

**LOCAL NAMES**

Chinese (qing gang li); English (ring cupped oak, blue japanese oak, bamboo-leaved oak); German (bambusblättrige eiche); Italian (quercia a foglie di bamboo); Nepali (sano phalant, sano pate phalant, banjh)

**BOTANIC DESCRIPTION**

*Q. glauca* is a medium-sized (up to 20 m), attractive broadleaf evergreen tree, with an oval, rounded crown and a clear, cylindrical bole. Leaves alternate, simple, evergreen, oblong, elliptic, to obovate-oblong, 7-13 cm long, 2.5-6 cm wide, abruptly acuminate. Margin serrate on the upper half. Lamina glabrous and glossy green above, glaucous and silky hairy beneath. New foliage is either a rich green or bronze to purple-green. Very handsome when the new foliage emerges which usually occurs in early.

Fruit a cone, 1 to 3 in a cluster, enclosed 1/3 in a downy cap with 6 to 7 raised concentric rings, ripens in one year. Acorns ovoid, 2 cm long, maturing (rarely in Europe) in one year.

**BIOLOGY**

*Q. glauca* is a polymorphic species. The seed ripens in its first year and it hybridises freely with other members of the genus.

**ECOLOGY**

It occurs in secondary evergreen broad-leaved forest communities in north subtropical and warmer temperate zones of Asia, at elevations from 300-3100 m. It prefers moist, cool locations with good illumination, but can grow on a variety of soils. Slightly saline loams and neutral limestone soils promote the best growth, with pure stands occurring on deep, moist clays underlain with sandstone and shale. *Q. glauca* can withstand considerable shade up to the pole stage, but thereafter requires complete overhead illumination.

**BIOPHYSICAL LIMITS**

Altitude range: 300 - 3100 m

Mean annual rainfall: 1000 - 2900 mm

Mean annual temperature: 6 - 19°C

Soils: It prefers light to medium, freely draining, acid to neutral soils. It is tolerant to shallow infertile soils.

**DOCUMENTED SPECIES DISTRIBUTION**

Native: China, India, Japan, Nepal, Pakistan, Vietnam

Exotic: Germany, Italy



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: Seeds, raw or cooked have a sweet taste. The seed can be dried, ground into a powder and used as a thickening in stews etc or mixed with cereals for making bread. If the seed contains bitter tannins, these can be leached out by thoroughly washing the seed in running water though many minerals will also be lost. Either the whole seed can be used or the seed can be dried and ground it into a powder. It can take several days or even weeks to properly leach whole seeds, one method was to wrap them in a cloth bag and place them in a stream. Leaching the powder is quicker. A simple taste test can tell when the tannin has been leached. The traditional method of preparing the seed was to bury it in boggy ground overwinter. The germinating seed was dug up in the spring when it would have lost most of its astringency. The leaves are cooked as a famine food. The roasted seed is a coffee substitute.

Tannin or Dyestuffs: Oak galls are excrescences that are sometimes produced in great numbers on the tree and are caused by the activity of the larvae of different insects. The insects live inside these galls, obtaining their nutrient therein. When the insect pupates and leaves, the gall can be used as a rich source of tannin, that can also be used as a dyestuff.

Timber: The wood is a good quality timber with a fine texture and straight grain. The specific gravity is about 0.89 g/cubic cm. The wood is hard, fairly durable and used for heavy and light construction purposes, railway sleepers, posts, stakes, poles, making containers and furniture and as fuelwood.

Medicine: It has been used in traditional medicine as an astringent treatment for haemorrhoids.

**SERVICES**

Ornamental: This tree often used as a residential shade tree

Other services: This tree is recommended for buffer strips around parking lots or for median strip plantings in the highway. The branches and twigs are good material for culturing mushrooms (for example, *Pleurotus eryngii*).

**TREE MANAGEMENT**

Q. glauca is propagated either by direct sowing or by planting nursery-raised seedlings.

The seedlings are tolerant to shade, but older trees benefit from full light; seedlings are sensitive to frost and must be protected during the winter, but older trees are more frost-resistant. The tree prefers moist situations, such as north aspects and the sides of the ravines, and grows well on deep clay loams. It should not be planted on dry sites. The seedlings are liable to be browsed. Natural stands reach a height of 9.8-11.2 m and 9.8-12.5 cm d.b.h. after 25 years, with a standing volume of 80-92 cubic m per ha. . Managed plantations grow faster and can attain 8 m and 7.5 cm d.b.h. after 14 years. The tree coppices freely. Bare-root planting has given very poor results.

**GERMPLASM MANAGEMENT**

The seed ripens between October and December, according to the locality. The number of seeds per kg varies from 500-1900. In most localities the seedlings will need about 15 months in the nursery to reach a height of 15 cm.

**PESTS AND DISEASES**

Insect pests reported include Contarinia spp., Deporaus spp., and Sitophilus glandium

Plants in this genus are notably resistant to honey fungus, however, fungus-caused diseases reported are those caused by Brasiliomyces cyclobalanopsis, Phomatospora albomaculans and Plagiosphaera japonica.

**FURTHER READING**

Baban PK.1985. Silvics of the trees of Nepal. Community Forestry development project.

CABI. 2000. Global Forestry Compendium. CD-ROM. CABI

Jackson JK. 1994. Manual of Afforestation in Nepal. Forest Research and Survey Centre Kathmandu, Nepal. Vol 2.

Plants for a future database ([http://www.scs.leeds.ac.uk/cgi-bin/pfaf/arr\\_html?Quercus+glauca](http://www.scs.leeds.ac.uk/cgi-bin/pfaf/arr_html?Quercus+glauca))

**SUGGESTED CITATION**

Orwa C, A Mutua, Kindt R , Jamnadass R, S Anthony. 2009 Agroforestry Database:a tree reference and selection guide version 4.0 (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.asp>)