SEED LEAFLET

No. 39 September 2000

Vochysia guatemalensis J.D. Sm.

Taxonomy and nomenclature

Family: Vochysiaceae

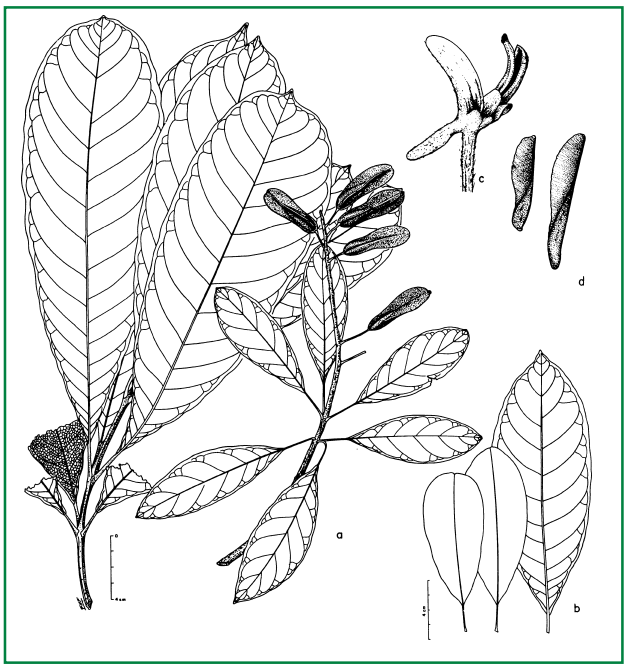
Synonyms: *Vochysia hondurensis* Sprague, *V. guatemalensis* Standley, *V. hondurensis* Standley.

Vernacular/common names: white yemeri (Eng.); mayo blanco, chancho (Costa Rica); San Juan peludo (Honduras); palo de agua (Nicaragua); San Juan (Guatemala); yemeni, emeri (Belize).

Related species of interest: *V. ferruginea* is closely related to *V. guatemalensis* but is distinguishable on the ferruginous (rust-coloured) tormentum on flowers and young shoots and leaves, giving the species its name. The distribution of *V. ferruginea* is more southern, extending south to Brazil.

Distribution and habitat

The area of natural distribution is Central America from Veracruz in Mexico to Panama. It inhabits the humid tropical forest and the very humid forest of the coastal plains, where it often grows in monospecific stands or in patches with other *Vochysia* spp. It is found at 0-1000 m altitude in areas with temperatures of 24-30°C. Preliminary results from Costa Rica indicate that this species behaves equally well on alluvial and residual soils.



a. fruiting branch; b. variation in leaf shape; c. flower in anthesis; d. seed. From: Flores 1993.

Uses

The wood is light but strong, with a density of 0,35-0,45 g/cm^3. It is suitable for carpentry, interior construction, canoes and veneer. The fibre quality is similar to that of *Gmelina arborea* and has potential use in production of paper pulp.

Botanical description

Tall tree, 30-55 m tall with diameter of 0,5-1,5 m. The trunk is straight with no branches in the basal 2/3 and without buttresses. Leaves simple, 3-4 together in whorls, obovate, 7-18 cm long. Flowers in 10-20 cm long, erect inflorescences. The flower is hermaphrodite, yellow-orange and fragrant.

Fruit and seed description

Fruit: a thick, obovate, dehiscent capsule, 5-7 cm long, yellowish-brown. The capsules have three locules each containing one seed.

Seed: laterally compressed, brown, winged and wind-dispersed. The size varies but is typically about 4.5 cm long, wing included. The embryo is large (1.8-2.4 cm long) and there is no endosperm. The embryo has high concentrations of lipids (28.6%) and proteins (34%) but is low in carbohydrates (4.2%). There are 3500-4800 fresh seeds and 7000-8000 dry seeds per kg.

