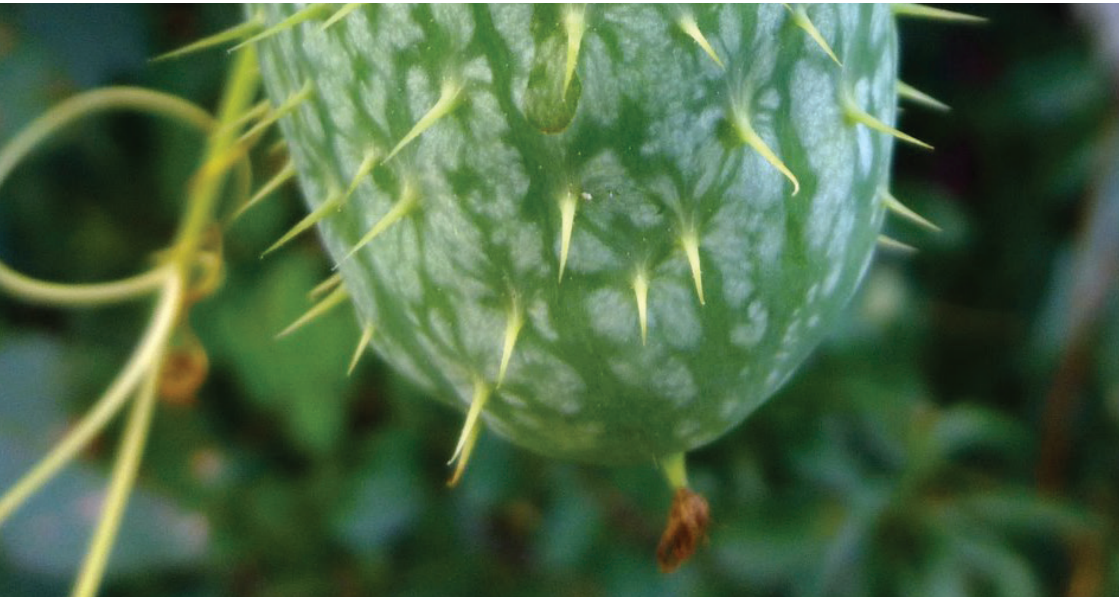
Wild Cucumber

Production guideline



agriculture,
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PART I: GENERAL ASPECTS

1. Classification

Scientific name: *(Cucumis africanus L.)*

Common names: wild cucumber; wild gherkin; wilde agurkie; doringkomkommertjie; monyaku; mthangazana; isende-lenja; uselwa-lwemamba; tshinyangu

Family: Cucurbitaceae (pumpkin family)

2. Origin and distribution

Wild cucumber is indigenous to Africa and occurs from the woodlands of Angola and Zimbabwe to Namibia, Botswana and South Africa. There are several species of wild cucumbers that differ in fruit shape, size, taste and leaves. The *Cucurbitaceae* consists of about 120 genera and 735 species that are cosmopolitan in mostly tropical and subtropical countries. The famous South African botanist, noted on his specimen no. 10040 (now in the National Herbarium), that he bought *agurkies* in a shop in Cape Town in January 1921. He found the flavour slightly acidic and the odour of the pulp like real cucumbers.

The non-bitter fruits of C. africanus have been pickled and preserved at the Cape since the late 17th century. This plant was taken by slaves from West Africa to the West Indies where it was domesticated.

3. Production levels in South Africa

With its wide distribution, *C. africanus* grows in a large variety of vegetation types, however; wild cucumber is still growing naturally in South Africa. No commercial or domestication of wild cucumber has been documented in South Africa.

4. Production areas in South Africa

C.africanus is found in Limpopo, North West, Gauteng, Northern, Western Cape, while it is rare in Mpumalanga, KwaZulu-Natal and the Eastern Cape.

5. Species in South Africa

Collectors have recorded the following: Karoo and Karroid types such as Namaqualand Broken Veld, Karroid *Merxmuellera* Mountain Veld, also with *Schmidtia kalahariensis, Salsola* and species of drought-deciduous scrub as well as Renosterveld, grassland and False Grassland. Also listed are savanna and various kinds of woodland e.g. Kalahari Thornveld with *Colophospermum* mopane, *Com-*

bretum, Terminalia and many species of *Acacia.* It is quite rare in the swampy coastal grassland of KwaZulu-Natal.

5. Description of the plant

Wild cucumber is a perennial herb with thick woody rootstock runner crop that grows up to 50 meters in favourable conditions. *C. africanus* flowers and fruits from about September to May, but mostly in March and bear about 120 fruit per plant. The stems are up to 2 meters long, either scrambling over the ground or climbing into other plants, where they support themselves by means of tendrils.

5.1 Stem

Stems annual, up to more than 2 m long, finely ridged, roughly whitish hairy, usually prostrate, but will climb on bushes and other support.

Picture 1: seeds of Cucumis Africanus

5.2 Seeds

Seeds are flattened oval in shape and are about 1 cm in diameter. The seeds are green in colour when unripe and turn red when ripe, and also turn brown when they are ready for collection. When the capsules are ripe, an opening appears at the bottom of the fruit and the seeds drop out. This means if the crop is not monitored carefully, seeds can drop and become lost before collection.

5.3 Leaves

The leaves are alternate and variable and tendrils are almost always present. The leaves are large and lobed, resembling maple leaves in shape.

