



– PRODUCTION GUIDELINES –

Wild ginger

Siphonochilus aethiopicus



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA



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2014

Department of Agriculture, Forestry and Fisheries

2014

Published by

Department of Agriculture, Forestry and Fisheries

Design and layout by

Directorate Communication Services

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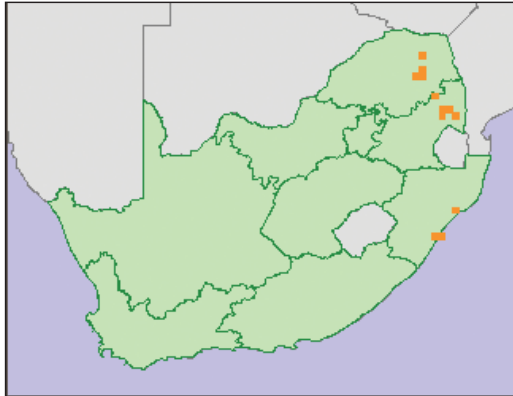
GENERAL ASPECTS

Classification

Scientific name: *Siphonochilus aethiopicus*

Common names: Natal ginger, African ginger, wild ginger (English), gemmerhout, wildegemmer (Afrikaans), indungulo, isiphephetho (isiZulu).

Origin and distribution



Wild ginger is a forest, herbaceous perennial plant with aromatic rhizomatous roots. This means that their lifespan extends for more than two years and they do not accumulate woody tissue. It belongs to the Zingiberaceae family, which has a number of important spice plants such as turmeric and cardamom. The plant received its name because of its taste and smell which is like ginger.

Wild ginger is grown primarily as a ground cover. The plant is now extinct in nature owing to over collecting and only available from cultivation.

Wild ginger is originated in Southern tropical Africa (south of Malawi to the eastern part of South Africa). It has a restricted distribution in South Africa, Zimbabwe, Malawi and Zambia.

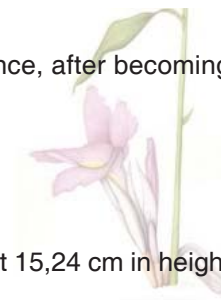
Major production areas in South Africa

It is currently grown mainly in the Mpumalanga Province, after becoming extinct in KwaZulu-Natal.

Description

Mature plant

Wild ginger is a small herb that typically grows to about 15,24 cm in height and 30,48 cm in diameter.





The roots

Wild ginger has an aromatic rhizomatous root that is thick, whitish or buff-coloured in appearance.

The stem

The stems reach a maximum height of 2 m and produce large, wax-covered, ovate alternate leaves (20 to 45 cm long x 10 to 15 cm wide).

The leaves

The leaves are deciduous and sprout annually from the underground stem in spring; they may reach a height of up to 400 mm. They are light green, lance shaped and borne on the end of stem-like leaf bases.

The flowers

The plant has highly attractive flowers, which are borne at ground level in early summer from the end of October to early December. They are broadly funnel shaped, pink and white in colour with a small yellow blotch in the middle.

The fruit

The small berry-like fruit are produced at or near ground level after the flowers.

Essential part

Bulbs and leaves are used as essential parts.

Climatic requirements

Temperature

Wild ginger species grow well in open, light-filled environments that are warm and moist, but could still grow well in semi and full shade beneath the forest canopy. High temperatures and humidity are favourable for the wild ginger plants.

Water

Watering should be reduced to a minimum during the winter months while the plant is dormant and may be resumed at the onset of spring. Watering should be done when the soil becomes dry.

Soil requirements

Wild ginger plants are easy to cultivate, provided they are given a well-drained, compost rich soil and a warm, but shady, position either in a container or in the garden. They grow well on soils high in organic matter with a clay content of between 15 and 50%. African gingers grow best in a pH range of 6,1 to 6,5. Soil temperature of between 20 and 22 °C, and air temperature of around 20 °C should be maintained.

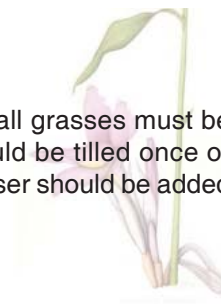
CULTIVATION PRACTICES

Propagation

African ginger is propagated by seed, rhizomes and tissue culture. The rhizome should be broken into smaller pieces when plants are dormant in June and August. Care should be taken not to damage the roots when splitting the rhizomes. Propagation of rhizomes can be done in September and December. Tissue culture is the most efficient means of propagating the wild ginger.

Soil preparation

The soil should be tilled to at least 15 cm depth and all grasses must be removed. To obtain a suitable seedbed the soil should be tilled once or twice before planting. Light application of organic fertiliser should be added to the planting hole.





