Pentaclethra macroloba

(Willd.) Kuntze

Fabaceae - Mimosoideae

fine leaf

LOCAL NAMES
Creole (koeroebaharo,trysil,koloballi,koorooballi); English (oil bean tree); Portuguese (pracaxy,paroacaxi,paranacachy,parachy); Spanish (gavilán,carbonero,palo de aceite,quebracho,sangredo,mulato); Trade name (fine leaf)

BOTANIC DESCRIPTION
Pentaclethra macroloba is a medium to large tree 40 m tall and 1.3 m diameter at breast height. The bark is smooth, grey-brown

Leaves biparipinnate, to 30 cm long, with numerous small leaflets giving a feather-like appearance

Flowers hermaphrodite, small, crowded in 15-20 cm long, dense racemes. There are almost 200 flowers per raceme but only 1-5 flowers develop into fruits

Fruit dehiscent pod, 20-50 cm long by 4-6 cm wide, dark brown, 3-8 seeds per pod.

Seed asymmetric, lack endosperm and differ from a typical mimosoid seed; seed coat brown with longitudinal stone cells forming fine lines on the surface

There are two other species in the genus P. macrophylla Benth and P. eetveldeana De Wild. & Th. Dur., both from tropical Africa. All the three species have rich oily seeds

BIOLOGY
The peak flowering season is April-May and July-August but there is normally some flowering all through the rainy season. In the Atlantic lowlands it is common to see trees bearing flowers as well as immature and mature pods in September -December. The main crop is produced in August-September and in most places there is a minor fructification in November-December

The species is out-crossing and probably pollinated by small insects. It begins to produce seeds at a very early age. Trees that grow in open areas with plenty of light tend to start flowering when they are 2 years old.

ECOLOGY
It is a lowland species. In humid tropical forests it is one of the dominant canopy trees reaching 30-35 m, often found growing near rivers and in swampy areas.

BIOPHYSICAL LIMITS
Altitude: 0-600 m
Mean annual temperature: 20-35ºC
Mean annual rainfall: more than 2500 mm
Soil type: Light to heavy acidic soils

DOCUMENTED SPECIES DISTRIBUTION

Native: Brazil, Colombia, Costa Rica, Cuba, Guyana, Honduras, Jamaica, Nicaragua, Panama, Peru, Surinam, Trinidad and Tobago, Venezuela

Exotic: Congo

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 seeds are edible and also produce a cooking oil (owala oil), widely used in Africa. Seeds contain 45-48% lipid, 27-28% protein and 12-14% carbohydrates

Fuel: The wood is a source of firewood

Timber: The wood is hard, heavy, tough and strong with a specific gravity in the range of 750-850 kg/m3 and often used as a substitute for mahogany. The wood is attractive but has no distinctive figure or grain. It can be used in heavy construction, railway sleepers, furniture, house frames, scaffolding and floor beams

Tannin or dyestuffs: The bark is a source of tannins

Lipids: The seeds have high oil content that may be used industrially in lubricants and soap manufacture

Poison: Both seeds and bark contain a toxin, and long contact with sawdust and bark may cause allergy

Medicine: Seeds and bark have multiple medicinal uses. It is used against snakebites, ulcers and insect bites. The bark is a remedy for dysentery

SERVICES
Reclamation: It has been used to rehabilitate over exploited savanna areas in Africa due to its rapid regeneration and coppicing ability.

Nitrogen fixing: As a nitrogen-fixing pioneer species, P. macroloba has great potential in forest regeneration and reclamation of degraded lands.

Boundary or barrier or support: It is used as a live firebreak in the lower Congo

Intercropping: It is inter-planted with other species

TREE MANAGEMENT
The adaptability of this species to a wide range of sites makes it a useful plantation species. This species tolerates waterlogging and shade. Stand establishment is by using natural regeneration and direct seeding. In Costa Rica, it is normally grown with Carapa guianensis

GERMPLASM MANAGEMENT
The pods are collected from the trees in July-August when they turn dark grey and before opening. The dehiscence is explosive and seeds can be thrown 10 m or more away from the mother tree. They are transported in open bags to the processing site and must at all times be protected from wind and direct sun. The pods are dried in the shade for one day and the seeds extracted manually

The seeds storage behaviour is intermediate. They lose viability very quickly and do not seem to tolerate desiccation or low temperatures. After collection, the seeds must be handled very gently, kept moist and well aerated. After about one week most seeds will have lost viability. There are about 300 seeds/kg.

PESTS AND DISEASES
Because of the toxicity of P. macroloba seeds, monkeys and birds avoid them. Some Lepidoptera lay eggs inside the seeds and the larvae come out when the seeds germinate.
In the lowland rainforests of Costa Rica, caterpillars especially Epimecis sp., Sematura luna are some of the major pests that influence the growth and survival of the trees

FURTHER READNG

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SUGGESTED CITATION

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