Picture 2: Leaves of A. cucumis

5.4 Flower

Wild cucumbers have both male and female flowers. The male flowers sprout in round clusters about (10-20 cm) across with individual flowers (1 cm) wide. They have six thin petals. A single female flower is found at the base of a male flower stalk. The flowers are mostly unisexual and white or yel-

low in colour; they occur on the same plant (monoecious) or on separate plants (dioecious). Male flowers are fascicled, very small, and much shorter than the hispid petiole, whereas female flowers have longer peduncles.

5.5 Fruit

The fruit often is an indehiscent berry (soft-shelled) or gourd (hard-shelled) with one to many, often flattened seeds. The fruits of this species, often small, prickly and striped cucumbers, were pickled and preserved in Old Cape kitchens. The fruits are green with soft spiny when unripe and turn orange when ripe and turn brown when dry before the fruit burst for seed collection.

6. Climatic and soil requirements

6.1 Temperature

It can withstand high soil temperatures (one collector measured 47,5 OC at about noon), but thrives in partial shade where the leaves will be larger and somewhat less hairy. On a very hot day, the leaves have been observed to stand at a 90 degree angle to the soil surface. At least the underground parts are frost hardy.

6.2 Rainfall

In Southern Africa it grows from 150 to 2 115 m altitude in areas of very low to moderately high rainfall, from under 100 to 800 mm annually; one record from the KwaZulu-Natal coast is exceptional.

6.3 Soil requirements

Wild cucumber is common on deep and well-drained soils such as white, red or brown sand, grey or red loam and gravelly or stony soil. It is also found on brackish soils with underlying limestone formations as well as blackish clay soil and grow well on seasonally moist alluvial soil. The lithology and geology have been described as granite and mica schist, concrete, shale and quartzite. It can be found on limestone outcrops, as well as dolomite and red granite formations.

6.4 Landscape

Because of the morphology of the plant that allows it to grow in different slopes; it can also grow sustained by other crops for support structure in order for plant to be able to spread as it is a runner (climber) plant. *C. africanus* is common on flat ground, but is also found on moderate to steep slopes where it grows on the northern, eastern and southern aspects among rocks, and also on Kalahari dunes. It

is common in drainage areas such as dry river beds and flood plains, along water courses, around pans and near water holes, and also in disturbed areas such as along roadsides.

PART II: CULTIVATION PRACTICES

1. Propagation

Wild cucumber seeds can be sown directly into the ground, or can be started indoors and moved out to the garden once the plant has 3 to 4 leaves and the threat of frost is over. Seeds should be sown in soil that has reached at least 16 oC.

2. Planting

Seeds or seedling can be planted in the field where the plant can climb on trellising structures or the trees where wild cucumber crops can support itself against the tree. Some of the research conducted reported the possibility of planting wild cucumber indoors in a glasshouse where it will be easy to manage, trellis and control the pest, however, wild cucumber grows naturally where it is able to climb on trees and fences.

3. Fertilisation

Fertiliser requirements for *Cucumis africanus* is 46 kg NPK per hectare for 10 000 plants. Wild cucumber can be planted in summer, mid-November and harvested throughout the season for consumption. As wild cucumber can grow naturally, organic manure is highly recommended.

4. Pest control

Bees are the most common pests that have been observed as visiting the flowers, presumably other insects too. Chemical control can be used over larger areas, such as shelter belts.

5. Harvesting methods and maturity

Harvesting is usually carried out in the morning to maintain full rigidity of the leaves and other fleshy parts. It can be done through hand by picking fresh leaves for consumption or it can be done through removing the fresh branches from the stem. The fruits are harvested when they are dry for seed collection. A precaution should be taken when hand-picking the fruit through its twig from the branch to avoid injuries from fruit spines.

PART III: POST-HARVEST HANDLING

Leaves harvested for consumption can be washed before cooking to clean the leaves. Leaves can be prepared immediately after harvesting for consumption whereas seeds wait to dry for storage and planting for next season.

PART IV: UTILISATION

In South African traditional medicine, the fruit, leaf or root of *C. africanus* is used as an emetic, purgative or enema for various ailments. The boiled leaf is used as a poultice. The plant has also been used as an animal medicine. The poisonous form of the fruit contains the bitter principle *cucumin;* incidents of human and cattle poisoning have been recorded, there are three types of fruit with increasing amounts of the bitter substance.

The fresh young leaves are eaten as a pot herb by many rural people in the communities of South Africa. Researchers found that the leaves are rich in calcium, iron, nicotinic acid and vitamin C. The fruits have an overall nutrient composition slightly better than that of the cucumber and are sought after as a water source by the Khoisan of the Kalahari and in other dry areas.

In most African countries non-bitter fruits serve as a source of water and are eaten as vegetable. The leaves per 100g: water 92.2g protein 1.3g, fat 0.3g, carbohydrates 3.4g, fibre 1.2g, Ca 216 mg, Mg 175g mg, P 11 mg, Fe 12, thiamine mg, riboflavin 0.11 mg, niacin 0.34 mg and ascorbic acid 81 mg.

Diluted fermented *C.acfricanus* fruit has nematicidal properties to suppress numbers of Meloidogyne incognita race 2.

As usual, any medical information is for informational purposes only. Always exercise caution when using any wild plants and make sure you have positively identified the plant.

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