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Weed Control in Pecans, Apples and Peaches - 2004

Michael W. Smith
Research Horticulturist

Becky L. Carroll
Extension Assistant

A weed can be defined as any plant growing where it is not wanted. Weeds compete with other plants for water and nutrients. They can also chemically inhibit growth of other plants, reducing their yield.

Several weed control options can be considered. The oldest method is tillage. Although it leaves a weed-free environment for a short time, clean cultivation can be detrimental to tree health and growth. Soil-borne diseases can be spread throughout the orchard. Soil erosion is usually increased with clean cultivation. Cultivation can also create a hard pan below the disked area, restricting water and root penetration.

Cover crops are another option. Annual ryegrass as a cover crop in a peach orchard aids soil water retention and suppresses weeds in test plots. The ryegrass is allowed to grow until it begins competing for water in June, and then killed in place to create a mulch. This seems to be an easy and inexpensive weed control method. In pecans, research has shown many positive aspects of legume groundcovers in orchards. Legumes fix nitrogen sufficient to meet most if not all the nitrogen needed by the trees, and the legumes attract beneficial insects which may reduce the need for some pesticide applications. Refer to CR-6250, Use of Legumes in Pecan Orchards, for complete information.

The most widely used orchard weed control method includes a combination of herbicide strips in the tree row with mowed sod middles. A strip 3-8 feet wide on each side of the tree is kept weed free and the vegetation in the row-middles is mowed. Maintaining the row-middles in sod improves orchard access, and mowing reduces competition with the trees. Herbicide strips reduce weed competition thus improving tree growth and yield, plus aid in irrigation line upkeep.

Weed control starts before planting your orchard. Identify perennial weed problems and eliminate them before the trees are in place. Control will be less costly and more effective if weeds are eradicated before tree establishment.

Federal and state laws and regulations pertaining to the use and application of herbicides are frequently revised. Always **check on the status of label clearances for herbicides before use.** Labels on the container give information on application restrictions, common rates, timing, directions for use and other facts which will allow for the most efficient use of these herbicides.

Principles in Using Herbicides

The following basic principles are important in using herbicides for weed control:

1. Identify the weed before choosing the herbicide. The susceptibility of weeds to different herbicides varies with the weed species.
2. Read the label for registration approval, precautions, limitations and directions for use. The rate varies with crop, target weed, soil type, etc. Call your county extension agent or chemical supplier for help in determining how much chemical to apply.
3. Choose the type of herbicide that will do the most good for the weed problem and the crop system you have. In pecans, grazing often must be considered. If the area will be grazed, only herbicides that are labeled for grazing areas can be used.
4. If the herbicide is new, try it on a small acreage the first time. Even though research has shown the herbicide to be effective, field use by growers on small areas is suggested before the herbicide is used on a large acreage. This gives the grower a chance to learn how to properly use the herbicide and to determine if there are any adverse effects from use of the chemical.
5. Time of application is very important in herbicide usage. Check the label to determine when the herbicide should be used in relation to crop growth, fruiting and weed growth.
6. Apply the herbicide accurately and at a uniform rate. Apply the herbicide such that drift is minimized. For information on precision calibration of a sprayer see Fact Sheet 1216, Calibrating a Low Pressure Ground Sprayer.

Preemergence Herbicides

Preemergence herbicides are applied to the soil surface and must be activated by rainfall. They must be applied to a clean soil before the weeds germinate or be applied with a postemergence herbicide that kills existing weeds. When the preemergence herbicides are activated by rainfall, they are taken up from the soil and kill weed seeds as they germinate.

Preemergence herbicide rates are based on soil type. Clay soils or soils high in organic matter require more herbicide to control weeds than sandy soils. Labels usually specify the appropriate rate for each soil type. Do not exceed the rate specified on the label or trees may be injured. Some herbicides cannot be used on sandy soils, so be sure to consult the label before applying these chemicals.

No one preemergence herbicide will control all weed species, as each herbicide differs in the species it will control. Complete reliance on only one material year after year will result in a buildup of the weeds that are resistant to that material. It is important to rotate herbicides from year to year to avoid this weed buildup, and to prevent herbicide accumulation in the soil.

