How to produce, harvest and store

Sweet Potatoes

Sweet potatoes form a key staple and poverty-relief crop in southern Africa. Orangefleshed types are useful in combating the vitamin A deficiency which causes many African children to go blind.

The sweet potato performs well in sandy-loam, loam or clay-loam soil. It needs good drainage and is sensitive to water-logging, salinity and alkalinity. Stony or clay soils are not suitable for developing good storage roots. The optimum pH of irrigation water should be 5.6 — 6.5.

Required climate
As a warm season crop, sweet potato is sensitive to low temperatures, especially frost. It performs best in subtropical areas but can be grown in all South African provinces, provided supplementary irrigation is available. The plant develops a degree of drought tolerance after the storage roots have formed.

Crop rotation
Crop rotation is essential to prevent disease and pest build-up. Sweet potatoes should only be cultivated in the same soil once in three years.

Propagation
Propagation is by stem cuttings. Always cut shoots from a healthy plant. Do not use vines from volunteer sweet potatoes because these might carry pests and diseases. Pieces of stem 20 — 30 cm long should be taken for cuttings. The leaves can be removed from the cuttings before planting, but this is not necessary.

Top cuttings are more vigorous than cuttings from other parts of the vine. Plant them in a prepared bed by covering half their length in moist soil.

Press surrounding soil down firmly so that it makes proper contact with the stem to promote quick root development. Water the plants immediately after planting.

Cultivar list
Orange-fleshed: Bophelo, Impilo
Cream-fleshed: Ndou, Monate (dry test), Bosbok (moist)
Soil preparation
Loosen the soil to a depth of 25 — 30cm to allow for good root aeration, root penetration and drainage by either ploughing or using a fork, hoe or spade. Remove stones and break down hard soil layers. All clods should be smashed until a deep, fine bed is obtained.

Planting method
Ridging. Sweet potato plants are grown on ridges or mounds. The ridges are especially beneficial in areas prone to flooding and also ease harvesting. Cuttings are laid 30cm apart on the ridge, with the basal end planted in the soil. Holes of suitable size are made, the vines placed in the holes and soil pressed down firmly around the cutting. Cuttings are planted vertically with 3 — 4 buds (nodes) under the soil surface.
Flat bed. Some farmers grow sweet potatoes on flat beds in sandy soil with good results.

Spacing
Sweet potatoes can be regarded as a field crop rather than a home garden vegetable. This is because its runners take up a large area. For the home garden (where space is limited) a row or two should do. Place stem cuttings 25 — 35cm apart (or the length of a spade blade) in the row. Generally, ridges of 1m apart are used, but they can also be 90 — 150cm apart for field production or 80 — 90cm for home gardens, and about 30 — 40cm high.

Planting time
Areas with light, mild frost: beginning of November to mid-December.
Areas with heavy frost: mid-November to beginning of December.
Frost-free areas: August to March.
Cooler areas: September to February.
Winter rainfall areas: mid-November to beginning of December; November is optimal.
Production guidelines

Fertilisation
Soil samples should be taken a few months before planting in order to rectify soil fertility problems. General recommendations are the following:

• Sweet potatoes need a high ration of nitrogen (N) and potassium (K). Approximately 500 — 750kg/ha (75g/m²) of a fertiliser mixture such as 2:3:4 (30) + 0,5% Zn or 2:3:2 (22) + 0,5% Zn, or 3:2:1 (25) + 0,5% Zn can be applied directly before planting. It must be worked into the soil lightly before making the ridges. For sandy soils the quantity can be increased to 1 000kg/ha. Apply a top dressing of 120 — 150kg/ha LAN (12g/m of row) or 200kg/ha (20g/m²) ammonium sulphate three weeks and six weeks after planting, if necessary. Sandy soil will require at least two top dressings. Water well after the fertiliser has been applied.

• Well-matured (six months) compost may be used to supplement part of the chemical fertiliser, but it must be worked into the soil some time before planting.

Water requirements
Sweet potatoes are moderately drought tolerant. Water stress during the first few weeks after planting and the period of tuber formation (30 — 60 days after planting) will cause low yields. As a general guideline, sweet potatoes require between 450mm and 600mm of water, well distributed throughout the growing season.

