

SOME LEGUMINOUS TREES PROVIDING USEFUL FRUITS IN THE NORTH OF BRAZIL

DAVID B. ARKCOLL¹

ABSTRACT - Several species of legume fruit trees are described briefly. Trees of *Parkia platycephala* Benth. (Faveira) produce as much as 200 kg of dry starchy pods which are fed to livestock in the dry part of the year in Piauí and the Tocantins region. *Pentaclethra macroloba* (Willd.) Kuntze (Pracachy) is a common tree along the banks of the rivers Negro and Amazon. The large pods contain seeds with 45% oil when dry that has been collected in the past and extracted for cooking, candle and soap production. Extracted meal is fed to livestock. *Swartzia* sp. (uabu) produce large seeds that form an important item of the diet of the toototóbi group (part of the Yanomamo tribe on the Brazil/Venezuela border) at certain times of the year. They are said to be toxic unless well cooked and soaked. *Cassia leiandra* Benth. (Marimari) is a common tree on the floodplain of the Amazon river. Its long pods contain flat seeds surrounded by a soft green edible pulp that is bitter sweet and pleasant enough to reach local markets. *Hymenaea courbaril* Linn. (West Indian locust, Stinking toe, Jatobá, Jutaf, Copal) and many other members of the same genus produce pods which contain an edible powdery pulp surrounding the seeds within. The tree is better known for its hardwood and hard resin used to produce a varnish. *Dipteryx odorata* (Aubl.) Willd. (Tonka bean, Cumaru) have seeds which are collected and extracted industrially to produce coumarin. This is used as a vanilla substitute, as a scent for tobacco and in perfumes. This species has a very hard wood and is being tested as a plantation crop by foresters in the Amazon. Two species of Inga, *I. edulis* Mart., and *I. macrophylla* H.B.K. are commonly grown in Amazon gardens for the sweet edible tests that surround the seeds in their large pods. Those collected from wild trees of *I. cinnamomea* Spruce ex Benth. are also sold in the market.

Index terms: edible pods from legume trees.

ALGUMAS ÁRVORES LEGUMINOSAS QUE PRODUZEM FRUTOS ÚTEIS NO NORTE DO BRASIL

RESUMO - Suscintamente, são descritas várias espécies de leguminosas arbóreas produtoras de frutos.

Árvores de *Parkia platycephala* (Faveira) produzem até 200 kg de vagens secas, contendo alto teor de amido, e que são usadas para alimentar animais durante o período seco do ano, no Estado do Piauí e na região do Tocantins. *Pentaclethra macroloba* (Willd.) Kuntze é uma árvore comum ao longo dos bancos dos rios Negro e Amazonas. As sementes secas contêm 45% do óleo que tem sido usado para cozinha e iluminação. Após a extração do óleo, o restante é usado para alimentação animal. *Swartzia* sp. (uabu) produz sementes grandes que constituem um importante alimento para o grupo de índios Toototóboi.

¹ Instituto Nacional de Pesquisas da Amazônia - INPA, Caixa Postal 478, CEP 69000 - Manaus, AM.

Cassia leiandra Benth (Marimari) é uma árvore comum na parte inundável do Amazonas. As sementes são revestidas de uma polpa verde, com sabor acre-adocicado tão apreciado que chega aos mercados locais. *Hymenea coubaril* Linn. (Jatobá, Jutaf, Copal) e vários outros membros do mesmo gênero produzem vagens com sementes revestidas de uma polpa pulverulenta comestível. A árvore é mais conhecida pela sua madeira e resina usada para produzir verniz. Das sementes de *Dipteryx odorata* (Aubl.) Willd. (Cumaru), extrai-se comercialmente o coumarin que é usado como substituto da baunilha, como aromatizante para tabaco e em perfumes. Esta espécie tem madeira muito dura e está sendo testada para reflorestamento na Amazônia. *Inga edulis* Mart e *I. macrophyla* H.B.K. são comuns nos quintais na Amazônia e apreciados pela polpa doce que envolve as sementes. As vagens colhidas das árvores silvestres de *I. cinnamomea* Spruce ex Benth. também são vendidas nos mercados.

Termos para indexação: vagens comestíveis.

Parkia platycephala Benth.

