

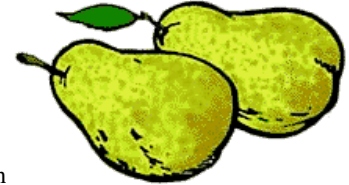


HOME FRUIT PRODUCTION - PEARS

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Pears are long-lived attractive trees for Texas landscapes. Selected varieties produce good fruit with few management problems.

Three basic types of pears grown in the United States are European or French pears, Oriental hybrids and Asian pears. The European pears include such popular varieties as Bartlett, Bosc and D'Anjou. These and other common European varieties are especially noted for their excellent fresh eating quality. However, the susceptibility of European pears to fire blight excludes them from all but far west Texas.



Oriental hybrids include such well-known varieties as Orient and Kieffer. This type is well adapted to much of Texas and accounts for most of the state's pears. Oriental hybrid pears include varieties that range from coarse and gritty to smooth, buttery textures. Some varieties have dessert (fresh eating) quality that will rival the best European varieties. The more coarse textured varieties, such as Kieffer, are used primarily for home processing, including canning, preserves, pickled pears and baking.

The Asian pear, often termed "apple-pear," is gaining increased attention because of its unique fruit. Asian pears are relatively new to Texas and adaptation is still undetermined.

Site and Soil Requirements

Climatically, pears are adapted to all areas of Texas north of a line from Corpus Christi to Laredo. Pears are not recommended farther south, because of insufficient winter chill, although two low chill Florida varieties - Hood and Flordahome - merit testing by pear enthusiasts in extreme south Texas. More humid eastern portions of the state often have severe problems with fire blight. Gardeners there should plant only varieties with high blight tolerance.

Good moisture drainage is an important soil requirement although pears are more tolerant of poorly drained soil than most other fruit trees. Sandy soils are best, but garden trees can be grown in clay or heavy loam soils in most parts of Texas. Iron deficiency (chlorosis) and cotton root rot can be serious problems on highly alkaline soils. Iron chlorosis can be treated with soil applications of iron chelate. Cotton root rot, if present in the soil, may kill trees. There is no effective treatment to eliminate this soil problem.

Plentiful sunlight is a key factor for maximum fruit production. Choose an area of the yard in full or nearly full sun. Morning sunshine is particularly important for early drying of dew; thereby, reducing the incidence of disease.

Pears bloom early and blossoms are subject to spring freeze damage, which occurs most often on pears planted in low areas (valleys, along streams, etc).

Purchasing Trees

Use only recommended varieties obtained from a reliable source. So-called "bargain" trees are rarely a bargain.

Select a healthy, 2- to 4-foot tree with at least a 1/2-inch trunk diameter. Large trees are often less desirable than smaller trees because larger trees usually lose a greater portion of the root system when dug from the nursery.

Larger nursery trees that are 2 years old or older frequently lack sufficient buds where side branches should be developed on the lower portion of the trunk.

Be sure that roots are protected when purchasing bareroot trees. They should be wrapped or covered with moist media such as sawdust or hay to prevent drying.

Varieties and Rootstocks

Most pear trees sold in Texas are budded onto *Pyrus calleryana*, a disease-resistant, drought tolerant rootstock. The Old Home pear is also used as a rootstock, and trees from nurseries outside Texas may be budded to this variety. Trees budded to either of these rootstocks are full-sized and usually long-lived.



Figure 1. Pear variety recommendations for Texas.

- Zone 1.** Warren, Ayres, Magness, Maxine, Moonglow, Garber, LeConte, Monterrey, Orient, Asian pear varieties
- Zone 2.** Warren, Ayres, Magness, Orient, Asian pear varieties
- Zone 3.** Not recommended

Trees on standard rootstocks often take as many as 8 years to begin bearing. Good dwarfing rootstocks are desired for more compact and earlier bearing trees, but to date no dwarfing rootstock can be recommended with confidence. Dwarf quince rootstocks are being tried. Quince are very dwarfing and will induce early bearing, but fruit yields and tree growth have, in general, been only fair to mediocre. Less dwarfing rootstocks that need further testing include Old Home x Farmingdale hybrids. Old Home x Farmingdale selections, including #40 and #333, are reported to have good potential for moderate dwarfing but testing has been inadequate to recommend them.

