UC IPM
University of California
Agriculture and Natural Resources

Retail Nursery and Garden Center

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Tools for Removing Dandelions and Other Weeds

Dandelions can be an especially troublesome weed in lawns and landscapes. Once established, these perennial weeds readily regrow from their deep taproot when their tops are pulled or cut. Since dandelions spread via windborne seeds, prevention of new infestations is difficult. The best way to manage dandelions is to dig them out when they are young. Controlling these and other weeds before they set seed reduces the potential for further spread and invasion. For dandelions, it is important to remove the whole plant, taproot and all, since regrowth can occur if even 1 inch of the taproot remains.

Specialized tools for removing individual weeds and their roots are great nonchemical choices for customers who are looking for alternatives to herbicides. The UC IPM Program recently tried several dandelion removal tools for their ease of use, soil displacement, and weed removal ability on mature dandelions in moderately moist soil. Many different styles are available on the market, but we sampled six handheld and seven long-handled tools. A summary of what we found is below; see Table 1 for comments and rating on each tool.

Long-handled Tools

We tried several different long-handled tools (Figure 1) and rated their efficacy on removing both the weed and the taproot. For ease of use, Enviroweeder and Speedy Weedy Puller performed the best. These tools have naillike tines that go into the soil to grab the weed and a retractable plunger that shoots the weed off the end for easy disposal. You often don't even get your hands dirty.

One big drawback of these tools is that they take a large divot out of the area where the weed is removed, which is especially noticeable in lawns (Figure 2). Top dressing or fill may be required to replace the hole left behind. In addition, the tines on these tools didn't always remove the entire dandelion taproot; however, they successfully removed many types of shallow-rooted weeds.

In separate trials, UC Davis weed scientist Tom Lanini found that another product that we didn't test, the Weed Hound, was the best tool among the long-handled type with tines. It didn't leave as large a divot as the tools mentioned here.

The best long-handled tools consistently removed the dandelion along with its taproot. Three tools met this requirement: Grampa's Weeder Tool,

... continued on Pages 2 and 3

K. Windbiel-Rojas, UC IPM

Figure 1. Long-handled tools (from left): Speedy Weedy, Enviroweeder, Rittenhouse Weed Twister, Ergonica Weed Twister (hand and drill models), Radius ProWeeder, Lee Valley Dandelion Digger 60 inch, Rocket Weeder, and Grampa's Tool.

K. Windbiel-Rojas, UC IPM

Figure 2. Hole left by a long-handled tool with naillike tines.

WHAT'S INSIDE ...

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Dandelion Tools ... continued

Table 1. Dandelion tool rating. Ratings, with 5 being excellent and 1 being poor, are based on ease of use, removal of the dandelion along with its taproot, and removal of weeds other than dandelion.

