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Phoebe goalparensis Hutchinson

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Phoebe goalparensis Hutchinson

Taxonomy and nomenclature

Species name: *Phoebe goalparensis* Hutchinson
Family: Lauraceae
Varieties: *Phoebe goalparensis* Hutch. var. *martiniana* Das, *Phoebe goalparensis* Hutch. var *boriana* Das.
Vernacular/Common name: Assam teak, Bonsum, nikahi.

Distribution and habitat

The tree is distributed in north-east India in the foothills of eastern Himalaya up to an altitude of 1650m. The mean annual maximum temperature of its natural habitat varies from 30-37°C and minimum is 4-7°C; annual rainfall from 2000-3500 mm. The tree occurs in moist forest.

Use

Phoebe goalparensis is one of the commercially important timber species of northeast India. The wood is light, easy to season, easy to work, and takes preservative easily. It is used as a versatile construction and in carpentry, e.g. house construction, shipbuilding, furniture, cabinet work, carriages, and tea-chest plywood.

Botanical description

P. goalparensis is a tall evergreen tree with a compact crown, buttresses at the base and a clear bole of 14-17 m. Bark is greenish or blackish grey, reticulately furrowed; young branches minutely puberulous; lenticels large, partly sunk. Leaves are 7.5-16 cm long, 2.5-5.5 cm wide, obovate or ovate-lanceolate, apex shortly acuminate, rarely obtuse, rigidly chartaceous, glabrous, puberulous on the nerves beneath; midrib impressed above, prominent beneath; lateral nerves 9-12 on either half, distinctly prominent beneath, tortuous and getting obscure towards the margin; tertiaries rather prominent on both sides and tortuous; base narrowed or cuneate; petiole 1-2.5 cm long, glabrous above, obscurely puberulous beneath. Inflorescence in long peduncled lax panicles, pedicels about 0.5 cm long, ashy, minutely puberulous; bracteoles minute, caduceus. Flower buds are ovoid, 0.6-0.7 cm long. Perianth segments are about 0.5 cm long, 0.3 cm wide, ovate, obtuse, coriaceous, puberulous outside, villous inside towards the base. Stamens slender; filaments pubescent about 0.5 cm long; anthers are oblong-ovoid. Ovary is depressed, globose, and pubescent; style about 1 mm long.

Typical growth of *Phoebe goalparensis*

Fruit and seed description

Fruits: Fruit is a drupe, ellipsoid, purple black, about 1.5-3.7 cm long and glabrous. Mesocarp is thin and aromatic. Fruits are not edible.
Seeds: Seed is the morphological seed enclosed in the endocarp (pyrene/'stone'). It is elliptical and black in colour. Number of seeds (pyrenes) per kg varies from 600-900.

Flowering and fruiting habit

Flowers are bisexual. Flowering occurs during April-May. Fruits mature October-November. The ripe fruits are eaten and dispersed by birds and wild animals.

Seed collection

Fresh fruits are collected when they are fully ripe and purple black. The color of the mature seed is grayish black and moisture content is 32-35%. The method of collection is to spread a tarpaulin under the tree and fruits are collected by lopping the branches.

Processing and handling

Fruits are heaped in shade to rot and the pulp is removed by gentle rubbing by hands followed by thorough washing under running water (if possible w/ high water pressure). The seeds are then surface-dried under shade. Care should be taken during the extraction of seeds as over-drying may result in the breaking of endocarp and seed coat and cause desiccation damage.

Dormancy and pretreatment

Fresh seeds have 35-70 % germination in the soil. The seed coat is thin but hard and germination is inhibited due to its hydrophobic nature. Manual removal or 2-4 longitudinal incisions on the seed coat helps in water absorption and subsequent germination. Best treatment for germination for testing purposes is to cut the seed in halves, remove the seed coat of the half in which the embryonic axis occurs and place it on moist paper in trays. Viable seeds germinate 100 % by this method. For bulk pretreatment, drying 12-15 hours under shade (to 30-32 % m.c.) at 25-30°C just before sowing is effective for breaking the seed coat and improves germination of seeds.

Left: Bark of *P. Goalparensis*. Right: Seed of *P. goalparensis*.

Storage and viability

The seeds are desiccation sensitive (recalcitrant). Germination is adversely affected by desiccation below 29 % m.c. The seeds can be stored at shedding moisture content of 32-34 % at 5-15°C at least for two years. Partial drying does not improve the longevity. At ambient condition (15-30°C) seeds are viable up to six months, if stored in polybags at harvest moisture content. In aerated and hydrated condition (stored over water in closed box) seeds are viable for two years, if not germinated. Seeds are treated by dressing with 0.2 % Bavistin used as fungicide before storage.

Sowing and germination

Sowing is done in the properly shaded seed beds at a depth of 1.5-2.0 cm oriented with the pointed end of the seeds upward. Germination is hypogeal. It starts after about 35 days and germination is completed in about 4 months. Seedlings are ready for transplantation after about four months of sowing when they are in three-leaf stage. Transplanting should be done under proper shade and once established; seedlings can be kept in open beds. They become ready for plantation after about six months after transplanting. Stump planting is also successful to some extent. Direct sowing is not found successful for this species.

Phytosanitary problems

P. goalparensis is susceptible to mottled spongy rot (*anoderma applanatum* (Pers.) Pat.), brownish pocket rot (*Polyporus gilvus* Schw.), white spongy rot (*Trametes corrugata* (Pers.) Bres.) and white fibrous rot (*T. serpens* Fr.).

Selected readings

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Seedleaflets are a series of species wise extension leaflets for tropical forest species with special emphasis on seed technology. Leaflets are compiled from existing literature and research available at the time of writing. In order to currently improve recommendations, FLD encourage feedback from users and researchers who have experience with the species. Comments, corrections, improvements and amendments will be incorporated into future edited leaflets. Please write your comments to: SL-International@life.ku.dk