Allanblackia parviflora A.Chev.

Protologue
Veg. Ut. Afr. Trop. Franc. 5: 163 (1909).
Family
Clusiaceae (Guttiferae)
Chromosome number
2*n* = 56
Vernacular names
Vegetable tallow tree (En). Ouotéra (Fr).

Origin and geographic distribution
Allanblackia parviflora occurs in the forest zone from Guinea and Sierra Leone to Ghana.

Uses
The seeds of *Allanblackia parviflora* yield a solid fat used in cooking. Recently, the international food industry became interested in the fat as a natural solid component for margarines and similar products. The seeds are used as bait in traps for small game. In Ghana latex from the bark is used as pitch. The wood, called 'lacewood' in Liberia, is locally used, e.g. in house construction for walls, doors and window frames. In Ghana small trees are used as poles, pit props and bridge piles. The trees are often retained when land is cleared for cocoa production. Because of their relatively small crown, they are valued as shade trees. Small twigs are used as chew sticks or tooth picks. The pounded bark is rubbed on the body to relieve pain. In Côte d'Ivoire a decoction of the fruit pulp is used to relieve elephantiasis of the scrotum.

Production and international trade
An international market chain for seed of *Allanblackia* spp., including that of *Allanblackia parviflora* is being established. It is estimated that Ghana produced about 50 t of allanblackia oil in 2006.

Properties
The dry seeds contain per 100 g about: water 6 g, energy 2700 kJ (648 kcal), protein 4 g, fat 64 g, carbohydrate 24 g, fibre 3 g, Ca 122 mg, P 169 mg. The fatty acid composition of the fat is approximately: stearic acid 45–58% and oleic acid 40–51%. Only traces of other fatty acids are present. Its composition and relatively high melting point (35°C) makes the fat a valuable raw material that can be used without transformation to improve the consistency of margarines, cocoa butter substitutes and similar products.
The wood of *Allanblackia parviflora* is pinkish beige. The grain is fairly straight, texture medium to coarse. The wood has little lustre.
The density is 660–900 kg/m^3 at 12% moisture content. The rates of shrinkage during drying are moderately high: from green to oven dry 4.1% radial and 10.1% tangential. At 12% moisture content, the modulus of rupture is 103–140 N/mm^2, modulus of elasticity 6900–15,800 N/mm^2, compression parallel to grain 43–53 N/mm^2, cleavage 12–20 N/mm, Janka side hardness 9050 N and Janka end hardness 9500 N. The wood is easy to

work and takes a smooth finish.

Adulterations and substitutes
The fats from the seeds of *Allanblackia floribunda* Oliv. and *Allanblackia stuhlmannii* (Engl.) Engl. are very similar in composition to that of *Allanblackia parviflora*.

Description
Evergreen, dioecious medium-sized tree up to 25(–33) m tall; bole straight, cylindrical, up to 80 cm in diameter, without buttresses; bark surface yellowish brown or reddish brown, with small, irregular scales, inner bark reddish brown with sometimes pale yellow streaks, exuding a colourless or pale yellowish sap; crown narrow, with short horizontal branches. Leaves opposite, simple and entire; stipules absent; petiole 1–1.5 cm long, grooved above; blade elliptical to narrowly obovate, 12–25 cm × 5–9 cm, base cuneate, apex acuminate, thinly leathery, glabrous, shiny above, pinnately veined with numerous lateral veins. Inflorescence a terminal raceme or panicle with strongly reduced branches or flowers single or in pairs in leaf axils. Flowers unisexual, regular, 5-merous, pinkish to reddish or white, fragrant; pedicel 1–3 cm long; sepals ovate or obovate, unequal, 6–18 mm × 4–15 mm, glabrous; petals obovate, c. 20 mm long, glabrous; male flowers with numerous stamens in 5 bundles opposite the petals, obtriangular, c. 18 mm long, anthers arranged on the internal face of the bundle, disk star-shaped with smooth or slightly folded glands; female flowers with superior, incompletely 5-celled ovary and sessile stigma. Fruit a large, ellipsoid berry 10–50 cm × c. 15 cm, with 5 longitudinal ridges, brown warty, 40–100-seeded. Seeds ovoid, c. 3 cm × 2 cm × 1.5 cm, enclosed by a pinkish aril. Seedling with hypogeal germination; epicotyl 4–5 cm long.

