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J.R. ...Another classic ... see mugwort ?

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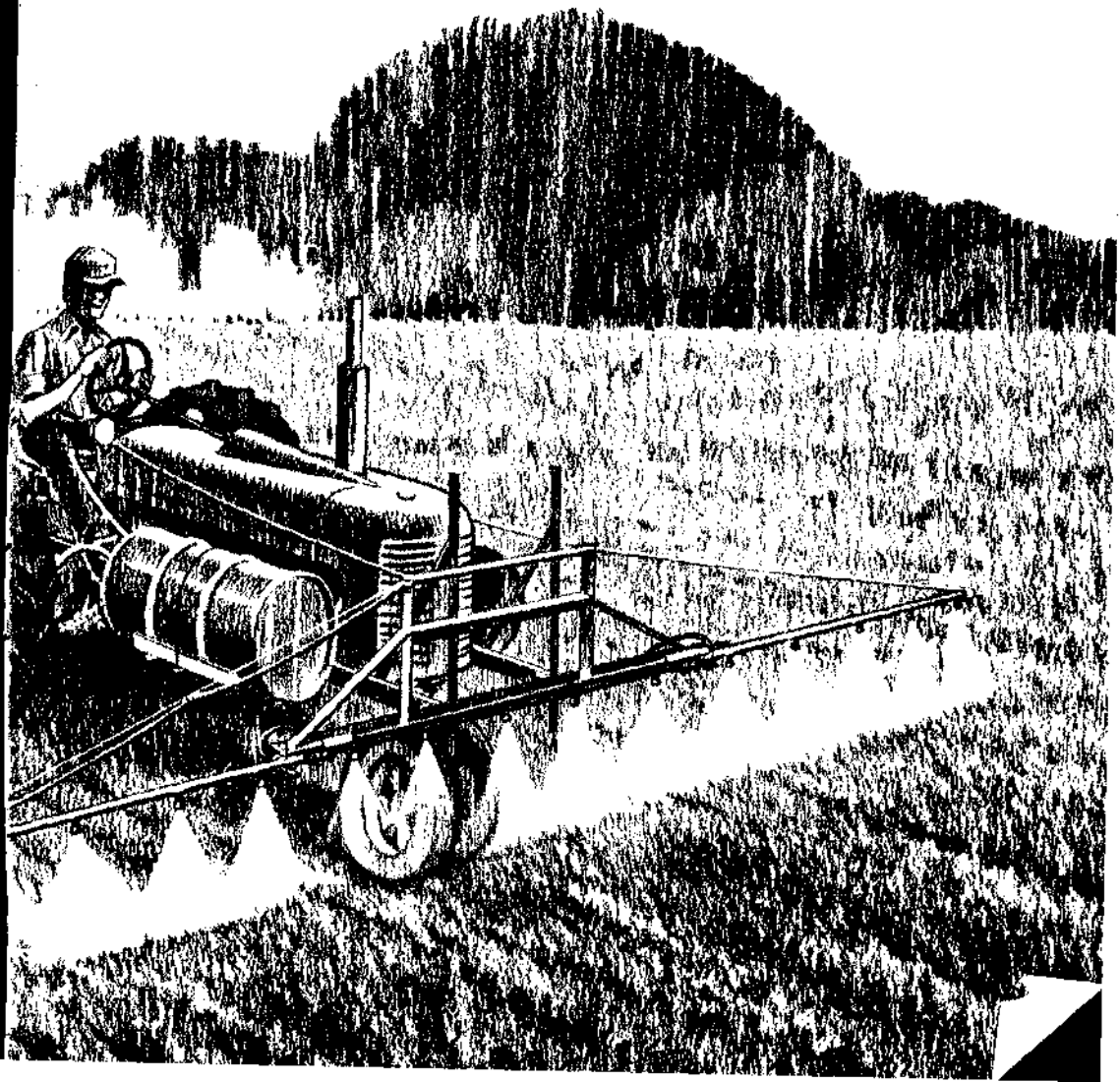
Farmers' Bulletin No. 2183 • U.S. DEPARTMENT OF AGRICULTURE

USING PHENOXY HERBICIDES EFFECTIVELY



COMMON AND CHEMICAL NAMES OF PHENOXY HERBICIDES

Common name	*Chemical name*
2,4-D	2,4-dichlorophenoxyacetic acid
2,4,5-T	2,4,5-trichlorophenoxyacetic acid
Silvex	2-(2,4,5-trichlorophenoxy)propionic acid
MCPA	2-methyl-4-chlorophenoxyacetic acid
2,4-DB	4-(2,4-dichlorophenoxy)butyric acid

The U.S. Department of Agriculture has suspended the use of liquid formulations of 2,4,5-T around the home and of all formulations on lakes, ponds, and ditchbanks. Also, the Department has cancelled use of all formulations of 2,4,5-T on food crops and of dry formulations around the home. 2,4,5-T should not be used in any of the above situations, and inclusion of 2,4,5-T in this publication does not suggest such uses.

CONTENTS

This bulletin supersedes Farmers' Bulletin 2005, "Using 2,4-D Safely."

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USING PHENOXY HERBICIDES EFFECTIVELY

2,4-D, 2,4,5-T, MCPA, Silvex, 2,4-DB

By D. L. Klingman and W. C. Shaw, Crops Research Division, Agricultural Research Service

Phenoxy herbicides—chiefly 2,4-D, 2,4,5-T,[1] silvex, MCPA, and 2,4-DB—are used widely. They are used for controlling weeds in many crops, on grazing lands, on lawns, and for killing unwanted brush and trees. These herbicides are especially useful because—

- They are selective; they kill most broadleaf plants but do not kill grasses or grain crops.
- They are potent; many species of weeds are controlled by less than 1 pound of active ingredient per acre.
- They are easy to use.
- They are not poisonous to man, domestic animals, or game when applied at the recommended rates.
- They do not accumulate in the soil and they have no harmful effects on soil organisms.
- They are not corrosive to spraying equipment.

HOW PLANTS REACT

When sprayed with phenoxy herbicides, leaves, green stems, twigs, flowers, and fruits usually absorb the herbicides. Roots absorb herbicides sprayed on the soil. When they are applied to growing plants or to the soil, herbicides rapidly become distributed in the leaves, stems, and roots and cause susceptible plants to die.

These herbicides are absorbed most readily by plants that are growing rapidly. Annual weeds are easiest to kill when they are young. Perennial weeds are easy to kill while they are seedlings; after they are established, most perennials are easiest to kill at the time flower buds appear.

Some broadleaf weeds are killed by very small amounts of phenoxy herbicides. Some are almost unaffected by very large amounts.

The chart on pages 12 to 24 lists the susceptibility of many common weeds and woody plants to control by 2,4-D, 2,4,5-T,[1] MCPA, silvex, and 2,4-DB.

SALTS AND ESTERS

Phenoxy herbicides are usually formulated as acids, salts, and esters. Salt and ester formulations usually are supplied as liquid concentrates. The purchaser mixes them before use. The salt concentrates form solutions when mixed with water. The ester concentrates form solutions when mixed with oil; they form milky-white

[1] See limitation on use of 2,4,5-T on page 2.

emulsions when mixed with water.

Heat causes ester formulations to release vapors. At temperatures below 90° F., low-volatile esters are much less volatile than high-volatile esters, and are less likely to damage susceptible crops. Vapors from either low- or high-volatile esters are about equally phytotoxic at temperatures above 90° F.

