# IPM Advocates for Retail Stores

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**A note about use of the term *less-toxic pesticide***: Throughout this document, we define less-toxic pesticides as those that don't pollute waterways and minimize exposure to people, pets, or wildlife. Occasionally, we substitute the terms *environmentally friendly* and *green*. Whenever possible, IPM Advocates emphasize cultural and mechanical solutions to pest problems instead of chemical ones—for example, promoting the use of traps and tools.

# IPM Advocates for Retail Stores

## INTRODUCTION

Large retail stores and independent garden centers sell an assortment of less-toxic pesticides, traps, and tools. Despite a growing number of consumers interested in purchasing these products, store employees frequently direct consumers toward aerosol sprays, foggers, do-it-yourself perimeter sprays, and combination pesticide–fertilizers for lawns. Consumers purchase these, often using them without reading label directions, and risk exposure to excessive amounts of pesticides. Many of the products contain pyrethroids, which can run off into storm drains and contaminate surface water.

Since 1997, the successful Our Water, Our World program (OWOW)—an outreach arm of the Bay Area Stormwater Management Agencies Association (BASMAA)—has involved over 200 retail nurseries and garden centers in Northern California in programs that educate store employees and consumers about less-toxic management practices. By 2003, OWOW program consultant Annie Joseph was working with stores single-handedly, traveling to different locations daily to conduct employee-training workshops, hold tabling events for customers, and design endcap displays featuring environmentally friendly products. At the same time, more and more stores were requesting OWOW services.

Meanwhile, the UC Integrated Pest Management Program (UC IPM) was developing educational materials and online training for store employees, and lending touch-screen kiosks to cooperating retailers.

In assessing the situation, it was determined that a corps of "IPM Advocates" would help expand these components and respond to stores' needs for assistance with inventory selection, marketing, and employee training. To fill this need, this Pest Management Alliance project combined OWOW's retail expertise with UC IPM's wealth of technical information and resources to complement this collaborative outreach and training program.

The goal of the project was to improve delivery of IPM information at retail stores through education of employees and customers. In addressing this goal, this project helped address two fundamental issues: (1) environmental and health problems resulting from improper or overuse of pesticides sold to consumers and (2) the lack of knowledge by retailers and customers of safe IPM alternatives that reduce or avoid these problems.

Project investigators developed an IPM Advocate profile, wrote a curriculum, identified trainees, conducted the Advocate training and certificate program, and created a mentoring program. All ten IPM Advocates successfully completed the program and spent over a year assisting 30 stores with inventory selection, built over 60 in-store displays, trained 321 employees at 31 workshops, and reached out to over 2,000 customers through 60 tabling events. All ten Advocates continue to work with stores, subsidized by local government pollution prevention programs.

As a result of this project, 23 of 30 (77%) store managers surveyed reported greater sales of less-toxic products from 2011 to 2012, even with a depressed economy. Over 96% of the managers say their employees now have more confidence when identifying pest problems. More than 70% of the stores increased their shelf space for less-toxic products in 2012. The store managers directly attribute these changes to the impact of the IPM Advocate Program.

## SCOPE OF WORK

**OBJECTIVE 1. Develop a profile of what trainees should know to qualify as IPM Advocates (learning objectives)**

**TASK 1.1. Information needed for Advocates. Identify the key information and skills the IPM Advocates need to know when delivering IPM information to retailers. This information will serve as the learning objectives for the IPM Advocate training program. Discuss at initial meeting (Task 10.1).**

The Management Team held its initial meeting on December 16, 2010 to develop learning objectives for the IPM Advocates, how to recruit candidates, and discuss logistical issues.

**TASK 1.2. Survey. Carry out a survey of 30 Bay Area and Sacramento retail nursery and garden center stores about enlisting an IPM Advocate for their store. If Advocate services were available, what should that person know and how could they help? Tabulate and summarize survey responses.**

**PRELIMINARY STORE SURVEY**

From December 17, 2010 to January 30, 2011, Annie Joseph surveyed 30 owners, managers, and product buyers of retail stores in the Bay Area and Sacramento about services an IPM Advocate should offer. She then summarized and discussed the results with the Management Team (**Table 1**).

**Stores surveyed included**: Alden Lane Nursery; Almaden Valley Nursery; Capital Nursery, Sacramento; Emigh Hardware, Carmichael; Green Acres Nursery, Sacramento; Orchard Supply Hardware's Corporate Office; Golden Nursery, San Mateo; Westbrae Nursery, Berkeley; Grand Lake Ace Hardware, Oakland; Yamagami's Nursery, Cupertino; SummerWinds Nursery, Cupertino; Orchard Nursery, Lafayette; Prickett's Nursery, Santa Rosa; Friedman's Home Improvement, Santa Rosa; Fairfax Lumber, Fairfax; Goodman Ace Nursery, Mill Valley; Sloat Garden Center's Corporate Office; Van Winden's Garden Center, Napa; Wegman's Nursery, Redwood City; Regan Nursery, Fremont; Evergreen Nursery, San Leandro; Navlet's Garden Centers, Concord; SummerWinds Nursery's Corporate Office; Palo Alto Ace Hardware, Palo Alto; Bill's Ace Hardware, Martinez; Flowercraft Garden Center, San Francisco; East Bay Nursery, Berkeley; Davis Ace Hardware, Davis; Bayside Gardens, Tiburon.

*Table 1. Store survey: what should IPM Advocates know and how can they help stores?*[*]

| | **If Advocate services were available, what should Advocates know?** |
|---|---|
| **76%** | Know about local insect pests, diseases, beneficial insects, and how to identify these. Advocates should present this information on a seasonal basis or when pests appear. |
| **73%** | Have a background gardening, farming, landscaping, or working in a nursery. |
| **63%** | Have good communication skills so they can relate to employees and customers. |
| **57%** | Have retail experience or know how to handle themselves in a retail setting. |
| **50%** | Understand principles of IPM. |
| | **If Advocate services were available, how could Advocates help your store?** |
| **97%** | Conduct employee training on a yearly basis so employees keep current on invasive pests and plants and less-toxic ways to manage them. Advocates should have excellent public speaking skills so they can easily engage and inspire employees and customers. |
| **73%** | Inform buyers about new products coming to the market. |
| **73%** | Hold outreach events at their stores highlighting IPM practices, including use of beneficial insects, companion planting, insect pest and disease identification for customers. Share resources. |
| **67%** | Provide stores with marketing and display ideas and help build displays. |
| **47%** | Replenish shelf talkers and keep literature racks well stocked. |
| **47%** | Serve as a conduit for additional resources not found in stores. |
| **37%** | Gain familiarity with most of the staff, their positions, which less-toxic products their store carries, and how these can be recommended. |

[*] *Survey of store owners, managers, and product buyers, n = 30.*

**ADDITIONAL MISCELLANEOUS REQUESTS**

Store owners, managers, and product buyers advised that Advocates should not be pushy. Advocates should know about pesticide regulations, which products might be going off the market, and less-toxic replacements. The following include other suggestions: be a good listener and willing to learn from us, be respectful of our knowledge base, know your audience, and don't talk over our heads. Know about the damage that pesticides can do to beneficial insects and wildlife, whether toxic or less toxic. Be able to tell us limitations of certain less-toxic pesticides, be able to think on your feet, know the effects of pesticides on pets and humans, know that changing to more environmentally friendly practices is a process that will take time. Be enthusiastic and passionate about your program—it will draw others to you. Don't be afraid to make suggestions even if you get rejected. Look at this from a business perspective—we're in the business of making money and this needs to be profitable partnership for us.

**TASK 1.3. Learning objectives meeting. Assemble a group of Alliance partners, including representatives of stores, California Association of Nurseries and Garden Centers (CANGC), and product distributors to develop learning objectives. The survey responses, along with discussion at the initial meeting, data from a recent survey of stores by UC IPM, and past experience of Alliance members will form the starting point for this discussion.**

On February 7 and 28, 2011, the Management Team met to develop learning objectives using the profiles proposed by the stores (**Appendix 1**). Attending this meeting were Geoff Brosseau, BASMAA; Annie Joseph, OWOW; Mary Lou Flint and Karey Windbiel-Rojas, UC IPM; Gina Purin, Marin County Stormwater Pollution Prevention Program; Nita Davidson, DPR; Chris Zanobini, CANGC; and Alan Borem, Central Garden & Pet, whose company distributes products to stores.

The learning objectives included detailed sessions on IPM, emphasizing hands-on activities with pests, diagnostics, tools and products, actual pesticide packages, and practice using the UC IPM web retail portal site. Another portion included information about specific categories of pesticides—insecticides, fungicides, herbicides, and rodenticides—and their target pests. Alternatives to pesticides were emphasized: physical or mechanical tools available in stores such as traps, barriers, and mulches. The classes would also cover cultural practices, resistant cultivars, pest-resistant plants, and biological control.

The learning objectives also included a component on communication with a practice presentation and role-playing exercises. The Advocates would need to know how to communicate with different store employees and customers, deal with conflict, and train store employees. Within the store, employees would need to know how to set up displays and understand how stores conduct business. They would also learn how to incorporate seasonal pests, new pests, and new products into a changing marketing program.

**OBJECTIVE 2. Develop a training curriculum and certificate exam.**

**TASK 2.1. Curriculum development. Incorporate the learning objectives into a lesson plan and training curriculum.**

**TASK 2.2. Review of curriculum. Review the draft curriculum, involving team members and Alliance partners before finalization.**

From April through June, 2011, Mary Lou Flint, Karey Windbiel-Rojas, Annie Joseph, Nita Davidson, and Gina Purin developed the curriculum and exams and submitted them to a review by Alliance partners. See Task 4.2 for a summary of the lesson plan and **Appendix 2** for the detailed training curriculum.

**TASK 2.3. Exit exam development.** Develop an exit exam for the course (to earn certification) based on the learning objectives and content.

See **Appendix 3** for the exit exam.

**OBJECTIVE 3. Recruit, interview, and identify up to ten IPM Advocate trainees.**

**TASK 3.1. Carry out a selective recruitment process through active, targeted advertisement to find individuals who are well suited to the IPM Advocate job.**

**TASK 3.2. Review candidate applications and curriculum vitæ.**

We actively recruited IPM Advocate candidates to interview through local retail nurseries and hardware stores, pesticide distributors, CANGC, UC Master Gardeners, the Northern California Spring Trade Show, California Landscape Contractors Association, Bay Friendly Landscapers, and through public agencies that participate in the Our Water, Our World program. Annie Joseph, Nita Davidson, Mary Lou Flint, Karey Windbiel-Rojas, and Gina Purin reviewed 27 applications and chose 20 people to interview in Sacramento, Martinez, and San Rafael. Annie, Karey, and Nita interviewed candidates on March 28–29 at Cal/EPA Headquarters, Sacramento; April 4 and 7 at Contra Costa County Public Works Department, Martinez; and April 11 and 15 at Marin County Civic Center, San Rafael.