Planting

Spring and summer are the ideal seasons for the planting of wild ginger. Seeds should be planted in two or three furrows, approximately 15 cm deep into the soil with a spacing of 18 cm apart and 72 cm between the rows.

Fertilisation

Wild ginger should be fertilised in spring. During the growing season, plants respond well to high levels of feeding with organic matter. Light application of organic fertiliser (e.g. N, P and K) should be added to the planting hole.

Nitrogen

Nitrogen in plants is important for amino acids, proteins and chlorophyll. It is required in very large quantities and is mobile in the soil, making it the nutrient that requires most replenishment.

Phosphorus

Plays a significant role in respiration. Phosphorus is also important to the development of nucleic acids, enzymes and phospholipids. It promotes early plant vigour and stimulates early root growth.

Potassium

Is important in enzyme activation, transpiration, osmosis and the opening and closing of the stomates of the plant leaves.

Irrigation

Wild ginger has a high water requirement. Irrigation should be reduced to a minimum during the winter months, while the plant is dormant and may be resumed at the onset of spring.

Weed control

Manual and chemical control can be used to eradicate weeds. Manual control is when the small seedlings are pulled out by hand and for larger plants, the cut stump method can be used (cutting the plants at the base close to the ground with a straight, flat cut). Another approach is to cut and remove all stalks and leaves and rake away ground litter to expose the roots. The roots should then be sprayed, left covered with leaves. This method should not be used after the flowering heads have formed seeds. For chemical control, common herbicides that are suitable can be used. Pre-sprouting herbicides can also be used to control weeds before the seeds germinate. Herbicides must be applied yearly until the ground cover is established enough to shade out weeds. Mulching of wild ginger with sawdust or wood chips, pine or hardwood bark can reduce weed growth.

Pest control

The major insects identified in wild ginger include nematodes, slugs and snails; leafminers and mites.

Nematodes

Nematodes are slender and non-segmented round worms in the soil.

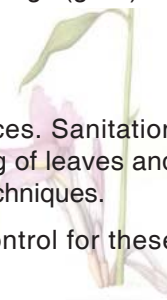
DAMAGE

They attack the root tubers of plants, causing lesions that make them susceptible to bacterial or fungal attack or cause knotty swellings (galls) on roots resulting in poor growth of plants.

CONTROL

Nematode management is done through cultural practices. Sanitation helps to remove the hiding areas of pests. Pruning, raking of leaves and destruction of heavily infested plant stock are sanitation techniques.

Using resistant varieties of plants is the best form of control for these organisms.



Slugs and snails

DAMAGE

Slugs and snails eat new leaves and the edges of mature leaves.

CONTROL

Top-dress the planting areas with sharp sand or rough bark mulch to protect against slugs and snails.

Mites

Insecticidal soap spray can be moderately effective, particularly if the mite infestation is in its early stages.

Disease control

The most common diseases of the wild ginger are: Damping off, powdery mildew and rust.

Damping off

SYMPTOMS

Seedlings are attacked.

CONTROL

Prevent by sanitation and avoid over watering.

Powdery mildew

CONTROL

Planting resistant varieties and increased air circulation. It should be done by spacing the plants appropriately and pruning them. Infected plants should be removed and destroyed.

Leaf spot

SYMPTOMS

The leaves show spots, surrounded by chlorotic halos. These spots often join together to form large necrotic areas with black perithecia in the middle of the lesion.



CONTROL

Recommended registered chemicals can be used.

Rust

Reddish-orange spots appear on the underside of leaves on infected plants. Rust infects plants through the underground rhizomes.

CONTROL

Infected plants must be removed and thrown out. Rust infected plants should not be composted.

Harvesting

Harvest maturity

The harvesting method of wild ginger is determined by the purpose for which the plant is grown. For fresh products and preserves, rhizomes should be harvested while they are still tender. Harvesting for dried spices and oil is best at full maturity when the leaves are yellow. The best for fresh consumption is five months, for preserved ginger is five to seven months, for dried ginger is eight to nine months, when leaves start yellowing and for essential oil production eight to nine months. Harvesting for planting material is further delayed until the leaves are completely dried out.

Harvesting methods

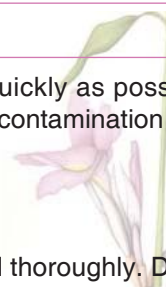
Wild ginger is harvested by digging and removal of all the roots from about 10 cm below the crown of the root. For mechanical harvesting, the leaves of the plants may be chopped off beforehand with a rotary cutter and the green stubble then removed manually after harvesting. Wild ginger for fresh marketing can be harvested mechanically with a potato filter.