Vapors from ester formulations can kill susceptible plants growing near the area to which the formulations are applied. Low-volatile esters are safer—that is, less likely to harm susceptible crops by toxic vapors—than high-volatile esters. Salt formulations are safest—they do not release enough vapors to cause damage.

High-volatile esters are less expensive than low-volatile esters and they can be used effectively and safely if no susceptible crops are growing nearby.

Ester formulations of the phenoxy herbicides are generally more potent, pound for pound, than salts. They penetrate leaves and other plant surfaces more readily than salts. When a range of rates is recommended for herbicide application, use the lower rate for esters and the higher rate for salts.

Esters are more effective than salts for killing weeds that are growing slowly because of drought or cold weather. Esters usually are best for treating weeds in areas of low humidity; esters are formulated in oils and remain in moist contact on foliage longer and penetrate better than salts, which are mixed with water. And, because

BN-13721-X

Weeds in this field of small grain (treated part at right) were controlled with 2,4-D. The herbicide costs about 25 cents per acre.

they are oily, esters are less likely than salts to be washed off foliage if rain falls soon after their application.

"ACID EQUIVALENT"

Phenoxy herbicide concentrates are available in various strengths. The amount of active ingredient in the concentrate is indicated on the container label as the number of pounds of "acid equivalent" in each gallon of concentrate.

Usually the strongest concentrates are the most economical to use; they usually cost less per pound of acid equivalent than weaker concentrates. For example, 1 gallon of a 2,4-D concentrate containing 4 pounds of acid equivalent per gallon usually will cost less than 4 gallons of concentrate containing 1 pound of acid equivalent per gallon, and it contains the same amount of active ingredient.

APPLICATION

General Principles

If herbicides are applied carefully they can save you money and labor. If they are applied carelessly, they can kill your crops.

Some crops and ornamental plants are extremely sensitive to phenoxy herbicides; they are severely injured or killed by small traces of the herbicides, such as spray drift or vapors.

The most sensitive of the crops and ornamental plants include cotton, grapes, tomatoes, cucumbers, tobacco, mimosa, roses, and dogwood. For more information about sensitivity of your crops to phenoxy herbicides, ask your county agricultural agent.

When using phenoxy herbicides near sensitive plants, observe all precautions regarding vapors, spray drift, and cleanliness of equipment.

For safe and effective control of weeds—

- Get professional advice before applying herbicides; ask your county agricultural agent, your State extension weed specialist, or other local agricultural authorities for weed-control recommendations.
- Use herbicides wisely: Follow label precautions. Do not apply herbicides for any use for which they are not registered.
- Avoid spraying on windy days.

Types of Phenoxy Herbicides Commonly Available

SALTS, such as:

Amine (triethanolamine, diethanolamine, trimethylamine, diethylamine, and isopropanolamine.
Sodium
Potassium
Ammonium

ESTERS

High-Volatile, such as:

Methyl
Ethyl
Isopropyl
Butyl
Amyl

Low-Volatile, such as:

Butoxyethanol
Butoxyethoxypropanol
Ethoxyethoxypropanol
Isooctyl
Propylene glycol butyl ether

- Do not apply ester formulations when the temperature is above 90°.
- Check output of your sprayer frequently to prevent over application of herbicides.
- Avoid sprayer skips or overlapping swaths.
- Clean spray equipment immediately after use.
- Before using spray equipment for applying insecticides or fungicides to crops, test it for injurious traces of herbicides.

Methods

Cropland

You can apply herbicides on cropland as preemergence sprays (after the crop is planted but before it or the weeds come up) or as postemergence sprays (after the crop and weeds come up).

Most modern spray equipment is designed for low-volume application—from about 5 to about 20 gallons of spray per acre. With the

BN-13680-X

Cotton is extremely susceptible to phenoxy herbicides. This plant was killed when it was accidentally sprayed with 2,4-D.

proper attachments, low-volume equipment can be used for broadcast spraying, band treatments, or directed spraying.

Apply a broadcast spray if the crop plants are not sensitive to the herbicide.

For broadcast application, the spray rig is equipped with a multiple-nozzle boom or a single boomless nozzle.

Apply a directed spray if the crop plants are somewhat sensitive to the herbicide.

For directed application, the rig is equipped with a boom and drop nozzles, which are adjusted to spray the weeds but no more than the bases of the crop plants.

Airplanes often are used for spraying nonrow crops, such as small grains and rice.

Noncropland

Use a ground sprayer with boom to apply low-volume broadcast spray for the control of weeds, brush, and trees on grazing land and along irrigation canals.

Airplanes often are used for applying low-volume broadcast sprays to noncropland areas that are too large, too rough, or have too many obstructions for ground equipment.

Apply high-volume directed spray to kill brush and trees along roads, utility lines, and fencerows, and aquatic weeds and brush along irrigation and drainage canals.

Equipment for high-volume spraying usually has a large-capacity spray tank (over 100 gallons per acre of spray may be used) and operates at relatively high pressure (about 60 to 100 pounds per square inch). The rig usually is equipped with a spray hose and adjustable nozzle. The spray often is applied as a drench that thoroughly wets the leaves and stems of the plants that are to be killed.

Apply sprays of ester formulations in diesel oil or kerosene to the bark at the base of small trees or to cuts in the bark at the base of large trees.

Phenoxy ester formulations with oil as a carrier can be absorbed by the bark at the base of trees with trunk diameters up to about 4

Spray Drift

Wind-carried droplets of phenoxy herbicides may kill susceptible crops near the area that is being treated.

To reduce the danger of damaging crops with spray drift—

- Use nozzles that apply a coarse spray.
- Use low pressures—no more than 35 pounds per square inch for boom sprayers, 100 pounds for spray guns.
- Avoid spraying on windy days; do not spray with ground equipment or from airplanes when the wind velocity is sufficient to cause drift to sensitive crops.
- Spray when wind is blowing away from susceptible crops and toward the area being sprayed.
- Where special drift hazards exist, use one of the special drift-control agents or formulations in properly designed and adjusted equipment. Get professional advice before using these.

BN-13079-X

Spray drift from a nearby application of phenoxy herbicide severely injured this Concord grape vine.

inches. The spray usually is applied with a small hand-operated sprayer and the lower 6 to 12 inches of bark on the trunk is thoroughly wetted with the solution.

The bark of many trees that are over 4 inches in diameter is too thick for the spray to penetrate. To kill these larger trees, it is necessary to ring the base of the tree with ax cuts and spray the ester solution into the cuts. The ax cuts must go through the bark and into the sapwood.

TESTING OUTPUT OF SPRAYER

Before mixing or applying herbicides on cropland, check the output of your spray equipment. If you apply too little herbicide, it is ineffective. If you apply too much, it may kill your crops.

In the test, the tractor speed and the pump pressure should be the same as they will be when you apply herbicide. If your tractor is not equipped with a speedometer, it is a good idea to make the test on the same type of terrain that you plan to spray and to mark the throttle setting that you use.

To test the output—

- Fill the spray tank with water.
- Spray a strip exactly 220 yards long.
- At the end of 220 yards, stop spraying and measure, in quarts, the amount of water needed to refill the spray tank.