Two preemergence herbicides are often applied as a tank mix to broaden the range of weed species controlled. In general, any herbicide may be legally used in a tank mix, as long as the timing, rates, soil conditions, etc., do not violate the label instructions for each of the materials in the tank mix. However, **the user assumes all risks associated with tank mixes not specifically mentioned on the labels for the materials in the mix.**

Postemergence Herbicides

Postemergence herbicides are effective after the weeds have germinated and started to grow. The chemical must contact the leaf of the target plant.

Glyphosate is applied to weed foliage and is translocated throughout the plant. It is necessary for the weeds to be growing at the time of application for effective control. This herbicide is effective for control of many perennial weeds such as johnsongrass, bermudagrass, and certain other weeds that are usually considered very difficult to control. Be sure to check the label for the rate and timing required for the particular weed problems that you have. Do not allow the spray to drift and contact the green foliage or green bark or suckers

of the trees. If this herbicide can get to the cambium layer of the trees, it will translocate and injure the trees. Addition of ammonium sulfate to the spray solution improves effect on perennial grasses.

2,4-D formulations are available for post-emergence control of broadleaf weeds. Extreme care should be exercised to avoid damage to the orchard. Follow label directions carefully.

Poast and Fusilade are translocated postemergence grass herbicides. Like glyphosate, they will kill roots as well as top growth. In many respects they can be considered 'reverse 2,4-D' since they will kill grasses but leave broadleaves unharmed.

Paraquat works best when applied at relatively high temperatures and in large gallonage per acre so that good coverage of the weeds is obtained. A non-ionic surfactant should be added to get maximum results. It is important not to allow the spray to contact green stems, fruit, or foliage of the trees. Paraquat kills by contact and should be used on small weeds for best results. It kills the top growth, but does not affect the roots, so repeat applications on perennial weeds are required for season-long control.

Tank Mixes

The preemergence herbicides in a tank mix may be used each at full rate, but many growers get good control by using 1/2 to 3/4 of the recommended rate of each. While this can reduce costs, **the user assumes all risks for reduction in weed control from reducing application rates.** Combinations of either Surflan or Solicam, which are more effective on annual grasses, with either Princep or Karmex, which are more effective on broadleaf weeds, are popular tank mixes.

Other Tree Fruits

Herbicides are approved for use in other tree fruits such as pears and plums but are not discussed here. If you have other tree fruits, check the labels of the herbicides discussed for apples and peaches to determine if these chemicals are approved for your crop.

WEEDS	TIME OF APPLICATION	HERBICIDE(S) * USE LABEL RATE	COMMENTS
Annual grass and broadleaf weeds	Preemergence	Princep Caliber 90 (simazine)	One application per year. Use as a directed spray in the spring to orchards established one or more years for apples and peaches; two years for pecan. Apply simazine to a clean soil before weeds germinate, or tank mix with paraquat to kill germinated weeds. Do not use on gravelly, sand or loamy sand soils. Do not graze.
		Solicam DF (norflurazon)	Directed spray in late fall to early spring prior to weed emergence or tank mix with paraquat to control germinated weeds. May be used in newly planted apple orchards. Pecan and peach trees must be established at least 18 months before use. Avoid contact with fruit or foliage. Do not apply when nuts or fruit are on the ground at harvest or within 60 days of harvest must have rainfall or irrigation within 4 weeks of application.
		Surflan (oryzalin)	Work all trash and established weeds into the soil before applying Surflan. Apply the spray directly to the ground prior to weed emergence or tank mix with paraquat to kill germinated weeds. May be applied to non-bearing and bearing apple, peach, or pecan trees. After transplanting trees, allow the soil to firmly settle around the roots before application. Requires 1/2 to 1 inch of rainfall or sprinkler irrigation to activate the herbicide.
		Karmex (diuron)	Use as a single application directed spray in the spring under trees established one year or more for apples or three years or more for peaches and pecans. Apply to a clean soil before the weeds germinate. Do not apply to soils with less than 1/2 percent organic matter for pecans. Do not treat apple cultivars grafted on full-dwarfing rootstocks. Do not use within 3 months of harvest on peaches. Avoid contact with fruit or foliage. Do not graze.
		Prowl 3.3 EC (pendimethalin)	Directed spray to the ground beneath the trees. Contact with leaves, shoots, or buds by the spray mixture may cause malformed plant tissue. For use on non-bearing apple, peach, and pecan. Do not apply to newly transplanted trees until the ground has settled and no cracks are present. Most effective when adequate rainfall or irrigation is received within 21 days of application. Do not graze or feed forage from treated fields.
Broadleaf weeds	Preemergence	Gallery 75DF (Isoxaben)	Apply before germination of broadleaf weeds or immediately after cultivation. Can be tank mixed with Surflan to control grasses. Do not apply to newly transplanted trees until rainfall settles soil. Apply to non-bearing trees only.
Winter annual grass and broadleaf weeds some perennials	Preemergence Postemergence	Kerb' 50W (pronamide)	Apply in late fall prior. Apply to trash-free soil surface. Do not apply to trees established less than one growing season. See label. Apples and peaches only.

