Diospyros melanoxylon

Roxb.

Ebenaceae

tendu, ebony, abnus

LOCAL NAMES

Bengali (kendu,kend); English (coromandel ebony persimmon,ebony); Gujarati (tamrug,tamru); Hindi (abnus,tendu,nallatumki,timburni,kendu,karundumbi); Nepali (abnush,tendu); Sanskrit (dirghapatraka); Tamil (karai,tumbi,tumki,thumbi,karundumbi); Trade name (ebony,tendu,abnus)

BOTANIC DESCRIPTION

Diospyros melanoxylon is a medium-sized tree or shrub up to 25 m, and 1.9 m girth. The bark is pelican in colour, exfoliating in rectangular scales. The primary root is long, thick and fleshy at first, afterwards woody, greyish, often swollen in upper part near ground level. The roots form vertical loops in sucker-generated plants.

Leaves opposite or alternate and coriaceus, up to 35 cm long, tomentose on both sides when young, becoming glabrous above when fully grown.

Male flowers are mauve in colour, tetramerous to sextamerous, 1-1.5 cm long, sessile or nearly sessile in short peduncles, mostly 3-flowered. Female flowers mauve, mostly extra-axillary or sometimes solitary, axillary generally 2, opposite each other, larger than the male flowers.

Fruits olive green, ovoid or globose 3-4 cm across; 1-, 2-, 3-, 4-, 5-, 6-, or 8-seeded berries. Pulp yellow, soft and sweet. Seeds compressed, oblong, shiny, often banded.

The generic name is derived from the Greek ‘dios’ (divine), and ‘pyros’ (fruit), referring to the excellent fruit of the genus. The specific name is Greek and means ‘dark wood’.

BIOLOGY

The tree is deciduous or evergreen depending on its habitat. In a dry locality, it is leafless for a short time in the hot weather, regaining its leaves in May-June. In a moist locality, it is evergreen. The flowers appear from April to June on new shoots and the fruit ripens after 1 year. The edible fruits are largely eaten and disseminated by fruit bats and birds, notably hornbills. The tree produces good seed in alternate years.

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ECOLOGY
D. melanoxylon demands light; it is drought and frost hardy but sensitive to waterlogging. It is normally found in a dry deciduous forest as a constituent species of Tectona grandis, sal and mixed forests of Acacia leucophlea, Boswellia serrata, Butea monosperma, Lannea coromandelica and Terminalia tomentosa.

BIOPHYSICAL LIMITS
Altitude: 0-900 m, Mean annual temperature: 0-48 deg. C, Mean annual rainfall: 500-1 500 mm

Soil type: D. melanoxylon is the most widely distributed and tolerant species when considered to soil requirements. It grows on poor denuded soils, hot and dry hill slopes, stony soils with quartzite, shale and sandstone, and also heavy clays. It however attains best growth and development on loose, porous soils in cool and moist sheltered valleys where it tends to be gregarious.

DOCUMENTED SPECIES DISTRIBUTION

Native: India, Nepal, Pakistan
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.

PRODUCTS
Food: The fruits and powdered seeds are sold in local markets and eaten.

Fodder: A tolerance to pruning makes D. melanoxylon a good fodder species. The leaves are reported to contain 7.12% crude protein, and 25.28% crude fibre.

Fuel: D. melanoxylon is reported to be good fuelwood; calorific value of sapwood is 4957 kcal/kg and of heartwood, 5030 kcal/kg.

Timber: Wood is hard, whitish-pink, tough, fairly durable and used for building, shoulder poles, mine props and shafts of carriages. The ebony is very heavy and valued for carving and other ornamental works.

Medicine: The seeds can be intoxicating; they have been prescribed in India as a cure for mental disorders, nervous breakdowns and palpitations of the heart. The fruits have a cooling and an astringent effect. Dried flowers are reportedly useful in urinary, skin and blood diseases. The bark is astringent; its decoction is used in diarrhoea.

SERVICES
Intercropping: The results of regular cultivation of D. melanoxylon mixed with agricultural crops is not known. Its cultivation on field boundaries or distributed in field crops, such as oilseed and cereal crops, appears to be a feasible and attractive proposition. Its deep tap-rooting habit would minimize competition with annual crops. Planting may be done in rows that are about 10 m apart with plants about 3 m apart in rows.

Other services: D. melanoxylon leaves possess unrivaled qualities of flavour, colour, flexible and leathery texture, decay resistance and easy workability, which make them admirably suitable for wrapping bidis.

TREE MANAGEMENT
The tree is usually kept reserved and is not felled except in clear-felling coupes, as in the coppice-with-reserves working cycle in India. The main source of production of bidi leaves is from the bushes arising from the root suckers; leaves of bigger trees are stiff and brittle and therefore not capable of producing trade leaves for wrapping bidis. The seedlings are normally planted at 2 m by 2 m. Where the objective of management is the production of leaves, heavy pruning is recommended as this promotes vegetative growth and the production of relatively large and thin leaves, although repeated pruning can cause stunted growth of trees. Plants up to 15 cm in girth are cut near the ground to encourage sprouting of coppice shoots, which gives best quality leaves after 40-50 days of operation. Coppicing experiments in India show that best quality of trade leaves are obtained by coppicing flush to the ground level twice, 2 weeks apart, then coppicing flush to the ground only once.

The tree also pollards well, although the growth of the pollard shoots is slow. Pollarding is done to obtain a good flush of tender leaves, and plants over 15 cm girth are usually cut at 60-90 cm height. The quality of the leaves also depends on whether the frequency and intensity of pollarding impairs the vitality and growth of the trees.

Management for small timber, poles or firewood requires a coppice rotation of about 30 years to give usable products. For ebony wood, a much longer rotation would be needed to give sufficient dimensions to the valuable heartwood.

GERMPLASM MANAGEMENT
Orthodox seed storage behaviour; viability maintained for 1 year in open storage; viability lost within 1 year in hermetic storage at room temperature with 11-15% mc. About 5 kg of ripe fruit yields 1 kg of seeds, weighing 1100-2 000 seeds/kg.

PESTS AND DISEASES
Trioza obsoleta feeds on the sap and forms rough reddish-yellow galls on the leaves. Among the defoliators are Euthalia laudabilis, E. nais, Lamida carbonifera and Miresa albipunctata. The larvae of Plocaederus ferrugineus bore between the bark and the sapwood. The fungus Stereum lobatum causes white spongy rot in felled timber while Cercospora kaki causes leaf spot.

FURTHER READNG

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SUGGESTED CITATION

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