutters. Gutters are an often overlooked site for ant nesting. They love the shelter afforded by decomposing leaves and other debris.
- Trim tree limbs away from the roof and house. Ants, especially carpenter ants, may use tree limbs as bridges to a structure.
- Before you bring firewood or potted plants indoors, check to ensure they are not infested.

Piles of dead tawny crazy ants mark the outdoor foundation of a Texas home treated with an insecticide spray.

Photo: Texas A&M Agrilife Extension

Remember, ants love tight, sheltered spots, especially with a little moisture. Minimizing these places, along with making it more difficult for them to get indoors, and you'll have a great start on your ant control program.

Although the use of effective ant baits over the past 10-20 years has greatly reduced the need for insecticide sprays, sprays are still an important tool for ant control in difficult situations. Sprays are best used outdoors as barriers to help prevent ants from entering buildings. Such sprays can assist a pest proofing campaign, and prevent the need to use pesticides inside. However, despite our best efforts, sometimes sprays are needed indoors. When this happens, the pesticide label should be your guide to safety.

Only use products labeled for indoor use, and be sure to let all products dry before letting children or pets back in a room that has been treated. To ensure pinpoint accuracy and minimize contamination, liquid insecticide formulations can be painted on ant trails. Insecticide dusts can be applied to inaccessible areas, such as wall voids where ants travel.

Integrated pest management uses a combination of accurate identification, knowledge of pest biology, monitoring, pest proofing and careful use of multiple control tactics. In addition to being better for the environment, IPM works better than any one-sided strategy. IPM can help keep your home safe and free from the worry of pests, including ants.

For more information about control of household ants, see Texas AgriLife publication: www.agrilifebookstore.org/v/vsp-files/downloadables/B6183.pdf

For identification of many household ants, see: http://citybugs.tamu.edu/factsheets/household/ants-house/ent-2013/

Fire Ants

Due to their painful bites and stings, as well as the potential for an allergic reaction to the stings, indoor fire ant infestations are particularly problematic. Fire ants from colonies close to homes can sometimes forage indoors for food and moisture, particularly during the summer months. Entire colonies occasionally nest in wall voids or rafters, sometimes moving into buildings during floods. To prevent fire ant infestations in the home, it is important to treat any fire ant mounds found outside the home. When fire ants are found inside, using bait specifically labeled for indoor use against fire ants can effectively treat the entire colony. Pest management professionals can also follow the trails of foraging ants to find the colony inside the home and treat them with pesticides injected into the nest.

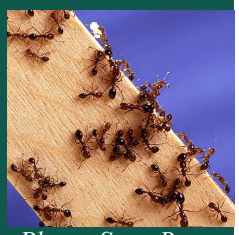


Photo: Scott Bauer USDA-ARS

The following links contain detailed information for fire ant control:
http://fireant.tamu.edu/manage/site/

http://insectsinthecity.blogspot.com/2013/10/resources-for-fire-ant-control.html

University of California - Riverside Develops Ant IPM Strategies Through EPA Grant

In 2011, the University of California-Riverside was awarded an EPA grant to develop IPM strategies for controlling ants while reducing pesticide run-off in an urban environment. The team, lead by Dr. Les Greenberg and Dr. Michael Rust, consisted of pest management professionals (PMPs), university researchers, extension personnel, and local and state agencies.

The project began with comparing IPM and standard strategies for controlling ants, collecting data on ant control efficacy and on pesticide runoff. After analyzing the results, the project went on to further refine the IPM strategies and further reduce pesticide runoff. The ultimate goal of the project was to reduce the use of pyrethroids by 75% and the use of fipronil by 50% while retaining efficacy of treatment.

Researchers collects a water sample for insecticide residue sampling from a driveway flush.

A PMP applies a crack and crevice application of fipronil at a driveway expansion joint.

During the first year of the study the main goal of the IPM route was to reduce the use of pyrethroids. The PMPs compensated for the loss of pyrethroids by a moderate increase in the use of fipronil sprays. The researchers found that the IPM method had a similar efficacy to the standard ant control option, based on the amount of customer call-backs for ant home-invasions. The IPM route significantly decreased the amount of pyrethroids used.

