



Home Depot Associate Training



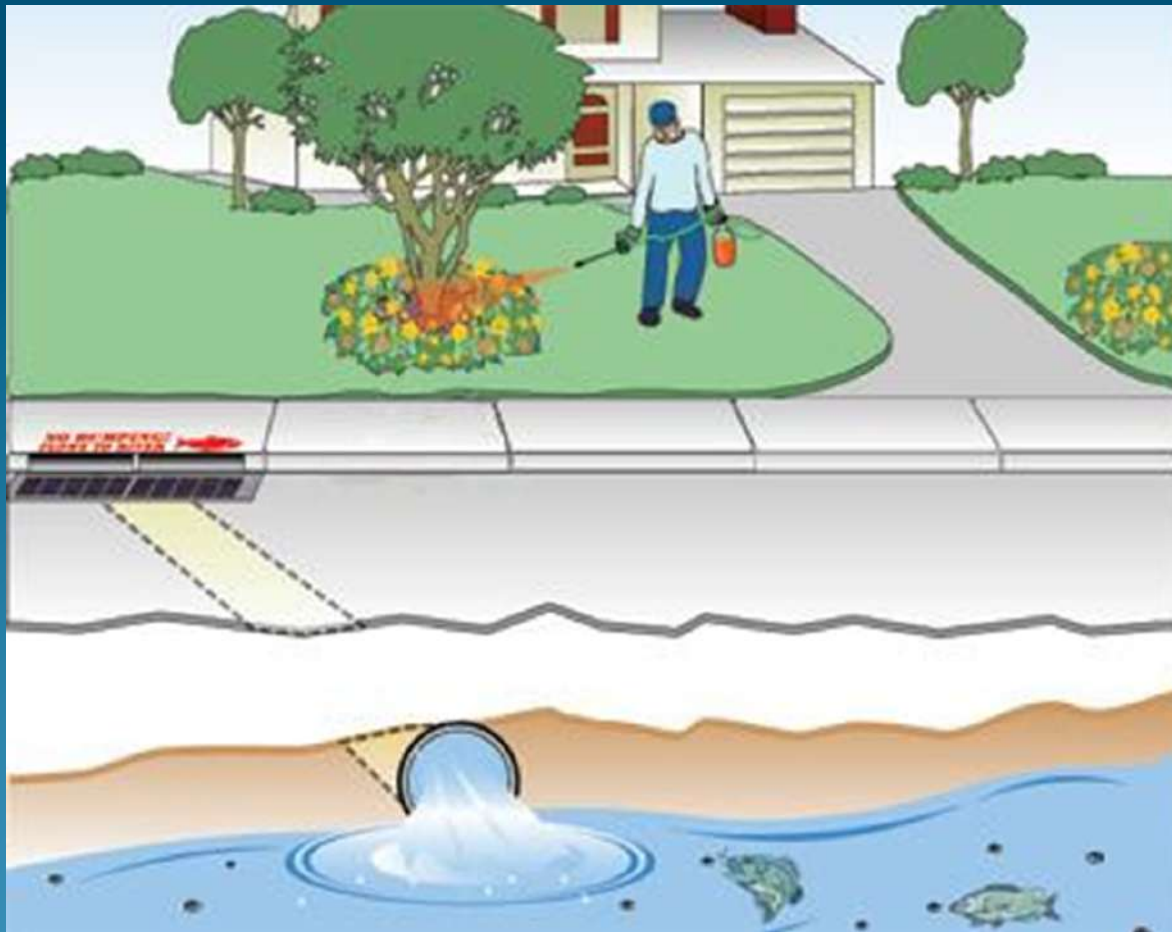
Annie Joseph
April 4, 2018

What is the number one source of water pollution in California?

- a. Sewage discharges
- b. Large industrial plants and factories
- c. Oil tanker spills
- d. Agriculture
- e. Runoff



Runoff from landscapes enters the storm drains, creeks and the Bay



Is water from the sewer system treated before it enters creeks, rivers and the Bay?



The Problem

- Most bodies of water in urban areas of California impaired by pesticide toxicity
- Current technology can't remove pollutants
- Clean Water Act & stormwater permits require local governments to reduce pesticide levels



One Solution: OWOW Store Partnership

- Involve local businesses in solving the problem
- Help the public learn about less-toxic products
- Make the connection between pesticide use and water quality



What is Our Water Our World?

