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Fagraea fragrans Roxb.

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Fagraea fragrans Roxb.

Taxonomy and nomenclature

Family: Loganiaceae

Synonyms: *Fagraea wallichiana* Benth., *F. cochinchinensis* A. Chev., *F. sororia* J.J. Smith, *F. gigantea* Ridley.

Vernacular/common names: ironwood (Eng.), urung, susulin (Philippines); nan (Burma); tatrau (Cambodia); tahmsao, man pa (Thailand-Laos); trai nam bo (Vietnam), tembuso tammuso (India-Malaysia).

Distribution and habitat

Natural distribution from East India (Bengal), Myanmar, Indochina, Thailand, Peninsular Malaysia, Sumatra, Borneo, Sulawesi, the Moluccas, Papua and SW Philippines.

A highly adaptive species which is particularly competitive on sites with poor soil aeration such as seasonally inundated sites, compact clay soil and on shallow sandstone. In primary forests occurring along rivers and swamps where it associates with e.g. *Melaleuca* species. It is a pioneer on poor sites such as alang-alang grassland and land that has been exposed to fire. Mainly found in lowland up to 500 masl.

Uses

The wood is hard and durable. The heartwood is light yellowish brown, the sapwood light yellow with an unpleasant smell. Wood is used for sawn timbers and roundwood for construction e.g. houses, bridges, boats, railway slippers, furniture, and doors. It yields a highly valuable charcoal and fuelwood. Because of its beautiful flowers and tolerance to poor soil it is often planted in towns and parks and along roads.

Botanical description

A medium or occasionally large-sized tree up to 25 (-55) m tall with diameter up to 135 cm and often long, straight, clear bole with or without buttresses. The outer bark is dark brown, fissured, and occasionally peeling off. Crown conical and light green. Leaves opposite, simple, entire, 4-15 cm long and 1.5-6 cm wide. Inflorescence axillary or terminal with 20-30 flowers. Flowers fragrant, white, bisexual, 5-merous, with funnel shaped corolla tube, 0.7-2.3 cm long, stamen long with slender filaments.

Fruit and seed description

Fruit: round berry with fleshy pericarp, 0.75-1 cm in diameter, orange or red. Each fruit contains about 20 seeds, many of which are small and sterile. There are about 1200 fruits per kg.

Seed: the seeds are very small, less than 1 mm in diameter, angular in shape, brown with a very thin seed coat. Fertile seeds are about 4 times larger than sterile. 1 kg of seed contains between 5 and 10 mill seeds.

1, flowering twig; 2, seed; 3, mature fruits. Photo: BPTH Sumatera.

Flowering and fruiting habit

The flowers are pollinated by insects. Flowering and fruiting is regular and abundant. In Sumatra, flowering occurs in May-August and fruiting in November-January. In Vietnam flowering is in April-June and fruiting in July-November.

Harvest

The fruiting season is quite long and only a fraction of the fruit crop can be collected at any time. Fruits should be collected when they turn orange or red. Collection can be done by shaking or cutting fruit bearing twigs. On small trees long handled tools can be used, larger trees may need climbing.

Processing and handling

Seeds must be extracted from the fleshy fruit layer by soaking in water and subsequent maceration over a wire mesh. The major part of the fruit can be separated by flotation; fruit parts will float while the seeds sink in water. The remaining mixture of fruit parts and seed is sun-dried. The major part of the remaining dry fruit parts and small (sterile) seed can be eliminated by sifting using a mesh size of 0.1 mm, which will retain the good seed. After sieving, the seeds are air-dried.

Storage and viability

Seeds are orthodox and can be dried to 4-5% moisture content and then stored in sealed containers.

Note: Germination percentage may be low due to a large number of sterile seed rather than loss of viability during storage. Germination of stored seed must thus be compared with the initial germination result before storage.

Dormancy and pretreatment

Clean seed is not dormant and pretreatment is not necessary. However, fleshy fruit parts may contain inhibitors and large quantities of dry fruit parts on or with the seed may delay germination.

Sowing and germination

Germination is epigeal, i.e. the cotyledons appear above ground. To speed up germination, seeds can be soaked in 50-100 ppm giberellin (GA3) for 24 hours. Seeds are sown in a mixture of sterilised sand and soil (1:2) under shady conditions and watered daily. Germination occurs within 15-25 days. Seedlings at the age of 1-1.5 months with 0.5-1 cm in length are ready to transplant into polybags. It is recommended that 2-3 seedlings be planted in each polybag. Seedlings are ready for planting out after one year.

1, tree habit; 2, twig with flowers and fruits; 3, flower. From: Plant Resources of South-East Asia No. 5(2).

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