



University of California  
Agriculture and Natural Resources

Retail Nursery and Garden Center

# IPM News

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## It's Time to Spray for Peach Leaf Curl

**W**inter slows down many garden pest problems, but it is also a key time for gardeners to take actions to prevent certain pest problems next spring. One of the most important of these preventive practices is application of dormant treatments for peach leaf curl.

Caused by the fungus *Taphrina deformans*, peach leaf curl is a very serious disease, which affects only peach and nectarine trees. Its most distinctive symptom is distortion, thickening, and reddening of foliage as trees leaf out in the spring. Damaged leaves often die and fall off trees but will be replaced with new, usually healthy leaves once the weather turns dry and warmer. A leaf curl infection that continues untreated over several years will contribute to a tree's decline and reduce fruit production.

To prevent peach leaf curl, peach and nectarine trees must be treated with preventive fungicides during the dormant season. The best time is after leaves have fallen, usually in **late November or December**. In wet climates or during a wet winter, a second application can be made in late winter or early spring just before buds swell. If the November/December treatment wasn't made, it can be applied in January or February as buds begin to expand.

Although gardeners won't notice the symptoms until spring, there is little that they can do at that time to reduce leaf curl. Treatment applied after trees leaf

out or after symptoms appear won't be effective. Removing affected leaves or shoots will not reduce the problem. There are a few peach varieties that are resistant or partially resistant to leaf curl. These are Frost, Indian Free, Muir, and Q-1-8. Your store may want to feature these varieties for customers who prefer not to apply the dormant spray.

### *Dormant Treatment Materials Recently Discontinued*

Two important fungicides traditionally used to treat peach leaf curl were withdrawn from the market in the last year. Lime sulfur (calcium polysulfide) was cancelled for backyard uses by the U.S. EPA, effective Dec. 31, 2010. Tribasic copper sulfate (sold as Microcop by Lilly Miller) has been discontinued by the manufacturer, although existing supplies can be sold and used.

As a result, the options for dormant treatments for preventing peach leaf curl in backyard trees are limited and less than ideal. Copper ammonium complex (Liqui-Cop or Kop R Spray) is still available but is only 8% copper and significantly less effective than Microcop. It can be made more effective by applying it with 1% oil in the solution.

The fungicide chlorothalonil is effective, and several trade named products are available (Daconil, Fung-onil, Ortho Garden Disease Control, etc.). However, care must be taken in handling chlorothalonil, since it is listed as a likely carcinogen and can also cause severe eye or skin irritation if applied improperly or if proper protective clothing and equipment aren't worn.



J. K. Clark, UC

*Figure 1. Peach leaves deformed by peach leaf curl.*

Bordeaux mixture, which gardeners can mix up themselves by following the directions in the UC IPM publication *Pest Note: Bordeaux Mixture* (<http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7481.html>), is also effective, but most gardeners will find the process of finding the ingredients and mixing up Bordeaux more work than they are willing to do to protect one or two backyard trees. For gardeners wishing to take the extra time to make Bordeaux mixture, you may want to stock the primary ingredients, which are powdered copper sulfate in "bluestone" form and either hydrated lime (calcium hydroxide), such as used in making plaster, or quick lime (calcium oxide). Neither of these ingredients is a registered pesticide. Be sure customers have goggles, gloves, and a dust and mist-filtering respirator when they are working with hydrated lime and mixing up the solution.

For more information about this disease and its management, see the UC IPM publication *Pest Note: Peach Leaf Curl* (<http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7426.html>).

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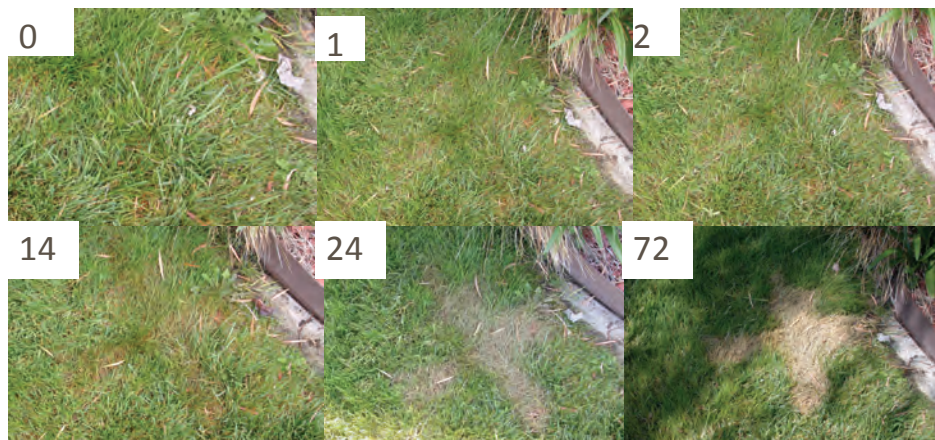
# Natural Herbicides: Are They Effective?

