

*Dalbergia sissoo* [简体中文](#) [正體中文](#)

**System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Fabales	Fabaceae

**Common name** sisuitti (Tamil), gette (Tamil), sisu (Spanish), dalbergia (Arabic), shinshapa (Sanskrit), sisso (Tamil), nukku kattai (Tamil), Indian dalbergia (English), pradu-khaek (Thai), yette (Tamil), du-khaek (Thai), Himalaya raintree (English), tali (English), skuva (English), India teakwood (English), ostindisches Rosenholz (German), aguru (Sanskrit), shishu (Bengali), Bombay blackwood (English), Indian rosewood (English), sissau (Nepali), sisso (English), sisham (Nepali), sisam (Hindi), shisham (Hindi), shisu (Bengali), sisu (Bengali), sonoswaseso (Javanese), sissu (Hindi), sissai (Hindi), pradu-khaek (Indonesian Bahasa), du-khaek (Indonesian Bahasa), ébénier juane (French)

**Synonym** *Amerimnon sissoo* , (Kuntze)  
*Dalbergia pseudo-sissoo* , (Miq.)

### Similar species

**Summary** *Dalbergia sissoo* is a perennial tree that is economically important for its value in forestry, agroforestry, and horticulture. It provides timber, fuelwood, fodder, has medicinal value, used extensively as an ornamental tree as well as for shading, erosion control, and soil fertility. Native to the Indian sub-continent it is a member of the legume family and can fix nitrogen from the atmosphere through bacteria nodules on its root system. It has been introduced in various countries throughout the world, but has known to be invasive in Australia and in Florida (U.S.).



[view this species on IUCN Red List](#)

### Species Description

*Dalbergia sissoo* is a deciduous tree with an open spreading crown that reaches a height between 15-35 metres (Duke, 1983). The trunk is often crooked (Duke, 1983) with thin, grey bark, furrowed and exfoliating in narrow strips as it matures (ICRAF, undated). It has a long taproot and an extensive lateral root system, often at the soil surface and producing suckers (PIER, 2006). The leaves are alternately arranged, compound and oddly pinnate (Gilman & Watson, 1993), with 3-5 glabrous, leathery leaflets, elliptical to ovate, tapering to a point and 2.5-3.6cm in diameter (ICRAF, undated). Flowers are sessile (PIER, 2006), arranged in axillary panicles, 2.5-3.7cm long, inconspicuous, white to dull yellow (ICRAF, undated). Flowers are fragrant (PIER, 2006), with pubescent sepals 4-5mm long, and petals 6-8mm long (Duke, 1983). Fruits are indehiscent, 5-7.5cm long and 8-13mm wide (ICRAF, undated), rounded with minute points, pale brown in colour (PIER, 2006), and persistent on the tree (Gilman & Watson, 1993). The seed is kidney-shaped, thin, flat, and light brown with 1-4 seeds in a pod (ICRAF, undated).

## Notes

*Dalbergia sissoo* has many beneficial impacts to the environment. Its extensive root system makes it ideally suited for stabilizing and controlling erosion along disturbed areas and near rivers and streams (ICRAF, undated, Duke, 1983). Belonging to the family Fabaceae, *D. sissoo* has the ability to fix nitrogen from the atmosphere through bacteria located in nodules present in the root system of the plant (ICRAF, undated). The leaf litter that accumulates and decomposes also contributes to soil fertility by adding additional nitrogen, potassium, iron, manganese, and organic carbon (Sangha & Jalota, 2005). In studies done in comparison of native *D. sissoo* species planted in monocultures versus exotic *Eucalyptus tereticornis* monocultures, plant species diversity was much higher in *D. sissoo* monocultures than in the *E. tereticornis* (Sangha & Jalota, 2005). In its native range Indian rosewood is a host to a variety of species of orchids (ICRAF, undated).

## Lifecycle Stages

*Dalbergia sissoo* begins to produce flowers after nine months, with flowering closely associated with leaf flush in the spring (ICRAF, undated), April-May in North America (Painter, 2006). The mature pods are persistent on the tree for 7-8 months (ICRAF, undated), however seed remains viable for a few months once exposed to air (Sheikh, 1989). The seed germinates in the spring in 1-3 weeks (Sheikh, 1989). Trees reach maturity around 19-21 years of age (Sangha & Jalota, 2005) with a natural rotation of about 60 years (Sharma, *et al*, 2000).

