



National Department of Agriculture
ARC-Institute for Tropical and Subtropical Crops



Advanced

Growing granadillas



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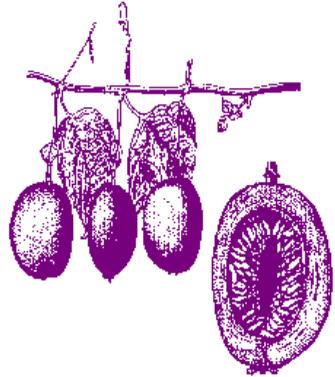


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Growing granadillas

The purple granadilla, also known as the purple passion fruit, is locally grown commercially as well as for home use.



Climatic requirements

- Granadillas prefer moderate temperatures throughout the year.
- They are sensitive to severe frost (especially the purple granadilla).
- In hot areas, they should be planted on cool slopes and in cool areas on the warm northern slopes. The average maximum monthly temperature should not exceed 29 °C and the minimum should not fall below 5 °C.
- Granadillas prefer a high relative humidity and well-distributed rainfall of not less than 1 200 mm/year (irrigation can supplement low rainfall).

Soil requirements

Deep soil preparation is important because granadilla plants develop shallow root systems in compacted soils. Thorough soil preparation will also improve drainage. This is very important, because granadillas are sensitive to excessively wet soil conditions. It is best to avoid clay soils.

Soil preparation

Granadillas have deep root systems, therefore cultivation practices should be as deep as possible, not less than 800 mm.

Proper soil preparation ensures better:

- root development
- soil drainage (less runoff)
- utilisation of nutrients
- tolerance of diseases
- fruit size
- yield
- economic return over a longer period.

The following is important

- Examine the soil thoroughly.
- Add lime and phosphate to the root zone.
- Deep plough or rip.

Supply nutrients

- Calcium and phosphate (if necessary) should be incorporated into the soil during soil preparation.
- Lime should be applied before planting.

Seed

Granadillas are mostly grown from seedlings.

- When seed is used, be sure to use seed from ripe fruit selected from

healthy plants.

- Scoop out the contents of a granadilla that has been cut through.
- Wash the contents to separate the seed and pulp.
- Dry the seed in the shade and sow it in seedling trays or planting bags filled with a well-prepared soil mixture.
- To enhance germination, the seed together with the pulp can be placed in a plastic container and allowed to ferment for 1 to 3 days. It is then thoroughly washed, dried and sown as soon as possible.
- Seed may be stored in closed containers at 13 °C for about 4 months.



Raising seedlings

All soil used in the nursery must be sterilised by fumigation or steam treatment, because the presence of rootknot nematodes can have a detrimental effect on the growth of the plants.

- Seed can be sown in trays or polyethylene bags (75–150 mm in diameter and 200 mm in height).
- If possible, sow 2 seeds per hole of the seedling tray or per bag and select the stronger of the two.
- Push a thin stake into the soil next to the emerged seedling so that it can be trained up the stake.
- Remove the developing side shoots regularly.
- The seedlings should be ready for transplanting when they reach a height of 300 to 400 mm.
- Select only seedlings for transplanting which have dark green leaves and are free of any symptoms of nematode or fungal disease infestations.

Transplanting

- The seedlings should be ready for transplanting about 3 to 6 months after sowing the seed.
- The optimum time for transplanting is during August/September.
- The yellow granadilla is more susceptible to cold than the purple granadilla and grafted plants should therefore not be planted in areas where frost occurs.

Planting distance

Generally plant spacings of 1 to 2 m are used. The average lifespan of a healthy granadilla plantation is about 3 years. Bearing in mind the effect of viruses and soil-borne diseases, plant spacing of about 1 m could ensure high production over the short term.

Trellising system

Erecting a trellising system is the main initial expense. A sturdy construction is necessary because the trellis has to support a heavy mass. The wooden posts must be solid and resistant to termites.

Construct it as follows:

Draw a single strand of 12-gauge wire (taut) about 2 m above the surface of the ground and along the tops of the wooden posts 2 m high and about 6 m apart along the row.



Training the plants

- The granadilla vines should be trained systematically so that the framework gets a good shape.
- Tie a selected leader of each plant loosely to a stake or train it up a string until it reaches the top wire. Remove all side shoots, but not the leaves.
- As soon as the main leader reaches the top wire, it is progressively wound loosely round the wire as it grows.

Pruning granadillas

Pruning or thinning out is necessary when the granadilla vine becomes unproductive. It is done mainly to:

- Stimulate new growth
- Promote healthy vine growth because light and air can now reach the inner parts, which discourages pests and diseases
- Remove all dead, old, injured and diseased parts of the vine
- Prevent vine overlap
- Facilitate spraying.

Severe pruning is not necessary if granadillas are grown on a short-term basis (12–18 months), because it can lower production.

