

into a thick vegetative cover over the soil surface, attained in 6 to 8 weeks after sowing. The movement in the crop should then be reduced to prevent plant damage.

Pest and disease control

The most common pest of bitter watermelon is aphids. The crop is affected by various diseases and the most common among others, are fusarium wilt, mosaic viruses, bacterial rind necrosis and root knot nematode. A proper crop rotation, use of correct volumes of fungicide and resistant cultivar can assist in the control of these pests. It is also reported that by watering at the base of the plants instead of using overhead sprinklers, diseases can be prevented.

Harvesting

Bitter watermelon reaches maturity within 75 to 95 days after planting. Hand picking is mostly preferred to avoid breakage and damage to the melons.

Uses

The tender leaves and fruit are cooked as a green vegetable. Fruit flesh may be cooked as porridge with maize meal. The fruit are traditionally used for making jam. Roasted seeds are edible. It is also used as animal feed.

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Bitter watermelon

Scientific name: *Citrullus lanatus* (Thunberg)

Family: Cucurbitaceae

Common names: Tsamma melon, wild watermelon, bitterboela, bitterwaatlemoen, karkoer, tsamma, makataan, ibotola



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Origin and distribution

Bitter watermelon originates in southern Africa and occurs naturally in South Africa, Namibia, Botswana, Zimbabwe, Mozambique, Zambia and Malawi. It is widely distributed in Africa and Asia.

Production areas in South Africa

Bitter watermelon is common in some provinces of South Africa, including Limpopo, Free State, North-West, Gauteng and Northern Cape.

Description

Bitter watermelon is an annual herb with curly tendrils which can grow up to 3 m long.

Stem

The stems are thin, hairy, angular, grooved and have tendrils at each node. They are highly branched and up to 10 m long.

Roots

The root system is very extensive and superficial with a taproot and many lateral roots.

Leaves

Leaves are hairy and deeply palmate with 3 to 5 lobes on 2 to 19 cm petioles. They have a rough texture and a visible white venation.

Flowers

Flowers with large, yellow petals of around 2 to 10 mm are randomly dispersed, forming many seeded fruit with a variegated light-green and dark-green pattern.

Fruit

The fruit varies considerably in morphology and size. The pulp is typically pink or red, though yellow, orange. White fleshed varieties are also popular.

Climate and soil requirements

Temperature

Generally, a long period of warm, preferably dry weather, with abundant sunshine is required. It is frost sensitive and requires temperatures of 27 °C.

Rainfall

In the Kalahari region, tsamma melons require 400 to 650 mm of rain a year. A seed type of drier climates requires less water than West African seed types, which require an average annual rainfall of at least 700 to 1 000 mm. It does not tolerate waterlogging.

Soil

Bitter watermelon prefers loose, sandy and well-fertilised soil. The crop does best on a rich, sandy loam, although it will grow in most soil types provided that the soil is well drained. It also grows best at a soil pH of 5,6 to 7,0, but will also tolerate a pH as low as 5,0.

Cultivation practices

Propagation

Bitter watermelon is propagated through seed.

Soil preparation

Minimal soil preparation is needed one month before planting; the field should be deeply ploughed and allowed to settle. The field should be relatively free of stones. Levelling may be needed for furrow irrigation. Raised beds (10 to 50 cm high) improve drainage, modify temperature and increase the depth of the rooting zone.

Planting

Bitter watermelons are usually planted in hills of 2 plants, spaced 50 cm between plants and 2 to 3 m between rows when only melons are planted to give

the plants plenty of room to grow, good air circulation and space for pollinators to work.

Fertilisation

Bitter watermelon responds well to fertilisers, especially to organic matter. The volume required depends on the nutrient status of the soil. In general, application at a rate of 20 to 30 t/ha organic manure, 50 to 60 kg N, 10 to 15 kg P and 20 to 30 kg K per ha is suitable for good performance. Using a hoe, open a furrow and apply the fertiliser mixture in the bottom of the furrow at a rate of 40 g/m. A normal-sized teacup takes about 200 gram chemical fertilisers and would cover 5 m. For really good growth, add LAN at a rate of 20 g/m when the plants have about 5 to 6 leaves. When applying LAN to the growing crop, open a furrow with a hoe about 10 to 15 cm away from the row of plants, mix the fertiliser with the soil using a stick, water the furrow and then close.

When using poultry or pig manure, apply one 10-ℓ bucket in a band of about 20 cm wide over a length of 15 m, work the manure into the top soil, water the band thoroughly and wait one to two weeks before transplanting. When you use kraal manure, use the same procedure, but apply one 10-ℓ bucket over a length of 5 m.

Irrigation

Bitter watermelon needs consistent moisture. Irrigating deeply is needed to keep the soil moist, rather than applying frequent, shorter sprinklings. Once the flowers emerge, irrigate the plants thoroughly every three days. The best time to irrigate is mid-day, after the flowers and fruit have had time to set and the bees have visited.

Weed control

Weed control is essential for good yield and it makes harvesting easier. Hand weeding, hoeing and other mechanical means are used to control weeds. Two or three weeding are needed before the stems grow