



University of California  
Agriculture and Natural Resources

Retail Nursery and Garden Center

# IPM News

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## It's Aphid Season!

It's that time of year when aphids seem to be everywhere! Almost every plant has one or more species of aphids that occasionally feed on it. Aphids often feed in dense groups and can curl leaves, produce sticky honeydew, and lead to the unsightly growth of a black fungus called "sooty mold." Low to moderate numbers of aphids usually aren't damaging to gardens or landscape trees, and these insects rarely kill plants. When aphid numbers get high, natural enemies such as lady beetles often feed on them, eliminating the need for pesticides. When pesticides are necessary, less toxic products such as insecticidal soaps and oils are the best choice.

### *Ways to reduce aphids*

There are several ways you can help your customers reduce aphid problems. One way is to be sure to inform customers about potential aphid problems when they are purchasing aphid-prone plants such as flowering plums, roses, tulip trees, crape myrtles, and apples, as some varieties tend to have fewer problems. Over fertilizing leads to lush new growth, which aphids love. If fertilizers are necessary, suggest organic or slow-release products to reduce this problem.

Ants feed on the honeydew aphids produce and will protect them from beneficial insects. Help your customers find tools to

keep ants off plants to help natural enemies do their job. Sticky materials such as Tanglefoot applied as a tree-trunk barrier can keep ants from accessing aphids and other honeydew-producing insects in trees. Applying the material on a tree wrap or trunk band protects sensitive bark and also facilitates cleanup. (Also see the ant bait article on Page 3.)

Other nonchemical control methods include pruning out infested leaves and stems, knocking aphids off by shaking the plant or spraying it with a strong stream of water, protecting seedlings with covers or aluminum-foil mulches, or simply waiting for aphids to disappear when the weather turns hotter. Some stores feature special hose attachments for washing off aphids and other insects.

### *Protect aphids' natural enemies*

Beneficial insects that eat aphids are abundant in the garden. Lady beetles, lacewings, syrphid fly larvae, and soldier beetles are a few examples of predators that may visit the garden naturally when aphids are abundant. Mini-wasps that kill aphids, turning their skins into crusty mummies, are also important natural enemies. Protect these good bugs by avoiding the use of insecticides that can be toxic to a broad variety of insects.

See UC IPM's Natural Enemies Gallery at <http://www.ipm.ucdavis.edu/PMG/NE/index.html> for photos of common good bugs found in California landscapes.



J. K. Clark, UC IPM

*Honeydew, black sooty mold, and cast aphid skins are signs of an aphid infestation.*

### *If insecticides seem necessary, use the safest products.*

Direct your customers to less toxic products such as insecticidal oils and soaps. When properly used, these materials solve most aphid problems. Oils and soaps work by smothering, so apply thoroughly. Don't apply them to drought-stressed plants or when it is very hot. A few plants are sensitive to these products.

Apply insecticidal soaps, soap-pyrethrum mixtures, or neem or other plant-based oils on vegetables or small bushes such as roses. Horticultural oils (also called narrow range, supreme, summer, or superior oils) are appropriate for larger bushes or trees. Oils and soaps don't kill aphids hidden within curled leaves; prune these out. Systemic insecticides such as imidacloprid can kill hidden aphids, but these insecticides move into the nectar of flowering plants where they can be toxic to honey bees and beneficial insects.

For more details about managing this insect, see Pest Notes: Aphids on UC IPM's Web site, <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7404.html>.

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# Lady Beetle Releases for Aphid Control: How to Help Them Work

**M**any retail stores sell lady beetles (commonly called ladybugs) for controlling aphids in gardens and landscapes. Your customers might wonder: Does releasing lady beetles really work? University of California research has demonstrated lady beetle releases can effectively control aphids in a limited area if properly handled and applied in sufficient numbers. However, because of inadequate release rates or poor handling at the store, in shipping, or after purchase, it is likely most lady beetles purchased at stores fail to provide satisfactory control. Here are some things to consider if you sell lady beetles:

## ***Keep lady beetles refrigerated.***

Live lady beetles on display are attractive to customers, but beetles left out at room temperature will rapidly deteriorate. Perhaps leave out one container with an attractive display advising customers to take a container of fresh beetles from the cooler and refrigerate them at home until they release them.

## ***Lady beetles need water.***

When you receive a shipment of lady beetles, mist them with a little water before refrigerating them. Use a squirt bottle and don't allow water to puddle in containers. Repeat about weekly.

## ***Don't sell dead lady beetles.***

Inspect your packets regularly and toss out any that have many dead lady beetles, or combine and save just the live ones. Try to purchase from primary suppliers (those who obtain

beetles directly from collectors) and avoid suppliers who regularly ship dead beetles. Generally, retailers shouldn't store beetles for more than two months.

## ***Suggest adequate release rates.***

University research shows high numbers of lady beetles are required to control aphids. One large, heavily infested rose bush in the landscape required two applications of about 1,500 lady beetles each, spaced a week apart. Most packages sold in stores contain only enough lady beetles to treat one aphid-infested shrub or a few small plants.