Tool	Ease	Removes dandelion	Other weeds	Advantages	Disadvantages
Long-handled tools					
Radius 205 PRO Weeder*	4	5	3	Easy to get entire taproot. Sturdy design, ergonomic grip.	Tool is like a shovel. Disturbs lawn when extracting weeds. Still have to bend down to get out dandelion.
Grampa's Weeder Tool*	5	4	3	Almost no bending required.	Doesn't work very well on smaller dandelion plants.
Enviroweeder	5	3	5	Can shoot weed off end with plunger. Great for shallow-rooted weeds.	Doesn't get entire taproot. Leaves large hole. Heavy tool.
Lee Valley Dandelion Digger 60 inch	2	3	2	Sturdy design with fulcrum for leverage.	Taproot isn't consistently removed. Long handle makes difficult to use.
Speedy Weedy Weed Puller*	5	3	5	Can shoot weed off end with plunger. Great for shallow-rooted weeds. Lightweight.	Doesn't get entire taproot. Leaves large hole. If metal tines get bent, plunger doesn't work well.
Ergonica Weed Twister	3	2	3	Great for shallow-rooted weeds.	Doesn't get entire taproot. Leaves large hole. Best for large weeds.
Rittenhouse Weed Twister	2	1	2	Can operate with one hand.	Leaves hole in ground. Must dig out weed and dirt clod from tool end. Doesn't always get taproot. Handle is awkward.
Hand tools					
Diggit	5	5	4	Goes deep into soil to get entire taproot. Sturdy construction.	Handle is soft but not ergonomic.
Radius 102 NRG Hand Weeder*	5	5	4	Goes deep into soil to get entire taproot. Sturdy construction. Comfortable, ergonomic grip.	May not be suitable for all types of weeds.
Leonard Weeder*	5	4	3	Sturdy design. Good leverage from fulcrum.	Entire taproot isn't consistently removed.
Lee Valley Dandelion Digger 24 inch	4	3	3	Sturdy design. Good leverage from fulcrum.	Entire taproot isn't consistently removed.
Dandelion fork (common model)*	4	2	3	Inexpensive. Carried by most stores. Long handle to get down into soil.	Poor grip. No leverage. Fork isn't usually good enough to pull out taproot. More effort to remove other weeds.
Corona dandelion fork*	3	2	3	Sturdy design. Good leverage from fulcrum.	Entire taproot isn't consistently removed.

*Available in some California retail stores.

Dandelion Tools ... continued

Rittenhouse Rocket Weeder, and Radius Pro Weeder. Grampa's Tool is a popular design carried by many garden centers, while the Rocket Weeder may be available online only. For these tools, you step on a lever, rock the handle forward to clamp onto the weed, then gently pull it out. The Rocket Weeder also has a plunger for easy weed disposal. The Radius Pro Weeder, available in some stores, looks and performs like a slim shovel, and although it does lift up a chunk of soil, it allows you to get under the taproot to easily remove the whole weed. Stomp down the chunk of soil when finished.

Hand-held Tools

Some customers may prefer one of the wide varieties of smaller handheld weeding tools (Figure 3). These are inexpensive and take up less space in the toolshed, and they don't generally disturb the soil or lawn as much as some of the previously mentioned tools.

Many hand tools have a forked end that helps grab the base of the dandelion to pull out the entire plant. Styles, grips, cost, and effectiveness vary greatly. We found the best ones had a small fork or even no fork, a fulcrum portion for leverage (the curve between the fork and the handle), and a comfortable handle grip. The best performers in our study were the Radius Hand Weeder and the Diggit tool, because they allow you to get deep into the soil to loosen the taproot for easy removal. Most of the hand-held tools worked fine, but some required more effort to get the weed and taproot out.

Choose a Tool that Suits You

All the tools we tried out had advantages and disadvantages. The main considerations in choosing which tool to use are how much effort is required, whether the weed is satisfactorily removed, and personal preference. Tools with long handles require less bending over and time on your knees, reducing possible back and joint pain. Handheld tools might give you more control and allow you to get your hands dirty, which many gardeners enjoy!

K. Windbiel-Rojas, UC IPM

Figure 3. From left: Dandelion fork/knife, Diggit, Radius Hand Weeder, A.M. Leonard dandelion fork, Corona dandelion fork, and Lee Valley Dandelion Digger 24 inch.

For more information about controlling dandelions and other weeds, see the UC IPM Web site at http://www.ipm.ucdavis.edu/PMG/menu.weeds.html for a list of resources about weeds and unwanted plants in gardens and landscapes.

For help identifying weeds, see the Weed Gallery at http://www.ipm.ucdavis.edu/PMG/weeds_intro.html and Key to Identifying Weeds at http://www.ipm.ucdavis.edu/TOOLS/TURF/PESTS/weedkey.html.

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New Pest Notes from UC IPM!

UC IPM has recently added two new titles of interest to its Pest Notes series of publications about home, garden, and landscape pests.

The new Pest Note *Removing Bee Swarms and Established Hives*, http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74159.html, provides information about how to safely handle bee swarms and prevent home invasions.

