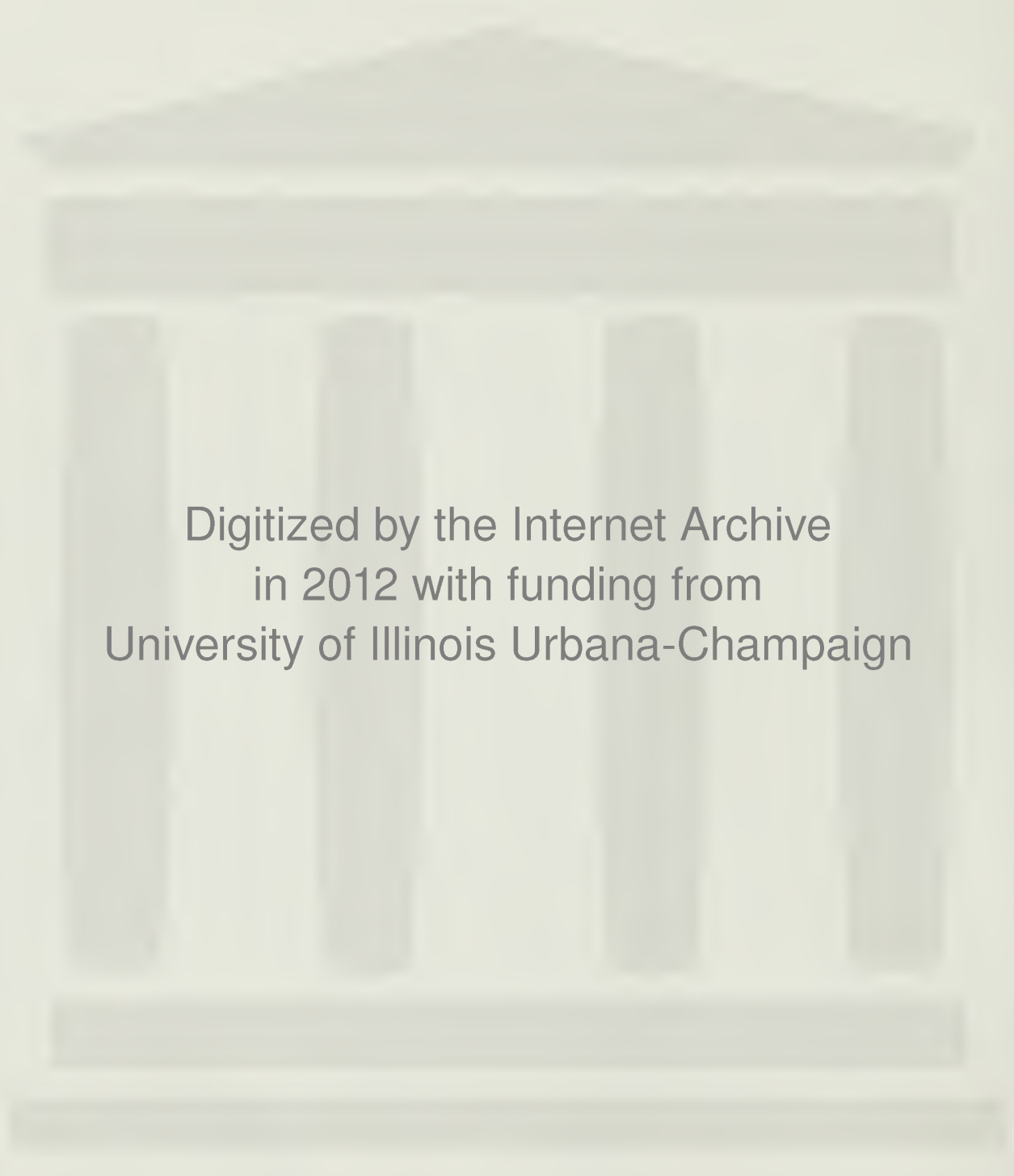


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Herbicide Guide

FOR COMMERCIAL VEGETABLE GROWERS

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1972

WEED GROWTH reduces vegetable growers' income in the United States by millions of dollars annually as a result of lower yields, poorer quality, and added labor in harvesting and processing the crops.