See **Appendix 4** for interview questions posed to the applicants.

We chose 11 Advocate trainees for the program, all residing in Northern California: Suzanne Bontempo, San Francisco; Lisa Graves, El Cerrito; Steve Griffin, Brentwood; Teresa Lavell, Fairfield; Daniel Levy, Sebastopol; David Perkins, San Francisco; Anne Rogers, Sausalito; David Rosen, Woodland; Maris Sidenstecker, Seaside; Debi Tidd, Walnut Creek; and Steve Zien, Citrus Heights. David Rosen attended two classes, but had to leave the program for health reasons.

**OBJECTIVE 4. Conduct a training program for up to ten IPM Advocate trainees. Trainees who successfully complete the curriculum and pass an exit exam will receive a joint certificate from UC IPM and BASMAA and will be designated IPM Advocates.**

**TASK 4.1. Conduct at least seven hands-on, interactive classes for candidates.**

**TASK 4.2. Assign homework and provide a library of resources to use during training and in future work as IPM Advocates.**

Ten Advocate trainees participated in a 7-week training course during June and July, 2011. Formal training took place at weekly 3-hour classes in Oakland that featured lectures from Mary Lou Flint and Karey Windbiel-Rojas of University of California, Nita Davidson of DPR, and Annie Joseph of OWOW, and industry experts as well as hands-on activities and student presentations. Participants were expected to spend at least an additional 3 hours each week completing reading assignments and homework. Each participant was given a binder and additional resources that included books, Quick Tip cards, flyers, and web site references.

See **Appendix 2** for the lesson plan and training curriculum, homework assignments, and the library of resources.

The following is a summary of the classes:

**WEEK 1, June 6. Overview of IPM Advocates training program and resources**

Overview of IPM Advocate Program; introduction of trainees; review of class outline, books, and other resources; what is IPM?; introduction to pests, the importance of pest identification, pest detection, prevention, cultural or good gardening practices, biological control, mechanical and physical control, and pesticides; learning to use the UC IPM Retail Portal, UC IPM web site, OWOW web site, and other online resources to get pest information and solve problems.

**WEEK 2, June 13. Introduction to pesticides and pest identification**

What are pesticides—the different types, their environmental and health concerns, secondary pest outbreak, pesticide resistance, how pesticides get into water and how people are exposed, how to read a label including signal words; introduction to less-toxic pesticides; introduction to identification of arthropods and plant diseases

**WEEK 3, June 20. Managing insects, mites, spiders, mollusks, and plant pathogens**

Introduction to insect and disease pests and abiotic disorders of plants; pest identification practicum; indoor and nuisance arthropod pests and their management; management tools for arthropods, mollusks, and plant pathogens

**WEEK 4, June 27. Managing weeds and vertebrate pests**
Types of weeds and management practices and tools; designing weeds out of landscapes with mulches; resources for weed identification; vertebrate pests

**WEEK 5, July 11. Communication: Working with stores, fostering teamwork, avoiding conflict, training store employees**
Developing relationships with different types of stores, effective communication with store employees and team building, helping employees with customer expectations about products, tailoring an educational program to the customers and employees of each store based on the store's product mix, how to identify the less-toxic products each store carries, training methods used at the store level, and dealing with conflict

**WEEK 6, July 18. Displays and Marketing: Understanding the business end of retail stores**
Defining the retail store model and each Advocate's place in that setting; understanding pesticide manufacturers and suppliers, how to display information and products, improving exposure of less-toxic products

**WEEK 7, July 25. Presentations, wrap-up, and mentoring (Figure 1)**
Presentations by Advocates on observations in the field regarding displays; what will happen next with the mentoring component of this program; store assignments, expectations, duration; take-home exam distributed

### TASK 4.3. Give exit exam based on curriculum.

After Week 7, Advocates were given a take-home exam covering class material, resources, and learning objectives (see **Appendix 3**). Questions were short answer or essay style and examinees were expected to use provided resources to research the answers. All ten Advocates passed the exam with grades above 84%. This allowed them to transition to internships, during which they were mentored in stores. Full certification was not awarded until the 11-month mentoring portion was completed and recognized by a graduation on June 1, 2012.

**Figure 1. The ten IPM Advocates after their seventh class, July 2011.**

**OBJECTIVE 5. Develop and implement IPM Advocate coordination and mentoring program by identifying needs of individual stores and matching IPM Advocates to those stores. Mentor IPM Advocates as they work with stores.**

**TASK 5.1. Identify 20–30 stores in Sacramento and the Bay Area interested in working with Advocates.**

Annie met with store managers of 40 stores in the Bay Area and Sacramento to see if they were interested in working with an Advocate and identified 30 stores in 12 counties (**Table 2**).

*Table 2. Stores interested in working with IPM Advocates.*

| | |
|---|---|
| Alameda County | 1. Orchard Supply Hardware, Berkeley; 2. Orchard Supply Hardware, Dublin; 3. Westbrae Nursery, Berkeley |
| Contra Costa County | 4. Annie's Annuals, Richmond; 5. Bill's Ace, Martinez; 6. Navlet's Garden Centers, Concord; 7. Orchard Nursery, Lafayette; 8. Urban Farmer, Richmond |
| Marin County | 9. Orchard Supply Hardware, San Rafael; 10. Pini Hardware, Novato; 11. Sloat Garden Center, Blithedale Ave., Mill Valley |
| Monterey County | 12. Home Depot, Seaside; 13. Orchard Supply Hardware, Sand City |
| Napa County | 14. Van Winden's Garden Center, Napa |
| Sacramento County | 15. Capital Nursery, Citrus Heights; 16. Capital Nursery, Sacramento; 17. Emigh Ace Hardware, Sacramento; 18. Orchard Supply Hardware, Antelope |
| San Francisco County | 19. Cole Hardware, San Francisco; 20. Flowercraft Garden Center, San Francisco |
| San Mateo County | 21. Home Depot, Colma; 22. Orchard Supply Hardware, South San Francisco |
| Santa Clara County | 23. Orchard Supply Hardware, Mountain View; 24. SummerWinds Nursery, Campbell; 25. Yamagami's Nursery, Cupertino |
| Santa Cruz County | 26. Orchard Supply Hardware, Capitola |
| Solano County | 27. Home Depot, Vallejo; 28. Orchard Supply Hardware, Fairfield |
| Sonoma County | 29. Friedman's Home Improvement, Santa Rosa; 30. Prickett's Nursery, Santa Rosa |

**TASK 5.2. Match each IPM Advocate with two to three stores introducing each Advocate to store managers and key employees, and discuss expectations as well as specific concerns.**

*Table 3. Store assignments.*

| |
|---|
| **Anne Rogers**: Sloat Gardens, Mill Valley; Orchard Supply Hardware (OSH), San Rafael; Cole Hardware, San Francisco |
| **Daniel Levy**: Friedman's Home Improvement, Santa Rosa; Prickett's Nursery, Santa Rosa; Pini Hardware, Novato |
| **David Perkins**: SummerWinds Nursery, Campbell; Yamagami's Nursery, Cupertino; OSH, Mountain View |
| **Debi Tidd**: Orchard Nursery, Lafayette; Westbrae Nursery, Berkeley |
| **Lisa Graves**: Urban Farmer Store, Richmond; Annie's Annuals, Richmond; OSH, Berkeley |
| **Maris Sidenstecker**: OSH, Sand City; Home Depot, Seaside; OSH Capitola |
| **Steven Griffin**: Navlet's Garden Centers, Concord; OSH, Dublin; Ace, Martinez |
| **Steve Zien**: Capital Nursery, Citrus Heights and Sacramento; OSH, Antelope; Emigh Hardware, Sacramento |
| **Suzanne Bontempo**: Flowercraft Nursery, San Francisco; Home Depot, Daly City; OSH, South San Francisco |
| **Teresa Lavell**: Home Depot, Vallejo; OSH, Fairfield; Van Winden's Garden Center, Napa |

**ADVOCATES IN STORES: INTRODUCTION TO THE RETAIL LIFE**

In August 2011, Annie Joseph matched Advocates to two or three stores and introduced them to store managers and key employees (**Table 3**). The Advocates discussed goals, expectations, and concerns with store managers, including ideas for endcaps, training employees, displaying materials, incorporating online training from UC IPM, bringing in IPM kiosks, and setting up regional training in Oakland by UC IPM.

Annie Joseph coordinated schedules and staff and Advocates contacted before visits. Annie worked one on one with the Advocates, teaching them how to conduct training sessions and assemble displays.

The following is a log of Advocate activities during the first months of their mentorship. It highlights how Advocates became acquainted with their stores and the progress they made.

## 2011

**August 8**. Anne Rogers met Sloat Garden Center's buyer Scott Peterson for an annual review of products to add and delete in their ten stores. This was an opportunity for Anne to see how a regional chain store operates. She realized that her participation influenced product selection for the coming year; this affected ten stores in three counties and more than 70,000 consumers.

**August 11**. David Perkins met José, the store manager of SummerWinds Nursery, Campbell and key staff. He also met Aaron, the manager and key staff of OSH, Mountain View, and product buyer Amy Root of Yamagami's Nursery, Cupertino (see Figure 6). At Yamagami's, David placed literature racks in more visible areas. He experienced a store that's a member of a small regional chain store, SummerWinds Nursery; a large regional chain, Orchard Supply Hardware; and an independent nursery, Yamagami's Nursery.

**August 15**. Steve Griffin met Navlet's Garden Centers, Concord manager and key staff, distributor representative Wayne Booth, plant buyer George Wharton, and built a small display of mosquito dunks at the register. This was an opportunity for Steve to see how a small regional store chain such as Navlet's works. He met the plant buyer, a pesticide distributor representative, and asked for shelf space, which resulted in the mosquito dunks being placed in a high-traffic area.

**September 2**. Debi Tidd met Orchard Nursery, Lafayette managers and staff, and Westbrae Nursery staff in Berkeley. These are both independent nurseries that Debi will work with over the next year.

**September 8**. Steve Zien met Capital Nursery, Sunrise manager Mike; Capital Nursery, Sacramento manager Seth, and OSH, Antelope manager Ed. Steve's stores combined a small regional chain, Capital Nursery, and a large regional chain, OSH. At OSH, Antelope, Steve met the district manager, store manager, and the pesticide distributor representative from a nursery distributor, the Commerce Corporation. This gave Steve a chance to discuss building endcaps (see Figure 5).

