

Platycladus orientalis

Chinese arborvitae

(L.) Franco

Cupressaceae

LOCAL NAMES

Chinese (baishu, xiangbai, cebai, bianbai); English (biota, tree of life, book-leaf pine, oriental arborvitae, Chinese arborvitae, Chinese thuja); French (thuya oriental, thuya d'orient, thuya de chine); German (Morgenlaendischer Lebensbaum, Chinesische Thuja, Lebensbaum, Orientalischer Lebensbaum); Italian (tuia orientale); Japanese (konotegashiwa); Spanish (uya de la China); Trade name (Chinese arborvitae)

BOTANIC DESCRIPTION

Platycladus orientalis is a large, evergreen shrub or small to medium-sized tree rarely exceeding 20 m in nature, in cultivation it often forms multiple stems; habit dense, usually broadly conical with ascending branches from bare stems; old trees in China often wide-crowned with spreading branches, occasionally it forms a monopodial tree, assuming a columnar habit; bark thin, reddish-brown, exfoliating in thin longitudinal strips with age; branches erect or spreading, with the foliage held in vertically aligned sprays pointing upwards.

Leaves light green or yellow-green, becoming brown after 3 or 4 seasons, persistent, scale-like, in opposite-decussate pairs, have no glands.

Pollen cones terminal, small (2-3 mm long), seed cones 20-25 mm long, 10-18 mm wide when closed, glaucous green at first, turning reddish brown, usually have 6-8 fleshy scales in an opposite-decussate arrangement, with a deeply recurved dorsal hook below the tip of each scale; this protuberance is the apical part of the bract, around which the fleshy scale develops after the ovules are fertilized, to nearly engulf the bract; scales glaucous when growing, maturing and ripening to bright brown; lower 4 scales fertile with 2(-3) seeds occurring adaxially near the base of the lowest pair, only one on the upper pair.

Seeds 5-7 mm long, 3-4 mm diameter, more or less ovate, wingless.

This is a monotypic genus; the generic name comes from the Greek word *platyclados* (with a broad stem). The Greek word results in two English words *plate* and *clad* which conjures up the image of plates arranged in a rack as the tree's foliage appears when viewed from afar. The peculiar arrangement of upright branchlets and flattened lateral twigs gives this tree its unusual leafing habit and explains the origin of its common name (book-leaf pine). The specific epithet means eastern.

BIOLOGY

Seed bearing starts at 3 years for instance in Kazakhstan.



Trees at Waikamoi trail, Maui, Hawaii.
(Forest & Kim Starr (USGS))



Leaves at Waikamoi trail, Maui, Hawaii.
(Forest & Kim Starr (USGS))



Branch at Waikamoi trail, Maui, Hawaii.
(Forest & Kim Starr (USGS))

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ECOLOGY

P. orientalis is hardy, tolerating a wide range of soil types and climatic conditions. The tree will endure drought but suffers from cold frosty winds and water logging.

BIOPHYSICAL LIMITS

Altitude: up to 2300 m

Soil type: It prefers moist soils, preferably acidic and peat-rich.

DOCUMENTED SPECIES DISTRIBUTION

Native: China, Japan, Korea, Republic of, Russian Federation, Taiwan, Province of China, Ukraine

Exotic: France, Iran, New Zealand, Poland



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.

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PRODUCTS

Timber: Wood close-grained and knotty, heartwood dark brown, sapwood white or cream. The timber is used for gateposts and furniture.

Essential oil: Leaves, wood, bark, and seed shells of *P. orientalis*, have been steam-distilled and the resulting essential oils and their constituents analysed by GC/MS (mass spectrometry). Essential oils from leaves and seed shells have been found to contain more than 20 mono and sesqui-terpenes were identified, the most important being alpha-pinene (constituting 40% of the oil), DELTA3-carene, and cedrol. Wood essential oil contained 45% thujopsene and 21% cedrol. The major components of the bark essential oils were alpha-pinene (14%), DELTA3-carene (16%) and thujopsene (13%). The best quality essential oil was obtained from the wood (Chen YD, 1984).

Medicine: It was used to treat scurvy. Leaf extracts have been shown to inhibit bacterial growth.

Other products: Seeds contain terpenoids.

SERVICES

Ornamental: Chinese arbovitae is planted in many gardens especially for its striking pale green foliage with odd-looking glaucous cones.

Boundary or barrier or support: It tolerates pruning and is therefore used as a hedge plant.

Other services: The tree is held high in mystical esteem in Chinese folklore and was planted within tombs of ancient emperors; seeds were placed in the caskets.

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TREE MANAGEMENT

Biota has the ability to tolerate unlimited pruning.

GERMPLASM MANAGEMENT

Seed storage behaviour is orthodox. There is little loss in viability following 5 years hermetic storage at 0 deg C with 6-8 % moisture content; hermetic air-dry storage recommended. Long-term storage under IPGRI preferred conditions at RBG Kew, WP.

PESTS AND DISEASES

Homoeolachesilla tibetana, H. pinnulata, Lachesilla platycladae, L. microplatyclatae, and the eriophyid Neoepitrimerus platyeladi are pests of P. orientalis. A fungus, Cylindrocladium scoparium has been isolated from the tree.

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FURTHER READNG

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SUGGESTED CITATION

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