The second new Pest Note, *Black Scale*, http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74160.html, details the biology, identification, and management of this insect pest of citrus, olive, and many other fruit and ornamental trees. Black scale has many natural enemies, pictured in the Pest Note, that often keep it under control naturally. When pesticides are needed, properly timed applications of narrow range mineral oil or canola oil insecticides are the best tools for managing this pest and less toxic to natural enemies and the environment.

REMOVING HONEY BEE SWARMS AND ESTABLISHED HIVES

Integrated Pest Management for Home Gardeners and Landscape Professionals

Large numbers of bees swarming in a tree in your garden or around your home can be unnerving, especially if they establish a hive within your house. However, bee swarms and nests can be safely managed if you follow careful procedures and get proper help.

WHAT IS A BEE SWARM?

Swarming is the honey bee's (Figure 1) method of colony reproduction. The old queen and about half of the worker bees leave their former nest and seek a new home, usually in the spring but sometimes at other times of the year when local conditions permit. To start the process, certain worker bees, called "scouts," begin to canvas the surrounding territory for a potential new nesting site even before the swarm leaves its original colony.

A departing swarm consists of a large number of bees flying in a cloud that seems to drift along through the air. People not familiar with honey bees are generally frightened by such a mass, which can contain 5,000 to 20,000 bees, but unless a bee becomes tangled in someone's hair, it isn't likely to sting. The queen is in the group, but not leading it. Usually within 100 to 200 yards of the original hive, the bees alight on an object and form a cluster, which looks like a seething, fuzzy glob of insects (Figure 2). Sometimes bees fly from the cluster to collect water and food, but most workers leaving the cluster are scouts that search out potential new home sites for the swarm. When they return from a good site, they dance on the cluster to communicate the location of their find.

A clustered swarm of many bees may appear frightening, but most spring swarm clusters of European honey bees—the common honey bees in central and Northern California—are extremely docile. It takes quite a bit of stimulation, such as being hit by sticks and stones or squirted with a hose, to induce defensive behavior. The same may not be true for Africanized honey bees or for any swarm of honey bees that has run out of food, as these aren't nearly as predictable and can be very touchy, even as swarm clusters.

Honey bees will nest in cavities having a volume of at least 4 gallons but prefer cavities around 9 gallons. Honey bees also prefer dark cavities with an easily defended entrance that is at least 9 feet from the ground. Hollowed-out trees are ideal sites. However, honey bees may nest in all sorts of cavities such as inside walls of houses; in or around chimneys; in outbuildings, fences, shrubs, water meters, utility boxes, barbecue grills, and soffits; or under decks. Within a few hours to a few days, the swarm's scouts usually reach a consensus about the best available site. Then the swarm takes to the air one last time to move to the new home.

Once in flight, the swarm is guided by scouts and arrives at the new site. It forms a cluster around the entrance with many bees fanning their wings and releasing a chemical signal to guide the others. Then the bees enter their new home, somewhat slowly. This is what most people notice when they see bees clustered on a section of a building. Inside, the low humming sound of the bees ventilating their nest often can be heard.

If the bees don't find a new nesting location, they may begin producing beeswax and forming combs at the spot where the cluster formed, such as a tree limb, the overhang of a house, or another unusual place. These "exposed comb" colonies (Figure 3) may exist until fall (or year-round in warm-winter areas), but robbing bees, hungry birds, and inclement weather usually put an end to these colonies and their combs.

Figure 1. Honey bee.

Figure 2. Bee swarm cluster on tree branch.

Figure 3. Feral beehive with combs.