**September 9**. Daniel Levy met David and Denise at Prickett's Nursery, Santa Rosa; Ed Casey at Friedman's Home Improvement, Santa Rosa; and Jim Stark at Pini Hardware, Novato. Daniel discussed training opportunities and the UC IPM Kiosk display opportunities.

**September 12**. Anne Rogers met Bill Selk at OSH, San Rafael and discussed moving the literature rack to an area with more traffic.

**September 13**. Anne Rogers met Molly, the manager at Sloat Garden Center, Blithedale Ave., Mill Valley and discussed training and displays.

**September 14**. Teresa Lavell met Van Winden's Garden Center, Napa and OSH, Fairfield managers and staff. This was an opportunity for Teresa to see how three different business models worked—an independent nursery, Van Winden's; a regional chain, OSH; and a large chain, Home Depot.

**September 15**. Lisa Graves met managers and key staff at OSH, Berkeley and Annie's Annuals, Richmond. (She started working at the Urban Farmer store in October.) Lisa worked with a small independent store, Annie's Annuals; a small regional chain, Urban Farmer; and a large regional chain, OSH.

**September 16**. Suzanne Bontempo met department manager Wendy and assistant manager Mo at OSH, South San Francisco. Later that day she met Tito at Home Depot, Colma, and Hazel, manager at Flowercraft Garden Center in San Francisco. Suzanne worked with the small independent Flowercraft, large regional chain OSH, and large chain, Home Depot.

**September 28**. Daniel attached shelf talker labels (**Figure 2**) at Friedman's Home Improvement, Santa Rosa with Annie Joseph.

**September 29**. Suzanne accompanied Annie to the San Francisco Public Utilities Commission office to get supplies and meet Meg Gale. She also met Tim Swillinger from San Mateo County Environmental Health when retrieving supplies for OSH and Home Depot.

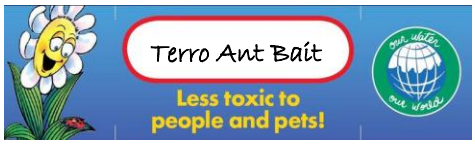


**Figure 2. Shelf talker label.**

**TASK 5.3. Encourage regular communication between IPM Advocate and consultant [Annie Joseph] to discuss the Advocates' progress with each store and address issues that come up.**

**TASK 5.4. Stay in contact with store managers to get feedback about the program.**

**ADVOCATES IN STORES: OFFERING TRAINING WORKSHOPS, BUILDING DISPLAYS, AND GETTING FEEDBACK**

Annie Joseph helped conduct training workshops and create displays with Advocates.

## 2011

**October 7**. Annie introduced Steve Griffin to Judy Macaluso at OSH, Dublin. They discussed outreach, training, and display ideas. Annie showed Steve how OSH shelf talkers are attached to shelves. They also discussed building an endcap for dormant sprays and how Steve could work with Judy, the store manager, to place orders for the products. Steve met Ace, Martinez manager Tom and they discussed an endcap display idea for fall and winter pests. Steve met Lisa, who's in charge of the endcap areas. They also refreshed shelf talkers and fact sheets.

**October 12**. Annie and Maris met the garden manager of Home Depot, secured the literature rack, displayed shelf talkers, and discussed training for October 26. They also met with the OSH, Sand City manager and attached shelf talkers and filled literature racks. They discussed outreach, potential training dates, and got feedback on Maris's progress.

**October 18**. Annie talked to the manager at Urban Farmer and worked out a date for Lisa to meet with staff.

**October 20**. Steve Zien and Annie met with Randy from Emigh Hardware. They discussed a training date for January, outreach for customers, and display ideas.

**October 25**. Lisa Graves met with Urban Farmer manager Kim and assistant manager Tom in Richmond and discussed display ideas and future training dates, probably in spring.

**October 25.** Annie and Geoff Brosseau met with OSH's Corporate Office in San José to discuss the IPM Advocate Program in OSH stores.

**November 1**. Anne and Annie met with Rick Cunningham at Cole Hardware in San Francisco to introduce Anne and schedule training and outreach. Later that day, Annie, Teresa Lavell, and Jennifer Kaiser met at Home Depot, Vallejo to discuss future partnership, put up shelf talkers, and meet staff.

## 2012

**January 3–6**. Annie worked with Daniel Levy and Gina Purin on a rat and mouse flier for stores in Marin and Sonoma counties.

**January 6.** Annie visited stores in Contra Costa and Alameda counties: Westbrae Nursery; Navlet's Garden Centers, Concord; Orchard Nursery, Lafayette; and Ace Hardware, Martinez to get feedback on Steve Griffin and Debi Tidd.

**January 9.** Annie visited Steve Zien's stores in Sacramento County to get feedback on his work.

**January 10.** Annie visited Anne Rogers's stores in San Francisco and San Rafael to get feedback.

**January 13.** Annie visited Prickett's Nursery and Friedman's in Santa Rosa to get feedback on Advocate Daniel Levy.

**Figure 3. Lisa greeting customers at OSH, Berkeley.**

**January 18.** Annie met Teresa at Home Depot, Vallejo. Together, they secured the literature rack and refreshed the shelf talkers. They then met the district manager, spoke with staff about the program, and discussed future training and outreach.

**January 19.** Annie and Daniel Levy conducted an outreach event at Friedman's, Santa Rosa.

**January 24.** Annie visited OSH stores in Berkeley, Dublin, and Mountain View; Yamagami's Nursery, Cupertino; and SummerWinds Nursery, Campbell to get feedback on Advocates Steve Griffin, Lisa Graves, and David Perkins.

**February 2.** Annie joined a Home Depot event with Teresa and Kevin Cullen from the Fairfield–Suisun Sewer District. Annie met with Bay Area stores to promote Home Depot's environmentally friendly products.

**February 12.** Annie helped David Perkins with tabling at SummerWinds Nursery, Campbell.

**February 16.** Annie staffed a booth at the Nor Cal Trade Show with Teresa Lavell, Steve Zien, and Anne Rogers. They were joined by Mae from the San Mateo County Department of Environmental Health. The Advocates met store employees, product distributors, and pesticide manufacturers.

**February 17.** Teresa Lavell and Annie secured a new area for literature rack placement at Home Depot, Vallejo. The store was reset, so shelf talkers needed updating.

**February 21.** Annie, Anne Rogers, and 100 employees participated in a special store event at Sloat's, Kentfield.

**March 11.** Annie attended a no-tax event at OSH, Berkeley with Lisa Graves (**Figure 3**).

**March 24.** Annie tabled with Teresa Lavell at Home Depot, Vallejo.

**April 2**. Annie visited Home Depot in Vallejo and with Teresa Lavell arranged for staff training on April 19.

**April 4.** Annie visited Friedman's and Prickett's Nursery in Santa Rosa and Pini Hardware in Novato to get feedback on the work of Daniel Levy.

**April 5.** Annie visited Navlet's Garden Centers, Concord; Ace, Martinez; and OSH, Dublin to get feedback on Steve Griffin's work.

**April 9.** Annie visited Yamagami's Nursery, Cupertino; OSH, Mountain View; and SummerWinds Nursery, Campbell to gather information on David Perkins's progress.

**April 11.** Annie visited Annie's Annuals and the Urban Farmer Store in Richmond and OSH, Berkeley to get feedback on Lisa Graves.

**April 12.** Annie met with Scott Peterson, a buyer from Sloat Garden Center, Mill Valley to get feedback on Anne Rogers and to discuss endcap ideas and possible store promotions.

**April 14.** Annie visited OSH, Fairfield and Van Winden's Garden Center, Napa to get feedback on the work of Teresa Lavell.

**April 16.** Annie visited Cole Hardware and Flowercraft Garden Center in San Francisco and Home Depot in Colma to get feedback the work of Suzanne Bontempo and Anne Rogers.

**Figure 4. Debi (left) stocking the literature rack with Scott and Madeline at Orchard Nursery, Lafayette.**

**April 26.** Annie visited Orchard Nursery, Lafayette and Westbrae Nursery to get feedback on Debi Tidd's work (**Figure 4**).

**May 7**. Annie met with the manager at OSH, Fairfield to discuss movement of less-toxic products this season and to get feedback on Teresa Lavell.

**May 9.** Annie visited OSH, Antelope and Emigh Hardware, Sacramento to get feedback from store managers and staff on Steve Zien.

**May 19.** Annie visited Capital Nursery in Sacramento and Citrus Heights to get feedback on Steve Zien.

**May 30.** Annie visited Sloat Garden Center, Mill Valley to get feedback on Anne Rogers and see how the less-toxic weed endcap was going.

**June 11.** Annie worked with Steve Griffin to set up a new Home Depot store in Roseville.

**OBJECTIVE 6. IPM Advocates work with individual stores to help stores promote IPM practices and less-toxic products to their customers.**

**TASK 6.1. Advocates develop a relationship with employees and management of each store (20–30 stores), possibly advising on inventory selection, in-store displays, and marketing approaches that can inform customers about less-toxic products.**

**Figure 5. Steve Zien and Debbie, a product distributor from the Commerce Corporation, at OSH, Antelope presenting their new endcap display.**

The IPM Advocates developed relationships with employees and managers of each store. Annie gave them procedural guides and checklists explaining how to call on the stores, whether independent nursery, hardware store, Orchard Supply Hardware, or Home Depot. Advocates also interacted with sales representatives and pesticide manufacturers **(Figure 5)**. These relationships grew as they worked together to make sure products were ordered for the displays they made.

Advocates suggested to store managers and buyers which less-toxic products to carry. They also advised on marketing approaches that informed customers about less-toxic products. Advocates frequently communicated with Annie Joseph during the year-long mentoring period. They suggested ideas and built over 60 displays in 93% of the stores. Highlights of the promotions from September 2011 through April 2012 include:

- **Van Winden's Garden Center**, Napa and **Sloat Garden Center**, Mill Valley. Created signage to promote the use of plants that attract beneficial insects.
- **Sloat Garden Center**, Mill Valley and **Orchard Nursery**, Lafayette. Focused on less-toxic options for weed management and more than doubled the sales of those products over the previous year.
- **Home Depot**, Seaside. Maris Sidenstecker created a display for less-toxic products. (This marks the first time Home Depot stores have promoted less-toxic products in off-the-shelf displays.)
- **Home Depot**, Vallejo. Added floor displays for less-toxic products in cooperation with Scott's Miracle-Gro merchandisers.

