

Senna didymobotrya

(Fresenius) Irwin & Barneby
Fabaceae - Caesalpinioideae

LOCAL NAMES

English (African wild sensitive); Filipino (wild senna)

BOTANIC DESCRIPTION

Senna didymobotrya is usually a several-stemmed shrub or small tree, 0.5-5(-9) m tall. Branches terete, striate, pubescent to villous, rarely subglabrous.

Leaves simply paripinnate, narrowly oblong-elliptical in outline, 10-50 cm long; stipules broadly ovate-cordate, 6-17 mm x 8-10 mm, acuminate, palmately veined, reflexed, tardily caducous; petiole terete, 1-8 cm long, rachis up to 40 cm long, both pubescent and eglandular; petiolules up to 3 mm long; leaflets in 8-18 pairs, chartaceous, elliptical-oblong, 2-6.5 cm x 0.5-2.5 cm, 2-3 times longer than wide, base oblique, apex rounded but mucronate, pubescent to glabrescent, marginal vein distinct.

Inflorescence an erect, axillary, 20-30 flowered, spike-like raceme, 10-50 cm long; peduncle terete, 5-8 cm long, pubescent; bracts broadly ovate, 8-27 mm x 5-15 mm, black green, at first imbricate and enclosing the flower buds; bracteoles absent; pedicel slender, 3-10 mm long, densely pubescent; sepals 5, subequal, oblong-obovate, 9-14 mm long, puberulous, green; petals 5, slightly unequal, at first incurved, later on more spreading, ovate to obovate, 17-27 mm x 10-16 mm, with a slender, about 1 mm long claw, glabrous, bright yellow, delicately veined; stamens 10, filaments shorter than anthers, anthers of 2 lower stamens 9-11 mm long, 3 upper stamens staminodial, anthers of 5 median stamens about 5 mm long; ovary and stipe velvety pubescent; style slender, glabrous, recurved, about 1 cm long; stigma punctiform.

Fruit a flat, 9-16 seeded pod, linear-oblong, 7-12 cm x 1.5-2.5 cm, glabrescent, short beaked, dehiscent or indehiscent when dry, depressed between the seeds, sutures raised, blackish-brown.

Seed flattened, oblongoid, apiculate, 8-9 mm x 4-5 mm x 2.5 mm, smooth, pale brown; areole elliptical, 3-4 mm x 0.7-1.5 mm.

In the older literature, this species is best known as *Cassia didymobotrya*. Until the beginning of the 1980s, *Cassia* L. was considered to be a genus with over 500 species.

BIOLOGY

S. didymobotrya flowers profusely twice a year; in temperate regions it flowers throughout the summer.



Flowers and leaves at Haiku, Maui, Hawaii. (Forest & Kim Starr (USGS))



Habit at Haiku, Maui, Hawaii. (Forest & Kim Starr (USGS))



Flowers and fruit at old Kula Rd, Maui, Hawaii. (Forest & Kim Starr (USGS))

ECOLOGY

In its natural habitat *S. didymobotrya* is often ruderal in riparian montane wooded grassland or evergreen bushland. It tolerates light frost.

