

Weed Management in Pear¹

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Weeds compete with pear trees for light, nutrients, and water. Weed interference can be minimized with proper cultural practices and herbicides. General maintenance, such as controlling weeds in adjacent areas (i.e., nearby fields, ditches, and driving paths), preventing weeds from producing seeds, and cleaning mowing equipment of weed seed, will prevent weeds from becoming a serious problem. Cultivation can be used but should be shallow to prevent root pruning and soil erosion.

Chemical control

Herbicides available for weed control in pear are included in Tables 1 and 2. Table 1 lists herbicides that control weeds before they emerge (preemergence). Table 2 lists herbicides that control weeds after they emerge (postemergence). Because soil types in Florida vary, consult the labels for application rate restrictions based on soil type. Bearing trees are pear trees that are currently producing fruit. Nonbearing trees are pear trees that will not produce fruit for a year after application. The tables include preharvest intervals (PHI) and restricted-entry intervals (REI).

Practices for improving weed control with herbicides are as follows:

1) Herbicide selection. Preemergence herbicides control the weeds before they emerge from the seed or soil surface. Postemergence herbicides control weeds that have emerged through the soil surface.

2) Optimal timing. Preemergence herbicides should be applied in the early spring or fall before annual weeds emerge. Postemergence herbicide efficacy decreases as weeds grow. Consult the label for the correct size of weed to control.

3) Sufficient coverage. Herbicide labels require certain gallons per acre (GPA) or nozzle types for proper coverage. Before spraying, check that all nozzles have a correct spray pattern and correct output.

4) Adequate activation. Preemergence herbicides require rainfall or irrigation to move the herbicide into the soil profile where the weed seeds are present. Postemergence herbicides require a nonionic surfactant, crop oil concentrate, or methylated seed oil for increased herbicide uptake.

Herbicide resistance

Herbicide-resistant weeds are a continuous and growing concern for farmers. Methods for reducing the chances of herbicide resistance include the following:

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1) Rotate herbicide's mode of action. Each herbicide's mode of action (MOA) is assigned a numerical group. Tables 1 and 2 list the MOA for each herbicide. Rotate between modes of action/numerical groups.

2) Include multiple MOA. Many herbicides allow for tank mixing. It is often suggested that preemergence herbicides be tank mixed with a postemergence herbicide. This method controls weeds that will emerge as well as weeds that have already emerged.

3) Managing known resistance. If an area of the field is known to have a resistant weed species, use mechanical weed removal to prevent the weed from producing seeds or other methods of propagation.

