

# SECTION V.

## HOME GARDEN AND LANDSCAPE MANAGEMENT

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*Revised March 2020*

Year-round weed management in home landscapes requires a year-round, integrated approach. This means using common sense, good practices, knowledge of weed biology, and use of as many weed control options as possible to reduce unwanted vegetation. The choice of weed control options available to you will depend on your site-specific issues and your ability to complete timely and often repetitious tasks. All weeds, if left unmanaged, reduce the value of the land they occupy. Consider the following concepts in designing a year-round weed management approach for home landscapes and gardens:

**Know your weeds.** Accurate weed identification is essential for successful weed management in home landscapes and gardens. Learn to identify common weeds by obtaining copies of weed identification publications listed at the end of this section. If needed, consult your local Extension Office and Master Gardeners, or local nurseries and lawn and garden stores.

Perennial weeds are particularly difficult to control in horticultural sites. Once established, most contain large storage organs such as roots, rhizomes, tubers, or trunks and vines. Some contain thorns, one or more are poisonous, and most are extremely vigorous.

Learn to identify mature and seedling weeds. Correct identification of perennials in the seedling stage can provide control options while the plant is small and vulnerable. After weeds become established as perennials, control options are limited to brief stages within the weed life cycle. Control practices often must be repeated or combined with other methods for maximum control.

### Year-round Weed Management

Designing a year-round weed management program requires planning and timely implementation. First, identify and prioritize the weeds infesting your home landscape or garden. You may decide to simply mow a weed that infests sod between buildings, whereas poison-oak or field bindweed may be intolerable near the front door or in your garden. Also, improve your weed and crop management efficiency by grouping plants that require similar practices.

Second, combine several control methods with management practices to improve crop competitiveness. Interplant crops and space plants closely to shade and compete against weeds. In food production areas, isolate perennial weed infestations and plan an attack while crops are absent. Always keep seedlings or new plants from becoming established plants, especially as perennial weeds. Apply controls at the correct time. If you choose to apply herbicides, read the enclosed information and the product label. Then calibrate your equipment and apply precisely the amount stated on the package.

Last, evaluate and continually monitor the infestation. Modify your choice of controls if results are not satisfactory. Remember, weed control requires patience and persistence!

### Preventative Tactics

Proper planning and use of geo-textile weed “barriers” are the optimal choices for weed control in home gardens. The adage holds true, that “an ounce of prevention is worth a pound of cure.”

**Design your landscape** In home gardens, orchards, or berry patches, weed control activities can be minimized with careful selection of weeding methods that are compatible with your needs and the desirable plants. Grouping plants that require similar weed control practices will improve efficiencies. Combine several weed control practices into a year-round weed management program designed to prevent weed growth. The goal of any landscape should be to enhance crop vigor while minimizing weed growth.

**Proper landscape or crop management** This practice shifts the competitive advantage to favor the crop instead of the weed. Choose a site or improve the area for optimum growth of landscape plants. Buy clean topsoil and nursery plants. Control perennial weeds before planting the landscape. If this is impossible, choose vigorous groundcovers or ornamental plants that compete against weeds or can be treated easily by combining weed management practices. Plant these ornamentals in closely spaced arrangements, and place fertilizer or use drip irrigation. Use drip irrigation and directed fertilizer applications to provide essential nutrients to crops without broadcasting it for use by weeds. Minimize the open space by interplanting short-duration vegetables between crops of longer duration.

**Prevent seedling weeds from becoming established** Select crops and planting dates that rapidly form a complete canopy to shade weeds. Green beans, cucumbers, and squash are good examples of broadleaf vegetables that provide competitive canopies. Control of perennial seedlings within the first 4 to 6 weeks after emergence, when plants are small and easily removed, will prevent their establishment as perennials. Prevent mature plants from producing seed or viable perennial parts such as new tubers or rhizomes.

