Cassia fistula L.

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FABACEAE (BEAN FAMILY)

No synonyms

Caña fistula, canafistula, canéficier, golden shower, lluvia de oro, indian laburnum, pudding pipe tree, purging cassia

Native to the tropical regions of Asia, *Cassia fistula* is naturally distributed across India, Indochina, and Malaysia. It has also been introduced to the tropical regions of Africa and America. In Africa, it is found in Kenya. In America, it has been planted in southern Florida, Cuba, Puerto Rico, Jamaica, Mexico, across Central America, Colombia, Venezuela, and Brazil. It is also found in Hawaii.

Cassia fistula is a fast-growing, deciduous tree of up to 15 m in height and 60 cm d.b.h. The trunk is straight, and the open crown consists of horizontal and extended branches with sparse foliage. The leaves are paripinnate, made up of 8 to 16 ovate to lanceolate leaflets, and 8 to 20 cm long. The tree grows in poor and thin soils. The average annual temperature where the tree develops ranges from 17.2 to 37 °C, and the average annual precipitation ranges between 500 and 3000 mm. The species usually grows in open areas subject to monsoon conditions.

Cassia fistula is used as an ornamental and shade tree around houses; on the edges of roads; and in the streets, parks, and gardens of towns. The sweet pulp is used as a mild laxative. An infusion of the fruit is used to dissolve kidney stones. The wood is used for firewood in rural areas. The wood has a specific gravity of 0.9; is hard, heavy, strong, and durable; and is used for poles and handles for farming implements and in cabinet-making and construction. The bark is used to tan hides (Little and others 1967, Lötschert and Beese 1992, Nicholson and Arzeni 1993, Rico-Gray and others 1991).

The colorful—pale yellow to golden—flowers are arranged in panicles. *Cassia fistula* blooms and fruits virtually throughout the year at a young age in most places where it is cultivated. In its natural habitat, the fruits (legumes) ripen in the months of April and May. Outside its habitat the season for ripening varies. Fruits remain hanging on the tree for 2 or 3 months after ripening. Gradually, they fall to the ground. The legumes are dangling, linear-cylindrical, 30 to 50 cm long, 1.5 to 1.7 cm in diameter, transversally septate, dark brown to black, and indehiscent when ripe; they have ligneous valves. Inside each septum, one seed is surrounded by a sweet, viscous, dark-brown pulp. Each fruit contains numerous seeds (Holdridge and Poveda 1975, Irwin and Barneby 1982, Isely 1975, Little and others 1967). The seeds are obovate-ellipsoid, biconvex in cross section, ventrally flattened, 7.5 to 10.0 mm long, 6.0 to 7.5 mm wide, and 2.5 to 3.0 mm thick. The seedcoat is light brown, smooth, shiny, and cartaceous with fracture lines.

Ripe fruits are collected from the trees and the ground. Poles with metal hooks are used to collect fruits from trees. In the first step to extract seeds, the fruits are ground in wood mortars. One of three processes can be used to separate seeds from legume residues. In one, the seeds, impurities and all, are put in containers with water. The seeds sink; the impurities float and are gathered easily with a strainer. The seeds are removed from the water and dried in the sun for 1 hour or longer, depending on lighting conditions. If the impurities are small, they can be removed using sieves. Or they can be blown away using a vertical column blower. The seeds are then washed vigorously with running water to remove remnants of pulp and pericarp that adhere to them. The cleaned seeds are placed in the sun to dry. Seeds average 5,500 per kg (Food and Agriculture Organization 1968).