Oriental Hybrid Varieties

Most of the pears grown in Texas are of the fire blight-tolerant Oriental hybrid type. Fruit of all these varieties are harvested firm and then ripened. Old gritty varieties such as Kieffer have been recommended in the past because of high fire blight resistance, but varieties with much better dessert quality and equal fire blight resistance are available.

The best available pear for combined dessert quality and fire blight resistance is Warren, a seedling selection discovered in Mississippi. Ayres and Magness also rank high on this list. The other pears listed are good, but are lesser than the above in quality and/or fire blight resistance. All of the varieties listed below will work well for canning, baking and other processing.

Warren. Excellent dessert quality in both the flesh and peel with a smooth, buttery texture and small- to medium size, red-blushed fruit. Ripens in August. Highly resistant to fire blight. A seedling tree discovered in Hattisburg, Mississippi by T. O. Warren.

Ayres. Excellent dessert quality, although not as good as Warren. Medium-size fruit with a brown russet and red blush. Ripens in August. Highly resistant to fire blight.

Magness. Excellent dessert quality with medium size fruit similar to Warren. Ripens in August. Highly resistant to fire blight.

Maxine. Very good dessert quality with medium to large attractive fruit. Good to fair fire blight resistance. Ripens in August-early September. Reported to be the same pear as Starking Delicious.

Moonglow. Good dessert quality with medium to large fruit that ripens in August-early September. Good fire blight resistance.

Garber. Good dessert quality with medium to large, crisp-textured, attractive fruit of a shape similar to Delicious apples. Ripens in August. Good to fair fire blight resistance. Often called apple-pear or pear-apple.

LeConte. Good dessert quality, medium-size, attractive fruit that ripens in August-early September. Fair fire blight resistance. Fan-Still, a variety propagated and sold in the San Antonio area, appears to be a LeConte seedling with similar quality and reported better fire blight resistance.

Monterrey. Good dessert quality with large fruit that ripens in August-early September. Good fire blight resistance. Propagated and sold chiefly in the San Antonio area.

Orient. Fair dessert quality, coarse textured, russeted, medium to large fruit. A consistent, heavy bearer that ripens late August-September. Highly resistant to fire blight. Used primarily for canning/baking.

Kieffer. Old standard, coarse-textured fruit that are poor to fair for dessert use but good for canning and baking. A consistent, heavy bearer that ripens late September-October, highly resistant to fire blight.

Asian Varieties

Asian pears are relatively new to Texas and are suggested for trial only. Fire blight tolerance ranges from moderate to fair and Asian pears do not have proven adaptation in any part of Texas. They combine apple-like texture with pear flavor. All are very juicy, but some varieties are proving to be a disappointment because of a rather bland flavor. Asian pears begin to mature 2 to 4 weeks earlier (July in central Texas) than the common Oriental hybrid varieties.

Asian pears are not to be confused with Garber, one of the Oriental hybrids listed. Garber and the Asian pears are both sometimes called apple-pears or pear-apples because of their apple-like shape and texture.

Hosui. Excellent dessert quality with medium-size, golden brown fruit and a distinct rum-like flavor. Ripens July-August. Moderate fire blight resistance.

Twentieth Century (Nijisseiki). Good dessert quality with medium-size, yellow fruit. Ripens July-August. Moderate fire blight resistance.

Shinseiki. Good dessert quality, but less flavor than Hosui or 20th Century. Yellow with medium to large brown lenticels freckling the peel. Ripens July-August. Moderate fire blight resistance.

Pollination

Pears are self-unfruitful, so two varieties are necessary for good fruit production. Pollen transfer is primarily by insect (mostly bees), so plant trees of different varieties within 40 to 50 feet of each other.

Soil Preparation and Planting

Plant pear trees in the winter or early spring while they are dormant. When fruit trees arrive from the nursery, inspect them for damage and general condition. Do not accept trees if roots are not moist. Soak the roots in water for 30 minutes to an hour before planting.