This guide should be used together with the grower's knowledge of soil types and the crop and weed history of the area to be treated. The decision of whether to use herbicides or other means of weed control depends in part on the severity of past weed infestations. Several herbicides may be suggested for some crops. These herbicides have shown good control with no injury to the vegetables under test conditions. Not all herbicides cleared for use on a species are necessarily listed. Where the choice of more than one herbicide is suggested, the decision rests with the grower and is based on his knowledge of past weed infestation and cost of material. Where one herbicide will not control the weed spectrum present a combination of herbicides is suggested. When using an herbicide for the first time, a small-scale trial is advised.

These suggestions for chemical weed control in vegetables are based on research at the Illinois Agricultural Experiment Station, the U.S. Department of Agriculture, and other research institutions. The University of Illinois and its agents assume no responsibility for

results from the use of these herbicides, whether or not they were used in accordance with suggestions, recommendations, or directions of the manufacturer or any governmental agency

Reading the label of the herbicide container is the most profitable time you spend in weed control. Use of the material and methods of use depend on registration of the herbicide by the federal Environmental Protection Agency (EPA). Do not use any herbicide *unless the label states that it is cleared for the use on the crop to be treated.*

Where mixtures of chemicals are applied the *user* will assume the responsibility for freedom from residues if such applications are not labeled by the EPA as a mixture.

Suggestions sometimes change during the growing season based on EPA clearances after date of issue. These suggestions are printed only once each year, and are therefore subject to change without notification.

Watch for notice of changes in EPA registration of herbicides (as they are identified by the EPA) in the Illinois Vegetable Farmer's Letter. The Letter is available from the Department of Horticulture, University of Illinois, Urbana 61801.

PUBLICATIONS ABOUT HERBICIDE EQUIPMENT: The following publications may be obtained from your county extension adviser or the Office of Agricultural Publications, 123 Mumford Hall, Urbana, Illinois 61801. Circular 791, "Band Spraying Preemergence Herbicides"; Circular 1038, "Calibrating and Maintaining Spray Equipment"; and Circular 1008, "Calibrating and Adjusting Granular Row Applicators."

NOTE: In the suggestions table on the following pages, the trade names of the herbicides are usually used. The list immediately below shows trade names and their corresponding common names.

Common name	Trade name	Common name	Trade name	Common name	Trade name
atrazine	AAtrex	diuron	Karmex	naptalam	Alanap
benefin	Balan	DCPA	Dacthal	nitralin	Planavin
bensulide	Prefar	diphenamid	Dymid, Enide	nitrofen	TOK
butylate	Sutan	EPTC	Eptam	pebulate	Tillam
CDAA	Randox	fluorodifen	Preforan	propachlor	Ramrod
chloramben	Amiben, Vegiben	linuron	Lorox	pyrazon	Pyramin
chloroxuron	Tenoran	metabromuron	Patoran	simazine	Princep
chlorpropham	Chloro IPC	monuron	Telvar	trifluralin	Treflan
cycloate	Ro-Neet	MCPA	Numerous	Petroleum solvent ..	Stoddard Solvent
dalapon	Dowpon	MCPB	Numerous	2,4-D (amine)	Numerous

Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture.
JOHN B. CLAAR, Director, Cooperative Extension Service, University of Illinois at Urbana-Champaign.

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Prepared by H. J. Hopon, Department of Horticulture

