



University of Idaho  
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# Herbicides for the Home Garden

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The worth of herbicide use in the home garden is a matter of individual judgment. If spending 1 hour in spring to calibrate your sprayer; measure, mix and apply chemical; and clean and store your sprayer saves you 2 hours of hand weeding every 2 weeks and reduces garden soil compaction, you may find that herbicide use is worthwhile. On the other hand, if you can control your garden's weeds in a half hour of hoeing and hand weeding every week or two, you are not likely to benefit much from herbicide use. Perennial weeds are often more effectively controlled by a herbicide than by hand.

Plan your weed control before you plant. After planting, there are few good herbicide treatments for emerged weeds. Planning a total weed control program a year in advance is not too early.

Never rely on herbicides alone. Always plan to use other tactics as your main defenses against weeds. For information on nonchemical weed control practices, see University of Idaho publication EXT 726, *Weed Control in the Home Garden*.

If you do not have the equipment, skills and experience to apply herbicides precisely, do not attempt to use them. If you are a beginner, have an experienced person with an applicator's license teach and advise you.

## The types of herbicide

**Nonselective herbicides** kill all or nearly all kinds of plants in the treated area. **Selective herbicides** may kill only broadleaf plants or only grasses. Some may kill only certain species of broadleaf plants or grasses. Selectivity is affected by species tolerance as well as by herbicide rate, timing and placement, weather; and soil type. Herbicides at high rates lose their selectivity.

**Contact herbicides** affect only the plant parts sprayed. They can kill or strongly suppress emerged annual and biennial weeds. They kill only the foliage

of perennials, resulting in little control. Use is not safe if garden crops have emerged. If crops have not emerged, other herbicides are more effective.

**Translocated herbicides** enter the plant system and move within it to a site where they cause injury or death. Herbicides such as glyphosate are applied to foliage and move to the roots. Leaves that are very dusty or fuzzy will not absorb herbicides well. Translocated herbicides move throughout the weed, killing both above- and below-ground parts. Translocated herbicides are useful in garden sites that have not yet been planted.

Some herbicides are applied to the soil and enter the plant through the roots. **Soil-applied herbicides** kill seedlings as they start to grow. The residual life of a herbicide in the soil varies from a few days to several years, depending on the herbicide, so be particularly careful to observe label precautions when selecting and using one.

Soil type and organic matter content are important factors in determining effective, safe rates for soil-applied herbicides. Find out your soil type and check the herbicide container label instructions before purchasing herbicides for your garden.

Incorporation is necessary for soil-active herbicides to be effective. Incorporation can be accomplished with garden tillers, rakes or other implements. Some soil-active herbicides are effectively incorporated into the soil with rain or sprinkler irrigation. Incorporation instructions are on the herbicide container label.

## Herbicide name

Every herbicide has a company trade name as well as a chemical name and a common name that specify the herbicide's active ingredient. The container label must state these names and identify the amount of active ingredient (ai) or acid equivalent (ae). For example, the herbicide Roundup has the chemical name N-(phosphonomethyl) glycine and the common name glyphosate.

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All materials sold for weed control are required by law to be approved by the Environmental Protection Agency (EPA) and must have an EPA registration number on the container label. Do not use as herbicides materials such as gasoline, salt or other household or commercial products that are not EPA registered and labelled for such use.

## Herbicide formulation

Herbicide formulation is the physical-chemical form of the herbicide as purchased. **Solutions** are liquids that contain herbicides dissolved in water. Solutions are clear and do not need to be agitated. **Soluble powders** and **dry solubles** dissolve in water and form true solutions. **Emulsifiable concentrates** are soluble in oil. When mixed with water they form a milky suspension of oil in water. **Wettable powders** are insoluble in water. When mixed with water they form a suspension of particles that will settle out if not agitated frequently. **Granules** are used dry without dilution.

Mixtures of herbicides are commonly available to homeowners. They contain two or more active ingredients designed to broaden the spectrum of weeds controlled. Don't mix herbicides together unless the container labels state they may be mixed.

The amount of a herbicide will be given in percent, in pounds ai or ae per unit of commercial product or both. **If the label gives the dose in pounds per acre (lb/A), you may have the wrong product for home use.** The label should specify a rate as the amount to use per 100 or 1,000 square feet.

## Herbicide application equipment Calibration

Use equipment designed specifically for pesticide application and calibrate it for the desired application rate. Even sprayers that are self-calibrated with a dial or other regulating device should be checked for accuracy. For calibration instructions, see University of Idaho CIS 792, *Calibration of Lawn and Garden Pesticide and Fertilizer Applicators for Homeowners*.