**Figure 6. David with buyer Amy at Yamagami's Nursery, Cupertino showing off their new display.**

**TASK 6.2. Advocates carry out in-store training workshops for 100–150 store employees. The workshops will provide information about products sold, pesticide safety and environmental protection, common pest problems and IPM solutions, pest identification, and other topics.**

Advocates held 31 training workshops in 30 stores, training a total of 321 store employees (**Table 4**). This more than doubled the projected goal of 150 store employees projected for training. Workshops were held in training rooms before or after hours so customers did not disturb participants. Annie Joseph attended as support for all but four of the workshops. Some of the workshops were attended by all store employees, including cashiers. This approach worked well, creating a sense of camaraderie. Employees eagerly attended the workshops, were actively engaged, and some came in to attend on their day off.

*Table 4. In-store training workshops.*

| Store and location | Advocate Trainer | Date | # Trained |
|---|---|---|---|
| Annie's Annuals, Richmond | Lisa Graves | 11/17/11 | 11 |
| Bill's Ace, Martinez | Steve Griffin | 3/16/12 | 10 |
| Capital Nursery, Citrus Heights | Steve Zien | 10/15/11 | 11 |
| Capital Nursery, Sacramento | Steve Zien | 10/22/11 | 6 |
| Cole Hardware, Cole Street, San Francisco | Anne Rogers | 11/15/11 | 3 |
| Emigh Ace Hardware, Sacramento | Steve Zien | 1/26/12 | 6 |
| Flowercraft Garden Center, San Francisco | Suzanne Bontempo | 1/7/12 | 4 |
| Friedman's Home Improvement, Santa Rosa | Daniel Levy | 12/7/11 | 7 |
| Home Depot, Colma | Suzanne Bontempo | 12/22/11 | 15 |
| Home Depot, Seaside | Maris Sidenstecker | 10/26/11 | 20 |
| Home Depot, Vallejo | Teresa Lavell | 4/19/12 | 11 |
| Navlet's Garden Centers, Concord | Steve Griffin | 9/28/11 | 9 |
| Orchard Nursery, Lafayette | Debi Tidd | 3/13/12 | 10 |
| Orchard Supply Hardware, Antelope | Steve Zien | 4/16/12 | 6 |
| Orchard Supply Hardware, Berkeley | Lisa Graves | 12/14/11 | 13 |
| Orchard Supply Hardware, Capitola | Maris Sidenstecker | 5/31/12 | 1 |
| Orchard Supply Hardware, Dublin | Debi Tidd | 2/12/12 | 38 |
| Orchard Supply Hardware, Fairfield | Teresa Lavell | 5/17/12 | 11 |
| Orchard Supply Hardware, Mountain View | David Perkins | 11/17/11 | 4 |
| Orchard Supply Hardware, Sand City | Maris Sidenstecker | 5/17/12 | 12 |
| Orchard Supply Hardware, San Rafael | Anne Rogers | 10/14/11 | 11 |
| Orchard Supply Hardware, South San Francisco | Suzanne Bontempo | 12/09/11 | 8 |
| Pini Hardware, Novato | Daniel Levy | 1/13/12 | 18 |
| Prickett's Nursery, Santa Rosa | Daniel Levy | 11/16/11 | 10 |
| Sloat Garden Center, Blithedale Ave., Mill Valley | Anne Rogers | 10/13/11 | 15 |
| SummerWinds Nursery, Campbell | David Perkins | 9/19/11 | 9 |
| Urban Farmer Store, Richmond | Lisa Graves | 12/20/11 | 5 |
| Van Winden's Garden Center, Napa | Teresa Lavell | 10/10/11 | 16 |
| Westbrae Nursery Berkeley | Debi Tidd | 11/18/11 | 4 |
| Yamagami's Nursery, Cupertino | David Perkins | 1/24/12 | 17 |
| | | *Total store employees trained* | 321 |

**TASK 6.3. Advocates consult on pest management issues specific to each store, and carry out informal employee training on selected topics as needed.**

Advocates used the OWOW "Ask the Expert Feature" and the Collaborative Tools web site set up by UC IPM (see Task 7.1 below) to inquire about unfamiliar plant diseases and pests. Advocates trained the store employees how to use the UC IPM web site to diagnose plant diseases and pests, and also consulted on selected topics as needed.

**TASK 6.4. Promote online pesticide safety and IPM training program.**

Advocates encouraged the stores to use the UC IPM web site and training modules on pesticide safety and IPM for retailers. UC IPM "Meet the Beneficials" poster was handed out to each store and displayed in a prominent area. UC IPM also donated a set of the UC IPM Landscape Pest ID cards and a pest wheel for each store.

**OBJECTIVE 7. Create a web page with links to online information and materials that will provide one-stop shopping for store employees, store managers, and IPM Advocates interested in keeping up with the latest IPM and product-related developments.**

**TASK 7.1. Set up a web page with links to information identified by Alliance Partners. Target audiences: retail nurseries, garden centers and IPM Advocates.**

UC IPM created two web sites and a web-based communication tool for IPM Advocates and expects to maintain all three sites into the indefinite future to support the IPM Advocates and retail nursery and garden center industry.

The IPM Advocates web site, www.ipmadvocates.com, is the official site for the project. This site was used to recruit IPM Advocate applicants and promote their activities to the public. It includes a summary of the program, contact information for each of the IPM Advocates, and links to resources of interest to retailers or IPM Advocates. Each IPM Advocate was also given an "@ipmadvocate.com" e-mail address.

The IPM Advocates Collaborative Tools site is a web-based communication tool (maintained by the University of California ANR Communications Services unit) that allows the IPM Advocates to share their experiences and ask questions. This is a closed system that includes not only the Advocates and the team managers but also several University of California pest experts who are able to answer technical questions. For instance, IPM Advocates may send in a photo of a damaged plant or pest and request help with identification or advice on appropriate management. Collaborative conversations on over 100 different topics have been initiated since the site was opened in late 2011.

**TASK 7.2. UC IPM update this new web page with educational materials related to pest problems, invasive pests and new products identified by Alliance Partners, IPM Advocates, or stores as being of special interest to retailers.**

**TASK 7.3. UC IPM modify existing information on its web site for better accessibility and usefulness for the above audiences.**

The Retail Nursery & Garden Center Portal on the UC IPM web page, www.ipm.ucdavis.edu/RETAIL, provides in-depth information about pests and pest management tools tailored to help retail employees quickly find the information they need to answer customer questions. The site includes links to a quarterly newsletter for retail nurseries and garden centers, online training courses, upcoming in-person training workshops, as well as information on pesticides and their alternatives.

**OBJECTIVE 8. Evaluate the program through feedback from stores, agency partners, IPM Advocates, and results of training.**

### TASK 8.1. IPM Advocates give pre- and post-surveys

The Advocates assessed the value of the in-store training workshops for store employees by having those attending take pre- and post-surveys. Annie compiled the results for all 30 stores (**Table 5**).

*Table 5. Store employee responses before and after training.*

| Question (correct answer) | % Correct | |
|---|---|---|
| | Before Training | After Training |
| When water enters a sewer, where does it go? (To a treatment facility where it's cleaned of contaminants.) | 53% | 71% |
| When water enters a storm drain, where does it go? (Directly to the nearest body of water without treatment.) | 82% | 100% |
| What do you do when you have left over pesticide after you finish spraying? *(Follow the disposal directions on the label.)* | 50% | 100% |
| Where can you dispose of left over pesticides? (Take unused pesticides to a household-hazardous waste facility.) | 58% | 100% |

After training store employees, Advocates conducted surveys of the training itself. Most employees found the training workshops enlightening and expected the information to help them do their jobs competently (see **Appendix 5**. Store Employee Evaluation of the Training Workshops).

### TASK 8.2. IPM Advocates work with partner store to get data on sales

Annie worked with each partner store to get data on changes in the types of products available and changes in sales of less-toxic products. This required store visits, phone calls, and e-mail communication with store managers and department managers. Obtaining sales data is an involved process as stores have to get information from different vendors.

As a result of this project, 16 of the 30 (53%) stores reported an increase in sales of less-toxic products from 2011 to 2012, even with a depressed economy. Not all 30 stores had the capability to track sales, so 53% may be an underestimate as confirmed by the less formal survey of store managers in Task 8.3, in which 77% attributed increased sales of less-toxic products to the presence of IPM Advocates in their stores.

### TASK 8.3. Each store [manager] participates in a follow-up survey to assess how the IPM Advocate program helped them better provide IPM information to their customers.

The Management Team created a survey to assess effectiveness of the IPM Advocates. Annie interviewed store managers in late 2012 in each of the 30 stores where IPM Advocates worked during their mentoring program. Results of the surveys are summarized below in **Table 6**. Some of the important findings managers attribute to the IPM Advocate Program included:

- Over 96% of stores reported increased employee confidence in identifying pest problems
- Over 76% of stores increased sales of green (less-toxic) products
- Over 70% of stores increased shelf space for green products
- Over 76% used the University of California web site for identifying pests or solving problems
- Over 66% said they would be increasing shelf space for green products in 2013.

*Table 6. Store manager responses about effectiveness of the IPM Advocate program.*

| 1 | The following questions are about elements of the IPM Advocate Program and how these have affected your store. (n = 30 store managers) | Agree (%) | Somewhat agree (%) | Not sure (%) | Somewhat disagree | Disagree (%) | Does not apply (%) |
|---|---|---|---|---|---|---|---|
| a | Training employees helps them more confidently identify pests or diagnose plant diseases. | 97% | 3% | 0% | 0% | 0% | 0% |
| b | Training employees helps them more confidently recommend products. | 93% | 7% | 0% | 0% | 0% | 0% |
| c | Training employees has helped improve their morale. | 77% | 20% | 3% | 0% | 0% | 0% |
| d | Sales of green products have increased since introduction of the IPM Advocate Program. | 77% | 13% | 10% | 0% | 0% | 0% |
| e | Attaching shelf talkers helps increase sales of green products | 73% | 13% | 10% | 0% | 3% | 0% |
| f | As a result of this program, shelf or display space for green products has increased. | 70% | 23% | 3% | 0% | 0% | 3% |
| g | Customers have given positive feedback. | 87% | 10% | 3% | 0% | 0% | 0% |

| 2 | Which of the following resources have you or your employees used in response to Advocate presence in stores? | % total stores (n = 30) |
|---|---|---|
| a | UC IPM web site for identifying pests or finding management information | 77% |
| b | Online retail training courses from the UC IPM web site | 23% |
| c | *Meet the Beneficials* poster (posted in the store) | 80% |
| d | Subscribed to UC IPM *Retail Nursery & Garden Center News* | 33% |
| **3** | **Has the IPM Advocate Program influenced the type of pest management products your store will sell next year?** | **% total stores (n = 30)** |
| a | Will increase shelf or display space for green products | 67% |
| b | Will keep shelf or display space for green products the same | 7% |
| c | Will reduce shelf or display space for green products | 0% |
| d | Haven't decided yet | 3% |
| e | I don't make decisions on shelf or display space allocation. | 23% |

**OBJECTIVE 9. Identify a way to maintain the IPM Advocates after the end of the grant and establish a continuing education requirement.**

### TASK 9.1. Identify a way to maintain IPM Advocates after the grant.

During the mentoring program, Annie introduced each Advocate to key representatives of sponsoring agencies in the area where they worked. This would enable Advocates to contract with local pollution-prevention agencies, have public speaking opportunities, and attend special events. Annie also promoted the Advocates at monthly BASMAA meetings by giving updates on their activities. With continued support by local agencies, the Advocates would still work in stores when the mentoring program ended in October 2012.

