

Passion Fruit Farming

Introduction

Passion fruit is amongst Kenya's top export fruit and a popular fruit in the domestic market. The fruit is a vigorous perennial climbing plant and can grow 15-20 feet per year.

The crop is very rich in Vitamins in high demand by processors for making juice blends.

Although the fruit is labor intensive and susceptible to pests and diseases, it is one of the good ventures which gives high returns to farmers under good management.



Varieties

There are two major Passion fruit species widely grown in Kenya:

Yellow passion fruit - Does well at altitudes of 0-800 m and is used mainly for the fresh fruit market. It can also be used as a rootstock for grafting of the purple passion variety

Purple passion fruit - Grows best in higher altitudes, cooler areas above 1000 m, ranging 1200-2000 m.



Yellow passion variety



Purple passion variety

Others include Sweet passion, Banana passion and Giant passion. They prefer cooler parts with higher altitudes above 1500 m.



Sweet Passion



Banana passion



Giant passion

Ecological requirements

The following are the best conditions for the establishment of passion fruit:

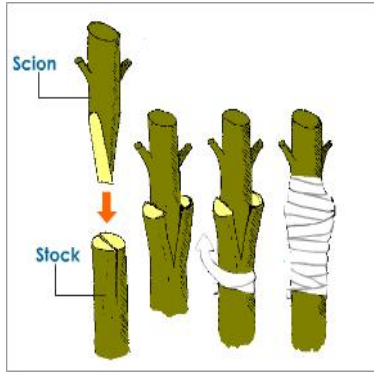
- Heavy well drained and fertile sandy loam soils with a pH of 5.5 - 7. If the soil is too acidic, apply agricultural lime. Good drainage and aeration are essential to minimize the incidence of diseases.
- A well distributed rainfall 900-2000mm but when rainfall is low supplement with irrigation.
- Optimum temperatures range between 18-25°C for the purple variety and between 25-30°C for the yellow variety.

Propagation

Passion fruit is generally propagated from seed, cuttings and grafted.

When propagating seeds: the seeds should be rubbed clean of pulp and dried in the shade then you sow in pots with soil or a ready nursery. Germination takes place after 2-4 weeks. Raise seedlings in polythene bags ready for transplanting after 2 months.

You can also graft yellow passion variety which is a good rootstock variety with purple passion. The seedlings will be ready for transplanting after 3-4 months and with a height of 15-25 cm.



Graft a scion and the root stock. For seedlings, transplant after 3-4 months when 15-25 cm tall

Planting

1. Select a site with a good shelter cover. The vines require sheltered locations without extreme temperatures.
2. Plough land deeply 2- 3 months before planting, remove all root stumps
3. Dig planting holes 40cm by 40cm by 40cm at least 3 weeks before transplanting. Separate topsoil and the subsoil. The recommended spacing for holes is 2 m between rows and 3 m within rows.
4. Add 1-2 debes of manure and 2 handfuls of planting fertilizer e.g Mavuno Fruit N.P.K 15.10.22, Mavuno Planting N.P.K 10.26.10, DAP or TSP to each hole and mix well.
5. Plant a healthy seedling in each hole and firm well with soil
6. Water well and mulch

Passion Fruit Management

These include field management practices that aim at ensuring passion has a good shelf life and productivity is maintained throughout seasons. They include:

1. Weed carefully to avoid injury to the plant
2. Mulch along the rows or around the base of the plants to kill weeds, protects the roots and to keep the soil moist.

3. Pruning and support

A) Pruning

When pruning, you remove old, unproductive and dead passion shoots. This helps the shoots to get enough light and fresh air. Care should be maintained when pruning.

If you do not prune, the crop will experience unlimited expansion along the trellis, some become intertwined and this limits the general growth of your passion fruits.

Pruning also helps reduce incidences of pests and diseases.

Do not prune until the second season after planting. Early pruning results in die-back in vines. Repeat every year at a stage where the passion fruit tree begins to also experience vigorous growth. This should be done before they flower.

How to prune

Use a sharp secateur or hedging shear to prune your passion.

Sterilize the equipment before and after the exercise.

Cut lateral vines to maintain a height of 20-30 cm below each wire then remove the sick, dead and weak growth.

On the second pruning season, shorten the main vines (leaders) to let the young shoot grow laterally. This will encourage proper and further spread.