## ***Release lady beetles at dusk or early evening.***

Lady beetles will fly away almost immediately if released during the heat of the day or when the sun is shining. Spray a fine mist of water on the plants, as giving beetles a drink can keep them around longer. Place beetles at the base of plants or in the crotches of low branches. Lady beetles will crawl higher into the plant in search of aphids. Don't release lady beetles on plants that have been sprayed with insecticides. Residues from most insecticides are likely to kill the beetles. Insecticidal soaps and oils, once they dry, won't leave toxic residues.

## ***Customers should expect lady beetles to fly away in a few days.***

Even when released with care, lady beetles will fly away within a few days. About 95% of released beetles



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*The convergent lady beetle, Hippodamia convergens, named for the converging white marks on its thorax, is the species sold in stores for aphid control. Suppliers collect beetles from large overwintering aggregations in California's foothills and mountains. Many other species of lady beetles occur naturally in California landscapes but aren't sold.*

in research studies flew away within 48 hours. Lady beetles are unlikely to lay eggs on the plants they are released on. If aphids return a week or two later, customers will need to release more lady beetles, hose aphids off with water, use insecticidal soap sprays, or wait for other native beneficial insects to fly in. Instead of releasing lady beetles, some customers might get better results by hosing aphids off with water or using insecticidal soap or horticultural oil sprays. However, these beneficial insects can be fun and educational!

See UC IPM's Natural Enemies Gallery at [http://www.ipm.ucdavis.edu/PMG/NE/convergent\\_lady\\_beetle.html](http://www.ipm.ucdavis.edu/PMG/NE/convergent_lady_beetle.html) for information about the convergent lady beetle's life cycle. If you are interested in finding out more about UC research on lady beetle releases for controlling aphids, we have posted several journal articles on our newsletter Web site.



*Life-cycle development and stages of the convergent lady beetle: Egg (left), larva (center), and pupa (right).*

J. K. Clark, UC IPM

## ::: New Tools

# Liquid Ant Bait Dispensers

**A**rgentine ants are a big problem for many consumers. Although they nest outdoors, these ants often invade houses in large numbers in search of food. The safest and easiest-to-use ant control products are insecticide baits, which foraging ants take back to their nest to kill the colony. Bait products are sold in different forms and may contain various active ingredients.

Small, prefilled, ready-to-use ant bait stations, in combination with sealing up entry ways and removing food sources, may solve ant problems when populations aren't too high. However, for customers who have tried everything and still can't keep ants out of the house, the answer may be the KM AntPro bait dispenser used with liquid borate bait.

The KM AntPro dispensers are sturdy, weatherproof, and secure and hold up to 19 ounces. Liquid bait is released only when ants trigger it at the feeding area around the base. For effective control, 0.5% to 1% borate (such as disodium octaborate tetrahydrate)

in a 25% sucrose-in-water solution must be used (available ready to use as Gourmet Liquid Ant Bait). Most borate baits sold contain 5% borate and are too strong to control serious problems, because they kill foragers before they can return to the colony to distribute bait to other ants.

These dispensers have shown good success in University of California research. Place four or more dispensers in shady areas next to the house where ants tend to trail. Check dispensers weekly to see if ants are trailing to them and if they require refilling. If ants are gone and no longer invading the house, dispensers can be kept empty or stored until the next invasion.

For successful control of ants, use bait dispensers as part of an IPM program that includes sealing up entryways to buildings, removing nesting materials such as mulch, limiting moisture next to the house, fixing leaking faucets and other water sources, and eliminating food



C. A. Reynolds, UC IPM

*KM AntPro liquid bait dispenser.*

sources such as sugary garbage and honeydew-producing insects. Pesticides should never be applied around bait dispensers.

Borate insecticides have very low toxicity to people and the environment. The standard insecticides used for ants are pyrethroids, such as bifenthrin, that can wash off treated surfaces in runoff, causing toxicity to aquatic wildlife. Using bait dispensers with liquid borate is an excellent way to manage ants and protect the environment. Only a few stores stock the KM AntPro dispensers and Gourmet Liquid Ant Bait, but we think the market will grow.

To see how these bait stations are used, see the Refillable Bait Stations video at [www.ipm.ucdavis.edu/ants](http://www.ipm.ucdavis.edu/ants).

## Plants that Attract Beneficial Insects

**M**any people are interested in growing plants that attract beneficial insects. Predators such as syrphid flies and lacewings and the tiny mini-wasps that parasitize aphids, scales, and other pests will live longer and lay more eggs if they have adequate supplies of pollen and nectar to feed on.

Plants that flower throughout the season and those with small flowers and readily accessible nectar and pollen will provide the most benefits. For examples to suggest to your customers, search the UC Davis Arboretum's All-Stars plant database at [http://arboretum.ucdavis.edu/plant\\_search.aspx](http://arboretum.ucdavis.edu/plant_search.aspx). Choose "show/hide



C. A. Reynolds, UC IPM

*Sweet alyssum provides nectar and pollen for beneficial insects.*

more criteria" to select for plants that support beneficial insects.