### Cleaning

To prevent settling or decomposition, do not allow a herbicide to remain in the sprayer more than 4 hours. Empty the sprayer and rinse it thoroughly with clean water after each use. Dispose of the rinse by spraying it on the area you just sprayed. Before using the sprayer for other pesticides, wash it with a detergent then soak it in an ammonia solution (2½ tablespoons of household ammonia per gallon of water) or commercial neutralizer such as Nutra-Sol. To avoid accidental injury to ornamentals or crop plants by her-

bicide residues, use your herbicide sprayer only for herbicides; don't use it to apply other materials.

## Personal safety

Garden herbicides have low toxicity to humans and animals. When used according to label instructions, they are as safe to use as other consumer chemicals such as gasoline and cleaning agents. They can be harmful if taken internally, however. Even though a herbicide may not be considered hazardous, it may cause illness or irritate the body parts it contacts, particularly if undiluted. Follow these precautions:

- Avoid herbicide contact with your mouth, skin or eyes.
- Do not smoke, drink or eat while applying herbicides.
- After using a herbicide, wash your hands with soap and water.
- If concentrated (undiluted) herbicide spills on your skin, stop working and wash immediately with soap and water.
- Wash clothing that has been contaminated with diluted herbicide before wearing it again. Wash herbicide-contaminated clothing separately from other laundry (see University of Idaho CIS 781, *Laundering Pesticide Contaminated Clothing*).
- If concentrated herbicide spills on clothing, destroy the clothing.

## Environmental safety

Some herbicides should not be allowed to contact any part of a desirable nontarget plant because serious injury may result. Spray on calm days and keep spray pressure below 30 pounds per square inch to minimize mist formation that can result in off-target drift. The directions for some herbicides prohibit use when temperatures are more than 80°F to avoid vapor drift. If herbicide spray accidentally gets on desirable plants, immediately wash it off with clear water. Don't apply herbicides to soil that may wash or leach into a different area with irrigation water or heavy rain.

## Herbicide storage and disposal

Herbicides for farm or industrial use are packaged in large quantities of concentrated product. Herbicides for homeowners come in smaller packages and often in more dilute forms for economy, convenience and safety.

Store all herbicides in their original containers in a locked storage area where children cannot reach them. Don't buy more herbicides than you will use in one season. Herbicides that will need to be stored over winter may freeze or decompose or the container may break.



Mix only the amount of chemical needed at any one time. Unused herbicides or sprayer rinse water should not be poured down drains, into street gutters or into irrigation or drainage ditches. Instead, use them up in areas of labeled use. Garden herbicides discussed in this bulletin are decomposed by sunlight, soil microorganisms and natural chemical reactions.

## Herbicide choices

Herbicides are sold under many trade names and in many forms and mixtures. Learn the uses of the active ingredients and their strengths and weaknesses. Inspect container labels or ask the seller which commercial product contains the active ingredient you want.

No herbicide controls all types of weeds. To select a herbicide, check the herbicide label to determine whether it is (1) permissible on your garden plants, (2) safe to crops planted afterward, (3) effective on your weed species and (4) compatible with the time and method of application you are considering. Although you are not prohibited from using a herbicide on a weed not listed on the label, you have no guarantee of its effectiveness.

Before buying any herbicide be sure you understand the label. Ask the seller or the Extension agricultural agent in your county to answer your questions. Consult the label each time you use the herbicide to ensure you are using it correctly.

### Broadleaf weeds

Relatively few herbicides are currently used for broadleaf weed control in gardens. **None of the herbicides listed in this publication can be used for control of emerged broadleaf weeds after the garden has been planted. After planting, you must choose nonchemical control alternatives such as cultivating, hoeing and hand pulling.**

Herbicides for broadleaf weeds in lawns are hazardous to ornamentals and garden crops. They should not be used where they may contact garden plants or on soil that is to be planted to anything but grass. Don't apply herbicides to your lawn when spray mist may be carried by air currents to garden plants.

**Annual broadleaf weeds** — Weeds that have not yet emerged may be controlled before planting with applications of EPTC, benefin, trifluralin, DCPA, chloramben, napropamide, oryzalin or oxadiazon. After planting, and before the emergence of either the crops or weeds, EPTC, DCPA, chloramben or oryzalin may be used. Check the label to ensure the herbicide can be used on the crop.

**Perennial broadleaf weeds** — Glyphosate applied to foliage will kill many perennials. It cannot be used

among growing garden plants, but it can be used 30 days before planting, sooner for some garden crops. Read the label to verify that it works on your weed species. Repeated applications are necessary.