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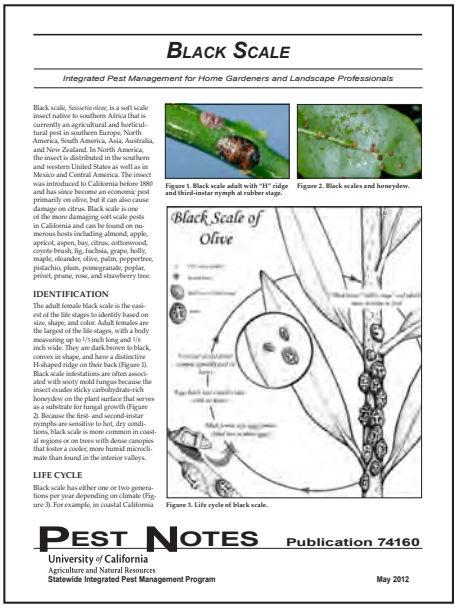

BLACK SCALE

Integrated Pest Management for Home Gardeners and Landscape Professionals

Black scale, *Saissetia oleae*, is a soft scale insect native to southern Africa that is currently an agricultural and horticultural pest in southern Europe, North America, South America, Asia, Australia, and New Zealand. In North America, the insect is distributed in the southern and western United States as well as in Mexico and Central America. The insect was introduced to California before 1880 and has since become an economic pest primarily on olive, but it can also cause damage on citrus. Black scale is one of the more damaging soft scale pests in California and can be found on numerous hosts including almond, apple, apricot, aspen, bay, citrus, cottonwood, coyote brush, fig, fuchsia, grape, holly, maple, oleander, olive, palm, peppertree, pistachio, plum, pomegranate, poplar, privet, prune, rose, and strawberry tree.

Figure 1. Black scale adult with "H" ridge and third-instar nymph at rubber stage.

Figure 2. Black scales and honeydew.

IDENTIFICATION

The adult female black scale is the easiest of the life stages to identify based on size, shape, and color. Adult females are the largest of the life stages, with a body measuring up to 1/5 inch long and 1/8 inch wide. They are dark brown to black, convex in shape, and have a distinctive H-shaped ridge on their back (Figure 1). Black scale infestations are often associated with sooty mold fungus because the insect exudes sticky carbohydrate-rich honeydew on the plant surface that serves as a substrate for fungal growth (Figure 2). Because the first- and second-instar nymphs are sensitive to hot, dry conditions, black scale is more common in coastal regions or on trees with dense canopies that foster a cooler, more humid microclimate than found in the interior valleys.

LIFE CYCLE

Black scale has either one or two generations per year depending on climate (Figure 3). For example, in coastal California

Figure 3. Life cycle of black scale.

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You can find other Pest Notes on our Retail Nursery and Garden Center Web page, http://www.ipm.ucdavis.edu/RETAIL.

Invasive Plants Sold in California

Sustainable Conservation's PlantRight program works with California's nursery industry to voluntarily stop the propagation, distribution, and sale of invasive garden plants. PlantRight's steering committee, which guides PlantRight's overall strategy and impact, includes well-known growers and retailers, the University of California, and other groups concerned about the threat of invasive plants. PlantRight also promotes alternative ornamental plants that are environmentally safe and commercially viable.

Through its annual Spring Nursery Survey, PlantRight tracks the availability of invasive garden plants in California. Data collected help inform PlantRight's strategy, enabling the organization to monitor the effectiveness of its work over time. PlantRight randomly selected 251 retail nurseries to survey in 2011 from a total pool of about 3,100 stores in California. One hundred forty-three volunteers, mostly UC Master Gardeners, surveyed 226 nurseries in 38 counties for the presence or absence of 19 invasive plants (Table 1).

Results

In 2011, 70% of the nurseries surveyed weren't selling any of PlantRight's 19 invasive garden plants. Of the stores that were selling invasives, the majority sold only one invasive species. About 40% of small, independent, and large retailers were carrying invasive garden plants, compared to just 9% of big-box stores. Although small and independent retailers were more likely than other types of stores to carry an invasive plant, the difference between larger chain stores and the other store types wasn't statistically significant.

Stores carrying invasive plants are most prevalent in California's South Coast region and less prevalent in the other regions. For the desert, Sierra, and coastal mountain regions, only a small number of stores were included in the survey, so the inference that fewer stores in these regions carry invasive plants is uncertain; this is particularly true for the desert region.