WEEDS	TIME OF APPLICATION	HERBICIDE(S) * USE LABEL RATE	COMMENTS
Annual grass and broadleaf weeds, suppression of perennials	Postemergence	Gramoxone Max [†] (paraquat)	Use as directed spray with a non-ionic surfactant to kill small emerged weeds. Read the label first for special precautions when using this compound. Up to 3 retreatments may be necessary. May be used with certain approved preemergence herbicides for long lasting control. Avoid contact with green tree stems, fruit or foliage. Do not apply when nuts on ground or within 14 days of harvest on peaches. Do not graze.
		Rely (glufosinate)	Apple and pecan only. Do not apply within 14 days of harvest. Do not graze or hay. Directed spray. Avoid contact with desirable vegetation. Controls suckers on mature trees. Retreatment required to control perennials. Label specifies tank mixes for longer lasting control. Do not use on trees within one year of transplanting.
Annual and perennial weeds	Postemergence	Roundup (glyphosate)	Rate and time of application vary, so consult the label. Avoid contact with foliage or green bark in apples and pecans, and avoid contact with any part of the tree in peaches. Shielded boom sprayer or wiper application advisable. The addition of two percent dry ammonium sulfate by weight or 17 pounds per 100 gallons of water may increase performance. See Label. Preharvest interval: pecan-3 days; peach-17 days; apple-1 day.
Annual and perennial grasses	Postemergence	Poast (sethoxydim)	Not within 14 days of harvest for apple and pear or 15 days for pecan. Apply as directed spray with crop oil. Two applications generally required for control of perennial grasses.
		Fusilade DX (fluazifop-butyl)	For nonbearing apples not to be harvested within one year. Peaches can be treated up to 14 days before harvest and pecans up to 30 days before harvest. Apply as directed spray with crop oil or non-ionic surfactant. Two applications generally required for control of perennial grasses.
Broadleaf weeds, some annual and perennial grasses	Postemergence	(MSMA)	Can apply up to 3 times per year. Apply when weeds are small and temperature is 80°F or above. Do not allow spray to contact leaves, stems or bark of trees. Do not graze. Do not use around trees from which crop will be harvested within one year following application. Peaches and apples only.
Broadleaf weeds	Postemergence	Weedar 64 or (dimethylamine salt of 2,4-D)	Study label carefully for proper application methods and weather conditions. Trees must be established for at least one year. Preharvest interval: pecan-60 days; peach-40 days; and apple-14 days.

* Read and follow label directions, precautions and limitations. If label information contradicts information presented here, the label information takes precedence. **Most herbicides have grazing restrictions and should not be used in pecan orchards that will be grazed.** Other brand names of several listed materials are available.

[†] Restricted Use Pesticide

The pesticide information presented in this publication was current with federal and state regulations at the time of printing. The user is responsible for determining that the intended use is consistent with the label of the product being used. Use pesticides safely. Read and follow label directions. The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

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