Common name: Faveira

These are small 5 to 10 m tall trees found in the cerrado shrub from southern Pará to Bahia. Small stem-less varieties are reported from Ceará. They look green and healthy throughout the dry season which may last as long as six months in these regions. Up to ten trees per hectare can be seen in some parts of Piauí, often associated with *Caryocar cuneatum*. Leaves are decomposed with very small leaflets and the dark red, 3 cm, ball like inflorescences hang on thin 30 cm long peduncles. Flowers are pollinated by bats and give rise to clusters of hard, dry, brown thin and curled pods. These are typically 8 x 3 x 0.5 cm in size, indehiscent and contain two parallel rows of elliptic seeds. Pods ripen between September and December and are thus available to cattle at the end of the dry season when little other forage is left. So they are left in areas cleared for pasture. Trees are able to produce 200 kg or more of dry pods and cattle eat them avidly off the tree, on the ground or after storage on the farms. Pods are bitter sweet and starchy and so are highly digestible (75%). The whole pods contain about 9% protein and the seeds 18% (Carvalho, J.H. & Ramos, G.M. unpublished data, EMBRAPA, Teresina). Pods can be fermented to produce alcohol. Tree leaves are not palatable. Five other tall *Parkia* spp. from the Amazon forest have good wood (Loureiro et al. 1979 and Instituto Brasileiro de Desenvolvimento Florestal 1981) and *P. pendula* has a sticky gum-arabic like resin around the seeds that is used as a bird lime. The pods of some other *Parkia* spp. are eaten by people in West Africa (Hill 1952) and the taxonomy of the genus has been described recently (Hopkins 1981).

Pentaclethra macroloba (Willd.) Kuntze syn: *P. filamentosa* Benth

Common names: Pracachy, Pracaxi, Paracaxi

This is a medium sized tree, 10 to 20 m tall, seen throughout much of the Amazon and also in some parts of Central America, the Guyanas and Trinidad. Several trees per kilometre are common along the banks of much of the Amazon river. Seeds float down the river and germinate when washed up on the sandy banks. So they like low lying areas, tolerate seasonal flooding and grow well on poor sandy soils where they nodulate profusely. Trees are fairly heavily branched often from low down. Leaves are

decompound and slightly pendant. The inflorescences are erect, terminal, white panicles each giving rise to several large woody curled pods. These are typically 40 x 5 x 1 cm in size and strongly dehiscent so that they hurl their 5 to 8 flat rhomboid seeds several metres when they dry and split. Dry seeds are 4 x 3 x 0.5 cm in size, weigh about 8 g and the brown testa separates easily from the two fawn coloured cotyledons. It is easy to collect about 5 kg of seed under a 10 m tree in July in the Manaus region if one is there before fish or wild animals. According to C. Pesce (1941) these contain 45% of a mild flavoured, partly solid oil. This was extracted in the past on a home and small industrial scale in Pará, for cooking and making soft soaps and candles. The residual meal containing 8.9% H₂O, 7.6% oil and 27.8% protein was fed to livestock. However, collection and use of seeds became rare partly because the trees along the rivers were drastically reduced during the period that they provided a favorite fuelwood for steamboats. Seeds of *P. macrophylla* are used as a human food in West Africa.

Swartzia spp

Common names: Uabu, Uaubu, Wauba

This species has not yet been described botanically but is said to be a medium sized tree with large trifoliolate leaves. The large pods usually produce a single flattened and round reddish seed, 4 x 1 cm in size. These form an important item of the diet of certain groups of the Yanomamo indians who live in a very remote area along the Brazilian Venezuela border. The Toototóbi group eat large amounts as a staple during the rainy season from May to July when their staples, *Musa* spp. and *Bactris gasipaes*, are rare. Seeds are left to soak in water for two or three days after prolonged cooking. This is said to be essential to eliminate toxins. Seeds are flavourless and a little soapy which suggests that they may contain saponins. They are eaten whole or mashed into a gruel, often with bananas. Several *Swartzia* spp. are known for their hardwoods and others for their large beans that wash up on the beaches of the river Negro.

Cassia leiandra Benth

Common names: Marimari, Seruaia, Ingá, Mari

This is a small heavily branched tree commonly found on the floodplains and flooded forest of the River Amazon and its tributaries. The fruit is a long (50 - 80 cm) functionally indehiscent, indented green to yellow pod. These are 1.5 to 3 cm in diameter and contain up to a hundred flat seeds each surrounded by a pasty green edible pulp. The flavour is subacid, slightly bitter-sweet but pleasant to most people and so wild fruit reach the Manaus market from March to June. A tree may produce as many as 100 pods. It is mentioned in Cavalcante (1976) and is the object of a recent monograph (Arkcoll 1983a). Many *Cassia* spp. are known as exotic ornamentals. *C. senna* and some other species are source of a powerful laxative and *C. auriculata* bark is used for tanning.

