

# PESTICIDAL PLANT LEAFLET

## *Euphorbia tirucalli*



### Taxonomy and nomenclature

Family: Euphorbiaceae

Vernacular/ common names :

(English): Firesticks plants, Naked lady, Pencil tree, Milk bush

(Maa): Oloilei

(Kipsigis): Lechuangit

(Kamba): Ndau

(Swahili): Mtupa mwitu, Mwasi, Utupa



### Distribution and habitat

*E. tirucalli* is the most widespread of all the *Euphorbia* species. It is native in Angola, Eritrea, Ethiopia, Kenya, Malawi, Mauritius, Rwanda, Senegal, Sudan, Tanzania, Uganda, and Zanzibar and can survive in a wide range of habitats. It can grow in tropical arid areas with low rainfall, on poor eroded soils, saline soils and high altitudes up to 2000 m but cannot survive frost. It grows wild, often in abandoned sites of homesteads. In Kenya for instance, it is found in Ruaka on the highway to Thikka and in Jilore forest station in Kilifi, in Baringo, Sigor, Makueni and Kitui.

### Uses

**Pesticidal uses** - The plant's latex can be used against aphids, mosquitoes, some bacteria and molluscs. However it is also toxic, due to phorbol based diterpenoids causing severe irritation from contact, emesis and purgation from ingestion.

Used as a hunter's tool in local fishing and arrow poisoning in tropical Africa. Dose-dependant latex toxicity to parasitic nematodes such as *Haplolaimus indicus*, *Helicolylenchus indicus* and *Tylenchus filiformis* in vitro.

**Medicinal uses** - In east Africa, latex used against sexual impotence, warts, epilepsy, toothache, hemorrhoids, snake bites, extraction of ecto-parasites and cough. In Malaysia, a poultice of roots and stems can be applied to nose ulceration, haemorrhoids and swellings. In India, it is a remedy for spleen enlargement, asthma, dropsy, leprosy, biliousness, leucorrhoea, dyspepsia, jaundice, colic, tumours and bladder stones. Branch and root decoction used for colic. Ashes applied on open abscesses.

**Use as an energy source** - Latex of *E. tirucalli* is composed of petroleum-like hydrocarbons, largely  $C_{30}$  triterpenoids which on cracking yield high octane gasoline. Potential source of biodiesel as high biomass

and growth in marginal areas unfit for other crops. Ease of fermentation implies potential source of methane and biogas. Can be used as compost, charcoal and fuelwood, particularly in semi-arid areas devoid of forests and due to its fast growth rate, high productivity and quick acclimatization to an area and ease of drying.

*Use for rubber* - It contains hydrocarbon polymers which can be used for manufacturing of rubber substitutes. Its latex is an emulsion of terpenes and resins in water, which can easily be transformed into rubber at low cost. Used at the east African coast in local gum manufacture, for fastening knife blades to wood handles and spearheads to shafts. Can be used as wood-based glue and adhesives.

*Use in conservation and Agroforestry* - Its favourable feature of drought resistance makes *E. tirucalli* a good species to use in semi-arid areas for afforestation and reforestation for soil conservation- Success in Tanzania, Kenya and Sri Lanka. Used as hedge plant owing to the irritant properties of the latex to potential invasive animals of homesteads and fields, as an intercrop, as boundary demarcation and as a windbreak.

*Use as ornamental* - Popular as ornamental plants in pots or in lawns rendering favourable trade.

## Botanical description

It is a deciduous shrub or small tree which can reach 4-12 m high with brittle, succulent branches 7 mm thick, often in whorls, green with whitish latex. Leaves are few, fleshy and linear-lanceolate, 1.5-2 mm, present only at tip of branchlets. Cymes 2-6, congested at apices of branchlets, forking 2-4 times producing cluster of cyathia developing only male flowers, sometimes female.

Note: Always verify your plant specimen and deposit a voucher in a verified herbarium.

## Fruit and Seed description

Fruit a glabrescent capsule, exerted on a tomentose pedicel to 1 cm long, subglobose, 8 x 8.5 mm. Seed ovoid, 3.5 x 2.8 mm, smooth, buff speckled with brown and dark brown ventral line; caruncle 1 mm across.

## Propagation

Stem cuttings grow fast forming dense bushes which become naturalized and forms a small tree. Seed germination is epigeous.

## Safety measure

Always use gloves, protective clothing and caution when handling and applying plant materials to field crops or stored commodities and minimise exposure of consumers. Avoid contact with the skin. In case of accidental contact, immediately wash the affected area with clean running water.

## Selected readings

[www.nri.org/projects/adappt](http://www.nri.org/projects/adappt).

Orwa *et. al.*, 2009, world agroforestry database.

Mwine Tedson Julius, PhD thesis, 2011- Evaluation of pesticidal properties of *Euphorbia tirucalli* L. (Euphorbiaceae) against selected pests. University of Gent.

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Pesticidal plant leaflets are a series of species wise extension leaflets on botanical pesticides. Leaflets are compiled from existing literature and research available at the time of writing. In order to currently improve recommendations, ICRAF, MSBP and the University of Greenwich encourage feedback from users and researchers who have experience with the species. Comments, corrections, improvements and amendments will be incorporated into future edited leaflets.

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