

## Weed Control in Vineyards

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**Table 3.5 - Herbicides Labeled for Use in Grapes**

For preemergence herbicides, use lower rates on sandy soils and higher rates on clay soils. Do not disturb soil after a preemergence herbicide application. Tank mixes of certain preemergence and postemergence herbicides can be made to control existing vegetation and control weeds germinating from seed. Check compatibility of tank mixes prior to application.

Pest	Chemical and Formulation Rate per Acre	Timing and Remarks
<i>Preemergence directed under vines</i>		
Most annuals, fescue, quackgrass, dandelions, dock, and other herbaceous perennials	dichlobenil 4.0-6.0 lb (Casoron 4G 100.0-150.0 lb or 2.3-3.4 lb/1000 sq ft)	Apply dry granules in late winter or early spring. Shallow incorporation may improve weed control. Do not apply within 4 weeks after transplanting. Short residual activity, regrowth usually occurs in late summer. Do not graze livestock in treated areas. Do not make an application within 1 month of harvest.
Most annuals and some perennials	diuron 1.6-2.4 lb (Karmex 80DF 2.0-3.0 lb)	Apply a single application/year in early spring to a weed free surface or include an appropriate postemergence herbicide. Use in vineyards established at least 3 years. Do not replant to any crop within 2 years after application.
Annual grasses and broad-leaf weeds	flumioxazin 0.19-0.375 lb (Chateau 6-12 oz/A)	Preemergence and early postemergence action. Apply as a directed spray to dormant vines or use shields if applications are made after flowering to prevent spray contact with grape foliage or fruit. Do not apply to vines established less than 2 years unless protected from spray contact using nonporous wraps, grow tubes, or waxed containers. Apply prior to weed germination or to small emerged weed seedlings. Combine with a labeled postemergence herbicide such as glufosinate for control of larger annual weeds or perennials.
Annual broadleaf weeds	isoxaben 0.5-1.0 lb (Gallery 0.67-1.33 lb)	Nonbearing grapes only. Apply after soil has settled following transplanting. Combine with oryzalin to control annual grassy weeds.
Many annual weeds	simazine 2.0-4.0 lb (Princep Caliber 90 2.2-4.4 lb or 4L 2.0-4.0 qt)	Apply a single application per year in the fall or spring to a weed free surface or include an appropriate postemergence herbicide. Vineyards must be established at least 3 years.
Annual grasses and certain annual broadleaf weeds	oryzalin 2.0-6.0 lb (Orzalin 4AS, Surflan 4AS 2.0-6.0 qt, Surflan DF 2.4-7.1 lb)	May be used in non-bearing and bearing vineyards. Areas to be treated should be free of weeds or include an appropriate postemergence herbicide. Remove or thoroughly mix trash into the soil before application. Use lower rate for short-term control (4 months) and higher rate for long-term control (6-8 months). Apply as a directed spray and avoid contact with leaves, branches, or trunks of vines. Do not apply to newly transplanted vineyards until soil has settled and there are no cracks present. Make only one application/growing season. May be tank-mixed with diuron or simazine to control many broadleaf weeds. Observe precautions and time limitations for diuron or simazine.
Annual broadleaf weeds and certain annual grasses	oxyfluorfen 0.5-2.0 lb (Goal 2XL 2.0-8.0 pt)	Dormant application only. Will control certain small seedling weeds plus provide soil residual control of annual broadleaf weeds and certain annual grasses.
Annual and perennial grasses and certain broad-leaf weeds	pronamide 1.0-4.0 lb (Kerb 50W 2.0-8.0 lb)	Apply in the fall after fruit harvest but prior to leaf drop and soil freeze-up. Do not apply to vines less than one year old. <b>RESTRICTED USE PESTICIDE.</b>

