

1. Varieties

Local varieties:

- Peach
- Parrot
- Maqo Dina
- Baramasia

Released varieties:

- Kensington
- Mapulehu
- Tommy Atkins
- Edward
- Mexican Kent

2. Yield

- Yields vary depending on the varieties, age of the tree and environmental conditions. An estimated yield of 25 to 80kg per tree can be obtained in 5th to 7th year and 70 to 150kg in older trees.

3. Propagation

- The preferred method is grafting which maintains the true characteristics of the variety and induces early flowering and fruiting. Grafting involves growing of selected scion on a local rootstock by inserting the scion in the centre or the side of the rootstock and securing with grafting tape (lip tongue grafting).
- Cleft or Wedge Grafting is suitable for commercial purposes in Fiji.
- It takes approximately 3 to 4 months to produce grafted seedlings.

4. Soil and Climate

- Grows well on a wide range of soil but prefers sandy loam and medium to heavy clays at a pH of 5.5 – 7.0
- Relatively tolerant to drought and poor soil fertility however adequate soil drainage is needed.
- Grows throughout the country but is very sensitive to dew and rain during the flowering stage as significant yield losses can be expected. Dry zones are more suited for mango production. Coastal lines are excellent since saline sea breeze protects the drop of flower and retain fruit set.

5. Planting

- Holes of 30cm should be dug ensuring that the top soil is filled into the bottom of the hole with 225g NPK 13: 13: 21 fertilizer, half mixed at the bottom of the hole.
- While transplanting, cut open the potted plastic bags and place the plants in position. The remaining half of the fertilizer should be spread around the plant. During the dry weather the newly established plants must be watered twice weekly and mulched.

6. Spacing

- On commercial scale - 9m between rows and 9m within rows in square or triangular pattern. A total of 123 trees/ha is recommended

7. Pruning

- Prune the plants at 6 to 7 years after the fruiting season. Thereafter, pruning should be done annually.
- Remove the terminal bud of the young seedling at about 1m height to allow side branch to develop. The plant should be balanced and well shaped. The other pruning required is the removal of sucker growth and dead branches.

8. Weed control

- Should be carried out during the early stages of growth either manually or chemically using Glyphosate at 150ml to 200ml/15L of water (sold as Roundup Champion, Rainbow and Rambo).



- Inter-cropping in rows between mango plants for the first 5 years with short-term crops.

9. Fertilizer requirements

Tree Age	Fertilizer & Application rate	Application Time
Young trees (up to 5 years old)	<ul style="list-style-type: none">• Apply NPK 13:13:21 at a rate of 225g/plant/year.• Apply 100g Urea/plant/year	<ul style="list-style-type: none">• November & March• August
Old trees (more than 5 years old)	<ul style="list-style-type: none">• 1 – 2kg NPK 13:13:21 per plant	<ul style="list-style-type: none">• March, August & November

10. Irrigation

- Newly planted trees should be watered regularly for growth while application to established trees depends on the soil type.
- During the establishment stages, trees grown on sandy soils should be given 2 – 3 watering/week while trees grown on clay soils once every two weeks.
- For mature trees, apply irrigation once a week for sandy soil and once every 3 – 4 weeks for clay soils.

Time of irrigation for mature trees:

Dry period → Flower initiation → fruit setting (Under Water stress)

11. Pests and Diseases

- (i) **Fruit Fly** (*Bactrocera passiflorae*)
Fruit flies lay eggs in the mature fruits. The larva develops and feeds in the ripening fruits.

Control:

Bait spraying is the technique used to control the pest. Mixture of 50ml of Protein Insect Lure and 4ml of Malathion mixed in 1L of water is sprayed at the rate of 50ml per tree. At pickling stage, 3 spraying prior to harvest is recommended and 6 spraying prior to harvest for mature stage.

- (ii) **Mango Scale** (*Aulacaspis tubercularis*) Clusters of white flecks (scales) can be found on the upper or lower leaf surface.

Control

Spray Dimethioate at 15ml/15L of water (Sold as Rogor).

(iii) **Mango Stone Weevil** (*Cryptorhynchus mangiferae*) The insect invades and survives in the seed. The pest does not move readily by itself but mainly in fruit.

Control

Collect and destroy all fallen fruits in the field by burying deep in the ground or burning.

(iv) **Anthracnose** (*Glomerella cingulata* = *Colletotrichum gloeosporoides*) The disease is found on all parts of the plant; branches, leaves, flowers and fruits. Small black irregular shaped spots on leaves that expand to form large areas that dry and fall out. New leaf flushes are especially susceptible. In wet weather, infected flowers may result in blossom blight hence low fruit set. On fruits, infections expand upon ripening, forming dark to black spots with pink spore developing at the centre.

Control

Remove dead twigs and branches before flowering. Apply Benomyl at 10g/15L of water (Sold as Benlate) at flowering stage with 14 days interval. After harvest, mangoes can be dipped in Benomyl (52°C for 5min) then stored at 10°C - 12 °C.

(v) **Black Spot** (*Xanthomonas compestris pymangifere indicae*) Affects leaves, stem and fruits. Blank angular raised spots between the veins on the leaves, often with yellow haloes. Emerging spots destroy large areas of the leaf. Spots on leaf and stem may lead to gum-filled cankers. On fruits, black irregular shaped raised spots develop and join to form cracks from which sap emerge.

Control:

Seedlings and grafted plants should be free from infection, select scion wood from disease-free trees. Treat propagating material with copper fungicides. Establish new plantings in areas protected from strong winds. Resistant variety is Kensington.

(vi) **Powdery mildew** (*Oidium sp.*) Affects leaves, flowers and fruits. White powdery fungal growth over the shoots, flowers and young fruits. Premature fruit fall. On older fruits - brownish scabby areas may develop due to earlier infections. The disease is most prevalent in the cool dry season.

Control:

Mancozeb 50g/15L of water or Benomyl at 10g/15L of water (Sold as Benlate).

12. Harvesting

- Mangoes are in season from September to March.
- For export pick half ripe (at colour break). It is recommended that harvesting to be carried out in the early part of the day to avoid build-up of field heat.

13. Characteristics of Mango for Export

- Mature (colour break) for eating
- Immature & green for pickling
- Free from sap stain
- Free from blemishes
- Free from insect & disease damage

Expected returns from a hectare of mango

Year	Marketable yield (tonnes/ha)	Expected Net Income \$/ha
1	-	-
2	-	-
3	1.6	\$960
4	2.4	\$1,440
5	5.4	\$3,240
6	8.2	\$4,900
7	12.2	\$7,320
8	18.4	\$11,040
9	22.1	\$14,365
10	26.5	\$17,225
11	31.8	\$20,600
12	35.0	\$22,750

14. Food value

It is an excellent source of vitamin A and C.



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Ministry of Agriculture

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