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Fertilizer and Cultural Recommendations for Pecan Trees

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General Fertilizer Recommendations

Soil tests should be conducted prior to planting and should be used solely as an initial guide for fertilizer recommendations for pecan trees. Other considerations that provide an indication of the nutritional needs of the tree include the length and vigor of terminal growth, leaf color and size, and the amount of leaves and nut production. Nitrogen and zinc are the two nutrients most often required by pecan trees annually. Phosphorus and potassium are rarely needed in pecans. Adding additional fertilizer to pecan trees cannot overcome a poor site or soil, inadequate soil moisture or poor disease and insect control.

Foliar Analysis

Foliar leaf analysis is the best measurement for the tree's fertilizer needs. Leaf sampling should be performed in July. Collect a random sample by selecting two leaflets from a compound leaf (leaflets are individual "leaves" of a compound leaf). See Figure 1 on page 2. These leaflets should be taken halfway up the tree, midway between the current season's growth and the terminal end from all sides of the tree. The sample should consist of at least 100 leaflets collected from cross sections of trees throughout the orchard. Sample each cultivar separately.

Soil Acidity

A soil sample should be taken prior to planting to determine any additional lime and fertilizer needs. Lime is not generally recommended for pecan trees when the soil pH is above 6. A very high pH is more likely to cause problems with mineral uptake than a low pH.

Young Nut Trees

The first year's growth on nut trees is normally very slow, and a first-year tree may not need or respond to fertilizer applications. Nonbearing trees should grow 12 to 36 inches per year. Weed and insect control and adequate water are essential for survival the first year. If the trees are growing rapidly, the recommended fertilizer should be applied in a broad band along the drip line but away from the trunk. Table 1 gives the recommended amount of fertilizer per tree based on the amounts of potassium and phosphorous in the soil. For trees two to five years old, fertilizer should be applied in a band from one foot from the trunk to beyond the drip line.

Mature Nut Trees in Yards

Fertilizing lawns with an adequate amount of nitrogen may be sufficient for nut trees in yards, but lawn grasses will use the initial

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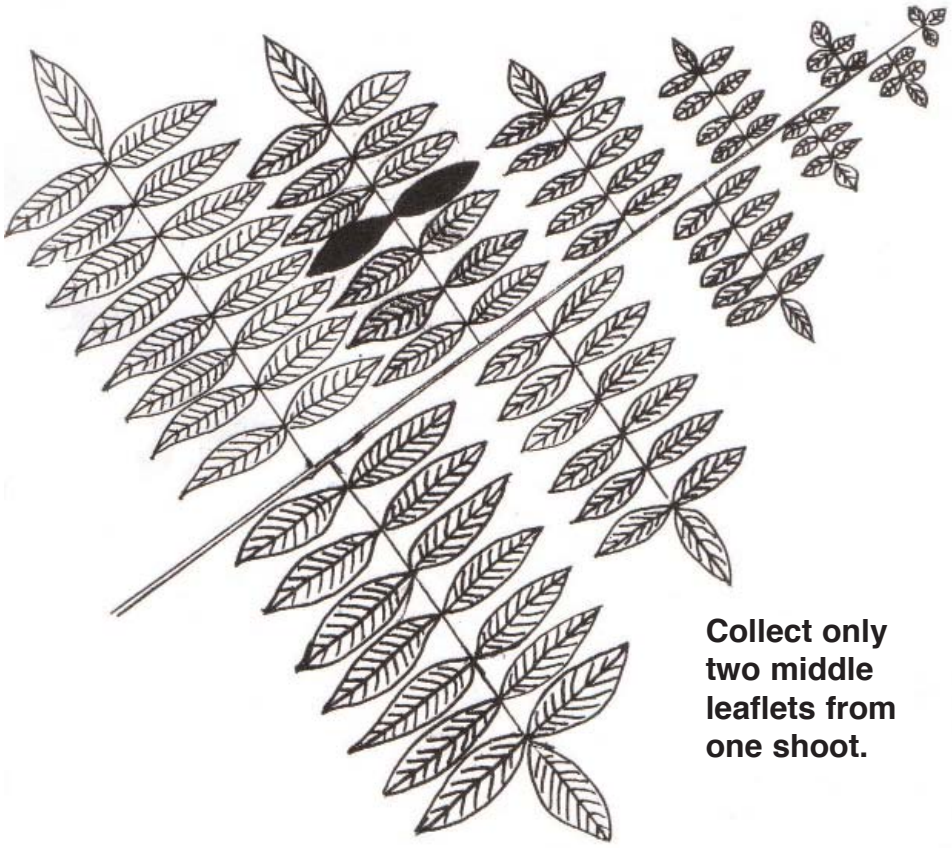