To determine the spray output in gallons per acre, multiply the number of quarts by 16.5 and divide the answer by the width, in feet, of the spray strip.

Example: Your spray rig treats a strip 20 feet wide. At operating

BN-13681-X

The equipment used to apply insecticide to this tobacco plant had been used previously for applying phenoxy herbicide. The tobacco was injured by herbicide traces that remained in the sprayer.

speed and pressure, the rig uses 6 quarts of water in 220 yards:

$6 \times 16.5 = 99$.

$99 \div 20 = 4.95$, or about 5 gallons of spray per acre.

The output of the sprayer is for the area treated. If your sprayer is adjusted to apply spray in bands to row crops, calculate the total width of the spray pattern. To do this, multiply the number of nozzles by the width that each nozzle treats.

If you are using 6 drop nozzles and each treats a 20-inch width, then the total width of the spray pattern is 10 feet, regardless of the nozzle spacing.

Output of the spray equipment may change because of enlarged nozzle orifices or worn parts in the pump. Check the output periodically to prevent application at the wrong rate.

After you know the output of your sprayer, you can mix the spray accurately. To calculate the total amount of spray needed, multiply the area to be sprayed, in acres, by the output per acre. Add the recommended amount of acid equivalent—in the form of herbicide

concentrate—to enough carrier (water or oil) to equal the total amount of spray needed.

For example: The calculated output is 5 gallons per acre and you plan to spray 10 acres at a recommended rate of 1 pound of acid equivalent per acre. Therefore you will need a total of 50 gallons of spray containing 10 pounds of acid equivalent.

The herbicide concentrate contains 4 pounds of acid equivalent per gallon. Add 2½ gallons of concentrate (10 pounds total acid equivalent) to 47½ gallons of water.

CLEANING SPRAY EQUIPMENT

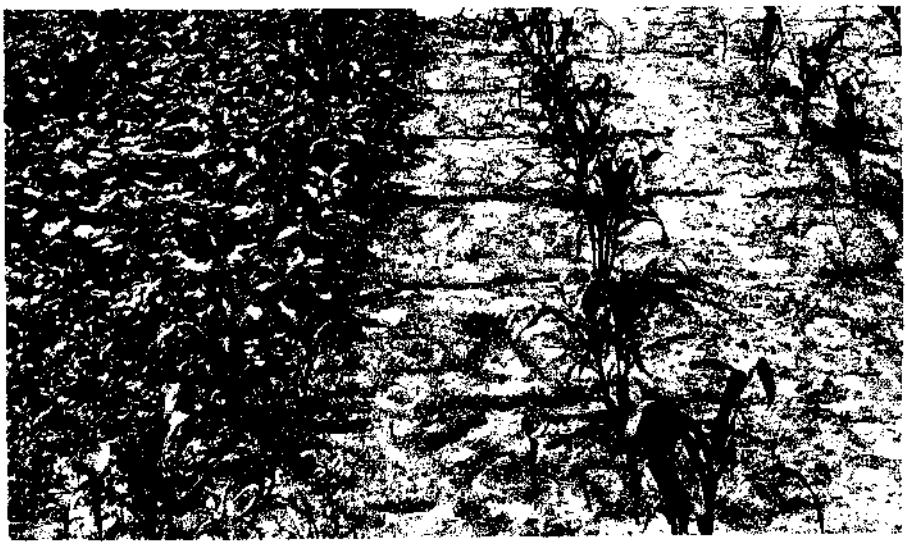
Clean your spray equipment immediately after using it for applying herbicides.

Some crops can be damaged or killed by traces of phenoxy herbicides that are left in the sprayer after cleaning. Before applying fungicides or insecticides to crops with equipment that has been used for herbicides, test the equipment for herbicide traces.

Fill the tank with water and spray a few of the crop plants. Sensitive plants such as tomato, cotton, and tobacco are good test plants. Wait a day or two after spraying. If the crop plants show no distorted growth after this period, the equipment can be used safely for spraying the crop. If the plants are distorted, then clean the spray equipment again. Retest the equipment for cleanliness before using it on crops.

For greatest safety with sensitive crops, apply fungicides or insecticides with equipment that has not been used for applying herbicides.

You can clean spray equipment quickly with a suspension of acti-



BN-11740-X

The right half of this field was sprayed with 2,4-D before the corn or weeds emerged. The left half of the field was not treated.

PRECAUTIONS

Phenoxy herbicides are safe when stored, handled, mixed, and used in accordance with label instructions and sound agricultural practices. Most herbicides are low in toxicity. However, some can cause injury to man, many domestic animals, and fish and wildlife if improperly used.

Most herbicides are toxic to many crop plants and ornamentals. Many are volatile and their vapors and spray drift will cause damage to desirable plants. Avoid spraying when windy conditions exist.

Keep herbicides away from children, livestock, and pets. Store herbicides in closed, well-labeled containers in a dry place where they cannot contaminate food, feed, or water.

When handling herbicides wear clean, dry clothing. Launder clothing after each spraying operation before wearing again.

Do not inhale herbicides and avoid contact with spray mist and drift. Avoid repeated or prolonged contact of herbicide with your skin. Avoid spilling it on any part of your body—especially your eyes, nose, and mouth. If you spill it on your body, wash it off with soap and water and remove contaminated clothing.

To protect fish, wildlife, and livestock, do not clean spraying equipment or dump excess spray material near lakes, streams, or ponds.

Empty herbicide containers may be hazardous. Dispose of them in accordance with label instructions and the recommendations of your State Extension weed science specialist or other local agricultural authorities. Do not burn herbicide containers.

vated charcoal in water. Use at least one-third of a tank of water. For each 10 gallons of water add ¼ pound of activated charcoal and ⅛ to ¼ pound of laundry detergent. Agitate this mixture vigorously to distribute the charcoal through the water.

Wash the equipment for 2 minutes by swirling the liquid around in the tank so that it reaches all parts of the tank. Pump some of the liquid through the hose and nozzles. Then drain the tank and rinse the equipment with clean water.

SUSCEPTIBILITY CHART

The chart that follows lists the effects of phenoxy herbicides when applied as foliage sprays on a number of common weeds. Normal rate of application for 2,4-D, 2,4,5-T,[1] MCPA, or silvex is 1 pound per acre; normal rate of application for 2,4-DB is 2 pounds per acre.

The control ratings for the herbicides are interpreted as follows:

Excellent.—One application at normal rate kills the weed.

Good.—Several applications at normal rate needed to kill the weed.

Fair.—Repeated applications at normal rate or application at higher rates needed to kill the weed.

Poor.—Weed kill is erratic, even at high rates of application.

