

Sweet potato information kit

Reprint – information current in 2000



REPRINT INFORMATION – PLEASE READ!

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This publication has been reprinted as a digital book without any changes to the content published in 2000. We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research: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- Financial information—costs and returns listed in this publication are out of date.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 2000. 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 sweet potato 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**

If you have never grown sweetpotatoes before, then you will find this section very useful. It is a brief checklist of the essential things you need to know before you start. It will help you make the right decision.

The information here 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

A brief overview of the Queensland sweetpotato industry	2
Know what you are getting into	3
What can you expect to make?	4
Capital required	6
The farm you need	6
The machinery you need	7
The labour you need	8
Other considerations	8

A brief overview of the Queensland sweetpotato industry

The Queensland sweetpotato industry is relatively static, producing around 6000 tonnes a year from about 400 ha. The industry has a farm gate value of about \$5 million (Source: Australian Bureau of Statistics, 1997–98 estimates).

Although official statistics suggest the industry is static, demand in the marketplace appears to be increasing slowly. Current estimates are that about 11 000 tonnes, worth around \$9.9 million, are produced on about 550 ha. A further 250 ha are produced at Cudgen in northern New South Wales, adjacent to the Queensland–New South Wales border.

This increased demand is occurring for two reasons:

- Traditional consumers are recognising the unique flavour and versatility of sweetpotato as a vegetable and are developing a taste for it.
- Sweetpotato, in particular white-fleshed varieties, also forms an important part of many Asian and Pacific Island diets, and demand for this variety has increased significantly in the past few years. Demand is likely to increase further, once the product is more widely promoted.

The industry mainly supplies the fresh market, though there is a small market for processing. In contrast to other industries, the sweetpotato processing industry does not contract produce, but sources it directly from growers or the market floor.

Production in Queensland is predominantly centred on the coastal districts of Mareeba, Atherton, Bowen, Rockhampton, Bundaberg and Redland Bay. Small growing areas exist in the Moreton district and Lockyer Valley of south-east Queensland. About 240 ha are produced at Cudgen in northern New South Wales. Further production occurs in Western Australia and South Australia.

Fresh sweetpotatoes can be sourced in Queensland at any time of the year. The Mareeba district and other northern areas produce sweetpotatoes year-round whereas in southern Queensland production is mainly from February to June.

Sweetpotatoes from Queensland are sold throughout Australia. The ability to harvest fresh sweetpotato at any time of the year means there is strong potential to develop and supply export markets. Until recently, the domestic market has been highly profitable and this is perhaps the main reason growers have not actively pursued export markets.

Table 1 lists the strengths, weaknesses, opportunities and threats (SWOT) affecting the sweetpotato industry.

Table 1. Factors affecting the sweetpotato industry

Strengths	Weaknesses	Opportunities	Threats
Staple food	Inconsistent quality	Processing	High value
Nutritional value	Lack of consumer understanding of product preparation and storage	Promotion	High production, packaging and freight costs
Long shelf life	Very little promotion	Export	Overproduction
Versatile product	No specific use	Canning	Lack of irrigation water (Bundaberg)
Value for money	Appearance	Curing	Soil rot
Convenient	Little knowledge about varieties for specific uses or products	Starch production	Sweetpotato weevil
Growing popularity		New varieties	
No direct competitor		Flour production	
Low input crop (chemicals, fertiliser)		Value adding, for example semi-prepared products	
Reliable crop to grow		Improved cultural management practices	
High value crop		Improved mechanisation	
		Ethanol production	
		Organic production	

Know what you are getting into

The average price for sweetpotatoes varies between seasons, making profitability and cash flow inconsistent and hard to estimate.

Consistent product quality can be difficult to achieve, due to pests (for example, sweetpotato weevil), diseases (soil rot) and climatic factors, such as wet weather at harvest time.

Consistency in size, shape and colour of storage roots can also be difficult to achieve because varieties perform differently in various growing areas.

Growing sweetpotato is highly labour intensive, particularly at planting and harvest times, and there can be problems getting a good, reliable labour force.

It can also be difficult to obtain sufficient planting material to establish an economically sized planting quickly.

Successful production requires frost-free growing conditions and a well-drained soil, for example a sandy loam; however, good crops are also grown on heavier soils, such as red krasnozems.