- Partnership with water pollution prevention agencies and retail stores
- National Award Winning Program



Shelf talkers



Fact Sheets

Our Water Our World

- Promotes your store as having environmentally-friendly solutions
- Helps design end caps
- Provides trainings for Associates
- Provides outreach for customers
- Offers on-going information and resources



300 Stores in 11 Counties

Working with the community to:

- Think about landscaping in new ways
- Provide expertise to troubleshoot pest problems
- Help customers solve problems in environmentally-friendly ways



Integrated Pest Management (IPM)

Use a variety of strategies for managing pest problems.

- **Cultural:** Creating healthy landscapes with organic fertilizers, compost, mulch, appropriate plants
- **Physical:** Using barriers & traps, caulk, screen, weed block, etc.
- **Biological:** Using beneficial organisms
- **Chemical:** Choosing least-toxic methods first and treating for the specific pest



IPM Techniques: Cultural Controls

Growing a Healthy Garden to Manage Pests Naturally

- Organic Fertilizers & Compost
- Mulch
- Waterwise & Native Plants
- Sanitation



Organic & Slow Release Fertilizers and Compost

- Slowly releases nutrients over a long period of time
- Won't run-off into local waterways
- Prevents growth spurts that can attract pests
- Feeds/adds soil microbes

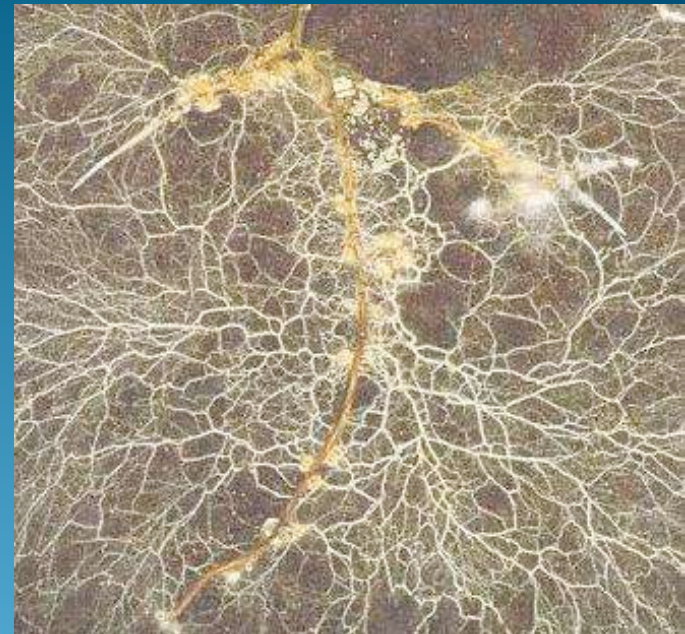


Bacteria and Fungi

Break down organic material, store nutrients in the soil,
break down toxins and pollutants, hold soil together



bacteria fixing nitrogen on
root of a plant



mycorrhizal fungi



Marvelous Mulch

A protective layer of material laid on surface of soil

- Adds nutrients to soil
- Feeds soil organisms
- Keeps weeds from sprouting and growing
- Conserves water, reduces evaporation
- Reduces soil compaction and erosion.
- Keeps soil cool in summer, warm in winter.

(Keep away from plant stems.)



Right Plant, Right Place

- Choose California natives or Mediterranean plants that are adapted to our climate.
- Match plants to the conditions of the site to keep them from being stressed and susceptible to pests.
- Choose pest and disease resistant varieties.



Salvias



Erigeron

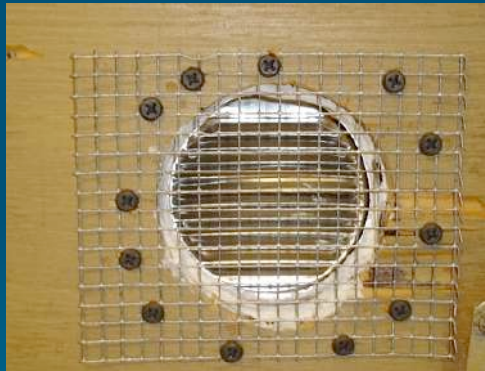


Sanitation

- Fallen fruit and nuts will attract pests like yellowjackets, rats and mice.
- Fungal spores can spread from diseased leaves and fruit.



