

CHEMICAL WEED CONTROL IN FRUIT CROPS
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NOTE: A mode of action code has been added to the Herbicide and Formulation column of this table. Use MOA codes for herbicide resistance management. See Table 8-11, Herbicide Resistance Management, for details.

TABLE 8-13B. CHEMICAL WEED CONTROL IN FRUIT CROPS—TREE FRUITS

Crop	Weed	Herbicide, Mode of Action* and Formulation	Amount of Formulation Per Acre	Pounds Active Ingredient Per Acre	Precautions and Remarks
APPLES Preemergence Directed Underneath Tree	Annual and perennial grass and broadleaf weeds	dichlobenil, MOA 20 (Casoron) 4 G (Casoron) 1.4 CS	100 to 150 lb 1.4 to 2.8 gal	4 to 6 2 to 3.92	Apply to any age tree in January or February. Do not apply until 4 weeks after transplanting. Liquid formulation may be tank mixed with glyphosate or other postemergence herbicides.
	Annual grasses and broadleaf weeds	diuron, MOA 7 (Diuron, Karmex DF or XP) 80 WDG (Direx) 4L	2 to 4 lb 1.6 to 3.2 qt	1.6 to 3.2	Apply in spring to trees established in the orchard for at least 1 year. Best results occur if rainfall occurs within 2 weeks of application. DO NOT treat varieties grafted on full-dwarf rootstocks.
	Annual grasses and broadleaf weeds	flumioxazin, MOA 14 (Chateau) 51 WDG	6 to 12 oz	0.19 to 0.38	Chateau is for newly planted and established orchards. Shield trees established less than 1 year from contact with spray solution. Tank mix with glyphosate, Rely, or paraquat for POST weed control. After budbreak, only tank mix with Rely or paraquat. Do not apply more than 6 oz per acre to trees planted less than 3 years in soil having a sand plus gravel content more than 80%. Sequential applications are very effective. Do not apply within 60 days of harvest. Chateau may only be applied after final harvest and no later than pink flower bud in bearing orchards. Do not use more than 24 oz of Chateau in a 12-month period.
	Annual grasses and some broadleaf weeds	norflurazon, MOA 12 (Solicam) 80 WDG	2.5 to 5 lb	2 to 4	Can be tank mixed with Karmex, Goal, paraquat, Prowl, glyphosate, Princep, and Surflan. Do not apply to newly transplanted trees until ground has settled. Rate is soil texture dependent. See label for details. PHI is 60 days.
		oryzalin, MOA 3 (Oryzalin or Surflan) 4 AS	2 to 6 qt	2 to 6	Allow soil to settle around newly transplanted trees before application. Surflan may be tank mixed with Goal, paraquat, glyphosate, Solicam, and simazine. May be applied sequentially. See label for details.
		pendimethalin, MOA 3 (Prowl H ₂ O) 4 AS	2 to 4.2 qt	2 to 4	Most effective when adequate rainfall or irrigation is received within 7 days after application. Do not apply to newly transplanted trees until ground has settled. Tank mix with paraquat for POST weed control. 60-day preharvest interval (PHI). May be applied as a sequential application as long as rate does not exceed 4.2 qt/A. Allow 30 days between applications.
	Broadleaf weeds and some annual grasses	rimsulfuron, MOA 2 (Matrix FNV) 25 WG	4 oz	0.063	For broad spectrum residual control, tank mix with oryzalin or Prowl H ₂ O. For nonselective POST control, apply in combination with glyphosate or paraquat. Do NOT treat orchards established less than 1 year. Rainfall within 2 to 3 weeks of application is necessary for herbicide activation. Spray solutions having a pH of less than 4.0 or greater than 8.0 will result in herbicide degradation. Matrix FNV has a 7-day PHI for apples. Matrix FNV may be applied as a sequential application so long as total use rate does not exceed 4 oz/A per year and application is made in a band on less than 50% of orchard floor.
	Annual broadleaf and grass weeds	simazine, MOA 5 (Princep, Simazine) 4 L 90 WDG	2 to 4 qt 2.2 to 4.4 lb	2 to 4	Apply preemergence to trees that have been established 1 year or more. Apply with glyphosate, paraquat, or Rely for postemergence weed control. PHI for Princep is 150 days.
	Most annual broadleaf and grass weeds plus many perennial grasses	terbacil, MOA 5 (Sinbar) 80 WP	2 to 4 lb	1.6 to 3.2	Use only on trees that have been established 3 years or more. Rate varies with soil organic matter. See label for details. Apply no more than 3 lb unless soil organic matter is greater than 2%. Do not use on sand or loamy sand soils.
Most annual broadleaf weeds and grass weeds in NEWLY PLANTED ORCHARDS	terbacil, MOA 5 (Sinbar) 80 WP	0.5 to 1.0 lb	0.4 to 0.8	Apply once soil has settled after transplanting. Apply no more than 1 lb per acre per year. For best results, apply 0.5 lb in spring followed by another 0.5 lb when control from initial application fails. Do not use on soils coarser than sandy loams with less than 2% organic matter.	

