Mango information kit

Reprint – information current in 1999

REPRINT INFORMATION – PLEASE READ!

For updated information please call 13 25 23 or visit the website www.dpi.qld.gov.au

This publication has been reprinted as a digital book without any changes to the content published in 1999. We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research:

- Chemical recommendations—check with an agronomist or Infopest www.infopest.qld.gov.au
- Financial information—costs and returns listed in this publication are out of date. Please contact an adviser or industry body to assist with identifying more current figures.
- Varieties—new varieties are likely to be available and some older varieties may no longer be recommended. Check with an agronomist, call the Business Information Centre on 13 25 23, visit our website www.dpi.qld.gov.au or contact the industry body.
- Contacts—many of the contact details may have changed and there could be several new contacts available. The industry organisation may be able to assist you to find the information or services you require.
- Organisation names—most government agencies referred to in this publication have had name changes. Contact the Business Information Centre on 13 25 23 or the industry organisation to find out the current name and contact details for these agencies.
- Additional information—many other sources of information are now available for each crop. Contact an agronomist, Business Information Centre on 13 25 23 or the industry organisation for other suggested reading.

Even with these limitations we believe this information kit provides important and valuable information for intending and existing growers.

This publication was last revised in 1999. The information is not current and the accuracy of the information cannot be guaranteed by the State of Queensland.

This information has been made available to assist users to identify issues involved in the production of mangoes. This information is not to be used or relied upon by users for any purpose which may expose the user or any other person to loss or damage. Users should conduct their own inquiries and rely on their own independent professional advice.

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained in this publication.

Queensland Government

Common QUESTIONS

This section contains the most commonly asked questions about growing mangoes. The answers are as brief as possible. Where this is difficult and more detail is required, we refer you to other sections of the kit. Symbols on the left of the page will help you make these links.

Contents

Starting an orchard

How many trees do I need to make a living from mangoes?

As the primary source of income about 5000 trees will return a profit of about $40 000 in addition to the owner operator allowance. Average marketable yield is 10 trays per tree and average returns range from $10 to $14 per tray. Production costs are about $9 per tray.

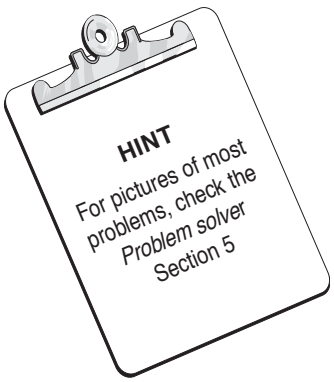
Is my farm suitable for mangoes?

Mangoes prefer a frost-free climate with a cool dry winter. They will grow on a wide range of soils but prefer light, well-drained soil of reasonably low fertility. Slopes should not be too steep to allow safe machinery access. You will need about 6 million litres (ML) per hectare per year of available water.

Problems

Why are my flowers going black?

The fungal disease anthracnose is the most common cause of flowers going black. The symptoms are small black spots developing on the flowers, stalks and small fruit. Preventative sprays can reduce the risk of infection.



How do I control bacterial black spot?

Bacterial black spot invades young leaves and fruit mainly through surface damage caused by wind. Windbreaks reduce wind damage to trees and thus help to control infection. A sustained regular spray program using a recommended fungicide will manage the disease.

Why are my leaves going brown?

Leaves turn brown for many reasons but the main cause is the disease anthracnose. Young leaves are particularly susceptible to infection and it is worse in wet conditions. If it is mainly the tips of the leaves turning brown, it is probably fertiliser burn or saline irrigation water. Leafminers tunnelling through leaves can also cause leaves to turn brown.

Why is my new growth wilting?

Two insects are the most likely cause of new growth wilting.

The *fruitspotting bug* sucks sap from new growth, which causes grooves along the length of the new stems, causing them to wilt.

The *mango tipborer* hollows out the inside of new stems, causing more severe wilting than the fruit spotting bug. If you cut the

stem lengthwise, you will find that it is hollowed out, often with a small caterpillar inside.

Why do some fruit never get bigger than an egg?

Egg-sized fruit are the result of poor pollination caused by cool night temperatures during flowering. Some of the fruit fall off and others will develop to egg-size. These fruit are commonly called nubbins. If you cut them open, you will find there is no seed.

