

LOCAL NAMES

English (she-oak); Indonesian (kilu)

BOTANIC DESCRIPTION

Casuarina oligodon is an evergreen tree to 30 m tall, bark grey-brown, fissured, peeling off in irregular flakes, outer bark red, hard.

Leaves reduced to minute scales, arranged in whorls of 5-7 at the internodes of the thin, pendulous, green branchlets which function as leaves (phyllodes). There are 6 leaf scales in each whorl. Branchlets are grooved.

Flowers unisexual, male flowers are borne in spikes 1.5-4.5 cm long, usually borne on terminal branches, each flower consists of one stamen surrounded by 4 scales. Female cones shortly cylindrical or sub-cylindrical, 4-10 mm long, 0.7-0.9 mm diameter, each flower consists of an ovary with 2 branch thread-like styles and of 1 large and 2 small scales. They are red.

The fruit is a 1-seeded winged nut initially enclosed in accrescent woody bracteoles, which separate at maturity appearing like a dehiscent capsule. The fruit proper is a small samara about 4 mm long that is held by the enlarged and hardened scales fused into a small woody cone less than 1 cm in diameter and dull light brown.

Two subspecies have been recognized, *ssp. oligodon* which occurs in Papua New Guinea and *ssp. abbreviata* in the Indonesian province of Irian Jaya. They differ in the length of the leaves (teeth), *ssp. abbreviata* teeth are 0.4-0.5 m long, those of *ssp. oligodon* are 0.8-1 mm long.

Casuarina is from the Malay word 'kasuari', from the supposed resemblance of the twigs to the plumage of the cassowary bird. One of the common names of *Casuarina* species, 'she-oak', widely used in Australia, refers to the attractive wood pattern of large lines or rays similar to oak but weaker. The specific epithet comes from the Greek olig- (few), and -odon (tooth); meaning with few teeth.

BIOLOGY

In its natural range in Papua New Guinea, flowering starts around early August and cones are ready to collect by November-December. Flowers are unisexual. The tree is wind pollinated.

ECOLOGY

This species is confined to the island of New Guinea. It occurs at high elevations (up to 2 500 m) forming extensive pure stands along river beds and on ridge tops but at times is seen to be associated with *C. papuana*. The species grows in areas with high relative humidity throughout the year and a weak dry season in July and August. Temperatures vary from 11-15 deg C minimum at night to 24-30 deg C maximum during the day.

BIOPHYSICAL LIMITS

Altitude: 1 500-1 800 m

Mean annual rainfall: 1 900-2 600 mm

Soil type: *C. oligodon* is mostly found in sandy soils along creeks and rivers but grows well in colluvial soils, humic brown clay soils, alluvial and meadow soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Indonesia, Papua New Guinea

Exotic: Israel



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

Fuel: The wood is regarded as one of the best firewoods in the world, with a calorific value of the charcoal of over 700 k cal/kg.

Timber: The wood is generally hard and heavy (air-dry density is about 900-1 000 kg/cu m) and tends to split when sawn. Split wood is used to construct fences and houses. Round posts for construction, poles, fences suitable for use in the ground and for unprotected extension use in buildings, protected extension and intension work. Specialty uses include tool handles, shuttles and permanently submerged freshwater piles.

SERVICES

Erosion control: The species is used to control soil erosion on steep slopes. Fallen casuarina foliage provide a good protective layer against soil erosion and helps rebuild soils and protect unstable sites.

Shade or shelter: *C. oligodon* has been found to be a good shade tree for both cattle and sheep as it provides a good shade and improves pastures. It has also been used as a shade tree for coffee.

Nitrogen fixing: *C. oligodon* like other species of the Casuarinaceae possess nodules of nitrogen-fixing bacteria in the rootlets.

Soil improver: When it is used as a shade tree for coffee, it further improves soil fertility by its leaf litter.

Boundary or barrier or support: One of the other main uses of *C. oligodon* is as wind breaks and in its natural range, can be seen in most villages where it is planted around the whole village protecting it from strong winds.

Intercropping: *C. oligodon* is planted in subsistence food gardens and as a fallow intercrop.

TREE MANAGEMENT

Trees should be fertilized with boron which tends to be deficient in highland grassland soils. It should be applied at 56g/tree during a 2 month period (28g, 1 month after planting and another 28g 1 month later).

Even though the species can grow with competition from grass, shrubs, trees etc, ring tending should be done after 3-5 months. *C. oligodon* grows well with close spacing and 1 110-2 500 stems/ha could be ideal. The rotation length depends on the end use. For use as fence posts, a rotation length of 12-15 years is sufficient with thinnings at age 6 which could be utilized as fuelwood etc.

GERMPLASM MANAGEMENT

Seed production by the species is very good. Storage of *C. oligodon* seeds is mainly in household refrigerators where they are kept until needed for sowing. No research has been carried so far into their longevity under these conditions, but appears to be orthodox for this family. There are 1.5-2 million seeds /kg. Viability is generally low.

PESTS AND DISEASES

The species does not have a problem with diseases. Boron deficiency in the species cause stunted growth with plants looking rounded and bushy with short internodes and the growing tips die.

FURTHER READNG

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SUGGESTED CITATION

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