Annie helped the Advocates prepare to work in the field on their own, teaching them how to invoice, compile a scope of work, and acquire insurance.

This Alliance Grant showed how valuable the Advocates are to stores by improving employee morale and sales of less-toxic products. Based in part on this reputation, the U.S. EPA provided funding in October 2012 to support the work of eight Advocates in 14 additional stores through its San Francisco Bay Water Quality Improvement Fund. The project, Greener Pesticides for Cleaner Waterways, will also provide advertising, training for retail store employees, events, and a mobile phone app to help connect customers to less-toxic products for pest problems.

**WHERE ARE THEY NOW?**

As of April 2013, all ten Advocates were gainfully employed.

1. **Suzanne Bontempo** represents OWOW in stores and works on separate outreach activities with the San Mateo County Department of Environmental Health. She's part of U.S. EPA's Greener Pesticides Grant and contracts with the San Francisco Public Utilities Commission partnership with OWOW.
2. **Lisa Graves** subcontracts with Annie in OWOW stores for the Alameda Countywide Clean Water Program. She's also part of the U.S. EPA Greener Pesticides Grant and Annie is working with Debi Tidd to find opportunities in west Contra Costa County stores.
3. **Steve Griffin** works with the City of Roseville, the County of Alameda Clean Water Program, and the Santa Clara Valley Urban Runoff Pollution Prevention Program. He's also part of the U.S. EPA Greener Pesticides Grant and subcontracts with Debi Tidd for the Contra Costa Clean Water Program.
4. **Teresa Lavell** subcontracts with Annie in the Alameda Countywide Clean Water Program, Santa Clara Valley Urban Runoff Pollution Prevention Program, Napa County Flood Control and Water Conservation District, and Fairfield Suisun Sewer District. She's also a part of the U.S. EPA Greener Pesticides Grant.
5. **Daniel Levy** works with Annie in Santa Rosa and with the U.S. EPA Greener Pesticides Grant.
6. **David Perkins** is part of the U.S. EPA Greener Pesticides Grant.
7. **Anne Rogers** is part of the U.S. EPA Greener Pesticides Grant and works in two stores.
8. **Maris Sidenstecker** contracts with the Monterey Peninsula Stormwater Pollution Prevention Program.
9. **Debi Tidd** subcontracts with Annie on OWOW activities in the Santa Clara Valley Urban Runoff Pollution Prevention Program and Alameda Countywide Clean Water Program. She's also part of the U.S. EPA Greener Pesticides Grant and contracts with the Contra Costa Countywide Clean Water Program.
10. **Steve Zien** subcontracts with Annie in stores associated with the Sacramento County Storm Water Program.

### TASK 9.2. Aligning the Advocates with a professional organization.

At the beginning of the project, BASMAA approached the CANGC about being an advisor to the project and CANGC accepted that role. CANGC was involved in helping with Task 1.3, establishing learning objectives, and also mentioned the project in its February 2011 e-Newsletter for members.

Now that the grant-funded portion of the project is ending, CANGC has agreed to include an article about the project and its results in an e-Newsletter in 2013. BASMAA is also approaching the Master Nursery Garden Centers about working with them to promote less-toxic products. Master Nursery Garden Centers is a national member-owned buying cooperative for independent garden centers with more than 700 members. They run discount programs, including a graduated green goods discount that allows members to earn an 18% discount from green goods growers.

#### TASK 9.3. Offer continuing education for IPM Advocates.

We held our first continuing education class for IPM Advocates on October 22, 2012 at the Benicia Community Center. Annie Joseph hosted the class, which focused on new products and changes in the marketplace. Mary Lou Flint, Andrew Sutherland, Steven Griffin, Steve Zien, Suzanne Bontempo, Lisa Graves, Teresa Lavell, and Debi Tidd attended.

Annie reviewed changes coming to the marketplace in 2013. For example, Home Depot planned to abandon support of the Elementals line of Scott's Miracle-Gro. The Bayer Company would offer its Natria line of pesticides in Home Depot. Orchard Supply Hardware would support Dr. Earth organic fertilizers and pesticides. OSH would reset its fertilizer aisle to showcase organic fertilizers prominently in front of the main pesticide aisle. Corry's planned to discontinue its snail and slug bait with metaldehyde and would package a new active ingredient, FeEDTA, an iron salt that is less toxic than metaldehyde.

On January 28, 2013, UC IPM conducted a continuing education class for the IPM Advocates on seasonal pests. IPM Advocates received information binders and PowerPoint presentations to use in their educational programs for retail stores. UC IPM will continue to conduct continuing education classes to keep Advocates up to date.

UC IPM will continue to maintain its IPM Advocates Collaborative Tools site to allow private and archived communication among Advocates, project team managers, and select affiliates, including UC pest experts to answer specific pest and plant problems, discuss issues common to the IPM Advocates, enhance communication, and send announcements of upcoming events or new publications of interest.

UC IPM created and printed brochures and posters "The IPM Advocates' Seasonal Guide to Home & Garden Pests in California" for the Advocates to use to publicize their programs and educate store employees. UC IPM also provides Advocates with copies of educational materials to distribute to their stores including copies of the quarterly retail *IPM News* newsletter, posters, Quick Tip collections on rings, bookmarks, and pest wheels.

#### OBJECTIVE 10. Grant administration meetings and reports

We held our initial meeting on December 16, 2010 in Davis at the UC IPM offices to develop learning objectives for the IPM Advocates. Annie met with Nita at DPR twice to discuss updates and transfer photos on November 3, 2011 and May 29, 2012. The Management Team communicated frequently through conference calls and in-person meetings.

## CONCLUSIONS

Ten IPM Advocates volunteered more than 30 hours every month for a year at stores while holding down full-time jobs. Many traveled over 100 miles each week to attend the seven 3-hour classes that covered a wealth of material from pest management, water pollution prevention, store-relationship building, and marketing ideas for less-toxic products.

Over the course of the year they met with store owners, managers, pesticide buyers, and manufacturers. They placed displays of less-toxic products in prominent areas of the stores and made sure the products were properly tagged with shelf talkers so customers and employees could easily find them.

- Advocates trained a total of 321 store employees in 31 training workshops. This more than doubled the projected goal of 150 store employees we originally proposed to train.
- Each Advocate participated in two tabling events for all three of their stores, totaling 60 outreach events. During these tabling events they contacted over 2,000 customers.
- The Advocates spent time researching pest problems for their stores and made sure the employees knew how to find the information on their own using the OWOW Ask the Expert feature and the UC IPM web sites.

At the end of the year, many store managers recognized that the Advocates had improved sales and asked if Advocates could call on their stores all the time. Representatives from the pesticide industry mentioned the displays of less-toxic products they built with the expertise of the Advocates. Everyone who worked with the Advocates was excited about the support they received from the "experts." The bonds forged were lasting, and store managers and employees are still fondly recalling their year with the Advocates.

## ACKNOWLEDGMENTS

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- **Geoff Brosseau**, Executive Director of BASMAA, who forged the path to make sure that the IPM Advocates Alliance Grant was supported by the public agencies from its infancy to fruition.
- **Gina Purin**, Education and Outreach Director for MCSTOPP. Her input for our classroom training and her steady support to keep us focused on the less-toxic message was felt throughout the project.
- **Mary Louise Flint**, Associate Director of Urban and Community IPM and Extension Entomologist, UC Davis, for bringing her ideas as well as UC IPM's resources, both of which sustained the project throughout its duration. **Karey Windbiel-Rojas**, Urban IPM Educator at UC IPM, for the knowledge and energy she brought to the classroom. Mary Lou and Karey provided the Advocates with tools for plant pest and disease diagnosis and donated UC IPM "Meet the Beneficials" posters, which were displayed in each store, in addition to pest wheels, UC IPM Landscape Pest ID cards, and several other publications. Their support also provided a forum for the Advocates and team members to discuss plant diseases and pests on Collaborative Tools.
- Our grant manager, **Nita Davidson** of DPR, whose vision championed the unique IPM Advocates Alliance. Her dedication motivated her to organize a session focused on this project at the Seventh International IPM Symposium in Memphis, Tennessee, and to participate in several outreach events, store training workshops, and trade shows on her own time.
- **Dan Joseph** and **Jenna Tidd**, for their support.
- And finally, our enthusiastic and committed IPM Advocates—**Suzanne Bontempo**, **Lisa Graves**, **Steve Griffin**, **Teresa Lavell**, **Daniel Levy**, **David Perkins**, **Anne Rogers**, **Maris Sidenstecker**, **Debi Tidd**, and **Steve Zien**.

