

SEED LEAFLET

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Illicium verum Hook. f.

Taxonomy and nomenclature

Family: Illiciaceae

Synonyms: *Badianifera officinarum* Kuntze.

Vernacular/common names: star anise (Eng.); badiane, anis de la Chine (Fr.); anís estrellado (Sp.); bunga lawang (Indon.); poy kak bua, dok chan (Thai.); mai, dai hoi, (Viet.)

Related species of interest: in older literature, the species is considered identical with *Illicium anisatum* L. (*I. religiosum* Siebold), the Japanese anise. The fruits of Japanese anise, however, are highly poisonous and confusion of the two species has had fatal consequences. The carpels of Japanese anise fruits are distinguished by being more woody and shrivelled than those of star anise and having a thin, mostly curved beak, a faint, clove-like smell and an unpleasant taste.

Distribution and habitat

Indigenous to southern China and northern part of Vietnam. Extensively cultivated throughout the cooler tropics and subtropics at altitudes up to 2000 m, annual rainfall 1500 - 2400 mm and annual temperatures of 12-18°C. It grows on deep fertile and well drained forest soils with pH 4-5. It is a light-demanding tree but it tolerates shade when young.



1, Flowering branch; 2, flower; 3, fruit. (de Guzman and Siemonsma, 1994).

Uses

Star anise is mainly grown for the essential oil that is extracted from fruits, seeds and leaves. The oil is used worldwide in medicine. 10 kg dry fruits may yield 1 kg oil.

Fruits and seeds are valued as a spice used in cooking and the fragrant wood is used for construction and furniture.

Botanical description

Evergreen tree, 8-15 (-20) m tall with diameter up to 30 cm. Trunk straight, with white to grey bark. Branchlets green and glabrous. Leaves 6-12 cm long, alternate, simple, leathery, often clustered 3 or 4 together at the end of branches. Flowers large, 1-1.5 cm in diameter, white-pink to red or greenish-yellow, bisexual, axillary and solitary. All parts of the tree have an agreeable aromatic smell.

Fruit and seed description

Fruit: capsule-like, aggregate fruit made up of 6-8 or rarely up to 12-13 boat-shaped, rather woody follicles with a straight beak. The follicles are arranged around a central axis in the shape of a star (hence the name star anise). Each follicle contains one seed.

Seed: shiny brown or reddish with high oil content and anise-like smell. There are 8000 - 11000 seeds per kg.

Flowering and fruiting habit

Within the area of natural distribution there are two flowering and fruiting seasons per year. First flowering occurs in June with fruit maturing in May-June the following year. Another flowering follows shortly after the first with mature fruits produced in October-November the following year. According to Ngo Quang De (1991), yield and germination percentage are higher for the second crop.

Flowering starts at the age of 5-6. Seed production usually begins when the tree is 9-10 years old and continues for about 80 years. Good fruit crops are usually encountered every three years.

Harvest

Fruits are harvested directly from the tree when they are still green and dried first in the shade and then in the sun. A mature tree may yield 8-12 kg fresh fruits per season. 4-5 kg fresh fruits give approximately 1 kg dry fruits.

Processing and handling

The fruits are collected in October when they have started to turn brown but before they open. After a short sun drying the seeds are extracted manually.

Dead or damaged seed can be separated from fresh seed by flotation.

Storage and viability

With the present methods the seeds cannot be expected to store for more than a few months but their storage physiology is still unclear. Studies from Vietnam indicate that the seeds do not tolerate desiccation and that best storage is achieved when the seeds are stored at fresh moisture content, about 40%. When dried below 30% mc, the seeds begin to lose viability. Cold storage at 5 or 10°C is significantly better than at room temperature.

In a recent study, fresh seeds mixed with moist sand and stored at 10°C for 3 months retained 53% germination.

Dormancy and pretreatment

In the study mentioned above, the newly harvested seeds germinated only 43%. After one month's storage in moist sand, germination increased to 81%. Whether the seed has some sort of dormancy or requires after-ripening still needs to be investigated.

Sowing and germination

Seeds collected during the September - October harvest season are preferred for propagation. Germination normally begins after 27 days and is finalised after 2 months.

Germination percentage is typically about 80%. The seedlings are planted out into the field when they reach a height of about 30 cm.

Vegetative propagation by cuttings and especially by grafting is also possible.

Phytosanitary problems

Because of the high moisture content required for storage, fungal problems are often encountered.

Selected readings

de Guzman, C.C. and J.S. Siemonsma (eds). 1994. *Spices*. Plant Resources of South-East Asia No. 13. PROSEA. Bogor, Indonesia.

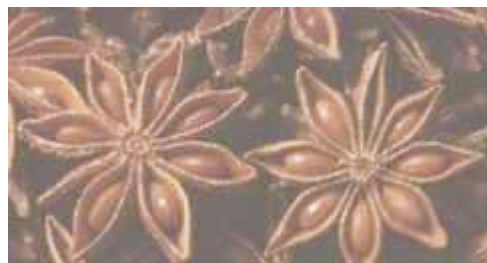
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Ripe fruits with seed. Photo: Toil d'Epices.

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