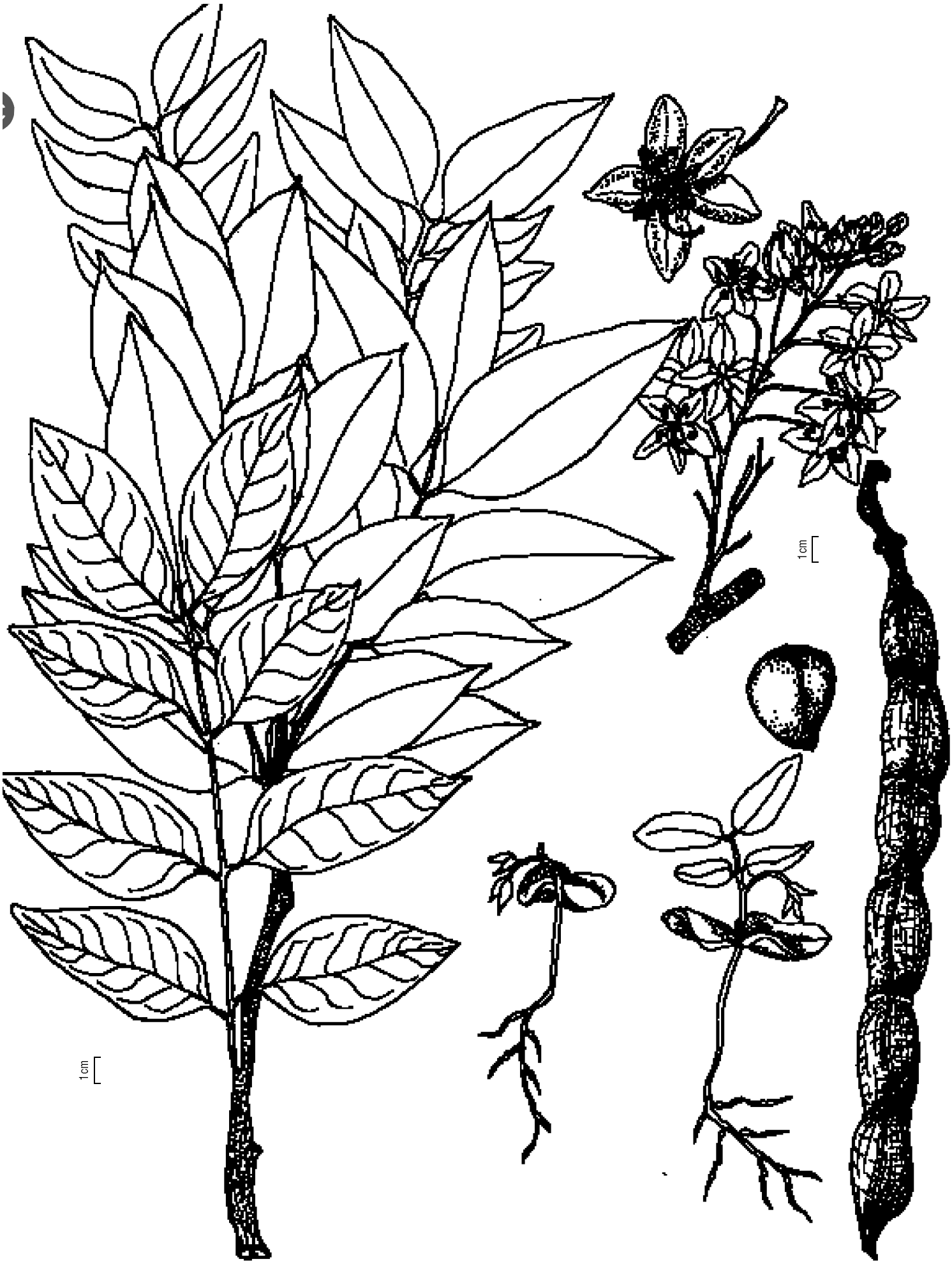
Seeds can be stored at room temperature and remain viable for 1 year. To remain viable longer, seeds must be placed in sealed plastic, glass, or metal containers in cold chambers at a temperature of 5 to 6 °C. It has been noted that after 1 year, the seeds stored in a cold chamber can still germinate. However, there have been no accurate assessments of this practice.

The seeds show a mechanical latency to germinate because the seedcoat is hard. The seeds can be soaked in boiling water for 5 minutes before planting to stimulate germination (Food and Agriculture Organization 1968).

ADDITIONAL INFORMATION

The *Cassia* genus includes some 500 species, some of which contain substances with laxative properties. These substances are found in the leaves and in the sweet and viscous pulp of the fruits (Lötschert and Beese 1992).

The vascular bundle is visible as a dark line that runs longitudinally to the seed through the middle part of its lateral surfaces. The hilum is subbasal, simple, puntiform, sometimes covered by remnants of funicular tissue, and set deep in a depression. The micropyle is indiscernible. The lens is subbasal, near the hilum, on the opposite side of the micropyle, lanceolate or oval, and set deep in a depression. The endosperm is abundant, whole, located mostly on the lateral surfaces of the embryo, cornaceous, whitish, and translucent. The yellow embryo has a straight axis and is almost bilaterally symmetrical. The cotyledons are obovoid, whole, expanded, flat, thin, twisted in the shape of an S, and independent of one another. The plumule is moderately developed in pinnae. The radicle is conical and not covered by the cotyledons (Niembro 1982, Shyam and Vartak 1985).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