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# INTEGRATED PEST MANAGEMENT FOR WEEDS

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Weeds—these harbingers of spring can be tough garden pests, challenging even the most seasoned gardeners. There are many ways to manage these unwelcome plants that crowd our new seedlings, sometimes harboring harmful insects and diseases.

Integrated Pest Management (IPM) offers several choices in managing weeds. Familiar to many gardeners, IPM helps gardeners solve pest problems using a process that minimizes risks to humans, animals and the environment. IPM includes as pests, plants, vertebrates, invertebrates, pathogens, or other unwanted organisms that may harm water quality, animal life or other elements in the ecosystem. A science-generated, decision-making process, IPM first requires observation and correct identification of the pest, followed by an assessment of the numbers or amount of damage caused by the pest. Guidelines are available from IPM sites to help gardeners decide which strategy or combination of strategies to enlist—such as biological, cultural, physical or chemical controls. On-going monitoring is also essential in management of pests, to determine if the strategy to control the pests actually worked.

First, it's critical to identify a pest—in this case, weeds. So, what is a weed? In simple terms, a weed is a plant that grows where you don't want it to grow, competing with vegetables or ornamentals for space, light, water and nutrients. Weeds can be annuals or perennials and can be characterized as persistent and competitive, some with seed that can survive in the soil for a long time.

To identify which weed may be invading your space this year, there are a number of online tools available to help. The UC IPM website Weed Photo Gallery ([http://ipm.ucanr.edu/PMG/weeds\\_intro.html](http://ipm.ucanr.edu/PMG/weeds_intro.html)), places weeds into four categories: broadleaf (herbaceous, flowering); sedges (perennial grassy-like plants that grow in shallow water or very moist soil); grasses (narrow leaves with parallel veins and small, inconspicuous flowers); and aquatic plants (plants that grow in water for at least part of their life cycle.) Each category includes a tutorial with pictures describing each type. The UCANR Weed Research and Information Center (WRIC) has a weed identification tool (<https://wric.ucdavis.edu/information/weedid.html>) which also assigns characteristics of weeds including broadleaf, grass like, and woody (trees, shrubs and sub-shrubs).



*Bermuda Grass.*  
Photo courtesy of UCANR

Once the weed is correctly identified, and with help from IPM sites, management of weeds may be considered. Options include biological, cultural, mechanical/physical and chemical controls. Below is a brief summary, with the understanding that much more information is available from references and educational websites (UCANR or other universities).

**Biological control** of weeds is the use of a plant's natural enemies, such as parasites, fungi, pathogens, or nematodes to control the weed. As an alternative to chemical means of control, the use of bioherbicides has gained some momentum over the past 20-30 years, particularly for large land managers. However, biological agents require state permitting and these choices are not readily available for home gardeners.

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**Cultural controls** are considered practices that reduce the establishment of the pest, or interfere with reproduction and survival. For instance, changing irrigation practices to a particular area can reduce pest problems since too much water can be an invitation to more weed growth and disease. As an example, bermudagrass (*Cynodon dactylon*) is dependent on moist soil to spread. According to the pest note for bermudagrass (<http://ipm.ucanr.edu/PMG/PESTNOTES/pn7453.html>), withholding summer water to dry the stems, followed by careful raking of the area two or three times during the summer will help bring the rhizomes to the surface where they can be removed. However, if water is applied or rain falls, the weed will quickly regrow. For this difficult weedy pest, a combination of IPM options may be required to get rid of the weed.

**Mechanical and physical controls** kill pests directly, such as pulling and removing weeds, adding mulch, or solarization. Weeds that reproduce by seed are generally easier to remove manually than weeds such as bermudagrass that reproduce vegetatively from stolons and rhizomes.

Conventional mulching involves applying a thick layer (6 to 8 inches for weed control) of straw, wood chips, leaves or other covering to an area as a barrier against weed growth. Avoid placing the mulch right up to the trunk or base of the tree or plant. Mulching has a number of other benefits, but suppressing weed growth is one huge benefit. Sheet mulching is an alternative that involves layering solid materials over an area to help control weeds or turf. This is accomplished by mowing or cutting the vegetative growth very short, covering with a layer of mulch, then adding a layer of cardboard, or other solid barrier, then covering the cardboard completely and thickly with another layer of straw, leaves or woodchips. Mulches can be applied any time of the year, and control can be extended as long as additional mulch is added over time.

Soil solarization is a non-chemical method of pest control that may help control many weeds by means of a combination of moisture and heat from the sun. Plastic sheeting, 1 to 4 millimeters thick, is used to cover an area of weedy growth that has been trimmed as short as possible. The area to be solarized is only the weeds the gardener wants to control—not the surrounding ornamentals or vegetables. The UCANR IPM Pest Note on Solarization (<http://ipm.ucanr.edu/PMG/PESTNOTES/pn74145.html>) offers more information about using soil solarization to control pests.

Chemical control for weed management is the use of herbicides, and should be used only when other approaches or combination of approaches is not effective. The UCANR Quick Tips for Weed Control (<http://ipm.ucanr.edu/QT/weedcontrolcard.html>) states, “most weed problems can be managed by hand-weeding, mulching, good garden or landscape design, keeping lawns vigorous and competitive, and using other non-chemical methods.” Herbicides (weed killers) are pesticides designed to control undesirable plants. When using herbicides, follow label directions precisely. Otherwise, products will fail to control the weeds, may damage desirable plants, or can limit your ability to replant in that area. Applying too much herbicide in an area also wastes money and can lead to it running off site and contaminating creeks and streams.”

Integrated pest management for weeds offers a variety of choices for control. Identification of the weed is the first step—then, prioritize management strategies. What weeds need to be dealt with first, and which can wait? On-going monitoring will indicate the need for further interventions. Seek guidance for management from IPM references, and consider the options for control that are consistent and achievable for the home garden.

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*Tool choices for weeding—a mechanical method of control.*

*Photo by Ann Wright.*

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UC Master Gardeners of Placer County are University of California Cooperative Extension (UCCE) ambassadors to the Placer County home gardening community. Master Gardeners promote environmental awareness and sustainable landscape practices, and extend research-based gardening and composting information to the public through educational outreach. UCCE is part of the Division of Agriculture and Natural Resources (ANR) of the University of California.

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## References

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