## Uses

*Dalbergia sissoo* has a wide range of economic and ecological uses. The wood of Indian rosewood is highly durable with excellent finishing colour and smoothness; used for veneer, furniture, cabinets, panelling, carving, small timber, plywood and musical instruments (ICRAF, undated; Lowry & Seebeck, 1997). The sawdust works in the absorption of nickel ions and has the potential of removing these heavy metals from industrial and commercial waste water sources (Habib-ur-Rehman, *et al*, 2006). The wood has a high caloric content and is an important fuelwood and charcoal source (Sheikh, 1989). The wood fibres are processed into a pulp that is further made into paper (ICRAF, undated). A non-drying fixed oil is processed from the heartwood and used as a lubricant in heavy machinery (ICRAF, undated). The leaves and young shoots can be used as fodder for livestock and grazing animals typically in winter seasons when other fodder is not available (Sheikh, 1989). The tree has many reputed medicinal properties and have been used culturally for a variety of ailments including: skin diseases, blood diseases, syphilis, stomach problems, dysentery, nausea, eye and nose disorders, aphrodisiac, expectorant, among others (Duke, 1983). Indian rosewood also has insecticidal and larvicidal properties, as well as resistance to some wood boring insects (ICRAF, undated).

Ecologically Indian rosewood provides numerous services to the landscape and environment and is commonly employed in agroforestry (Lowry & Seebeck, 1997). It is used as a windbreak and shelter belt and as a shade tree in intercropping of orchards, mango, tea, and coffee plantations (ICRAF, undated; Sharma, *et al*, 2000). Since it has an aggressive root system and is prone to suckering it is commonly used for erosion control and soil stabilization along stream and river banks (ICRAF, undated). It is widely planted in its native countries for reforestation programs (Sharma, *et al*, 2000). It is also valued for its ability to increase soil fertility through nitrogen fixation and is intercropped for these reasons as well (ICRAF, undated). Highly valued for its fragrant flowers and shade it is planted in urban areas along roadsides and in gardens as an ornamental (Gilman & Watson, 1993).



## Habitat Description

*Dalbergia sissoo* is found in tropical to subtropical climates in natural and planted forests, mainly along forest margins near streams and rivers, hammocks, canopy gaps, agricultural areas, disturbed sites and roadsides (ICRAF, undated; Langeland & Stocker, 2001; Duke, 1983; Sharma, *et al*, 2000). It survives in areas with a mean annual rainfall of 500-4500mm and often associated with seasonal monsoon and periods of drought up to six months (ICRAF, undated). Temperature hardiness is from slightly below freezing to 50 degrees Celsius (Sheikh, 1989) and can grow from altitudes ranging at sea-level to 1500 metres (ICRAF, undated). It grows best in porous well-drained soils like sands, sandy loams, gravels, and alluvial soils, but does poorly in heavy clay and waterlogged soils (Sharma, *et al*, 2000). The pH ranges from 5-7.7 (ICRAF, undated) and the species has a low salt tolerance (Black & Meerow, 1993). Seedlings are intolerant of shade (Sheikh, 1989) but mature trees can tolerate moderate shade (Black & Meerow, 1993).

## Reproduction

*Dalbergia sissoo* reproduces through seed production and vegetatively through suckers arising from the root system (PIER, 2006). The flowers are bisexual and capable of both self- and cross-pollination (ICRAF, undated). The pollination mechanism is theorized to be through insects (ICRAF, undated). Regeneration is rare under the shade of the parent canopy and seed dispersal is through wind or water (ICRAF, undated).

## General Impacts

Literature on the effects of *D. sissoo* in introduced natural or wilderness areas is limited.

## Management Info

**Preventative measures:** Preventing the introduction through strict quarantine and inspection stations is the primary preventative measure. Education of the public on identity, impact, and control of the species is necessary to ensure public support for keeping the species from being introduced. Research and testing on what kind of impact and what invasion potential the species has on the environment will determine if the species can be safely cultivated in the country (Langeland & Stocker, 2001).

