

LOCAL NAMES

Amharic (abalo); Arabic (subaraya, subakh, subagh, darot); Somali (hareri biiris, hareri, harere biins, harar, biress, biiris); Swahili (mwalambe, mbarao); Tigrigna (weiba)

BOTANIC DESCRIPTION

Terminalia brownii is a leafy deciduous tree with an attractive somewhat layered appearance, usually 4-15(25) m high with a rounded, flat topped, spreading crown, and a straight bole; branches reaching close to the ground. Slash dull red-brown, bark of branchlets grey fibrous. Young bark smooth, whitish, old bark grey, longitudinally fissured, young shoots densely hairy.

Leaves spirally arranged, crowded at the ends of branches, underside with white hairs, turning bright red before falling. Broadly elliptic to obovate, wider towards the apex, 6-16 x 2.5-8 cm, glabrous on the underside, lateral veins prominent, about 7 pairs arising from the mid-rib; apex pointed, sometimes notched; margin wavy; petiole 1.5-4 cm long, acuminate, with white hairs.

Flowers long, white to cream, 0.5 mm wide, glabrous, calyx lobes acuminate, unpleasantly scented, in axillary spikes 9.5-12 cm in length (inflorescence), peduncle 1.5-2 cm long, tomentose. Each inflorescence contains bisexual and male flowers, the male ones towards the apex, the bisexual ones towards the base.

Fruit winged, smooth, greenish when young, purplish-red to brown when mature, broadly elliptic to ovate, apex obtuse to rounded, emarginate, base acute to obtuse, 3.5 x 4.2(5) x 2.5 sometimes up to 7.5 cm long; pedicel 0.5-0.7 cm long; endocarp woody, containing long and delicate seeds. Seeds 2-winged, 3 cm long, 2 cm wide, red to purple in colour.

The generic name comes from the Latin 'terminalis' (ending), and refers to the habit of the leaves being crowded at the ends of the shoots.

BIOLOGY

In Sudan trees flower from April to June, and fruiting occurs from October to November. In Kenya, trees flower in years with normal climatic conditions from March to June. After pollination by insects, fruit development takes about 5-6 months.



Terminalia brownii (Patrick Maundu)



Amenity use: *T. brownii* planted in a school compound in Bondo (Kenya), 10 years old and 12 m high. Note the poor shallow soil and profuse seeding. (E. Chagala)



Leaves and fruits: *T. brownii* foliage, flowers and fruits from individual growing in Bondo, Kenya. Note the whitish-cream flowers (spikes up to 12 cm) and purplish fruits (up to 5 cm). (E. Chagala)

ECOLOGY

The drought resistant species occurs in the high rainfall woodlands, bushlands, and wooded savannah of the arid and semi-arid regions but can also be found in the sub-humid areas. It is often found near rivers in very dry areas.

BIOPHYSICAL LIMITS

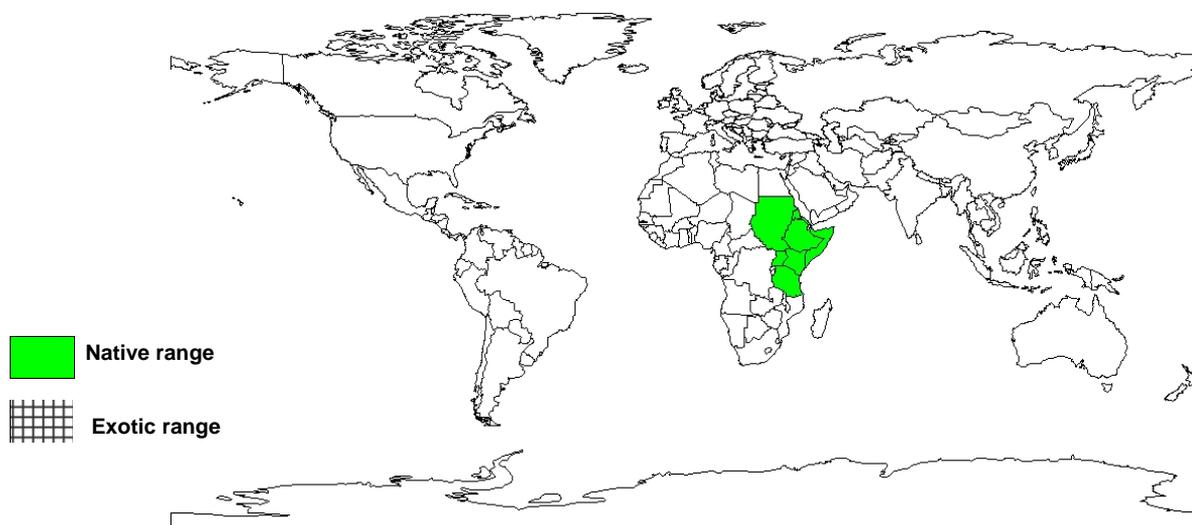
Altitude: 600-2 000 m, Mean annual rainfall: 500-1 300 mm

