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Pear Production in the Home Garden

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Pears are long-lived, attractive trees that work well in Arkansas landscapes and produce fruit for home owners. In general, pears do not have as many pests as apples and are commonly grown by homeowners without pesticides. Selected varieties produce good fruit and present 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 their use.

Oriental hybrids include such well-known varieties as 'Orient' and 'Kieffer'. This type is well adapted to much of Arkansas and accounts for most of the state's pears. Oriental hybrid pears produce russeted fruit that is firm to hard and has a high number of grit cells. These varieties are popular for preserves, for 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 Arkansas. This crop seems to do well in northern Arkansas. The southern extent of their adaptation in the state has not been determined.

Site and Soil Requirements

Climatically, pears are adapted to all areas of Arkansas. Pears often have severe problems with fire blight, and gardeners should only plant varieties with high blight tolerance. It is possible to lessen the effects of fire blight with judicious sprays, but this is difficult for homeowners to do and is not encouraged.

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Good 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 Arkansas.

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, which will reduce 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 two 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 bare-root trees. They should be wrapped or covered with moist media, such as sawdust or hay, to prevent drying.

Pollination

Most 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 Arkansas 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 Arkansas 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 Arkansas.

Oriental Hybrid Varieties

Most of the pears grown in Arkansas are fire blight-tolerant Oriental hybrids. Fruit of all of these varieties are harvested firm and then ripened in storage. 'Kieffer' is recommended chiefly because of high resistance to fire blight. Properly ripened, it will soften, but its high grit cell content makes it coarse-textured and limits its appeal for fresh consumption. Most pears are best picked firm and then allowed to soften in a cool, dark place. They are ready to eat when they become slightly soft to the touch. 'Comice' and 'Seckel' pears can be enjoyed straight from the tree.

Asian Varieties

Asian pears require greater care than Oriental hybrid varieties and are suggested for trial only. They generally have only moderate fire blight tolerance. Their combination of apple-like texture and pear flavor and aroma is highly desirable for fresh eating. Most varieties ripen about one month earlier than Oriental hybrid varieties commonly grown in Arkansas. All of the varieties listed have a yellowish green color. Preliminary grower trials indicate they will do well in Arkansas.

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. Recommended Pear Varieties for Arkansas

Type	Cultivar	Notes
European	Comice	Large, broad-based, greenish-yellow fruit. Finely textured flesh. Excellent dessert, but not canning. Grit cells: Low. Large, vigorous tree. Good fire blight resistance. Low chill: 600 chilling hours.
	Harrow Delight	Medium-sized fruit with attractive red blush over yellow background. Flesh is high quality with very low grit cells. Hardy, productive tree with high resistance to fire blight.
	Kieffer	Oriental hybrid type. Large, long, yellow-golden fruit. Coarse texture. Good for canning. Fruit is picked while still hard and stored in a cool place. Can be self-fruitful. Hard, vigorous. High resistance to fire blight.
	Maxine	Bartlett type. Large, golden, firm fruit with very low grit cells. Good for fresh eating, canning and preserves. Tree highly productive, upright habit. High fire blight resistance.
	Magness	Greenish-yellow, medium-sized fruit with a red blush. Smooth flesh. Good for fresh eating but not canning. Stores well. Does not produce good pollen. High fire blight resistance.
	Moonglow	A Comice seedling. Medium-large, dull yellow fruit. Excellent for fresh juice or canning; stores well. High resistance to fire blight. Requires 700 chilling hours.
	Seckel	Commonly called Sugar Pear. Not very attractive looking due to its russet skin, but great flavor. Smooth flesh. Excellent dessert pear. Self-fertile, but benefits from cross-pollination. Some fire blight resistance.
Asian	Shinsesik1	Round, firm, yellow-skinned fruit that can be stored up to three months in common storage. Can be self-pollinating. Moderate resistance to fire blight.
	20th Century	Common cultivar also known as Nijisseiki. Fruit is round and yellow skinned. Can store for a long period of time. Moderate resistance to fire blight.

If soil at the planting site is compacted, thoroughly work the soil with a shovel or tiller. A soil test should be done to determine the soil pH and nutrient needs. A soil pH of 6.0 to 6.5 is optimum for pears, but trees usually do well in soils from pH 5.0 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 damaged 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 1 through 6.

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

Figure 1. At planting – cut the tree off 18 to 24 inches (depending on the tree size) above the ground.

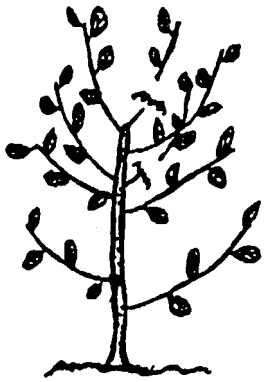


Figure 2. First summer – when new shoots are about 1 foot long, select three shoots to serve as leaders. For leaders, select shoots that have wide branching angles, are on opposite sides of the tree and are spaced at 24, 20 and 16 inches above the ground (ideally). Leave three or four branches below the leader shoots.

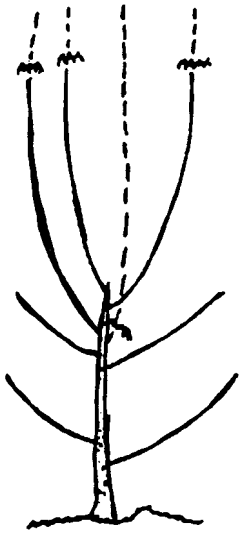


Figure 3. First winter – cut back the leaders to 18 to 24 inches. Remove shoots with narrow branching angles. Leave three to four branches below the leaders.