Table 1. Preemergence weed control in pear

Common name lb. a.i. / A	(Trade name) formulation amount of product / A	Weeds controlled
Dichlobenil , MOA 20 4–6 1.96–3.92	(Casoron®) 4G 100–150 lb. (Casoron®) 1.4 CS 1.4–2.8 gal	Annual and some perennial weeds
<i>Remarks:</i> Apply to bearing and nonbearing trees. Higher rates required for perennial weed control. Casoron® 1.4 CS should not be applied until 1 year after transplanting. Casoron® 4G should not be applied until 4 weeks after transplanting. Tank mix with postemergence herbicides for broader spectrum of weed control. Casoron® 4G REI 12 hours. Casoron® 1.4 CS REI 24 hours.		
Diuron , MOA 7 1.2–3.2	(Diuron, Karmex®, Karmex® XP) 80 WDG 2–4 lb. (Direx®) 4 L 1.6–3.2 qt.	Annual broadleaf and grass weeds
<i>Remarks:</i> Bearing and nonbearing. Use on trees established for at least 1 year. Do not treat varieties grafted on full-dwarf root stocks. A rainfall event or irrigation of 0.5–2 in. is required within 2 weeks of application. Apply as a split application after harvest and before bud break with 90 days between applications. REI 12 hours.		
Flumioxazin , MOA 14 0.19–0.38	(Chateau®) 51 WDG 6–12 oz.	Broadleaf and annual grass weeds
<i>Remarks:</i> Nonbearing trees. Do not apply within 300 yards of nondormant pears. Apply a maximum of 6 oz./A per application in soils with a sand plus gravel content greater than 80% on trees less than 3 years of age. Do not apply more than 24 oz. per year. Best results if applied as a split application with a minimum of 30 days between applications. Avoid direct or indirect spray contact with foliage and green bark. Do not apply to trees established less than 1 year unless protected from spray contact by nonporous wraps, grow tubes, or waxed containers. Tank mix with burndown herbicides. PHI 60 days. REI 12 hours.		
Isoxaben , MOA 12 0.5–1.0	(Gallery®, Gallery® T&V) 75 DF 0.66–1.33 lb.	Certain broadleaf weeds
<i>Remarks:</i> Nonbearing trees. Direct spray solution to the base of the tree. A rainfall event or irrigation of 0.5 in. or more must occur within 21 days after application. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. REI 12 hours.		
Isoxaben , MOA 12+ Oryzalin , MOA 3 2.0–4.0 + 0.5–1	(Snapshot®) 2.5 TG 100–200 lb.	Certain broadleaf and annual grass weeds
<i>Remarks:</i> Apply to nonbearing trees. Apply with a drop or rotary spreader. Requires 0.5 in. or more of rainfall or irrigation within 3 days of application for activation. Do not exceed 600 lb./A per year. REI 12 hours.		
Norflurazon , MOA 12 0.98–1.18	(Solicam®) 80 WDG 1.25–1.50 lb.	Small-seed broadleaf and annual grass weeds
<i>Remarks:</i> Bearing and nonbearing plants. Do not apply before 12 months after planting. Temporary loss of pigment (whitening) in leaf veins may occur with normal use. Rainfall or irrigation is required within 4 weeks of application. Consult label for postemergence herbicides that can be tank mixed to broaden spectrum of weed control. Can be applied as a sequential application, but do not exceed 1.97–2.95 lb. a.i./A per year. PHI 60 days. REI 12 hours.		
Oryzalin , MOA 3 2–6	(Oryzalin, Surflan®) 4 AS 2–6 qt.	Certain annual broadleaf and grass weeds
<i>Remarks:</i> Bearing and nonbearing trees. Apply as a sequential treatment with 2.5 months between applications. Do not exceed 12 lb. a.i./A per year. Irrigation or rain event of 0.51 in. must occur within 1 week of application. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. REI 24 hours.		
Oxyfluorfen , MOA 14 1.25–1.5	(Goal® 2XL, Galigan®) 2 EC 5–8 pt. (Goaltender®) 4 E 2.5–4 pt.	Broadleaf weeds
<i>Remarks:</i> Bearing and nonbearing trees. Apply after dormancy is initiated and before bud break. Broadcast application is 1.25–1.5 lb. a.i./A, and banded treatment is 1.25–2 lb. a.i./A. Do not apply more than 1.5 lb. a.i./A per year in a broadcast application and 2 lb. a.i./A per year in banded applications. Direct spray solution to the base of the tree using a shielded sprayer. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. REI 24 hours.		
Pendimethalin , MOA 3 1.9–6.0	(Prowl® H ₂ O) 3.8 2.0–6.3 qt. (Prowl®, Pendulum®) 3.3 EC 2.3–7.3 qt.	Broadleaf and grass weeds

Common name lb. a.i. / A	(Trade name) formulation amount of product / A	Weeds controlled
<i>Remarks:</i> Nonbearing trees. Direct spray solution to the base of the trees. Apply during the dormant period. Apply as a single application or sequential application with 30 days between applications. After application, 1–2 in. of rainfall or irrigation are required for activation. For newly transplanted trees, apply after a rain or irrigation event settles soil around the roots. PHI 90 days. REI 24 hours.		
Pronamide , MOA 3 1–2	(Kerb®) 50 W 2–4 lb.	Certain broadleaf and grass weeds
<i>Remarks:</i> Bearing and nonbearing trees. Do not apply until 1 year after fall transplanting or 6 months after spring transplanting. Direct spray solution to the base of the tree after fruit harvest. Apply in the fall when temperatures are below 55°F but before soil freezes. Do not apply more than 4 lb. a.i./A or one application per year. REI 24 hours.		
Rimsulfuron , MOA 2 0.03–0.06	(Matrix® FNV, Matrix® SG) 25 WG 2–4 oz.	Certain broadleaf weeds and annual grasses
<i>Remarks:</i> Bearing and nonbearing trees. Apply only when trees are 1 year old. Broadcast application is limited to one application per year at 4 oz./A per year. Banded application may be applied twice a year with 30 days between applications not to exceed 4 oz./A per year. Direct spray solution to the base of the tree, avoiding contact with foliage and fruit (except undesirable suckers). Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. Do not apply within 7 days of harvest. REI 4 hours.		
Simazine , MOA 5 2–4	(Princep®, Simazine) 90 WDG 2.2–4.4 lb. (Princep®, Simazine) 4 L 2–4 qt.	Annual broadleaf and grass weeds
<i>Remarks:</i> Bearing and nonbearing trees. Do not apply in trees less than 3 years old. Apply half the maximum in the spring before bud break and half in the fall. Do not apply more than 4 lb. a.i./A per calendar year. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. REI 48 hours.		
Terbacil , MOA 5 0.4–1.6	(Sinbar®) 80 WP 0.5–2 lb.	Annual broadleaf and grass weeds
<i>Remarks:</i> Nonbearing trees: Apply to newly planted trees after a significant rainfall or irrigation that allows soil to settle around the tree base. Make one to two applications per season; do not exceed 1 lb. a.i./A. Do not apply to soils containing less than 1% organic matter. Approximately 0.5–1.0 in. of rainfall or irrigation is required within 2 weeks of application. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. REI 12 hours.		

