HOME GARDEN WEED MANAGEMENT

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Introduction. Weeds exist in every garden site at times and, depending upon the gardener's management skills, may or may not be a serious problem. The goal with most modern weed management programs is not to eliminate weeds from every environment, but to reduce their impact. For example, a 100 percent weed-free lawn may be desirable, but it is not always practical. However, with good management skills, one's lawn can be nearly weed free without the extensive use of chemicals. Good turf management practices, such as selecting the best turf species and varieties for the site, proper mowing height and frequency, and adequate fertilization and irrigation, lead to a strong and competitive lawn where weeds cannot easily invade. Once turf is weakened, weeds are able to gain a foothold.

Weeds naturally invade garden sites. It is a part of the natural succession of plant ecosystems, even if they are man-made ecosystems. The goal of a gardener is to interrupt the natural succession and maintain a garden of ornamental plants. To do that, one must use a variety of weed control techniques over a long period of time. The following are a few of the methods home gardeners can use.

Prevention. If the garden is weed free now, be diligent in preventing weeds from coming in. Be aware of weeds when they emerge and clean them out before they flower and set seed. Avoid bringing in weed-infested plants from the nursery, or garden equipment that may have seeds or dirt on it with weed seeds present. Don't bring in soil that may contain weed seeds.

Keep Garden Plants Competitive. Provide conditions that favor the crop or plant and not the weed. For example, drip irrigation wets a small area and provides water to only the desired plants but not weeds. Fertilize at the right time and with the right amount for the garden planting.

Mechanical Control. Use tools, or hand pull weeds before they go to seed. Also consider mowing or rototilling them, or the "sprinkle-sprout-spade/spray" technique of weed removal prior to planting. Frequent hand removal of young plants will rapidly reduce annual weeds. Perennial weeds can be spread by cultivation and should be removed by other methods.

Smothering. Mulches can be very effective in reducing weed germination or in some cases eliminating it altogether. Organic or plastic mulches or a technique called soil solarization can be used. Organic mulches ("yard waste") must be 4 to 6 inches deep depending upon the fineness of the mulch to prevent weed seed germination. Plastic mulches should be black or dark colored (not clear) and exclude light and should also have UV light inhibitors to protect the plastic from rapid photodecomposition. There are also many landscape fabric products available.

Soil solarization is an effective technique to kill weed seeds and seedlings by heating the soil. Till the area to be solarized, rake it very smooth, irrigate it well, and then cover the area with a 2 to 4 mil clear plastic. Make sure the edges are well sealed with soil and that the area stays moist. Light and

heat are transmitted through the plastic, and after 4 to 6 weeks in inland areas and 8 weeks in coastal regions, the soil becomes sufficiently heated to kill weed seeds and some soilborne pathogens.

Other weed control cultural techniques include flaming, flooding, and crop rotation with frequent tillage.

Biological Control. Using natural enemies to control weeds has been effective on a few species. For example, puncturevine (*Tribulus terrestris*) is a weed that has been significantly suppressed by the importation of two beneficial insects that feed on puncturevine: a puncturevine seed weevil and a stem weevil.

Chemical Control. In some cases, weeds can get the best of any gardener, and an herbicide may be the solution. There are many types of herbicides, and some work on some weeds and in some planting situations and not in others. It is important to read the label and follow the recommendations exactly. There are *preemergent* and *postemergent herbicides*, *contact* and *systemic herbicides*, and *selective* and *nonselective herbicides*. The following definitions will help:

First, an herbicide may be either preemergent or postemergent.

Preemergent. Applied before the weeds emerge from the soil. Damages young seedlings as they germinate and try to emerge.

Postemergent. Applied after the weeds have emerged from the soil. Damages actively growing weeds.

Then the herbicide may work either as a contact herbicide or a systemic herbicide.

Contact herbicide. The chemical causes localized injury where it has come in contact with the plant. Some examples include cacodylic acid, diquat, Finale® (glufosinate), and soap (fatty acid) herbicides, such as Scythe® (pelargonic acid).

Systemic herbicide. The chemical moves within the plant causing injury throughout the plant. Examples include Roundup® (glyphosate), 2,4-D, MCPP, dicamba mixtures, or Turflon® (triclopyr).

Lastly, herbicides may be selective or nonselective.