POST-HARVEST HANDLING

Cleaning and drying procedures should be done as quickly as possible after harvesting to ensure minimum loss from microbial contamination and less mould growth and fermentation.

Cleaning

After the roots have been picked, they must be washed thoroughly. Dead foliage should be cleaned-up in spring. Diseased plants should be re-



moved. Fresh rhizomes should be washed and cleaned from debris, shoots and roots.

Drying

Once the plants are cleaned, they should be laid out one layer deep until their surface is dry. Sun-dried peeled ginger takes seven to nine days to reach a moisture content of 7,8% to 8,8%. If the ginger is sliced, it takes only five to six hours to dry if a cross-flow drier is used. Drying should not exceed the critical temperature of 60 °C to avoid flesh darkening and discolouration.

Packing

Bulk rhizomes may be packed in jute sacks, wooden boxes or lined corrugated cardboard boxes for shipping.

Storage

Wild ginger can be used in a fresh state, dried or stored. The plant material may be dried in the sun or shade or may be cut into slices and left to dry. Once dry, the material may be stored as it is, or may be crushed into powder. Dry material should be stored in paper bags, newspaper, glass jars or tin cans. Fresh ginger should be stored in a cold and humid environment, and dried rhizomes, slices, or splits should be stored in a cool environment of 10 to 15 °C. When stored, a room temperature between 23 and 26 °C is required.

PRODUCTION SCHEDULES

| Activities | January | February | March | April | May | June | July | August | September | October | November | December |
|------------------|---------|----------|-------|-------|-----|------|------|--------|-----------|---------|----------|----------|
| Soil sampling | | | | | | | | | | | | |
| Soil preparation | | | | | | | | | | | | |
| Planting | | | | | | | | | | | | |
| Fertilisation | | | | | | | | | | | | |
| Irrigation | | | | | | | | | | | | |

| Activities | January | February | March | April | May | June | July | August | September | October | November | December |
|--------------|---------|----------|-------|-------|-----|------|------|--------|-----------|---------|----------|----------|
| Pest control | | | | | | | | | | | | |
| Harvesting | | | | | | | | | | | | |

UTILISATION

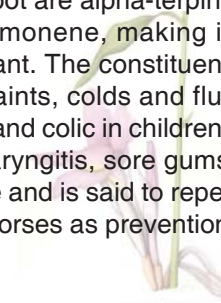
Medicinal uses

Wild ginger has highly aromatic roots with a variety of medicinal and traditional uses. It is used by the Zulu people as a protection against lightning and snakes. The rhizomes and roots are chewed when fresh to treat asthma, hysteria, colds, coughs and flu. It relieves intestinal gas and promotes sweating. It is used in some regions for respiratory illnesses, such as bronchitis and asthma. Wild ginger promotes vomiting, which has led to its use in cases of mushroom and alcohol poisoning and to treat indigestion. Wild ginger is used by the Swati people to treat malaria



and is chewed by women during menstruation to minimise pain. The root and rhizome of the wild ginger, when slowly boiled in a small volume of water for a long time, can be taken as contraceptive by women.

Wild ginger contains the valuable constituent aristolochic acid and scientific study shows that it anti-inflammatory, antiviral, anti-tumor activity. It cures warts in some cases and it a broad-spectrum antibacterial and anti-fungal constituent. This constituent is also an oral contraceptive, spermicide and immunostimulant. Other constituents in the root are alpha-terpinol, beta-sitosterol, geraniol, methyl-eugenol and limonene, making it useful as a motor-depressant, sedative and expectorant. The constituent can be used in the treatment of chronic chest complaints, colds and flu, dropsy, painful spasms of the bowels, stomach aches and colic in children. Wild ginger can be chewed to ease sore throat and laryngitis, sore gums and lessen bad breath. Dried root is burned as incense and is said to repel insects. A preparation of this plant is administered to horses as prevention against horse sickness.



Culinary

Wild ginger roots and dried herb are medicinal and edible, used as a ginger substitute, it has a spicy, hot, crispy taste and can be eaten fresh in small quantities in salads, used as a relish, a condiment, or made into a sauce for meat, it is especially good on chicken, and used to make ginger candy.

Ornamental

Wild ginger is sold in horticulture as a perennial under wood species. It is also commonly used in forest revegetation.

Other uses

The aromatic oil is used for culinary purposes and is used in perfume making.

ACKNOWLEDGEMENT

Directorate Agricultural Information Services and ARC-Institute for Tropical and Subtropical Crops.

REFERENCES

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