

Tropical banana information kit

Reprint – information current in 1998



REPRINT INFORMATION – PLEASE READ!

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

This publication has been reprinted as a digital book without any changes to the content published in 1998. We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research: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- Financial information—costs and returns listed in this publication are out of date.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.deedi.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 1998. 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 tropical banana. 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 bananas in the wet tropics. 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.

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Varieties

What variety do I grow?

Ninety-five per cent of the bananas grown in Australia are Cavendish bananas. There are several Cavendish varieties but Williams is the most popular with Mons Mari and Grande Naine two other common types. The remaining Australian production is mostly Lady Finger, which comprises about 1% of tropical production. Some specialty niche market varieties are grown but their production is very minor.

Is the Cavendish banana one variety?

There are several varieties of Cavendish bananas. The most popular is Williams, followed by Mons Mari and Grande Naine. Other selections made by industry and the Department of Primary Industries in Queensland are being assessed.

Other bananas that produce a Cavendish-like fruit but are not usually grown commercially include TU8 and SH-3436.



Where can I get planting material?

Within the northern banana growing quarantine area you may buy planting material for Cavendish varieties from any source provided you have applied for a permit. Non-Cavendish varieties must come from DPI approved sources only. By the end of 1998, Cavendish varieties must also come from an approved source. A list of approved sources is available from DPI plant health inspectors.

Are tissue-cultured plantlets worth the price?

We recommend that you use tissue-cultured plantlets if possible as they have several advantages over conventional planting material. Tissue-cultured plantlets from QBAN accredited nurseries (Quality Banana Approved Nursery) meet required pest and disease-free standards. The pest and disease-free status of tissue-cultured plantlets makes them ideal for establishment of clean blocks and farms. Tissue-cultured plantlets can also produce a bigger plant bunch and bunch more uniformly than conventional planting material.

Where do I buy tissue-cultured plantlets?

The banana industry has developed guidelines for QBAN accredited nurseries. We recommend you source tissue-cultured plantlets from these nurseries.

more info



QBAN nurseries
Contacts
Section 6 page 4



Economics of
growing bananas
Section 4 page 12

Money

How much money do I need?

Growing bananas requires considerable capital investment. The investment required will vary according to your starting position, but it could cost up to \$560 000 if you're starting from scratch to buy the land and equipment to set up an 18 ha farm with 12 ha of bearing bananas.

For an average yield of 2500 cartons per hectare the annual production costs for Cavendish bananas in north Queensland are estimated at \$25 000 to \$30 000 per hectare or about \$10 to \$12 per 13 kg carton.

How much money can I make?

Returns from tropical bananas vary according to supply and demand, and fluctuate widely between and throughout years. They can range from \$5 to \$15 per carton because of variations in supply and fruit quality. A rough estimate for production costs is \$11 per 13 kg carton. Average annual production is about 2500 cartons per hectare for a farm with plant and ratoon crops. Your gross margin per hectare, therefore, may vary from a loss of \$15 000 to a return of \$10 000. Banana crops are severely affected by adverse climatic conditions, particularly strong winds, storms, tropical cyclones and floods, and these events will severely affect profitability.

Growing the crop

Do I need a permit to grow bananas?

Yes. Anyone who moves or plants one or more banana plants needs a permit, including each time you plant a new block of bananas. Banana permits are free and can be obtained from the DPI.

How big a banana farm do I need to make a living?

Farm size and production will be determined by the availability of financial and physical resources, and how the banana plantings fit into the overall business enterprise. Are the bananas part of a mixed farm or the sole source of income? If bananas are a sole source of income 12 ha of bananas would be considered the minimum size for a viable family operation. To allow for expansion, the planting of replacement blocks and fallowing of old blocks, at least 18 ha should be considered. There is an increasing price-cost squeeze on small scale producers.



Is my site suitable for growing bananas?

Bananas will grow on a wide range of soil types but best production requires well drained soil, preferably a clay loam at least 0.5 m deep. A frost-free site is crucial and freedom from flooding is desirable. Aspect is not particularly important in north Queensland but some protection from prevailing winds is beneficial.

Irrigation is essential and it is important to check that an irrigation licence is available if you are drawing from a water-course or lake. Underground water may be an alternative but a licence is also required for a bore in a groundwater-declared area. To determine your water licence requirements, check with your local Department of Natural Resources office.

Erosion control strategies are required once slopes exceed 3%. Slopes of less than 15% are suitable but once slopes exceed about 5% it is difficult and expensive to construct mounds across the slope that will be suitable for double rows of bananas. Always seek professional advice before using these slopes. Access to labour, transport and agribusiness services is essential.

When do I plant bananas?

Bananas are usually planted in May–June and August–October for the following reasons:

- the plant crop and first one or two ratoon crops are produced during winter-spring, when better prices are usually received;
- land preparation and early management is easier when planting during the drier months;
- the hotter and wetter months are avoided; (These conditions can cause sucker and bit planting material to rot, which results in poorer establishment.)
- land preparation during the wet season is avoided, to minimise the possibility of soil erosion.