### Annual grasses

Annual bluegrass and crabgrass move to gardens from lawns. Applying glyphosate to their foliage before they produce seeds and in periods when garden plants are not being grown can be effective. Annual bluegrass seed is capable of germinating nearly all year. Warm periods from late fall until early spring are suitable for treating such winter-growing weeds with glyphosate.

The preemergence herbicides EPTC, trifluralin, benefin, DCPA and oryzalin are effective for controlling crabgrasses, barnyardgrasses, sandburs, foxtails, annual bluegrass and certain other species. They are effective only when applied before these grasses germinate.

Sethoxydim controls many grass species when applied to their leaves and can be applied before or after the garden is planted. Check the label to determine which can be applied after planting your garden.

### Perennial grasses

Creeping perennial grasses such as quackgrass, Kentucky bluegrass, johnsongrass, redtop and bermudagrass are difficult to completely remove by mechanical means because even a small piece of stolon or rhizome left in the soil is enough to reinfest the area. An effective method of controlling such creeping perennials in gardens is to treat their leaves with glyphosate when no garden plants are growing. Suitable times for treatment are in fall, in warm periods during winter and in spring before planting the garden. Apply glyphosate to the grass leaves only when there is good soil moisture so that grasses are growing actively. Do not apply glyphosate when rainfall is expected within 6 hours after application because its effectiveness will be reduced. This treatment is effective for destroying grass in a lawn or other grassy area that is to be planted to a garden.

Complete weed kill may require 2 to 4 weeks or longer in cool seasons, but weeds treated with glyphosate can be tilled 7 days after application. The label tells how soon you can plant.

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## Which herbicide to use?

Timing and purpose <sup>1</sup>	Common name <sup>2</sup>	Example of trade name <sup>3</sup>	Formulation <sup>4</sup>	Residual hazard to following crops <sup>5</sup>
<b>Before planting</b>				
<b>Before weeds emerge</b>				
Fumigation	metam-sodium*	Vapam, others	L	
Control of broadleaf weeds and grasses	benefin	Balan	G	X
	DCPA	Garden weed preventer	WP	X
	napropamide*	Devrinol*	WP	X
	EPTC*	Eptam*	L	
	oryzalin*	Surflan*	L	X
	oxadiazon (nonedible ornamentals only)	Ronstar	G,WP	
	trifluralin	Treflan	L,G	X
<b>After weeds emerge</b>				
Control of annual grasses and some broadleaf annual weeds	bensulide	Betasan	L,G	X
	glyphosate	Roundup, Kleenup	L	
Control of labelled perennial weeds	glyphosate	Roundup, Kleenup	L	
<b>After planting and before crops emerge</b>				
<b>Before weeds emerge</b>				
Control of broadleaf weeds and grasses	DCPA	Dacthal	WP	X
	EPTC*	Eptam*	L	
	oryzalin*	Surflan*	L	X
<b>Before or after planting</b>				
<b>After weeds emerge</b>				
Grasses	sethoxydim	Poast	L	

<sup>1</sup>Use herbicides only as directed on the container label; some of these herbicides can be used for weed control in only a few garden crops. The herbicide's effectiveness on weeds other than those listed on the container label is a risk the user assumes.

<sup>2</sup>Herbicides marked with an asterisk (\*) can be purchased and used only by people with an applicator's license.

<sup>3</sup>Many of these herbicides are sold under other trade names. Reference here to particular brand names does not imply a preference for them.

<sup>4</sup>G=granular; L=liquid; WP=wettable powder; DS=dry soluble.

<sup>5</sup>Read label for limitations to crops that may be planted after using these herbicides.

**Pesticide residues** — Recommendations for use are based on currently available labels for each pesticide listed. If followed carefully, residues should not exceed the established tolerances. To avoid excessive residues, follow label directions carefully with respect to rate, number of applications and minimum interval between application and reentry or harvest.

**Groundwater** — To protect groundwater, when there is a choice of pesticides, the applicator should use the product least likely to leach.

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

## Further reading

- CIS 781 *Laundrying Pesticide Contaminated Clothing* (25 cents)
- CIS 792 *Calibration of Lawn and Garden Pesticide and Fertilizer Applicators for Homeowners* (25 cents)
- CIS 865 *Pesticides and Their Movement in Soil and Water* (free)
- EXT 726 *Weed Control in the Home Garden* (50 cents)
- To order publications, write Ag Publications, Building J40, Idaho Street, University of Idaho, Moscow, Idaho 83843. To order by phone call (208) 885-7982. Please make checks payable to Agricultural Communications Center. Idaho residents add 5 percent sales tax.

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