Figure 1. Pecan leaf sample collection. Select two leaflets (dark color in the diagram) from the middle of the compound leaf per shoot.

amount. The general rate for nitrogen fertilizer is 1/4 to 1/2 pound of ammonium nitrate or equivalent per 100 square feet. The fertilizer should be broadcast in a band starting 2 feet from the trunk and going beyond the drip line two or three times from bud break to early summer. Annual terminal growth of mature bearing pecan trees should be 5 to 12 inches. Poor nut production can occur from either low nitrogen, which causes weak vegetative growth, or from excessive nitrogen, which causes excessive vegetative growth. The amount of nitrogen fertilizer should be adjusted to improve nut production.

Fertilization of Individual Trees

Where insufficient terminal growth and nut production are not achieved with regular lawn applications, an additional amount of fertilizer should be applied. Table 1 shows the extra amount of fertilizer to apply per tree using your soil test results.

Fertilizing Commercial Pecan Orchards

Fertilizing of commercial orchards will vary depending on the cultural practices used and the type of pecan in the orchard. Table 2 shows a general total rate for fertilizing commercial orchards with improved varieties and native pecans. Splitting the fertilizer into two or three applications is best. If split, fertilizer applications should be applied at bud swell in mid-March, April and May. Another light application in June can be used in very heavy crop years.

Table 1. Pecan nitrogen rate recommendations based on the amounts of potassium and phosphorous in the soil.

Tree Age or Tree Trunk Diameter [a,b]	Rates Per Tree	
	Soil Test P ≥ 35 ppm Soil Test K ≥ 125 ppm lb ammonium nitrate or equivalent/tree	Soil Test P< 35 ppm Soil Test K < 125 ppm lb 10-10-10 or equivalent/tree
Year of Planting	0	0
1	0.5	1.5
2	1	3
3	1.5	4.5
4	2	6
5	3	9
6	4	12
10	8	24
14	12	36
19	20	60
23	30	90
27	40	120

[a] Use the smaller number.

[b] Measure trunk diameter at 36 inches above the ground.

Table 2. Nitrogen fertilizer recommendations for improved varieties and native pecan orchards based on various cultural practices.

Cultural Practice	Improved Varieties	Natives
	lb N fertilizer (33-0-0 or equivalent) per acre	lb N fertilizer (33-0-0 or equivalent) per acre
Pasture or grass cover	270-450	180-360
Spring cultivation and summer vegetation	180-360	90-270
Winter legumes and pasture	90-270	0-120
Winter legumes and spring cultivation	90-180	0-90

Zinc

The soil pH is very important in determining the availability of zinc in pecan trees. In acidic soils of less than pH 6, a soil treatment of 1/2 pound of zinc sulfate per year of age up to 10 pounds can be spread under each tree. In alkaline soils, ground application is often useless because carbonates found in these soils form insoluble complexes with the zinc. If spraying is possible, spray foliage with zinc sulfate at 2 pounds per 100 gallons or equivalent and apply three times in early spring starting at bud break. Young trees should get applications of zinc to all new growth, and very fast-growing trees might need zinc every two or three weeks as new growth develops. Foliar spraying of zinc on the new growth is the best method of application.

Fertilizing Native Pecan Groves

Native pecan trees use less fertilizer per acre or tree than improved varieties. However, to produce consistent crops of native pecans, an annual supply of nitrogen is needed. Nitrogen can be provided to native pecans by using fertilizer or by legumes (Table 2). Cool-season legumes such as a red clover-white cover mixture can supply some or all the nitrogen a native pecan tree will need without competing with the tree for soil moisture and nutrients during the growing season. In addition, legumes attract beneficial insects and are excellent forage for livestock. If legumes are grazed, the amount of nitrogen produced for the tree will be less. Splitting the fertilizer into two applications is best. If split, fertilizer applications should be applied in mid-March and in May. Another light application in June can be used in very heavy crop years.

Portions of this fact sheet were adapted from “Pecan Leaf Sampling” by J. Benton Storey in *Texas Pecan Handbook*, TAEX Hort Handbook 105, edited by G.R. McEachern and L.A. Stein, 1992.

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