The public's increasing demand for safe "green" products has resulted in many new environmentally friendly herbicides for controlling weeds in the garden and landscape. Information on the efficacy of these new products is limited. However, environmental awareness groups and public agencies are promoting them as a way to reduce the use of herbicides that have a greater potential to contaminate surface waters. Retailers are beginning to more widely stock these "natural" herbicides, most of which contain essential oils or other natural plant extracts targeting weeds.

The majority of these "green" weed-control products are botanically based oils (e.g., clove oil, eugenol, and *d*-limonene), soaps (e.g., pelargonic acid), or acetic acid that control weeds by destroying the leaf cuticle or causing cell leakage that rapidly leads to death. Unfortunately, because these herbicides kill only green parts of the plant they contact, they don't provide long-term control of weeds with extensive root systems or underground storage structures such as rhizomes, tubers, or bulbs. Thus many treated plants are able to recover. In contrast, some conventional herbicides such as glyphosate or 2,4-D are translocated to roots or underground storage structures to kill larger plants and perennial weeds.

These types of herbicides are applied after the weeds have emerged (postemergent) and have little or no soil residual activity. They don't control weed seedlings that germinate after application. They kill the plants by breaking down plant membranes and are considered contact or burndown herbicides. These herbicides are very fast acting (Figure 1), but to be most effective they must contact all or most of the aboveground plant tissue. It is especially important to spray the growing points, or else the plant will regrow. Grasses and perennial weeds are difficult to control for an extended period of time, because they have some or all of their growing points below ground.

However, in some cases, especially where annual weeds are small, these products may be appropriate. These herbicides are best used on small weeds and annual weeds or for controlling weeds in cracks and, in some



C. A. Wilen, UC

Figure 1 (above). The effect of a plant essential oil-based herbicide on grass growth 1, 2, 14, 24, and 72 hours after application. However, the grass recovered in about two weeks.

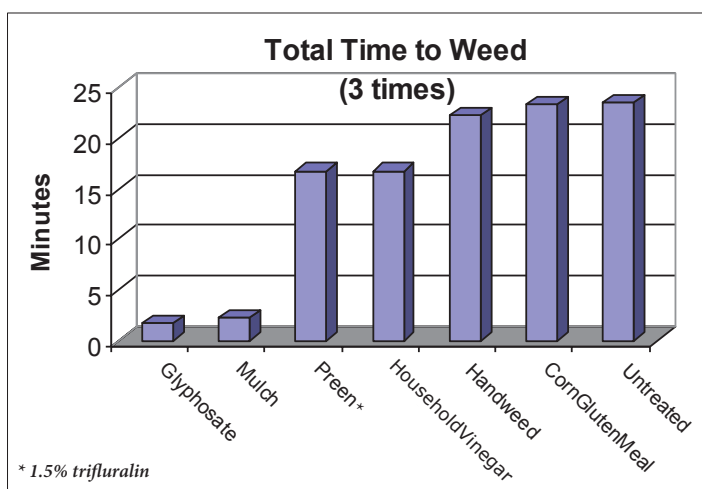


Figure 2 (left). Time needed to weed landscape beds treated with various products and methods.

cases, edging. They can be used for spot spraying, but care must be taken that the spray or drift doesn't contact desirable plants or else leaf spotting or death will occur.

## Increasing the Odds

Ways to improve efficacy when using these types of herbicides include:

- Good spray coverage;
- Application in warm weather (75° to 80°F);
- If using concentrates, addition of surfactants that improve weed control;
- Treatment when weeds are small; and
- Repeat applications for larger weeds, in most instances.

## Corn Gluten Meal

Another common natural herbicide is corn gluten meal (CGM). While the previously listed herbicides are postemergent types, CGM is sold as preemergent herbicide. Although being

widely touted as an effective herbicide that will control seedlings as they germinate, we have conducted numerous tests with this product and haven't been able to get results that justify its use as an effective preemergent herbicide. For example, there were no differences in the time needed to remove weeds from plots treated with CGM than from plants that were handweeded or from plots that were not subjected to any other treatment (Figure 2).