Why are my fruit splitting?

The main reason for fruit splitting is infection by bacterial black spot.

There is a hollow in the fruit. What is that?

A hollow in the fruit is an occasional problem in Kensington Pride and some other varieties. The hollow develops at the top of the fruit where it is connected to the stem, and is known as stem-end cavity. It is related to a nutritional imbalance in the tree and fruit hanging on the tree for too long.

Why do my mangoes stay green?

Incorrect ripening practices and high nitrogen levels in the tree are the most common causes of mangoes that stay green when ripe.

How do I avoid skin browning

Skin browning
Section 4 page 48

Incorrect harvesting and postharvest handling practices cause skin browning. You need to manage your system to minimise skin damage from sap contamination, bumping, dirt, wetness and heat.

Planting and varieties

What varieties should I plant?

Selecting varieties
Section 4 page 22

The varieties you choose will depend on the growing region and your target market. The three main commercial varieties grown in Queensland are Kensington Pride, R2E2 and Keitt. Kensington Pride is an early season variety, R2E2 mid-season and Keitt a late season variety.

Should I use grafted plants or seedlings?

Kensington Pride can be grown from seed or grafted. Most other varieties (Kent, Palmer and Keitt) need to be grafted because they do not grow true-to-type from seed. Grafted plants produce earlier, are less vigorous and have a more uniform production than plants grown from seed.

What tree spacings should I use?

Tree spacings will depend on variety and how you will prune and manage your mature trees. Varieties such as Keitt and Palmer can be planted closer than more vigorous types such as Kensington Pride. If you plan to prune your trees as a hedgerow, they can be planted closer within the row. Row spacing should allow easy access for machinery when trees reach full maturity.

more info
Tree spacing
Section 3 page 7

How long before my trees bear fruit?

Grafted trees will settle into a cropping pattern by the third year after planting and reach peak production in the sixth to eighth years. Seedling trees take a year longer to come into production.

Tree management

How can I protect my trees from frost?

The best way to protect trees is to grow them on frost-free land. You can protect young trees by wrapping their trunks in sisalation or similar insulating material for their first winter. Another method is to irrigate for an hour or two until sunrise, just before frost settling.

Should I hedgerow my new plantings?

Hedgerowing will depend on tree spacing. Tree spacings of less than 4 m lend themselves well to hedging as opposed to managing wider spaced individual trees.

How tall should I let my trees grow?

For efficient harvesting and effective spray coverage keep trees less than 4.5 m high.

How and when do I prune?

Young mango trees should be pruned every one to two flushes to maximise branching and fruiting terminals. When trees reach bearing age, prune them each year to maintain size, thin out the canopy and remove dead wood. Prune by hand with secateurs or machine prune. The main pruning is done after harvest.

more info
Pruning mangoes
Section 3 pages 17, 27

When should I fertilise my trees?

In bearing trees, most fertiliser is applied after harvest. The rest is applied at flowering and early fruit growth. Young trees require regular fertilising every two to three months to encourage continuous, strong growth.

more info
Fertilising trees
Section 3 page 14,22

How much fertiliser should I use?

The amount of fertiliser you use will depend on soil type, tree size and cropping history. Always do a leaf and soil analysis before planning your fertiliser program.

How much gypsum do I need and how often should I apply it?

Gypsum supplies additional calcium to the plant without changing the pH of the soil. The normal application rate is about 5 t/ha or 500 g/sq. m. Gypsum is normally applied once a year soon after harvest, to coincide with the wet season.

How much water do my mangoes need, and when?

Mangoes are a deep-rooted crop and a mature tree needs a large volume of water. The amount of water required depends on the size of the tree and on the time of the year. Total water requirements of an orchard can exceed 6 ML/ha year. At peak demand, from fruit set to harvest, a mature tree may need over 2000 L per week.

more info
Irrigation
Section 3 page 15, 25

Why don't my trees flower?

Mango trees are sensitive to climatic conditions at flower initiation. They need a dormant period in winter to initiate flowering. Poor flowering can also result from reduced carbohydrate reserves in the tree from a very heavy crop the previous season, or from late pruning.

Why do my trees flower but not set fruit?

