

PESTICIDAL PLANT LEAFLET

Tagetes minuta L.



Taxonomy and nomenclature

Family: Asteraceae

Synonym (s): *Tagetes glandulifera*, *Tagetes glandulosa*

Vernacular/ common names :

(English): Mexican marigold, stinkweed, Khaki weed

(Maa): Ol' bangi

(Kikuyu) : Mubangi

(Kamba) : Muvangi/ kivangi

(Luo) : Nyanjaga

(Luhya): Etakanyi

Distribution and habitat

It is an invasive weed on farms. Grows well in disturbed areas and cultivated beds, usually found in maize farms. Originally from South America but is now a widespread weed in Africa, South Europe, South Asia and Australia. In Kenya it is found in Nairobi, Taita Hills, Voi-Nairobi road, Kaimosi, Masai Mara, Gatundu, Gathiuru Forest in Nyeri, Machakos.

Uses

Insecticidal - Powdered plants are effective against maize and Mexican beans weevils when mixed with grain but require relatively high concentrations. Plant extract is effective against aphid *Brevicoryne brassicae* and red spider mites in vegetables. Essential oil is used against ticks. Decoctions show effective control of intestinal parasites in domestic livestock. Secretions from roots are effective against nematodes, worms, insects, fungi and perennial weeds.

Medicinal - It is used to treat gastritis, indigestion and intestinal worms. Externally it is used to treat skin infections and haemorrhoids. The essential oil treats fungal infections like athlete's foot and boosts the respiratory system. It has antimicrobial, antiphlogistic, antiseptic, antispasmodic, cytophylactic, sedative, emollient, fungicide and hypertensive properties.

Other uses - Used in perfumery and as flavour in beverages and food industry.



Botanical description

Strongly scented annual herb with stiff erect stems up to 2 m tall. Leaves stalked, opposite, light green, 7-15 cm long, pinnately dissected into 4-6 pairs of pinnae. Leaflets lanceolate, margins finely serrate. Undersurface of leaves bears sunken oil glands with liquorice-like aroma when ruptured. Glands also present on the stems and involucres bracts. Inflorescences terminal with numerous tube-like capitula of dull yellow florets.

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

Fruit and Seed description

Black achenes, narrowly ellipsoid and hard seeds, 6-7 mm long, pilose, pappus of 1-2 setae to 3 mm long and 3-4 scales to 1 mm long with ciliate apex.

Flowering and fruiting habit

It flowers in February, June and November. The fruits are available in December-January, March-April and July-September.

Harvesting

Harvesting of seeds is done in February, May and October. Harvesting of leaves and flower parts are done above the ground where leaves and inflorescence are desirable.

Processing and handling

Mature fruits, black-brown in colour, are removed from stalks. Seeds are obtained by sieving dried fruits to remove husks. One pod has several seeds.

Propagation and cultivation

Seeds germinate readily when sown fresh, without treatment. Seeds are sprinkled directly on soil or only just cover with soil. Germination takes place within one week. Seedlings can also be transplanted to pots. Grows well in disturbed areas, in heavy clay soils or sandy soils.

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.

Caution: This plant can be invasive.

Selected readings

www.pfaf.org

Weaver, D.K., Zettler, J.L., Wells, C.D., *et al.* (1997) Toxicity of fractionated and degraded Mexican marigold floral extract to adult *Sitophilus zeamais* (Coleoptera: curculionidae) *Journal Of Economic Entomology*, 90, 1678-1683.

Tomova, B.S., Waterhouse, J.S., Doberski, J. (2005) The effect of fractionated *Tagetes* oil volatiles on aphid reproduction. *Entomologia Experimentalis et Applicata*, 115, 153-159.

Muzemu, S., Mvumi B.M., Nyirenda S.P.M., Sileshi, G.W., Sola P., Kamanula J.F., Belmain S.R. & Stevenson P.C. (2012). Pesticidal effects of indigenous plants extracts against rape aphids and tomato red spider mites. *African Crop Sci Conf Proc*, 10, 169 – 171.

Macedo, Iara T.F., Bevilaqua, Claudia M.L., de Oliveira, Lorena M B *et al.*, (2012) In vitro activity of *Lantana camara*, *Alpinia zerumbet*, *Mentha villosa* and *Tagetes minuta* decoctions on *Haemonchus contortus* eggs and larvae *Veterinary Parasitology*, 190, 504-509.

Tomova, B.S., Waterhouse, J.S., Doberski, J. (2005). The effect of fractionated *Tagetes* oil volatiles on aphid reproduction. *Entomologia Experimentalis et Applicata*, 115, 153-159.

Authors: D. A. Ofori, P. Anjarwalla, L. Mwaura, R. Jamnadas, P. C. Stevenson and P. Smith.

ISBN 978-92-9059-345-4

July 2013

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.

Please write your comments to: d.ofori@cgiar.org or p.anjarwalla@cgiar.org