[1] See limitation on use of 2,4,5-T on page 2.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB

Plant name	Type of plant	Control [1]				
		2,4-D	MCPA	2,4,5-T [2]	Silvex	2,4-DB
Alder (*Alnus* spp.)	Woody	Good	Good	Excellent	Excellent	
Alligatorweed (*Alternanthera philoxeroides*)	Perennial	Poor	None	Fair	Fair	
Alyssum, hoary (*Berteroa incana*)	Perennial [3]	Fair	Fair	Excellent		Poor.
Amaranth:						
Green (*Amaranthus hybridus*)	Annual	Excellent	Excellent	do		Excellent.
Palmer (*A. palmeri*)	do	do	do	do	Excellent	
See also Pigweed.						
Arrowgrass, seaside (*Triglochin maritima*)	Perennial	Fair		Fair		
Arrowhead:						
Annual (*Sagittaria calycina*)	Annual	Excellent	Excellent	Excellent	Excellent	Do.
Perennial (*S. longiloba*)	Perennial	Fair	Fair	Poor		
Ash (*Fraxinus* spp.)	Woody	None	None	do	Poor	None.
Aster:						
Many-flowered (*Aster ericoides*)	Perennial	Good				
Western (*A. occidentalis*)	do	Poor		Poor		Do.
White heath (*A. pilosus*)	do	Fair		Fair	Fair	Do.
Woody (*Xylorrhiza parryi*)	do	Poor	None	Poor	Poor	
Baccharis, coyote brush (*Baccharis salicina*)	Woody	Excellent				
Baileya, desert (*Baileya multiradiata*)	Perennial	Good		Good		
Bassia, five-hook (*Bassia hyssopifolia*)	Annual	Fair				
Cornflower:						
Batchelor's button (*Centaurea cyanus*)	do	Excellent				
Bedstraw:						
Cleavers (*Gallium aparine*)	do	Poor	None	Poor	Good	Do.
Smooth (*G. mollugo*)	Perennial	None	do	do	do	Do.
Beeplant, Rocky Mountain (*Cleome serrulata*)	Annual	Fair				
Beggartick, devils (*Bidens frondosa*)	do	Excellent	Excellent	Excellent		
Florida betony (*Stachys floridana*)	Perennial	Poor		Poor		
Bindweed:						
Field (*Convolvulus arvensis*)	do	Fair	Fair	Fair	Fair	Fair.
Hedge (*C. sepium*)	do	Good	Good	Good		
Biscuitroot (*Lomatium leptocarpum*)	do	Fair		do		
Bistort, American (*Polygonum bistortoides*)	do	do		Fair		None.
Blackberry (*Rubus* spp.)	Woody	None	None	Good	Fair	Do.

Blackeyed susan (*Rudbeckia serotina*)	Perennial	Good		do	Excellent	
Bloodweed (*Ambrosia aptera*)	Annual	Excellent		Excellent		
Blueweed, Texas (*Helianthus ciliaris*)	Perennial	Fair				
Bouncingbet (*Saponaria officinalis*)	do	Poor	None	Poor	Poor	Do.
Boxelder (*Acer negundo*)	Woody	Good		Good	Good	
Bracken (*Pteridium aquilinum*)	Perennial	None	None	None	None	Do.
Broomweed, common (*Gutierrezia dracunculoides*).	Annual	Good		Good	Good	
Broom, Scotch (*Cytisus scoparius*)	Woody	do		do		
Buckeye, California (*Aesculus californica*)	do	Fair		Poor	None	
Buckwheat:						
Tartary (*Fagopyrum tataricum*)	Annual	Poor	Excellent	Fair		
Wild (*F. convolvulus*)	do	Fair	Fair	Good	Fair	Good.
Buffalobur (*Solanum rostratum*)	do	None	None	None		
Bulrush (*Scirpus* spp.)	Perennial	Fair	Fair	Fair	Fair	None.
Burdock, common (*Arctium minus*)	Biennial	Excellent	Excellent	Excellent	Excellent	Excellent.
Bur-head (*Echinodorus cordifolius*)	Annual	do	do	do	do	
Buckbrush (*Symphoricarpos orbiculatus*)	Woody	Good		Fair	None	
Western (*S. occidentalis*)	do	Fair	None	Poor		
Bullnettle (*Cnidoscolus stimulosus*)	Perennial	Good	Fair	Good		
Burroweed (*Haplopappus tenuisectus*)	do	do		Excellent		
Buttercup:						
Celery leaf (*Ranunculus sceleratus*)	Annual	Fair				
Corn (*R. arvensis*)	do	Good	Excellent	Excellent	Excellent	Excellent.
Creeping (*R. repens*)	Perennial	do	do	do	do	Good.
Tall (*R. acris*)	do	do	do	do	do	Excellent.
Campion, bladder (*Silene cucubalus*)	do	None	None	None	None	None.
Carpetweed (*Mollugo verticillata*)	Annual	Excellent		do	do	Excellent.
Carrot, wild (*Daucus carota*)	Biennial	Fair	Fair	Fair	Fair	Fair.
Catchfly, night flowering (*Silene noctiflora*)	Annual	None	None	None	None	None.
Catsear, spotted (*Hypochoeris radicata*)	Perennial	Good	Excellent	Excellent	Excellent	Excellent.
Catnip (*Nepeta cataria*)	do	do		do		
Cattail:						
Broadleaf (*Typha latifolia*)	do	Fair	Poor	Fair	Fair	Poor.
Narrowleaf (*T. angustifolia*)	do	do	do	do	do	Do.
Ceanothus (*Ceanothus* spp.)	Woody	do	Fair	Good		Fair.
Wedgeleaf (*C. cuneatus*)	do	Good	do	Excellent		
Chamise (*Adenostoma fasciculatum*)	do	Fair	Poor	Fair	Poor	Poor.
Chickweed:						
Common (*Stellaria media*)	Annual	do	do	Good	Excellent	Fair.
Field (*Cerastium arvense*)	Perennial	do	do	do	do	Poor.
Mouseear (*C. vulgatum*)	do	do	do	do	do	Do.

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB—Continued

Plant name	Type of plant	Control [1]				
		2,4-D	MCPA	2,4,5-T [2]	Silvex	2,4-DB
Chicory (*Cichorium intybus*)	Perennial	Good	Good	Good	Good	Fair.
Chokecherry (*Prunus virginiana*)	Woody	Poor		Fair	Fair	None.
Cinquefoil:						
Blueleaf (*Potentilla diversifolia*)	Perennial	Fair		do		Do.
Common (*P. canadensis*)	do	Good	Fair	do	Fair	
Rough (*P. norvegica*)	Annual [3]	Excellent				
Sulfur (*P. recta*)	Perennial	Good	Fair	Good	Fair	
Cockle:						
Corn (*Agrostemma githago*)	Annual [3]	Poor	Poor	None	None	None.
White (*Lychnis alba*)	Perennial	do	None	do		Do.
Cocklebur, common (*Xanthium pensylvanicum*).	Annual	Excellent	Fair	Excellent		Good.
Coffeeweed (*Daubentonia texana*)	Woody	do		do	Good	
Coyote brush (*Baccharis pilularis*)	do	Good		Fair		
Coyotillo (*Karwinskia humboldtiana*)	Perennial			Excellent	Excellent	
Cranebill, cutleaf (*Geranium dissectum*)	Annual [3]		Excellent			
Cress, hoary (*Cardaria draba*)	Perennial	Fair	Fair	Fair	Fair	Fair.
Croton:						
Lindheimer (*Croton lindheimeri*)	Annual	Excellent	Excellent	Good	Good	Good.
Texas (*C. texensis*)	do	do		Excellent	Excellent	
Wolly (*C. capitatus*)	do	do		do	do	Excellent.
Burcucumber (*Sicyos angulatus*)	do	Fair	Excellent			
Cudweed (*Gnaphalium peregrinum*)	Annual	None				
Daisy, oxeye (*Chrysanthemum leucanthemum*)	Perennial	Fair	Fair	Good	Fair	None.
Dandelion (*Taraxacum officinale*)	do	Excellent	Excellent	Excellent	Excellent	Good.
Deadnettle, red (*Lamium purpureum*)	Annual [3]	Poor	Poor			Poor.
Deathcamas (*Zigadenus gramineus*)	Perennial	Fair		Poor		
Foothill (*Z. paniculatus*)	do	Good		Fair		
Deerweed (*Lotus scoparius*)	Woody	Excellent		Excellent		
Devil's claw (*Proboscidea louisianica*)	Annual	do				

