PASSION FRUIT

Designed by:

Crop Manager Team

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Varieties

There are about 600 known species of Passion fruit now found worldwide. Of the 600 species, only one, P. edulis Sims, has the exclusive designation of passion fruit, without qualification. Passiflora edulis exists in two distinct types known as P. edulis, edulis the purple passion fruit and P. edulis flavicarpa, the yellow passion fruit.

In Uganda three species are common: the purple **Grandilla** is grown for its scent and is locally known as Kasese, Masaka and Kenyan passion fruit variety.

Highly resistant **Kawanda hybrid** is a cross between the local purple and the yellow passion fruits.

Yellow passion: This is grown for its aromatic but rather acidic pulp.

Soil requirement

Passion fruit vines grow on many soil types but light to heavy sandy loams with a pH of 6.5 to 7.5 are the most suitable. Also, the soil should be rich in organic matter and low in salts. If the soil is too acidic, lime must be applied. Because the vines are shallow rooted, they will benefit from a thick layer of organic mulch. Well-drained soil is essential. Otherwise, root problems develop that soon destroy these plants. In general, it is recommended that the soil should be deep, relatively fertile and well drained, the best soil recommended is sandy clay. Growing passion fruit at altitudes between 100 m and 1,000 m is recommended. Plantations at lower altitudes last for a shorter period of time than those with higher altitudes

Climatic conditions

Passion fruit grows well in tropical and subtropical regions, where the climate is hot and humid. Temperature, relative humidity, light intensity and precipitation have an important influence on the longevity and the yield of the plants, but also favor the incidence of pests and diseases. Biological processes, such as flowering, fertilization, fruit formation, maturation and fruit quality depend on temperatures between 21-25degrees Celsius. Lower temperatures slow the growth of the plant and reduce the uptake of nutrients and fruit production, while very high or very low

temperatures affect fruit bearing. The germination period of the seeds is shorter in summer time than in the coldest months, when the period is longer.

Land preparation

Land preparation may be conducted one to two months before planting the vines. The land must first be cleared. This produces green mulch that can be incorporated back into the soil when ploughing. This ensures a quick and even establishment of vines. Soil analysis should be conducted and all necessary adjustments made before planting. Manual soil preparation starts with clearing existing vegetation and using it as mulch or burning it. Soil preparation is limited to the manual opening of the pits for planting the vines

Planting

Plant passion fruit in at least (2x20) ft width and 3ft depth.

The holes must be well fertilized.

Open up the planting holes at least 2-3 months earlier. This gives room to kill the soil pests and it borne diseases.

After mix the top soil with compost and then put it back, as this is very important at the initial stages.

To further boost the plant growth, add NPK and CAN fertilizer at the climbing stage and when the branches start to develop.

Harvest your passion fruits 4-6 weeks after transfer to the main field.

Trellis the fruit plant with 270 cm long and 15 cm in diameter posts. Place these posts in 60 cm deep holes spaced at 6 m apart in rows midway between the plants.

Opt for companion planting as your inter-crop passion fruits with green paper, onion, carrots and other short-term veggies. However avoid crops like maize, bananas; sugar canes as these are heavy feeders.

Fertilizer application

A balanced fertilizer that supplies nitrogen, phosphorus and potassium in approximately equal proportions, as well as essential micronutrients (magnesium, manganese, copper, zinc and iron), is adequate for passion vines on the slightly acid, sandy soils. On the alkaline, rocky soils, phosphorus is needed less than nitrogen and potash, but micronutrients must be applied for normal growth and production. These can be applied 4 times a year in foliar sprays. In addition, iron chelates can be applied directly in solution to the soil near the roots. Fertilization may be through using organic fertilizers, inorganic or using micro nutrients.

Weed control

Weed control can be done manually in the rows and mechanically between the rows. During harvest weed control needs to be especially well done in the rows parallel to the planting lines because the fruits are usually collected from the ground. Mechanical weeding (close to the plant less than one meter) is not recommended in order to prevent damages to the roots, which are largely concentrated within 15 to 45 cm from the stem. Chemical weeding, using selective herbicides eliminates not only the weeds, but reduces operational costs and simplifies the work.

Disease management

The most serious diseases of the passionfruit are brown spot, root rot and nematodes.

Brown spot

Symptoms

- Small reddish-brown spots on the leaf.
- Premature leaf drop.

Management

- Apply Maneb (80% WP) at the rate of 1 kg/ha in 500 l of water applied biweekly or Captan, Zineb or copper fungicide.
- Minimize fruit damage by picking up the fruit before it can be damaged by fungal spores on the damp soil.

Root rot

Symptoms

General decline in vigor as feeder roots are destroyed by the fungus.

Nematodes

Symptoms

severe stunting of the vine which may eventually die.