CIRCULAR 907

USE THESE SUGGESTIONS IN 1972 ONLY

Crop	Herbicide	Rate of active ingredient per acre actually covered ¹	Weeds controlled	Best time of application (based on crop stage)	Remarks, cautions, limitations
Asparagus (seedlings)	Amiben	3 lb.	Annuals	Immediately after seeding	Irrigation or rainfall after treatment will give maximum control.
Asparagus (established plantings)	Dowpon	5-10 lb.	Perennial grass	End of harvest season following disking	Apply when grass weeds are 3 to 4 inches tall. Direct spray under fern growth.
	Telvar	3 lb.	Annuals	In spring before spears emerge and immediately following harvest	Apply Telvar after disking. Do not exceed 6 lb. per growing season.
	Karmex	1.5-3 lb.	Annuals		Apply Karmex after disking. Do not exceed 4.8 lb. per growing season. Do not replant treated area to any other crop for 2 years after last application.
	Princep	3-4 lb.	Annuals	In spring and after harvest	Apply after disking. Do not treat during last year in asparagus because of residue. With Telvar, Karmex and Princep—usually weed infestation will be reduced and spring application will be sufficient after first year.
Beans, lima and dry	Amiben	2-3 lb.	Broad spectrum of annual weeds	Immediately after seeding	Field may be rotary-hoed without destroying herbicide action. Do not feed foliage to livestock.
	Amiben plus Randox	2 lb. +2 lb.	Broad spectrum of annual weeds	Immediately after seeding	Gives sustained annual grass control.
	Treflan	0.5-0.75 lb.	Annuals ² (primarily grasses)	Preplant soil application Incorporate with soil immediately	Plant crop immediately or within 3 weeks after application. Can be used up to 1 lb. on dry beans.
Beans, dry	Preforan	3.5-4.5 lb.	Broad spectrum of annual weeds	Immediately after seeding Rainfall or irrigation needed soon after application	Do not follow treated crop in the same growing season with any crop except those stated on the container label. Do not use treated plants for feed or forage within 60 days of application.
	Planavin	1-1.5 lb.	Annuals (primarily grasses)	Preplant soil application Incorporate with soil	Can be used on sandy soil.
Beans, snap	Eptam	3 lb.	Annual grasses and nutgrass ⁴	Preplant soil application Incorporate with soil immediately	Plant crop immediately or within 3 weeks after application.
	Treflan	0.5-0.75 lb.	Annuals ² (primarily grasses)	Preplant soil application Incorporate with soil immediately	
	Preforan	3.5-4.5 lb.	Broad spectrum of annual weeds	Immediately after seeding Rainfall or irrigation needed soon after application	Do not follow treated crop in the same growing season with any crop except those stated on the container label. Do not use treated plants for feed or forage within 60 days of application.
	Dacthal	6-10 lb.	Annuals ³ (primarily grass)	Immediately after seeding	Do not feed treated plant parts to livestock.
	Planavin	1-1.5 lb.	Annuals (primarily grass)	Preplant soil application Incorporate with soil	Can be used on sandy soil.
Beets, garden	Pyramin	4 lb.	Annuals (primarily broad-leaved)	Preemergence or after beets emerge and before weeds have 2 true leaves	Where grasses are a severe problem, use 4 lb. Pyramin + 4 lb. Ro-Neet.
	Ro-Neet	4 lb.	Annual grasses	Preplant soil application Incorporate with soil immediately	Use a combination treatment with Pyramin to broaden control spectrum.
Broccoli Brussels sprouts Cabbage Cauliflower	Preemergence — direct-seeded				
	Treflan	0.5-0.75 lb.	Annuals ² (primarily grasses)	Preplant soil application Incorporate with soil immediately	Stunting or growth reduction may occur at recommended rates under growth stress conditions.
	Dacthal	6-10 lb.	Annuals ³ (primarily grasses)	Immediately after seeding	
	Preemergence — transplanted				
	Treflan	0.5-1 lb.	Annuals ² (primarily grass)	Preplant soil application Incorporate with soil immediately	Transplant after application to 3 weeks later.
	Planavin	1-1.5 lb.	Annuals (primarily grass)	Preplant soil application Incorporate with soil	Transplant after application. Can be used on sandy soil.
	Postemergence — direct-seeded or transplanted				
	TOK ⁷	3-5 lb.	Broad-leaved weeds ⁸	One to 2 weeks after crop emergence or transplanting, while weeds are in seedling stage	Use wettable powder formulation to reduce injury potential.
Carrots	Preemergence				
	Treflan	0.5-1.0 lb.	Annuals ² (primarily grass)	Preplant soil incorporation Incorporate with soil immediately	Seed after application to 3 weeks later.
	Lorox	1-1.5 lb.	Annuals	Preemergence	Do not feed treated foliage to livestock or replant treated area for 4 months. Can also be used on parsnips, but do not use on parsnips on sandy soil.