Dock:						
Broadleaf (*Rumex obtusifolius*)	Perennial	Good	Fair	Good	Good	Fair.
Curly (*R. crispus*)	do	do	do	do	Poor	Fair.
Fiddle (*R. pulcher*)	do	Excellent				
Pale (*R. altissimus*)	do	Good	Good	Good	Good	Poor.
Veiny (*R. venosus*)	do	Fair				
Dodder:						
Largeseed (*Cuscuta indecora*)	Annual	Poor	None	None	None	None.
Smallseed alfalfa (*C. pentagona*)	do	do	do	do	do	Do.
Duckweed, common (*Lemna minor*)	do	do		do	None	
Elm (*Ulmus* spp.)	Woody	do	None	Fair	Fair	Do.
Eveningprimrose, common (*Oenothera biennis*)	Biennial	Excellent		Good	Excellent	
Falseflax, smallseeded (*Camelina microcarpa*)	Annual	do				
Fennel, dog (*Eupatorium capillifolium*)	do	Good		Excellent	Excellent	Do.
Fiddleneck, coast (*Amsinckia intermedia*)	do	do	Fair	Good	do	Do.
Filaree, redstem (*Erodium cicutarium*)	Annual [3]	Good				Poor.
Fireweed (*Epilobium angustifolium*)	Perennial	do		Good	Excellent	
Fleabane:						
Annual (*Erigeron annuus*)	Annual	Fair	Fair	do	do	Excellent.
Oregon (*E. speciosus*)	Perennial	do				
Rough (*E. strigosus*)	Annual [3]	Good		Excellent	Excellent	
Flixweed (*Descurainia sophia*)	do	Excellent	Fair			Good.
Franseria:						
Bur (*Franseria discolor*)	Perennial	Fair				
Woollyleaf (*F. tomentosa*)	do	do	Poor	Poor	Poor	Poor.
Galinsoga, hairy (*Galinsoga ciliata*)	Annual	Good	Excellent	Excellent	Excellent	
Garlic, wild (*Allium vineale*)	Perennial	Fair	Poor	Poor	None	Do.
Geranium, Carolina (*Geranium carolinianum*)	Annual [3]	Good	Excellent	Good	Good	Excellent.
Goatsrue (*Galega officinalis*)	Perennial	Fair				
Goldenrod (*Solidago* spp.)	do	do				
Gooseberry, sierra (*Ribes roezli*)	Woody	Excellent		Good		
Goosefoot:						
Jerusalem-oak (*Chenopodium botrys*)	Annual	Fair				
Nettleleaf (*C. murale*)	do	Excellent	Excellent	Excellent		Do.
Oakleaf (*C. glaucum*)	do	do	do	do	Fair	Do.
Gooseweed (*Sphenoclea zeylanica*)	do	Fair	Poor	Fair	Poor	None.
Gourd, buffalo (*Cucurbita foetidissia*)	Perennial	Poor				
Goutweed, Bishops (*Aegopodium podagraria*)	do	None				
Grapehyacinth (*Muscari botryoides*)	do		Poor			
Greenbrier (*Smilax bona-nox*)	Woody	None	None	Poor	Poor	
Common (*S. rotundifolia*)	do	do		do	do	
Gromwell (*Lithospermum officinale*)	Perennial	do				

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB—Continued

Plant name	Type of plant	Control [1]				
		2,4-D	MCPA	2,4,5-T [2]	Silvex	2,4-DB
Groundcherry:						
Clammy (*Physalis heterophylla*)	Woody	None		Fair	Fair	None
Purple flower (*P. lobata*)	do	do				
Smooth (*P. subglabrata*)	do	do	None	Poor	Poor	Do.
Wrights (*P. wrightii*)	Annual	Excellent		Excellent	Excellent	
Ground-ivy (*Glechoma hederacea*)	Perennial	Fair	Poor	Fair	Good	
Groundsel:						
Arrowleaf (*Senecio triangularis*)	do	do		do		Do.
Common (*S. vulgaris*)	Annual	Poor	Poor	None	None	Do.
Cressleaf (*S. glabellus*)	do	Excellent	Excellent	Excellent	Good	Good.
Riddell (*S. riddellii*)	Perennial	do				
Threadleaf (*S. longilobus*)	do	Fair				
Gum:						
Sweet (*Liquidambar styraciflua*)	Woody	Poor		Good	Fair	
Tupelo or black (*Nyssa sylvatica*)	do	None		Fair	do	
Gumweed (*Grindelia squarrosa*)	Perennial	Excellent				
Halogeton (*Halogeton glomeratus*)	Annual	Fair	Poor	Poor	Poor	None.
Hawksbeard, smooth (*Crepis capillaris*)	Annual [3]	Poor	do	None	None	Poor.
Hawkweed:						
Orange (*Hieracium aurantiacum*)	Perennial	Fair	do	Poor		
Yellow (*H. pratense*)	do	do	do	do		
Hawthorn (*Crataegus* spp.)	Woody	None	None	Fair	Poor	None.
Healall (*Prunella vulgaris*)	Perennial	Good	do	Poor	do	Do.
Hellebore, false western (*Veratrum californicum*)	do	do				
Hemlock, poison (*Conium maculatum*)	Biennial	do	Excellent	Fair	Excellent	Excellent.
Hemp (*Cannabis sativa*)	Annual	do		Good		Good.
Hempnettle (*Galeopsis tetrahit*)	do	Poor	Fair			
Henbit (*Lamium amplexicaule*)	do	do	Poor	Fair	Good	Poor.
Hickory (*Carya* spp.)	Woody	do	Fair	do	Fair	None.
Hogpeanut (*Amphicarpa bracteata*)	Perennial	Excellent				
Hogpotato (*Hoffmanseggia densiflora*)	do	None	None	None	None	Do.
Honey locust (*Gleditsia triacanthos*)	Woody	Poor		Fair		
Honeysuckle (*Lonicera japonica*)	do	Fair	Excellent	Good	Good	
Horsebrush, littleleaf (*Tetradymia glabrata*)	do	Poor		Poor		

