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 We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research: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- Financial information—costs and returns listed in this publication are out of date.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

Before you START

If you have never grown tomatoes 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

An overview of the Queensland tomato industry

Queensland leads Australia in tomato production for the fresh fruit market, producing about 75% of the total tonnage grown. Only a small percentage of the total crop is grown for processing.

Fresh-market tomatoes are grown as either trellis or ground crops. In most instances they are established from nursery-grown transplants. Trellised tomatoes are trained on trellises and are harvested by hand at two to five day intervals at an early stage of ripeness, usually when the fruit show a small amount of red colour. Some plantings are harvested up to eight times. Ground crops of tomatoes are harvested when the maximum tonnage is in a mature green stage, usually in two or three picks. Ethylene gas is used to enhance ripening in both growing systems.

In Queensland, tomatoes are grown all the year round. The main production areas are Bowen, Bundaberg and south-east Queensland (Redlands, Lockyer Valley and Granite Belt). Bowen production is predominantly an autumn to spring ground crop, however, the move towards gourmet tomatoes means Bowen growers will have to use trellises to grow these varieties. Bundaberg production is a trellised crop grown all year round with production peaks in autumn and late spring to summer. In south-east Queensland, a predominantly trellised crop is produced through summer and autumn.

Queensland tomatoes are marketed throughout Australia, with the main sales centres being Sydney, Brisbane and Melbourne. Small but increasing quantities are also exported to New Zealand (90%), South Pacific Islands (5%), Hong Kong (3%) and Singapore (2%). Export to New Zealand is limited by the requirement for certification of the variety and only a couple of certified varieties are still grown commercially. This has reduced exports to New Zealand.

Know what you are getting into

A high level of management skill and knowledge of the crop is needed to grow and market tomatoes successfully. Poor management of cultural operations can seriously reduce yields and quality.

Tomatoes are a highly expensive crop to grow and require a very high capital investment in equipment. The cost of growing the crop up to harvest can amount to $10 000/ha. There is also a high labour requirement for harvesting and packing.

The market price fluctuates considerably. Large variations can occur in price and yield, depending on supply, and on the weather and seasonal conditions which affect yield, quality and demand. Wet weather can seriously reduce marketable yields and the quality of the remaining crop. Growers should do everything possible to ensure tomatoes are handled with care throughout the harvesting and marketing process. Careful handling will limit mechanical damage, and

a key issue
Pest and disease management
Section 4 page 56

bruising and infection by bacterial and fungal breakdown organisms. A regular and intense spray program is essential to control pests and diseases.

What you can expect to make

Yields

Yields vary considerably, depending on climatic conditions, pests and diseases, the season and whether tomatoes are grown on the ground or on trellises. Round tomatoes are usually sold in 10 kg cartons. Average yields per hectare for crops over all seasons are 3000 cartons for a ground crop and 5000 cartons for a trellised crop.

Prices

Prices vary from $1 to $40 per 10 kg carton, with an average of $8 to $10 per carton. The break-even price is about $8 per carton for the normal round tomatoes. Production costs, including pruning for gourmet tomatoes, are said to be about $11 per carton at Bundaberg and up to $14 in Bowen. Figures 1 to 6 show average prices and throughput at the Brisbane and Sydney markets for 1995 to 1997. The bigger the variation above or below the average price, the greater the opportunity or risk involved.

more info
Market information contacts
Section 6 page 10

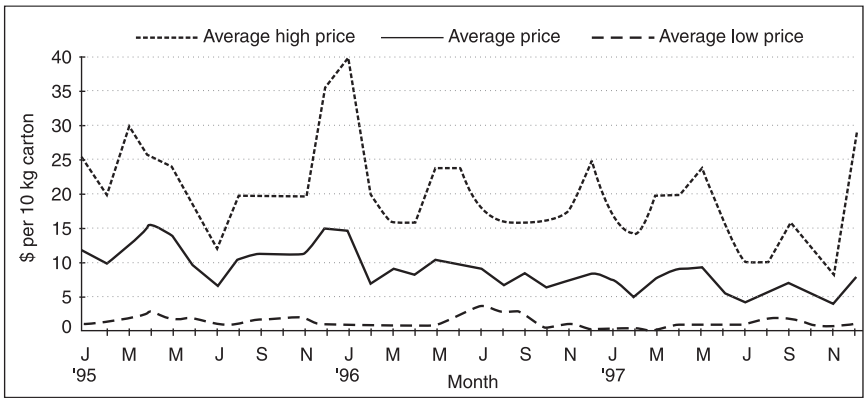

Figure 1. *Average monthly price of round tomatoes per 10 kg carton at the* ***Brisbane*** *market 1995 to 1997*

