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Aquilaria crassna Pierre

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Aquilaria crassna Pierre.

Taxonomy and nomenclature
Family: Thymelyaceae
Synonyms: none
Vernacular/common names: agar wood, eagle wood (Eng), bois d'eaigle, bois daloes (France), tram huong, Do bau (Vietnam), kritsanaa (Thailand, Laos).
Related species of interest: *Aquilaria* is represented by a number of species in SE Asia - Pacific. The taxonomic status of some of them is uncertain. Some important species are *A beccariana* van Tiegham, *A. banaensis* Pham Hoang Ho, *A. subintegra* Ding Hou and *A. malaccaensis* Lam.

Distribution and habitat

Naturally distribution significantly reduced by selective cutting. Mainly occurring south of 19º N in Vietnam, Cambodia, Laos and Thailand. In Vietnam widely distributed, from central Vietnam southwards to Phu Quoc island (Kien Giang province).

It is light demanding, occurring scattered in natural forest on rocky, shallow ferralitic soil, often along streams. Altitude range mainly 300-900 m.a.s.l. Annual rainfall around 1200 mm.

Uses

The main product is agar wood or eagle wood, which is a deposit of dark brown aromatic resin in the wood. Agar wood is produced in some old trees (at least 15-20 years old), presumable by some stress factors such as mechanical injuries, bacterial or fungal attack. Agar wood is used e.g. in temples as perfume wood. *Aquilaria* wood can be destilled and then yield an essential oil, which is used in the perfume industry. Both agar wood and *Aquilaria* oil is very much sought after and the species is disappearing from many of its original growth sites. However, the species is also cultivated, frequently planted around houses and home gardens, and large scale industrial plantations have been initiated in Vietnam.

Botanical description

Large evergreen tree, 15-20 (-30) m, and diameter up to 40-60 (occasionally 100) cm. Bark greyish-brown, slightly fissured, easy to peel off, smooth. Inner bark wet with much water. Branches nearly horizontal, not straight. Crown open. Leaves alternate, coreaceous, elliptical, petiole 4-5 mm, blade 8-13 cm long 3.5-5.5 cm wide, upper surface glossy and green, lower surface light coloured. Inflorescence umbellate, axillary or terminal. Flowers small, pale blue-yellow, fragrant, fine-haired, pedicel up to 1 cm long, floral tube campanulate, 4 mm long.

Open fruit with two seeds. Photo: Lars Schmidt

Fruit and seed description

Fruit: flattened, dehiscent, obovoid capsules, 3-3.5 cm long, 2.5-3 cm wide with 2 valves, each with 1 seed. Capsule hard or leathery when dry, with short greyish-yellow hairs and persistent calyx. When capsules open on the tree, the seeds hang from a 5-6 cm long prolonged funicle.
Seed: glossy black, ovoid, about 5-6 mm diameter, 4 cm long including a 3-3.5 cm long, twisted, tail-like pubescent appendage. There are about 4500-5000 seeds per kg.

Nearly mature still closed fruits (Internet source - photographer unknown)

Flowering and fruiting habit

In southern Vietnam the tree flowers in February and fruits in May-June. In Central Vietnam (Quang Binh) it flowers in March and fruits in July

Acquilaria crassna. From: Vietnam Forest Trees

Harvest

Fruits are harvested from the trees when they turn from green to yellow but before the capsules open. Harvest time is crucial because the seeds have very short viability after acquiring maturity.

Processing and handling

Capsules are dried under shade or moderate sun until they open. The seeds are fragile and remain attached to the capsule by the funiculus, and are therefore usually detached by hand. It is recommended to remove the arils before storage as it tends to absorb moisture and cause rot or fungal attack.

Storage and viability

The seeds are oil rich, recalcitrant with very short viability. In a storage experiment seeds the best storage condition was 25% moisture content and 8°C in folded plastic bags. After 1 months storage at these conditions viability declined from 41% to 22 %; the viability was '0' after 2.5 months of storage. The experiment also showed that storage time is significantly prolonged when the seed is stored cold, i.e. at 8°C.

Dormancy and pretreatment

There is no dormancy and pretreatment is not necessary.

Sowing and germination

Germination is epigeal. Because of the recalcitrant nature, sowing should be as soon as possible after collection. Seeds are sown shallow in sand or nursery soil with only the seed part covered, the tail remaining above the soil. Germination starts after 10 days and may be spread over one month.

Phytosanitary problems

Seeds without the arilus removed tend to collect moisture and decompose rapidly.

Vegetative propagation

Root cuttings as well as air layering appear easy provided application of rooting hormones and appropriate microclimate. Also propagated by tissue culture.

Selected readings

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