So the question is: Are natural herbicides safe and effective? If used as part of an integrated pest management program, the contact herbicides fit very well. Users should know that they won't get the same kind of long-term weed control as products containing glyphosate (e.g., Roundup). The user should also be aware that many of the plant based or "natural" products can cause skin irritation or eye or lung problems. Eye protection

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# IPM Workshop Held, Another Planned

**O**n Nov. 2, UC IPM held the first in a planned series of workshops for retail nurseries and garden centers. Sixty participants from 32 stores in the San Francisco Bay Area attended this sold-out workshop, which was held in Oakland.

The hands-on training, which was co-sponsored by UC IPM and the California Association of Nurseries and Garden Centers (CANGC), included sessions on landscape pest identification, tips on how to find information using the UC IPM Web site, and pesticides and other products with an emphasis on less toxic pesticides. Participants were provided with materials to help them share aspects of the training with other employees back in their stores.

## Demonstrated Learning

In a pre- and post-workshop interactive survey, participants demonstrated a measurable increase in knowledge related to pesticide safety and labeling, the ability to recognize several plant pest problems (Figure 1), and familiarity with the UC IPM Web site. For example, before the workshop started, participants were asked to choose which best described their experience using the UC IPM Web site. Before the workshop, only about 33% answered that they use and know how to find pest information on the site, compared to 86% the end of the workshop (Figure 2).

## Registration Now Open for Jan. 17 Sacramento Workshop

Want your staff better prepared to answer customer questions related to pests and pesticides? Join us for the next train-the-trainer UC IPM workshop, scheduled for Jan. 17. Your \$40 registration fee includes a set of the popular Landscape Pest Identification cards, lunch, a training certificate, and take-home materials.

The workshop will be held at the **UC Davis Extension Center in Sacramento**. For directions, the full agenda, and additional details, see the training and registration Web site at <http://ucanr.org/sites/IPMretail/>. Registration is open exclusively for retail affiliates until Jan. 6, so sign up online today!

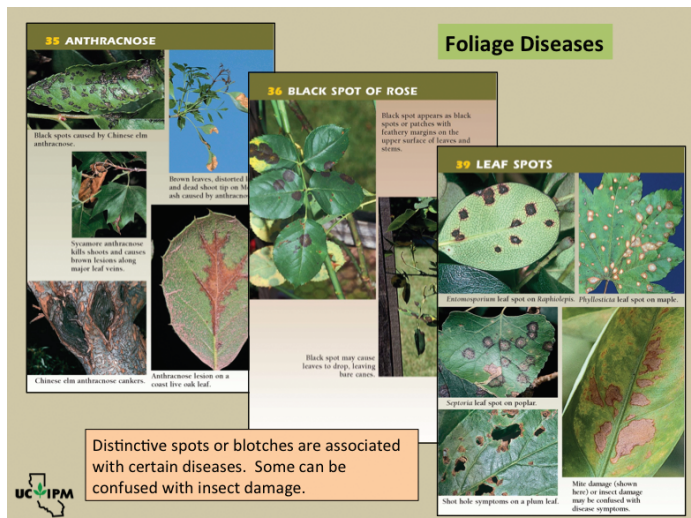


Figure 1. Participants learned to identify problems using the UC IPM Landscape Pest Identification Cards.

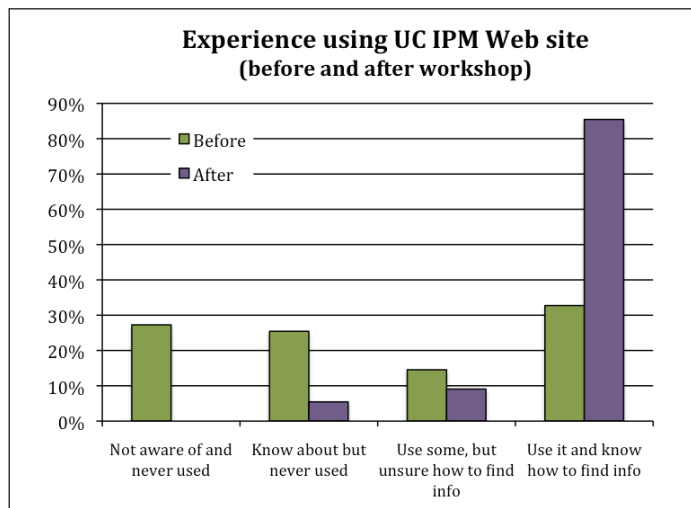


Figure 2. Attendees at the Oakland workshop learned how to use UC IPM's Web site to answer customer questions, becoming three times more proficient in doing so, according to a post-workshop survey.