If soil at the planting site is compacted, thoroughly work the soil with a shovel or rototiller. A soil test is beneficial in determining the soil pH and nutrient needs. The county Extension office can provide information on soil testing. A soil pH of 6.0 to 6.5 is optimum for pears, but trees usually do well in soils from pH 5 to 7.5.



First summer

Figure 3. When new shoots are about 1 foot long, select three shoots to serve as leaders. For leaders, select shoots that have wide branching angles, are on opposite sides of the tree and are spaced at 24, 20 and 16 inches above the ground (ideally). Leave three or four branches below the leader shoots.

Dig a planting hole large enough to spread the root system in a natural position. Larger holes filled with topsoil are of no benefit unless the soil at the planting site is extremely poor (rock, calcareous, etc.). Do not add fertilizer to the planting hole.

Trim off broken or mutilated root parts before planting. Set the plants at the same depth at which they were growing in the nursery. Work soil in and around the roots, firming to eliminate air pockets as the hole is filled. Do not leave a depression around the tree. Water the tree thoroughly and check for air pockets. If the tree settles, gently lift it to the proper planting depth.



At planting
Figure 2. Cut the tree off 18 to 24 inches (depending on the tree size) above the ground.

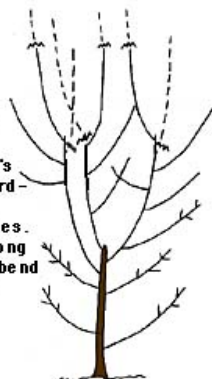
Cut off the newly planted tree at 24 to 30 inches and remove all side branches. This is necessary to compensate for roots lost when the tree was dug at the nursery.

Training and Pruning

Pruning a young tree controls its shape by developing a strong, well-balanced framework of scaffold branches. Remove or cut back unwanted branches early to avoid the necessity of large cuts in later years. The preferred method of training pear trees is described in Figures 2 through 7.

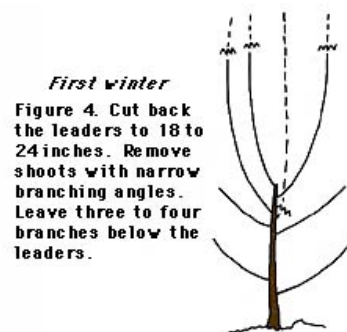
Second winter

Figure 5. Cut back the leaders leaving 20 to 30 inches of last year's growth. Remove upward-growing shoots with narrow branching angles. Leave side branches long to encourage them to bend down under their own weight.



The multiple leader system also described in the figures offers several advantages over trees trained to a single trunk. The multiple leader system has more, but shorter, side limbs. There is more fruiting wood in the tree's upper portion in the early years, and there is no need to use spreaders to make trees grow wider. In case of severe fire blight damage, multiple leaders offer more chances of escape from serious injury than a single leader.

Do major pruning in late winter; prune sparingly in summer. Remove suckers that grow from the base of the trunk as soon as they are noted in the summer. Suckers from the Calleryana pear rootstock are thorny and have leaves that are distinctly different from others in the tree. If not pruned, rootstock suckers often grow to become a significant part of the tree. Calleryana suckers bear tiny, worthless fruit.



First winter
Figure 4. Cut back the leaders to 18 to 24 inches. Remove shoots with narrow branching angles. Leave three to four branches below the leaders.

On older bearing trees, continue to prune as shown in Figure 7. Cut back the leaders by approximately 24 inches each winter (if they are growing vigorously). Thin crowded shoots as needed to allow light penetration into the tree. If fire blight becomes a serious problem, prune sparingly because the vigorous shoots stimulated by pruning cuts usually are more susceptible to fire blight.

Fourth winter

Figure 7. Cut back leaders and remove or cut back side shoots as described for the third winter. Cut back side shoots to just beyond flower buds (where flower buds are present). Continue to follow a similar pruning pattern on mature bearing tree.



Fertilization

Vigorous shoots are more vulnerable to fire blight, so if blight is a problem, use little or no fertilizer. As a general rule for newly planted trees when growth begins, apply 1/2 cup of balanced fertilizer (13-13-13 or equivalent) in a 2 foot circle around the tree. Keep fertilizer at least 6 inches from the tree trunk to avoid fertilizer burn. Each spring after growth starts, apply 1/2 cup of 13-13-13 (or equivalent) per year of age through the fourth year. Continue to apply about 2 cups per tree each spring. If fire blight is a problem, discontinue fertilizer applications. If new growth is less than 6 inches per year, increase

the amount of fertilizer. Mature trees growing in well-fertilized lawns generally receive adequate nutrition through lawn fertilization.

