Khaya nyasica Stapf ex Baker f.

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MELIACEAE (MAHOGANY FAMILY)

K. anthotheca (Welw.) (Makuwila 1997)

Acajou, banket, East African mahogany, mkangazi, Mozambique mahogany, muvava, Nyasaland mahogany, red mahogany, Rhodesian mahogany, umbaua

Of the 10 species in the genus, 9 grow in continental Africa and 1 grows in Madagascar and the Comoros. *Khaya nyasica* grows in central, eastern, and southern Africa, including Malawi, Mozambique, South Africa, Tanzania, Zaire, Zambia, and Zimbabwe, where it is found in association with other tree species (Exell and others 1963, Francis 1989a, Storrs 1979). Plantations of this species were tried in Cuba, Florida, Puerto Rico, and Nicaragua (Exell and others 1963, Francis 1989a).

Khaya nyasica is an evergreen to semideciduous tree that occasionally attains 60 m in height and 4.5 m d.b.h. (Greenway 1947). A fast-growing tree, it has reached 36 m in height and 65 cm d.b.h. in 50 years in South Africa (Bussche 1982). Its rounded, heavy crown tops a branchfree, straight bole arising from a basal swelling, occasionally with buttresses. Primarily a riparian tree, *K. nyasica* is found on well-drained alluvial soils and neighboring colluvial slopes (Rendle and others 1911). Suitable soils include clay to sandy loam with a pH from 7 to less than 4 (Francis 1989a). The species grows from near sea level to 1,400 m, with the optimum elevation lying between 700 and 1,000 m. Tolerant of seasonal drought, *K. nyasica* grows best where annual precipitation exceeds 1,000 mm.

The wood of *K. nyasica* is almost pink when fresh, turning to a lustrous reddish-brown when dry (Greenway 1947). Moderately hard and durable, with a specific gravity of about 0.5 to 0.65 g/cm^3 and a straight-to-wavy grain, it air-dries rapidly without much distortion. The wood saws easily, planes hard, and finishes to the rich polish characteristic of American mahoganies (*Swietenia* spp.). It is used for cabinets, furniture, joinery, turnery, paneling, and boats. In its native range, bark preparations are said to cure colds (Greenway 1947), and the seed oil is used to fight head lice. *Khaya nyasica* is grown as an ornamental and as a shade tree in coffee plantations.

The very small, white, and fragrant flowers appear at the end of the dry season and beginning of the wet season (Coates and others 1957, Exell and others 1963, Hack 1950). They are arranged in many-flowered racemes or panicles. The sepals are rounded and overlapping, and the petals are twisted (Greenway 1947). In Puerto Rico, the trees can produce these four- or five-part, unisexual flowers at 24 years (Francis 1989a). The globe-shaped, gray-brown fruits are erect, woody, septifragal capsules up to 8 cm in diameter. When the fruits ripen in spring or early summer (about 9 to 11 months after flowering), they release 20 to 60 seeds. The four- or five-valved capsule opens from the top to release the pale- to reddish-brown, narrowly winged seeds, which measure about 2 to 2.5 by 2.5 to 5 cm.

Seed capsules are clipped from trees when they begin to split. Considering the size and height of mature trees, their fruits must be collected by shooting them down or climbing the tree, or by synchronizing logging with seed maturity. The capsules are sun-dried until they split, and the shells are removed by hand (Francis 1989a, Makuwila 1997). Seeds are air-dried in the shade for an additional five days, when the moisture content should be about 5 to 10 percent (Makuwila 1997). Seeds average about 1,000 to 3,800 per kg.

Because seeds are viable for less than 3 months and are attacked by insects (Mugasha 1978), they must be stored in sealed containers in a refrigerator or sown fresh. Germination is cryptocotylar and takes place in 1 to 4 weeks, with average germination of 30 to 70 percent and sometimes almost 100 percent (Bussche 1982, Makuwila 1997). Large seeds germinate faster and at a higher rate and produce more vigorous seedlings. Seeds can be sown directly into lightly-shaded open beds, into black polyethlene sleeves (10 x 30 cm) with soil containing 50 percent sand (Mugasha 1978), or in a mix of well-

but not over-watered compost of semi-decomposed pine bark (or appropriate substitute) and sandy soil (Bussche 1982). Sowing depth is 0.6 to 1.2 cm, and the hilum of the seed must point down to prevent stem curl during germination.

During the first 3 months, shade netting of about 70 percent is required. When seedlings are about 5 cm tall, they are transplanted into large polyethylene bags. After the seedlings are 5 months old, sleeves are pruned monthly with piano wire. In South Africa, seedlings reach 30 to 50 cm and are ready for outplanting at 1 year (Bussche 1982) Seedlings should be planted with minimum root disturbance at 5-by-5 m distance in well-prepared pits surrounded by hoed circles 1 m in diameter, when the second soaking rain of the season occurs (Bussche 1982). To avoid problems with shootborers and sun scorch, this shade-tolerant tree should be planted in small forest clearings or interplanted with fast-growing species. Greenway (1947) transplanted seedlings at 3 to 4 months and 7.5 cm tall. However, he found stump planting or stopping more successful. In this procedure, widely spaced seedlings are usually grown in beds for 18 months to 2 years. When they reach 1.2 to 1.5 m (Mugasha 1978), stumps of about 30-cm shoot and 23-cm taproots are planted at 2.4-by 2.4-m distance (Mugasha 1978).