TABLE 8-13B. CHEMICAL WEED CONTROL IN FRUIT CROPS—TREE FRUITS

Crop	Weed	Herbicide, Mode of Action* and Formulation	Amount of Formulation Per Acre	Pounds Active Ingredient Per Acre	Precautions and Remarks
APPLES Preemergence Tank Mixes	Many annuals and perennial grass and broadleaf weeds	diuron, MOA 7 (Diuron or Karmex DF or XP) 80 WDG (Direx) 4 L + terbacil, MOA 5 (Sinbar) 80 WP	1 to 2 lb 1.6 to 3.2 qt + 1 to 2 lb	0.8 to 1.6 0.5 to 1 + 0.8 to 1.6	DO NOT treat varieties grafted on full-dwarf rootstocks. Use only on trees established in orchard for 2 years. See labels for details.
	Annual grasses and broadleaf weeds	norflurazon, MOA 12 (Solicam) 80 WDG + simazine, MOA 5 (Princep, Simazine) 4 L 90 WDG	2.5 to 5 lb + 2 to 4 qt 2.2 to 4.4 lb	2 to 4 + 2 to 4	See labels for details. Apply in combination with paraquat, glyphosate, or Rely for postemergence control.
		oryzalin, MOA 3 (Oryzalin, Surflan) 4 AS + simazine, MOA 5 (Princep, Simazine) 4 L 90 WDG	2 to 4 qt + 2 to 4 qt 2.2 to 4.4 lb	2 to 4 + 2 to 4	See labels for details. Apply in combination with paraquat, glyphosate, or Rely for postemergence control.
	Annual grasses and some broadleaf weeds	norflurazon, MOA 12 (Solicam) 80 WDG + diuron, MOA 7 (Diuron or Karmex DF or XP) 80 WDG	2.5 to 5 lb + 2 to 4 lb	2 to 4 + 1.6 to 3.2	Use only on trees established 1 year or more. Do not treat varieties grafted on full-dwarf rootstocks. See label for details. Apply in combination with glyphosate, paraquat, or Rely for postemergence weed control.
APPLES Postemergence, Directed Underneath Tree	Broadleaf weeds including morningglory, pigweed, dayflower, lambsquarters, and prickly lettuce	carfentrazone-ethyl, MOA 14 (Aim) 2 EC	0.5 to 2 oz	0.008 to 0.031	Apply alone or tank mixed with other herbicides. Apply in a minimum spray volume of 20 gpa. Applications can be made with boom equipment, hooded sprayers, or shielded sprayers. Do not allow Aim to contact green bark, desirable foliage, flowers, or fruit of the crop. Contact with fruit or foliage will result in spotting and leaf necrosis. Do not apply within 7 days of harvest. Best results are obtained when applied to weeds in the 2- to 3-leaf stage. Apply in combination with a nonionic surfactant (1 qt/100 gal of spray solution) or crop oil concentrate (1 gal/100 gal of spray solution).
	Broadleaf weeds including perennials like blackberry and hosenettle	fluroxypyr, MOA 4 (Starane Ultra)	0.7 to 1.4 pt	0.35 to 0.70	DO NOT apply during bloom or to trees less than 4 years old. Make only one application per year. Starane may be tank mixed with other herbicides registered for use on apples. Starane has a 14-day PHI.
	Most annual broadleaf and grass weeds plus many perennials	glyphosate, MOA 9 (various brands and formulations)	See label	1 to 2	DO NOT SPRAY GREEN BARK OR FOLIAGE. Trees are more susceptible to injury from midsummer until dormant. Repeat applications may be necessary for control of perennial weeds. Can be tank mixed with Goal, Karmex, simazine, Solicam, and Surflan. Check label for specifics. Generic glyphosate formulations may require the addition of a surfactant at 0.5% by volume (2 qt per 100 gal of spray solution). See label for spray additive information and for detailed restriction information.
		glyphosate carfentrazone, MOA 9 and 14 (Rage)	20 to 99 oz	0.78 to 3.8	Apply as a direct spray for non-selective postemergence weed control. Do not apply within 3 days of harvest. Do not allow spray solutions to contact desirable vegetation, stems, leaves, or fruit of tree. Use hooded or shielded application equipment. The addition of a non-ionic surfactant or crop oil is recommended. The addition of ammonium sulfate at 2-4 lbs per acre will enhance herbicide activity.