During the second year of the study, researchers further refined their methods and found that by replacing pyrethroid sprays with pyrethroid granules that were kept away from the drive-way, pyrethroid run-off was further reduced. At the same time, applying fipronil as a narrow band around the house and into the expansion joint near the garage door also resulted in a decrease in fipronil usage and runoff. Also during the second year, some PMPs looked at replaced pyrethroids with botanical insecticides (natural plant oils), and found that when they were applied monthly to supplement an initial fipronil treatment, ant control was nearly as effective as the standard route. In a third study, researchers found they could significantly reduce fipronil run-off by not using fipronil within 1 foot of the driveway.

Researchers plan to continue to refine IPM techniques for urban ant control. In the meantime, two symposia were conducted in California on the topic of ant IPM, covering the topics of insecticide runoff, controlling ants with less insecticide, and new label changes affecting the use of pyrethroids.

PowerPoints of these talks are available at: http://ucanr.org/sites/UrbanAnts/

Odorous house ant

Photo: Texas A&M Agrilife Extension

EPA Spreads the Word About School IPM

Tribal School Integrated Pest Management Pilot Project in the Portland Area

The Indian Health Service (IHS) and EPA Region 10 provided a 1-day IPM training to IHS Portland Area Environmental Health and Safety Officers (EHOs) on December 10, 2013 in Salem, OR. The purpose of the training was for EHOs to learn how to provide IPM assessments using a standardized checklist during their annual school visits. IHS will use the information collected from these visits to provide further technical assistance to tribal schools based on interest and need. Specifically, IHS will use a spectrum diagnosis tool that will determine the facility's level of IPM and identify action items. IHS and EPA are working towards expanding this project to other regions of the country. More information on the progress of this project to come in subsequent issues!

EPA's Center of Expertise for School IPM (CoE) Swarms Entomological Society of America's Foundation Insect Rodeo

Photo: Entomological Society of America

On November 9, 2013 in Austin, Texas, hundreds of teachers, parents and kids attended the Austin Insect Rodeo held at the Bullock Texas State History Museum. The Rodeo featured teacher workshops along with an Insect Petting Zoo, Bugs as Food, Termite Racing, Bee Dancing and other games. EPA's CoE was on location to meet and greet with teachers and parents and educate them about healthy schools and IPM; brochures and fact sheets on healthy schools were made available to participants. Over 1300 attended the free event.

EPA School IPM Session Held at Entomological Society of America (ESA) Annual Meeting

On November 12, 2013 in Austin, Texas, ESA held a School IPM symposium as part of their annual meeting with sessions lead by the speakers from the federal government, universities, IPM centers, city and state governments, school districts, and NGOs. EPA's CoE and Region 6 co-led a session with USDA's Southern IPM Center titled "Healthy Schools: Research, Benefits and Impacts in the Classroom". Other symposia presentation topics included national and regional perspectives on IPM, innovations in IPM, and metrics for success in IPM implementation. Several collaborative partnerships were made throughout the day with IPM stakeholders and partners.

Tick Quest: *Ticks, Regions, and Seasons*

Different tick species can be found within different regions of the United States. Identification can be important for early treatment of tick-borne diseases. In the winter, ticks are in their adult life stage. Some tick species, such as blacklegged ticks, do not hibernate and may be active on warm winter days, so continue to practice prevention methods when venturing into tick habitat!

Courtesy of the CDC, below are some common tick species and their geographic distribution.

More information can be found at www.cdc.gov/ticks/geographic_distribution.html

American Dog Tick

Brown Dog Tick

Rocky Mountain Wood Tick

Gulf Coast Tick

Blacklegged (Deer) Tick

Western Blacklegged Tick

Lone Star Tick

Upcoming Events

Principles of Tick Management and Tick-Borne Disease Webinar
March 5, 2014
www2.gotomeeting.com/register/864775674

Deer Resistant Landscaping
March 19, 2014
Whately, MA
www.ecolandscaping.org/events/

Green Schools National Conference
March 27-29, 2014
Sacramento, CA
http://conference.greenschoolsnationalnetwork.org

Tick-borne Disease: Awareness, Prevention, and Treatment
April 6, 2014
Framingham, MA
www.ecolandscaping.org/events/

National Conference on Urban Entomology
May 18-21, 2014
San Antonio, Texas
http://ncue.tamu.edu/

Association of Structural Pest Control Regulatory Officials (ASPCRO) National Meeting
August 24-27, 2014
Missoula, MT
www.aspcro.org

Entomological Society of America National Meeting
November 16-19, 2014
Portland, OR
www.entsoc.org

8th International IPM Symposium
March 24-26, 2015
Salt Lake City, UT
www.ipmcenters.org/ipmsymposium15