Specialised harvesting and washing equipment is required for sweetpotato production so that a high quality product can be supplied to the market.



What can you expect to make?

Yield

Yields vary considerably, depending on climatic conditions, pests and diseases, variety and season. Marketable yields commonly range from 16 to 30 tonnes per hectare.

Prices

Prices vary greatly, depending on quality and supply. Sweetpotatoes are usually sold in 32 L cartons that hold 18 kg of storage roots. Price can range from \$4 to \$40 per carton, but is usually in the \$8 to \$20 range. Figures 1 to 4 show average prices and throughput at the Brisbane and Sydney markets for 1997 to 1999. The bigger the variation above or below the average price, the greater the opportunity or risk involved.



Market prices Section 6 page 11

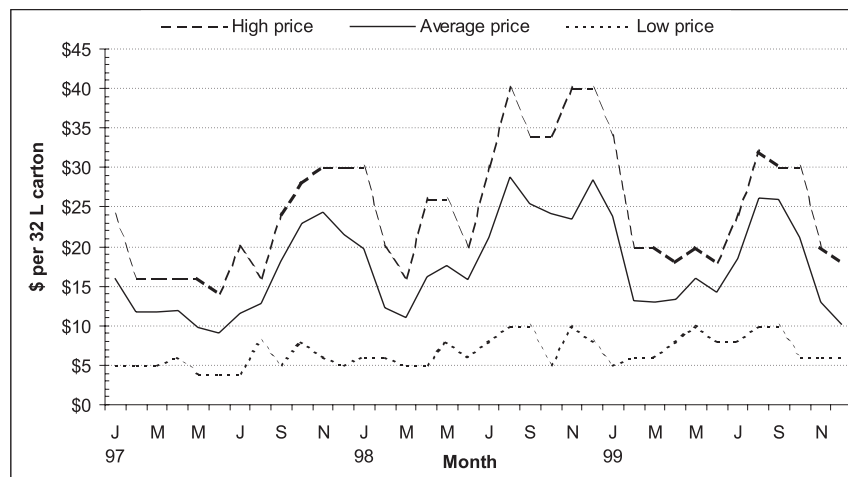


Figure 1. Average monthly price for orange-fleshed sweetpotatoes on the **Brisbane** market 1997 to 1999

