

LOCAL NAMES

English (kola nut, goora nut, cola nut, bitter cola); French (colatier); Fula (goro); German (kolabaum); Hausa (goro); Igbo (oji); Mandinka (kuruo, goro); Spanish (colatero); Wolof (goro); Yoruba (obi gbanja)

BOTANIC DESCRIPTION

Cola nitida is an understorey, evergreen tree, generally growing 9-12 m high, sometimes reaching 27 m, with a diameter up to 1.5 m, narrow buttresses extending for 1 m in old trees, or absent, bole not always straight and cylindrical; bark grey or greyish brown, rough with longitudinal fissures; slash pinkish red, thick and fibrous, darkening to brown on exposure.

Leaves simple, alternate, petiolate; petiole 1.2-10 cm long; blade broadly oblong to broadly elliptic or elliptic-oblong, 10-33 x 5-13 cm, apex abruptly and shortly acuminate, base obtuse or rounded, margins wavy, glabrous or nearly so; leathery, dark green lateral nerves 6-10.

Inflorescence axillary, an irregularly branched panicles 5-10 cm long, shorter than the leaves; flowers unisexual, 5-merous, apetalous. Male flowers with cup-shaped calyx, about 2 cm in diameter, deeply lobed, stamens numerous, in two whorls. Female flowers with calyx about 5 cm in diameter, with 5 carpels and numerous rudimentary anthers at the base.

Fruits oblong-ellipsoid follicles 13 x 7 cm, green, shiny-surfaced, smooth to the touch but knobby with large tubercles. Seeds 4-8 (10) per carpel, ovoid or subglobose 3-3.5 x 2-2.5 cm, either red or white.

BIOLOGY

The tree is evergreen. Flowering period is for 3 months (May to July in Ghana) followed by fruiting for 3 months (October to December in Ghana).



Leaves. Lowes Garden Center Kahului, Maui, Hawaii (Forest & Kim Starr)

ECOLOGY

Originally a tree of tropical rainforest, it needs a hot humid climate but can withstand a dry season on sites with a high ground water level. It may be cultivated in drier areas where ground water is available. *C. nitida* is a shade bearer but develops a better spreading crown which yields more fruits in open places. Though it is a lowland forest tree it has been found at altitudes over 300 m on deep rich soils under heavy and evenly distributed rainfall.

BIOPHYSICAL LIMITS

Altitude: 0-300 m, Mean annual temperature: 26-35 deg. C, Mean annual rainfall: 1 200-1 800 mm

Soil type: Prefers well-drained soils although it may be found in marshy areas. Does well in both light and heavy soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Cote d'Ivoire, Ghana, Liberia, Nigeria, Sierra Leone

Exotic: Angola, Brazil, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Ethiopia, Gabon, Guinea, India, Jamaica, Kenya, Mali, Mozambique, Senegal, Somalia, Sudan, Tanzania, Togo, Uganda, United States of America, Zimbabwe



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

PRODUCTS

Food: The nuts taste bitter when chewed at first but they leave a sweet taste in the mouth later. Thus chewing cola nuts before drinking water helps to render the water sweeter. The bitter tasting seeds are much appreciated by Muslims in the drier region of West Africa, especially during the month of Ramadhan. Seeds consist of 13.5% water, 9.5% crude protein, 1.4% fat, 45% sugar and starch, 7% cellulose, 3.8% ash, also rich in alkaloids, caffeine (2.8%), theobroine (0.05%) and kolatine. The red nuts are a potential source of food colourant.

Cola nuts, in combination with coca-leaf are incorporated in brands of cocoa, tonic wines and other beverages. The nuts are said to be restraining and to possess thirst-restraining properties.

The nuts are used for non-alcoholic soft drinks like Coca-Cola. Nuts are very rich in caffeine.

Fuel: A good source of fuelwood.

Timber: Sapwood is pinkish-white and the heartwood dull yellow. Suitable for furniture, house and boat building, coach-work, plates, domestic utensils, gun stocks, joinery and carvings.

Medicine: Cola nuts stimulate the nervous system when chewed. They counteract overstrain and depression thus improving the physical and mental state. The principle action is that of caffeine. Other active principles include theobromine and kolatine. A non-addictive stimulant used medicinally for diarrhoea and to prevent vomiting in cases of high fever. In combination with the coca-leaf a drug was made which was used as 'Forced March' tablets by explorers and military expeditions.

The crushed nuts are boiled together with the leaves of *Morinda lucida* and the liquid taken internally to cure piles. The nuts ground to a fine paste together with the leaves of *Scooparia dulce*, are dissolved in a little water and a few drops are administered orally to babies for headache. An infusion of the bark mixed with ginger and a little pepper is taken internally to cure stomach ulcers. The nuts are also used to treat diarrhoea and dysentery.

Other products: Widely used in West Africa for social ceremonies. World production of cola nuts from *C. nitida* and allied species estimated as ca. 180 000 t of which about 120 000 t is produced in Nigeria and used either internally or in neighbouring countries.

SERVICES

Intercropping: Cultivated as an intercrop of cacao to provide top shade.

Pollution control: Reputed to act as a water purifier.

Other services: Muslims consider the cola nut as sacred and brought by the prophet Mohammed. They use the nut for ceremonial and social occasions.

TREE MANAGEMENT

Field spacing of 10 x 10 m is common. Early weeding is essential and interplanting with a shade tree recommended. Initial growth is slow, reaching only 3 m in 4 years.

Slashing the trunk of cola trees before the season of main flowering is believed to induce heavy bearing. Trees start flowering at 4-5 years and very few fruits can be obtained, but full production occurs in 20 years. Cola as an intercrop flowers later than the normal 4-5 years.

GERMPLASM MANAGEMENT

Seed generally have recalcitrant storage behaviour. Seed can be retained for 1 year or more without loss in viability with seeds wrapped in banana leaves in a basket, or with polythene bags, at room temperature. Nuts may be thus stored for several months without spoiling but will require regular changing of the leaves and checking for weevil damage.

PESTS AND DISEASES

The nuts are subject to attack by the Kola weevil *Balanogastriis cola*. The larvae of the moth *Characoma strictigrapta* that also attacks cacao bore into the nuts. Traders sometimes apply an extract of the bark *Rauvolfia vomitoria* or the pulverised fruits of *Xylopi*a and *Capsicum* to counteract the attack on nursery plants. The cacao pests *Sahlbergella* spp have been found also on *C. nitida* as an alternative host plant. While seeds are liable to worm attack, the wood is subject to borer attack.

FURTHER READING

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SUGGESTED CITATION

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