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HS95

Weed Management in Pecan[1]

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Weeds compete with pecan 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 pecan are included in Table 1. Because soil types in Florida vary, consult the labels for application rate restrictions based on soil type. Bearing trees are pecan trees that are currently producing fruit. Nonbearing trees are pecan trees that will not produce fruit for a year after application. The table includes 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:

1) Rotate herbicide's mode of action. Each herbicide's mode of action (MOA) is assigned a numerical group. The MOA for each herbicide is listed in Table 1. Rotate between modes of action/numerical groups.

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2) Include multiple MOA. Many herbicides allow for tank mixing herbicides. 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. Please contact your county Extension agent to have the weed resistance confirmed and documented.

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Table 1. Chemical weed control in pecan

Common name lb. a.i. / A	(Trade name) formulation amount of product / A	Weeds controlled
PREEMERGENCE		
Diuron, MOA 7 1.6	(Diuron, Karmex®, Karmex® XP) 80 WDG 2 lb. (Direx®) 4 L 1.6 qt.	Annual broadleaf and grass weeds
Remarks: Bearing and nonbearing trees. Apply as a single band or broadcast application in the spring before weeds emerge or during early growth. Apply under trees at least 3 years old. Use on soils with at least 0.5% or greater organic matter. Consult label for tank mix to broaden the spectrum of control. REI 12 hours.		
Flumioxazin, MOA 14 0.19–0.38	(Chateau®) 51 WDG 6–12 oz.	Broadleaf and annual grass weeds
Remarks: Nonbearing trees. In soils with sand plus gravel content greater than 80%, do not use more than 6 oz./A per application on trees younger than 3 years old. Do not apply more than 24 oz./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.		
Halosulfuron, MOA 2 0.03–0.05	(Sandea®) 75 WDG 0.66–1 oz.	Broadleaf and nutsedge weeds
Remarks: Bearing and nonbearing trees. Do not apply until 1 year after planting and soil has settled around the tree roots. Direct spray solution to the base of the tree and minimize contact with trunk, stems, roots, and foliage. May be tank mixed with glyphosate to broaden spectrum of weed control. Sequential application may be required, but do not exceed 2 oz./A per season. PHI 1 day. REI 12.		
Isoxaben, MOA 12 0.5–1.0	(Gallery® or Gallery® T&V) 75 DF 0.66–1.33 lb.	Certain broadleaf weeds
Remarks: Nonbearing trees. Direct spray solution to the base of the tree. After application, 0.5–2 in. of rainfall or irrigation are required within 21 days for activation. 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
Remarks: Nonbearing trees. Apply with a drop or rotary-type spreader. Requires 0.5 in. or more of rainfall or irrigation within 3 days of application for activation. Do not apply more than 600 lb. of product/A per year. Allow 60 days between applications. REI 12 hours.		
Napropamide, MOA 15 4	(Devrinol®) 50 DF 8 lb. (Devrinol®)10 G 40 lb.	Small-seed broadleaf and annual grass weeds
Remarks: Bearing and nonbearing trees. Can be applied to newly transplanted trees. Apply in fall or early spring before weeds emerge. Direct spray solution to the base of the tree to minimize contact with foliage and fruit. Cultivate or irrigate to a depth of 2–4 in. within 24 hours of application. PHI 35 days. REI 12 hours.		
Norflurazon, MOA 12 0.98–2.95	(Solicam®) 80 WDG 1.25–3.75 lb.	Small-seed broadleaf and annual grass weeds
Remarks: Bearing and nonbearing trees. Do not apply until trees are 6 months old. 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 1.25–3.75 lb. product/A per year. After application, 0.5–2 in. of rainfall or irrigation are required to activate the herbicide. PHI 60 days. REI 12 hours.		
Oryzalin, MOA 3 2–6	(Oryzalin, Surflan®) 4 AS 2–6 qt.	Certain annual broadleaf and grass weeds
Remarks: Bearing and nonbearing. 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 0.5–1 in. is required within 1 week of application. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. REI 24 hours.		