**Figure 7. Suzanne and employees at the end of a training class at Home Depot, Colma.**

**Figure 8. Securing the literature rack at Home Depot, Seaside from rogue forklifts.**

# APPENDICES

## Appendix 1. Learning Objectives for the IPM Advocate Curriculum

The seven classes for IPM Advocates were based on these learning objectives:

**1. Technical IPM**

These sessions will include hands-on activities with pests, diagnostics, tools and products, actual pesticide packages, and practice using the UC IPM web retail portal site:

a. Pest and problem identification—How to identify and diagnose common home (including indoor pests) and garden pest problems including arthropods, weeds, plant disease, vertebrate pests, nematodes and abiotic disorders
b. What is IPM?
   i. The importance of preventing pest problems
   ii. Integrating multiple management tools
c. General pesticide information including hazards, safety, and labeling
   i. How to read a label including signal words
   ii. Pesticide regulations as they related to consumer products in California
   iii. Environmental and human health concerns,
   iv. How pesticides get into the environment
   v. How people get exposed to pesticides
   vi. Pesticide mitigation measures—how applications can be made safer,
   vii. Protective equipment and clothing—what is sold in store. When to use it
   viii. Application equipment—what is sold in stores. Basics of mixing and calibration
   ix. Safe storage and disposal practices
d. Information about *specific* insecticides, fungicides, herbicides, and rodenticides on the market
   i. Which pests they manage
   ii. How and when they must be applied
   iii. How and why they work
   iv. What are the advantages and disadvantages of different formulations and packaging (e.g., foggers, aerosols, granules, ready-to-use)
   v. Impacts on people, beneficials, and wildlife
   vi. Least-toxic pesticides—what they are, specific active ingredients, what they're effective against, and how to use them
e. Alternatives to pesticides
   i. Physical or mechanical tools—e.g., traps, barriers, mulches, hoses
   ii. Cultural practices including good plant care, how irrigation and fertilization practices impact pest problems and details on how products sold in stores can enhance good plant care and protect plants from pests
   iii. Resistant cultivars and pest-resistant plants—what these are, how and when to advise customers to purchase these. Includes UCD Arboretum All-Stars.
   iv. Biological control—naturally occurring and commercially available species. How to recognize them and encourage their activities.
f. How to research information related to pests and managing pests with least-toxic IPM practices. Gain familiarity with resources.

**2. Communication**

This session will include a practice presentation and role-playing exercises

a. Developing relationships with stores
b. Effectively communicating with different store employees
c. How to ask questions of customers to effectively solve their problems
d. Addressing customer expectations about products
e. How to match your education program to a store's products and customer base. How to know the products your store carries
f. Effective teaching methods

   g. Dealing with conflict
   h. Problem solving
   i. Training at the store level
2. Displays and Marketing—includes going to stores and observing displays
   a. Understand the business end of the retail stores
   b. Relationships with suppliers—how to best work with vendors
   c. How to display materials and information in the store to promote safer products
   d. How to incorporate seasonal pests, new pests, and new products into a changing market

# Appendix 2. Lesson Plan and Training Curriculum

## WEEK/DAY 1—June 6, 2011

**OVERVIEW OF IPM ADVOCATES TRAINING PROGRAM AND RESOURCES**

**1. A. Introduction and Overview of the Program**

- Overview of IPM Advocate Program—15 minutes (Geoff Brosseau, BASMAA and introduction of trainers (MLF, KWR, AJ, NAD))
- Introductions—30 minutes (trainees)
- Class outline, what to expect, introduction to books and other resources—15 minutes (MLF)

**1. B. What is IPM?**

Introduction to pests, the importance of pest ID, pest detection, prevention, cultural or good gardening practices, biological control, mechanical and physical control, and pesticides. Covers indoor and outdoor pests. 45 minutes (PowerPoint presentation—MLF)

**Break—10 minutes**

**1. C. Hands-on Activity**

Learning to use the UC IPM Retail Portal, UC IPM web site, and OWOW web pages, and other online resources to get pest information and solve problems. Trainees use their own laptop and Wi-Fi to follow along and look up information—1 Hour (KWR)

**Homework**

- Take the two online courses, *Introduction to Pesticides* and *Moving Beyond Pesticides* on the UC IPM web site, and get certificates
- Read pages 3-48 in *Pests of Landscape Trees and Shrubs* and review pages 3–35 in *Pests of the Garden and Small Farm*. Answer multiple-choice questions (handout given in class).
- Read Chapters 4 and 6 from *Lawn and Residential Landscape Pest Control* (copies in binder). Answer review questions at end of the chapter. (Optional: View online training course for Maintenance Gardeners chapters 4, 5, 6)

**Information included in binder for Week 1**

1. Name and contact information for IPM Advocates trainees and instructors
2. Information about the partners: UC IPM annual report; UC IPM Retail newsletter; OWOW brochure/info; Trainer bios; partner program info
3. Information about IPM Advocate Program
4. Class outline: Training schedule for 7 training sessions
5. List of books and other resources each trainee is being given
6. PowerPoint for "What is IPM?" presentation
7. Web demonstration handouts:
   a. Instructions for using UC IPM web site
   b. Web exercises
   c. Illustrated UC IPM web handout
8. Homework assignment and instructions.

9. Reading assignment questions.
10. Copies of Chapters 4 ("Pesticides and Their Hazards") and 6 ("Selection and Use of Pesticide Application Equipment") from *Lawn and Residential Landscape Pest Control*. (for homework reading)

**Resources provided to each IPM Advocate on first day**

1. A binder for training materials (will be added to each week)—bring to each class
2. UC IPM Quick Tip collection on a key ring
3. *Pests of Garden and Small Farm*, UC ANR publication 3332
4. *Pests of Landscape Trees and Shrubs*, UCANR Publication 3359
5. *Landscape Pest Identification Cards*, UC ANR publication 3513
6. *Natural Enemies Handbook*, UC ANR publication 3386
7. *Wildlife Pest Control Around Gardens and Homes*, UC ANR Publication 21385
8. *Retail Garden Center Manual*, UC ANR Publication 3492
9. Laminated Natural Enemies poster
10. *Watershed map*
11. Hand lens and UC IPM lanyard
12. OWOW Fact Sheets
13. OWOW Booklet
14. Mac's Field Guide
15. Top 10 Most Wanted

## WEEK/DAY 2—June 13

**PESTICIDES AND INTRODUCTION TO PEST IDENTIFICATION**

**2. A. Introduction to Pesticides—60 minutes (PowerPoint, MLF)**

- What are pesticides, different types
- Environmental and health concerns, acute and chronic toxicity
- Secondary pest outbreak, pesticide resistance
- How pesticides get into water and how people are exposed
- How to read a label including signal words
- Laws and regulations related to consumer pesticides in California
- Pesticide formulations and packaging including advantages and disadvantages of each (e.g., ready-to-use, aerosols, liquid concentrates, granules, foggers, baits)
- Protective equipment and clothing with an emphasis on what is sold in stores
- Pesticide application equipment sold in stores, how it works
- Storage and disposal
- Introduction to less-toxic pesticides. Organic pesticides. What they are; how they work.
- Resources for pesticide information

**Break—10 minutes**

**2. B. Hands-on Activity Related to Pesticides—75 minutes (MLF and KWR)**

We will have a range of pesticide products, application equipment and safety equipment that is sold in stores. A very brief introduction to what is on display will be given. Then IPM Advocate trainees will be broken into 3 groups of 3 or 4. Each group will have 30 minutes to study the items in their section and prepare a 15-minute presentation for the group based on their research. They can use their laptops to search the Internet. Groups will listen to presentations, ask questions and discuss related issues.

**Group 1—Pesticide Labels**

Group will be provided with 15 product containers. They should do the following:

a. Find the key parts of the label—trade name, active ingredient, formulation, signal word, manufacturer, U.S. EPA number, precautionary statements including hazards, direction for use. How do the labels differ in the way they present the material? Which labels are most helpful? Which are the least helpful? Discuss examples of information that you thought might be confusing for consumers.
b. For each pesticide, determine what the formulation is. How does the formulation affect how it would be used?

c. Go on the internet and find MSDS sheets for some of these products. What information do the MSDS sheets have that labels don't have?

**Group 2—Application Equipment and Personal Safety Equipment**

Included will be a backpack sprayer, a compressed sprayer, a squirt bottle, a hose end sprayer, aerosol can, a drop spreader. Also goggles, gloves, boots, plastic hat, cloth baseball cap. Measuring equipment for mixing up pesticides. We will also have a pesticide to mix up (This will actually be colored water).

Group will explain or demonstrate:

a. What each type of equipment is and what it is used for, when it should be used, and what are advantages and disadvantages of each.

b. How to mix up a pesticide following label directions in the backpack or compressed air sprayer. Use the measuring equipment and colored "pesticide" water. Be sure to put on appropriate protective equipment.
c. Once you are finished applying the pesticide, what will you do with any left over in the tank? What about the material remaining in the pesticide container? How do you handle the clothing you wore when you applied the pesticide?

**Group 3—Organic Pesticides and Exempt (25b) Pesticides**

- Examples of the following pesticides will be presented (2 or more trade names if possible).
  Bacillus *thuringiensis* var. *kurstaki*
- *Bacillus thuringiensis* var. *israelensis*
- *Bacillus subtilis* (Serenade, Bayer Advanced Natria)
- Codling moth granulosis virus (Cyd-X)
- Borate-based baits (including Gourmet liquid ant bait)
- Insecticidal soap
- Spinosad
- Pyrethrin (without piperonyl butoxide—PBO)
- Azadiractin
- Horticultural oil
- Neem oil
- D-Limonene oil
- Canola oil
- Rosemary, clove, cinnamon, phenylethyl proprionate (derived from peanuts) and other 25b oils
- Copper ammonium complex (Kop-R-Spray)
- Copper soaps
- Iron phosphate
- Plant-based herbicide oils (Greenmatch EX, Matran)
- Acetic acid (vinegar) (Ecosharp Weed and Grass Killer)

a. Group will review definition of organic pesticide, identify what OMRI on the label means, and identify what a 25b pesticide is. What are inert ingredients?

b. Group will introduce each product, explain what pests it is used against, what plants and sites can be treated, and any known problems or advantages. Consult the UC IPM web page for help.

**2. C. Introduction to Arthropod and Plant Pathogen Identification**

Will introduce insect orders (and common pest groups) and major groups of plant pathogens. Will also review resources for pest identification in preparation for Week 3.—Last 30 minutes (PowerPoint, MLF)

**Homework**

- Research how and where to dispose of home use pesticides in your county.
- Read introductory parts of chapters on insect and pathogen pests from *Pests of Landscape Trees and Shrubs*. Answer homework questions.
- View narrated biological control presentation (24 minutes).

- View 20-minute video, *Managing Argentine Ants Around the Home*.