IPM Techniques: Physical Controls



screening



caulk



row covers



hose nozzles



weeding tools



IPM Techniques: Biological Control

Bring in the Beneficials

Beneficial bugs will eat or parasitize pests and pollinate flowers.



Green Lacewing



Lady Beetle



Soldier Beetle



Choose Plants that Attract Beneficials

Add 'insectary' plants to the garden – the nectar and pollen will draw in beneficials.



Plants with masses of tiny flowers or flowers in the sunflower family are especially attractive to beneficials.



IPM Techniques: Chemical Controls

How Basic Less-Toxic Products Work



Soaps



Oils



Bio-Pesticides



Tips for Using Products

- Less-toxic products may take longer to work.
- Timing is important – know the pest’s life cycle to apply the pesticide at the best time.
- Remember to spot treat.
- Apply soaps and oils in the late afternoon.
- If releasing beneficials, give them time to find the pests before applying any pesticides.
- Make sure customers have protective gear and equipment for mixing and spraying concentrates if needed.



Putting it All Together: Managing Common Pests



Our Water Our World
2018 Home Depot Monthly Pest-At-A Glance Calendar

Month	Pest/Disease	Notes	Resources	Products to Highlight
January	Dormant spray for diseases/over-wintering insects	Remove/dispose of infected plant material	OWOW Dormant Spray handout	Bonide Copper Fungicide Bonide All-Seasons Oil
February	Rose Care	Mulch to prevent fungal diseases & conserve water	OWOW Rose Fact Sheet	Southern Ag Triple Action Neem Bonide All Seasons Oil Nature's Care Insect Soap
March	Snail/Slug Codling Moth	Water early morning to prevent wet foliage at night	OWOW Snail & Slug Fact Sheet	Sluggo Codling Moth: Captain Jack's
April	Aphids	Look for ladybugs & other beneficials that eat aphids	OWOW Aphid Fact Sheet	Nature's Care Insect Soap Bonide All Seasons Oil Organocide Dr. Earth Final Stop
May	Grubs	Buy beneficial nematodes on-line to manage young grubs	OWOW Grub Handout	Beneficial Nematodes
June	Mosquitoes	Check for standing water/screen windows	OWOW Mosquito Fact Sheet	Mosquito Dunks
July	Yellowjackets	Set traps at perimeter of yard, not near eating areas	OWOW Yellowjacket Fact Sheet	Yellowjacket traps/lures
August	Fleas & Flies	Flies: remove pet waste & fallen fruit Fleas: use nematodes in outside breeding areas	OWOW Flea Fact Sheet	Fly Traps, Fly Tape Fly predators (on-line) Flea Traps, Nematodes EcoLogic Flying Insect
September	Ants Citrus Leafminer	Use caulk to seal entries Manage aphids to discourage ants Monitor for citrus leafminer	OWOW Ant Fact Sheet	Amdro & Terro ant baits EcoLogic Ant & Roach Leafminer: Captain Jack's
October	Rats/Mice	Pick up fallen fruit/nuts Seal entries with foam	OWOW Rats and Mice Fact Sheet	Rat/Mouse Traps Great Stuff Foam Rat X, Mouse X
November	Dormant Spray	Use when roses and fruit trees have lost their leaves	OWOW Rose Fact Sheet	Bonide All Seasons Oil Bonide Copper Fungicide
December	Bed Bugs	Use a monitoring tool to detect bed bugs	Bed Bugs Quick Tips	Ortho Bed Bug Trap Hot Shot Bed Bug/Flea Powder Hot Shot Bed Bug Glue Trap Safer Ant & Crawling Insect Killer



Aphids

- Fertilizers attract them
- Hatch out in warm weather
- Females are pregnant at birth
- Ants protect them



Aphid Solutions

- Plants that attract beneficials
- Organic/slow-release fertilizers
- Don't over-prune
- Hose aphids off with water
- Soaps
- Oils
- Manage ants