Hymenaea coubaril Linn

Common names: West Indian or Latin American Locust. Stinking toe, Jatobá, Jutaf, Copal, Guapinol, Algarrobo das Antilhas

These are large 30 to 40 m tall trees well known throughout Central America, the West Indies and the Amazon forest for their excellent hardwood (0.8 to 1 g/cm³) and hard resin. The latter makes an inferior varnish and is known as South American Copal or Jutaica. It exudes from damaged parts of the

trees and is often dug up from the base of the tree in a semi-fossilized form. The bark is used in folk medicine especially against coughs. Trees may produce many hundreds of hard brown woody pods typically 10 x 3 x 1.5 cm. These split if hit hard and contain 1 to 3 round seeds surrounded by an edible, powdery, dry, green cream or fawn pulp. This has a peculiar smell and sweet banana-like flavour. They are eaten mainly by children but are not considered attractive enough to market. More detail is available in a recent monograph (Arkcoll 1983b) and the taxonomy and ecology of the genus have been described (Langenheim et al. 1973).

Dipteryx odorata (Aubl.) Willd.

Common names: Tonka bean, Cumarú

This is a large 30 to 40 m tall tree widely dispersed by bats throughout many areas of the Amazon forest, in Venezuela and the Guyanas. The soft green mesocarp of the 6 x 3 x 2 cm drupe like pods are eaten by bats. Single seeds within the hard endocarp are collected from beneath wild trees as a source of coumarin. This is used for scenting tobacco and perfumes and as a vanilla substitute for foods (Purse-glove 1976). Synthetic vanilla has reduced the market from a pre-war height when even a few plantations were installed. However, Brazil still processes 34 t of seeds each year. A tree produces only 0.5 to 1 kg of dried seeds, but as these are still fairly valuable, it is hoped that they may justify dual purpose plantations aimed at producing the excellent hardwood as well (Loureiro et al. 1979).

Inga edulis Mart

Common names: Ice cream bean, Ingá, Guabo, Guano, Pois sucre

This is a small 5 to 15 m open crowned tree frequently found growing around dwelling throughout many parts of Central America, the Amazon and surrounding countries. It is fast growing and is widely used as a coffee and cocoa shade. The ease with which seeds germinate on the ground, quick growth, rusticity and a good ability to coppice, suggest that it would be a useful species for small-holders woodlots and useful bush fallows (Arkcoll 1983c). Trees fruit heavily several times a year. The 50 to 100 cm long, indehiscent, green, cylindrical, grooved pods have 10 to 20 seeds covered by succulent white edible testas. These are sweet, moist and often fibrous like cotton wool. They are appreciated enough to reach market which is surprising as they are considered dull by most new-comers. Superior varieties with a mild cinnamon flavour have been identified (Arkcoll 1983). *I. cinnamonea* Spruce ex Benth. and *I. macrophylla* H.B.K. are also common in the Central Amazon region (Cavalcante 1976), the fruit of the former being collected from wild trees and sold in the market. The seeds of *I. paterno* are eaten roasted in El Salvador. Many other *Inga* spp. are found in the American tropics and are eaten by wild animals and occasionally by humans.

REFERENCES

- ARKCOLL, D.B. A comparison of some fast growing species suitable for woodlots in the wet tropics. In: SYMPOSIUM OF N₂-FIXING TREES FOR THE TROPICS, Rio de Janeiro, 1983c. Proceedings of a . . .
- ARKCOLL, D.B. Monograph on *Cassia leiandra* Benth. Rome, FAO, Forestry Dept., 1983a.
- Pesq. agropec. bras., Brasília, 19 s/n: 235-239, jun. 1984.

- ARKCOLL, D.B. Monograph on *Hymenaea coubaril* Linn. Rome, FAO, Forestry Dept., 1983b.
- ARKCOLL, D.B. Monograph on *Inga edulis* Mart. Rome, FAO. Forestry Dept., 1983.
- CAVALCANTE, P.B. Frutas comestíveis da Amazônia. Manaus, INPA, 1976. 176p.
- CORREA, P.M. Dicionário de plantas úteis do Brasil. Rio de Janeiro, Ministério da Agricultura, 1931.
- HILL, A.F. Economic botany. New York, Mc-Graw-Hill, 1952. 560p.
- HOPKINS, H.C. The taxonomy, pollination biology of and evolution in the bat pollinated genus *Parkia* D. Phil. Oxford, University, 1981. Tese.
- INSTITUTO BRASILEIRO DE DESENVOLVIMENTO FLORESTAL. Madeiras da Amazônia: características e utilização. Brasília, CNPq, 1981. v.1, 133p.
- LANGENHEIM, J.H.; LEE, Y.T. & MARTIN, S.S. An evolutionary and ecological perspective of Amazonian *Hylaea* species of Hymenaceae. *Acta amaz.*, 3(1):5-37, 1973.
- LOUREIRO, A.A.; SILVA, M.F. da & ALENCAR, J.C. Essências madeiras da Amazônia. 1979. v. 1, 245p.
- PESCE, C. Oleaginosas da Amazônia. Belém, Of. Graf. da Revista do Veterinário, 1941. 164p.
- PURSEGLOVE, J.W. Tropical crops: Dicotyledons. London, Longman Group Ltd., 1976. 719p.