Hood Pear  
*Pyrus communis 'Hood'*

**TAXONOMY**

Pears are placed in the Rose family (Rosaceae), subfamily Pomoideae along with apple and quince. The genus Pyrus is composed of about 22 species, found in Asia, Europe, and northern Africa. Two major species are commercially cultivated:

- European pear: *Pyrus communis* L. This species does not occur in nature, and possibly derives from *P. caucasia* and *P. nivalis* (snow pear). This is the major pear of commerce.
- Asian pear: *P. pyrifolia* (Burm. f.) Nak. [syn. *P. serotina* L.]. Also called "Japanese" or "Oriental" pear, or "Nashi". Grown mostly in the Orient, this fruit has been increasing in popularity in the USA over the last 20 years.

Asian pears appear more like apple than European pear, and have hard, crisp flesh like apples when ripe, unlike the melting flesh European pears. Also, Asian pears will ripen on trees like apples, but European pears are subject to core breakdown if allowed to ripen fully on-tree. In this picture, ‘Hosui’ is an Asian pear, others are European.

**Cultivars**

There are relatively few cultivars of European or Asian pear grown worldwide. Only about 20-25 European and 10-20 Asian cultivars represent virtually all the pears of commerce. Almost all European cultivars were chance seedlings or selections originating in western Europe, mostly France. All of the Asian cultivars originated in Japan and China. 'Bartlett' is the most common pear cultivar in the world, and represents about 75% of US pear production.

**ORIGIN, HISTORY OF CULTIVATION**

Like its relative the apple, the European pear is not found in the wild. Its probable progenitors are native to Eastern Europe and Asia Minor near the Mediterranean, but it is not known when they may have hybridized to yield *P. communis*. The European pear has been selected and improved since prehistoric times, and was cultivated in Europe in 1000 BC. Pears probably came to the new world with the first settlers on the east coast, and spread westward with pioneers. When moved to the Pacific northwest in the 1800s, European pears were able to escape fire blight, a serious bacterial disease that limited pear cultivation in the east. Today, over 90% of the pear crop is grown in the Pacific northwest, such as the Hood River Valley of oregon (shown), and California.

Asian pears were domesticated in China about the same time European pears were in Europe, 3000 years ago. *P. pyrifolia* is native to central and southern China, and probably the first to be domesticated
since fruit of wild trees is edible. Fruit of wild P. ussuriensis is astringent, small, and course-textured, so that it was probably hybridized with P. pyrifolia prior to domestication. Chinese writings dating from 200-1000 BC describe pear propagation and culture. Asian pears moved from China to Japan, Korea, and Taiwan, where they are cultivated commercially today.

BOTANICAL DESCRIPTION

Plant

A medium sized, upright growing tree, to 30 ft tall, generally 8-18 ft in cultivation. Tree size is heavily dependent on rootstock and training system. Leaves are elliptic/ovate with acute tips, with finely serrate or entire margins, 2-4" in length.

Flowers

Flowers are about 1" in diameter with white petals, and similar to apple except for having longer pedicels. The inflorescence is corymbose, containing 5-7 flowers (also different from apple).

Pollination

Most cultivars require cross pollination for commercial fruit set. Some cultivars are partially self-fruitful - 'Bartlett', 'Orient', 'Baldwin', 'Kieffer', 'Spalding'. Honey bees are the main pollinator.

Fruit

A pyriform (European) or round (Asian) pome. As in apple, the fleshy edible portion is derived from hypanthium tissue. There are 5 central seed cavities, usually bearing 2 seeds each as in apple. The flesh contains grit cells (termed brachysclereids), which are thick-walled, lignified cells that give the characteristic European pear flesh texture. Pears are thinned to 1-2 fruit per spur, spaced 6" apart.

GENERAL CULTURE

Soils and Climate

Pears tolerate heavy, poorly drained soils better than most tree fruits. However, productivity is best on deep, well-drained loams with pH 6-7. Pears have very similar climatic requirements to apples, but are much more prone to fire blight and therefore cannot tolerate humid, wet springs. Pears require 900-1000 chill hours to break dormancy, although some low chill cultivars exist, and many Asian pears have lower chill requirements and can be grown as far south as northern Florida. Pears have similar or slightly lower cold hardiness than apples, tolerating -10 to -20 F. Pears bloom 1-3 weeks before apple, and are therefore prone to frost damage in most regions. Pears mature in as little as 90 days, or as long as 200 days. 'Bartlett' and its sports are referred to as "summer pears" since they ripen in July - August in California (115-140 days). "Winter pears" are those harvested in autumn and marketed throughout the winter months, such as 'Anjou', 'Bosc', 'Comice', 'Hardy', 'Winter Nelis', and 'Packham's Triumph'.

Propagation
Standard sized pears are chip or t-budded onto compatible rootstocks like most tree fruits. However, where quince (Cydonia oblonga) is used as a dwarving stock, most pear scions require an interstem for compatibility (of major cultivars, only 'Anjou', 'Comice' and 'Hardy' are compatible with quince, and all Asian cultivars are incompatible).

**Planting Design, Training, Pruning**

Pear orchards are designed very similar to apple orchards. Standard trees are spaced at 25 x 25 ft (70 trees/acre), but hedgerow forms are more common in high density plantings, with hundreds of trees per acre. Pollinizers are planted in alternate rows, or every 10th or 15th tree within hedgerows.

The most common system is central leader for free-standing trees and some form of palmette for trellised orchards. Initial tree training is particularly important with pear since scaffolds tend to grow nearly vertically, causing poor crotch angles and delayed fruiting. Other than this tendency to grow upright, and therefore greater need for limb spreaders, pears are trained and pruned in the same way as apples.

**Disease**

Fire blight (Erwinia amylovora). This is a severe bacterial disease for virtually all pear cultivars, particularly in warm, wet springs. The bacteria are carried by bees from tree to tree at bloom, and can kill all or most of the flowers on a tree if severe. Very susceptible cultivars show twig and spur dieback or complete tree death. Flowers, twigs, and leaves often turn black and wilt; shoot tips droop over, giving a distinctive "Shepherd's Crook" appearance.

**HARVEST, POSTHARVEST HANDLING**

**Maturity**

European pears are harvested when "firm mature"; flesh firmness is the most reliable indicator of pear maturity. Firmness in the range of 10-15 lbs as measured by a pressure tester is desirable for most cultivars.

**Harvest Method**

Pears for are picked by hand several times over a 10-20 day period.

**Postharvest Handling**

Standard packing line procedures are used for pear - hydrocooling, washing, culling, waxing, sorting, and packing. Quality grade is based on size and appearance of skin; greater prices are obtained for larger fruit and those with minimal surface blemishes.

**Storage**
Pears are stored just below freezing up to several months, then ripened for a few days at 70-75 F prior to consumption or canning. Unlike apples, pears are not subject to chilling injury. 'Bartlett' can only be stored for a few months, whereas 'Anjou' and 'Winter Nelis' can be stored for 5-7 months.

by Mark Reiger University of Georgia