### 3-16 Grapes: Weed Control in Vineyards

**Table 3.5 - Herbicides Labeled for Use in Grapes (cont.)**

<b>Pest</b>	<b>Chemical and Formulation Rate per Acre</b>	<b>Timing and Remarks</b>
Annual grasses and certain annual broadleaf weeds	pendimethalin 2.0-4.0 lb (Prowl 3.3 EC 2.4-4.8 qt, Prowl H2O 2.0-4.0 qt)	Prowl EC - use on nonbearing plantings only. Prowl H <sub>2</sub> O - do not apply within 90 days of harvest. Allow soil to settle around vines before application. Apply only to dormant plants. Do not apply after buds have started to swell. Do not apply overtop vines.
Annual grasses, certain annual broadleaf weeds and suppression of yellow nutsedge	norflurazon 1.0-4.0 lb (Solicam 1.25-5.0 lb)	Apply prior to budbreak. Vines must be established at least 2 years. Combine with simazine or diuron for improved broadleaf weed control in vineyards over 3 years old. Apply to weed-free areas or combine with an appropriate postemergence herbicide.
<i>Postemergence directed under vines</i>		
Annual and perennial grasses	fluazifop-butyl 0.25-0.375 lb ai (Fusilade DX 16.0-24.0 fl oz + 2 pt crop oil concentrate or 1/2 pt nonionic surfactant/25 gal)	Use on non-bearing plantings only. Apply as directed spray to actively growing grasses. Treat annual grasses before tillering for optimum results. Perennial grasses may need repeat treatment for total control. Do not treat canes to be harvested within one year of application. For spot treatment use 0.75 fl oz Fusilade DX plus 1.5 oz crop oil concentrate or 0.5 fl oz nonionic substance/gal. Ensure thorough coverage of weed foliage.
	clethodim 0.09-0.12 lb ai (Select 6.0-8.0 fl oz/A + nonionic surfactant at 0.25% by volume)	Use on nonbearing plantings only (at least 1 yr before harvest). Postemergence control of actively-growing grasses. For spot treatment, apply 0.25%-0.5% Select solution (0.33-0.65 fl oz/gal) with 0.33 fl oz nonionic surfactant.
	sethoxydim 0.28-0.47 lb ai (Poast 1.5E 1.5-2.5 pt + 1.0 qt crop oil concentrate)	Do not apply within 50 days of harvest. Apply in a minimum of 10 GPA of water. Apply the lower rate to annual grasses up to 6 inches tall and apply higher rate to annual grasses up to 12 inches tall and to perennial grasses. For spot treatment use 1.25-1.9 fl oz Poast plus 1.25 fl oz crop oil concentrate/gal. Provides postemergence grass control only.
Annual weeds and certain perennials	glufosinate 0.75-1.25 lb (Rely 3.0-5.0 qt/A)	Apply as a directed spray to emerged weeds. Do not allow spray to contact desired foliage or green bark. Do not apply within 14 days of harvest. For spot treatment, mix 4.0 fl oz Rely/gal of water. Rely can also be used for sucker control. See label for directions.
Annual and perennial grasses and broadleaf weeds	glyphosate 0.75-3.75 lb ae (acid equivalent) Roundup UltraMax 26 fl oz-4 qt, Touchdown 1.0-5.0 qt, or other labeled formulation) Spot treatment 1.3-2.6 fl oz Roundup UltraMax or Touchdown/gallon. For wiper application use 1 part Roundup Ultra Max or Touchdown/gal to 2 parts water	Use as a directed spray in established vineyards or for site preparation prior to transplanting new vines. Do not apply when green shoots or canes or foliage are in the spray zone. Do not allow spray drift or mist to contact green foliage, green bark, suckers, or vines and renewals less than 3 years of age. Spray contact, other than with mature bark on the main trunk, can result in serious localized or systemic injury. If repeat treatments are necessary, do not exceed a total of 10.6 qt/A/year. Do not treat within 14 days of harvest. Apply prior to the end of the bloom stage or apply with shielded equipment to avoid crop damage.
All weeds, general contact	paraquat 0.63-1.0 lb (Gramoxone Inteon 2.5-4.0 pt/A plus a nonionic surfactant at 1.0-2.0 pt/gal)	Apply as a directed spray in at least 30 gal of water/A. Most effective on small, actively growing weeds. Repeat applications will be needed to control perennial weeds. Do not allow spray to contact foliage, fruit, or stems. Corrosive to aluminum. Do not mix or store in aluminum tanks or in systems with aluminum fittings. Paraquat is toxic and a restricted use pesticide - handle with caution. <b>RESTRICTED USE PESTICIDE.</b>