¹ Based on active ingredients (actual amount of active herbicide in material or acid equivalent). Use lower rate on sandy soil and higher rate on clay and loam soils. When using a band application over the row, adjust amount of material applied to the part of an acre treated. See Illinois Circular 791.

² May not control ragweed and panicum. ³ May not control ragweed, smartweed, and velvetleaf. ⁴ May not control smartweed. ⁵ May not control smartweed and velvetleaf. ⁶ May not control crabgrass. ⁷ Use of 50% wettable powder is suggested for cabbage and horseradish. ⁸ May not control ragweed or chickweed. Grass control is sometimes marginal. ⁹ Do not use Alanap Plus, Solo, Whistle, or Amoco Soybean herbicide. These materials all contain Alanap plus another ingredient which may cause injury.

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<i>Crop</i>	<i>Herbicide</i>	<i>Rate of active ingredient per acre actually covered¹</i>	<i>Weeds controlled</i>	<i>Best time of application (based on crop stage)</i>	<i>Remarks, cautions, limitations</i>
Carrots (continued)	Postemergence Lorox	1-1.5 lb.	Annuals	Postemergence on carrots only after crop is 2-6 inches tall	Do not feed treated foliage to livestock or replant treated area for 4 months.
	TOK	3-5 lb.	Broad-leaved weeds ⁸	While weeds are in seedling stage	Can also be used on celery and parsley.
	Tenoran	4 lb.	Broad-leaved weeds	After true leaves formed on carrots; before weeds are over one inch tall	Do not apply within 60 days before harvest.
	Stoddard Solvent	60-80 gal.	Annuals	After 2 true leaves have appeared (do not apply to carrots or parsnips after they are ¼ inch diameter, since oily taste may result)	Most effective when sprayed on cloudy days or during high humidity, and when weeds are not more than 2 inches high. May not control ragweed. Do not apply within 40 days of harvest. Can also be used on celery, dill, parsnips, and parsley.
Cucumbers Muskmelons Watermelons	Alanap ⁹	3-5 lb.	Annuals ⁴	Immediately after seeding or transplanting	Do not use on cold soil. Rainfall or irrigation after treatment gives maximum control.
		3-3.5 lb.		After transplanting or vining	Use granular form. Keep away from foliage. Apply to soil after weeds have been removed.
	Prefar	4-6 lb.	Annuals (primarily grasses)	Preplant soil incorporation Incorporate with soil immediately	Is primarily a grass killer. May not control lambsquarter. Consult label for sensitive crops within 18 months after application. Prefar can be used in rotation only with tomatoes, broccoli, Brussels sprouts, cauliflower, and lettuce, within 18 months of application.
	Prefar plus Alanap	3-4 lb. + 2-3 lb.	Grasses and broadleaves	Preplant soil incorporation for Prefar; Alanap as an immediate post seeding application	Has value for broad spectrum weed control. Consult label for sensitive crops within 18 months after Prefar application.
Eggplant	Dacthal	6-10 lb.	Annuals ³ (primarily grass)	Immediately after transplanting	
Horseradish	TOK ⁷	3-5 lb.	Broad-leaved weeds ⁸	Before weeds are 1 inch tall One application per growing season only	Will not consistently control weeds over 1 inch tall. Some emerging annual grass may be controlled by this treatment. Lower rate will control seedling purslane.
Lettuce	Balan	1.5 lb.	Annuals	Preplant soil incorporation Incorporate with soil immediately	Is primarily a grass killer. Seed after application to 3 weeks later. Do not plant wheat, barley, rye, grass, onions, oats, beets, or spinach for 12 months after application.
Onions	Preemergence Dacthal	6-10 lb.	Annuals ³ (primarily grasses)	Immediately after seeding or transplanting	May not kill smartweed or common ragweed. Can be used on seeds, sets, or seedlings. Use only on mineral soils. Use lower rates on sandy soils.
	Randox	4-6 lb.	Annuals ⁵ (primarily grasses)	Just before onions emerge	Use on muck soils. Heavy rainfall may reduce stand. Very effective on purslane and pigweed.
	Postemergence TOK	3-4 lb.	Broadleaf weed control	When weeds are in seedling stage and not over 1 inch tall	Use a single application of E.C. or W.P. per growing season. Do not apply E.C. until onions are in the 2-3 leaf stage. <i>Preemergence</i> use of TOK with heavy rainfall may reduce stand.
	Tenoran	4 lb.	Broad-leaved weeds	After 2 to 3 onion leaves have formed, before weeds are over 1 inch tall	Do not apply within 30 days of harvest. Tenoran used in combination with CIPC or the insecticide diazinon may cause injury. See container label for precautions.
	Chloro-IPC	3-6 lb.	Broadleaf control (especially smartweed)	On seeded onions: loop stage or after 3- to 4-leaf stage	In the later sprays, direct at base of onion plant. If more than one application is applied do not exceed 6 lb. per acre for the season. <i>Use lower rates in cool, wet weather.</i> Use no later than 30 days before harvest.
Peas	Ramrod	4-4.9 lb.	Annuals	Preemergence	Do not use on sandy soil.
	Treflan	0.5-0.75 lb.	Annuals ²	Preplant soil incorporation Incorporate with soil immediately	Seed after application to 3 weeks later. Some reduction of growth and stand reduction possible under stress.
	MCPB	1 lb.	Broad-leaved weed and Canada thistle	When peas are 3-7 inches tall and no later than 4 nodes prior to pea blossom	May delay maturity 1 to 4 days. Use at least 20 gal. of water per acre. Do not feed vines to livestock. MCPA is more effective on mustard. MCPB is less injurious to peas.
	MCPA	¼-½ lb.			
Potatoes, Irish	Eptam	3-5 lb.	Annual grasses and nutgrass ⁴	Preplant soil application or drag-off treatment at emergence Incorporate with soil immediately	Use lower rate on sandy soil.
	Lorox	1-2 lb.	Annuals	At very start of potato emergence	Plant tubers at least 2 inches deep. Do not replant treated area to other crops for 4 months after treatment. May injure crop on light sandy soil.
	Patoran	2-3 lb.	Annuals	At very start of potato emergence	Do not apply within 90 days before harvest.
	Dowpon	7 lb.	Quackgrass	Before plowing in spring; wait 4 days before plowing and planting	Not for fields intended for red-skinned varieties or White Rose. Do not plant potatoes for 4 weeks.

