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PEARS

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5/117/E22/B-1598/1988/Feb.

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.

The three basic types of pears grown in the United States are European or French pears, Oriental hybrids and Asian pears. The common 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 limits them to 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 produce russeted fruit that are firm to hard and have a high number of grit cells. These varieties are popular for preserves, pickling or in jams, but most varieties are also satisfactory for fresh use if properly ripened.

The Asian pear, often termed "apple-pear," is a third type that is gaining increased attention because of its high quality 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, although a few trees have grown fairly well and occasionally borne fruit in the Lower Rio Grande Valley. More humid eastern portions of the state often have severe problems with fire blight, and 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.

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Plentiful sunlight is a key factor for maximum fruit production. Choose an area of the yard in full sun 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 ½ 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.

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.

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. Other rootstocks, including dwarf quince, are usually less successful in Texas.

Oriental hybrid varieties. Most of the pears grown in Texas are of the fire blight-tolerant Oriental hybrid type.



Figure 1. Pear variety recommendations for Texas.

- Zone 1 Orient, Moonglow, Kieffer, LeConte, Ayers, Garber, Maxine, Savannah, Warren, Monterey, Fan-Stil, Asian pear varieties
- Zone 2 Orient, Kieffer, Tennessee, Savannah, Warren, Asian pear varieties
- Zone 3 Not recommended

Fruit of all of these varieties are harvested firm and then ripened in storage. Orient and Kieffer are recommended chiefly because of high resistance to fire blight. Properly ripened, they will soften, but their high grit cell content makes them coarse-textured and limits their appeal for fresh consumption. Warren, Tennessee and Savannah are suggested for trial because of their high tolerance to fire blight and good quality for fresh consumption. The other hybrid varieties listed in the table have good quality fruit, but fire blight can become a serious problem, especially in the more humid regions of Texas.

Asian varieties. Asian pears are relatively new to Texas and are suggested for trial only. They generally have only moderate fire blight tolerance and do not have proven adaptation in any part of Texas. Their combination of apple-like texture and pear flavor and aroma is highly desirable for fresh eating. Most varieties ripen about 1 month earlier than Oriental hybrid varieties commonly grown in Texas. All of the varieties listed have a yellowish green color except Chojuro which is brownish.

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.

TABLE 1. CHARACTERISTICS OF RECOMMENDED PEAR VARIETIES.

Variety	Fire blight tolerance	Grit cells	Firmness	Uses*
<i>Oriental hybrid varieties</i>				
Orient	high	medium-high	hard	F, P
Kieffer	high	high	hard	P
Warren	high	medium	soft	F, P
Savannah	high	medium	soft	F, P
Tennessee	high	medium	soft	F, P
Moonglow	moderate	medium	soft	F, P
Ayers	moderate	medium	soft	F, P
Maxine	moderate	medium	soft	F, P
LeConte	moderate	medium	soft	F, P
Garber	moderate	medium	soft	F, P
Fan-Stil	moderate	medium	soft	F, P
Monterrey	moderate	medium	soft	F, P
<i>Asian pear varieties</i>				
Twentieth Century (Nijisseiki)	moderate-high	low	soft	F, P
Shinseiki	moderate	low	soft	F, P
Kikusui	moderate	low	soft	F, P
Seigyoku	moderate	low	soft	F, P
Chojuro	moderate	low	soft	F, P

*F - fresh, P - processing (canning, preserves, pickling, etc.)

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.

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 (rocky, 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.

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.

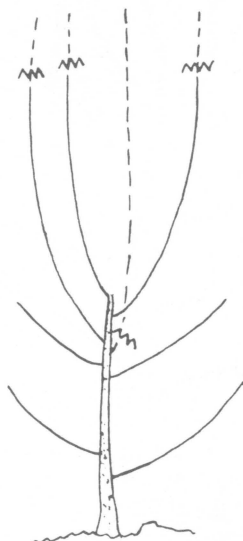
The multiple leader system also described in the figures offers several advantages over trees trained to a single trunk. The multiple leader system has more, but shorter, side limbs; there is more fruiting wood in the tree's upper portion in the early years, and there is no need to use spreaders to make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