**Proper disposal of vegetation** Although it may seem obvious, many weed problems can arise if grass clippings or household compost are not disposed of in a responsible manner. Weed seeds can be destroyed in a compost bin, but only if it is being managed to ensure proper pH, temperature (at least 160°F for 3 days), oxygen and moisture content, etc. For instance, seeds of speedwell, field bindweed, groundsel, lambsquarters, and other species require 30 days of temperatures above 145°F to become fully sterilized. Unkempt compost piles also can attract rodents and other vertebrates that can disperse weed seeds via their digestive tract.

**Mulches** are materials that are placed on the soil surface to physically impede weed growth and emergence. Common organic mulches include bark, sawdust, wood chips, and crushed nutshells. Inorganic mulches such as rocks and sand are more expensive and generally used only in commercial landscapes. Plastic, paper and fiber mulches will prevent most weeds and are an excellent choice for long-term weed control, especially around ornamental trees and shrubs

Black plastic laminate effectively blocks weed emergence but also reduces water and air supply to the soil underneath and tends to degrade over time. Geo-textiles, or landscape fabrics, include spunbonded, woven, and laminated plastic fibers. Biodegradable plastic mulches are becoming more available and are a substitute for polyethylene, but are not yet approved for organic production.

These provide a physical barrier that limits growth of many annual and perennial weeds while allowing complete drainage and oxygen exchange into the soil. However, sharp underground rhizomes and roots of perennial weeds like quackgrass or yellow nutsedge can penetrate the fabrics (except the laminate). After installation, prevent weed establishment within the mulch by frequent hand-weeding.

On some sites, a vigorous turfgrass or other type of “living mulch” can be managed to suppress weeds. In berries and tree fruits, dwarf turfgrasses can be managed as a living mulch. Turfgrasses reduce weed growth by filling 50% to 66% of the space with a competitive cover while a weed-free strip is maintained within the tree or berry row.

## Management Tactics

Cultivation, hoeing, or hand-weeding should be the first of mode of attack. Annual weeds must be cut just below the soil surface to prevent resprouting from buds on the stem. Always maintain a sharp hoe or knife and minimize soil disturbance. Shallow cultivation is required in tree fruits and berries to avoid scarring roots. Fewer weeds will grow after the initial population near the soil surface has germinated. After cultivating, remove weeds such as common purslane from the garden area, since they dry slowly and often re-root. In vegetable gardens, annual tilling will improve planting conditions while controlling most weeds and covering debris from last year. However, mechanical tillage conducted too often, or when soils are excessively moist, will promote soil compaction and a “hardpan” usually several inches below the soil surface.

Weed infestations are rarely eliminated in one season using cultivation or hand removal, unless combined with frequent scouting to eliminate new perennial weed seedlings, and starvation of established perennials. Starvation requires cutting the weed every 2 to 3 weeks for 2 years or more to completely prevent storage of food reserves. Repeated removal of weeds or drying of the soil will reduce infestations of annual weeds that remain near the surface. However, cultivation, and especially rototilling, chops and rapidly spreads most perennial weeds throughout the site, thus worsening the problem.

**Chemical controls** can effectively control unwanted vegetation when applied correctly, and are most useful for large areas. Herbicides require considerable testing to assess potential hazards and to minimize possible crop injury before the product can be sold, but only IF the product is used as intended. Product labels describe specific uses and provide detailed instructions. Users must read and follow label instructions precisely to reduce human exposure and prevent crop injury.

### Use pesticides safely!

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
- Precisely follow label instructions.
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from your pesticide use.

Herbicides often are specially formulated and sold in small packages for use by home landscapers. Always verify that the crop you intend to treat is listed on the package. Apply the herbicide to the crop or site exactly as listed on the package. Be especially careful about drift or misapplication to desirable plants. Avoid applications during windy conditions or spraying too close to desirable vegetation not listed on the label.