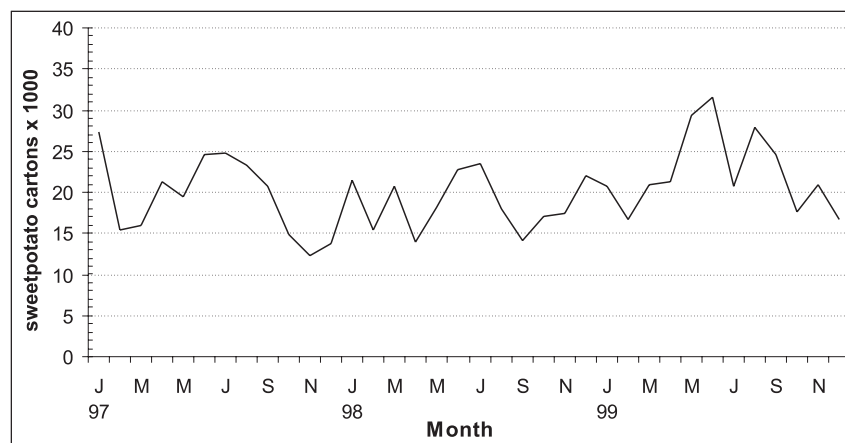


Figure 2. Throughput of sweetpotatoes on the **Brisbane** market 1997 to 1999

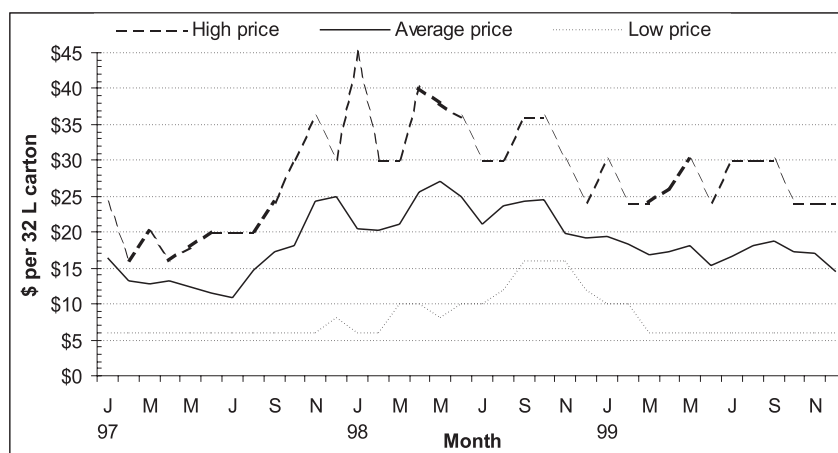


Figure 3. Average monthly price for orange-fleshed sweetpotatoes on the Sydney market 1997 to 1999

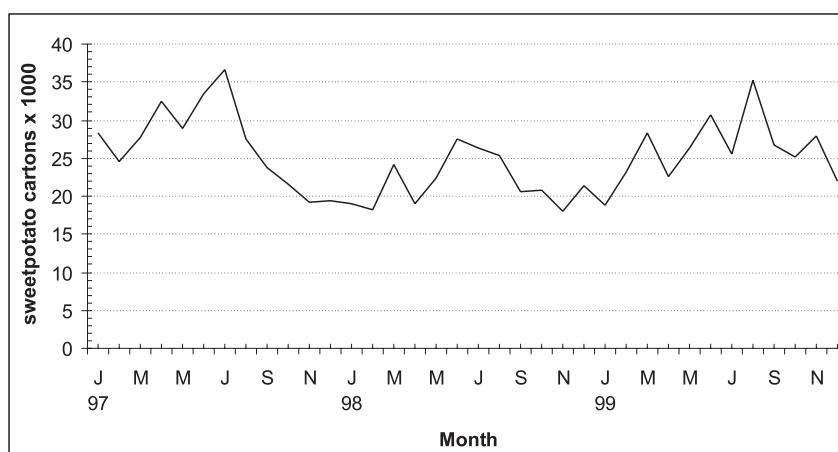


Figure 4. Throughput of sweetpotatoes on the Sydney market 1997 to 1999

Production costs

Production and marketing costs in southern Queensland are over \$10 per carton, and around \$16 per carton in north Queensland. Variable growing and marketing costs, including cost of plants, fertiliser, chemicals, fuel, power, labour, irrigation, packing and freight, vary from almost \$13 000 per hectare for a 25 tonnes per hectare crop in southern Queensland to over \$15 000 per hectare for a 20 tonnes per hectare crop in north Queensland. Table 2 shows the estimated average costs (\$ per carton and \$ per hectare) of producing sweetpotatoes in southern and north Queensland.



Gross margin Section 4 page 9

Table 2. Estimated average costs (\$ per carton and \$ per hectare) in southern and north Queensland

Costs	Southern Queensland		North Queensland	
	\$ per carton	\$ per hectare	\$ per carton	\$ per hectare
Growing	\$2.40	\$2 998.81	\$4.38	\$4 377.59
Harvesting (pick, pack and carton)	\$4.96	\$6 194.20	\$5.43	\$5 429.07
Marketing (freight and commission)	\$2.85	\$3 562.50	\$5.71	\$5 716.67
Total	\$10.21	\$12 755.51	\$15.52	\$15 523.33



Gross margin Section 4 page 9

Gross margin

The gross margin (income after deducting growing, harvesting and marketing costs) for a 20 tonnes per hectare north Queensland crop on a \$20 per carton market would be about \$4480 per hectare. In southern Queensland a 25 tonnes per hectare crop sold at \$18 per carton would give a gross margin of about \$9740 per hectare. To determine your net income, deduct fixed costs such as rates, depreciation, electricity and living expenses.

Capital required

It would cost about \$250 000 to buy the minimum amount of new equipment needed to set up an 8 to 40 ha sweetpotato crop. Second-hand equipment prices are normally less than half that of new equipment.

The farm you need



Growing the Crop Section 3

Soil

Sweetpotatoes grow best in deep, light, well-drained soils, for example sands or sandy loams and loams, but can be grown in a wide range of soil types. Soil should be at least 30 cm deep, the main requirement being good drainage.