<i>Crop</i>	<i>Herbicide</i>	<i>Rate of active ingredient per acre actually covered¹</i>	<i>Weeds controlled</i>	<i>Best time of application (based on crop stage)</i>	<i>Remarks, cautions, limitations</i>
Potatoes, sweet	Dacthal	6-10 lb.	Annuals ³ (primarily grasses)	Immediately after planting	May not control smartweed or common ragweed. Preferred on sandy soil.
	Amiben	3 lb.	Annuals	Immediately after planting	Preferred on loam soils. Do not feed foliage to livestock
Spinach	Chloro-IPC	1-3 lb.	Annuals	Immediately after seeding	Use 1 lb. if the temperature is below 60°.
	Ro-Neet	4 lb.	Annuals (primarily grasses)	Preplant soil application Incorporate with soil immediately	
Squash Pumpkins	Alanap ⁹	3-3.5 lb.	Annuals ⁴	Immediately after seeding	Do not use early when soil is cold. Moisture is necessary for good control. Use 3-lb. rate on sandy soils.
	Amiben	3-4 lb.	Annuals	As soon after seeding as possible	Use on loam soils.
Squash	Prefar	4-6 lb.	Annuals (primarily grasses)	Preplant soil application Incorporate with soil immediately	Is primarily a grass killer. May not control lambsquarters. Consult label for sensitive crops within 18 months after application. Use in combination with Alanap as suggested for cucumbers.
Sweet corn	Preemergence AAtrex	2-3 lb.	Annuals, annual and perennial grasses ⁶	Preemergence, apply no later than 3 weeks after seeding Shallow cultivation may improve weed control during dry weather	Grow corn a second year without AAtrex treatment. This chemical has a high soil residue. Do not plant other vegetable crops on a sprayed area until a second year of corn has been grown. Use AAtrex where quackgrass is a problem. Residue hazard decreased when banded or in combination with Ramrod or Sutan. Do <i>not</i> use on sandy soils. Use to reduce AAtrex residue. Use on sandy soil and where nutgrass is a problem. Use where nutgrass is a problem and to reduce AAtrex residue. Preferably, apply before corn is 6 inches tall. If corn is over 12 inches reduce rate to $\frac{1}{4}$ lb. Can be combined with crop oils for post emergence application as an emergency measure. This may increase residue the following year. Preemergence use preferred. Do not graze or feed treated foliage for 21 days after treatment.
	Ramrod	4-5 lb.	Annuals	Preemergence	
	AAtrex plus Ramrod	1.5 lb. + 3 lb.	Annuals and perennial grasses	Preemergence	
	Sutan	3-4 lb.	Primarily annual grasses	Preplant soil application Incorporate with soil	
	AAtrex plus Sutan	1 lb. + 3 lb.	Annuals and perennial grasses	Preplant soil incorporation Incorporate with soil immediately	
	Postemergence 2,4-D (amine)	$\frac{1}{2}$ lb.	Broad-leaved	Postemergence	
	AAtrex	2 lb.	Annuals, annual and perennial grasses ⁶	Directed spray 3 weeks after emergence	
Tomatoes, direct-seeded	Dymid, Enide	4-6 lb.	Annuals	Preemergence	Do not plant other food crops on treated areas for 6 months
	Tillam	4 lb.	Annuals (primarily grasses)	Preplant soil incorporation Use a 2-4 inch incorporation	Direct seed as soon after application as possible.
Tomatoes and Peppers, transplanted	Vegiben	3-4 lb.	Annuals	Wait 3 days after transplanting to apply	Use granular formulation only. Do not use on sandy soils
	Treflan	0.5-1 lb.	Annuals ² (primarily grasses)	Preplant soil application Incorporate with soil immediately	Some reduction of growth may be possible under growth stress conditions or if rates are higher than suggested for soil type.
	Dymid, Enide	4-6 lb.	Annuals	After transplanting	Use 4 lb. on light soils. Use a maximum of 5 lb. on peppers
	Planavin	1-1.5 lb.	Annuals (primarily grasses)	Preplant soil application Incorporate with soil	Can be used on sandy soil.