Pesticide safety requires common sense. Always keep a pesticide

in its original container with the label clearly visible. Do not put chemicals in empty food or drink containers. Store herbicides and your sprayer in a locked cabinet, out of the reach of children, away from foods, and in a ventilated area protected from freezing. Rinse the sprayer thoroughly after each use. Let metal sprayers dry to prevent rusting.

Apply herbicides at the correct rate or concentration, and time of year. Use one of the methods below depending on label instructions and the weed to be controlled:

- **Broadcast sprays** must be applied precisely to a measured area, or mixed at a specific concentration and applied to wet the weed foliage. Hose-end sprayers are poor choices of application equipment. Rather, use a pressurized hand-held or backpack sprayer, and reserve it for herbicides only. Either calibrate your sprayer by spraying the amount of water on the prescribed area stated on the label (e.g., 1 gal/250 sq ft), or spray the area to be treated with water and measure the amount used, then adjust your walking or applicator speed. Mix the correct amount of liquid herbicide in water and treat the exact area. While spraying, do not stop to concentrate spray on a specific weed. Apply the spray uniformly over the entire area.
- **Spot or foliar spraying** directs a narrow stream of spray toward the weed. Herbicides often are diluted to a certain concentration (e.g., 3 Tbsp/quart of water). Spray weed foliage until it is uniformly wet but not dripping.
- **Basal spray** completely wets the lower 18 inches of all stems or trunks until spray runs down and collects around the collar and exposed roots.
- **Stump spray** thoroughly drenches newly cut surfaces including bark and exposed roots of trees.
- **Concentrate treatments** apply undiluted herbicide on newly cut stumps or in frills cut with an ax on larger stumps. Frills must be cut through the bark and undiluted chemical poured into the opening. Drill holes also can be bored in the wood near the outside of the trunk, filled with undiluted chemical, and plugged with a dowel.
- **Granular herbicides**, including “weed and feed” products, also must be applied precisely to known areas. Measure small areas and apply exact quantities of chemical to that area. Avoid using the visual guides printed on product labels because they lack precision.

Herbicide selection requires information about each weed and herbicide including the precise time of application. First, identify the weed accurately before studying control options. Next, determine the susceptible growth stage or best time of year to achieve maximum control. Last, consider the unique properties and application requirements for each herbicide. Herbicides can be applied by one or more of the following four CHEMICAL CONTROL STRATEGIES:

1. **Preemergence herbicides applied selectively to soil (PRE/SELECTIVE)** These herbicides kill germinating weed seedlings, but WILL NOT KILL ESTABLISHED WEEDS. They can be used among established plants or as crop seedlings are emerging. Preemergence herbicides remain near the soil surface where weed roots and shoots absorb the chemical and die. Established perennial weeds may survive because their roots grow beneath the treated layer.

If you want to use this type of herbicide in annual flower and bulb beds and in certain vegetables, ask for products that

contain trifluralin or oryzalin. Verify that your crop or site is listed on the label.

If you want to use this kind of herbicide around established shrubs, trees, berries, tree fruits, and conifers, ask for products containing trifluralin, oryzalin, or dichlobenil. Do not apply dichlobenil (Casoron) around conifers or groundcovers. Apply dichlobenil only in midwinter when temperatures are above freezing but below 50°F and when a rain will follow your application. Dichlobenil volatilizes (evaporates) into the atmosphere when temperatures are too warm.

Corn gluten meal (CGM, also known as maize gluten meal) is a product made from the by-product of corn processing. This material acts on newly emerged roots and causes desiccation to the seedling. It is sometimes marketed as a weed-and-feed product because it naturally contains nitrogen. CGM can be used in organic systems. Weed control can be highly variable with these products and depends on many factors. Experiment on small areas before investing in large amounts of product.