Climate

Sweetpotatoes are very susceptible to frost; hot, sunny conditions are best. Temperatures below 15°C are detrimental to growth and storage root development. Wet conditions following maturity result in root rots, inferior quality and delayed harvest.

Rainfall will stop machine harvesting, particularly on heavy soils. Under prolonged wet conditions roots can rot, particularly in high clay soils or those that are poorly drained. High humidity will increase the incidence of leaf diseases, particularly on the coast and the Atherton Tableland.

Slope

A slight slope will provide better drainage and allow machinery, particularly harvesters, to operate correctly, but crops can be grown on steeper slopes. Uniform slopes are desirable, but not essential. Erosion can be a problem on steep slopes, while depressions can result in waterlogging.

Slopes below 5% are not a limitation, but slopes above 5% require recognised soil conservation practices. Slopes above 10% make machinery operations hazardous and it can be difficult to maintain uniform irrigation.



a key issue

Irrigation management
Section 4 page 60

Water

Sweetpotatoes need up to five megalitres (ML) of water per hectare of crop are required. The most critical times are the first two weeks of establishment, and the eight to 16 weeks of storage root development. If the crop is established in hot weather, about 20 mm per week are required for the first four to six weeks. Under cooler conditions, 12 to 20 mm per week are required.

Water quality is most important for sweetpotato production. Water should be low in sodium (Na) and chlorides, and have a low conductivity, but poorer quality water can be used on sandy soils with good drainage. Acceptable conductivity, measured in deciSiemens per metre (dS/cm), varies with soil type (Table 3). Conductivities above these figures may cause serious yield reductions.

Table 3. Maximum conductivity above which yield may be reduced

Soil type	Sand	Loam	Clay
Conductivity	3.0 dS/m	1.7 dS/m	1.0 dS/m

Source: DNR Water Facts, W55

The machinery you need

Essential

Table 4 lists the machinery and equipment considered essential for sweetpotato production. The next step is to get bigger and better equipment for bulk handling.

Existing equipment is often used or modified for sweetpotato production, resulting in substantial savings in machinery costs. The prices listed in the table are estimates only. Second-hand machinery would normally cost less than half the new cost.

Table 4. Estimated cost of new machinery and equipment

Equipment	New cost \$
Tractor (26 kW) for planting, cultivation and spraying	35 000
Tractor (45 to 60 kW) for harvesting and ploughing	50 000
Transplanter	3 000
Fertiliser spinner	2 500
Harvester	20 000
Washer	15 000
Wash water recycling	5 000 – 15 000
Grader	25 000
Weighing equipment	2 500
Spray equipment	15 000
Half-tonne bins (each)	170
Crates (32 to 50 L) \$20 each	4 000
Shed fork-lift	30 000
Cultivation equipment	20 000 – 25 000
Hand shift irrigation equipment \$/ha OR	4 000
Solid set irrigation equipment \$/ha	6 000
Slasher/pulveriser	6 000

The labour you need

One person can take 600 to 1100 cuttings per hour from field plantings, but many more from seedbeds. One person can also prepare about 750 cuttings per hour. Two people and a driver are required for planting and can plant 2500 to 3000 cuttings per hour.

One person could grow 8 to 12 ha of sweetpotatoes. Harvesting requires four people plus a driver, and it takes about 4.5 hours per tonne to dig. Washing and packing takes about 4 hours per tonne.

Other considerations

Growing sweetpotatoes involves hard, physical work. This includes land and seedbed preparation, taking cuttings, planting, spraying for weed, pest and disease control, fertilising, irrigation management and harvesting. There is an intensive labour requirement for washing, grading and packing in the shed.

Management skills or access to consultants with these skills are required for managing finances, staff and the crop. Skills in machinery operation and maintenance, especially the harvester and washer, and the ability to read and understand chemical labels, are essential. Careful attention to details is necessary to be a successful sweetpotato grower.

Quality of the end product is most important in successful sweetpotato growing. This starts with good land preparation and the type of planting material selected, and continues through the growing of the crop to the careful digging, washing, grading and marketing of the sweetpotatoes.

Sweetpotatoes may be grown organically; however, pest and disease control can be hard to achieve.



Other production methods
Section 4 page 107



Organic production
Section 6 page 3