Finally, spray with effective fungicides to control diseases.

B) Support

This is usually done through **Trellis** or **training** the passion fruit vines. It involves use of posts (stakes) and wire/string. It aims at ensuring that they spread out well and get good support for fruit formation.

How to offer support

a) Training

Training aims at spreading the vines so that they get onto the wires of the trellis with ease. To train:

- Fix stakes 2.7m tall into the ground beside each passion plant at a spacing of 6-8m
- Attach the vines to the wires to provide support for the young leaders
- When the young vines start to grow, select two strong shoots to act as leaders and direct them to the stakes
- Prune the other shoots to give room for the leaders to grow well

- As the leaders grow, tie them loosely upwards on the stick. You can also twist them lightly around a sisal wire and tie it in position
- Once the leaders reach the trellis wires, train them horizontally along the wire i.e. one on the left and another on the right
- After a while, develop 2 or 3 branches from the main stems to act as secondary leaders
- This can be repeated over but with care until vines meet up with the neighboring plant



Erect stakes close to plants and twine stems in position until the shoots reach the wire/strands

b) Using Trellis

The method is known as trellising. In trellising:

- After generating leaders by training the shoots to a height of about 2.1m and remove weak shoots and leave 2 strong ones as leaders then you start to build a trellis system gradually while the plant grows:
 - Using strings or galvanized wires, stretch them tightly from one post to another. You need about 3-4 strands.
 - The trellis should be erected when the field is planted so that the main shoot and one vigorous lateral can be tied to the wire with a string.
 - If laterals do not emerge in time, they can be forced to leaf out by pinching off the shoot tip.
- Once the leader shoots reach the wire, they are allowed to grow in opposite directions along it. Twine the leaders gently along the wires. Prune all the lateral shoots below the wire.
- After a while, secondary shoots will form and hang down forming a curtain of shoots. Thin, rejuvenate and cut off shoots before they reach the ground by pruning frequently to avoid them from being entangled.



4. Fertilization - 4 weeks after planting, apply a handful of CAN per plant. Repeat every 3-4 weeks until the tips of the stem meet with the wire. Also apply manure every 3 months for optimum yields.

5. Pruning - Remove dead stems and unproductive shoots. Also, cut off secondary shoots reaching the ground. If laterals do not emerge in time, they can be forced to leaf out by pinching off the shoot tip. After every pruning, disinfect with detergents to avoid spread of viral diseases.

6. Intercropping - Intercrop passion fruit with vegetables especially vegetables like beans, cabbages and tomatoes. You can also intercrop with crops like potatoes, beetroots, carrots, spinach, strawberries, eggplants, peppers and onions. This will provide good compost and help control erosion.

Do not intercrop with Cucurbits family e.g cucumbers, pumpkins, and squashes. They share the same pest and diseases. Also, do not intercrop with maize, cowpea, sorghum and Okra.

Pests and diseases

Pests

Red spider mite - Common during hot dry weather and causes scarring and discolouration of maturing fruits. Control with insecticides e.g Vapcomic



Leafminer - It causes stippling with white spots on leaves and under heavy attack, leaves may drop off



Aphids - It sucks plant sap causing curling. It is also a vector of woodiness virus.



Diseases

Woodiness - It is a viral disease carried by Aphids. It causes fruit to have a very hard rind and small pulp cavity and cause fruits to burst. To control, use grafted varieties, do crop rotation with vegetables like kales or cabbages or cereals like maize or sorghum and spray with fungicides e.g Score, Wetsulf.



Leaf spot - It is a fungi which causes brown spots on leaves. Treat with fungicides e.g Score



Fusarium wilt - It causes yellowing of leaves with the collar region of affected plant at soil level turning brown and vertically cracks and vines wilt



Brown spot - The symptoms of brown spot are tiny spots, which enlarge into sunken circular spots with brownish centers. Eventually the rind around the diseased area becomes wrinkled and the fruits shrivel.



Harvesting

Passion fruits are ready for harvesting 8-12 months after transplanting. 6 months after transplanting, passion fruit will start to flower. It takes another about 75 days after flowering for the fruit to be ready for harvesting. This is when the fruits begin changing colour from green to red or yellow depending on the type. Harvest by cutting or clipping the fruit off the vine to leave a small stem using a sharp secateur. Pack the fruit in mesh sacks to ensure adequate ventilation.