

## Warburgia salutaris

isiBhaha

(Bertol. f.) Chiov.

Canellaceae

### LOCAL NAMES

Afrikaans (peperbasboom); English (pepperbark tree, East African greenheart); Swahili (msokonoi); Trade name (isiBhaha); Zulu (isiBaha)

### BOTANIC DESCRIPTION

Warburgia salutaris is an aromatic evergreen tree, usually 5-10 m in height, but reaching 20 m in some areas, with a dense erect canopy. Bark smooth and grey on young branches but brown and slightly rough with prominent yellowish corky lenticels on older branches and stems; inner bark reddish, with a peppery smell.

Leaves aromatic, alternate, simple, elliptic to lanceolate, 4.5-11 x 1-3 cm, glossy dark green above, paler green and dull below; midrib frequently slightly off-centre; apex and base tapering; margin entire; petiole 1-3 mm long.

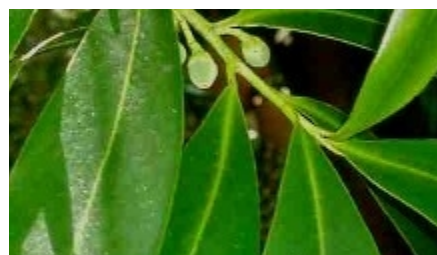
Flowers bisexual, up to 7 mm in diameter, solitary or in 3-flowered cymes in axils of leaves, green, 3 sepals, 10 petals, 5 inner petals smaller, thinner in texture and yellow than outer 5, filaments fused to form a prominent staminal tube.

Fruit oval berries, 4 cm in diameter, turning dark purple when ripe; skin leathery, glandular, black when mature. Containing 2 or more seeds with oily endosperm.

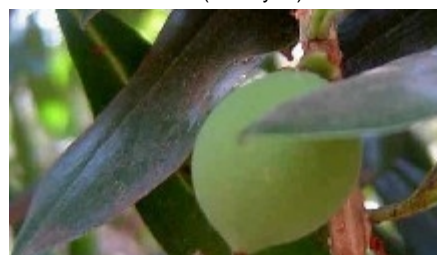
The genus is named after Dr Otto Warburg (1859-1938), born in Hamburg, a lecturer in botany at the University of Berlin and author of numerous botanical papers. The specific name 'salutaris' means 'healthy' or 'salutary', presumably in reference to its medicinal properties.

### BIOLOGY

Insects pollinate the bisexual flowers and birds disperse the fruit. In South Africa, flowering time is from April to May and fruiting from October to January.



Flowers and leaves (MA Hyde)



Fruit (Bart Wursten)

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## ECOLOGY

Habitat ranges from evergreen montane forest to evergreen sandveld forest along the coast; also found in secondary bushland, wooded ravines and in grasslands. It is moderately drought resistant and not suitable for areas that experience frost.