**Week 2 binder materials**

1. DPR hand-outs
   - What is a pesticide?
   - Read the Label First!
   - Buy less, lock it away, and dispose with care
   - Emergency! What to do when accidents happen
2. UC IPM handout: "Choosing Less-Toxic Insecticides and Fungicides for Use in Landscapes and Gardens"
3. UC IPM handout: "Some Organically Acceptable Pesticides Used in Landscapes"
4. OWOW Pesticide list
5. Pest Note: *Pesticides: Safe and Effective Use in the Home and Landscape*
6. Pesticide label illustration from page 17 of *Lawn and Residential Landscape Pest Control*.
7. Printed PowerPoint for "Introduction to Pesticides" presentation
8. Printed PowerPoint for "Introduction to Arthropod and Plant Pathogen Identification"
9. Assigned reading questions for homework

## WEEK/DAY 3—June 20

**MANAGING INSECTS, MITES, SPIDERS, MOLLUSKS, AND PLANT PATHOGENS**

**3. A. Introduction to Insect and Disease Pests and Abiotic Disorders of Plants**

An introduction to the pest ID cards, including general management approaches for pest groups. 30 minutes (Mary Lou)

**3. B. Pest Identification Practicum**

Hands-on ID with 75 samples of arthropod pests and pathogen damage and natural enemies. Each IPM Advocate will have a list of pests and damage symptoms on display so they can check off the pests as they view them and identify them using the Landscape Pest ID cards.—35 minutes (MLF and KWR)

**3. C. Indoor and Nuisance Arthropod Pests and Their Management**

Introduction to managing spiders, bed bugs, mosquitoes, roaches, fleas, yellowjackets, and kitchen pests; when customers should consider hiring a professional to solve their pest problems. PowerPoint presentation—30 minutes (NAD) (*Note: Ants are covered in online video homework, so were not covered in detail here*.)

**Break—15 minutes**

**3. D. Management Tools for Arthropods/Mollusks and Plant Pathogens**

A brief introduction to tools on display (see attached list of tools) and directions for hands-on activity.—10 minutes (MLF and KWR)

**3. E. Hands-on Activity:**

IPM Advocates work in teams of twos and identify several examples of less-toxic tools from the products on display (see attached list—Products and Tools for Week 3) that they would suggest for managing each pest on their lists. (See pest lists). Also consult UC IPM web site—Pest Notes for help and OWOW lists. 20 minutes for research, then 40 for reports and discussion (each group gets 6 minutes)—Total 60 minutes)

**Homework**

- Read *Weeds in Lawns* and *Weeds in Landscapes* Pest Notes plus some sections of *Managing Wildlife Around Homes*.
- Bring three samples of insect of pathogen pests or pest damage to share with the group in Week 4. Use print and online resources to identify them, research solutions, and be prepared to show them to the group. Prepare them using guidelines
- Bring in three weeds to be used in identification exercise for Week 4.

**Week 3 binder materials**

1. Handout on how to prepare a pest ID sample
2. List of pests on display
3. List of products on display
4. Pest Notes for spiders, fleas, bed bugs, cockroaches, mosquitoes, pantry pests

5. Pest Notes for *Weeds in Lawns* and *Weeds in Landscapes*
6. Printed copies of PowerPoint presentations
7. The 10 Most Wanted Bugs in Your Garden (OWOW brochure)
8. List of common insectary plants that provide food for natural enemies (OWOW fact sheet, *Healthy Garden to Manage Pests Naturally*

## WEEK/DAY 4—June 27

**MANAGING WEEDS AND VERTEBRATE PESTS**

*Beginning of class: Advocates lay out homework specimens for others to view*

**4. A. Management Tools for Weeds—30 minutes (PowerPoint, Mary Lou)**

Brief intro to weeds—broadleaf, grass, sedge; annual, perennial, biannual; summer and winter weeds.

- Environments favoring weeds
- Cultural practices
- Irrigation practices
- Solarization
- Mulches
- Hand weeding and cultivation tools
- Keeping weeds out of planting beds with barriers
- Designing weeds out of landscapes
- Herbicides

**4. B. Weed Management Tool Display and Time for Viewing—10 minutes**

Brief introduction to activity (Mary Lou)

**Tools**

- Fabric mulches
- Organic mulches—various sizes of bark chips and other organic mulches, rocks
- Plastic for solarization
- Drip irrigation?
- Barriers to keep lawn weeds out of planting beds
- Dandelion removal tools
- Hand cultivation tools
- Weed whacker
- Herbicides
  - Traditional products—Glyphosate, weed & feed product, trifluralin, benefin, dithiopyr, dicamba, 2,4-D, fluazifop
  - Organic products: plant oils: clove, lemongrass, eugenol; acetic acid, soaps, corn gluten meal

**4. C. Resources for Identifying Weeds—5 minutes (Karey)**

UC IPM web site, books

**4. D. Hands-on Activity (Karey)**

Advocates work in pairs. Each pair is given 3 weeds (from selections brought in by Advocates). For each weed, they must use web resources to fill out a form with the information below.

- Common and scientific name
- Annual or perennial?
- How does it reproduce?
- What environmental conditions favor its growth and spread?
- What are some nonchemical management practices?
- What herbicides manage it?

Advocates will be given 20 minutes to fill out their forms. Then everyone will report on what their weeds were and how to manage them. (5 minutes per pair = 30 minutes)

**Break—10 minutes**

**4. E. Vertebrate Pests**

Overview of management of rodents with focus on rats, mice, pocket gophers, ground squirrels, squirrels and some information on deer, skunks, raccoons and moles—45 minutes (PowerPoint, Roger Baldwin, Wildlife IPM Specialist, UC Statewide IPM Program)

**4. F. Display and Discussion of Rodent Management Tools Sold in Stores—30 min. (Roger Baldwin)**

- Various repellents for deer and rabbits
- Screens for rodent-proofing houses
- Clippers for removing ivy
- Barriers to keep squirrels out of trees?
- Ultrasonic devices, vibrating stakes, pinwheels
- Netting (especially for birds)
- Fencing, trunk guards,
- Gopher baskets
- Traps—live traps
  - Traps for gophers: box, Macabee, Gophinator, Cinch
  - Traps for moles: harpoon, scissor-jaw, mole worm bait?
  - Traps for rats and mice: snap traps, glue traps, electrocution (zapper) traps
  - Bait stations
- Repellents such as castor oil for moles and gophers
- Rodenticides: Labels of common materials. Note that second-generation anticoagulant rodenticides will be removed from consumer market June 30, 2011. Emphasize problem with nontarget predators.
- Probe (with or without bait dispenser)
- Smoke or gas cartridges and explosives
- Other items (shovel, boards, stakes)

**Homework**

UC guide to healthy turf; how to exclude rodents around your home and landscape

**Week 4 binder materials**

1. List of items on display for weed management
2. List of items on display for rodent management
3. Pest Note: *Weeds in Lawns*
4. Pest Note: *Weeds in Landscapes*
5. Printed copies of PowerPoint presentations

## WEEK/DAY 5—July 11

**COMMUNICATION**

*All presentations and activities led by Annie unless otherwise noted*

**5.A Developing Relationships with Different Types of Stores—1 Hour (PowerPoint)**

- Independent Nursery
- Franchise: Ace, Do It Best, True Value Hardware
- Small Regional Chain: e.g., SummerWinds Nursery, Sloat Garden Center, Cole Hardware
- Large Regional Chain: Orchard Supply Hardware
- Big Box Store: Home Depot, Lowe's

**5.B Effective Communication with Store Employees and Team Building—30 minutes**

- How to identify key players in a store and understand the store hierarchy
- Learn who makes recommendations for pest management and who makes decisions for purchasing
- Know which employees can influence purchasing

**Break—10 Minutes**

**5.C Helping Employees with Customer Expectations About Products—30 minutes**

- Preparing the customer with the right expectations so they don't abandon less-toxic practices
- Hands-on activity with less-toxic products, and how they work: Advocates will break up into groups and present alternative strategies for pest management, defining how the products work, and how this information will be communicated to the stores

**5.D. Tailoring Your Educational Program to the Customers and Employees of Each Store, Based on the Store's Product Mix—30 minutes**

**5.E. How to Identify the Less-toxic Products Each Store Carries—15 minutes**

**5.F. Training Methods Used at the Store Level—10 minutes**

- PowerPoint presentations
- Hands-on activities
- Flip Charts

**5.G. Dealing with Conflict—20 minutes**

- Learn about different challenges and how to handle them
- Three case studies

**Homework**

- Make a list of the services your local Mosquito and Vector Control offers your community.
- Locate a creek in your area (you may have to consult a street map if the creek is well hidden). Draw a section of the creek and imagine that there is an outfall pipe that brings in water from storm drains. Look around the nearest street and describe—pictorially or in words—how contaminated water would move from houses (or if you are in a commercial area, from a potential spraying site) to the storm drain. What features such as surface substrate, slope, and sprinkler placement may contribute to runoff into the storm drain?

**Week 5 binder materials**

1. List of stores and type of chain of command
2. Conflict reading info
3. Team building reading info
4. Importance of key contacts in areas: County Agricultural Department, Mosquito and Vector Control, Household Hazardous Waste, Cooperative Extension, local Stormwater Pollution Prevention group, Green Waste.
5. Local Creek Information (how to access locations)

## WEEK/Day 6—July 18

**DISPLAYS AND MARKETING: UNDERSTANDING THE BUSINESS END OF RETAIL STORES**

**6.A. Define the Retail Store Model and Our Place in That Setting—30 minutes**

**6.B. Learn about pesticide manufacturers and suppliers, the roles they play in the stores, and how you can work best with them.—45 minutes**

**Break—10 Minutes**

**6.C. How to Display Information and Products—30 minutes**

- Learn how to get additional display space and improve the exposure of the less-toxic products.
- Learn how to encourage more ad space for products in the store's advertising.

**6.D. Learn How to Incorporate Seasonal Pests, New Pests, and New Products Into Your Store's Marketing Program—1 hour (ppt)**

**Guest Speakers on Displays and Marketing: SummerWinds Nursery Management Team—45 minutes**

**Homework**

- Prepare a 10-minute presentation for Week 7
- For presentation, present your observations on store placement of less-toxic products and what could be done to improve their promotion

**Week 6 binder materials**

1. List of vendors that call on stores
2. List of seasonal pests and display ideas for stores
3. PowerPoint presentation handouts
4. Homework assignment and instructions

## WEEK/Day 7—July 25

**PRESENTATIONS, WRAP UP, AND MENTORING**

**7.A. Presentations**

Each advocate gives a 10-minute presentation on what they observed in the field, regarding displays: What works, what doesn't, and why. Followed by questions.

(11 presenters x 10 minutes: 110 minutes)

**Break—10 minutes**

**7.B. Mentoring—1 hour**

- What will happen next with the mentoring component of this program
- Store assignments, expectations, duration

**7.C. Take-home exam distributed**

# Appendix 3. Exit Exam for IPM Advocates

When answering these questions, consult the resources used in the IPM Advocate training program. Refer to the UC IPM resources (e.g., books, web site, Pest Notes, Quick Tips, online training), the OWOW resources, the posted presenters' PowerPoint presentations, the binder, and your class notes. Resources from other states and organizations may not have correct or appropriate information for California, and your answer may be marked incorrect.

Work on the exam on your own—do not consult or collaborate with others in the class.