Use ammonium sulfate (21-0-0) instead of balanced fertilizer on highly alkaline soil (pH above 7.5) to avoid phosphorus-induced iron deficiency.

Irrigation

In most sections of Texas, supplemental water is required for optimal tree growth and fruiting. Water young trees at least weekly. Mature pear trees are drought tolerant, but growth and fruiting are better if they are watered weekly or biweekly. Be sure irrigations are always sufficient to thoroughly soak the soil several inches deep.

Weed Control

Weed competition can result in death or poor growth of young trees. Keep an area at least the width of the canopy of young trees weed-free with a hoe, with plastic (or other types of mulching materials that prevent weed growth) or chemicals. Woven polypropylene ground cover is especially good for preventing weed growth. It is durable and allows water penetration while stopping weed growth. Only applicators with a thorough knowledge of dangers and safety precautions should use chemical weed killers. Consult your county Extension agent for information on weed control applications.

Fruit Thinning

Pear trees grown under favorable conditions will overbear, resulting in small fruit and broken limbs. Removing excess fruit ensures satisfactory development of color, shape and size of pears remaining on the tree. Failure to remove excess fruit decreases formation of flower buds for the following year and causes trees to produce a good crop every other year. Overcropped trees are also subject to serious limb breakage problems.

The earlier thinning is completed, the more effective it is in achieving desired results. Midsummer thinning improves fruit size, but it does not aid formation of next year's flower buds which are initiated during the spring and summer following full bloom. Thin fruit before this period.

Remove fruit by hand. Leave one pear per cluster and space the clusters approximately every 6 inches. Start at one end of a branch and systematically remove fruit. To remove fruit without damaging other pears on the spur, hold the stem between the thumb and forefinger and push the fruit from the stem with the other fingers. This method removes the pears but leaves the stem attached to the spur.

Harvesting and Ripening

The Oriental hybrid and European pears grown in Texas do not ripen well on the tree. They are ready to harvest when they change from hard to firm (firmness similar to a softball). Harvest maturity is usually indicated by a slight change from green to yellow.

Mature fruit will begin to drop even though still hard, if harvest is delayed. Most pear varieties in Texas reach harvest maturity in August and September. They should be picked and ripened off the tree. Pears remaining on the tree too long ripen poorly and have poorer texture and flavor.

Ripen pears at room temperature in a well ventilated area. They will ripen in 1 to 2 weeks. Refrigerate the fruit after ripening until consumed or processed. For longer storage life, refrigerate unripe pears as near 32 degrees F as possible and then ripen as desired.



Third winter

Figure 6. Cut back the leaders again leaving 20 to 30 inches of new growth. If the leaders are spreading too wide, encircle them with twine to keep them reasonably upright. Remove upward growing shoots with narrow branching angles and cut others that are crowded and competing for space. Cut back side shoots only if they are bending down.

Disease and Insect Control

Fire blight is the most seriously limiting pear disease. The disease usually appears in the spring on blossoms, leaves and twigs. Infected tissues quickly turn black and die. Highly susceptible varieties can suffer severe damage and trees are sometimes killed.

Prevention through selection of resistant varieties is the most effective means of control. Chemical sprays with streptomycin (Agri-strep (TM)) are beneficial if applied at 5-day intervals beginning at first bloom. Up to three sprays can be applied. If streptomycin is not available, Kocide 101 (TM) or other copper fungicides may be used.

Prune out fire blight-damaged tissue any time the disease is noted. Make cuts at least 6 inches below the diseased tissue. Sterilize pruning shears in a 10 percent solution of liquid chlorine bleach after each cut.

Satisfactory fruit for home use usually can be produced without following a regular spray schedule for diseases and insects. If necessary, a combination insecticide-fungicide fruit tree spray applied according to label directions may be used to prevent serious fruit quality problems.

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