Ants

- Outside ants are decomposers, aerate soil, eat insect pests
- Will protect aphids and keep beneficials from doing their job



Ant Solutions

- Inside: kill scouts & clean up scent trails
- Tanglefoot
- Ant baits
- Insecticidal 'dusts' – diatomaceous earth
- Manage aphids



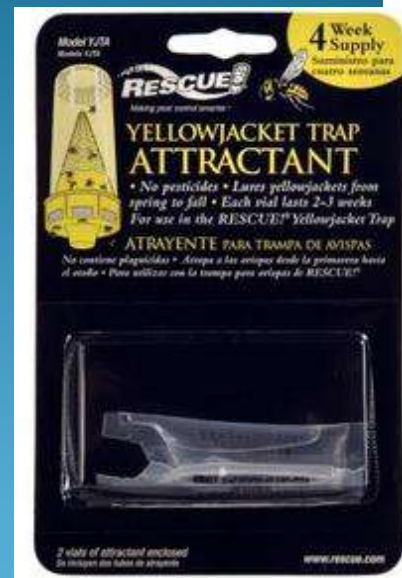
Yellowjackets

- Colony dies end of summer, Queen overwinters
- Eat pests like katydids, tomato hornworms & flies



Yellowjacket Solutions

- Traps – careful placement
- Attractant
- Some local vector control districts will remove ground nests.



Snails and Slugs

- Snails can live for 15 years!
- Were brought to this country to eat as escargot



Snail and Slug Solutions

- Hand pick
- Sluggo or Nature's Care Slug and Snail Control – Iron Phosphate – online only
- Copper Barrier Tape (online only)
- Water early in morning
- 'Chunky' mulch
- Replace 'snail hotels' – agapanthus, ivy, lilies, hosta



Mosquitoes


- Larva is aquatic – don't leave any standing water
- Only female feeds on blood – the male is a pollinator




Mosquito Solutions

- Mosquito dunks
- Drain standing water
- Mosquito fish are usually available from your local Vector Control
- Many free pest management services are offered locally through your County Mosquito and Vector Control agency



 **OUR WATER – OUR WORLD**

FIGHT THE BITE 

Free Services Provided by Your
Mosquito and Vector Control District

MOSQUITOES:

- Trained technicians will inspect your property for mosquito problems and provide advice on management.
- Free mosquitofish are available for pickup at the District's office.
- District entomologists will identify mosquito samples.

YELLOWJACKETS:

- District technicians will provide extermination of ground-nesting yellowjacket nests.

TICKS:

- The district will provide tick identification services for ticks mailed or brought into the District offices.

WILDLIFE:

- **RATS AND MICE** - Trained technicians will inspect your home to identify rodents and will advise you on prevention and control.
- **SKUNKS** - District staff will inspect for skunks, make recommendations on management strategies, and can loan you live-catch traps.

Spider Mites

- Like dry, dusty conditions
- May not be predators around



Spider Mite Solutions

- Change plant location/
increase air flow
- Wash off leaves
- Use soaps and oils



Whitefly

- Like dry, dusty conditions
- Can excrete sticky honeydew
- May not be predators around
- Group together on underside of leaf



Whitefly Solutions

- Change plant location/
increase air flow
- Wash off leaves
- Use soaps and oils
- Use traps to monitor and
manage



Citrus Leaf Miner

- Larvae create shallow tunnels (mines) in young citrus leaves as they feed and leave a dark line of frass (feces.)
- The adult is a silver and white moth, less than 1/4" long.
- They are attracted to nitrogen rich, new growth. Generally will not harm mature trees.
- Traps can indicate when adults are present.



Larvae in mine



Adult moth



Citrus Leaf Miner Solutions

- Beneficial insects, like wasps, will parasitize larvae.
- Monitor growth weekly.
- Prune in late fall when weather cools to avoid encouraging soft new growth. Do trim off suckers that harbor moths.
- Use organic fertilizers - do not apply high nitrogen fertilizer summer and fall when populations are high.
- Broad spectrum pesticides are not effective and can harm beneficials. Oils may be useful in suffocating eggs and larvae, and products with spinosad may help manage larvae.