TABLE 8-13B. CHEMICAL WEED CONTROL IN FRUIT CROPS—TREE FRUITS

Crop	Weed	Herbicide, Mode of Action* and Formulation	Amount of Formulation Per Acre	Pounds Active Ingredient Per Acre	Precautions and Remarks
APPLES Postemergence, Directed Underneath Tree (continued)	Broadleaf and some small annual grass weeds	paraquat, MOA 22 (Gramoxone Inteon) 2 SL (Firestorm) 3 SL	2.5 to 4 pt 1.7 to 2.7 pt	0.6 to 1	Apply when grass and weeds are 1 to 6 in. high and succulent for best results. Direct spray with low pressure to avoid contact with tree foliage or bark less than 1 year old. Young trees must be shielded to prevent spray contact with bark. Add surfactant at 0.25% by volume (2 pt per 100 gal). Paraquat may be tank mixed with Goal, Karmex, simazine, Sinbar, Solicam, and Surflan. Paraquat is a restricted use pesticide.
	Broadleaf weeds	2,4-D amine, MOA 4 (various generic formulations) 3.8 SL	2 to 3 pt	0.95 to 1.4	Apply any time during the growing season to actively growing broadleaf weeds except during apple bloom. Trees must be at least 1 year old. Do not apply more than two applications per year (75-day interval between applications) or within 14 days of harvest. Some formulations limit rate to 2 pt per acre. See label for details.
	Grasses	clethodim, MOA 1 (Arrow, Intensity, or Select) 2 EC (Select Max or Intensity One) 1 EC	6 to 8 oz 12 to 16 oz	0.094 to 0.125	Apply to actively growing grasses not under stress. See label for rate and optimum grass size to treat. Multiple applications may be necessary to control perennial grass weeds. Use in NONBEARING TREES ONLY. When using the 2 EC formulations, add crop oil concentrate at 1% by volume (1 gal per 100 gal of spray solution). When using the 1 EC formulations, add nonionic surfactant at 0.25% by volume (1 qt per 100 gal).
		fluzifop, MOA 1 (Fusilade DX) 2 EC	12 to 24 oz	0.125 to 0.38	NONBEARING TREES ONLY. Apply to actively growing grasses not under stress. See label for rate and optimum grass size to treat. Multiple applications may be necessary to control perennial grass weeds. Add crop oil at 1% by volume (1 gal per 100 gal).
sethoxydim, MOA 1 (Poast) 1.5 EC		1.0 to 2.5 pt	0.19 to 0.47	Apply to actively growing grasses not under stress. See label for rate and optimum grass size to treat. Multiple applications may be necessary to control perennial grass weeds. Add Dash adjuvant at 1 pt per acre or crop oil concentrate at 1 qt per acre. Do not apply within 14 days of harvest. Do not apply more than 7.5 pt per acre per year.	
APPLES Ground Cover Suppression	Suppression of fescue, orchardgrass, and bluegrass	glyphosate, MOA 9 (various brands and formulations)	Rates and application time varies for each grass species. See label for details.	Mow one time in spring. Apply 3 to 4 days after mowing. Caution: This treatment will normally discolor the grass. DO NOT apply after seedhead emergence. See label for details.	
PEACHES Preemergence Directed Underneath Tree	Annual grasses and some broadleaf weeds	diuron, MOA 7 (Direx 4L) 4 L (Diuron, Karmex DF, Karmex XP) 80 DF	1.6 to 2.2 qt 2 to 2.75 lb	1.6 to 2.16	Apply in spring to trees at least 3 years old. Rate is soil texture dependent. May be tank mixed with Sinbar, Solicam, glyphosate, or paraquat. Karmex DF, Karmex XP, and Direx 4L have a 20-day PHI. Other formulations of diuron have a 90-day PHI.
		flumioxazin, MOA 14 (Chateau) 51 WDG	6 to 12 oz	0.19 to 0.38	Chateau is for newly planted and established orchards. Shield trees established less than 1 year from contact with spray solution. Tank mix with Gramoxone Inteon for POST weed control. Do not apply more than 6 oz per acre to trees planted less than 3 years in soil having a sand plus gravel content more than 80%. Sequential applications are very effective. Due to the potential for crop injury, Chateau should not be applied after budbreak until after final harvest. Do not apply within 60 days of harvest. Do not tank mix with glyphosate or 2,4-D amine after trees break dormancy. Do not use more than 24 oz per acre per year.
		norflurazon, MOA 12 (Solicam) 80 WDG	2.5 to 5 lb	2 to 4	Can be tank mixed with Karmex, Goal, glyphosate, paraquat, Prowl, simazine, Sinbar, and Surflan. Rate is soil texture dependent. See label for details. Do not apply within 6 months of transplanting. PHI is 60 days.
		oryzalin, MOA 3 (Oryzalin or Surflan) 4 AS	2 to 6 qt	2 to 6	Allow soil to settle around newly transplanted trees before application. Surflan may be tank mixed with Goal, glyphosate, paraquat, simazine, and Solicam. Sequential applications permitted. See label for details. In newly planted orchards may be tank mixed with Gallery for broad spectrum preemergence control.