(See footnotes on page 2.)

Storage of Pesticides and Containers

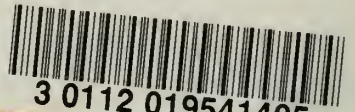
Keep pesticides and containers in a separate building, room, or enclosure used only for this purpose. Such buildings or rooms should be dry, ventilated, and locked. Fence outside storage areas to protect children and animals and to discourage pilferage. CAUTION: Do not store weedkillers, herbicides, or defoliants in the same room with insecticides. Chlorate salts can create a fire or explosion hazard. Remove only the pesticides needed for one day's operation and return empty containers — and any unused pesticide — to the storage area each day.

Disposing of Pesticides and Containers

Disposal methods and precautions depend on the type of container and facilities available. Drain any left-over pesticide into a pit dug in sandy soil. Rinse glass and small metal containers several times with the diluent being used and include the rinse in your spray. Keep lids and bungs tightened.

Do not burn volatile weedkiller containers. Weedkillers such as 2,4-D and its derivatives can volatilize, and the resulting vapor may damage nearby plants, crops, and shrubbery. Herbicides or defoliants containing chlorates may explode when heated. *Dispose of container in this manner:* break glass containers and chop holes in the top, bottom, and sides of metal containers so they cannot be used again or collect water; bury all weedkiller containers 18 inches deep at a safe disposal site or take them to a dump to be covered with soil.

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