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

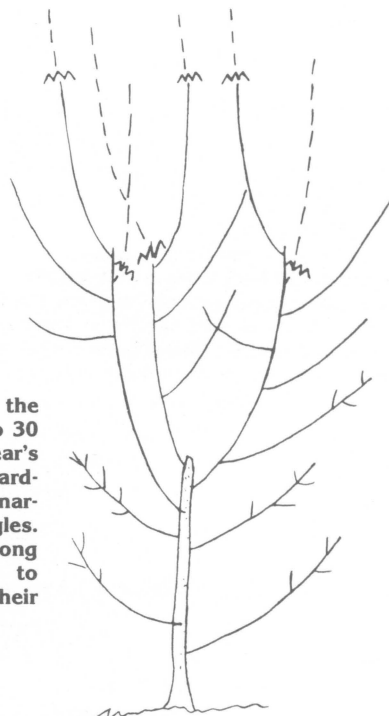


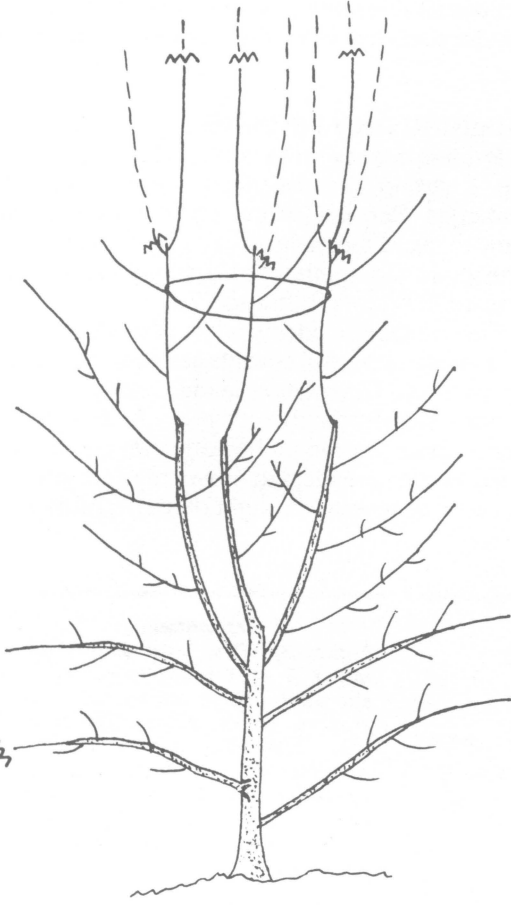
First summer
Figure 3. When new shoots are about 1 foot long, select three shoots to serve as leaders. For leaders, select shoots that have wide branching angles, are on opposite sides of the tree and are spaced at 24, 20 and 16 inches above the ground (ideally). Leave three or four branches below the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



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.

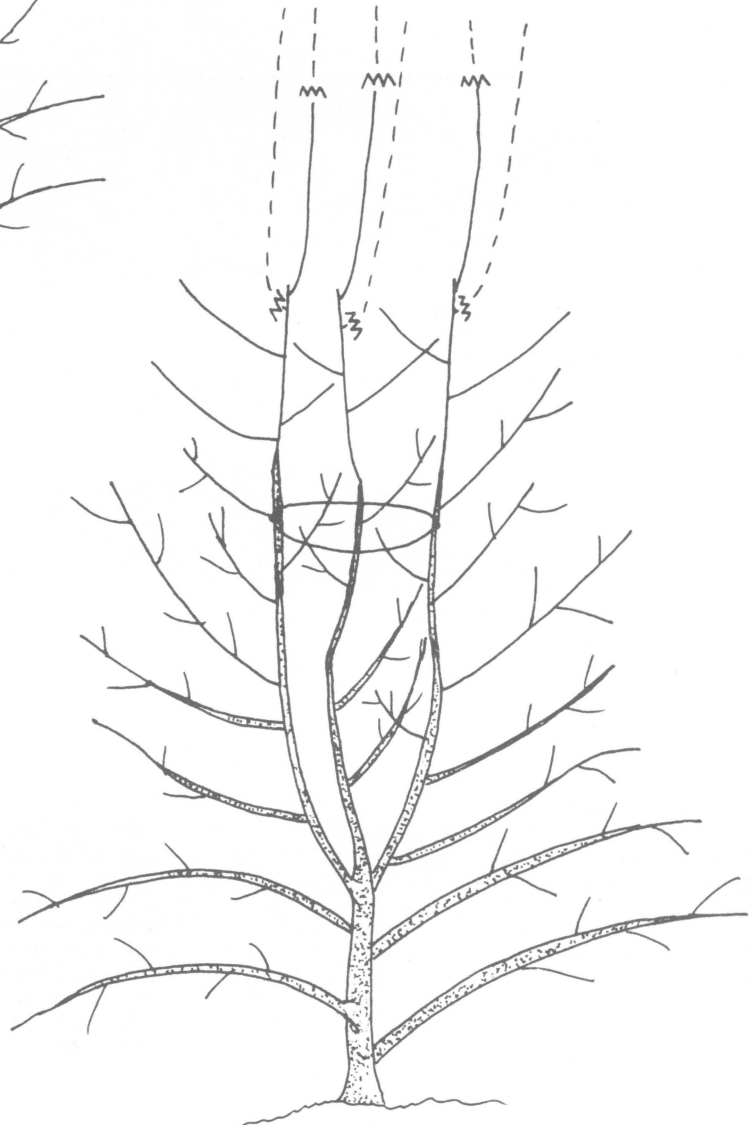
Second winter
Figure 5. Cut back the leaders leaving 20 to 30 inches of last year's growth. Remove upward-growing shoots with narrow branching angles. Leave side branches long to encourage them to bend down under their own weight.





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.



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 trees.

offer more chances of escape from serious injury than trees with a single leader.

Do major pruning in late winter; summer prune sparingly. 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.

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 since the vigorous shoots stimulated by pruning cuts are usually more susceptible to fire blight.

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 ½ 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 ½ 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 the 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 with 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 often, broken limbs. Removing excess fruit insures 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 commonly 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. 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.

Ideally, ripen pears in a well-ventilated room at 60° to 65° F. for 2 or more weeks until they become uniformly soft. Room temperature in the coolest part of the house is usually satisfactory.

Asian pears attain their best eating quality when tree ripened. They have a long shelf-life and can be stored for several months with refrigeration.

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®) 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 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 can usually 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 prevents serious fruit quality problems.

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Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Zerle L. Carpenter, Director, Texas Agricultural Extension Service, The Texas A&M University System.