**Chemical:** Herbicide applications to the base of the trunk of *D. sissoo* is recommended in Florida for control (Langeland & Stocker, 2001). Other chemical applications can be made on the cut stump, basal bark or as a stem injection (PIER, 2006).

**Biological:** There is no mention in the literature of a host specific organism that is being researched or tested as a biological control agent for *D. sissoo*, however several species of fungi, insect, and bacteria cause mortality or reduced growth of the tree. Species of fungi that attack and commonly kill Indian rosewood are the genus *Fusarium*, *Ganoderma lucidum*, and *Phellinus gilvus*, all of which attack the root and vascular system (Sharma, *et al*, 2000). Several defoliating moths, *Plecoptera reflexa* and *Dichomeris eridantis* can cause significant biomass reduction in Indian rosewood (Sharma, *et al*, 2000). Other insect species that attack Indian rosewood are *Stromartium barbatum*, *Sinoxylon anale*, and *Lyctus africanus* (Sheikh, 1989).

**Principal source:** [International Center for Research in Agroforestry, undated, \*Dalbergia sissoo\*](#), World Agroforestry Centre, Agroforestry Tree Database [online];

[Pacific Island Ecosystems at Risk \(PIER\), 2006, \*Dalbergia sissoo\*](#), [online database];

[Sheikh, M.I., Dec. 1989](#), NFT Highlights Sissoo- The Versatile Rosewood, NFTA 89-07, Forest, Farm, and Community Tree Network (FACT Net), Winrock International, Morrilton, AR, 72110-9370, USA.

**Compiler:** National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

## Review:

**Publication date:** 2007-08-03

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### ALIEN RANGE

[1] AFGHANISTAN	[2] AUSTRALIA
[1] BANGLADESH	[1] BENIN
[1] CAMEROON	[1] COSTA RICA
[1] CYPRUS	[1] ETHIOPIA
[1] FRENCH POLYNESIA	[1] GABON
[1] GHANA	[1] GREATER ANTILLES
[1] INDONESIA	[1] IRAN, ISLAMIC REPUBLIC OF
[1] IRAQ	[1] ISRAEL
[1] KENYA	[1] MALAYSIA
[1] MAURITIUS	[1] NEW CALEDONIA
[1] NIGERIA	[1] SENEGAL
[1] SOUTH AFRICA	[1] SRI LANKA
[1] SUDAN	[1] TAIWAN
[1] TANZANIA, UNITED REPUBLIC OF	[1] THAILAND
[1] TOGO	[2] UNITED STATES
[1] ZIMBABWE	

## Red List assessed species 1: VU = 1;

[Rhinoceros unicornis](#) VU

## BIBLIOGRAPHY

20 references found for *Dalbergia sissoo*

### Management information

[Langeland, K.A., & Stocker, R.K., 2001, Control of Non-native Plants in Natural Areas of Florida, SP 242, Dept. of Agronomy, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.](#)

**Summary:** This article discusses general control options for non-native plants in Florida with a brief notation on chemical control, growth, and dispersal of *Dalbergia sissoo*.

Available from: <http://edis.ifas.ufl.edu/pdffiles/WG/WG20900.pdf> [Accessed on 28 March 2007].

[Pacific Island Ecosystems at Risk \(PIER\), 2006, Dalbergia sissoo, \[online database\].](#)

**Summary:** The PIER website has information on introductions of *Dalbergia sissoo* on Pacific Islands, along with habitat ecology, description and chemical control.

Available from: [http://www.hear.org/pier/species/dalbergia\\_sissoo.htm](http://www.hear.org/pier/species/dalbergia_sissoo.htm) [Accessed on 28 March 2007].

### General information

[Australian Weed Committee, undated, Weed Identification, Himalayan Raintree, Dalbergia sissoo, \[online database\].](#)

**Summary:** The AWC was referenced for the distribution of Indian rosewood in Australia.

Available from: <http://www.weeds.org.au/cgi-bin/weedident.cgi?tpl=plant.tpl&ibra=all&card=E23> [Accessed on 28 March 2007].