What row spacing should I use?

Bananas are usually grown at plant densities of between 1500 to 2200 plants/ha. Bananas can be grown in single rows (leaving either a single or double sucker) or double rows (leaving a single sucker).

Single rows of bananas (leaving a single sucker) are commonly 5 m apart with plants spaced 1.2 m apart within the row. When single row plantings are converted to double rows in the first ratoon by leaving two following suckers, the spacings are 2.2 m within the row and 5.5 m between rows.

Plants grown in double rows are spaced 1.7 m apart within rows and between individual rows. The centres of double rows are commonly spaced 6.5 to 7.0 m apart. The interrow distance is set on the basis of machinery access.



Crop scheduling
Section 4 page 15



Plant and row spacings
Section 3 page 9

Should I mound my bananas?

Mounding is recommended to improve drainage and runoff control. On low sloping land, mounding helps improve drainage by ensuring excess water does not lie on the ground near the plant and by keeping the root system above the watertable. When using mounds it is essential to provide good outlets for each interrow channel to prevent waterlogging of the end stools in each row. On steeper land the mounds should be used for erosion control by aligning the rows/mounds on a gradient that should provide adequate drainage of runoff water without eroding the soil. The maximum gradient will vary with soil type.

What fallow crop should I grow and for how long?

Any crops grown as a fallow need to be resistant to nematodes to reduce their population. The corm from the previous banana crop should be completely decomposed before replanting and this takes at least six months. Recommended length of fallow is at least one year.

more info



Fallow crop and
replant
Section 3 page 27

Can I grow bananas organically?

Yes, but there are considerable problems with pest, disease and weed control and maintenance of adequate fertility in tropical conditions. If you want to grow bananas organically, consider a drier or more isolated environment where pest and disease problems are not as great.

The requirements of the *Plant Protection Act 1989* for producers to manage pests and diseases such that their plantation poses no risk to other properties, apply equally to organic and non-organic growing systems.

a key issue



Growing bananas
organically
Section 4 page 55

Fertilising

How much fertiliser do I need?

Average annual applications are 400 kg of nitrogen, 50 kg of phosphorus, 600 kg of potassium and 2 t/ha of lime/dolomite. These relatively high fertiliser rates are necessary because high yielding banana crops extract large quantities of nutrients from the soil. In addition there is the potential for high nutrient losses in the wet tropics. Soil and leaf analyses should be used to guide exact applications for particular soils and management conditions from year to year.

a key issue



Fertiliser management
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Irrigation

What irrigation system should I use?

Irrigation is necessary during drier periods to achieve optimum yield and fruit quality. Good quality bananas can be grown with most irrigation systems provided optimum scheduling is practised. Each system has its advantages and disadvantages. The most popular system at present is overhead solid-set sprinklers. We recommend you use an irrigation consultant to design your system.

How much water do bananas need?

A banana crop at bunching will need 20 to 60 mm of irrigation or rainfall per week. The actual amount required depends on:

- your environment; (The typical rainfall for a district/region will influence the amount of irrigation required, as will the water-holding capacity of the soil. The rainfall distribution throughout the year will also influence the amount of irrigation required.)
- stage of growth; (Different growth stages, related mostly to plant size, require different amounts of water.)
- irrigation system; (With appropriate scheduling techniques, under-tree irrigation systems can often meet plant requirements with less water.)

Use soil moisture monitoring tools such as tensiometers to fine-tune requirements for individual blocks of bananas.

Spraying

What chemicals are registered for use on bananas?

Many chemicals are registered for pest and disease control in bananas. Refer to the *Problem solver handy guide* for details of chemical choices.

Can I mix chemicals when I spray?

In many cases chemicals can be mixed but always refer to the chemical label for specific requirements. Bravo®, for example, cannot be mixed with oil-based formulations.

Problems

My next door neighbour has bad leaf spot. What can I do?

Leaf spot is a prescribed pest in the *Plant Protection Act 1989* with specific requirements for its control. If possible, discuss the problem with your neighbour and contact your local DPI plant



health inspectors. Inspectors have a responsibility to act on leaf spot reports.

What should I spray for leaf diseases?

Bananas need regular spraying to control leaf diseases. The spray program should consist mainly of protectant-type fungicides with systemic fungicides being used during conditions which most favour disease infection.

Oil should be applied with most fungicides. Sprays should be applied at 10 to 14 day intervals during wet weather, with the time between sprays increasing to 21 to 28 days at the driest times of the year.

Leaf spot consultants offer monitoring and control programs.



Leaf spot diseases
Section 4 page 49

Why are my banana plants falling over?