Other botanical information
Allanblackia comprises about 10 species and is restricted to tropical Africa. *Allanblackia parviflora* is sometimes considered a synonym of *Allanblackia floribunda* Oliv. However, their areas of distribution are disjunct, the latter occurring from Benin and Nigeria east to eastern DR Congo. The two species are very similar, but *Allanblackia floribunda* can be distinguished by the folded disk glands of the male flowers and longer pedicel.

Growth and development
In Sierra Leone trees flower in April–June and fruits mature in January–February. In Côte d'Ivoire flowering is from December to September with a peak in March and mature fruits are found almost throughout the year. Branches are brittle and often break due to strong winds.

Ecology
Allanblackia parviflora is most abundant in the wet evergreen forest zone, especially on slopes and away from disturbed areas. It is less common in semi-deciduous forest. It is common on strongly leached, acid soils with pH 3.8–4.1.

Propagation and planting
Natural regeneration is affected by seed predation and collection. Multiplication by seed

is difficult as germination is extremely slow and may take 24–30 months. Methods of multiplication using cuttings and grafting are being developed.

Management
An inventory in the wet evergreen Mabi forest of Côte d'Ivoire found 150 trees per km^2 in the diameter class above 10 cm; in the very wet Yaya forest in south-eastern Côte d'Ivoire 600 trees per km^2 were recorded. In evergreen forest in Ghana it occurs at estimated densities of 200 trees of 30–80 cm bole diameter per km^2. The total number of trees in this class in Côte d'Ivoire was estimated at over 1 million (or 8 trees per ha), in Liberia the number was estimated at 4 million trees.
Efforts are underway to domesticate this species, but at present all seed is collected from wild stands or trees retained in farmland.
In production forest *Allanblackia parviflora* is considered a weed and sometimes eradicated.

Harvesting
The degree of maturity of fruits on the tree can not be estimated; therefore mature fruits are left to drop to the ground and are then collected. The fruits and seeds are eaten by many wild animals and losses are great unless mature fruits are collected frequently. The harvesting season coincides with labour demands on the farm or with the harvest season for other forest products. For individual groups of trees the fruiting season is shorter and preliminary work indicates that collection of fruits from wild stands can be economical. A collection, marketing and processing chain aiming at export of the fat is being developed in Ghana.

Handling after harvest
Fruits are stored under a cover of leaves to allow the fruit pulp to disintegrate. To extract the seeds, fruits are crushed between the hands and seeds are rubbed clean. To extract the fat, seeds are dried and crushed; the resulting mass is mixed with water and boiled until the fat separates and floats to the surface, from where it is scooped off. More modern hydraulic and screw press equipment is now also used.

Genetic resources
Allanblackia parviflora is widespread and although rainforest areas are decreasing, it is not considered vulnerable.

Breeding
Selection of high-yielding trees for seed collection and vegetative multiplication has started recently.

Prospects
Demand for the fat of *Allanblackia* spp. is likely to remain strong. If efforts of domestication are successful, *Allanblackia parviflora* or one of the related large-fruited *Allanblackia* species may become a promising crop in the rainforest zone of Africa. Collection of seed from wild stands is possible, but its economical viability is poor,

except possibly in areas where *Allanblackia parviflora* is most common.

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Sources of illustration

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Author(s)

C. Orwa
World Agroforestry Centre (ICRAF), United Nations Avenue, Gigiri, P.O. Box 30677-00100 GPO, Nairobi, Kenya

L.P.A. Oyen
PROTA Network Office Europe, Wageningen University, P.O. Box 341, 6700 AH Wageningen, Netherlands

Editors

- H.A.M. van der Vossen
  Steenuil 18, 1606 CA Venhuizen, Netherlands
- G.S. Mkamilo
  Naliendele Agricultural Research Institute, P.O. Box 509, Mtwara, Tanzania

General editors

- R.H.M.J. Lemmens
  PROTA Network Office Europe, Wageningen University, P.O. Box 341, 6700 AH Wageningen, Netherlands
- L.P.A. Oyen
  PROTA Network Office Europe, Wageningen University, P.O. Box 341, 6700 AH Wageningen, Netherlands

Photo editor

- A. de Ruijter
  PROTA Network Office Europe, Wageningen University, P.O. Box 341, 6700 AH Wageningen, Netherlands

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