Horsenettle, Carolina (*Solanum carolinense*)	Perennial	do	None	Fair		Poor.
Horsetail, field (*Equisetum arvense*)	do	do	Fair	Poor	Poor	
Horseweed, marestail (*Erigeron canadensis*)	Annual	Fair	do	Good	Good	Fair.
Houndstongue (*Cynoglossum officinale*)	Biennial	do				
Indian-hemp (*Apocynum cannabinum*)	Perennial	Poor	None	None		
Indian-tobacco (*Lobelia inflata*)	Annual	Fair				
Iris, Rocky Mountain (*Iris missouriensis*)	Perennial	do		Poor		
Ironweed, Western (*Vernonia baldwini*)	do	Good		Good	None	Poor.
Ivy, English (*Hedera helix*)	do			Excellent		
Jerusalem-artichoke (*Helianthus tuberosus*)	do	Good		do		
Jewelweed (*Impatiens pallida*)	Annual	Excellent				
Jimmyweed (*Haplopappus pluriflorus*)	Perennial	Fair		Fair		
Jimsonweed (*Datura stramonium*)	Annual	Good	Excellent	Good		Excellent.
Jointvetch, Northern (*Aeschynomene virginica*).	do	Fair	Fair	Excellent	Fair	None.
Juniper:						
Alligator (*Juniperus deppeana*)	Woody	None		None	None	Do.
One-seed (*J. monosperma*)	do	do		do	do	Do.
Utah (*J. osteosperma*)	do	Poor		Poor	do	Do.
Knapweed:						
Brown (*Centaurea jacea*)	Perennial	Fair				
Diffuse (*C. diffusa*)	Biennial	Excellent	None	Poor	Poor	Do.
Russian (*C. repens*)	Perennial	Poor	Poor	do	do	Do.
Spotted (*C. maculosa*)	Biennial	Fair	Excellent	Fair	Good	
Squarrose (*C. virgata* var. *squarrosa*)	Perennial	do				
Knawel (*Scleranthus annuus*)	Annual	None	None			
Kochia (*Kochia scoparia*)	do	Excellent	Good	Excellent	Excellent	Excellent.
Knotweed:						
Japanese (*Polygonum Cuspidatum*)	Perennial	Poor		Poor	do	
Prostrate (*P. aviculare*)	Annual	Fair	Poor	Fair	Fair	Poor.
Sakhalin (*P. sachalinense*)	Perennial	Good				
Silversheath (*P. argyrocoleon*)	Annual	Fair				
Kudzu (*Pueraria lobata*)	Perennial	do	Fair	Fair	Fair	
Lambsquarters, common (*Chenopodium album*)	Annual	Excellent	Excellent	Excellent	Excellent	Excellent.
Larkspur:						
Little (*Delphinium bicolor*)	Perennial	None		None		None.
Menzies (*D. menziesii*)	do	Fair		Fair	None	
Tall (*D. barbeyii*)	do	None		None		
Duncecap (*D. occidentale*)	do	do	None	Fair	Fair	
Lettuce:						
Blue (*Lactuca pulchella*)	do	Fair	Fair	do	Fair	Fair.
Wild (*L. scariola*)	Annual	Excellent				

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB—Continued

Plant name	Type of plant	Control [1]				
		2,4-D	MCPA	2,4,5-T [2]	Silvex	2,4-DB
Loco, bigbend (*Astragalus earlei*)	Annual [3]	Excellent				
Locoweed, white (*Oxytropis lambertii*)	Perennial	Fair		Fair	Fair	
Locust, black (*Robinia pseudo-acacia*)	Woody	do		Good	Good	
London-rocket, annual (*Sisymbrium irio*)	Annual	Excellent	Excellent	Excellent	Excellent	Excellent.
London-rocket, perennial (*Franseria confertiflora*).	Perennial	None	None	None	None	None.
Lupine (*Lupinus rivularis*)	Woody	Excellent		Excellent		
Silvery (*L. argenteus*)	Perennial	Fair	None	do	Excellent	Excellent.
Tailcup (*L. caudatus*)	do	Good				
Madrone (*Arbutus menziesii*)	Woody	Fair		Fair		
Mallow:						
Common (*Malva neglecta*)	Annual [3]	Poor	None	Poor	Poor	
Dwarf (*M. rotundiflora*)	Perennial	Fair				
Little (*M. parviflora*)	Annual	do	None			
Venice (*Hibiscus trionum*)	do	Good	Excellent	Excellent		
Manzanita (*Arctostaphylos* spp.)	Woody	do	Poor	Fair	Fair	Poor.
Maples (*Acer* spp.)	do	Poor	None	do	Good	None.
Marshelder (*Iva xanthifolia*)	Annual	Excellent	Good	Good	Excellent	Excellent.
Mayweed, dogfennel (*Anthemis cotula*)	do	Fair	Poor	Fair	Poor	None.
Medic, Black (*Medicago lupulina*)	do	do	Fair	do	Good	Poor.
Mesquite:						
Honey (*Prosopis juliflora* var. *glandulosa*)	Woody	Poor		do	Fair	Fair.
Velvet (*P. juliflora* var. *velutina*)	do	None	None	Good	do	None.
Mexicantea (*Chenopodium ambrosioides*)	Annual	Excellent	Excellent	Excellent	Good	Excellent.
Mexican weed (*Caperonia castaneaefolia*)	do	Fair	Fair	Good	do	None.
Milkweed (*Asclepias curassavica*)	Perennial	Good		Excellent		Do.
Broadleaf (*A. latifolia*)	do	Fair			Fair	
Common (*A. syriaca*)	do	None	None	Poor	do	Do.
Showy (*A. speciosa*)	do	do	do	do	Good	Do.
Eastern whorled (*A. verticillata*)	do	do	do	do		Do.
Mimosa, catclaw (*Mimosa biuncifera*)	Woody			do		Poor.
Moneywort (*Lysimachia nummularia*)	Perennial	Excellent				

Morningglory:						
Common (*Ipomoea purpurea*)	Annual	do		Excellent		Excellent.
Ivyleaf (*I. hederacea*)	do	do		do		Do.
Woolly (*I. hirsutula*)	do	do	Excellent	do	Excellent	
Mountain Mahogany (*Cercocarpus montanus*)	Woody			Poor		Poor.
Mudplantain (*Heteranthera limosa*)	Annual	Excellent	Good	Good	Good	Fair.
Mugwort (*Artemisia vulgaris*)	Perennial	Poor	None	None		
Mulberry (*Morus* spp.)	Woody	None		Poor	Fair	
Mulesears (*Wyethia amplexicaulis*)	Perennial	Good		Good		
Mullein:						
Common (*Verbascum thapsus*)	Biennial	Poor	Poor	Fair		None.
Moth (*V. blattaria*)	Perennial	Fair		do		
Mustard:						
Black (*Brassica nigra*)	Annual	Excellent	Excellent	Excellent	Good	Excellent.
Blue (*Chorispora tenella*)	do	Fair	Poor	Good	do	None.
Haresear (*Conringia orientalis*)	do	Excellent	Good			
Hedge (*Sisymbrium officinale*)	do	do	Excellent	Excellent	Excellent	Excellent.
Indian (*Brassica juncea*)	do	do	do	do	Good	Do.
Tumble (*Sisymbrium altissimum*)	do	do	Good	do		Do.
Wild (*Brassica kaber*)	do	do	Excellent	do	Good	Do.
Wormseed (*Erysimum cheiranthoides*)	Annual [3]	do	do	do		Do.
Nettle:						
Stinging (*Urtica dioica*)	Perennial	Good				
Tall (*U. procera*)	Annual	do				
Niggerhead (*Rudbeckia occidentalis*)	Perennial	do				
Nightshade:						
Black (*Solanum nigrum*)	Annual	Fair	Fair	Fair	Good	Fair.
Cutleaf (*S. triflorum*)	do	do				
Silverleaf (*S. elaeagnifolium*)	Perennial	Poor		Poor	Poor	
Norcal bean (*Sophora secundiflora*)	do			Excellent	Excellent	
Nutsedge:						
Purple (*Cyperus rotundus*)	do	Poor	None	None	None	None.
Yellow (*C. esculentus*)	do	do	do	do	do	Do.
Oak:						
Black (*Quercus velutina*)	Woody	do		Fair		
Blackjack (*Q. marilandica*)	do	do	None	do	Fair	Do.
Blue (*Q. douglasii*)	do	do	Poor	Poor	do	Poor.
Gambel (*Q. gambelii*)	do			Fair		
Interior live (*Q. wislizenii*)	do	Poor	Poor	Poor	Poor	Do.
Post (*Q. stellata*)	do	Fair	None	Good	Good	None.
Scrub (*Q. dumosa*)	do	Poor	Poor	Fair	Fair	Poor.
Shinnery (*Q. havardi*)	do	Fair		Excellent	Excellent	

