

What is this Action Sheet about?

It's about Neem, a tree that was introduced to Africa more than 100 years ago. Its Swahili name mwarubaini means forty – perhaps because it has up to forty different uses!

Scientific Name: Azadirachta indica

English names: Bastard tree, bead tree, cornucopia, Indian cedar, Indian lilac, margosa tree, neem tree, Persian lilac

Swahili names: mkilifi, mwarubaini, mwarubaini kamili

Tigrigna name: Nim

- Neem grows throughout the tropics and subtropics, at altitudes of up to 1500m, in areas with a mean annual temperature up to 40°C, and a mean annual rainfall of 400-1200mm
- Neem fruit is eaten by bats and birds
- Neem grows best on neutral to alkaline soils, and can grow in shallow, stony, sandy soils or areas with a hard clay or calcareous pan not far beneath the surface
- Neem trees can live for over 200 years
- Neem cannot grow in waterlogged soil



What can neem be used for?

Food: Fruits are eaten fresh or cooked, or prepared as a dessert or lemonade-type drink. The young twigs and flowers can also be eaten.

Fodder: The leaves, though very bitter, can be used as a dry season fodder.

Fuel: Neem makes excellent charcoal and firewood. In India, its oil is burned in lamps.

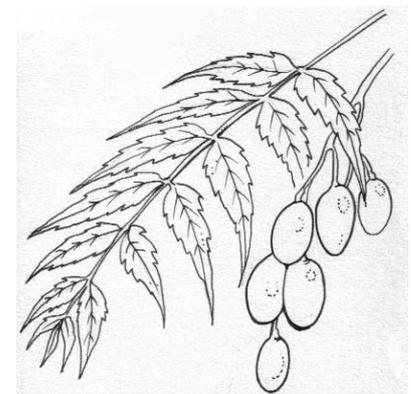
Timber: Neem is related to mahogany (muhuhu), and is often used to make wardrobes, bookcases, closets, construction timbers and fence posts because it repels insects such as termites. As wild hardwoods are becoming scarce, it is becoming more commonly used as a carving wood (*See Box on Good Woods on the next page*). Carving with farm-grown neem can be an alternative to unsustainable exploitation of wild forests.

Gum or resin: The substance produced when the bark of the trunk is wounded is high in protein and can be used as a food additive and a glue.

Tanning: Tree bark contains 12-14% tannins and can be used in tanning leather

Oil: Neem oil from crushed seeds is used to make herbal soap, cosmetics, and medicines

Pesticide: Neem seeds, leaves and wood contains Azadirachtin, which can be used against pest insects. Rather than killing the insects, it works by changing the insects behaviour and growth – stopping them feeding and reproducing. This helps protect plants from having their leaves eaten by pests, without putting off good insects like honeybees. Tests of neem extracts have shown results on about 300 insect species, including beetle larvae, weevils, cockroaches, flies, bugs, aphids, wasps, ants, caterpillars, fleas and grasshoppers.



Homemade Neem pesticides

Neem tea – Crush dried neem seeds and soak them in water overnight to produce a liquid pesticide for direct application to crops, providing protection from pests for about 1 week. Exposure to high temperatures and sunlight will make the pesticide lose its strength. Crushed seed kernels can also be used as a dry pesticide, for controlling stem borers on young plants.

Caution: Take care not to discard active neem extract into water. It may have toxic effects on fish and other aquatic wildlife and on some useful insects. Put any leftover neem extracts in the sun or heat them up to break down the active chemicals before discarding.

Medicine: In India, the Neem tree is known as the village pharmacy. Various parts of the plant are used to treat many diseases including parasites, ulcers, boils, leprosy and rheumatism. Neem oil is a traditional remedy for skin diseases, and has been shown to be toxic to 14 types of fungi. People use the twigs as toothbrushes. Leaf teas are used to treat malaria. The oil should not be swallowed.

Erosion control: As they develop deep roots, neem trees can help fix dunes and take nutrients from deeper levels of soil.

Shade and shelter: A great shade tree and windbreak, because of large crown and low branching.

Soil improvement: Farmers in India use neem cake (what's left after extracting oil from the seeds) as an organic manure and soil amendment. Leaves and small twigs can be used as mulch and green manure.

Carving with Neem – Good Woods in Kenya

More and more buyers of carvings are concerned about the environmental impacts of their purchase. They may ask what wood a carving is made from, preferring farm-grown wood over wild hardwoods, and even looking for carvings with a Forest Stewardship Council certificate (*See Action Sheet 48*). The WWF Good Woods project is helping Kenyan carvers switch from endangered slow-growing hardwoods like ebony and mahogany (muhuhu) to trees that can be easily grown on farms - like neem. Neem is becoming an acceptable choice for carvers, but it may need special treatment to make sure it doesn't crack or go mouldy. The Kenyan Forestry Research Institute (KEFRI) has been studying ways to avoid these problems. These are their preliminary recommendations:

- Cutters should select only straight stems that are cylindrical (pith in the centre) and free from knots
- Carvers need to be able to select the best logs from the supplier
- Carving should start as soon as possible after delivery of the logs
- Rough carvings should be kept out of the sun and ideally left to air-dry slowly in the shed, and at the first signs of cracking, carvings should be covered immediately with a damp cloth (to be taken off intermittently) or sprayed with fine mist of water and/or borax solution (which helps to stop moulds)
- Carvings should be left to dry for as long as possible before sanding. Any cracks or checks can be filled at this stage
- Larger carvings should be left with a 'buffer' of end-grain, for instance, at the heads or feet of a carved animal until the rest of the carving is completed. This helps control moisture loss and can be removed at the very end
- If possible, avoid carving larger and bulkier items; tall thin carvings and smaller items crack much less. This is because they do not include the pith (weak core) of the wood
- Further technical recommendations may be available from the Good Woods project: These could include the use of a drying kiln to control moisture loss and temperature levels during drying, as well as specific chemical treatments for mould

GROWING GUIDE

Planting: Plant neem seeds in a nursery and plant out in the field as seedlings, or plant directly in the shelter of other trees. Neem seeds do not need any treatment before planting, although cleaning the seeds of pulp from the fruit helps. Most of the seeds planted should germinate within a week. Neem can also be grown from root and shoot cuttings.

Management: Neem plantations need weeding as the trees cannot stand competition from grasses and other plants. Neem can be coppiced (cut at the base and allowed to resprout) and grows faster from coppice than from seed. It can be pollarded but will produce less seed. Adult trees require a lot of light.

Acknowledgements

This Action Sheet was prepared by Nancy Gladstone, based on the following sources:

Chonga – Good Woods Newsletter No 3, April 2003, People and Plants (<http://peopleandplants.org/whatweproduce/Newsletters/chonga3.pdf>) World Agroforestry Centre Agroforestry database

For more information

See Action Sheet 49: Tree-planting and Action Sheet 35: Agroforestry

CONTACT

World Agroforestry Centre: www.agroforestry.org

WWF: www.panda.org