Flowering and fruiting habit

In Costa Rica flowering takes place in March-June and mature seed is collected in August-October. In some places there is a minor blooming season in October-November and sometimes in February and in general the seasonality and flowering and fruiting vary with alterations in rainfall pattern.

The anthers open before the flowers open and the species may be predominantly self pollinating. Flowering normally begins when the tree is 4-6 years old.

Harvest

Collection can normally begin two months after flowering and before the fruits begin to open. The fruits are collected from the tree when the colour changes from light green to dark green and lines of division between locules become marked. Seeds should never be collected from the ground as they are quickly infected by fungi and of low quality.

On average, a mature tree can be expected to produce one kg of seed. The seeds do not mature at the same time and it may be necessary to collect several times from a seed source during the season.

Seed orchard planted in 1990. CATIE, Costa Rica. Photo: Dorthe Jøker, DFSC

Processing and handling

After collection the seeds are transported in jute sacks to the processing site, where they are dried in the shade for 2-3 days or until the capsules open. Fresh seeds have a moisture content of 45-55%. Sun drying of either fruits or seeds should be avoided as it may affect viability.

Storage and viability

The seeds are tolerant to desiccation in the sense that they can be dried down to at least 5% moisture content without loss in viability. However, a trial in Costa Rica showed that at 5% mc germination decreased quickly after a few months' storage. Best results were obtained for seeds with about 10% mc; this was significantly better than either 12% or 6.7%. The same trial indicated that 15°C is better for storage than 5°C. The seeds are sensitive to low temperatures, no seeds survived -17°C.

Even with optimal conditions the seeds cannot be stored for more than 6 months.

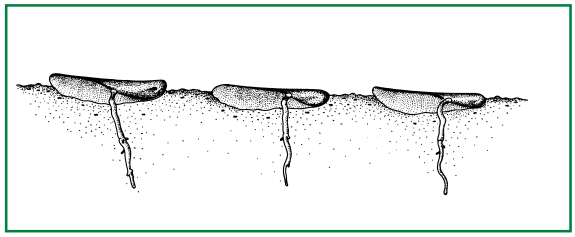
Dormancy and pretreatment

The seeds are not dormant and need no pretreatment.

Sowing and germination

The seeds are sown in boxes with fine sand. Unlike most other seeds, the radicle does not emerge through the micropyle but laterally through the seed coat. The best result is obtained when the seeds are placed horizontally in the soil allowing correct root anchoring and faster growth (see illustration below). Alternatively the seeds can be sown vertically with the wing buried in the soil. Germination starts 10-12 days after sowing and is terminated within one month. Fresh seeds will normally germinate close to 100%.

The seedlings must be transferred to bags some 10 days after germination and before the first pair of leaves appears. After transplanting the seedlings must be protected from direct sunlight for the first couple of weeks. After 4-6 months, when the plants are about 30 cm tall, they are planted into the field. Planting should not be delayed as the root has a fast growth rate. If the bag is not deep enough the root will be damaged and this will affect seedling growth. For monospecific plantations a planting distance of 4 x 4 m is recommended. The distance should not be less than this as the tree tops close very quickly. The species has a type of autopruning but it is convenient to prune the saplings 9-12 months after planting to eliminate ramifications.



Sowing technique. From: Flores 1993.

Phytosanitary problems

Fungi of the genera *Fusarium* sp. and *Phoma* sp. have been reported to infect the seeds.

Selected readings

Flores, E. M., 1993. *Vochysia guatemalensis.* Trees and Seeds from the Neotropics Vol. 2, no 2. Museo National de Costa Rica.

Salazar, R. et al, 2000. *Seed management of Vochysia guatemalensis.* Proceedings from Project on Handling and Storage of Recalcitrant and Intermediate Tropical Forest Tree Seeds, phase 1. (in preparation).

Salazar, R. 1997. *Vochysia guatemalensis*. Nota Técnica sobre Manejo de Semillas Forestales no 6. CATIE.

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