TABLE 8-13B. CHEMICAL WEED CONTROL IN FRUIT CROPS—TREE FRUITS

Crop	Weed	Herbicide, Mode of Action* and Formulation	Amount of Formulation Per Acre	Pounds Active Ingredient Per Acre	Precautions and Remarks
PEACHES Preemergence Directed Underneath Tree (continued)	Annual broadleaf and some grass weeds	oxyfluorfen, MOA 14 (Goal 2 XL or OxiFlo) 2 EC (Galigan) 2 E (GoalTender) 4 E (Galigan H ₂ O) 4E	5 to 8 pt 5 to 8 pt 2.5 to 4 pt 2.5 to 3 pt	1.25 to 2 1.25 to 2 1.25 to 2 1.25 to 1.5	Apply to dormant trees until just before buds start to swell. Do not apply when foliage or fruit are present. Do not apply more than 8 pt per acre in one season. May be tank mixed with Devrinol, Kerb, glyphosate, paraquat, simazine, Solicam, or Surflan.
	Annual grass and some broadleaf weeds	pendimethalin, MOA 3 (Prowl) H ₂ O 4 AS	2 to 4 qt	2 to 4	Most effective when adequate rainfall or irrigation is received within 7 days after application. Do not apply to newly transplanted trees until ground has settled around roots. Apply with paraquat to control emerged weeds. Prowl has a 60-day preharvest interval (PHI). May be applied as sequential applications so long as total amount used does not exceed 4.2 qt/A. Allow at least 30 days between applications.
	Broadleaf and some grass weeds	rimsulfuron, MOA 2 (Matrix FNV) 25 WG	4 oz	0.063	For broad spectrum PRE control, tank mix with oryzalin or Prowl H ₂ O. For nonselective POST control, apply in combination with glyphosate or paraquat. Do NOT treat orchards established less than 1 year. Rainfall within 2 to 3 weeks of application is necessary for herbicide activation. Spray solutions having a pH lower than 4.0 or higher than 8.0 will result in herbicide degradation. Matrix FNV has a 14-day PHI for stone fruit. Matrix FNV may be applied as a sequential application so long as total use rate does not exceed 4 oz/A per year and application if made in a band on less than 50% of orchard floor.
	Broadleaf and grass weed control for NEWLY PLANTED ORCHARDS	terbacil, MOA 5 (Sinbar) 80 WP	0.5 to 1.0 lb	0.4 to 0.8	Apply once soil has settled after transplanting. Apply no more than 1 lb per acre per year. For best results, apply 0.5 lb in the spring followed by another 0.5 lb when control from initial application fails. Do not apply on soils coarser than sandy loam having less than 2% organic matter.
	Annual broadleaf and grass weeds	simazine, MOA 5 (Princep, Simazine) 4 L 90 WDG	1.6 to 4 qt 1.8 to 4.4 lb	1.6 to 4	Apply in early spring before weed emergence. Use only on trees established 1 year or more. Do not use on sand or loamy sand soils.
	Annual broadleaf and grass weeds plus many perennial grasses	terbacil, MOA 5 (Sinbar) 80 WP	2 to 4 lb	1.6 to 3.2	Use on trees established 3 years or longer and soils with at least 1% organic matter. Unless soil organic matter is greater than 2% do not exceed 3 lb/A. Do not use on sand or loamy sand soils.
PEACHES Preemergence Tank Mixes	Many annual and perennial grasses and broadleaf weeds	diuron, MOA 7 (Diuron or Karmex DF or XP) 80 WDG	1 to 2 lb	0.8 to 1.6	Use only under trees established in the orchard for at least 2 years. Apply to soils having at least 1% organic matter. See label for details.
		+ terbacil, MOA 5 (Sinbar) 80 WP	+	+	
		oryzalin, MOA 3 (Oryzalin or Surflan) 4 AS	2 to 4 qt	2 to 4	Tank mix for use before weed emergence. Tree must be established at least 1 year.
		+ simazine, MOA 5 (Princep, Simazine) 4 L 90 WDG	+	+	
		norflurazon, MOA 12 (Solicam) 80 WDG	2.5 to 5 lb	2 to 4	
+ simazine, MOA 5 (Princep, Simazine) 4 L 90 WDG	+	+	2 to 4		
norflurazon, MOA 12 (Solicam) 80 WDG	2.5 to 5 lb	2 to 4	See labels for details. Trees must be established at least 3 years.		
+ diuron, MOA 7 (Diuron or Karmex DF) 80 WDG	+	+		1.6 to 3.2	
PEACHES Postemergence, Directed Underneath Tree	Broadleaf weeds including morningglory, pigweed, lambsquarters, cocklebur, smartweed, and dayflower	carfentrazone-ethyl, MOA 14 (Aim) 2 EC	0.5 to 2 oz	0.008 to 0.031	Apply alone or tank mixed with other herbicides. Apply in a minimum spray volume of 20 gpa. Applications can be made with boom equipment, hooded sprayers, or shielded sprayers. Do not allow Aim to contact green bark, desirable foliage, flowers, or fruit of the crop. Contact with fruit or foliage will result in spotting and leaf necrosis. Do not apply within 7 days of harvest. Best results are obtained when applied to weeds in the 2- to 3-leaf stage. Apply in combination with a nonionic surfactant (1 qt/100 gal of spray solution) or crop oil concentrate (1 gal/100 gal of spray solution).