Table 2. Postemergence weed control in pear

Common name lb. a.i. /A	(Trade name) formulation amount of product / A	Weeds controlled
2,4-D , MOA 4 1.43	(Various formulations)	Broadleaf weeds
<i>Remarks:</i> Bearing and nonbearing. Consult individual labels for amount of formulation to include in spray solution. Do not apply during bloom. Trees must be at least 1 year old. Prevent drift from contacting foliage, fruits, stems, and trunk of the tree. Withhold irrigation 2 days before and 3 days after application. Do not apply more than 2 lb. a.i./A per application, and do not make more than two applications in a growing season. Allow 75 days between applications. PHI 14 days. REI 48 hours.		
Carfentrazone , MOA 14 Up to 0.031	(Aim®) 2 EC Up to 2.0 fl. oz. (Aim®) 1.9 EW Up to 2.0 fl. oz.	Broadleaf weeds
<i>Remarks:</i> Apply to bearing and nonbearing. Consult label for appropriate rate based on weed species. Do not apply more than 0.124 lb. a.i./A in a growing season. Apply with hooded sprayer direct to the base of the tree to reduce contact with green stem tissue, desirable fruit, blooms, and foliage. Applications must be 14 days apart. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. Include a nonionic surfactant at 0.25% v/v or crop oil concentrate at 1% v/v. PHI 3 days. REI 12 hours.		
Clethodim , MOA 1 0.09–0.125	(Select®) 2 EC 6–8 fl. oz. (Select Max®) 1 EC 9–16 fl. oz.	Annual and perennial grass weeds
<i>Remarks:</i> Nonbearing trees. Consult label for rate of nonionic surfactant or crop oil concentrate. Direct the spray to the base of the tree. REI 24 hours.		
Diquat , MOA 22 0.7–0.9	(Diquat) 2 L 1.5–2.0 pt.	Broadleaf and grass weeds
<i>Remarks:</i> Nonbearing trees. Direct spray to the base of the tree to minimize contact to green stems and foliage. Include a nonionic surfactant at 0.06%–0.5%. REI 24 hours.		
Flumioxazin , MOA 14 0.19–0.38	(Chateau®) 51 WDG 6–12 oz.	Broadleaf and annual grass weeds
<i>Remarks:</i> Nonbearing trees. A maximum of 6 oz./A per application in soils that have a sand plus gravel content greater than 80% on trees less than 3 years of age. Do not apply more than 24 oz. per year. Best results if applied as a split application with a minimum of 30 days between applications. Avoid direct or indirect spray contact with foliage and green bark. Do not apply after flowering unless using a shielded sprayer. Do not apply to trees established less than 1 year unless protected from spray contact by nonporous wraps, grow tubes, or waxed containers. Tank mix with burndown herbicides. REI 12 hours.		
Fluazifop , MOA 1 0.25–0.38	(Fusilade® DX) 2 EC 16–24 fl. oz.	Annual and perennial grass weeds
<i>Remarks:</i> Nonbearing plants. Direct spray solution to the base of the trees to minimize contact with leaves. Do not apply more than 72 fl. oz./A per season. Include nonionic surfactant at 0.25%–0.5% v/v or crop oil concentrate at 1% v/v. REI 12 hours.		
Glyphosate , MOA 9 0.47–4.5	(Various formulations)	Broadleaf and grass weeds
<i>Remarks:</i> Glyphosate has various formulations. Consult individual labels for rates. Do not exceed 9.6 lb. a.i./A in a single season. Direct spray solution to the base of the tree to minimize contact with desirable vegetation. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. Do not apply within 1 day of harvest. REI 4 hours.		
Oxyfluorfen , MOA 14 0.5–1.5	(Goal® 2XL or Galigan®) 2 EC 2–8 pt. (Goaltender®) 4 E 1–4 pt.	Broadleaf weeds
<i>Remarks:</i> Bearing and nonbearing trees. Apply after dormancy is initiated and before bud break. Broadcast application is 0.5–1.5 lb. a.i./A, and banded treatment is 0.5–2 lb. a.i./A. Lower rates for weeds up to the four-leaf stage and higher rates for weeds up to the six-leaf stage. Do not apply more than 1.5 lb. a.i./A per year in a broadcast application and 2 lb. a.i./A per year in banded applications. Direct spray solution to the base of the tree using a shielded sprayer. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. Include a nonionic surfactant at 0.25% v/v. REI 24 hours.		
Paraquat , MOA 22 0.63–1	(Gramoxone Inteon®) 2 SL 2.5–4 pt. (Firestorm®) 3 SL 1.7–2.7 pt.	Broadleaf and grass weeds