**Table 3.5 - Herbicides Labeled for Use in Grapes (cont.)**

Pest	Chemical and Formulation Rate per Acre	Timing and Remarks
Annual grasses and certain annual broadleaf weeds	napropamide 4.0 lb (Devrinol 50DF 8.0 lb)	Apply to the soil surface in the fall through early spring prior to weed emergence. Do not apply to frozen ground. Does not control existing weeds, but may be used with an appropriate post-emergence herbicide to kill existing vegetation or with simazine to broaden the spectrum of weeds controlled. Use as a directed spray and avoid contact with fruit or foliage. Do not apply when fruit is on the ground during the harvest period. Do not graze areas. Make only one application/season. Must be incorporated within 24 hours by rainfall, irrigation, or mechanical means for optimum results.
Annual broadleaf weeds	carfentrazone-ethyl 0.016-0.031 lb (Aim 2EC, 1.9 EW 1.0-2.0 fl oz/A)	Apply post-directed using a hooded sprayer for control of small annual broadleaf weeds less than 4 inches tall. Add a crop-oil concentrate or nonionic surfactant. Can be tank mixed with other herbicides for broader-spectrum weed control. Can also be used for control of suckers—see label for rates and directions for this use.

**Table 3.6 - Relative Effectiveness of Selected Preemergence Herbicides and Ratings in Grapes**

Weeds	Dichlobenil (Casoron)	Diuron (Karmex)	Flumioxazin (Chateau)	Isoxaben (Gallery)	Napropamide (Devrinol)	Oryzalin (Surflan)	Oxyfluorfen (Goal)	Pronamide* (Kerb)	Simazine (Princep)	Pendimethalin (Prowl)	Norflurazon (Solicam)
<i>Annual Grasses</i>											
Barnyardgrass	G	G	-	-	G	G	F	F	F-G	G	E
Cheat	G	G	-	-	G	G	-	G	G	-	G
Crabgrasses	G	G	F-G	P	E	E	F	G	F-G	E	E
Fall panicum	F	F	-	-	G	G	-	F	F-G	G	E
Foxtails	G	G	F-G	-	E	E	F	G	G	G	F
Goosegrass	F	G	F-G	-	E	E	F	G	E	G	G
Johnsongrass (seedling)	F	G	P-F	-	P	F-G	-	-	N	G	G
<i>Annual Broadleaf Weeds</i>											
Annual fleabane	E	G	-	-	G	G	G	F	G	-	F
Annual morningglory	G	G	G	p	N	P-F	F	F	E	P	F
Black nightshade	G	G	G	-	N	P-F	G	F	E	P	F
Carpetweed	G	E	-	-	G	G	G	G	E	G	G
Common chickweed	G	E	F-G	E	-	G	G	G	E	G	G
Common lambsquarters	G	E	E	F	F-G	G	G	F	E	F	G
Common ragweed	G	E	E	G	P	F	F	E	N	F	-
Hairy galinsoga	G	E	G	G	G	G	G	-	E	N	-
Henbit	G	E	-	G	F	P	G	G	E	G	-
Horseweed	G	G	-	F	P	F	F	P	E	P	G
Knotweed	G	G	-	-	G	G	G	E	E	-	F
Mustards	G	G	-	-	P	P-F	G	G	G	-	F
Pennsylvania smartweed	G	G	-	G	P	P-F	G	-	E	-	-
Pigweeds	G	E	E	G	G	G	G	N	E	F	F
Prickly lettuce	G	G	G	-	G	F	G	-	E	-	-
Prickly sida	F-G	G	E	-	N	P-F	G	N	G	-	P
Purslane	G	E	-	G	G	G	G	-	E	F	G
Shepherds' purse	G	G	-	-	F	G	G	G	E	N	G
Speedwells	-	-	-	-	-	-	-	P	-	-	-
Velvetleaf	-	F	G	F	N	P-F	G	P	G	G	-
Virginia pepperweed	G	G	-	-	F	G	-	P	E	-	G
<i>Perennial Grasses And Sedges</i>											
Fescues	G	F	-	N	N	N	N	G	P	N	F
Johnsongrass (rhizome)	-	P	N	N	N	N	N	P	N	N	P
Nimblewill	-	P	-	N	N	N	N	P	P	N	F
Orchardgrass	G	P-F	-	N	N	N	N	G	P	N	F