J. M. DiTomaso, UC Davis

Figure 1. Periwinkle was the most frequently found invasive plant in nurseries.

When the results are viewed by both region and store type, it is noteworthy that small and independent stores in the South Coast region were carrying the most invasive plants. These stores also comprise half of the stores that were surveyed in 2011 due to the high concentration of nurseries in Southern California. No other significant differences emerged when comparing different regions by store type.

Most Commonly Sold Plants

The most frequently found invasive garden plant in the survey was periwinkle (Figure 1) (found at 16% of stores surveyed), pampas grass (9%), and green fountain grass (8%). While focusing education efforts on these three species would potentially have the largest impact, their prevalence also indicates that they represent significant sources of revenue for the nursery industry, which presents challenges in eliminating these plants. The survey found highway iceplant, Chinese tallow tree, Scotch broom, myoporum, and Spanish broom at fewer than 3% of stores surveyed; therefore, these species may be easier to remove from circulation.

The data from this survey, in combination with PlantRight's knowledge of the relative threat posed by each species, will help the organization determine how best to partner with growers and suppliers. Over time, the annual survey is an excellent tool for gauging the effectiveness of PlantRight's efforts to stop the propagation, distribution, and sale of invasive garden plants in California.

For more information about this survey and PlantRight's efforts to stop the sale of invasive plants in California, visit http://www.plantright.org. The 2011 survey fact sheet is available at http://www.plantright.org/spring-nursery-survey. A 2012 survey of stores began in March, and results can be expected in the fall.

Table 1. PlantRight's 19 Invasive Garden Plants.*

Common name	Scientific name
Arundo, giant reed	*Arundo donax*
Blue gum	*Eucalyptus globulus*
Bridal veil broom	*Retama monosperma*
Capeweed	*Arctotheca calendula*
Chinese tallow tree	*Sapium sebiferum*
Crystalline iceplant	*Mesembryanthemum crystallinum*
French broom	*Genista monspessulana*
Green fountain grass	*Pennisetum setaceum*
Highway iceplant	*Carpobrotus edulis*
Jubata grass	*Cortaderia jubata*
Myoporum	*Myoporum laetum*
Pampas grass	*Cortaderia selloana*
Periwinkle	*Vinca major*
Russian olive	*Elaeagnus angustifolia*
Saltcedar	*Tamarix ramosissima*
Scarlet wisteria	*Sesbania punicea*
Scotch broom	*Cytisus scoparius*
Spanish broom	*Spartium junceum*
Striated broom	*Cytisus striatus*

* Selected as the most problematic in California. Impact may vary by region.

—Christiana Conser, Project Scientist, Sustainable Conservation, PlantRight Program, cconser@suscon.org

Editor's note: This article was slightly modified, with permission from the author, from an article that ran in the Fall 2011 issue of Cal-IPC News, *http://www.cal-ipc.org/resources/news/index.php.*

Getting the Best Results with Yellowjacket Traps

With the onset of warm weather and outdoor eating, expect an increase in customer requests for help managing yellowjackets (Figure 1). Your store probably carries yellowjacket lure traps, and customers may want to know if they work and how to use them.

University of California, Riverside entomologists recently tested yellow lure traps (Figure 2) in picnic areas in parks in Southern California and demonstrated that proper use of traps can provide protection of local areas, such as eating areas, in many situations.

Traps don't eliminate large populations but can help reduce numbers of localized foraging workers. Lure traps contain a chemical that attracts yellowjackets into the traps, but the common lure in traps, heptyl butyrate, attracts primarily the western yellowjacket, *Vespula pensylvanica*, the most commonly encountered species in California, but not other species. Meat such as fresh chicken can be added as an attractant and is believed to improve catches of the German yellowjacket, *V. germanica*, and *V. vulgaris*.

