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SEED LEAFLET

No. 15 September 2000

Grevillea robusta Cunn. ex R. Br.

Taxonomy and nomenclature

Family: Proteaceae

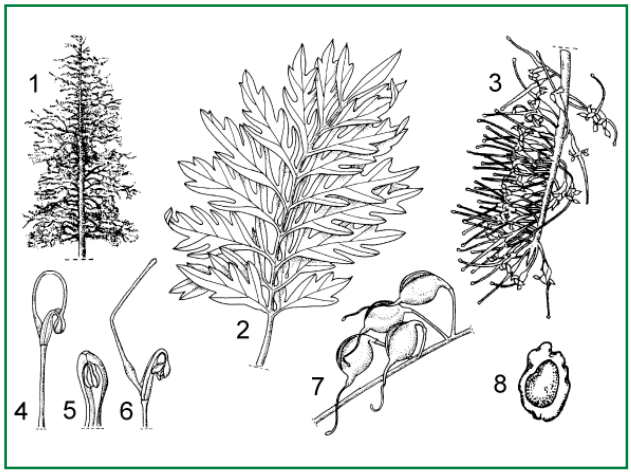
Vernacular/common names: Southern silky oak (Australian standard trade name), silk(y) oak (English), mgrivea (Swahili), son indian (Thai)

Distribution and habitat

Native to eastern Australia. Introduced into warm, temperate, subtropical highland regions around the world and widely planted in India, Sri Lanka and many countries in Africa. Within the area of natural distribution it is found in warm, humid to sub-humid zones, 100-800 m altitude, 1000-1500 mm rain/year. Tolerates annual rainfall of 600-2700 mm and altitudes to 2500 m, but prefers altitudes below 1200 m and with less than 2000 mm rain/year. Average temperature for coldest month not below 0°C and at no time lower than -10°C. Prefers light, well-drained soils, mildly acid to neutral. Light demanding.

Uses

Timber, firewood, industrial, leaf mulch, fodder and shade tree in coffee plantations. Excellent agroforestry species as it interferes little with crops. Best growth is obtained when it is planted in rows or intermixed with crops; not suitable for monoculture. The sapwood is pale, the heart-wood yellow-brown and silky.



1, Habit; 2, leaf; 3, inflorescence; 4, young flower (stigma retained in bud); 5, tepal with anthers attached: 6, mature flower (extended style + stigma); 7, fruits; 8, seed. From: Plant Resources of South-East Asia 5:3.

Botanical description

Tree 20-30 m tall, 50-80 cm in diameter. Bole unbuttressed, erect, somewhat tapering. Crown pyramidal, tufted with open canopy. Bark grey, furrowed, with lenticels. Leaves alternate, 10-34 x 8-12 cm, pinnately compound, fern-like, pale green above, white-hairy below. Facultatively deciduous. Flowers in 7-13 cm long, erect racemes, bright yellow-orange, 2 cm long. The style is long, recurved at first, later straight.

Fruit and seed description

Fruit: boat-shaped, dehiscent, 2-seeded capsule up to 2 cm long, tipped with the long, persistent style

Seed: brown, flat, ovate-oblong, about 1 x 0,5 cm with a shiny centre surrounded by light brown papery wing. There are 50-120,000 seeds per kg.

Flowering and fruiting habit

Flower and fruit setting occurs after the rainy season. Pollination by birds and bats. The period from fertilisation to fruit maturity is two months.

Prolific seeder, often 2 kg seed/tree; heaviest crop from 20-40 year-old trees.

Harvest

The fruits are collected when the colour changes from green to yellow and the first hint of brown appears. The seeds do not mature at the same time, in each inflorescence there are many stages of maturity.

Collection is difficult because of the short time (often only 2-3 days) between seed maturity and dispersal. The seeds must be mature when they are harvested. Collection of seeds from the ground is possible but very time consuming and it should only be done in dry weather as the wings stick to the ground if wet.

Fruit and seed processing and handling

The fruits are cleaned by gentle winnowing or sieving and air-dried in trays in the sun until they open. If the capsules do not open, drying in the shade will often help.

Seeds are cleaned using a screen, a laboratory gravity table or an air separator. The wings should be removed to reduce bulkiness, reduce fungal attacks and facilitate sowing. After extraction the seeds are dried in the sun.

Dormancy and pretreatment

The seeds have no dormancy but germination is delayed and uneven. Soaking in cold water for 24 hours may improve germination.

Storage and viability

If the seeds are dried to app. 8% moisture content and packed in air-tight polythene bags, they store well even at room temperature. The following results were obtained at the Australian Tree Seed Centre:

	Temperature		
Storage time	23°C	3-5°C	-15°C
Initial (1987)	77,0 %	77,0 %	77,0 %
1 year	73,0 %	76,7 %	70,3 %
4 years	81,3 %	75,0 %	70,7 %
6 years	58,7 %	64,7 %	68,0 %
8 years	54,0 %	75,3 %	65,3 %
	s.e.d. = 3,92 %		

Source: Australian Tree Resources News No. 4, 1998

Sowing and germination

Seeds can be sown in shady seedbeds with sandy loam and sand 1:1. The seedbeds should be protected from heavy rain with plastic sheets, not watered too much and ensured good drainage to avoid problems with fungi. Germination occurs after 2-4 weeks. When the seedlings are 7 days old, they are pricked out in polytubes. The seeds can also be sown directly in polytubes.

Shade is required for 2-3 weeks after transplanting. Regular root-pruning is recommended. For industrial plantations, bare-rooted stocks are often preferred. Outplanting is done 6-8 months after sowing when plants are 20-30 cm. Weeding is necessary for the first 1-2 years after planting.

Selected readings

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Shade trees in tea plantation, Sri Lanka Photo: Stephen Midgley, CSIRO Forestry and Forest Products.

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