(E=excellent; G=good; F=fair; P=poor; N=none; - = not registered or information lacking)

<sup>1</sup>Designates restricted use pesticide - must be trained and certified as a private applicator to purchase or use these more toxic chemicals in your vineyard. Refer to Publication 456-001 and the pesticide label for safety information. Ask your local Extension agent how to become a certified applicator.

**Table 3.6 - Relative Effectiveness of Selected Preemergence Herbicides and Ratings in Grapes (cont.)**

Weeds	Dichlobenil (Casoron)	Diuron (Karmex)	Flumioxazin (Chateau)	Isoxaben (Gallery)	Napropamide (Devrinol)	Oryzalin (Surflan)	Oxyfluorfen (Goal)	Pronamide* (Kerb)	Simazine (Princep)	Pendimethalin (Prowl)	Norflurazon (Solicam)
Quackgrass	G	G	-	N	N	N	N	G	P-F	N	P
Yellow nutsedge	P-F	P	N	N	N	N	N	N	N	N	P
Purpletop, redtop	-	P	-	N	N	N	N	-	N	N	F
Dallisgrass	-	F	-	N	N	N	N	-	N	N	P
Bermudagrass	N	N	N	N	N	N	N	P	N	N	P
<i>Perennial Broadleaf Weeds</i>											
Broadleaf plantain	G	P-F	-	N	N	N	N	F	G	N	P
Buckhorn plantain	G	P-F	-	N	N	N	N	F	G	N	P
Canada thistle	P-F	N	-	N	N	N	N	-	N	N	N
Chicory	G	G	-	N	N	N	N	-	P-F	N	N
Common dandelion	E	P-F	-	N	N	N	N	P	P-F	N	N
Common mallow	G	F	-	N	N	N	N	-	N	N	N
Common milkweed	-	N	-	N	N	N	N	-	N	N	N
Common yarrow	-	N	-	N	N	N	N	-	-	N	N
Docks (broadleaf, curly)	G	F	-	N	N	N	N	F	N	N	N
Goldenrod	F-G	-	-	N	N	N	N	-	N	N	N
Ground ivy	E	N	-	N	N	N	N	-	N	N	N
Hemp dogbane	N	N	-	N	N	N	N	-	N	N	N
Horsenettle	N	P-F	-	N	N	N	N	-	P	N	N
Mugwort	G-E	P	-	N	N	N	N	-	N	N	N
Red sorrel	G	N	-	N	N	-	N	F-G	N	N	N
Thistles (bull, musk, curl)	F	N	-	N	N	N	-	P	N	N	N
White flowered aster	G	N	-	N	N	N	N	-	N	N	N
Wild carrot	G	P	-	N	N	N	-	-	N	N	F
Wild strawberry	G	G	-	N	N	N	-	-	N	N	P
Yellow rocket	G	P	-	N	N	N	-	P-F	P	N	F
Yellow woodsorrel (from seed)	G	F	-	N	N	N	G	-	F	N	F
<i>Special Perennial Weed Problems</i>											
Bigroot morning-glory	N	N	-	N	N	N	N	N	N	N	N
Brambles (Rubus spp.)	N	N	-	N	N	N	N	N	N	N	N
Common greenbriar	N	N	-	N	N	N	N	N	N	N	N
Japanese honeysuckle	N	N	-	N	N	N	N	N	N	N	N
Poison ivy	N	N	-	N	N	N	N	N	N	N	N
Virginia creeper	N	N	-	N	N	N	N	N	N	N	N
Wild garlic	F	N	-	N	N	N	N	N	N	N	N