Wasp attacking a leaf miner



Fungal Diseases



black spot



powdery mildew



rust



Fungal Disease Solutions

- Remove diseased foliage
- Water early in the day
- Mulch
- Syringe for powdery mildew
- Sulfur, copper soap
- Neem oil, mineral oil



Managing Weeds

- Plant oils like citric acid, clove, thyme, soybean, rosemary and sesame work as a topkill of weeds and grasses
- Potassium salts of fatty acids is a potassium based soap that kills and inhibits growth in moss and algae



Asian Citrus Psyllid

- A small insect that feeds on leaves and stems of citrus
- Can transmit a bacterial disease fatal to citrus called Huanglongbing (HLB)
- Two species of parasitic wasps provide biological control of nymphs, and lacewing larva will also eat nymphs
- Monitor plant growth weekly.
- Use organic fertilizers.
- If found, call the California Dept. of Food and Agriculture Exotic Pest Hotline: 1-800-491-1899



adult



nymphs



Fleas

- Adult fleas spend most of their time on an animal's body
- Look for tiny white eggs and larvae or dark flea droppings in carpets, cracks and crevices where animals rest
- Use a flea trap to monitor for fleas
- Outside wear white socks and walk through areas where animals rest – fleas will jump onto socks and be more visible



Flea Solutions

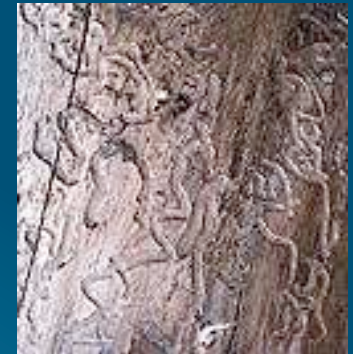
- Wash pets with warm, soapy water, use a flea comb, and wash bedding often
- Vacuum carpets, floors, couches and chairs and use diatomaceous earth or borate based carpet treatments
- Use flea traps to monitor for fleas
- Outdoors: spot-treat with insecticidal soap, or use beneficial nematodes that can be ordered on-line



Borers

Borers are invasive, wood-boring beetles that can spread fungal diseases to trees.

- Monitor trees to look for entry holes, sugary exudate or frass
- Keep trees healthy with proper watering and mulch
- Prune off damaged wood
- Paint tree trunks white to avoid cracking from sunburn



Flatheaded borer damage



Pacific Flat headed borer



Borers of California Trees



Polyphagous shot hole borer
damage on live oak



- A. Polyphagous shot hole borer
- B. Western oak bark beetle
- C. Shothole borer
- D. Walnut twig borer

Brown Marmorated Stinkbug

Brown marmorated stink bugs can cause crop and garden damage, but are mostly a nuisance pest in home gardens. Adults and nymphs suck juices from fruits and seed, leaving pockmarks and pithy fruit.

- These pests may overwinter in large numbers and stink when disturbed.
- Report any sightings to your local Cooperative Extension or county agricultural commissioner.



Brown marmorated stink bug



Damage on fruit



Ligurian Leafhopper

Ligurian leafhoppers are tiny insects that are sucking pests of many plants in the mint family such as rosemary, sage, lavender, marjoram, mint and oregano.

- Look for severe stippling, stunting or browning on plants.
- Use sticky yellowtraps or shake plants to monitor
- Neem oil can help manage these pests
- Ladybugs, lacewings and spiders will eat these pests
- If damage is severe, cut plant back and let it re-grow, or remove plant.



Ligurian leafhopper



Damage on rosemary



What should you do with products you no longer want?



Take it to your local Household Hazardous Waste Collection Facility!



Tips for Water-Wise Gardening

Watering

- Go with soaker hoses or drip irrigation (can save up to 90% of water use)
- Smart controllers help water only when it is needed.
- Water early in the morning to reduce evaporation and discourage pests attracted to wet foliage at night
- Many cities and counties offer rebates to install high efficiency irrigation systems
- Water deeply and infrequently



Protecting the Soil

- Mulching: add a layer of organic material over the soil to conserve water, reduce weeds and feed soil organisms
- Add compost to hold in moisture, add nutrients and feed the soil organisms



Plant Choices

- Choose plants native to California or a Mediterranean climate – they can better tolerate drought and are often more pest resistant
- Group plants with similar water needs together to make watering more efficient (hydrozoning)
- Consider reducing or eliminating lawns that need a lot of water. Many cities and counties offer rebates for getting rid of lawns.
- When planning big landscaping projects remember that the best time to plant is in the Fall.