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB—Continued

Plant name	Type of plant	Control [1]				
		2,4-D	MCPA	2,4,5-T [2]	Silvex	2,4-DB
Oak—Continued						
Turbinella (*Q. turbinella*)	Woody			Poor		Poor.
White (*Q. alba*)	do	Fair	None	Good	Fair	None.
Onion, wild (*Allium canadense*)	Perennial	do	Poor	Poor		Poor.
Orache (*Atriplex hastata*)	Annual	Good		Excellent		
Osage-orange (*Maclura pomifera*)	Woody	Poor		Good	Fair	
Parsley, desert (*Lomatium grayi*)	Perennial	Excellent	Excellent		Excellent	Excellent.
Parsnip, wild (*Pastinaca sativa*)	Biennial	do		Excellent		
Partridgepea (*Cassia fasciculata*)	Annual	do	Excellent	do	Excellent	
Passionflower, Maypop (*Passiflora incarnata*)	Perennial	Fair				
Peavine (*Astragalus emoryanus*)	Annual	Good		Good		
Pellitoryweed (*Parietaria floridana*)	do	None	None	Excellent		None.
Pennycress, field (*Thlaspi arvense*)	do	Excellent	Excellent	do	Good	Good.
Pennywort, lawn (*Hydrocotyle sibthorpioides*)	Perennial	Good		do	Excellent	
Penstemon, Rydberg (*Penstemon rydbergii*)	do	Fair		Poor		None.
Pepperweed:						
Field (*Lepidium campestre*)	Annual	Excellent	Excellent	Good	Fair	Excellent.
Perennial (*L. latifolium*)	Perennial	Fair		Fair		
Virginia (*L. virginicum*)	Annual	Excellent	Excellent			Do.
Yellowflower (*L. perfoliatum*)	do	do	do	Excellent	Excellent	
Persimmon (*Diospyros virginiana*)	Woody	Poor		Poor	Fair	
Texas (*D. texana*)	do	Excellent			Excellent	
Pigweed:						
Prostrate (*Amaranthus graecizans*)	Annual	do	Excellent	Excellent		Do.
Rough (*A. retroflexus*)	do	do	do	do	Excellent	Do.
Tumble (*A. albus*)	do	do	do	do	do	Do.
Pineappleweed (*Matricaria matricarioides*)	do	Fair	Poor	None	Poor	None.
Plantain:						
Blackseed (*Plantago rugelii*)	Perennial	Excellent	Excellent	Excellent	Good	Excellent.
Broadleaf (*P. major*)	do	do	do	do	Excellent	Do.
Buckhorn (*P. lanceolata*)	do	do	Good	do	do	Do.
Poison-ivy (*Rhus radicans*)	Woody	Fair	Fair	do	do	None.
Poison-oak (*Rhus diversiloba*)	do	do	Poor	do	do	Do.

Pokeweed (*Phytolacca americana*)	Perennial	do	Fair	Good	Good	
Pondweed (*Potamogeton* spp.)	do	do	None	Poor	Poor	
Ponyfoot (*Dichondra repens*)	do	Excellent				
Poorjoe (*Diodia teres*)	Annual	Good	Fair	Good	Fair	Fair.
Poppy, Roemer (*Roemeria refracta*)	do	Excellent				
Prickly-ash, Northern (*Xanthoxylum americanum*).	Woody	Poor		Fair		
Pricklypear (*Opuntia* spp.)	Perennial			do		
Prickly poppy (*Argemone intermedia*)	Annual	Excellent				
Pursiane, common (*Portulaca oleracea*)	do	Fair	Fair	Excellent	Good	Good.
Puncturevine (*Tribulus terrestris*)	do	Good	do		Fair	Do.
Pusley, Florida (*Richardia scabra*)	do	Excellent				
Queensdelight (*Stillingia sylvatica*)	Perennial	None				
Rabbitbrush:						
Gray (*Chrysothamnus nauseosus*)	Woody	Fair	Poor	Poor	Poor	
Yellow (*C. viscidiflorus*)	do	do	do	do	do	
Radish, wild (*Raphanus raphanistrum*)	Annual	Excellent	Excellent	Excellent	Excellent	Excellent.
Ragweed:						
Common (*Ambrosia artemisiifolia*)	do	do	do	do	do	Do.
Giant (*A. trifida*)	do	do	do	do	do	Do.
Western (*A. psilostachya*)	Perennial	Good		do	do	Do.
Ragwort, tansy (*Senecio jacobaea*)	Perennial [3]	do	Fair	Fair	Fair	Poor.
Rape, Bird (*Brassica rapa*)	Biennial	Excellent	Excellent	Excellent	Excellent	Excellent.
Raspberry (*Rubus* spp.)	Woody	Poor	None	Good	Good	None.
Redbay (*Persea borbonia*)	do	do		do	Poor	
Redbud (*Cercis occidentalis*)	do	do		Poor		
Redvine (*Brunnichia cirrhosa*)	Perennial	None	None	do	Poor	Do.
Redstem (*Ammannia coccinea*)	Annual	Excellent	Excellent	Excellent	Excellent	Good.
Rose:						
California (*Rosa californica*)	Woody	None		Fair		
Cherokee (*R. laevigata*)	do	Fair		do	Excellent	
Macartney (*R. bracteata*)	do	do	None	Good	Good	
Multiflora (*R. multiflora*)	do	Poor	do	Fair	Fair	
Prairie (*R. pratincola*)	do	Fair		Excellent		
Woods (*R. woodsii*)	do	None		Fair	None	None.
Rubberweed:						
Bitter (*Hymenoxys odorata*)	Annual	Excellent				
Colorado (*H. richardsoni*)	Perennial	Good		Fair		
Rue, African (*Peganum harmala*)	do			do	Fair	
Sage:						
Creeping (*Salvia sonomensis*)	do	Good	Fair	Good	do	Fair.
Purple (*S. leucophylla*)	do	do				

