

KNOW YOUR USEFUL TREES

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Adina cordifolia, Hook. f. - This is the botanical name of Haldu, a well-known timber species of Indo-Pak Sub-continent. Adina is derived from the Greek word "adinos" meaning crowded, referring to the flowers of the plant which are clustered in globose heads. Cordifolia is referred to the cordate or heart-shaped leaves of the plant.

Local names : Haldu is the most common name. In Mymensingh it is called Baldurang by the Garos. In the forests of Chittagong and Chittagong Hill Tracts the plant is often mixed up with Mitragyna parvifolia (Roxb), Korth, and misnomerly called Dakram which is the local name for Mitragyna parvifolia.

Distribution: The plant is distributed in the forests of Sylhet, Chittagong, and Chittagong Hill Tracts growing on dry hill slopes but rare in occurrence. It is also found in the sal forests of Mymensingh.

Botanical identity: A large deciduous tree, often buttressed with 30-50 feet clean bole, 2-3 feet in diameter. Bark grayish, $\frac{1}{2}$ " thick, peeling off in irregular patches which leave depressions on the bark, pinkish inside.

Leaves : Opposite, heart-shaped with long stalk, upper surface smooth, lower surface hairy.

Flowers: Yellow, clustered in spherical ball like structures mixed with hair-like bractioles, $2\frac{2}{3}$ -1" diameter, calyx tube 5-angled, lobes 5, corolla-tube like, densely hairy; stamens-5, inserted in the mouth of the corolla-tube; ovary 2-celled with many ovules; style thread-like; stigma club-shaped.

Fruits: Capsules in globose heads, seeds numerous, minute, winged.

Silviculture: The tree attains its best development on well-drained ground specially along the lower slopes of hills. The tree sheds leaves in February and remain leafless until May when the new foliage appears. The yellow flower heads appear in June, July and the fruits are formed by October. The fruits ripen from April to June of the following year. The seeds are very small. As many as 11,000 seeds weigh 1 gramme.

After germination the seedlings are extremely minute and during the first season their growth is slow attaining only 1 inch or less. Primary root is very fine, white and delicate. During the second season the growth is rapid and the seedlings may attain a height 1-2 feet. The top root thickness may attain a diameter of $\frac{1}{8}$ ". The seedlings need good drainage and porous soil for successful development and they are sensitive to frost and drought. The leaves of seedlings

turns brownish in the cold season and fall to the ground. The new leaves appear in March.

The natural regeneration is very poor. The minute seeds are shed during hot season and carried by wind. Sometimes the whole fruit heads fall to the ground and the seeds may germinate within the fruit heads. The seeds are germinated in the early rainy season. Although vast number of seeds are produced only few seedlings survive and establish themselves as those are very minute, delicate and thereby washed by rains.

Direct sowings of the seed are not successful. In the nursery the seedlings can be grown successfully in raised beds of fine soil with a good proportion of sand or better powdered charcoal. The beds should be covered with screens raised about a foot above them to keep off rain and sun. Watering to the bed should be done with a very fine spray. The seedlings will be ready for transplantation early in the following rains. Care should be taken to keep a ball of earth round the roots of the seedlings. After transplantation the soil around the plants should be kept well loosened and free from weeds.

Trade name of timber : In Indo-Pak Sub-continent, the trade name for Adina cordifolia Hook, is Haldu. The same species is largely exported from Thailand under the trade name of Kwao. Haldu is considered superior to Kwao. In Ceylon the timber is called Colon and in Burma it is called Hnaw.

Description of the wood : Growth rings very faintly visible, delimited by smaller and less numerous vessels and denser fibre zone. Sapwood yellowish white, wide, heartwood deep-yellow when first felled, turning pale-yellowish on exposure. Wood diffuse porous, normally straight-grained but sometimes interlocked-grained, texture-fine and even, planned surfaces lustrous, without any characteristics smell or taste, average weight of seasoned timber is 40-41 lbs. per cubic foot (sp.gr. approx. 0.65).

Poros- very small, indistinct to just visible to the naked eyes, uniformly distributed except in the growth rings zones.

Rays - Very fine, numerous, indistinct to naked eyes.

Parenchyma- Diffuse, scattered, only visible with a hand lens after moistening the wood surface.

Wood properties :

Mechanical properties : It is a strong hardwood. It is slightly less strong than teak in compression, transverse strain and elasticity but possesses greater shearing stresses.

Seasoning : The timber seasons easily and well, both by air and kiln drying methods, but may develop slight amount of end splitting or surface cracking.

Durability : Moderately durable in exposed position and may be attacked by white ants and borer beetles. It is sufficiently durable under cover and can be treated easily with preservatives.

Working qualities : The timber saws with ease, works excellently either by hand or by machine. It surfaces well and has an excellent turning properties. It has good glue, screw and nail holding properties and takes high polish and stain.

Uses : It is a good furniture wood and can be used for panelling and flooring. Because of its excellent turning properties, the wood is used for making jute bobbins, combs, toys, rulers, penholders and other small articles.

Other economic aspects of the plants : The bark of haldu is regarded as febrifuge and antiseptic. It contains 7.27- 9.7% of tannin. The wood contains 0.09% of a yellow pigment called adinin.

Conclusion : Haldu is an important timber of East Pakistan but its supply is extremely limited due to the poor natural regeneration of the species. Special attention should be taken by the Forest Department to raise the plantations of Haldu and thus to save this valuable species from extinction and also to help the wood-based industries where the wood of Haldu is used.