TABLE 8-13B. CHEMICAL WEED CONTROL IN FRUIT CROPS—TREE FRUITS

Crop	Weed	Herbicide, Mode of Action* and Formulation	Amount of Formulation Per Acre	Pounds Active Ingredient Per Acre	Precautions and Remarks	
PEACHES Postemergence, Directed Underneath Tree (continued)	Kill all green foliage on contact	paraquat, MOA 22 (Firestorm) 3 SL (Gramoxone Inteon 2 SL	1.7 to 2.7 pt 2.5 to 4 pt	0.66 to 1	Apply when grass and weeds are 1 to 6 in. high and succulent for best results. Direct spray with low pressure to avoid contact with tree foliage or bark. Add surfactant at 0.25% by volume (2 pt per 100 gal) for best results. Paraquat may be tank mixed with Goal, Karmex, simazine, Sinbar, Solicam, and Surflan. Paraquat is a restricted use pesticide. Newly planted trees can be severely injured by paraquat, so use a shield or wrap to protect the tree from spray. Do not make more than three applications per year. Paraquat has a 14-day PHI.	
	Non-selective weed control	glyphosate + carfentrazone, MOA 9 and 14 (Rage)	20 to 99 oz	0.78 to 3.8	Apply as a directed spray for non-selective postemergence weed control. May be applied in dormant peach orchards ONLY. The addition of a non-ionic surfactant (1 qt/100 gal of spray solution) or crop oil concentrate (1 gal/100 gal of spray solution) is necessary for optimum performance. The addition of AMS 2 to 4 lb per acre will enhance herbicide activity.	
	Non-selective weed control	glyphosate, MOA 9 (various brands and formulations)	See label	1	Do not apply in orchards established less than 2 years. Applications must be made with shielded sprayer. Low hanging limbs and suckers must be removed at least 10 days prior to application. DO NOT use glyphosate 90 days past bloom. DO NOT allow glyphosate to contact foliage or bark; EXTREME care must be taken to prevent injury. See label for details. Some glyphosate formulations may require the addition of a surfactant.	
	Grasses		clethodim, MOA 1 (Arrow, Intensity, or Select) 2 EC (Select Max or Intensity One) 1 EC	6 to 8 oz 12 to 16 oz	0.094 to 0.125	NONBEARING TREES ONLY. Apply to actively growing grasses not under stress. See label for rate and optimum grass size to treat. Multiple applications may be necessary to control perennial grass weeds. When using 2 EC formulation chemicals, add crop oil concentrate at 1% by volume (1 gal per 100 gal). When using 1 EC formulations, use a nonionic surfactant at 0.25% by volume rather than crop oil.
			fluzifop, MOA 1 (Fusilade DX) 2 EC	8 to 24 oz	0.125 to 0.38	Apply to actively growing grasses not under stress. See label for rate and optimum grass size to treat. Multiple applications may be necessary to control perennial grass weeds. Add crop oil at 1% by volume (1 gal per 100 gal). Do not apply within 14 days or harvest. Do not apply more than 72 fl oz per acre per year.
			sethoxydim, MOA 1 (Poast) 1.5 EC	1.0 to 2.5 pt	0.19 to 0.47	Apply to annual grasses up to 12 in. tall. For perennial grasses apply early in the growth cycle at the high use rate. Multiple applications may be necessary for perennial grass weeds. Add Dash adjuvant at 1 pt per acre or crop oil concentrate at 1 qt per acre. Do not apply within 25 days of harvest. Do not apply more than 5 pt per acre per year.
	Broadleaf weeds		2,4-D amine, MOA 4 (various generic formulations) 3.8 SL	2 to 3 pt	0.95 to 1.4	Do not apply within 40 days of harvest. Do not apply more than twice a year. Trees must be at least 1 year old. Use when trees are dormant. Some formulations limit rate to 2 pt per acre. See label for details.
			clopyralid, MOA 4 (Clopyr AG or Stinger) 3 EC	0.33 to 0.66 pt	0.125 to 0.25	Multiple applications may be used as long as total amount does not exceed maximum rate. Use at least 10 GPA of spray solution. Stinger may be tank mixed with preemergence herbicides. Do not apply within 30 days of harvest. Do not apply more than twice.