Soil type: *T. brownii* prefers deep, sandy soils, and is widespread on loam soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Eritrea, Ethiopia, Kenya, Somalia, Sudan, Tanzania, Uganda

Exotic:



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

Fodder: Leaves are browsed by livestock.

Fuel: *T. brownii* is a good source of timber and charcoal.

Timber: The strong, durable and termite resistant wood is used for construction, beams and rafters, poles and posts, tool handles and mortars and pestles.

Tannin or dyestuff: Bark and fruits contain 19% tannin and warrant further investigation for both local and commercial exploitation. A yellow dye comes from its roots.

Medicine: The phloem fibres are chewed and the solution swallowed in the treatment of yellow fever, particularly in children. An extract from the leaves is used to treat pink-eye in livestock and a medicine from the bark is used in the local treatment of hepatitis.

SERVICES

Soil improver: Leaf fall is heavy, making excellent mulch.

Shade or shelter: Trees are planted in Nairobi, Kenya as shade trees, and act as windbreaks.

Ornamental: *T. brownii* is suitable for planting in amenity areas.

Intercropping: The tree is widely recommended for agroforestry; despite its rather dense shade, crops do well under its canopy.

TREE MANAGEMENT

A major drawback of *T. brownii* is its slow growth, but this can be increased by irrigation. Trees should be coppiced and need be given support when young.

GERMPLASM MANAGEMENT

Care should be taken to inspect all seeds of insect damage. Seed storage behaviour is orthodox with seeds tolerating desiccation to 10% mc. Viability can be maintained for at least 1 year in hermetic storage at 3 deg. C with 10-12% mc. On average, there are about 3 000 seeds/kg.

PESTS AND DISEASES

Seeds are susceptible to attack by insects.

FURTHER READING

- Albrecht J. ed. 1993. Tree seed hand book of Kenya. GTZ Forestry Seed Center Muguga, Nairobi, Kenya.
- Beentje HJ. 1994. Kenya trees, shrubs and lianas. National Museums of Kenya.
- Bein E. 1996. Useful trees and shrubs in Eritrea. Regional Soil Conservation Unit (RSCU), Nairobi, Kenya.
- Bekele-Tesemma A, Birnie A, Tengnas B. 1993. Useful trees and shrubs for Ethiopia. Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA).
- Dale IR, Greenway PJ. 1961. Kenya trees and shrubs. Buchanan's Kenya Estates Ltd.
- Eggeling. 1940. Indigenous trees of Uganda. Govt. of Uganda.
- Hong TD, Linington S, Ellis RH. 1996. Seed storage behaviour: a compendium. Handbooks for Genebanks: No. 4. IPGRI.
- ICRAF. 1992. A selection of useful trees and shrubs for Kenya: Notes on their identification, propagation and management for use by farming and pastoral communities. ICRAF.
- Katende AB et al. 1995. Useful trees and shrubs for Uganda. Identification, Propagation and Management for Agricultural and Pastoral Communities. Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA).
- Kokwaro JO. 1976. Medicinal plants of East Africa. East African Literature Bureau.
- Mbuya LP et al. 1994. Useful trees and shrubs for Tanzania: Identification, Propagation and Management for Agricultural and Pastoral Communities. Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA).
- Noad T, Birnie A. 1989. Trees of Kenya. General Printers, Nairobi.
- Sahni KC. 1968. Important trees of the northern Sudan. United Nations and FAO.
- Vogt K. 1995. A field guide to the identification, propagation and uses of common trees and shrubs of dryland Sudan. SOS Sahel International (UK).
- Wayne T. 1984. A pocket directory of trees and seeds in Kenya. KENGO.

SUGGESTED CITATION

Orwa C, Mutua A, Kindt R, Jamnadass R, Simons A. 2009. Agroforestry Database: a tree reference and selection guide version 4.0 (<http://www.worldagroforestry.org/af/treedb/>)