# Natural Herbicides ... continued

and gloves as well as any other label requirements should be worn when using these natural herbicides, even if they are listed as exempt products. Note that some of the acetic acid products can be quite hazardous to handle.

## Trade Names

Examples of **plant essential oil-based herbicides** include WeedZap, Bioganic Broadleaf Killer, and EcoSmart Weed and Grass Killer.

Examples of **orange oil (d-limonene) based herbicides** include Avenger and Worry Free Weed and Grass Killer.

Examples of **acetic acid-based herbicides** include WeedPharm (Signal word: Danger), AllDown, and Grotek Elimaweed Weed and Grass Killer. **Note:** The acetic acid concentration for herbicidal use should be about 10 to 20%. Household (food-use) vinegar is about 5% acetic acid and isn't effective for controlling most weeds.

Examples of **fatty acid-based herbicides** include Scythe, Safer Moss and Algae Killer, Safer Fast Acting Weed and Grass Killer, Monterey Herbicidal Soap, and Natria Weed and Grass Killer.

**Combination** products include Burn-out II (clove oil plus citric acid) and Earthtone 4n1 Weed Control RTU (soap of fatty acids plus maleic hydrazide, a growth regulator).

—Cheryl Wilen, UC IPM South Coast Area Advisor, [cawilen@ucdavis.edu](mailto:cawilen@ucdavis.edu)

# Help! How Do I Manage Ants in my House?



J. K. Clark, UC

Figure 1. An Argentine ant tending a soft scale.

**A** look at the variety of ant control products on the shelves of any hardware store or garden center is enough to confuse any ant-tormented customer. Here are some questions you can ask your customers to help them find less-toxic solutions for ant invasions.

## What kind of ant do you have?

Different products work better for different ant species. The most common type of ant invading California homes is the Argentine ant (Figure 1). It is small (no more than 1/2 inch long), uniformly brown, and travels in distinct columns of workers. The *Key to Identifying Common Household Ants* at [www.ipm.ucdavis.edu/ants](http://www.ipm.ucdavis.edu/ants) can help identify species.

## How are the ants coming into the house?

Most household ants such as the Argentine ant nest outdoors and come in seeking food or water. A good way to solve many ant problems is to simply plug their entryways. Tell customers to inspect inside and outside of their house to find out where ants are coming in. Your store probably sells caulk and sealers that you can direct customers to.

## What's drawing ants into the house?

If invading ants don't find a food source in a house within a few days, chances are they may leave. Removing food sources including pet food bowls, leaking garbage, or spilled sugary or greasy items is an *essential* part of making a home less attractive to ants. These attractive foods will also make ants less likely to visit any bait stations installed to manage them.

Also, conditions outside can encourage ant invasions. For instance, wood-based

mulch up against the house (especially when moist) provides ideal nesting material, and plants (often in pots) that support aphids and other honeydew-producing insects will also draw ants. Where customers have persistent problems, suggest they keep the area directly around their house clear of these attractants.

Finally, movement of ants into the home is often triggered by changes in weather such as the first rains in fall or the first hot days of summer, so expect an increase in customer questions around those times.

## Once these questions are out of the way, you can suggest some ideas:

- An IPM approach is essential. Ant control products are unlikely to be effective unless food sources are removed and entryways are plugged.
- If Argentine ants are the problem, the most effective and safe products available to homeowners are liquid borate baits (e.g., sodium tetraborate decahydrate or disodium octaborate tetrahydrate). Argentine ants prefer liquid baits that contain a sugary attractant. There are many prefilled liquid ant bait stations containing these

products on shelves; however, the 5% borate solutions in these products are likely to kill ants before they can take the poison back to their nest to kill the colony. Solutions of 1% or less borate dispensed in refillable bait station are most effective. We hope these products soon become available in more stores. (See the June 2011 issue of this newsletter for details.) Other ant baits are more effective on other ant species.

- Gel baits (such as fipronil) can be useful in cracks and crevices that can't be sealed with a more permanent sealant.
- Ready-to-use sprays of plant oils such as orange, peppermint, rosemary, or clove may kill ants on contact and repel ants for a short time but provide no long-term control.

For more information—including helpful videos—on how to manage ants with less toxic methods, visit the UC IPM ant page at [www.ipm.ucdavis.edu/ants](http://www.ipm.ucdavis.edu/ants).

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

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