Harvesting
The sweet potatoes are ready for harvesting four months (warm areas) to five months (moderate areas) after planting. Soil should be soft during harvest to prevent breakage and skin damage. Withhold watering from about 30 days before harvesting as a way of field curing. In warm areas, cut vines four to seven days before harvesting for the tubers to cure.

Use a hand fork to lift the tubers and take them out by hand. Make sure you do not damage them. If too long a season is allowed, the tubers will become too large. Rub the soil from the sweet potatoes, wash and leave them to dry in sun for one to two hours when temperatures are moderately high. At 32°C, harvested tubers can get sun scald within 30 minutes. If left on the field at night at temperatures below 5°C, chilling injury will occur. Store the tubers in a cool, dry place at about 15°C.

Storage
Sweet potatoes can be stored fresh for three to six weeks after harvesting. Do not store damaged tubers. They can also be left in the ground until such time as they are needed. It is better to extend harvesting through planting at fortnightly intervals during the planting season.

Sweet potatoes can be used in many different ways

• Storage roots can be eaten raw, boiled, baked or cooked.
• The tips of shoots (petioles) and young leaves serve as a vegetable. Crop residues are useful as stock feed.
• Storage roots can make starch, alcohol, flour, jam, and juice.
• The high carbohydrate content makes sweet potatoes a key energy source.
• The orange-fleshed sweet potato is a good source of vitamin A.
• Green leaves provide additional protein, vitamins and minerals.
Protect your harvest

Sweet potato is less affected by diseases and pests than most crops. Sweet potato weevil and sweet potato moth are the pests that most often affect sweet potatoes. The most important field diseases are sweet potato feathery mottle virus, fusarium wilt, alternaria leaf spot, and scurf. During storage soft rot, surface rot and dry rot may occur.

Sweet potato weevil
Adult weevils feed on foliage. The larvae tunnel into the sweet potato tubers and stems. Preventive measures include the following:

- Crop rotation, which can help reduce the weevil population.
- Earthing-up tubers, which generally reduces infestation.
- Removing all tubers at harvest and never using cuttings from volunteers; in other words, from plants emerging in a field where sweet potatoes were planted the previous season.
- Burning all infested plants after harvesting.
- Using plant cuttings which are free from weevils or larvae.
- Not planting cuttings close to the previous sweet potato crop.
- Reducing soil cracking.
- Adjusting planting times so that there are no tubers in the dry season.
- Harvesting at the right time, as in-ground storage during the dry season promotes damage.
- Spraying with registered chemicals.

Larvae of sweet potato hawk moth
Large brown larvae (worms) which have a horn on the back of their bodies, feed on the leaves of sweet potatoes. Control them with registered chemicals at an early stage. Hand-picking larvae is usually sufficient if numbers are not too high.
Field diseases

**Fusarium wilt** can cause severe yield loss. When cutting through the stem of an infected plant, a reddish-brown discolouration of vascular tissues can be seen. The leaves and stem turn yellow, wilt and die. Infected plants also infect the soil. Preventive measures include the following:
- Using wilt-resistant cultivars.
- Using disease-free planting material.
- Practising field sanitation.
- Removing infected and old plant residues.
- Rotating crops.
- Limiting any stress such as water deficiency combined with high temperatures during the growing season.

The same measures apply to alternaria leaf spot and scurf.

**Sweet potato feathery mottle virus**
Although symptoms are seldom seen on the leaves, the yield decreases severely and there are more cracked tubers.

Here are some preventive measures:
- Planting virus-free material — obtain cuttings from registered vine growers or from ARC - Roodeplaats.
- Controlling weeds in and around the field, especially wild ipomoea species.
- Using healthy-looking, vigorous material.
- Removing volunteer sweet potato plants, debris and weeds from the previous season before planting.
- Renewing plant material every two to three years.
- Cleaning all cutting equipment with a strong bleach solution.

Storage diseases

Try the following preventive measures against storage diseases such as soft rot, surface rot and dry rot:
- Remove and destroy infected tubers from the storing place.
- Store them in a cool, dry place.
- Clean containers with bleach.

- Do not store damaged sweet potatoes and those showing signs of disease.
## RSA sowing and planting chart for the most popular vegetable crops*

<table>
<thead>
<tr>
<th>Crop</th>
<th>Sowing time</th>
<th>Transplanting time</th>
<th>Harvesting time</th>
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*Please consult the seed company in your region regarding cultivars, which vary from area to area.