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB—Continued

Plant name	Type of plant	Control [1]				
		2,4-D	MCPA	2,4,5-T [2]	Silvex	2,4-DB
Sage—Continued						
White (*S. apiana*)	Perennial	Good				
Sagebrush:						
Big (*Artemisia tridentata*)	Woody	do	Poor	Good	Fair	None.
California (*A. californica*)	do	Excellent		do		
Sand (*A. filifolia*)	do	do	Good	do	Good	Poor.
Salsify:						
Common (*Tragopogon porrifolius*)	Biennial	Good				
Meadow (*T. pratensis*)	do	do				
Saltcedar (*Tamarix gallica*)	Woody	Poor	None	Fair	Good	None.
Sedge, Umbrella (*Cyperus difformis*)	Annual	Fair	Fair	Poor	Poor	
Sesbania, coffeebean (*Sesbania exaltata*)	do	do	Good	Good	Excellent	Fair.
Sorrel (*Rumex acetosa*)	Perennial	Good	Fair	do	Fair	Do.
Heartwing (*R. hastatulus*)	do	Excellent				
Red (*R. acetosella*)	do	None	None	None	Poor	None.
Shepherdspurse (*Capsella bursa-pastoris*)	Annual	Good	Good	Excellent	Good	Good.
Sicklepod, coffeeweed (*Cassia tora*)	do	Excellent	Excellent			
Skunkcabbage (*Symplocarpus foetidus*)	Perennial	Good		Good	Fair	
Smartweed:						
Ladysthumb (*Polygonum persicaria*)	Annual	do	Fair	do	Good	Do.
Pennsylvania (*P. pensylvanicum*)	do	do	do	do	Fair	Do.
Swamp (*P. coccineum*)	Perennial	Poor				
Snakeroot, white (*Eupatorium rugosum*)	do	Fair		Fair	Poor	
Snakeweed:						
Broom (*Gutierrezia sarothræ*)	do	do	Fair	do	do	Poor.
Threadleaf (*G. microcephala*)	do	Good		Good	Good	
Sneezeweed, bitter (*Helenium tenuifolium*)	Annual	Excellent	Excellent	Excellent	Excellent	Good.
Snow-on-the-mountian (*Euphorbia marginata*)	do	Fair		Good		Fair.
Sowthistle:						
Annual (*Sonchus oleraceus*)	do	Excellent	Excellent	Excellent		Excellent.
Perennial (*S. arvensis*)	Perennial	Fair	Fair	Fair	Fair	Fair.
Spiny (*S. asper*)	Annual	Excellent		Excellent		Excellent.
Spanishneedles (*Bidens bipinnata*)	do	do	Excellent	do	Excellent	

Speedwell:						
Common (*Veronica officinalis*)	Perennial	Poor	None	None	Poor	None.
Corn (*V. arvensis*)	Annual	do	do	do	do	Do.
Purslane (*V. peregrina*)	do	Fair	do	Fair		
Spikerush (*Eleocharis palustris*)	Perennial	do	Fair	Poor	Poor	Poor.
Spurge:						
Flowering (*Euphorbia corollata*)	do	Poor		Good		
Leafy (*E. esula*)	do	do	None	Poor	Fair	None.
Spotted (*E. maculata*)	Annual	do		do	Fair	
Spurry, corn (*Spergula arvensis*)	do	do	Fair	None	Fair	Do.
Squaw-berry (*Rhus trilobata*)	Woody			Poor		Poor.
Starthistle, yellow (*Centaurea solstitialis*)	Annual	Fair				None.
Sticktight, European (*Lappula echinata*)	do	Good				
Strawberry, wild (*Fragaria* spp.)	Perennial	Poor	None	Poor	Fair	Do.
St. Johnswort (*Hypericum perforatum*)	do	do				
Spotted (*H. punctatum*)	do	Fair		Fair		
Sumpweed, rough (*Iva ciliata*)	Annual	Excellent				
Sunflower (*Helianthus annuus*)	do	do	Good	Excellent	Excellent	Excellent.
Sweetclover, annual yellow (*Melilotus indica*)	do	do	Excellent			Do.
Tanoak (*Lithocarpus densiflora*)	Woody	Poor		Poor	Poor	Poor.
Tansy (*Tanacetum vulgare*)	Perennial	Fair	None	Fair		
Tansymustard (*Descurainia pinnata*)	Annual	Excellent				
Thistle:						
Blessed (*Cnicus benedictus*)	do	do				
Blue (*Echium vulgare*)	Biennial	Fair	Fair	Fair		
Bull (*Cirsium vulgare*)	do	Excellent	Excellent	Excellent	Excellent	Excellent.
Bristly (*C. horridulum*)	Perennial[3]	Fair				
Canada (*C. arvense*)	Perennial	do	Fair	Fair	Fair	Fair.
Russian (*Salsola kali*)	Annual	Good	Good	Good	Good	Good.
Tickseed (*Coreopsis tinctoria*)	do	do		Excellent		
Toadflax:						
Blue (*Linaria canadensis*)	Perennial	Poor				
Yellow (*L. vulgaris*)	do	None	None	None	None	None.
Toyon (*Heteromeles arbutifolia*)	Woody	Good	Fair	Fair	Fair	Fair.
Tree-of-heaven (*Ailanthus altissima*)	do	Fair	None	Excellent	Good	Poor.
Trumpet creeper (*Campsis radicans*)	do	Poor	do	Fair	Excellent	None.
Velvet-leaf (*Abutilon theophrasti*)	Annual	Excellent	Good	Good		Excellent.
Vervain:						
Blue (*Verbena hastata*)	Perennial	do				
Hoary (*V. stricta*)	do	Good				
Prostrate (*V. bracteata*)	do	Excellent				
Roadside (*V. bonariensis*)	do	Good				

See footnotes at end of table.

Susceptibility of common weeds to control by 2,4-D, MCPA, 2,4,5-T, silvex, and 2,4-DB—Continued

Plant name	Type of plant	Control [1]				
		2,4-D	MCPA	2,4,5-T [2]	Silvex	2,4-DB
Vetch:						
Narrowleaf (*Vicia angustifolia*)	Annual	Excellent	Fair	Excellent		
Milk (*Astragalus* spp.)	Perennial	Good	do	Good	Excellent	
Two grooved (*A. bisulcatus*)	do	Excellent				
Wild (*Vicia* spp.)	Annual	do	Excellent	Excellent	Excellent	Excellent.
Violet (*Viola* spp.)	Perennial	Poor	None		Good	
Walnut, black (*Juglans nigra*)	Woody	Excellent		Excellent		
Waterhemlock, spotted (*Cicuta maculata*)	Perennial	Good		do		
Water-hyacinth (*Eichhornia crassipes*)	do	do		do	Excellent	
Waterplantain (*Alisma triviale*)	do	Excellent	Excellent		do	Good.
Waterweed, Canada (*Elodea canadensis*)	do	Fair			do	
Willow (*Salix* spp.)	Woody	Good	Good	Good	Good	
Witchweed (*Striga asiatica*)	Annual	Excellent	Excellent	Excellent	Excellent	Excellent.
Woodsorrel, yellow (*Oxalis stricta*)	Perennial	Poor	None		do	
Wormwood, annual (*Artemisia annua*)	Annual	Good	Fair	Good		
Yankeeweed (*Eupatorium compositifolium*)	Perennial	Fair		Fair		
Yarrow:						
Common (*Achillea millefolium*)	do	Poor	Poor	Poor	Poor	None.
Western (*A. lanulosa*)	do	Fair		Fair		Do.
Yellow-rocket (*Barbarea vulgaris*)	Perennial [3]	Good	Good	Good	Fair	Fair.
Yerba-santa (*Eriodictyon californicum*)	Woody	Excellent	do	do	do	None.
Yucca; soapweed (*Yucca glauca*)	Perennial	None		Poor	do	

[1] For explanation of control ratings, see "Susceptibility Chart," page 11.

[2] See limitation on use of 2,4,5-T, page 2.

[3] Sometimes biennial.

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