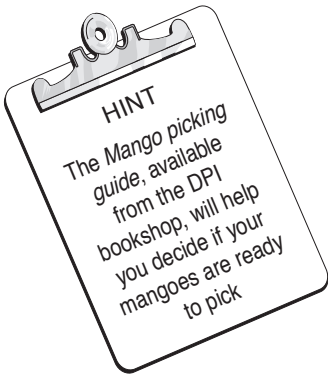
Poor fruit set can be caused by poor pollination due to cold weather at flowering, or fungal diseases such as anthracnose in the flowers. There are also several insects that eat the flowers.

My trees are flowering early when the nights are cold. What should I do?

Early flowering at this time is difficult to manage. Flowers can be cut off as long as the weather stays cool. Healthy trees will produce new flowers in about six weeks. Remember to cut off just the flower panicle. There is a risk that late flower removal can result in the production of a leaf flush rather than flowers as the weather gets warmer.

Why are my fruit dropping off?

Mango flowers will set many more fruit then the tree can hold and will have significant fruit drop. Other reasons for fruit falling off include water stress, poor pollination, disease and insect attack.



When are my mangoes ready to pick?

Fruit that is ready for harvest should have a minimum dry matter of 14% and should be well filled at the beak and shoulders. When the fruit is cut open, the internal flesh is a uniform pale yellow. The internal flesh of immature fruit is white.

Spraying

Do I have to spray my mangoes?

Many pests and disorders attack mangoes. They include the diseases bacterial black spot and anthracnose and the pests fruit fly, mango scale and fruitspotting bug. Most growers control these with a regular spray program. Completely organic production is only possible if you grow your trees in an area that is not prone to wet weather during fruiting and is free of fruit fly.

more info
Pest and disease control
Section 3 page 20, 30

Harvesting

How do I avoid sapburn?

Sapburn occurs when the sap that first squirts from the fruit at destemming comes in contact with the skin. It is worst in Kensington Pride. Use harvesting and handling techniques that minimise sap coming in contact with mango skin.

What sapburn protectant do I use on harvest aids?

The most effective protectant is a detergent specifically designed for use when harvesting mangoes on harvest aids.

How should I harvest my mangoes?

There are two major harvesting and handling systems that minimise sapburn and skin browning. Both are effective when used correctly.

- Pick mangoes with stems attached and desap (take the stems off) them in the packing shed.
- Use harvest aids and desap mangoes in the field.

more info
Harvesting
Section 3 page 39

Postharvest handling

Should I artificially ripen mangoes?

Mangoes are generally harvested in a mature but still firm, green state. Ethylene gas can be used to trigger ripening of fruit, bringing on uniform colouring and ripening. The results from gassing depend on critical temperature management during and after ethylene treatment.

Your decision on whether to gas fruit or not should be made in consultation with your agent/wholesaler because gassed fruit has a shorter storage life and will need to move quickly through the market chain.

Do I need refrigeration?

Fruit should be cooled within 48 hours of harvest to prolong storage life, maximise fruit quality and improve colour development. Uncooled fruit tends to ripen irregularly and is more prone to postharvest diseases.

What temperatures should I use?

Mangoes ripen evenly between 18° and 22°C. Hard green mangoes can be stored at 13°C until they start to ripen, and ripe fruit can be cooled to 5°C for about four days.

Do I need to dip my mangoes?

Fruit sold to areas free of fruit fly must be treated according to the fruit fly certification agreement in place for that destination. This will include dipping or a postharvest spray with an insecticide in addition to your preharvest fruit fly control program. Treatment for postharvest diseases is recommended, though it is not compulsory.

Packing

Should I put in my own packing shed?

This is a personal and financial decision. If there is a contract packing shed in the district, you can save capital investment and have more time for other farm operations.

How do I register my packing shed?

Mango packing sheds must be registered only if the fruit is exported or sold in certain other states. For details contact the Australian Quarantine and Inspection Service (AQIS) for export information or the Department of Primary Industries in Queensland for Interstate Certification Assurance (ICA) to allow you to send your fruit interstate.

more info
Interstate marketing and ICA
Section 3 page 58

Marketing

Where can I sell my mangoes?

Most growers sell their mangoes through wholesale agents based at the fruit and vegetable markets in each capital city. All southern states have quarantine requirements for entry of mangoes. Several processors take fruit for processing.

more info
Quarantine
Section 3 page 58