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### 3-20 Grapes: Weed Control in Vineyards

**Table 3.7 - Relative Effectiveness of Selected Postemergence Herbicides and Ratings in Grapes**

Weeds	Carfentrazone (Aim)	Clethodim (Select)	Fluazifopbutyl (Fusilade)	Glufosinate (Rely)	Glyphosate (Various)	Paraquat <sup>1</sup> (Gramoxone)	Sethoxydim (Poast)
<i>Annual Grasses</i>							
Barnyardgrass	N	E	E	G	F	E	E
Cheat	-	-	G	G	F	E	G
Crabgrasses	N	E	E	G	F	E	E
Fall panicum	N	E	E	G	F	E	E
Foxtails	N	E	E	G	F	E	E
Goosegrass	N	E	E	G	F	E	E
Johnsongrass (seedling)	N	E	E	G	F	E	E
<i>Annual Broadleaf Weeds</i>							
Annual fleabane	-	N	N	-	E	E	N
Annual morningglory	F	N	N	G	F	G	N
Black nightshade	G	N	N	G	E	G	N
Carpetweed	G	N	N	-	E	E	N
Common chickweed	F	N	N	G	E	E	N
Common lambsquarters	G	N	N	G	E	E	N
Common ragweed	P	N	N	G	E	E	N
Hairy galinsoga	-	N	N	-	E	E	N
Henbit	G	N	N	G	E	E	N
Horseweed	-	N	N	G	E	F	N
Knotweed	-	N	N	-	E	F-G	N
Mustards	-	N	N	G	E	G	N
Pennsylvania smartweed	-	N	N	G	E	G	N
Pigweeds	G	N	N	G	E	G	N
Prickly lettuce	-	N	N	G	E	G	N
Prickly sida	-	N	N	G	E	E	N
Purslane	-	N	N	G	E	G	N
Shepherds' purse	-	N	N	G	E	F-G	N
Speedwells	G	N	N	-	E	P	N
Velvetleaf	E	N	N	G	E	E	N
Virginia pepperweed	-	N	N	-	E	G	N
<i>Perennial Grasses And Sedges</i>							
Fescues	N	-	P	F	E	F	P-F
Johnsongrass (rhizome)	N	G	G	P	E	P	G
Nimblewill	N	-	F-G	-	G-E	P	F-G
Orchardgrass	N	-	F	P	E	F	F
Quackgrass	N	-	G	P	G	P	G

(E=excellent; G=good; F=fair; P=poor; N=none; - = not registered or information lacking)

<sup>1</sup>Designates restricted use pesticide - must be trained and certified as a private applicator to purchase or use these more toxic chemicals in your vineyard. Refer to Publication 456-001 and the pesticide label for safety information. Ask your local Extension agent how to become a certified applicator.

