

Eucalyptus grandis

Hill ex Maid.

Myrtaceae

LOCAL NAMES

Amharic (key bahir zaf); English (rose gum, red gum, flooded gum);
Luganda (kalitunsi)

BOTANIC DESCRIPTION

Eucalyptus grandis attains a height of 45-55 m, usually with an excellent trunk and a wide-spreading, rather thin crown; most of the bark and branches are smooth, white or silvery, sometimes greenish, rough on lower stem, smooth above, debark easily.

Juvenile leaves are petiolate, opposite for several pairs then alternate, ovate up to 16 x 8.5 cm, green to dark green and slightly wavy; adult leaves are petiolate, alternate, stalked, lanceolate to broad lanceolate, up to 15 x 3 cm, green on topside and pale green on underside, slightly wavy, with a long point.

Inflorescence axillary and simple, 7 flowered; peduncles flattened, to 1.8 cm long; buds have a bluish bloom.

Fruit or seed capsules several, short stalked, pear shaped or conical, slightly narrowed at the rim, thin, 8 x 6 mm, with whitish waxy coating, narrow sunken disc, and 4-6 (commonly 5) pointed, thin teeth, slightly projecting and curved inward, persisting on twigs.

The genus *Eucalyptus* was described and named in 1788 by the French botanist l'Héritier. The flowers of various *Eucalyptus* species are protected by an operculum, hence the generic name, which comes from the Greek words 'eu' (well) and 'calyptos' (covered). The specific name, 'grandis', is Latin word for 'large' or 'great'.

BIOLOGY

The flowers are bisexual, with fertile male and female organs on the same flower. Pollination is dependent on insects or animal vectors. Like many *Eucalyptus* species, it has a tendency to out-breed.



8-year old stand in south Florida, USA.
(Edward L. Barnard, Florida Department of
Agriculture and Consumer Services,
www.forestryimages.org)



E. grandis, 11 week old rooted cuttings,
Carton de Colombia, Colombia. (David
Boshier)



E. grandis, clonal plantations, Carton de
Colombia, Colombia. (David Boshier)

ECOLOGY

In its natural range, *E. grandis* grows in tall, open forest in sheltered valleys and on hill slopes, often in pure or almost pure stands, sometimes in mixed forests. In the southern part of its natural range, it is found on flats and lower slopes of deep, fertile valleys and at the edge of rainforests.

BIOPHYSICAL LIMITS

Altitude: 0-2 700m, Mean annual temperature: -1 to 40 deg. C, Mean annual rainfall: 100-1800 mm

Soil type: *E. grandis* needs a deep, free-draining soil, and does best on fertile loam or clay-loam soils, but it will also perform well on lighter sandy soils, provided these are deep enough.

DOCUMENTED SPECIES DISTRIBUTION

Native: Australia

Exotic: Angola, Argentina, Brazil, Ethiopia, India, Kenya, South Africa, Tanzania, Uganda, Uruguay, Zambia, Zimbabwe



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

Apiculture: *E. grandis* blossoms regularly and sometimes heavily but usually provides only small honey surpluses. The tree's main nectar value is as a supporting species. The honey is amber and strongly flavoured but rather thin.

Fuel: Large quantities of the wood are used for charcoal, for iron smelting, for example in Brazil. The firewood is used for domestic purposes and for curing tobacco, especially in Uganda.

Fibre: *E. grandis* has been used for manufacturing sulphate pulp, for example in Brazil, Uruguay, South Africa and Angola.

Timber: The wood has been used for fence posts, building, transmission and telephone poles, boxes and hooks. It is especially used for boat building, flooring, plywood, panelling and general construction. It can also be used for sawn timber but has tendency to split.

SERVICES

Intercropping: Soya bean (*Glycine max*) interplanted with *E. grandis* as part of an agroforestry research project in southeastern Brazil suppressed weeds without adversely affecting *E. grandis* survival and growth. Maize and sorghum have also been found compatible with *E. grandis*. In South Africa, *E. grandis* planted adjacent to avocado orchards reduces the yields by shading and competing unfavourably with the avocados for light, nutrients and water.

TREE MANAGEMENT

For pulpwood, fuelwood and timber for mining, a 6 to 10 year rotation is common. In most countries, no thinning is done on these short rotations. In Zambia, for industrial plantations, an 8-year rotation is used with thinning at the ages of 2 and 5 years. In the same country, a 4-year rotation without thinning is used for production of small wood for domestic purposes. Thinning should be done to 3 stems per stump. In Uganda, with initial spacing of 2.4 x 2.4 m to 3 x 3 m, a 7- to 8-year rotation is sufficient to produce trees of 15-20 cm diameter at breast height, the preferred size for tobacco curing. In India, a 9-year rotation is used with initial spacing of 3 x 3 m. For saw logs, a rotation of 30 years is recommended with thinning at ages 7, 11 and 15 years, leaving a final stocking of 250 stems/ha. The use of boron to reduce die-back and improve the growth rate is essential. For most types of products, 1 seedling rotation, followed by at least 2 coppice rotations, is common practice. Under natural conditions, *E. grandis* bears heavy seed crops every 2-3 years. A fully mature tree can produce 2 kg of seed annually.

GERMPLASM MANAGEMENT

Seed storage behaviour is orthodox; 4% germination after 10 years open storage at room temperature; viability maintained for 4 years in hermetic storage at room temperature with 11-15% mc; hermetic storage at 4-6% mc and subzero temperatures is recommended; viability can be maintained for several years in hermetic storage at 3 deg. C with 6-10% mc. There are approximately 650 000 viable seeds/kg.

PESTS AND DISEASES

Browsing by wallabies, particularly black wallaby and the red-legged pademelon, can seriously affect height increment and even cause death of young plants. Young trees of *E. grandis* in the 1st year or 2 after planting are extremely susceptible to termite attack where they occur. In Zambia, the old trees are attacked by the borers *Phoracantha semipunctata* and *P. recurva*. In Angola, the lepidopteran defoliator *Buzura abruptiara* has caused some damage to the tree, and in Australia, the beetle *Anoplognathus* has caused defoliation.

In Brazil, the fungus *Diaporthe cubensis* causes stem cankers and death in plantings of *E. grandis*. In Kerala, India, the fungus *Corticium salmonicolor* has caused severe losses in low-altitude plantations. Some heart rot has been observed in trees grown on a saw-log rotation in Zambia and South Africa. Several fungi are associated with this decay.

FURTHER READING

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SUGGESTED CITATION

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