

Cashew information kit

Reprint – information current in 1999



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 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 We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research: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- Financial information—costs and returns listed in this publication are out of date.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.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 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 cashew production. 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.

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Queensland Government



Before you **START**

This section provides a brief checklist of the essential things to consider before you start a cashew plantation. It will help you make the right decision about growing cashews. The information in this section is brief and to the point. We provide more detail on important areas in other sections of the kit. Symbols on the left of the page will help you make these links.

Contents

An overview of the Australian cashew industry	2
Know what you are getting into	2
What you can expect to make	3
The capital you need	4
The machinery you need	5
The farm you need	5
The labour you need	6
Marketing considerations	7

An overview of the Australian cashew industry

Cashew is an emerging industry in Australia and production is limited to the wet/dry tropics. So far there are only two commercial cashew plantations in Australia. One is near Dimbulah in north Queensland and the other is at Wildman River near Darwin. Small areas are also planted near Katherine and at La Belle Downs Station, south-west of Darwin. The Australian market for cashew is about \$30 million dollars, of which virtually all is currently imported.

Cashew is grown in several tropical countries. The major producers are Brazil, India, Vietnam, Tanzania and Mozambique. The total world production of traded cashew kernel is about \$700 million. World supply is increasing at about 5% a year, which is being matched by similar increases in demand, keeping prices stable.

Know what you are getting into

As cashew production is relatively new in Australia there is no established industry organisation but prospective growers can work with local research organisations to develop their expertise in cashew production. Production systems overseas are based on low inputs and labour costs and their growing techniques are not always applicable to Australian conditions.

If cashew production is to be your sole source of income, you will need to plant at least 200 ha of trees and be prepared to employ permanent staff. This farm area is based on achieving satisfactory yields, and the necessity to produce the large volume of nuts necessary to be able to negotiate with overseas processors. A yield target of 2.8 tonnes of raw nuts per hectare with a kernel recovery of 30% is required to achieve satisfactory returns. At a plantation density of 200 trees per hectare this is equivalent to a yield of 14 kg/tree of nut-in-shell (NIS).

Although yields in excess of this figure are regularly achieved from trial blocks, it takes good management to achieve the same result over a large plantation. In a large plantation you cannot manage the trees as intensively as in a research trial. Managing 40 000 trees is a challenge, even for experienced producers.

Prospective growers must plan for a fully mechanised operation and most importantly, how they will market their crop. The mechanical harvesting methods used for other tree nut crops, such as macadamia, are satisfactory for the harvesting of cashew. A local grower has developed postharvest handling systems, including a mechanical system for removing the cashew apple from the nut, and cleaning the nuts.



Growers can market their crop as raw nut-in-shell or as kernels after shelling. However, there are currently no facilities for shelling raw nuts in Australia. Overseas processors are only interested in volumes of 100 tonnes or more of raw nuts, so only larger growers (more than 100 tonnes of raw nuts) have the option of negotiating marketing or shelling arrangements with these processors. Smaller growers should make arrangements to sell or shell their crop through a major local grower.

What you can expect to make

Yields

The yields you can expect will vary with location and soil type, but Table 1 will give you an indication of what nut-in-shell yields you can expect. Higher early yields can be obtained with closer planting, but this is an experimental practise and is recommended for trial only.

Table 1. Expected nut-in-shell (NIS) yields for trees of different ages

Tree age (years)	Yield (kg NIS/tree)		
	low	medium	high
1	0	0	0
2	1.5	3	4.5
3	3	6	9
4	4.5	9	14
5	6	12	18
6+	7	14	21

Prices

Although the world price for cashew kernel is fairly stable, the price you will receive is highly dependent on the recovery rate of the kernel and currency exchange rates. A north Queensland farm gate price of \$1.63/kg NIS, assuming a 30% recovery rate, is considered average. A 30% recovery rate means that for every 1000 kg of nut processed you will recover 300 kg of kernel for sale. This price is based on selling the kernel in Brisbane for a wholesale price of \$7000 per tonne for kernel, less the costs of transporting and processing the nut in China.

Income and cost of production

At full production, the annual farm gate income for a 200 ha farm would be about \$920 000 or \$4600/ha (using a price of \$1.63/kg NIS, and a yield of 14 kg NIS/tree). The costs can be divided into variable and fixed costs.



Economics of growing cashew
Section 4 page 5

Variable costs

Variable costs or operating costs vary directly with production and are summarised in Table 2. Fixed costs or overhead costs represent those costs that do not vary directly with output.

Table 2. The variable cost per hectare to produce 14 kg of NIS per tree

Variable costs	Cost \$/ha
Machinery operations	\$88
Fertiliser	\$364
Herbicide	\$19
Insect and disease control	\$350
Irrigation	\$107
Packaging and harvesting	\$446
Total variable costs	\$1374

Fixed costs

Fixed or overhead costs will account for over \$320 000 to operate the 200 ha plantation for a year. The break-up of the costs allowed for in the economic analysis are shown in Table 3. All costs are annualised for the 20 year life of the project.