Periodically check the trap to remove dead yellowjackets and make sure workers are still attracted to the trap. Lures need to be replaced periodically; follow trap directions regarding replacement. If you added meat to your trap, replace the bait frequently, because yellowjackets aren't attracted to rotting or dried meat.

To reduce the number of yellowjackets foraging in specific areas such as patios, place lure traps with hepytl butyrate around the periphery. In large areas such as parks, place traps about 200 feet from the area to be protected and about every 150 feet along the circumference. In backyards, place the traps along the edge of the property line as far away from the patio or other protected area as possible. It is important to place the traps between the area to be protected and the native landscapes serving as nesting sites to intercept foraging yellowjackets. Typically yellowjackets will forage about 1/4 mile. Figure 3 shows a suggested placement for traps.

J. K. Clark, UC

Figure 1. The western yellowjacket, Vespula pensylvanica.

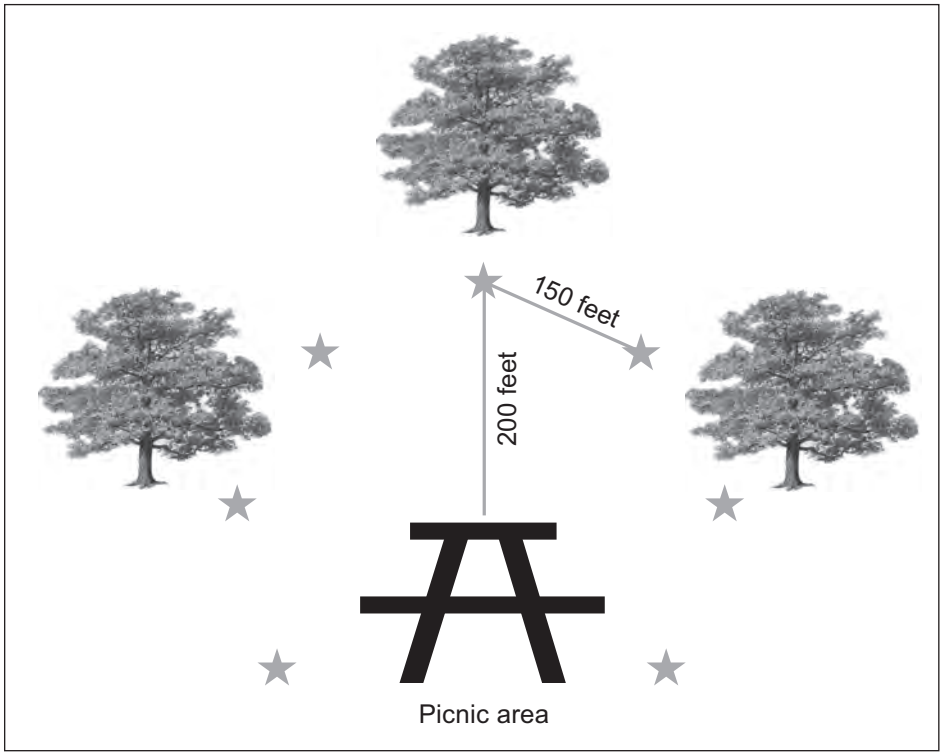
J. K. Clark, UC

Figure 2. A lure trap.

Consumers should be reminded that to get the best effect from traps, they should remove other yellowjacket attractants such as trash, rotting fruit on or under trees, soda cans, and outdoor food.

For more information about yellowjackets and their management, see the UC IPM Pest Note *Yellowjackets* at http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7450.html.

—Michael Rust, Entomology, UC Riverside, michael.rust@ucr.edu



M. K. Rust, UC Davis

Figure 3. Placement of lure traps, represented by stars, to protect a picnic area in a park. Place the traps about 200 feet from the protected area and about 150 feet apart. In backyards, place the traps around the periphery of the property as far away from the patio or other protected area as possible.