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Common name lb. a.i. / A	(Trade name) formulation amount of product / A	Weeds controlled
Oxyfluorfen, MOA 14 1.25–1.5	(Goal® 2XL, Galigan®) 2 EC 5–8 pt. (Goaltender®) 4 E 2.5–4 pt.	Broadleaf weeds
Remarks: Bearing and nonbearing trees. Apply after dormancy is initiated and before bud break. Do not apply more than 1.5 lb. a.i./A per year in broadcast applications and 2 lb. a.i./A per year in banded applications. Direct spray solution to the base of the tree using a shielded sprayer. Within 2 weeks of application, 0.5–2 in. of rainfall or irrigation are required to activate the herbicide. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. 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
Remarks: Bearing and nonbearing trees. Apply after plants are 1 year old. Broadcast application is limited to one application per year at 4 oz./A. Banded applications may be made 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. PHI 14 days. REI 4 hours.		
Simazine, MOA 5 2–4	(Princep®) 90 WDG 2.2–4.4 lb. (Princep®) 4 L 2–4 qt.	Annual broadleaf and grass weeds
Remarks: Bearing and nonbearing trees. Do not apply to trees less than 2 years old. Do not apply more than 4 lb. a.i./A per year. Do not apply when nuts are on the ground, or illegal residues may result. Apply in early spring prior to weed emergence. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. REI 48 hours.		
POSTEMERGENCE		
2,4-D, MOA 4 1.43	(Various formulations)	Broadleaf weeds
Remarks: Bearing and nonbearing trees. 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, fruit, stems, and trunks. Withhold irrigation 2 days before irrigation 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 30 days between applications. PHI 60 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
Remarks: Bearing and nonbearing trees. 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 directed 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. For control of undesirable suckers at the base of the tree, apply at 0.031 lb. a.i./A. Suckers must be young and not mature. For all types of applications, 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 0.14–0.25	(Arrow®, Select®) 2 EC 6–8 fl. oz. (Select Max®) 1 EC 9–16 fl. oz.	Annual and perennial grass weeds
Remarks: Nonbearing trees. Consult label for rates of nonionic surfactant or crop oil concentrate to include in the spray solution. 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
Remarks: Nonbearing trees. Direct spray to the base of the tree to minimize contact with green stems and foliage. Include a nonionic surfactant at 0.06%–0.5% v/v. REI 24 hours.		
Flumioxazin, MOA 14 0.19–0.38	(Chateau®) 51 WDG 6–12 oz.	Broadleaf and annual grass weeds
Remarks: Nonbearing trees. In soils that have a sand plus gravel content greater than 80%, do not apply more than 6 oz./A on trees less than 3 years of age. Do not apply more than 24 oz./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.		

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Common name lb. a.i. / A	(Trade name) formulation amount of product / A	Weeds controlled
Fluazifop, MOA 1 0.25–0.38	(Fusilade® DX) 2 EC 16–24 fl. oz.	Annual and perennial grass weeds
Remarks: Bearing and 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. Do not apply within 30 days of harvest. Do not apply when harvestable fruit are on the ground. REI 12 hours.		
Glufosinate, MOA 10 1.0–1.5	(Rely®200) 1.67 SL 77–115 fl. oz. (Rely®280) 2.34 SL 48–82 fl. oz.	Broadleaf and grass weeds
Remarks: Bearing and nonbearing trees. Efficacy is reduced when temperatures are cool or when weeds are under drought stress. Direct spray solution to the base of the tree to minimize contact with leaf, flower, and fruit tissue. Do not apply to green or noncallused stems unless protected by nonporous wraps, grow tubes, or waxed containers. Do not apply more than 3 lb. a.i. per acre. Consult label for preemergence herbicides that can be tank mixed to broaden spectrum of weed control. Do not apply within 14 days of harvest. REI 12 hours.		
Glyphosate, MOA 9 0.47–4.5	(Various formulations)	Broadleaf and grass weeds
Remarks: Bearing and nonbearing trees. 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. PHI 3 days. REI 4 hours.		
Halosulfuron, MOA 2 0.03–0.05	(Sandea®) 75 WDG 0.66–1 oz.	Broadleaf and nutsedge weeds
Remarks: Bearing and nonbearing trees. Do not apply until 1 year after planting and soil has settled around the tree roots. Direct spray solution to the base of the tree and minimize contact with trunk, roots, and foliage. Use a nonionic surfactant at 0.25% v/v. May be tank mixed with glyphosate to broaden spectrum of weed control. Sequential application may be required, but do not exceed 2 oz./A per season. Do not apply within 1 day of harvest. REI 12 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
Remarks: Bearing and nonbearing trees. Apply after dormancy is initiated and before bud break. Use 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
Remarks: Bearing and nonbearing trees. All applications must be made prior to shaking for harvest. 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 fruit. 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
Remarks: 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
Remarks: 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. PHI 14 days. REI 4 hours.		
Sethoxydim, MOA 1 0.3–0.5	(Poast®) 1.5 EC 1.5–2.5 pt.	Annual and perennial grass weeds
Remarks: Bearing and nonbearing trees. 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 10.0 pt./A per season. Consult label for herbicides that can be tank mixed to broaden spectrum of weed control. PHI 15 days. REI 12 hours.		