Casuarina cunninghamiana Miq.

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CASUARINACEAE (CASUARINA FAMILY)

No synonyms

Australian pine, casuarina, jan, jangli, kasa, pino australiano, pino de Australia, pino de mar, river oak, river she-oak, river sheoak, saru

Casuarina cunninghamiana is native to northeastern Australia, from Queensland to New South Wales, forming part of hot and wet subtropical forests. Because it can survive in difficult and adverse niches, the tree has been introduced as part of reforestation efforts in the tropical and subtropical countries of Africa, Asia, and America. In these countries *C. cunninghamiana* has been planted more frequently in mountainous regions than on the coasts because it is resistant to cold.

Casuarina cunnighamiana is an evergreen, fast-growing, dioecious tree, of up to 40 m in height and 65 to 100 cm d.b.h. It has a straight trunk, which is enlarged toward the base, and a pyramidal crown made up of acicular branches with sparse, hanging, grayish-green foliage. The leaves are compact and made up of 8 to 10 small scales. The tree prospers in a variety of soils, from those rich in organic matter to those sandy, poor, and eroded. In its natural habitat, the species develops at an average annual temperature of 13 to 27 °C, and an average annual precipitation of 500 to 1500 mm. The tree grows naturally from sea level to 1000 m. *Casuarina cunninghamiana* is resistant to cold and drought and endures shade, salinity, and seasonal flooding.

Because the species is fast-growing, it is used in reforestation programs to control erosion, preserve the soil, stabilize riverbeds, and stop the advance of dunes. Because it fixes nitrogen in the air, the tree thrives in places that are difficult for other species. It has been used successfully as a shade and ornamental tree in streets, parks, and gardens and as a wind-breaking hedge around rural communities. Specific gravity of the wood is 0.58. The wood is hard and dense and is used for firewood and charcoal. It is also used in rural construction and for poles, posts, furniture, particle board, veneer, parquet, pulp for paper, turned articles, and handles for tools. The bark contains tannin and is used to tan hides. The leaves and the young stems serve as forage for cattle (Little and others 1988, Nair 1993, National Academy of Sciences 1984, von Carlowitz 1991).

The tree begins to bloom and yield fruits at 4 or 5 years of age. In its native habitat, the tree blooms April through June, and the fruits ripen September to December. Outside its natural distribution area, *C. cunninghamiana* blooms and fruits at different times of the year depending on the environment. The light-brown flowers are arranged in sprigs. The fruits are multiple, gathered in an ovoid cone approximately 15 mm long by 10 mm in diameter, brown, dehiscent when ripe, with acrescent and persistent bracts. Inside each bract is a samaroid, monospermic, very small nut, which is dispersed by the wind (Little 1983, Little and others 1988, Pennington and Sarukhan 1968). These small nuts are elliptic or obovate, laterally flattened, approximately 3.4 to 4.3 mm long, 1.5 to 1.8 mm wide, and 0.9 to 1.0 mm thick, and have, at the apex, a light-brown terminal wing. The seeds are within the nuts. The seeds are elliptic, with the membranous seedcoat firmly attached to the fruit.

The abundant small cones are collected before they ripen, open their bracts, and release the small samaroid nuts. Collectors climb the trees and use poles with metal hooks to remove the cones. The small cones are placed in boxes in the sun for 2 to 3 days to accelerate the opening of the bracts. The cones are shaken inside closed containers to release the winged nuts. The nuts are separated from the small cones with sieves. For the same purpose, vertical column blowers are also used, through which flows a current of air. Nuts may average up to 1,970,000 per kg. The seeds within the nuts can remain viable for several years when stored in closed containers under ambient conditions (24 to 30 °C) (National Academy of Sciences 1984). The samaras that this tree produces are commonly called seeds. However, the real seeds, botanically speaking, are

found inside them and are not removed in any way. The samaras are planted as if they were seeds because of their small size.

The germination of the seeds is phanerocotylar. Fresh seeds germinate at 55 to 90 percent without pretreatment. The seeds germinate 2 to 3 weeks after sowing.

In nurseries, the seeds are planted in seedbeds. When the shoots are 5 to 6 cm tall, they are transplanted to black polyethylene containers. The growth medium used in the containers is a mixture of soil and sand with proportions varying among nurseries. The plantules are cultivated in their containers for approximately 4 to 6 months. The plantules in the nurseries do not require any special treatment. When they are 50 cm tall and have a diameter of 6 to 8 mm at the base of the stem, the seedlings are outplanted (National Academy of Sciences 1984, Olson and Petteys 1974, von Carlowitz 1991).

ADDITIONAL INFORMATION

The embryo has a straight axis and is spatulate, almost bilaterally symmetrical, and cream in color. Two cotyledons shaped like the seed are whole, equal, expanded, flat, pulpy, and independent of each other. The plumule is rudimentary. The radicle is short and superior (Hutchinson 1967, Pennington and Sarukhan 1968, Reitz 1984, Rogers 1982, Standley and Steyermark 1952, Stoffers 1980).


1cm
2cm
2cm