TABLE 8-13B. CHEMICAL WEED CONTROL IN FRUIT CROPS—TREE FRUITS

Crop	Weed	Herbicide, Mode of Action* and Formulation	Amount of Formulation Per Acre	Pounds Active Ingredient Per Acre	Precautions and Remarks
PECANS Preemergence Directed Underneath Tree	Broadleaf weeds and annual grasses	diuron, MOA 7 (Diuron or Karmex DF or XP) 80 WDG (Direx) 4 L	2 to 4 lb 1.6 to 3.2 qt	1.6 to 3.2	Do not apply to trees not less than 3 years old. Rate is soil texture dependent. Do not use on soils with less than 0.5% organic matter.
	Annual grass and some broadleaf weeds	norflurazon, MOA 12 (Solicam) 80 WDG	2.5 to 5 lb	2 to 4	Do not apply when nuts are on the ground. Rate is soil texture dependent. See label for details. Do not apply within 6 months of planting. PHI is 60 days.
		oryzalin, MOA 3 (Oryzalin or Surflan) 4 AS	2 to 6 qt	2 to 4	Allow soil to settle around newly transplanted trees before application. Oryzalin may be tank mixed with Goal, glyphosate, paraquat, simazine, and Solicam. Sequential application permitted. See label for details.
		pendimethalin, MOA 3 (Prowl H ₂ O) 4 AS	2 to 6.3 qt	2 to 6	Most effective when adequate rainfall or irrigation is received within 7 days after application. Do not apply to newly transplanted trees until ground has settled around roots. Apply with paraquat to control emerged weeds. Do not apply within 60 days of harvest. Prowl may be applied in sequential applications so long as total use rate does not exceed 6.3 qt/A and there is at least 30 days between applications.
PECANS Preemergence Tank Mixes	Broadleaf weeds and some annual grasses	oxyfluorfen, MOA 14 (Galigan) 2 E (Goal 2 XL) 2 EC (OxiFlo) 2 EC (GoalTender) 4 E	5 to 8 pt 5 to 8 pt 5 to 8 pt 2.5 to 4 pt	1.25 to 2	May be tank mixed with glyphosate, paraquat, Oryzalin, simazine, Solicam, or Surflan to improve weed control. Do not apply after buds start to swell or when foliage or nuts are present.
	Annual broadleaf weeds and grass weeds	simazine, MOA 5 (Princep, Simazine) 4 L 90 WDG	2 to 4 qt 2.2 to 4.4 lb	2 to 4	Apply preemergence to weeds under trees that have been established 2 years or more. Do not apply when nuts are on the ground. Do not use on sand or loamy sand soils.
	Most annual broadleaf and grass weeds plus many perennials	flumioxazin, MOA 14 (Chateau) 51 WDG	6 to 12 oz	0.19 to 0.38	Chateau is for newly planted and established orchards. Shield trees established less than 1 year from contact with spray solution. Tank mix with Gramoxone Inteon for POST weed control. Do not apply more than 6 oz per acre to trees planted less than 3 years in soil having a sand plus gravel content more than 80%. Sequential applications are very effective. Do not tank mix with glyphosate or 2,4-D amine after trees break dormancy. Do not apply after budbreak through final harvest unless using shielded application equipment. Chateau has a 60-day PHI. Use rate cannot exceed 24 oz per acre in a 12-month period.
		diuron, MOA 7 (Diuron or Karmex DF or XP) 80 WDG + norflurazon, MOA 12 (Solicam) 80 WDG	2 to 4 lb + 2.5 to 5 lb	1.6 to 3.2 + 2 to 4	Trees must be established in the orchard for 3 years.
		norflurazon, MOA 12 (Solicam) 80 F + simazine, MOA 5 (Princep, Simazine) 4 L 90 WDG	2.5 to 5 lb + 2 to 4 qt 2.2 to 4.4 lb	2 to 4 + 2 to 4	Trees must be established for at least 2 years. See labels for details.
		oryzalin, MOA 3 (Oryzalin, Surflan) 4 AS + simazine, MOA 5 (Princep, Simazine) 4 L 90 WDG	2 to 4 qt + 2 to 4 qt 2.2 to 4.4 lb	2 to 4 + 2 to 4	See label for details.
		carfentrazone-ethyl, MOA 14 (Aim) 2 EC	0.5 to 2 oz	0.008 to 0.031	Apply alone or tank mixed with other herbicides. Apply in a minimum spray volume of 20 gpa. Applications can be made with boom equipment, hooded sprayers, or shielded sprayers. Do not allow Aim to contact green bark, desirable foliage, flowers, or fruit of the crop. Contact with fruit or foliage will result in spotting and leaf necrosis. Do not apply within 7 days of harvest. Best results are obtained when applied to weeds in the 2- to 3-leaf stage. Apply in combination with a nonionic surfactant (1 qt/100 gal of spray solution) or crop oil concentrate (1 gal/100 gal of spray solution).
PECANS Postemergence, Directed Underneath Tree	Broadleaf weeds including morningglory, pigweed, lambsquarters, cocklebur, smartweed, and dayflower	carfentrazone-ethyl, MOA 14 (Aim) 2 EC	0.5 to 2 oz	0.008 to 0.031	Apply alone or tank mixed with other herbicides. Apply in a minimum spray volume of 20 gpa. Applications can be made with boom equipment, hooded sprayers, or shielded sprayers. Do not allow Aim to contact green bark, desirable foliage, flowers, or fruit of the crop. Contact with fruit or foliage will result in spotting and leaf necrosis. Do not apply within 7 days of harvest. Best results are obtained when applied to weeds in the 2- to 3-leaf stage. Apply in combination with a nonionic surfactant (1 qt/100 gal of spray solution) or crop oil concentrate (1 gal/100 gal of spray solution).