Virus

Viral infections will persist in a plant and include Chrysanthemum B carlavirus, Passiflora latent carlavirus, Passiflora ringspot potyvirus, Passionfruit woodiness potyvirus, and Purple granadilla
mosaic virus.

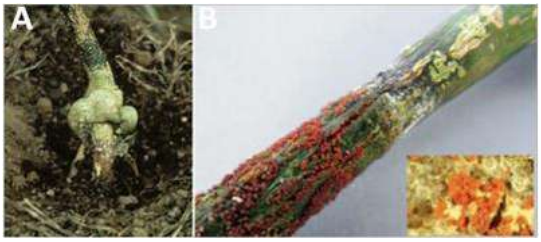
Some symptoms include: yellowish spots on the leaves, deformed growth and bad flowering or low yield in fruit

Management

- Produce virus-free plants is by cutting fast growing shoots, also regular feeding with fertilizer might help keep the plant healthy.
- Also, plants should be propagated from seed whenever possible.
- A vine used as a source of cuttings should be kept insect free in a screen house to protect it from viral infections.

Some viral and Fungi related diseases might include

Collar Rot



Symptom

- changing of leaf colour to pale green.
- Wilting, defoliation and finally plant death.

Management

Area previously infected with the disease should be avoided for new planting and nurseries. Badly drained soils have to be avoided and careful irrigation has to be conducted in order to avoid excess water, water stress as well as injuries to plant collar and roots. Biweekly drenching of copper oxychloride reduces the number of plants developing collar and roots. Under favorable conditions use of fungicides is ineffective. The use of a resistant root stock is an effective way to deal with the problem in the contaminated areas.

Fusarium Wilt

The glory green leaves of young passion fruit plants show a pale green colour and mild die back.

Drop pf lover leaves, general plant wilting and sudden death take place as the disease progresses.

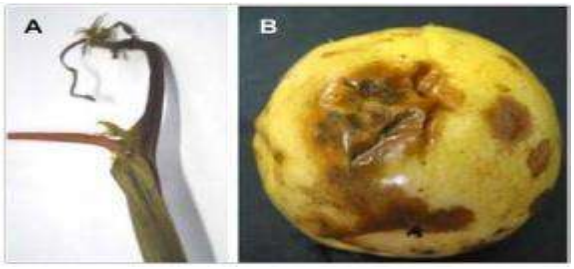
In adult plant, the disease causes yellowing of young leaves, followed by plant wilt and death. Symptom development may be unilateral or encompasses the entire plant.

Management

The vascular system becomes darkened at the root, collar, steam and twig areas. The disease typically affects the xylem vascular system, leading to impermeability of vascular walls and preventing the translocation of water to other plant parts.

Under high relative humidity conditions, lesions and fissures can be found in the plant collar stems.

Root and Crown Rot



Symptoms

- Yellowing of the plant, willing, defoliation and death. Cortical tissues of the plants are exposed
- Burned appearance. Occurrence of foliar blight followed by drop of flowers.
- Change in leaf color from colorless to pale green with leaves reaching a light copper color.
- Affected plant shows burned-like black twig tips and flowers which eventually die.

Management

- Bordeaux mixture helps minimise the spread of the disease.
- Application of fungicides at the start of rains may help control the spread of the disease.
- Pulverizations with copper oxychloride at an interval of seven to ten days can control foliar blight.

Anthracnose

Symptoms

- Intense defoliation, twig wilt and fruit rot.
- Leaf spots oily in appearance,they later become dark brown, the spot centres become brittle and may break apart.
- Dark brown spots are produced on branches eventually turning into cankers

Management

- Use pathogen free seedlings.
- Prune to eliminate affected areas.
- Improve ventilation and light conditions help control the disease.
- Fruit should not be harvested in wet conditions unduly exposed to sunlight or kept for long in absence of refrigeration.
- Pruning should be done when plants are dry followed by fungicide application

Diseases caused by viruses

Potyvirus diseases


Symptoms

- Severe mosaic, and distortion on the leaves.
- Reduction of plant development, and woody and deformed fruits.
- Premature death of plants.
- Ring-spot on younger leaves.
- Yellow spots on leaves dappled or faded fruits

Management

- Use virus free seedings for new plantings.
- Eradication of old and abandoned orchards before starting new crops.
- Care during trimming operations to eliminate mechanical transmission of the virus.
- Avoid leguminous plants, which may harbour the virus, near the orchard.

Harvesting

Harvesting of passion fruit starts from 8-12 months especially for the purple ones.

Pick fruit when they turn from green to purple, and when the calyx has dried up leaving a small stalk attached.

For processing, fruits should preferably be left to drop on to clean mulch. They should not be plucked from their stems.

Usually fruits which have dropped can be collected once or twice a week. During the rainy season they should be picked up every other day and kept in a cool place.