

Hardwickia binata

chota-dundhera, anjan

Roxb.

Fabaceae - Caesalpinioideae

LOCAL NAMES

Hindi (karachi, alti, anjan, kamra, yana, katt-udugu, parsid, ura); Nepali (papri); Sanskrit (anjan); Tamil (katudugu, acha, calam, ura, karacha); Trade name (chota-dundhera, anjan)

BOTANIC DESCRIPTION

Hardwickia binata is a moderate-sized to large tree, up to 24-30 m tall, girth 1.8-3 m with a clean cylindrical bole up to 12-15 m; graceful, drooping slender branches; crown conical in early life, becoming broader later. Bark of saplings almost silvery white and smooth, gradually changing as the tree gets older to dark grey and rough with irregular vertical cracks, 1.2-2.5 cm thick, exfoliating in narrow flakes. In isolated situations, or on poor soils, the tree tends to branch low down and produce a short bole, but when grown in a fairly crowded crop on favourable soil it produces a long, straight, cylindrical bole with an elevated crown.

Leaves small, 2-6 cm long by 2-3 cm wide, alternate, pinnate, almost kidney shaped and greyish-green.

Flowers small, pale yellowish-green in axillary and terminal lax paniced racemes.

The pod flat and samaroid, 5-7.6 x 1-1.5 cm, oblong lanceolate, coriaceous, narrowed at both ends, with parallel longitudinal veins, containing 1 seed near the apex. The seed is exalbuminous, flat, averaging 0.8 x 0.3 in, in sub-reniform, pointed at one end and rounded at the other, with a fairly hard testa.

BIOLOGY

In India, the tree is leafless, or nearly so, for a short time towards the end of the cold season, the new leaves, which are tinged with red, appearing in April. The trees are in leaf in the hot weather, and their feathery foliage is conspicuous when most other species are leafless. The light, winged pods commence falling in early May and are often carried some distance from the mother tree, the strong winds being prevalent in that season. There is some sporadic seeding every year, but gregarious seeding takes place on average every 3-5 years, according to locality.



Typical "epicormic" branching habit of *H. binata* which permits limited lopping from the trunk for livestock fodder. (Colin E. Hughes)

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ECOLOGY

Characteristically found in teak forests, dry savannah and degraded dry deciduous forests. The tree is distributed in isolated patches, varying in extent in the drier parts of the Indian Peninsula. Overlying soil does not have to be deep since the taproot has a capacity for growing through fissures in solid rock. *H. binata* thrives in a dry climate characterized by a long drought, scanty to moderate rainfall, and intense heat during the hot season. In the cold season, frosts, generally mild, occur only in certain portions of its area of distribution, particularly in low-lying areas. In its natural range, the seedlings are sensitive to drought, while frosts are not severe enough to do any harm. From the 2nd year onwards, they are immune to injury from frost. Young shoots are sensitive to fire, but recovery is good.

BIOPHYSICAL LIMITS

Altitude: 0-300 m, Mean annual temperature: 22-34 deg. C, Mean annual rainfall: 250-1500 mm

Soil type: The tree grows best on sandstone, conglomerate, quartzite, granite and schist, with an overlying soil of sandy loam or, very characteristic, a quartzose reddish gravelly sand. It tolerates acidic to neutral soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Afghanistan, Bangladesh, Brunei, Cambodia, India, Indonesia, Iran, Laos, Malaysia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Thailand, Vietnam

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

Fodder: Leaves contain about 9% crude protein, but the amount varies with the age of the leaves.

Fuel: *H. binata* provides excellent firewood and good charcoal.

Fibre: The bark yields a strong fibre largely employed for making ropes.

Timber: The wood is perhaps the hardest and heaviest in India. The sapwood is small and white, the heartwood dark reddish-brown streaked with purple; used for beams and mine props, bridge and house construction, agricultural implements, carts and wheel work. It is close grained, difficult to season but fairly durable.

SERVICES

Nitrogen fixing: A nodulating species, but there is considerable doubt about whether it is nitrogen fixing or not.

Soil improver: Branches are much lopped for manure; leaves can be used as mulch.

Intercropping: *H. binata* has a deep-rooting habit, hence competes minimally with arable crops.

TREE MANAGEMENT

The tree thrives in a dry climate and is capable of establishing itself and growing on dry shallow soil and rocky ground where most other species would succumb. This is due partly to the early development of the taproot and the ability to penetrate hard soil and fissures in solid rock (the stem usually dying back annually during development of the taproot) and partly to its ability to withstand mutilation. Young trees can withstand some shade and may even require artificial shading. Later they are moderately light demanding. In heavily grazed areas the plant assumes a characteristic bushy form.

The tree pollards well even up to a comparatively advanced age, and old pollards when repollarded almost invariably produce abundant new shoots. However, the tree coppices poorly. Old trees, which send out vigorous pollard shoots if cut 1 or 2 m above the ground, produce no coppice shoots if cut flush with the ground; old pollards when felled at ground level never coppice.

GERMPLASM MANAGEMENT

Seed may sometimes retain viability for 1 or even 2 years.

PESTS AND DISEASES

Aphid attacks in the nursery can cause mortality. Young plants and coppice shoots suffer much from grazing, the leaves being browsed by deer as well as by cattle and goats; buffaloes especially are partial to them. Mature trees appear to have no serious insect or disease pest.

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FURTHER READNG

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SUGGESTED CITATION

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