

PESTICIDAL PLANT LEAFLET

Solanum incanum L.



Taxonomy and nomenclature

Family: Solanaceae.

Synonym: *Solanum panduriforme* E.Mey, *Solanum bojeri* Dunal, *Solanum campylacanthum* Hochst, *Solanum delagoense* Dunal, *Solanum lichtensteinii* Willd, Vernacular/common names: (English) Bitter apple, snake apple, Sodom apple, thorn apple (Ndebele) Intume, umdulukwa Munhomboro (Shona) Munhundurwa.

Distribution and habitat

Solanum incanum is abundant and common as a weed, around houses, in overgrazed grassland and on roadsides. It is also found at forest edges and in bushland and grassland, from sea-level up to 2500 m altitude. It is considered an indicator for low-fertility soils.

Uses

Pesticidal - *S. incanum* is effective for control of cattle ticks when used as water extracted concoction. The whole dry ripe fruits are crushed and extracted in water at 5% w/v for 24 h and this is then sprayed onto cattle (5L/animal). However it has shown acute toxicity when applied at high concentrations so users need to wear appropriate protective clothing, gloves and face mask when applying.

Medicinal - The fruit of *S. incanum* are used in Kenya for treatment of skin mycotic infections.

Other - The leaves and stems are used in compost.



Botanical description

Solanum incanum is a herb or soft wooded shrub up to 1.8 m in height with spines on the stem, /stalks and calyces and with velvet hairs on the leaves. Flowers pale to deep blue, mauve or purple. The leaves are alternate, egg-shaped in outline with broad end at base (ovate) with slightly wavy margins (especially on young leaves), with a grey-green upper surface and a green-white lower surface.

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

Fruit and Seed description

Fruit are mottled or striped green and light green, yellow when ripe.

Seed: On average, there are 131,000 seeds/kg, depending on the provenance and the climatic conditions.

Flowering and fruiting habit

The flowers are often borne in the leaf axils, sometimes solitary or in clusters of a few flowers. The yellow or white calyx is fused, the purple corolla regular, bell- or wheel shaped with 5 stamens. The globular fruits are yellow at the beginning, becoming black later on. In Kenya, the species flowers from November to March.

Harvesting and extraction of seeds

Ripe yellow fruits are hand collected from the tree branches using secateurs. Fruits are dried under shade at a temperature of 30°C-35°C for two days. Seed extraction is done as soon as the fruit turns brown. Fruits are squeezed between the fingers, crushed and seeds removed, the seeds are washed in running water to clear off the pulp and spread on open trays to dry for two to three days.

Storage and viability

Seed storage behaviour is orthodox; viability can be maintained for over 1 year in air-dry hermetic storage at 5°C at a moisture content of 6-8%.

Propagation and pre-treatment

Ideally, the seeds should be soaked for 24 hours before sowing as this will increase germination rate to above 75%. (unpublished data, ICRAF 2012).

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

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Madzimure, J., Nyahangare, E.T., Hamudikuwanda, H., Hove, T., Belmain, S.R., Stevenson, P.C., Mvumi, B.M. (2013) Efficacy of *Strychnos spinosa* (Lam.) and *Solanum incanum* L. aqueous fruit extracts against cattle ticks. *Tropical Animal Health and Production*. (in press).

Henderson, L. (2002). Problem plants in Ngorongoro Conservation Area. Final Report to the NCAA.

Fukuhara, K. and Kubo, I. (1991). Isolation of steroidal glycoalkaloids from *Solanum incanum* by two counter current chromatographic methods. *Phytochemistry* 30(2), 685-687.

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ISBN 978-92-9059-343-0

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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