

**LOCAL NAMES**

Arabic (umm agheda, godem, gaddein, gaddeim); Hindi (gangu kanger, gango, gangerun, achchu); Somali (duferu, dekah, defarur, damak); Wolof (kel)

**BOTANIC DESCRIPTION**

*Grewia tenax* is a multistemmed shrub up to 2 m tall, usually rounded but generally battered and untidy due to browsing. Bark smooth, grey, very fibrous so that twigs are hard to break.

Leaves alternate, almost circular in outline, 1.5-4 cm in diameter, margins toothed and prominently tri-nerved at the base, often hairy, particularly beneath with star shaped hairs. Stipules inconspicuous, falling early.

Flowers solitary or in pairs, axillarily placed, petals white, about 1 cm long; sepals long and recurved.

Fruit orange-red at maturity, with 1-4 spheroid lobes.

*Grewia tembensis* and *G. tenax* are virtually indistinguishable in fruit. The specific epithet refers to the plant's tenacious growth habit. The genus was named after Nehemiah Grew (1641-1712), one of the founders of plant physiology.

**BIOLOGY**

*G. tenax* is hermaphroditic and insect pollinated.

**ECOLOGY**

*G. tenax* is highly drought resistant and occurs in the driest savannas at desert margins and regions of higher rainfall, where it grows in thickets on termite mounds in otherwise seasonally flooded country. In the Sahel it grows in rocky places on hills and slopes, in regions with 100-600 mm of rain per annum.

**BIOPHYSICAL LIMITS**

Altitude: 0-1 500 m

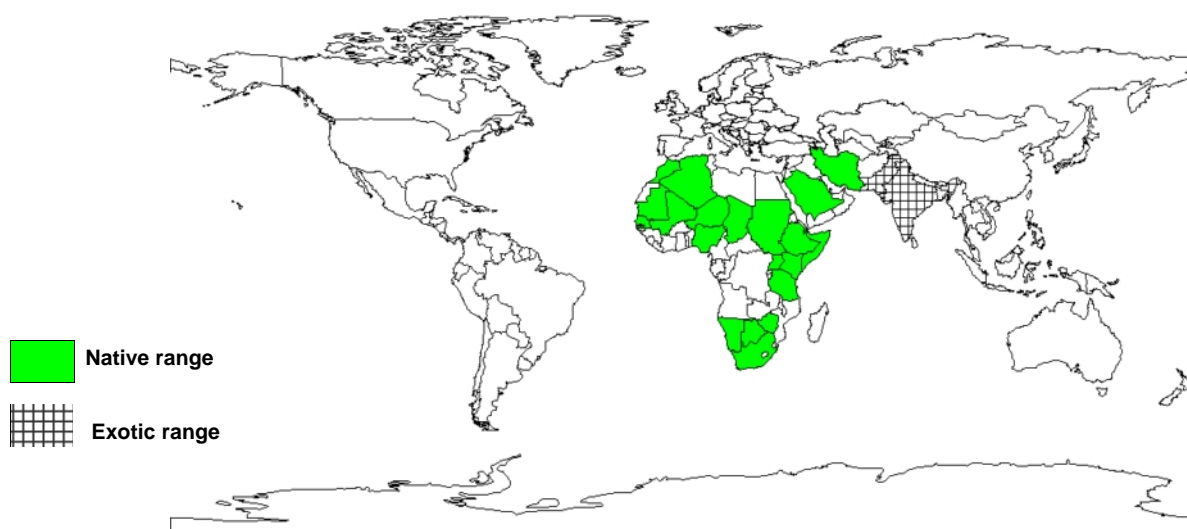
Mean annual rainfall: 200-1 000 mm

Soil type: Sandy, rocky and lateritic soils.

**DOCUMENTED SPECIES DISTRIBUTION**

Native: Algeria, Botswana, Chad, Djibouti, Ethiopia, Iran, Kenya, Mali, Mauritania, Morocco, Namibia, Niger, Nigeria, Saudi Arabia, Senegal, Somalia, South Africa, Sudan, Tanzania, Uganda, Zimbabwe

Exotic: India, Pakistan



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**

**Food:** The fruits consumed by man and animals contain a large amount of iron and can be made into a refreshing drink. Fruit storage can be extended by drying. The dead leaves are eaten, but only while they remain on the plant.

**Fodder:** Young leaves are consumed by livestock, they are slightly palatable at the end of dry seasons, and have fairly good feed value.

**Apiculture:** Bees visit the flowers for pollen and nectar.

**Fuel:** The branches are used as firewood, and can be used in charcoal making.

**Fibber:** The bark is used to make ropes and for binding purposes in house construction.

**Timber:** *G. tenax* wood is used in making weapons such as clubs, bows, arrows and for other general purposes.

**Poison:** A mucilaginous bark preparation is used by women against hair vermin.

**Medicine:** In Kenya plant parts are used as a remedy for colds and chest complaints and also as a chief constituent in a typhoid remedy.

**SERVICES**

**Erosion control:** *G. tenax* has an aggressive root system which holds fast to the soil protecting it from water and wind erosion.

**Reclamation:** With regard to its sturdy growth habit, *G. tenax* seems promising as a dune fixing plant in desert reclamation.

**Intercropping:** Intercropping with *G. tenax* may not affect crop growth adversely.

**Soil improver:** Leaf litter from the shrub improves soil physical and chemical properties.

**Boundary or barrier or support:** The shrub can be used for hedging.

**TREE MANAGEMENT**

The shrub is drought tolerant, an adaptation to the erratic rainfall in its natural habitat. Seedlings survive planting out with ease, but never grow large. Growth is fast, sometimes up to 1.5 m in 8 months. Plants need protection from browsing animals. Total nursery time for *G. tenax* is approximately 2 months.

**GERMPLASM MANAGEMENT**

Germination is reportedly difficult in this species, however, germination percentages of over 75% have been achieved by pretreating seed by repeated washing and scrubbing until all flesh is removed. Germination occurs after 10 days. There are 15 000-21 000 seeds /kg.

**FURTHER READING**

Baumer M. 1983. Notes on trees and shrubs in arid and semi-arid regions. Rome FAO. Forestry Division.

Beentje HJ. 1994. Kenya trees, shrubs and lianas. National Museums of Kenya.

IBPGR-Kew. 1984. Forage and browse plants for arid and semi-arid Africa. Rome. IBPGR.

Vogt K. 1995. A field guide to the identification, propagation and uses of common trees and shrubs of dryland Sudan. SOS Sahel International (UK).

von Maydell HJ. 1986. Trees and shrubs of the Sahel - their characteristics and uses. GTZ 6MBH, Eschborn.

**SUGGESTED CITATION**

Orwa C, A Mutua, Kindt R, Jamnadass R, S Anthony. 2009 Agroforestry Database: a tree reference and selection guide version 4.0 (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.asp>)