**Table 3.7 - Relative Effectiveness of Selected Postemergence Herbicides and Ratings in Grapes (cont.)**

Weeds	Carfentrazone (Aim)	Clethodim (Select)	Fluazifopbutyl (Fusilade)	Glufosinate (Rely)	Glyphosate (Various)	Paraquat <sup>1</sup> (Gramoxone)	Sethoxydim (Poast)
Yellow nutsedge	N	N	N	F-G	G	P	N
Purpletop, redtop	N	-	G	-	E	P	G
Dallisgrass	N	-	G	-	E	P	G
Bermudagrass	N	G	G	F	G	P	G
<i>Perennial Broadleaf Weeds</i>							
Broadleaf plantain	-	N	N	F	E	P	N
Buckhorn plantain	P	N	N	F	E	P	N
Canada thistle	-	N	N	-	F-G	P	N
Chicory	-	N	N	-	E	P	N
Common dandelion	P	N	N	G	E	P	N
Common mallow	-	N	N	-	E	P	N
Common milkweed	-	N	N	-	G	P	N
Common yarrow	-	N	N	-	G	P	N
Docks (broadleaf, curly)	P	N	N	-	G	P	N
Goldenrod	-	N	N	-	E	P-F	N
Ground Ivy	-	N	N	G	G	P-F	N
Hemp dogbane	-	N	N	P	F	P	N
Horsenettle	-	N	N	F-G	F-G	P	N
Mugwort	-	N	N	-	F	P	N
Red sorrel	-	N	N	G	G	P	N
Thistles (bull, musk, curl)	-	N	N	-	G	P	N
White flowered aster	-	N	N	-	E	P-F	N
Wild carrot	-	N	N	-	E	P	N
Wild strawberry	-	N	N	-	E	P-F	N
Yellow rocket	-	N	N	-	E	F	N
Yellow woodsorrel	-	N	N	G	E	P	N
<i>Special Perennial Weed Problems</i>							
Bigroot morningglory	-	N	N	-	F-G	P	N
Brambles	-	N	N	F-G	G	P	N
Common greenbriar	-	N	N	-	P	P	N
Japanese honeysuckle	-	N	N	-	F-G	P	N
Poison ivy	-	N	N	-	G	P	N
Virginia creeper	-	N	N	-	F-G	P	N
Wild garlic	-	N	N	G	F	P	N

(E=excellent; G=good; F=fair; P=poor; N=none; - = not registered or information lacking)

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### 3-22 Grapes: Weed Control in Vineyards

**Table 3.8 - Chemical Names, Re-entry Times, and Days to Harvest<sup>1</sup>**

Chemical (Other name)	Manufacturers	Re-entry time	Days to Harvest
Aim (carfentrazone)	FMC	12 hours	3
Casoron (dichlobenil)	Chemtura	12 hours	30
Chateau (flumioxazin)	Valent	12 hours	60
Devrinol (napropamide)	United Phosphorus	12 hours	35
Fusilade (fluazifop-butyl)	Syngenta	12 hours	365
Gallery (isoxaben)	Dow AgroSciences	12 hours	365
Goal (oxyfluorfen)	Dow AgroSciences	24 hours	NA <sup>2</sup>
Gramoxone (paraquat)	Syngenta	12 hours	NA <sup>5</sup>
Karmex (diuron)	DuPont	12 hours	NA <sup>3</sup>
Kerb (pronamide)	Dow AgroSciences	24 hours	NA <sup>4</sup>
Poast (sethoxydim)	BASF	12 hours	50
Princep (simazine)	Syngenta	12 hours	NA <sup>6</sup>
Prowl (pendimethalin)	BASF	24 hours	365
Rely (glufosinate)	Bayer	12 hours	14
Roundup (glyphosate)	Monsanto	4 hours	14
Select (clethodim)	Valent	24 hours	365
Solicam (norflurazon)	Syngenta	12 hours	60
Surflan (oryzalin)	United Phosphorus	24 hours	NA <sup>6</sup>
Touchdown (glyphosate)	Syngenta	12 hours	14

<sup>1</sup>This information is given as a guideline only. Always read the label because there have been many changes in re-entry times and pre-harvest intervals in recent years, and more changes are expected in the future.

<sup>2</sup>Apply when crop is dormant.

<sup>3</sup>Apply between March and May.

<sup>4</sup>Apply in the fall after harvest.

<sup>5</sup>Do not allow paraquat to contact fruit.

<sup>6</sup>Apply between harvest and spring.