Resources: Our Water Our World Website

- Fact Sheets
- Lists of less-toxic Products
- 10 Most Wanted Bugs
- Ask the Expert



The screenshot shows the homepage of the 'Our Water Our World' website. At the top, there is a navigation bar with 'Login', 'OUR SPONSORS', and 'HOME'. Below this is a large banner image of a bee on a flower. The main content area is divided into two columns. The left column has a 'Quick Links' section with a list of links: 'Ask Our Expert', 'Finding Pesticide Alternatives', 'Where To Buy Products', 'Pest Control Operators And Landscapers', 'Pesticide Residues In Food', 'Pesticides And Water Quality', 'Beneficial Insects', 'Disposal', 'Caring For Our Creeks', 'Our Water Our World', and 'Promotional Material'. Below the links is a promotional box for a mobile app titled 'Our Water Our World' with 'Find Less Toxic Pest Control Products' and 'Now there's an app for that!'. The right column features the title 'OUR WATER — OUR WORLD' and a paragraph explaining the website's purpose: 'This website has been developed to assist consumers in managing home and garden pests in a way that helps protect Our Water - Our World. Among other things, this site offers:'. This is followed by a bulleted list of services: 'assorted fact sheets/forma informativas on specific pests and methods to manage them without using hazardous materials.', 'pocket guide to less toxic products for managing common pests.', 'information on where to buy less toxic pesticides, including fungicides and herbicides.', 'a list of products by brand name that are considered less toxic alternatives to more conventional pesticides.', 'a list of products by the pest they target.', and 'an Ask the Expert feature that allows you to ask a specific question and receive a personal reply.'. Below the list, there is a link to 'Visit NorCal IPM for information to assist municipalities, pest control operators and landscapers.' and another link for a 2-minute video: 'For a 2 minute video on how the Our Water - Our World program helps customers in retail stores, click here (NOTE: Video starts at 00:35 second mark in recording). Video courtesy of KRON 4, San Francisco.'. At the bottom right of the screenshot is an illustration of a person at a computer with the text 'Get Expert advice online!'.

www.ourwaterourworld.org

UC Statewide IPM Program: www.ipm.ucdavis.edu/

UNIVERSITY OF CALIFORNIA AGRICULTURE & NATURAL RESOURCES
UC IPM Online
Statewide Integrated Pest Management Program

What is IPM? Identify & Manage Pests Research Publications Training & Events Links About Us Contact Us Subscribe

HOME

ON THIS SITE

- What is IPM?
- Home & landscape pests
- Agricultural pests
- Natural environment pests
- Exotic & invasive pests
- Weed gallery
- Natural enemies gallery
- Weather, models & degree-days
- Pesticide information
- Research
- Publications
- Events & workshops
- Online training
- Links
- About us
- Contact us

For Retail Nurseries & Garden Centers

What can you do to protect water quality?
Don't let fertilizer or pesticides get onto hard surfaces such as sidewalks or driveways. Sweep any material that accidentally lands on hard surfaces back onto lawn.

Search home & landscape pages:

Choose a plant and find its pests

- Flowers
- Vegetables & Melons
- Trees & Shrubs (includes roses)
- Lawns & Turf
- Fruit, Nuts, & Berries

Choose a pest by category

- Birds, Mammals & Reptiles
- Insects, Mites & Mollusks
- Plant diseases
- Weeds
- Household

More resources

Current highlights

- Newsletter, March 2014 issue (NEW)
- Asian citrus psyllid information for garden centers (NEW)
- Invasives—find out more about invasive and exotic

Common questions

- Aphids
- Damping-off
- Earwigs
- Gophers
- Lawn Watering
- Mosquitoes
- Powdery Mildew
- Scales
- Snails & Slugs
- Weeds in Landscapes

Training & publications

- Online training & workshops
- Publications

Pesticides & alternatives

- Using pesticides



When we try to pick out anything by itself, we find it hitched to everything else in the universe.

John Muir