Bananas can fall over for many reasons. Nematode damage causes the plant to topple, breaking at the roots so that the corm comes out, exposing the roots. Severe banana weevil borer damage causes the corm to snap at ground level, leaving the roots in the ground. Erwinia corm rot infects the corm and can cause the plant to snap at ground level. The infected corm becomes soft and has a strong odour. Heavy bunches and/or strong wind can cause plants to fall in very wet soils. Periods of hot weather with water stress can also cause plants to kink midway along the stem. Bunch support by tying or propping the plants will reduce these losses.



Consultants
Contacts Section 6
pages 5 & 9

How do I control nematodes?

Nematode damage should be monitored to determine a root disease index. Treat the block with nematicide only if the root disease index is greater than 10. Banana blocks that are severely affected by nematodes should be fallowed. During the fallow period a nematode resistant crop should be grown to reduce nematode populations. You can prevent introducing nematodes on your farm by always using clean planting material (planting material free of nematodes) and washing down machinery before moving it from infested blocks to clean blocks.



Managing nematodes
in bananas
Section 4 page 44

What can I do when cyclones and floods wipe out my banana crop?

Natural disasters are divided into those that affect only a few properties — Individual Disaster Stricken Properties (I.D.S.P.) — and those that affect broad areas of Queensland. These broad areas are declared a disaster area. If individual properties are affected, contact your local DPI plant health inspectors or extension officers. If you are in a disaster declared area, nominated officers of the Queensland Rural Adjustment Authority

(QRAA) are identified in the media. It is possible to buy crop insurance against loss by tropical cyclones and storms.

How do I kill banana plants in my backyard?

You may wish to kill an entire clump or just thin a clump by removing individual suckers within it. In either case you have the choice of non-chemical or chemical control methods.

Non-chemical. Dig out all the plants you want to remove and chop them up. Digging out the corm and chopping it up is hard work. Any remaining eyes can re-shoot if they are not completely removed. A modified crowbar or special desuckering shovel are often used.

Chemical. Choose the surplus plants and apply a solution of 2,4-D amine, glyphosate or diesel to the cut stumps, or inject it into the stem close to the growing point. Special injection equipment will make the job easier.

Marketing

I want to sell bananas to Western Australia. What do I do?

Each Australian state and some areas within states may have restrictions relating to the importation of banana fruit and plants. Bananas to be sold in Western Australia must meet pest freedom for European red mite and Queensland and papaya fruit fly. Contact your local DPI plant health inspectors for the various requirements and to arrange for inspection and accreditation of your packing facility.

How do I sell my bananas?

There are three main markets for bananas:

- central — agents and merchants in wholesale markets in state capitals;
- regional — agents and merchants buying for large regional cities and towns;
- local — flea market, direct supply to shops and roadside stalls.

Growers can market independently to the central market agents/merchants or through a group marketing body. Group marketing or cooperative ventures run by growers have become established in north and south Queensland. These groups charge a brokerage fee, usually per carton, and provide a marketing service.





Marketing
Section 3 page 32

How does the marketing system work?

Traditionally, the marketing process follows these steps when growers send bananas to an agent/merchant in the central markets:

- fruit is harvested in a hard green condition and transported to market (two to four days);
- fruit is control ripened with ethylene gas (five to seven days);
- ripe fruit is presented for sale (five to seven days);
- returns from sale are processed and remitted to the growers (five to seven days).

It can take three to four weeks before growers are paid for their fruit.

Cooperative or group marketing systems have started for bananas in some areas. A cooperative or group marketing system negotiates freight and pricing on behalf of growers. Marketing groups charge a brokerage fee, often on a carton basis, for marketing services. These services can often include independent quality and out-turn reports.



Cooperatives
Section 6 page 11

Where are most tropical bananas sold?

About 70% of the bananas grown in north Queensland are sold through the Sydney (37%) or Melbourne (30%) central markets. Retail chain stores and supermarkets are the main wholesale purchasers of bananas in Australia, buying about 70% of the bananas produced. They require large quantities of consistent quality produce.

Quarantine

What quarantine regulations govern bananas?

Banana growing is a highly legislated industry, the main legislation being the *Plant Protection Act 1989*. Any person who intends to move or plant one or more banana plants is required by law to meet certain conditions. Current conditions are available from your local DPI plant health inspectors.



Legislation
Section 4 page 8

General

What machinery do I need?

You'll require machinery for land preparation, planting, irrigation, fertilising, bagging, spraying, and harvesting. Centralised packing facilities may be available in your district, or you can pack with your neighbour(s). Otherwise an on-farm packing shed with appropriate sorting, packing and fruit treatment equipment will be needed.

Where do I get farm labour?

Most farm labourers in the north Queensland banana industry are itinerant workers, particularly backpacker tourists. Permanent or permanent part-time staff are desirable in key positions requiring skills and experience.

You can contact your local employment agency and advertise in district newspapers for staff. For backpackers, approach hostels, backpacker lodges and caravan parks. Sometimes these businesses provide an active employment service for their guests. Traditionally, growers provide transport to and from the farm each day for these employees, often from a central point.