If you need clarification about a question, email Karey at kwindbiel@ucanr.edu and one of the instructors will address the question**. Do not post your query on Collaborative Tools.**

E-mail your final answers as an attachment directly to Karey no later than 5:00 p.m. on August 8. DO NOT POST YOUR ANSWERS ON COLLABORATIVE TOOLS.

1. Define the critical features of an integrated pest management program. (3)

2. It's June and a customer comes in complaining about volcano-shaped piles of soil in their turf, which is tall fescue. (6)

   a. Where on the UC IPM web site could you go to diagnose a problem on turf? (cut and paste the URL)

   b. What "pests" might be causing this problem? How would you distinguish between the symptoms of the different pests that might leave these mounds in a lawn?

   c. What would you tell the customer to do? What products do many garden centers sell that can help reduce each of these problems?

3. Attached are 3 home-use pesticide labels. Answer the following questions for **each** product (15):

   a. What is the trade name and what is the active ingredient?

   b. On what sites, plants or situations can it be used?

   c. What is the formulation? What equipment (including safety equipment) do you need to apply it?

   d. Go to the UC IPM web site home-use pesticide database and note the active ingredient's:

      1. Water quality rating
      2. Impact on natural enemies

3. Impact on honey bees
4. Acute toxicity to people
5. Names of some other home-use pesticide products that contain this active ingredient

4. Use the UC IPM web page to identify this weed (8).

a. What is its scientific name, common name, and any other names it is sometimes called?

b. Use the UC IPM Pest Note as a resource. What are some nonchemical control products sold in stores that can be used to manage this weed?

c. What herbicides are suggested by UC IPM to manage this pest? Are any of these products on the OWOW list?

d. What are 25b products? Are there any 25b products suggested for managing this weed? What are the benefits and drawbacks of this (these) product(s)?

e. What are pre-emergent herbicides? Are there pre-emergent herbicides suggested for this weed?

5. One of your stores is stocking "ladybugs" (convergent lady beetles). What advice would you give them about how to properly handle lady beetles in the store and what to recommend to customers who purchase them? (Research the UC IPM web site for this information and note where you found it.) (3)

6. A customer brings you the insect pictured below that she found in her kitchen. It's a little under ½ inch long. (9)

a. What is its common name and species name? What is its preferred habitat?

b. What would you suggest she buy to determine the **extent** of her problem?

c. What are some nonchemical tools and products she might find in her local hardware store to help limit the problem?

d. Fill out first 3 columns in the table below with the following: What types of pesticide formulations are recommended in the Pest Note for use against this pest? How is each formulation used? For each type, list active ingredients (a.i.s) that can be found in that formulation.

e. For the fourth column, go to the Sortable Less-toxic Product List (version 3) on the IPM Advocates Collaborative Tools web site (which is a modification of the OWOW product list in a sortable and expanded format).

List trade names for each for the formulation/active ingredient combinations you listed in **d** above. (This Pest Note is not up to date on product names.)

**Example Table for Question 6—add additional lines or reformat as needed.**

| Formulation type | How Used | Active Ingredients | Product Names | Found in Store? |
|---|---|---|---|---|
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f. Go to a well-stocked hardware or big box store and note which of these products and active ingredients found there (last column). What store did you visit?
g. At the store, you will find other pesticide formulations are available for management of this pest. What are these? Are there situations when these types of pesticides should be recommended?
7. A customer brings you the plant sample and damage pictured below. (9)

a. What is the plant? What is the common name of the problem indicated by the symptoms? What organism caused it?
b. Where can you find information on the UC IPM web site about managing this problem? (list URL)
c. What are some nonchemical controls for this problem?
d. Might your store sell varieties of this plant that resist this problem? If so, name some of the varieties? Are there other ornamentals that don't get this problem?
e. List less-toxic active ingredients that can be used to manage this problem.

f. For each active ingredient, include product names available in stores. What are 3 different resources you can use to find this information? (You should have used all 3 sources in this training.)
g. What is a synthetic product that is effective against this problem?
h. Use the "Active Ingredient/Compare Risks" button at the bottom of the Pest Note to determine which product has the highest risk to water quality, the highest risk to natural enemies, and which may pose a long-term risk to people. List these here.

9. A store manager asks your advice about how he can quickly get his new employees up to speed regarding pesticides and alternatives to pesticides. What free training resources would you recommend? (3)

10. What are the steps you follow when diagnosing an insect or disease problem on a plant? How do you distinguish a biotic disorder from an abiotic one? (Include resources you would use and how you would use them. Also note what information you need to make a good diagnosis.) (6)

11. What problems occur when pyrethroid insecticides such as bifenthrin run off into storm drains? Why should we care? (3)

12. In some stores (e.g., Home Depot, OSH, Ace) you may find some nonpesticidal pest management items located in the cleaning, appliance, or paint departments. (3)

For each of the pests in the table below, list one nonpesticidal tool ideal for managing this pest. Refer to resources such as handouts and PowerPoint presentations—you don't have to go to the store to answer this question.

| TARGET PEST | ITEM |
|---|---|
| Spiders | |
| Drain flies | |
| Ants (and other pests) | |

13. A customer complains that he has so many moths flying out of his kitchen cupboard that he can't keep up with them. He sees them fluttering in his kitchen every night, collecting on the walls and ceiling. He thinks these moths had their start breeding in dog kibbles that he keeps in a kitchen cupboard. They've now spread to dried fruit and rice he stores in plastic zip bags in the same cupboard. He's looking for a spray to kill the moths in his cupboard and on the kitchen ceiling. You try to dissuade him from spraying. (8)

a. List two things he can do to clean up the infestation. b. List two ways he can prevent future infestations.
c. List a product he can purchase to detect the moths. d. What's the common name of the moth in his kitchen cupboard?

He is also concerned that some of the moths have moved to a closet and are now devouring his woolen clothes. You explain that the moth in his kitchen and those in his closet are two distinct types of moth (and actually the larvae or caterpillars are the culprits).

e. What are the common names of the two possible moths in his closet? f. Should he buy some moth balls? What are two things he can do reduce future infestations?

14. From what sources do Ace Hardware stores get pesticides? What are the advantages of each? (3)

15. Define the role of the following individuals and how they influence the sales of pesticides in Home Depot and OSH: (6)

A. Department lead
B. Merchandiser from pesticide manufacturer or distributor
C. Sales staff in garden section
D. Shelf stocker employed by store
E. Nursery staff

16. Describe a conflicting situation you may come across with an employee in a store and how you'd resolve it. (3)

17. What is the main goal of a retail business? (3)
18. Why would it be important for you to know about the local Household Hazardous Waste Facility and Mosquito and Vector Control Agencies that are in your store area? (3)
19. What are four of the most important things to remember when you're training store employees on IPM? (3)
20. What do you do when store employees ask you about a pest or pest control product you are not familiar with? (3)

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## Appendix 4. Recruitment of IPM Advocates

**INTERVIEW QUESTIONS**

1. Describe your knowledge and experience with horticulture as it relates to gardening, the retail sector, or landscaping.
2. Describe any training or experience you've had in pest management including pest identification and use of pesticides. Any classes? Special workshops?
3. What experience do you have working with retail nurseries and garden centers?
4. What are your thoughts on the use of pesticides as part of an IPM program? (This includes conventional, organic, and less-toxic products).
5. Tell us how you might go about researching a pest-related question asked by a store or customer. How would you find management solutions?
6. How would you describe your people skills?
7. Have you been involved in any activities where you had to advocate for a new program or a new way of doing something? Were you successful? Why or why not? How might you change the process if you were to do it over again?
8. Give an example of a situation in which you've dealt with conflict or a challenging person. How did you handle the situation?
9. What experience have you had giving presentations, lectures, or training classes? Have you had experience explaining technical or scientific terms to the general public?
10. Describe your experience working with people from diverse socioeconomic and ethnic backgrounds.
11. Why are you interested in becoming an IPM Advocate?
12. What are your short-term career goals? Long-term goals?
13. Are you currently employed? (no | yes—full-time/part-time)
14. Explain any conflicts that may arise from working as an IPM Advocate.
    Would the time commitment interfere with your current job or business?
    What, if any, are your time constraints?
15. Approximately how many hours during the week can you devote to IPM Advocate training and homework? What about mentoring?
16. We anticipate that many IPM Advocates will work as self-employed consultants like Annie does.
    Do you have any experience working on your own in a business or other activity?
17. If selected as an IPM Advocate, how will you feel about traveling using your personal vehicle as part of the training and mentoring portions, and for future work in this field?
18. As an IPM Advocate, you'd have to establish a working relationship with new people. Describe how you'd go about doing this.

## Appendix 5. Store Employee Evaluation of the Training Workshops

| Survey question (number of responses) | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| **The training workshop was well organized and interesting. (n = 245)** | 67% | 28% | 4% | 1% | 0% |
| **My training manual will be a useful resource in the future. (n = 248)** | 68% | 24% | 7% | 1% | 0% |
| **The information will help me recommend and sell less-toxic products. (n = 219)** | 76% | 20% | 4% | 1% | 0% |
| **The instructor was responsive to questions. (n = 251)** | 80% | 16% | 3% | 0% | 0% |
| **The level of detail was appropriate. (n = 239)** | 69% | 27% | 3% | 1% | 0% |
| **Visual aids were effective. (n = 237)** | 68% | 27% | 4% | 1% | 0% |
| **Written materials were effective. (n = 232)** | 68% | 25% | 6% | 1% | 0% |
| **I would recommend the training to my co-workers. (n = 246)** | 74% | 17% | 8% | 0% | 0% |
| **I'd like to learn more about IPM practices and certification. (n = 219)** | 50% | 27% | 21% | 1% | 0% |

**TRAINING WORKSHOPS FOR STORE EMPLOYEES**

**LEFT**: Teresa Lavell training employees at OSH, Fairfield

**RIGHT** Annie Joseph and Anne Rogers training employees at Sloat Garden Center, Mill Valley

**THE IPM ADVOCATES—CHANGING HOW STORES SELL PESTICIDES**

**Left to right, top to bottom**: ❶ Suzanne Bontempo attaching shelf talkers with Tito, lead for the garden department at Home Depot, Colma ❷ A display of less-toxic products at Home Depot, Sacramento set up for the 2012 season ❸ Steve Griffin after setting up an endcap display at Navlet's Garden Center, Concord with Marsha, the store manager ❹ Display of traps and tools and other less-toxic products at Cole Hardware, San Francisco ❺ Maris at OSH, Sand City presenting a fact sheet about rodent exclusion ❻ Daniel Levy with Ed Casey, a buyer for Friedman's Home Improvement, Santa Rosa