User-friendly Weed Identification Tool

The UC IPM Web site contains many useful features to help identify pests and problems in the garden and home. One such feature is the Weed Gallery, which contains images and identification tips for more than 150 common weeds.

If you think you know the name of your weed, the gallery allows you to quickly access photos using common or scientific names to confirm identification. Just use the List of All Weeds link from the main weed gallery page.

If you don't know what the weed is, the gallery will help you identify the plant using visual characteristics. First, narrow your search by selecting the weed category—broadleaf, grass, sedge, or aquatic plant (Figure 1). You will then see a collection of photos in that category.

Select the appropriate plant characteristic (Figure 2) to see another sub-menu of weeds that exhibit the traits of your weed. Scrolling over a thumbnail image on this sub-menu will bring up several photos of the weed—as a seedling, as a mature plant, its flower, and its seeds—to further aid in identification (Figure 3).

Once you think you've identified the weed, click on the link of the weed's name, which will take you to a photo gallery page where you can read about the weed's habitat, growth characteristics, and life stages (Figure 4). For many weeds, there is a link to a Pest Note that provides information about management, both chemical and nonchemical. In addition, each page in the gallery links to the Calflora Web site to show where the weed grows in California.

The gallery contains other features as well:

- **Want to know more about plants and their parts?** Illustrated tutorials distinguish among broadleaf, grass, and sedge plants and define plant parts used in characterizing certain plant species.
- **Want to identify common weeds found in turf?** The broadleaf and grass categories link to a dichotomous key, where users can pinpoint common turf (and landscape) weeds.
- **Didn't find your weed?** See the weed identification tool under "More information" to search the UC Weed Research & Information Center (WRIC) technical weed key.

Figure 1. Weed Photo Gallery home page.

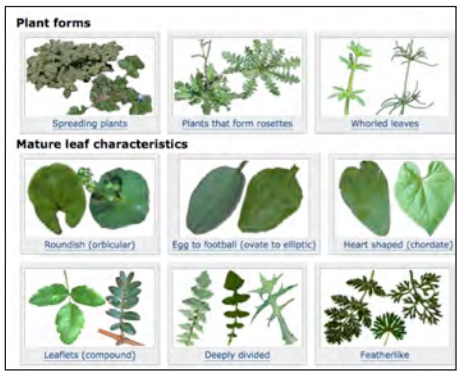


Figure 2. Plant characteristics page.

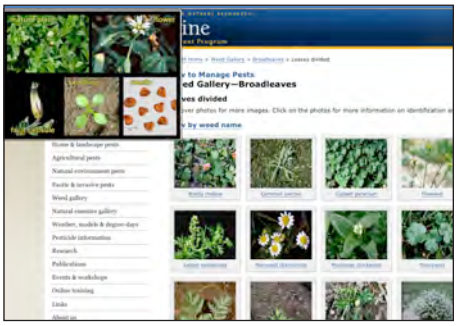


Figure 3. Sub-menu with thumbnail images and links to more details.

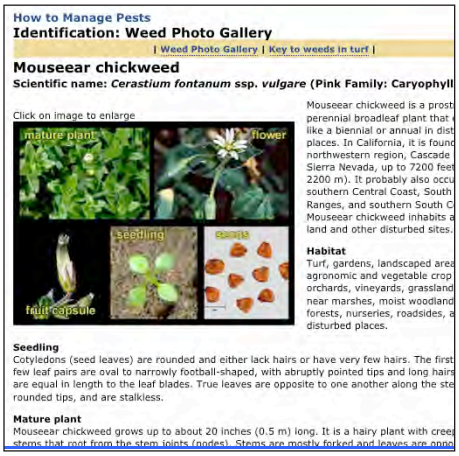


Figure 4. Photo gallery page.

You can access the weed gallery from the left-hand column of any page on the UC IPM Web site, http://www.ipm.ucdavis.edu, or from many of the site's weed-related pages. To access the weed gallery directly, visit http://www.ipm.ucdavis.edu/PMG/weeds_intro.html.

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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.

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.