Common name lb. a.i. /A	(Trade name) formulation amount of product / A	Weeds controlled
<i>Remarks:</i> Bearing and nonbearing trees. Use a shield or wrap plants when spraying around young trees. Direct spray to the base of the trees to minimize drift to foliage, flowers, and fruits. Do not make more than five applications per year. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. REI 12 hours.		
Pelargonic Acid	(Scythe®) 3%–10% v/v	Broadleaf and grass weeds
<i>Remarks:</i> Bearing and nonbearing trees. Contact herbicide that should be applied with a shielded sprayer and direct sprayed to the base of the tree to minimize contact with foliage and green bark. Consult label for control of suckers. Should be tank mixed with preemergence herbicide to broaden spectrum of weed control. REI 12 hours.		
Rimsulfuron, MOA 2 0.03–0.06	(Matrix® FNV, Matrix® SG) 25 WG 2–4 oz.	Certain broadleaf weeds and annual grasses
<i>Remarks:</i> Bearing and nonbearing trees. Apply only when plants are 1 year old. Broadcast application is limited to one application per year at 4 oz./A. Banded application may be applied twice a year with 30 days between applications, not to exceed 4 oz./A per year. Use a nonionic surfactant at 0.125% v/v. Direct spray solution to the base of the tree, avoiding contact with foliage and fruit (except undesirable suckers). Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. Do not apply within 7 days of harvest. REI 4 hours.		
Saflufenacil, MOA 14 0.04	(Treevix™) 70 WG 1 oz.	Broadleaf weeds
<i>Remarks:</i> Bearing and nonbearing trees. Apply as a postdirected application to the base of the tree. Apply as a single application or three sequential applications with 21 days between applications. Include methylated seed oil at 1% v/v plus ammonium sulfate at 1%–2% v/v or urea ammonium nitrate at 1.25%–2.5% v/v. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. REI 12 hours.		
Sethoxydim, MOA 1 0.3–0.5	(Poast®) 1.5 EC 1.5–2.5 pt.	Annual and perennial grass weeds
<i>Remarks:</i> Bearing and nonbearing plants. Include crop oil concentrate at 2 pt./A or methylated seed oil at 1.5 pt./A. Do not apply more than 2.5 pt./A in a single application. Do not exceed 7.5 pt./A per season. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. Do not apply within 14 days of harvest. REI 12 hours.		
Fluroxypyr, MOA 4 0.35–0.70	(Starane® Ultra) 2.8 L 0.7–1.4 pt.	Certain broadleaf weeds
<i>Remarks:</i> Apply to nonbearing and bearing trees. Direct spray solution to the base of the tree and minimize contact with foliage. Do not apply to trees less than 4 years old. Do not apply during bloom. Do not make more than one treatment per year. Do not apply within 14 days of harvest. REI 24 hours.		