[Black, R.J., & Meerow, A.W., July 1993, Enviroscaping to Conserve Energy: Trees for Central Florida, Circular EES-41, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.](#)

**Summary:** A Cooperative Extension article discussing landscaping techniques to reduce energy loss by effectively shading and screening residential houses. It has general form and cultivation requirements for *Dalbergia sissoo*.

Available from: <http://www.p2pays.org/ref/08/07633.pdf> [Accessed on 28 March 2007].

[Duke, J.A., 1983, Dalbergia sissoo Roxb. ex. DC., Handbook of Energy Crops, unpublished, \[online\] at Purdue University Center for New Crops & Plant Products.](#)

**Summary:** An unpublished handbook with a lot of detailed information on the description, uses, habitat, and pest species of *Dalbergia sissoo*.

Available from: [http://www.hort.purdue.edu/newcrop/duke\\_energy/Dalbergia\\_sissoo.html](http://www.hort.purdue.edu/newcrop/duke_energy/Dalbergia_sissoo.html) [Accessed on 28 March 2007].

[Gilman, E.F., & Watson, D.G., Nov. 1993, Dalbergia sissoo Indian Rosewood, Fact sheet ST-227, Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida.](#)

**Summary:** A factsheet from the Florida Cooperative Extension through the University of Florida giving information on description and cultivation requirements of *Dalbergia sissoo*.

Available from: <http://hort.ufl.edu/trees/DALSISA.pdf> [Accessed on 28 March 2007].

[Global Biodiversity Information Facility \(GBIF\), 2010, Species: Dalbergia sissoo Roxb. ex DC.](#)

**Summary:** Available from: <http://www.gbif.net/species/1363852/> [Accessed 15 June 2010]

[Habib-ur-Rehman, Shakirullah, M., Ahmad, I., Shah, S., & Hameedullah, 2006, Sorption Studies of Nickel Ions onto Sawdust of Dalbergia sissoo, Journal of the Chinese Chemical Society, Vol. 53, pp. 1045-1052.](#)

**Summary:** An briefly cited article on the use of *Dalbergia sissoo* sawdust for the absorption of nickel ions and its potential use in removing these heavy metals in industrial waste water supplies.

Available from: <http://nr.stpi.org.tw/ejournal/ChiChemSociety/2006/EJ52-2006-1045.pdf> [Accessed on 28 March 2007].



# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Dalbergia sissoo*

[International Center for Research in Agroforestry, undated, \*Dalbergia sissoo\*, World Agroforestry Centre, Agroforestry Tree Database \[online\].](#)

**Summary:** This website, an international forestry page, has the most thorough information on almost all of the basic informational categories needed for the profile. It has detailed information on distribution, ecology, common names, habitat, reproduction, and uses. Available from: <http://www.worldagroforestrycentre.org/sea/Products/AFDbases/AF/asp/SpeciesInfo.asp?SpID=645#Uses> [Accessed on 28 March 2007].

[ITIS \(Integrated Taxonomic Information System\), 2007. Online Database \*Dalbergia sissoo\*.](#)

**Summary:** An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.

Available from: [http://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=26596](http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=26596) [Accessed on 28 March 2007].

[Lowry, J.B., & Seebeck, J., 1997, The Potential for Tropical Agroforestry in Wood and Animal Feed Production, Rural Industries Research and Development Corporation, Publication no. 97/73.](#)

**Summary:** This journal article discusses the cultivation of indian rosewood in Australia and the multiple benefits of the species in agroforestry practices in the country.

Available from: <http://www.rirdc.gov.au/reports/AFT/CSZ-1A.doc> [Accessed on 28 March 2007].

[Painter, D., Jan. 2006, \*Dalbergia sissoo\*, Master Gardeners of the University of Arizona Pima County Cooperative Extension, Arizona Board of Regents, \[Online\].](#)

**Summary:** An Arizona Cooperative Extension webpage that gave information on a common name and flowering time of *Dalbergia sissoo* in North America.

Available from: [http://cals.arizona.edu/pima/gardening/aridplants/Dalbergia\\_sissoo.html](http://cals.arizona.edu/pima/gardening/aridplants/Dalbergia_sissoo.html) [Accessed on 28 March 2007].