To learn more about natural enemies of pests, see UC IPM's Natural Enemies Gallery at [www.ipm.ucdavis.edu/PMG/NE/index.html](http://www.ipm.ucdavis.edu/PMG/NE/index.html).



J. K. Clark, UC IPM

*Many flowers in the sunflower family, such as the daisy above and yarrow below, are attractive to beneficials.*



# Store Survey Provides Direction for UC IPM

In February 2010, the UC Statewide IPM Program surveyed garden center and nursery stores for ideas about how we could help retailers promote greener pest control methods and products to customers. We surveyed managers by phone from 71 stores in Sacramento, Contra Costa, and Marin counties. The survey was limited to stores that sold both plants and pesticides and had employees available to answer customer questions about pests. We included independently owned nurseries, national garden-center chains, large hardware chains, and franchise stores.

We wanted to find out how employees currently receive training on pest identification and pesticides and whether there was an interest in University of California-sponsored training programs. We also wanted to learn what resources stores use when answering pest questions, whether retailers were familiar with UC educational materials, and whether there was a need for additional materials.

## Training

We found that only 52% of stores offer formal training on pests or pesticides for employees. Most information is passed down informally. Pesticide product vendors were the most common provider of training, followed by store managers. About 8% of stores had no training at all. There was strong interest in a UC-sponsored education program: 91% of stores indicated they would be willing to send at least one employee to training off-site. Respondents also said they would encourage those who attended to train others back in the store. Alternatives to pesticides, organic pesticides, and pest identification or diagnosis were among the top training topics identified (Fig. 1).

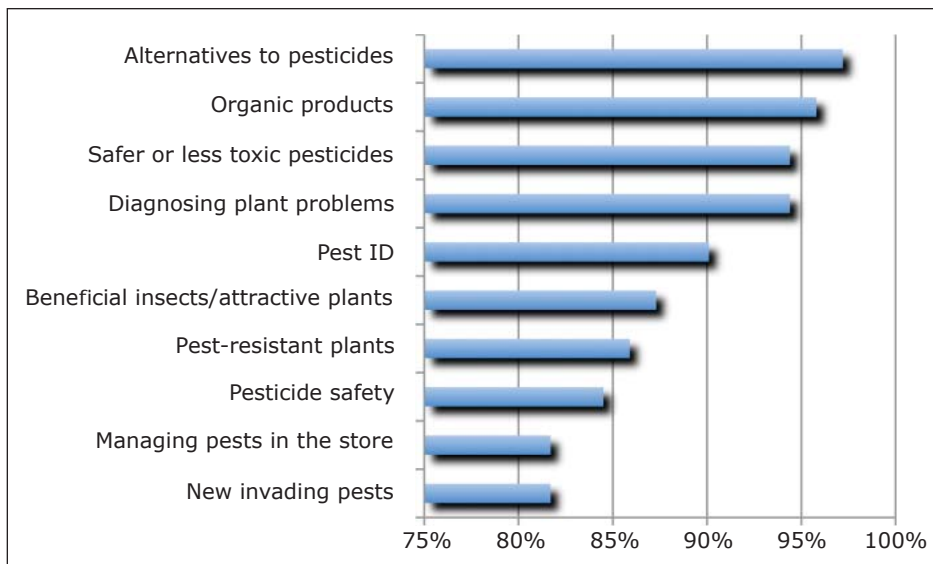


Figure 1. Percent of survey respondents interested in various training topics.

## Resources

When asked what are the most important resources used for answering customer pest questions, about 54% of stores said they use the Ortho Problem Solver. About one-third of stores use the Internet to look up pest problems. Other resources used include University of California books, Sunset's *Western Garden Book*, pesticide company materials, product labels, and local resources such as UC Master Gardeners and agricultural commissioners.

Although many weren't familiar with UC materials, most stores were eager to learn more about UC books, pest identification cards, online training courses, handouts, and the UC IPM touch-screen computer kiosk. We learned there is a need to raise awareness of these resources.

## What's next?

The results of this survey and the enthusiasm of the retailers we spoke to convinced the UC IPM program staff to focus more effort on working with retail nurseries and garden centers. This newsletter and our new Nursery and Garden Center portal at [www.ipm.ucdavis.edu/RETAIL](http://www.ipm.ucdavis.edu/RETAIL) are the first steps in this effort. We are planning training workshops for this fall and winter in Northern California. We will advertise the details as soon as we know them, so stay tuned!

In the meantime, if you work for a retail store and are interested in providing input into our training and outreach programs, we would value your input. Please fill out the short survey at <http://ucanr.org/retailsurvey2011>.

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For more information about managing pests, contact your University of California Cooperative Extension office listed under the county government pages of your phone book, or visit the UC IPM Web site at [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu).

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**WHAT IS IPM?** Integrated Pest Management (IPM) programs focus on long-term prevention of pests or their damage through a combination of techniques including resistant plant varieties, biological control, physical or mechanical control, and modification of gardening and home maintenance practices to reduce conditions favorable for pests. Pesticides are part of IPM programs but are used only when needed. Products are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.