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PECANS Postemergence, Directed Underneath Tree (continued)	Most annual broadleaf and grass weeds plus many perennials	flumioxazin, MOA 14 (Chateau) 51 WDG	6 to 12 oz	0.19 to 0.38	Chateau is for newly planted and established orchards. Shield trees established less than 1 year from contact with spray solution. Tank mix with Gramoxone Inteon for POST weed control. Do not apply more than 6 oz per acre to trees planted less than 3 years in soil having a sand plus gravel content more than 80%. Sequential applications are very effective. Do not tank mix with glyphosate or 2,4-D amine after trees break dormancy. Do not apply after budbreak through final harvest unless using shielded application equipment. Chateau has a 60-day PHI. Use rate cannot exceed 24 oz per acre in a 12-month period.
		glufosinate, MOA 10 (Rely 200) 1.67 SL	58 to 96 oz	0.75 to 1.25	DO NOT SPRAY GREEN BARK OR FOLIAGE. Rely should not be used on trees within 1 year of transplanting. Apply in a minimum of 20 gal of water per acre as a directed spray under trees. Repeat applications may be necessary for control of perennial weeds. Rely can be tank mixed with Karmex, Solicam, Surflan, Devrinol, Goal, and Princep. Do not apply within 14 days of harvest.
		glyphosate, MOA 9 (various brands and formulations)	See label	1 to 2	DO NOT SPRAY GREEN BARK OR FOLIAGE. Repeat applications may be necessary for control of perennial weeds. Tank mix with Goal, Karmex, simazine, Solicam, and Surflan. Check label for details. Generic glyphosate formulations may require the addition of surfactant at 0.5% by volume (2 qt per 100 gal). See label to determine if surfactant is needed for the formulation you use.
		glyphosate + carfentrazone, MOA 9 and 14 (Rage)	20 to 99 oz	0.78 to 3.8	Apply as directed spray for non-selective postemergence weed control. Do not apply within 3 days of harvest. Apply with hooded or shielded application equipment. Apply in combination with a non-ionic surfactant (0.25% r/r) or crop oil concentrate (1% r/r). The addition of ammonium sulfate at 2 to 16 lb per acre will enhance herbicide activity.
	Yellow and purple nutsedge plus some broadleaf weeds	halosulfuron, MOA 2 (Sanda) 75 WDG	0.66 to 1.33 oz	0.032 to 0.063	Use on trees established in orchard at least 12 months. Avoid contacting bark or foliage or severe injury or death may occur. The addition of 0.25% surfactant (1 qt per 100 gal of spray solution) will be necessary for adequate control. Do not make more than two applications per year. Use no more than 1 oz per acre on soils classified as sand, loamy sand, or sandy loam. Sanda has a 1-day PHI. User assumes risk when treating trees recovering from certain stress conditions.