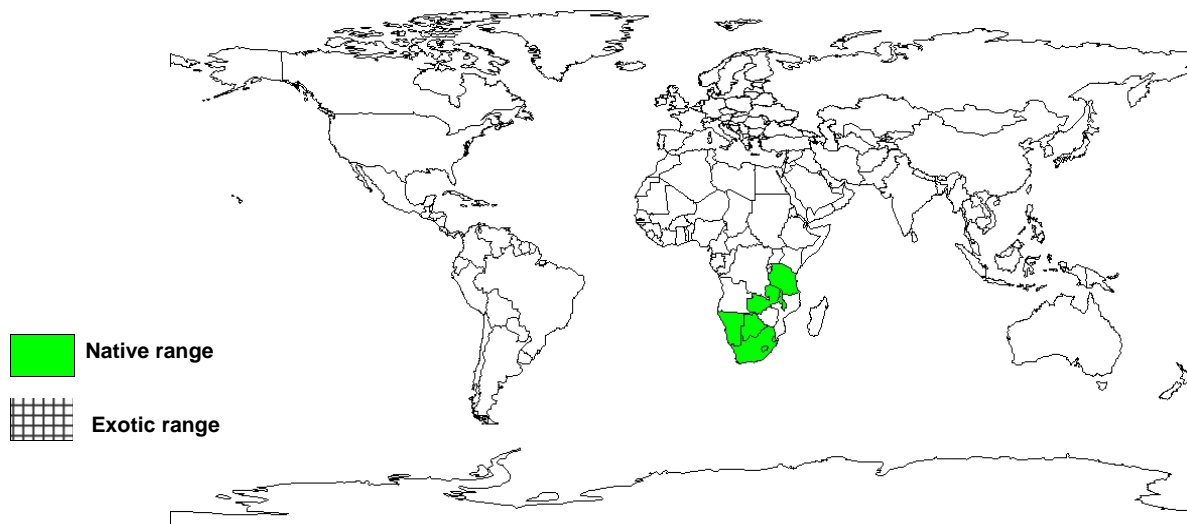
## BIOPHYSICAL LIMITS

Altitude: 1 000-2 200 m, Mean annual rainfall: 400-1 750 mm

## DOCUMENTED SPECIES DISTRIBUTION

Native: Botswana, Lesotho, Malawi, Namibia, South Africa, Swaziland, Tanzania, Zambia

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.

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### PRODUCTS

Food: Fresh or dried leaves can be used in various dishes or tea to add an agreeable aroma and, peppery taste.

Fodder: Leaves, pods and seeds all provide good fodder.

Fuel: Wood is used as firewood and charcoal.

Timber: Sapwood light yellow, heartwood dark yellowish-brown, oily, aromatic and darkening with exposure to air. The wood is used as a timber for furniture and tools. It saws and planes well but it is not durable.

Gum or resin: Resin is extracted from this tree; the peppery taste is due to the amorphous resinous substances.

Tannin or dyestuff: Tannins are found in the bark.

Medicine: The inner bark is used as a treatment for malaria, colds, chest complaints, coughs, diarrhoea, muscle pains, stomach-ache and general body pains. Dried and ground to a snuff, it is used to clear the sinuses; smoke from the burning bark is inhaled as a remedy for chest complaints. The stem and root bark act as an expectorant; the leaves are used as part of an infusion to treat rheumatism.

Other products: The bark contains mannitol.

### SERVICES

Shade or shelter: The dense leaf canopy provides good shade.

Soil improver: Foliage can be used for green manure and mulch.

Ornamental: An evergreen tree with white flowers, *W. salutaris* is widely planted as an ornamental. When used as greenery in flower arrangements, small branches last up to 3 weeks in water. It is also very successful when grown as a pot plant; if kept in light shade the plant takes on a neat shape and the leaves become very glossy.

Boundary or barrier or support: It can be grown either as single trees around boundaries or to make an attractive dense hedge.

Intercropping: *W. salutaris* can be intercropped for shade in coffee, banana and cocoa plantations.

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### **TREE MANAGEMENT**

The tree has coppicing abilities. Care and good time management must be taken during bark removal to avoid tree mortality. The tree can be planted along fence lines, in scattered groups or, preferably, in a small plantation. Although fairly slow growing, in warm, frost-free areas growth can be as much as 90 cm/year.

### **GERMPLASM MANAGEMENT**

*W. salutaris* is classified as recalcitrant; however, with dry seed viability can be maintained for 6 months at cool temperatures; storability is intermediate between orthodox and recalcitrant. Seed can be stored for a short time in moist sawdust at 3 deg. C. More investigation is needed. There are approximately 10 500 seeds/kg.

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### **FURTHER READING**

Coates-Palgrave K. 1988. Trees of southern Africa. C.S. Struik Publishers Cape Town.

Hines DA, Eckman K. 1993. Indigenous multipurpose trees for Tanzania: uses and economic benefits to the people. Cultural survival Canada and Development Services Foundation of Tanzania.

Hong TD, Linington S, Ellis RH. 1996. Seed storage behaviour: a compendium. Handbooks for Genebanks: No. 4. IPGRI.

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).

Venter F, Venter J-A. 1996. Making the most of Indigenous trees. Briza Publications.

### **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/>)