

Tephrosia vogelii

Hook. f.

Fabaceae - Papilionoideae

LOCAL NAMES

English (vogel's tephrosia, fish-poison-tree, fish-poison bean, fish bean); Lao (Sino-Tibetan) (hu: kata: yx); Spanish (barbasco guineano); Swahili (utupa wa mrima, utupa wa kingindo, utupa wa kibaazi, mtupa, mibaazi, kibazi, kibaazi)

BOTANIC DESCRIPTION

Tephrosia vogelii is a soft, woody branching herb or small tree with dense foliage, 0.5-4 m tall, with velutinous to sericeous indumentum. Stems and branches tomentose with long and short white or rusty-brown hairs.

Leaves arranged spirally, imparipinnate; stipules 10-22 x 3-3.5 mm, early caducous; rachis 5-25 cm long, 1.5-5 mm long including petiolule; leaflets in 5-14 pairs, narrowly elliptical to elliptical-oblongate, up to 7 x 2 cm, base acute to obtuse, apex rounded to emarginate, venation most distinct on lower surface, silky tomentose.

Inflorescence a terminal or axillary pseudo-raceme, 8-26 cm long, rusty tomentose; basal bracts leaflike, peduncle stout, as long as pseudo-raceme; flower 18-26 mm long, fragrant when fresh, white, violet-purple or blue; pedicel up to 23 mm long; bracteoles sometimes present on calyx.

Pod linear, slightly turgid, 5.5-14 x 0.8-1.8 cm. Brown or green, woolly to sericeous, 6-18 seeded. Seed ellipsoid to reniform, 5-7 x 3-5 mm, dark brown to black.

BIOLOGY

The flowers are bisexual, borne in compact clusters. The stigma is receptive when pollen is released, and self-pollination occurs. Large carpenter bees (*Xylocopa brazilianorum*) have been reported as principal pollinators. Seed set is low.



T. vogelii intercropped along contours with coffee for green manure near Jutiapa, Guatemala. (Colin E. Hughes)



Flowers of *T. vogelii* vary in colour from white to pale lilac. (Colin E. Hughes)



Flowers of *T. vogelii* vary in colour from white to pale lilac. (Anthony Simons)

ECOLOGY

Found in widely varying habitats, including savannah-like vegetation, grassland, forest margins and shrubland, wasteland and fallow fields. In acid soils, it grows much better than *Leucaena leucocephala*, forming root nodules and fixing atmospheric nitrogen where the latter does not. On poor soils, however, *T. vogelii* grows more slowly and is more prone to diseases.

BIOPHYSICAL LIMITS

Altitude: 2 100 m, Mean annual temperature: 12-27 deg. C, Mean annual rainfall: 850-2 650 mm

Soil type: Grows well on andosols not subject to flooding and on well drained loams with pH 5-6.5 and is also tolerant to poor soils with low pH.

DOCUMENTED SPECIES DISTRIBUTION

- Native:** Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Cote d'Ivoire, Democratic Republic of Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Sao Tome et Principe, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Zambia, Zanzibar, Zimbabwe
- Exotic:** Afghanistan, Argentina, Bangladesh, Bhutan, Bolivia, Brazil, Brunei, Cambodia, Chile, Colombia, Ecuador, French Guiana, Guatemala, Guyana, Honduras, India, Indonesia, Laos, Malaysia, Mexico, Myanmar, Nepal, Nicaragua, Pakistan, Panama, Paraguay, Peru, Philippines, Sri Lanka, Surinam, Thailand, Uruguay, Venezuela, Vietnam



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

Poison: Cultivated for insecticide, fish and arrow poison obtainable from the leaves. The poison stupefies fish, which are then easily caught. Dry, crushed leaves are used as insecticide against lice, fleas and ticks, and as a molluscicide. Tephrosine is the poisonous principal.

Medicine: Used as an abortifacient, emetic, bactericide, purgative and cure for skin diseases, schistosomiasis, ringworm and parasitic infections. Leaf decoctions are used in the treatment of scabies and yaws; a weak infusion of the leaves is taken as an anthelmintic. Root decoctions are used to treat constipation.

SERVICES

Shade or shelter: *T. vogelii* is cultivated in Indonesia as a green manure, windbreak and temporary shade crop in cocoa, coffee, tea, rubber and cinchona plantations.

Nitrogen fixing: A known nitrogen-fixing species.

Soil improver: In central Africa, Indonesia, the Philippines and peninsular Malaysia it is used as green manure, e.g. in coconut plantations. The nitrogen content is 3.7 g/100 g dry matter in plants 2-3 months old, falling to 1.2 g in 10-month-old material, while the phosphorus content drops from 0.8 g to 0.2 g.

Ornamental: Its variously coloured flowers make it suitable as an ornamental.

Boundary or barrier or support: Because of its dense growth, it is suitable as a hedge plant.

TREE MANAGEMENT

Under favourable conditions, *T. vogelii* grows fast and is tolerant to repeated pruning. It is also tolerant to drought, strong wind and grazing, although drought often stops resprouting. Burning has little effect on *T. vogelii*, as it resprouts readily due to its deep root system. If the plants are weakly branched, they should be lopped to promote branching.

For a green-manure crop, the recommended spacing is 40 cm x 40 cm, with 2-3 seeds per hole; when planted for hedges the spacing should be 1.5 m between the rows. For large plantations, sufficient seedlings should be available for replanting in case of a low survival rate. When sown in rows, the recommended sowing rate is 5 kg/ha and when broadcast 8-13 kg/ha. Planting should be done at the beginning or in the middle of the rainy season.

GERMPLASM MANAGEMENT

Orthodox seed storage behaviour; no loss in viability over 2-3 years in open storage. Air-dried seed can be stored in sealed containers for at least 1.5 years. Preferably, fresh seed should be stored for 2 months before planting.

PESTS AND DISEASES

In Java, stems of *T. vogelii* are liable to serious attacks by *Corticium salmonicolor*, especially after lopping. When *T. vogelii* was tested in the USA as a pesticide-producing crop, root-knot nematodes caused very serious damage. In Central Java, *Helopeltis* spp., a serious pest of cocoa, can also heavily attack *T. vogelii*. Because of this, the species is no longer recommended for planting in Java.

FURTHER READING

Anon. 1986. The useful plants of India. Publications & Information Directorate, CSIR, New Delhi, India.

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

Dale IR, Greenway PJ. 1961. Kenya trees and shrubs. Buchanan's Kenya Estates Ltd.

Faridah Hanum I, van der Maesen LJG (eds.). 1997. Plant Resources of South-East Asia No 11. Auxillary Plants. Backhuys Publishers, Leiden, the Netherlands.

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

Williams R.O & OBE. 1949. The useful and ornamental plants in Zanzibar and Pemba. Zanzibar Protectorate.

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>)