## 2. Postemergence herbicides applied selectively to foliage

**(POST/SELECTIVE)** These herbicides kill undesirable foliage, such as broadleaf weeds growing in turf, but do not harm turf or desired crop. Selective foliar herbicides are absorbed mostly by leaves and move through the weed's vascular system to growth sites; there, the chemical disrupts plant growth. To use this type of herbicide safely, you must know both the weed's susceptibility and the desired plant's tolerance to the chemical. Apply these herbicides carefully to prevent drifting or volatilizing onto nearby susceptible, desirable plants.

In lawns, herbicides containing 2,4-D, MCPP, MCPA, quinclorac, and dicamba will control most broadleaf weeds. However, these chemicals can drift and injure or kill adjacent broadleaf crops or ornamental plants. Select products with very small amounts of dicamba, or be extremely careful in applying dicamba, because it can injure or kill susceptible trees or shrubs growing in or near the treated lawn. The desired plants' roots under the lawn can absorb dicamba, resulting in injury. Apply these herbicides when air temperatures are below 70°F. More information regarding herbicides in lawns can be found in section T1 of this publication, but be advised that all not chemicals listed in section T1 are registered for home use.

Triclopyr and 2,4-D products applied to foliage and cut stems will control many broadleaf and woody plants. Choose amine formulations to reduce the chance that the herbicide will volatilize and move to neighbors' property or to desired plants on your property. Crossbow is a combination of triclopyr and 2,4-D in an ester formulation. It must be applied when temperatures will be below 60°F for a couple of days to prevent volatility.

In landscapes, the postemergence grass herbicides containing fluazifop or sethoxydim will control certain annual grasses and suppress or control some perennial grasses growing among broadleaf plants. All fine fescues and annual bluegrass are tolerant. Often, a surfactant is needed to enhance the uptake and thus efficiency of these herbicide.

3. **Postemergence herbicides applied nonselectively to foliage (POST/NONSELECTIVE)** can be a contact-type herbicide or a systemic-type herbicide applied postemergence that kills most treated plants. The treatment can still be selective,

however, if applied at the correct time—destroying emerged weeds before you plant the desired plants—or if you carefully direct the chemical on the weed, avoiding contact with desirable foliage. This type of herbicide does not leave long-lasting residues in soil.

**Contact herbicides** require thorough coverage and are most effective on small, rapidly growing broadleaf weeds and annual grasses with exposed growing points. This type of herbicide is usually not effective on perennial weeds because even though foliage is controlled, roots survive.

- Glufosinate, diquat, herbicidal soaps, and pelargonic acid or cacodylic acid products disrupt cell membranes, causing leakage and rapid desiccation of foliage. Some products include acifluorfen or oxyfluorfen to broaden the spectrum of weed control, or to hasten foliage death.
- Acetic acid and/or citric acids cause cell contents to leak, resulting in burned leaves of small, actively growing broadleaf and grass weeds. However, if growing points of grasses are protected beneath the soil surface, control will be erratic, and nonexistent for perennial weeds with ample reserves of starches and nutrients. Perennial weed leaves will be burned with these products. However, buds from rhizomes or roots below the treated area will require multiple treatments. One example of a vinegar-based herbicide is WeedPharm.
- Several herbicides made from plant oil extracts, including clove, cinnamon and citrus rinds, have been approved for use in home landscapes. Remember that just because these products are “natural” does not mean they can be used carelessly. In fact, they can damage any foliage they contact. Such herbicides must be directed so they do not contact desirable plants. Weeds will be controlled by these products only if they are treated after emergence. Some examples of plant extract herbicides include Matratec EC, EcoSmart, GreenMatch, C-Cide, and WeedZap.

**Systemic herbicides** enter leaves and move through vascular tissue to sites within the plant that control growth. This type of herbicide can control many perennial weeds, although application timing is critical.

