African nut
*Njansang* - Okhuen - Bofeko - Musodo
Family: Euphorbiaceae

West and Central Africa
African nut

Family: Euphorbiaceae

1. Species identity

- Names
  Scientific name: Ricinodendron heudelotii (Bail) Pierre ex Pax
  Common name: African nut tree, African wood-oil nut tree, corkwood
  Vernacular name: (Cameroon) ezezang, ezang, njansang; (Nigeria) okhuen; (RDC) bofeko; (Ghana) wama; (Equatorial Guinea) nsezang, (CAR) Musodo

- Botanical description
  Fast-growing tree, reaching up to 50 m in height and 2.7 m in girth; Branches often short, thick and contorted, 3–5 leaf foliates alternate digitately; Flowers form an inflorescence yellow tomentose; Fruits are 2–3 lobed, 2 celled and indehiscent with a thick hard shell. They smell of overripe apples; contain 2–3 red-brown–black seeds, are rounded and flat. Seeds vary from reddish brown to black and usually consists of a testa with a yellow kernel.

2. Ecology and distribution

- Natural habitat and geographical distribution
  Tree of deciduous and secondary forests, it is common throughout the semi-dry, wooded-savannah zone of the region that stretches from lower Senegal, west Cameroon and Equatorial Guinea, to the Democratic Republic of Congo, Angola and Tanzania, where it is found scattered in gaps on forest edges and in secondary scrub as well as thickets.
• Biophysical limit
It can be found at an altitude range of between 200 - 500 metres. The ideal temperature range for growth is 18 - 32°C with a minimum annual rainfall of 1500 mm. It prefers medium textured, freely draining acidic soils (pH = 5–6, low ECEC, Aluminium saturation>40%). The tree is light demanding and is not resistant to strong winds.

• Reproductive Biology
Flowering takes place in April and May. The fruits of which are produced abundantly mature in September and October. The tree remains leafless for a few weeks while the fruits fall. In open light spaces it will bear in the 7th–10th year. Bats, hornbills and rodents are said to help disperse the seeds. The capsules also break open and scatters seeds in all directions. Elephants can also eat the fruits and pass the seeds out in their faeces.

3. Uses

3.1. Products
• Food: The kernels can be eaten after boiling in water, or used to spice sauce. Seeds/kernel have high oil content (47%), this qualifies R. heudelotii to be used in industries for soap and varnish making.
• Medicine: The plant is used to relieve constipation (roots), elephantiasis (bark), as pain killer (bark), to cure dysentery (root–bark), eye infections (Sap), oedema and female sterility. It is a purgative (leaves decoction) and used against blennorrhoea (bark), painful menstruation and as a poison antidote (bark).
• Fuel and Timber: Used as firewood, for durable building, rough planks, coffins, fishing net floats and rafts for heavy timbers.
• Other products: Dried seeds are used for popular games and rattles for dances.

3.2. Services
• Soil improver: The cake from seed-oil extraction is a good nitrogenous fertilizer.
• Intercropping: When not grown in pure stands, it has always been intercropped (10 x 10m) with coffee, cocoa or banana.

4. Propagation Methods

4.1. Germination
• Seed pre-treatment: Hand scarification by abrasion of the seed coat at the micropyle using sand paper.
• Substrate: 2:1 mixture of forest soil and river sand, 3 cm deep
• Success rate: about 70% after 7 weeks
• Germination: 3 weeks

4.2. Rooting of cuttings
• Rooting medium: 1:1 mixture of fine Sand and Sawdust
• Leaf area: 50 cm²
• Cutting length: 4 cm
• Number of weeks before rooting starts: 2 weeks
• Rooting success rate: more than 70% after 5 weeks
• Survival rate after nursery: about 80%
• Potting medium after rooting: 2:1 mixture forest soil and sand
• Size of polythene bags: 1 liter
4.3. Marcotting
- Rooting medium: Topsoil, oil palm inflorescence, leaf compost or peat
- Diameter of branch: 5–7 cm
- Success rate for rooting: more than 50%
- Time: 2 months
- Survival rate after weaning: about 15%

4.4. Grafting
- Type of grafting: Side tongue graft
- Success rate: more than 70%
- Survival rate: about 50%

5. Planting and Management

5.1. Planting
A njansang farm can be established either through direct sowing or from a stockplant. Only seedlings, rooted cuttings or marcots that have spent at least 6 months under shade in the nursery can be transplanted. The recommended spacing for planting R. heudelotii in orchards is 10 x 10 m. Dig planting holes of 30 x 30 cm for seedlings, cuttings and grafted plants or 50 x 50 cm for marcots. The species is suited for coppicing and pollarding.

5.2. Management
Weed 1 metre around the trees once every 2 months for the first year after planting. Apply NPK at a ratio of 20–10–10 and at the rate of 25 g/tree/year when the soil is poor. Do this at the beginning of the rainy season.

6. Pests and diseases
Four types of caterpillars have been reported to defoliate njansssang in DRC. In Cameroon, a psyllid, Dilidiophlebia xuani was reported to cause serious damage in nurseries. Aphids also infest leaves in nurseries, and leaves curl as a result of these attacks. Aphids attack the lower sides of the leaves but can easily be seen. Systematic insecticides application can eradicate these attacks. A concentrated emulsified cyperdim solution 220 EC (which contains 200g/l of dimethoat plus 20g/l of cypermethrin) is sprayed using a knapsack sprayer (40–60 mg/15 l of water) on trees twice in three months: (1-1.5 l/ha) during the first two years of tree establishment in the field.

Bibliography and Further Reading

- http://www.worldagroforestrycentre.org/SEA/Products/AFDbases/AF/asp/SpeciesInfo.asp?spID=1449#Pests
- Illustrations: World Agroforestry Centre-West and Central Africa Region.

Prepared by
Ebenezer Asaah
Régine Pakejou Tchientche
Dr. Marie Laure Mpeck
Dr. Zac Tchoundjeu
Catherine Momha

For more information contact:
World Agroforestry Centre-West and Central Africa Region
P.O. Box: 16317 Yaounde–Cameroun
Tel: (237) 2.221.50.84 / 2.223.75.60
Fax: (237) 2.221.50.89 / 2.223.74.40
E-mail: icraf-aht@cgiar.org
Web site: worldagroforestrycentre.org/aht