Table 3. Fixed costs to manage a 200 ha cashew plantation

Activity	Cost (\$/plantation/year)
Repairs and maintenance	\$16 000
Unspecified fuel and oil	\$2 000
Electricity	\$1 500
Administration	\$20 000
Permanent hired labour	\$66 000
Manager/owner	\$30 000
Capital costs	\$186 000
Total fixed costs	\$321 500

The capital you need

A financial commitment of about \$1.9 million is required to buy the necessary capital equipment, cover initial establishment costs and provide finance during the initial years of cashew production. The necessary major capital items include land, trees, irrigation equipment, harvesting machinery and processing facilities. The land is the biggest single cost at \$451 000.

If you have a debt-free farm and already own some of the required infrastructure, the cost of developing a cashew enterprise and the financial commitment required would be considerably reduced.



Pay-back period for cashews
Section 4 page 6

The machinery you need

You will need this machinery in the first year for a 200 ha plantation:

- tractor 80 hp
- tractor 25 hp
- utility truck
- four-wheel-bike
- slasher
- boom spray for herbicides
- spray mister (2000 L)
- machinery and maintenance sheds
- nursery and pruning equipment.

In the second or third year when trees begin to bear, you will need the following additional equipment for harvesting and processing the nuts:

- four trailers
- harvester (PTO type)
- two sweepers
- processing plant to grade and dry the nuts
- processing shed.

As the trees grow larger you will need to buy additional harvesting equipment:

- two 80 hp tractors
- two trailers
- harvester (PTO type)
- two sweepers
- upgraded processing plant.

The farm you need

Soil

Cashews prefer deep, well drained, sandy textured soils with a watertable at least 1 m below the soil surface. They should not be grown on heavy clay soils. As cashews are mechanically harvested, steep slopes and rocky soils should be avoided. The pH should be moderately acid to neutral (5.5 to 7.0) and alkaline soils over pH 8.0 should be avoided.

Climate

Cashews are a tropical species and the preferred production areas in Australia are north of 17°S latitude. This climatic zone can be described as the seasonally wet/dry tropics. The mean monthly temperature during the day should not drop below 10°C and there is no maximum temperature limit. Cashews can tolerate temperatures in



Getting the
plantation started
Section 3 page 3

excess of 40°C. However, regardless of the maximum temperatures during the dry season, irrigation is required for sustained high yield.

The trees need a frost-free area with distinct wet and dry seasons. Flowering, nut set and harvest should all coincide with dry weather which should last from 4 to 6 months. The crop is harvested between August and February, depending on locality.

Slope

Cashews can be grown on slight to moderate slopes of up to 12%, but growers should keep in mind that trees require extensive management, so machinery access is essential. In high rainfall areas good management is needed in the interrow to minimise erosion risks on sloping land.

Wind

Protection from strong winds is necessary as cashew trees are susceptible to branches breaking and trees being uprooted. You may need to consider planting windbreaks. Try to use some native tree species as they will encourage the establishment of natural predators of insect pests of cashews.

Water

Cashews can be grown without irrigation, but for optimal yields and good quality kernels, irrigation is required.

During the dry season (about 32 weeks) mature trees will require 250 to 500 L per week. Supplementary irrigation may also be required during the wet season if rainfall is inadequate. Young trees require much less water, but will need to be irrigated every 7 to 14 days. You should allow for 3.5 megalitres (ML) of water per hectare to meet the tree's irrigation needs.

Ideally, water should have an electrical conductivity of less than 0.8 deciSiemens per metre (dS/m) and Total Dissolved Ions (T.D.I.) of less than 600 mg/L. High iron levels can be a problem in drip irrigation systems. Be careful with drip irrigation if iron levels in the water exceed 0.1 ppm iron.



Irrigation
Section 4 page 23

The labour you need

Hired labour, additional to the owner/operator, is required for daily farm operations and the seasonal operations such as harvesting, sweeping and cleaning. For a 200 ha cashew plantation the estimated labour requirement is 2 permanent staff, with up to 6 casual staff during harvesting and processing.

Marketing considerations

You must gain a close understanding of the international trade for cashews before deciding to plant them. You need to know how cashews are marketed and the kernel grade standards that apply. Talk to cashew traders and potential purchasers before you invest in cashew production.

It is vitally important that you plan how you will market your crop before you embark on cashew production. Even if you plant 200 ha, your first harvests will be small, yielding much less than 100 tonnes of raw nut. Overseas processors are interested in volumes of 100 tonnes or more of nut, so they will not be interested in buying the small volumes of nut from early harvests. Until you have more than 100 tonnes of raw nut, you need to consider selling your raw nut as nut-in-shell through a large local grower.

When you are producing sufficient nut, you have the option of selling your crop as raw nut-in-shell or as kernels after shelling. Because there are no shelling plants in Australia, you will need to negotiate with overseas processors to shell the raw nut if you wish to sell your crop as kernel. Kernel can be sold as raw unsalted nuts or further processed into confectionary products, including roasting and salting.



Marketing
Section 3 page 35
