

Pyrus communis

L.

Rosaceae

LOCAL NAMES

English (european pear,cultivated pear,common pear); French (poirier); German (birnenbaum,birne,birnbaum); Japanese (seiyo-nashi); Portuguese (pereira); Spanish (peral,pera)

BOTANIC DESCRIPTION

Pyrus communis is a deciduous small to medium-sized tree to 10 m tall (normally 3-5 m in cultivation), with a pyramidally shaped crown. The conical erect trunk bears small, reddish-brown, narrow-angled branches. The grey-brown bark has shallow furrows and flat-topped scaly ridges.

Leaves alternate, simple, elliptic/ovate with a finely serrated margin, obtuse tips, 2.5-10 cm long and 3-5 cm wide, shiny green above, paler and dull below, glabrous. The petioles are stipulate and the buds are involute, with imbricate scales.

Flower corymbose inflorescences, 5-7.5 cm wide, containing 5-7 showy white, 2.5-3.5 cm wide flowers, borne from terminal, mixed buds of short spurs, appearing before or with the leaves. The spurs are very short and lateral branches. The ovary is epigynous, or inferior, with the 5-carpellate ovary embedded in receptacle tissue, containing up to 10 ovules (2 per carpel); peduncle thin, 2.5-5 cm long.

Fruit a pyriform (pear-shaped) pome with persistent or deciduous calyx, 4-12 cm long, greenish colored, dry and gritty.

Seed blackish, 8.4 by 4.8 mm, each with a thin layer of endosperm.

Pyrus is a latin classic name for pear tree while *communis* is of the latin meaning common current.

The genus *Pyrus* (24 primary species) is in the subfamily Pomoideae, along with apple, loquat, medlar and quince. The genus *Pyrus* probably originated in the mountain regions of what is now western and southernwestern China and evolved and spread eastward and westward. The species *P. communis* possibly is derived from the species *Pyrus nivalis* Jacq. and *Pyrus caucàsica* Fed. Many improved named varieties have been derived from this species.

BIOLOGY

Pears are self-sterile and need more than one variety planted within 12 or 15 m of each other in order to cross-pollinate. It flowers around March-April, while fruiting occurs in July-September. Some varieties (eg Seckel and Bartlett) do not pollinate each other.

The pollinators are honeybees.



Fruits and foliage (Gil Wojciech, Polish Forest Research Institute, www.forestryimages.org)

ECOLOGY

P. communis is a tree of warm temperate and subtropical regions. *Pyrus communis* L. does not occur in the wild, and possibly it is derived from *P. caucasia* and *P. nivalis* Jacq. (snow pear) progenitors are native to Eastern Europe and Asia Minor near the Mediterranean.

BIOPHYSICAL LIMITS

Altitude: 600-2400 m

Soil type: Pears will do best in a deep, fertile, well drained, sandy clay loam to clay loam with pH of 6.0-6.8. They are, however, tolerant of adverse soil conditions and will do reasonably well on heavier and less well-drained soils than ideal. Light soils are also suitable, but provision should be made to provide adequate moisture during dry periods.

DOCUMENTED SPECIES DISTRIBUTION

Native: Armenia, Azerbaijan, Georgia, Greece, Iran, Russian Federation, Turkey

Exotic:



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

PRODUCTS

Food: The fruit is eaten fresh, in fruit salads, or more rarely, canned. Sometimes, they are dried or candied. They are also used in jams and jellies

Timber: Its wood is brown-reddish, compacts, with several applications such as in furniture.

Poison: Like apples, pears contain cyanogenic glucosides in seeds, which can be toxic if eaten in large quantities. Pear juice has been found to cause chronic, nonspecific diarrhea in infants and children. This stems from the abnormally high levels of fructose and sorbitol relative to glucose compared to other foods

Medicine: The same antibiotic-like substance (phloretin) found in apple bark is present in bark of pear.

Other products: In Europe, the alcoholic cider "Perry" is made from the pear.

SERVICES

Shade or shelter: Provide shelter in the boundary planting system.

Ornamental: The pendulous form of the willow-leaf pear makes it a unique ornamental landscape plant especially the flowering ornamental selections and the evergreen pear are widely planted as street trees in the United States

Intercropping: Other crops may be planted between the rows of the pears.

TREE MANAGEMENT

Trees are spaced at 7.5 x 7.5 m for the more vigorous varieties.

The seedling should be about 65 to 75 cm high at time of planting.

All fruit are borne on spurs on 2- to 6-year-old wood. Older wood and spurs give smaller fruit than those on 2- to 4-year-old wood. Clean pruning cuts and excess spurs should be cut off smoothly so stubs will not rub and damage fruit. It is advisable to maintain individual tree spacing and avoid tight hedgerows for good fruit color and long-lived productive orchards.

Initially a half-cup of a balanced fertilizer may be placed in a 60 cm circle around the tree at least 15 cm from the trunk. This is done each spring until the fourth year at which time 2 cups may be set around the tree each spring.

Pruning, which should mainly be done in December to February, should be light and just enough to develop a strong tree that is able to handle the weight of the fruits. When a one-year-old tree is first planted, it should be cut back to 1 or 1.2 m high and all side branches should be removed.

The best thinning usually requires two times to effectively leave no more than one fruit per spur, and if spurs are close together well thinned fruit are spaced 10 to 15 cm apart. Thinning up to 30 days before harvest can benefit size, but early thinning is essential for annual bearing and good fruit sizes. Crop loads of 200 to 400 fruit per tree are common on 8- to 10-year-old trees.

GERMPLASM MANAGEMENT

The mature fruits are picked from trees or shaken to the ground. Seeds are recovered by macerating the fruit, drying the pulp, and using a screen to extract the seeds. Small quantities of seeds are effectively removed by carefully transversely cutting fruit to expose the locules. Each ripe fruit contains up to 10 smooth black (or nearly black) seeds, each with a thin layer of endosperm. There are about 22000 seeds/kg. Pears are outcrossing species, so seedlings will not be identical to parental genotypes.

PESTS AND DISEASES

Pear cultivars develop fireblight (*Erwinia amylovora*). When trees are planted too deep in the soil they may die of crown rot (*Phytophthora* spp.)

Seedlings may be subject to powdery mildew, caused by *Podosphaera leucotricha* and by root rots. Experienced growers usually spray antibiotic fireblight materials (Streptomycin, Terramycin, or copper) during the bloom period. Antibiotic sprays for fireblight should be made at time of bloom and continued in April and May and after harvest. Frequent removal of diseased (blighted) limbs as soon as symptoms appear to control fireblight is necessary most years.

Codling moth (*Carpocapsa pomonella*) is severe on pears, requiring 3 to 4 well-timed sprays of the insecticides at or near full dosage for control of this serious pest. Thinning clusters to single fruit also reduces codling moth infestation. Pear psylla (*Psylla pyricola*) can cause sticky fruit and requires at least one delayed dormant spray. Two-spot spider mites are serious especially if the trees become water-stressed. Mite spray before harvest and frequent irrigation is essential for control of two-spot and European red mites

FURTHER READNG

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SUGGESTED CITATION

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