- Glyphosate (several products) controls a wide range of grasses and broadleaf plants by inhibiting production of three essential amino acids, or protein building blocks, in plants. The herbicide moves more efficiently from leaves to perennial roots if it is applied to actively growing foliage, usually in midseason just before bloom; consult label for details on specific weeds. Glyphosate is strongly adsorbed to soil and has no activity once it contacts soil.
4. **Persistent herbicides applied nonselectively to soil or structures (PERSISTENT/NONSELECTIVE)** These herbicides and sterilants control all vegetation for an extended time, for example on driveways, along foundations, or under fence lines. Desirable plants can be severely injured if their roots grow into the treated area or if treated soil is moved. This type of herbicide product is often marketed as “extended-control” and products contain prometon, monobor chlorate, sodium chlorate, sodium metaborate, imazapic, or imazapyr. Potassium laurate is used for moss and algae control, and some products are labeled for use directly on roof shingles or siding.

# Weed Treatments and Available Products for Home Gardens and Landscapes<sup>a</sup>

Herbicide ingredient	Examples of brand names	Timing <sup>b</sup> and application notes	lawn/turf	ornamental shrubs/trees	annual flower beds	perennial flower beds	home vegetable gardens	home orchards (tree fruit/nut)	home small fruit/berry	pasture, borders, and non-crop
2,4-D (+ triclopyr) <sup>c</sup>	Crossbow	Selective, POST	x	x						x
acetic acid	Weed Pharm	Nonselective, POST		x	x	x	x	x	x	
clove or citrus oils	Burnout II	Nonselective, POST		x	x	x	x	x	x	
dicamba (+2,4-D) <sup>c</sup>	875 Brush Killer	Selective, POST	x							x
dichlobenil	Image, Noxall, Casoron	Nonselective, PRE		x				x	x	
dithiopyr <sup>d</sup>	Crabgrass Preventer 24-0-6	Selective, POST	x							
glyphosate	RoundUp, Pronto	Nonselective, POST		x	x	x	x	x	x	
oryzalind	Weed Impede	Selective, PRE		x	x	x		x	x	
pendimethalin <sup>d</sup>	Landscape Weed Preventer	Nonselective, PRE	x	x				x		x
prodiamed	Crabgrass Preventer 24-0-8	Selective, PRE		x	x	x		x		
quinclorac <sup>c</sup>	Trimec	Selective, POST	x							x
sethoxydim	Grass beater II	Selective, POST		x	x	x	x	x	x	
sulfentrazone <sup>c</sup>	Sedge Ender	Selective, PRE, POST	x	x		x		x	x	
triclopyr <sup>c</sup>	Image	Selective, POST		x						x
trifluralin <sup>c,d</sup>	Easy Weeder Flower & Garden Weed Preventer	Selective, PRE		x	x	x	x	x	x	

<sup>a</sup> Consult labels to ensure that products are registered for specific use areas (landscape, lawn, garden, etc.).

<sup>b</sup> See text in this article for explanations of selective vs. nonselective herbicides, applied pre- or postemergence (PRE or POST).

<sup>c</sup> Nearly always found in premixes with other products.

<sup>d</sup> often premixed with lawn fertilizer

## Resources

### General Information

The Oregon State University Extension Gardening website contains links to the OSU Master Gardener program, “Growing Your Own” – an extension publication (EM 9027) covering many aspects of home gardens and landscape design, a calendar of events, and other resources specific to the PNW: <https://catalog.extension.oregonstate.edu/em8742>

### Weed Identification

Hortsense (WSU Extension) has a weeds menu on the left of the page that will direct you to pictures and management strategies for more than 60 species common in the PNW: <http://hortsense.cahnrs.wsu.edu/Home/HortsenseHome.aspx>

Information about how to identify plant parts of grassy versus broadleaf weeds is available from the University of California: [http://ipm.ucanr.edu/PMG/weeds\\_intro.html](http://ipm.ucanr.edu/PMG/weeds_intro.html)

Washington State University provides a weed identification service where your specimens may be identified by a professional taxonomist or weed science Extension specialist: <http://css.wsu.edu/extension/weed-identification/>