Selective. Toxic to only certain plants or weeds, such as 2,4-D, which is selective to kill only broadleaf weeds and not grasses, or pendimethalin, which controls crabgrass but does not injure established turfgrass.

Nonselective. Generally toxic to all plants. These chemicals may be rate (dose) dependent in terms of their toxicity.

Weed Identification. Prior to using any herbicide, it is important to identify the weeds needing control and know about their life cycle. Know if a weed is an annual or perennial. If it is an annual weed, then is it a summer or winter annual? Know if it is a grass or a broadleaf plant. Also know where the weed is a major problem. Is it in the lawn, along ditchbanks, or only in the flower beds?

Common weeds in landscapes and their life cycles

Annuals: *Grasses* - annual bluegrass, crabgrass (large and smooth), goosegrass, Italian ryegrass. *Broadleafs* - clovers (black medic and CA burclover), chickweed, field madder, filaree, common groundsel, henbit, knotweed, mayweed, nettle, pineappleweed, prickly lettuce, purslane, scarlet pimpernel, shepherdspurse, Southern brassbuttons, sowthistle, speedwell, spurge (petty, prostrate, and spotted), spurweed, and swinecress.

Biennials: Cheeseweed (mallow, malva), wild carrot.

Perennials: *Grasses* - bermudagrass, dallisgrass, German velvetgrass, kikuyugrass. *Narrowleaf* - nutsedge (purple and yellow). *Broadleafs* - clover (white), dandelion, English daisy, mouseear chickweed, oxalis (creeping woodsorrel and bermuda buttercup), pearlwort, perennial morningglory, plantain (broadleaf and narrowleaf), and yarrow.

If you cannot identify the weed, there are numerous references, or you may contact your local nursery, University of California Master Gardeners or Farm Advisors for assistance.

Group I: Selective herbicides for home gardeners

Common name	Trade name(s)	Pre/post-emergence	Contact/ systemic	Weeds controlled (special)
benefin	Balan	pre		grasses
bensulide	Betasan (others)	pre		grasses (henbit)
metolachlor	Pennant	pre		grasses (nutsedge)
oryzalin	Weed Stopper (Surflan)	pre		grasses, some broadleafs
pendimethalin	Pendulum (PreM)	pre		grasses, some broadleafs
prodiamine	Barricade	pre		grasses, broadleafs
trifluralin	Treflan	pre		grasses, some broadleafs
clethodim	Select	*post*	systemic	grasses
fluazifop	Fusilade (Grassout)	*post*	systemic	grasses (except annual bluegrass)
halosulfuron	Manage	*post*	systemic	nutsedge in turfgrass
MSMA	Weedhoe 108 (others)	*post*	systemic	grasses (nutsedge) in turfgrass
sethoxydim	Poast	*post*	systemic	grasses (except annual bluegrass)
DCPA	Dacthal (Prevent)	pre		broadleafs, grasses (spurge, crab, annual bluegrass)
diclobenil	Casoron	pre		broadleafs, some grasses (horsetail)
isoxaben	Gallery (Portrait)	pre		broadleafs (oxalis)
napropamide	Devrinol	pre		broadleafs
2,4-D	Weed-B-Gon (others)	*post*	systemic	broadleafs (dandelion)
dicamba		*post*	systemic	broadleafs (clover, Eng. daisy)
Mecoprop		*post*		broadleafs (clover, chickweed)
2,4-D, dicamba, Mecoprop	Trimec	*post*	systemic	broadleafs
triclopyr	Turflon (Brush-B-Gon)	*post*	systemic	broadleafs (clover, oxalis)

Group II: Nonselective herbicides for home gardeners

Common name	Trade name	Pre/post-emergence	Contact/ systemic	Weeds controlled (special)
cacodylic acid	Weed Ender (Montar)	*post*	*contact*	grasses, most broadleafs
diquat	Weed & Grass Killer (Reward)	*post*	*contact*	broadleafs, most grasses
pelargonic acid	Scythe	*post*	*contact*	broadleafs, most grasses
sodium chlorate	Grass, Weed & Vegetation Killer	*post*	*contact*	annual and perennial grasses and broadleafs
glufosinate-ammonium	Finale	*post*	systemic	many
glyphosate	Roundup (Kleenup)	*post*	systemic	many
oxyfluorfen/ imazapyr	Triox	*post*	systemic	all vegetation

Read and understand all label directions before using any chemicals.

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products which are not mentioned.