[Pallewatta, N., Reaser, J.K., and Gutierrez, A.T., 2003, Invasive Alien Species in South-Southeast Asia: National Reports & Directory of Resources, Global Invasive Species Programme, Cape Town, South Africa.](#)

**Summary:** This article was cited for its information on location of *Dalbergia sissoo* in Bangladesh.

Available from: [http://www.gisp.org/downloadpubs/SOUTH\\_AN.PDF](http://www.gisp.org/downloadpubs/SOUTH_AN.PDF) [Accessed on 28 March 2007].

[Sangha, K.K., & Jalota, R.K., June 2005, Value of Ecological Services of Exotic \*Eucalyptus tereticornis\* and Native \*Dalbergia sissoo\* Tree Plantations of North-Western India, \*Conservation and Society\*, Vol. 3, no. 1, pp. 92-109.](#)

**Summary:** A journal article comparing the ecological and economic benefits from planting native stands of *Dalbergia sissoo* over exotic tree species like *Eucalyptus*.

Available from: [http://www.conservationandsociety.org/cs-3-1\\_6\\_fsangha\\_jalota.pdf](http://www.conservationandsociety.org/cs-3-1_6_fsangha_jalota.pdf) [Accessed on 28 March 2007].

[Sharma, M.K., Singal, R.M., & Pokhriyal, T.C., April 2000, \*Dalbergia sissoo\* in India, Proceedings of the Sub-Regional Seminar Die-Back of Sissoo \(\*Dalbergia sissoo\*\), Food and Agriculture Organization of the United Nations \(FAO\), FAO Corporate Document Repository.](#)

**Summary:** An article in a seminar proceedings publication discussing the mortality of *Dalbergia sissoo* in native countries and what environmental conditions promote the die-back of these trees. It discusses the habitats and soil conditions in which indian rosewood performs best.

Available from: <http://www.fao.org/docrep/008/ae910e/ae910e02.htm> [Accessed on 28 March 2007].

[Sheikh, M.I., Dec. 1989, NFT Highlights Sissoo- The Versatile Rosewood, NFTA 89-07, Forest, Farm, and Community Tree Network \(FACT Net\), Winrock International, Morrilton, AR, 72110-9370, USA.](#)

**Summary:** A factsheet with information on description, uses, ecology, and pest species.

Available from: [http://food-security.info/food-security.info/Winrock%20Archive/d\\_sissoo.html](http://food-security.info/food-security.info/Winrock%20Archive/d_sissoo.html) [Accessed on 28 March 2007].

[The Global Compendium of Weeds \(GCW\), 18 Dec. 2001, \*Dalbergia sissoo\* Roxb. ex DC., Collaboration between AgWest & USGS Hawaiian Ecosystems at Risk \(HEAR\), \[online database\].](#)

**Summary:** The Global Compendium of Weeds had information on some common names not found in other literature sources as well as a synonym.

Available from: <http://www.hear.org/gcw/index.html> [Accessed on 28 March 2007].

[USDA, ARS, National Genetic Resources Program, Germplasm Resources Information Network-\(GRIN\) \[online database\], National Germplasm Resources Laboratory, Beltsville, Maryland.](#)

**Summary:** The Germplasm Network offers detailed information on the native distribution of *Dalbergia sissoo* with common names associated with the species.

Available from: <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?13169> [Accessed on 28 March 2007].

[USDA-NRCS \(Natural Resource Conservation Service\). 2007. \*Dalbergia sissoo\*. The PLANTS Database Version 3.5 \[Online Database\] National Plant Data Center, Baton Rouge, LA.](#)

**Summary:** The USDA-NRCS was used for part of the distribution of indian rosewood in North America.

Available from: <http://plants.usda.gov/java/profile?symbol=DASI> [Accessed on 28 March 2007].

[Wu, S.-H., Chaw, S.-M., & Rejmánek, M., 2003, Naturalized Fabaceae \(Leguminosae\) species in Taiwan: the first approximation, \*Botanical Bulletin of Academia Sinica\*, Vol. 44, pp.59-66](#)

**Summary:** This article was cited for the distribution and introduction of *Dalbergia sissoo* in Taiwan.

Available from: <http://ejournal.sinica.edu.tw/bbas/content/2003/1/bot441-09.pdf> [Accessed on 28 March 2007].