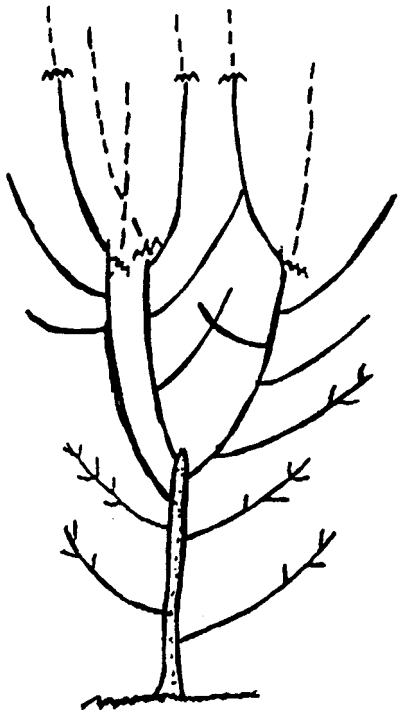


Figure 4. Second winter – cut back the leaders leaving 20 to 30 inches of last year's growth. Remove upward-growing shoots with narrow branching angles. Leave side branches long to encourage them to bend down under their own weight.

Figure 5. Third winter – 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.

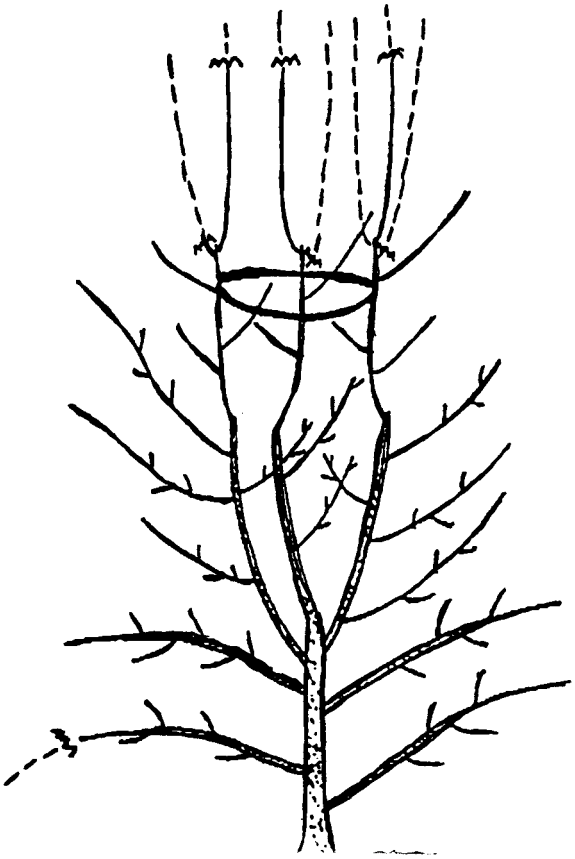
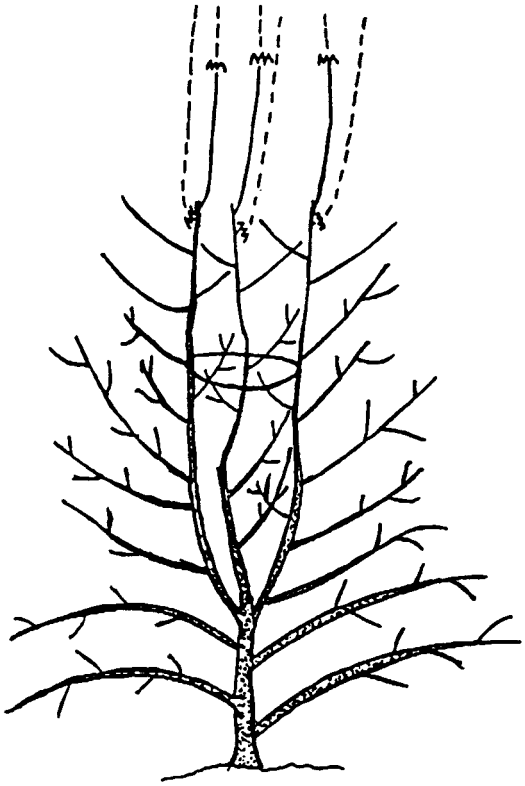


Figure 6. Fourth winter – cut back leaders and remove or cut back side shoots as described for the third winter. Cut back side shoots to just beyond flower buds (where flower buds are present). Continue to follow a similar pruning pattern on mature bearing trees.



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.

On older bearing trees, continue to prune as shown in Figure 6. 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

Fertilization of pear trees should be based on soil analysis results to avoid problems with nutrient deficiencies or toxicities, but if these results are not available, 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 the lawn fertilization. Vigorous shoots are more vulnerable to fire blight, so use little or no fertilizer if blight is a problem.

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

Irrigation

In most sections of Arkansas, 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 the 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 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.

Disease and Insect Control

Fire blight is the most serious pear disease in Arkansas and limits the production of pears to highly resistant varieties. The disease usually appears in the spring on blossoms, leaves and twigs. Infected tissue quickly turns black and dies. 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 control of fire blight is difficult, especially in the home orchard. Chemical sprays with streptomycin (Agri-Strep) are beneficial if applied at five-day intervals beginning at first bloom. Check with your county agent for the latest recommendations.

Prune out fire blight-damaged tissue anytime 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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