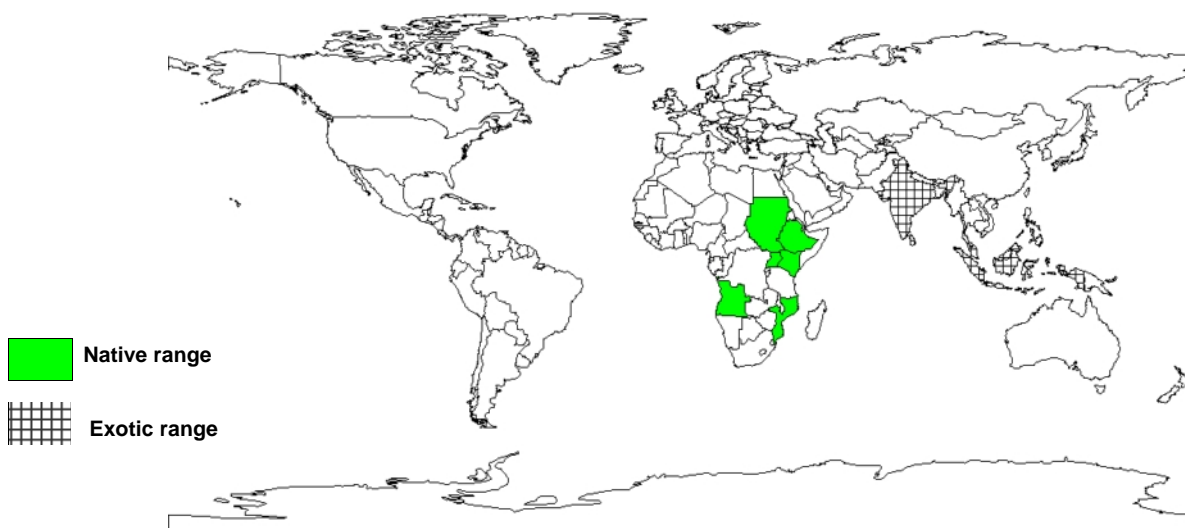
BIOPHYSICAL LIMITS

Altitude: 900-2400 m.

DOCUMENTED SPECIES DISTRIBUTION

Native: Angola, Ethiopia, Kenya, Mozambique, Sudan, Uganda

Exotic: India, Indonesia, Malaysia, Sri Lanka



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

Medicine: It is widely used as a purgative and an anti-malaria medicine. A decoction of the leaves is used against stomach complaints. Leaves and roots contain a number of anthraquinones, choline, and the trisaccharide raffinose.

Poison: In Africa, it is commonly used as a stupeficient poison for fishing.

SERVICES

Ornamental: It is now popular as an ornamental plant owing to its bright yellow flowers and black-green bracts. It is used as ornamental plant in Africa.

Shade or shelter: It has been used as a shade tree in tea plantations.

Soil improver: The aboveground biomass of *S. didymobotrya* grown as ground cover in Sri Lanka was found to contain 0.7 g N per 100 g fresh material. It was introduced as a green manure in India, Sri Lanka, Peninsular Malaysia and Java. It was introduced as a cover crop in India, Sri Lanka, Peninsular Malaysia and Java.

Other services: In sites where *Erythrina* spp. do not grow well, *S. didymobotrya* may be a valuable substitute.

TREE MANAGEMENT

Plantation: When seedling planted as a small shade tree in tea it is spaced at about 5 m x 5 m.

Husbandry: The plants can be lopped several times per year to provide green manure. Lopping is preferably done when the plants are in flower, when the nutrient content in the leaves is high. The plant yields a fairly large amount of lopping. About 5 t of green material provides 35.5 kg nitrogen. In temperate areas, potted ornamental plants are overwintered in greenhouses.

GERMPLASM MANAGEMENT**PESTS AND DISEASES**

It is hardy and quite free from diseases and pests.

FURTHER READNG

Botta, B., G. Dall'Olio, et al. (1989). Cell suspension cultures of *Cassia didymobotrya*: Optimization of growth and secondary metabolite production by application of the orthogonal design method. *Journal of Plant Physiology*. 135(3): 290-294.

Botta, B., R. M. C. De, et al. (1989). Studies in cell suspension cultures of *Cassia didymobotrya*: Part II. The biotransformation of chalcones to flavanones. *Heterocycles*. 29(11): 2167-2174.

Botta, B., V. Vinciguerra, et al. (1989). Studies in cell suspension cultures of *Cassia didymobotrya*: Part III. The biotransformation of chalcones to flavones and biflavanones. *Heterocycles*. 29(11): 2175-2184.

de Wit HCD. 1956. The Genus *Cassia* in Malaysia. *Webbia; raccolta di scritti botanici*. 11: 197-292 (241-242)

Irwin HS & Barneby RC. 1982. *Memoirs of the New York Botanical Garden*. 35: 467

Monache, G. D., R. M. C. De, et al. (1849). Metabolites from in vitro cultures of *Cassia didymobotrya*. *Phytochemistry*. 30(6): 1849-1854.

Sunarno B. 1997. *Senna didymobotrya* (Fresenius) Irwin & Barneby. In Faridah Hanum, I. & van der Maesen, L.J.G. (Eds.): *Plant Resources of South-East Asia No. 11. Auxiliary Plants*. Prosea Foundation, Bogor, Indonesia. pp. 229-231.

Thakur, C. (1988). Leaflet architecture in *Cassia* spp. *Acta Botanica Indica*. 16(1): 63-72.

Vitali, A., B. Botto, et al. (1998). Purification and partial characterization of a peroxidase from plant cell cultures of *Cassia didymobotrya* and biotransformation studies. *Biochemical Journal*. 331(2): 513-519.

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>)