Selective pruning

- The main leader is trained along the wire and the fruiting laterals are trained so that they hang down freely.
- Cut off all laterals at ground level if they start growing along the ground.

Severe pruning

- The main leader is trained along the wire and the laterals are trained to hang down.
- As soon as the laterals reach the ground, they are cut back just above ground level.
- After about 12 to 15 months all the laterals are cut back about 300 mm (or 4–6 nodes) from the main leader.
- The plants are usually pruned during July/August.
- To produce an out-of-season crop, the vines may be pruned during September/October.



Water requirements

- Well-distributed rainfall of about 1 000 to 1 200 mm /year is essential for commercial granadilla cultivation.
- The maximum water requirements are approximately 50 m³/ha/day or 15 l /plant/day in summer and approximately 25 m³/ha/day or 8 l /plant/day in winter.
- It is important to obtain an optimum soil-water status throughout the season.
- Avoid overirrigation because it could enhance the multiplication and distribution of fungi.

Fertilisation

The recommended fertiliser programme for granadillas is given in the table. These are only general guidelines and should be supported by soil and leaf analyses.

Fertilisation according to plant age (g/plant/year)

Age	LAN	Single superphosphate	KCl	or K ₂ SO ₄
1st year	250	150	150	180
2nd year	350	300	300	375
3rd year+	450	450	450	540

Time of application

July to August: $\frac{1}{3}$ of the nitrogen + all the phosphate + $\frac{1}{2}$ of the potash

December: $\frac{1}{3}$ of the nitrogen + $\frac{1}{2}$ of the potash

April: $\frac{1}{3}$ of the nitrogen

Granadillas often have a zinc and boron deficiency.

- Zinc oxide can be added at 200 g/100 l of water
- Solubor at 100 g /100 l of water
- Spray especially new growth during spring.

Diseases

Major diseases affecting granadilla yields in South Africa include:

- *Damping off* of seedlings caused by fungi as a result of poor seedbed management.

Control

- Plant on a well-drained site in virgin soil, or sterilised soil or growth medium.
- *Foot rot* (dikvoet) where the base of the stem thickens, causing cracks in the soil surface through which numerous secondary organisms can enter resulting in total rotting of the stem. Waterlogging and overirrigation increase the incidence of the disease.

Control

- Plant in well-drained soils.
- *Various viruses* causing symptoms such as spots, mosaics and distortion. It is usually very difficult to identify the specific virus involved.

Control

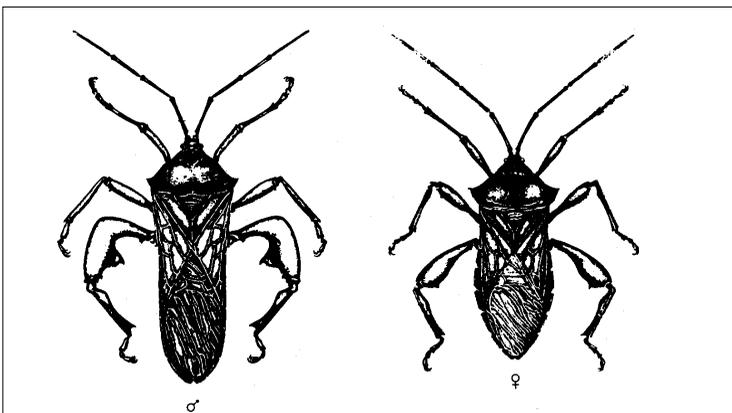
- Affected shoots can be broken off the plant
- Frequent washing of hands reduces transmission
- Wipe instruments with 10 % of a household bleach like Jik after pruning each plant.

Pests

Pests which frequently occur on granadillas include stinkbugs and tip wilters.

Control

- Field inspections must be carried out frequently.
- Collecting insects by hand can help to control them.



Male (left) and female (right) tip wilters

Consult the latest issue of A Guide to the Use of Pesticides and Fungicides for information on chemical disease and pest control. It is obtainable from the Resource Centre, Private Bag X144, Pretoria 0001

Harvesting

Depending on the time of transplanting, the first fruit is usually ready for harvesting 6 to 9 months after planting. At about 18 months after planting the crop should have reached its full bearing potential. Thereafter, there are 2 main crops annually, namely a summer crop from November to January and a smaller winter crop during June and July. In the Northern Province and Mpumalanga growers sometimes have a third crop during March and April. A limited quantity of fruit will, however, be available throughout the year.

When to pick the fruit

- Fruit for the fresh market is picked 2 to 3 times a week in summer when fully developed and with a light purple colour.
- Fruit should not have a deep purple colour when harvested, because it will arrive at the market in a shrivelled condition and will not have a good market value. A wax treatment protects the fruit from drying out and could delay the shrivelling process.
- During the cooler months fruit is harvested weekly.
- Fruit for processing can be harvested when it has reached a deep purple colour.
- Fruit should be harvested early in the morning.



For further information contact the
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