	Annual broadleaf and grass weeds	paraquat, MOA 22 (Firestorm) 3 SL (Gramoxone Inteon)	1.75 to 2.7 pt 2.5 to 4.0 pt	0.66 to 1	Apply when grass and weeds are 1 to 6 in. high and succulent for best results. Direct spray with low pressure to avoid contact with tree foliage or bark less than 1 year old. Add surfactant at 0.25% by volume (2 pt per 100 gal) or 1% crop oil concentrate (1 gal per 100 gal) for best results. Paraquat may be tank mixed with Goal, Karmex, simazine, Solicam, and Surflan. Paraquat is a restricted use pesticide.
	Broadleaf weeds	2,4-D amine, MOA 4 (various brands) 3.8 SL	2 to 3 pt	0.95 to 1.4	Apply anytime during the growing season to actively growing broadleaf weeds except during bloom. Do not apply more than two applications per year. Do not use within 60 days of harvest. Do not apply to trees less than 1 year old. Some formulations may limit use rate to 2 pt per acre. Refer to product label for details.

TABLE 8-13B. CHEMICAL WEED CONTROL IN FRUIT CROPS—TREE FRUITS

Crop	Weed	Herbicide, Mode of Action* and Formulation	Amount of Formulation Per Acre	Pounds Active Ingredient Per Acre	Precautions and Remarks
PECANS Postemergence, Directed Underneath Tree (continued)	Grasses	clethodim, MOA 1 (Arrow, Intensity, or Select) 2 EC (Select Max or Intensity One) 1 EC	6 to 8 oz 12 to 16 oz	0.094 to 0.125	NONBEARING TREES ONLY. Apply to actively growing grasses not under stress. See label for rate and optimum grass size to treat. Multiple applications may be necessary to control perennial grass weeds. For 2 EC formulation chemicals, add crop oil concentrate at 1% by volume (1 gal per 100 gal). For 1 EC formulation chemicals, a nonionic surfactant at 0.25% by volume may be used rather than crop oil.
		fluzifop, MOA 1 (Fusilade DX) 2 EC	8 to 24 oz	0.125 to 0.38	Postemergence grass control. Annuals up to 12 in. tall and 6 to 10 in. new growth on perennials. Multiple applications may be necessary to control perennial grass weeds. Add crop oil at 1% by volume (1 gal per 100 gal). Limited to 72 oz per year. Do not apply within 30 days of harvest.
		sethoxydim, MOA 1 (Poast) 1.5 EC	1.0 to 2.5 pt	0.19 to 0.47	Apply to annual grasses up to 12 in. tall. For perennial grasses, apply early in the growth cycle at the high use rate. Multiple applications may be necessary to control perennial grass weeds. Add Dash adjuvant at 1 pt per acre or crop oil at 1 qt per acre. Do not apply within 15 days of harvest. Do not apply more than 10 pt per year.
PECANS Ground Cover Suppression	Groundcover suppression in row middles	glyphosate, MOA 9 (various brands) 4 SL (various brands) 5 SL (Roundup WeatherMax) 5.5 SL	Rate and application times different for grass species. See label.		See label directions specific for each grass species. DO NOT apply after seedhead emergence. See label for details.
			See label	See label	

* Mode of action (MOA) code developed by the Weed Science Society of America. See section with Table 8-11, Herbicide Resistance Management, for details.