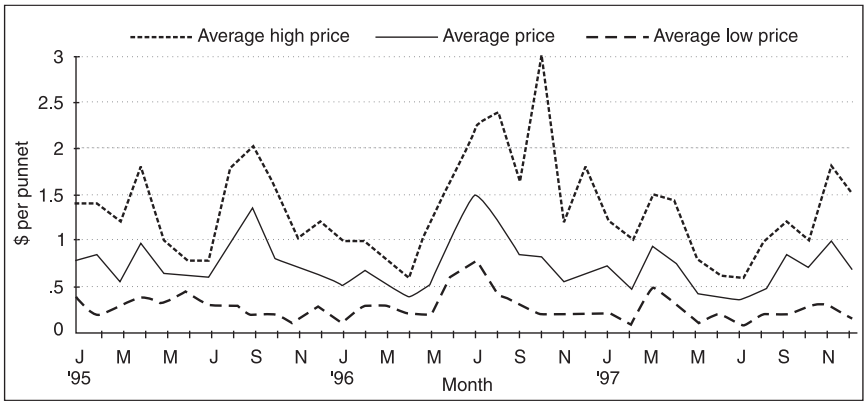

Figure 2. *Average monthly price per punnet of cherry tomatoes at the* ***Brisbane*** *market 1995 to 1997*

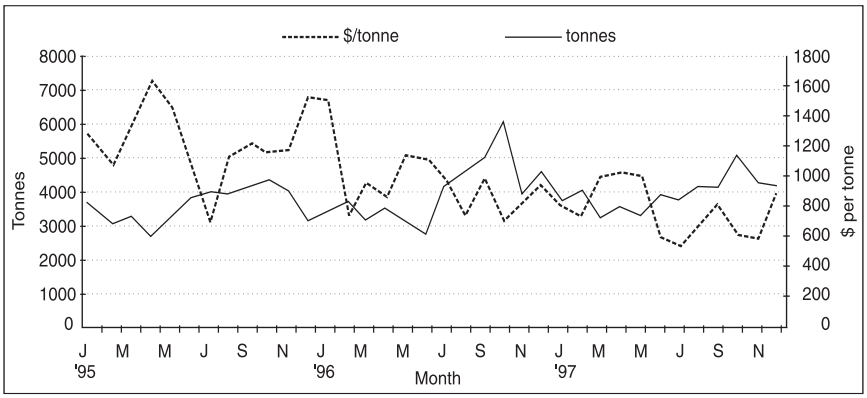

Figure 3. *Throughput and price per tonne of tomatoes at the* ***Brisbane*** *market 1995 to 1997*

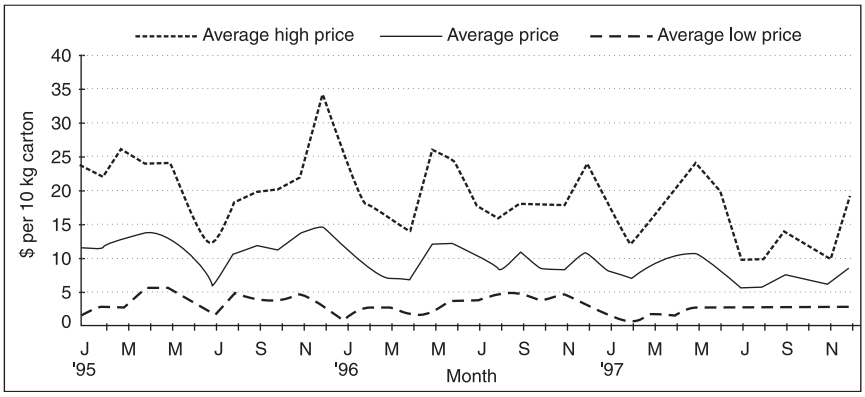

Figure 4. *Average monthly price of round tomatoes per 10 kg carton at the* ***Sydney*** *market 1995 to 1997*

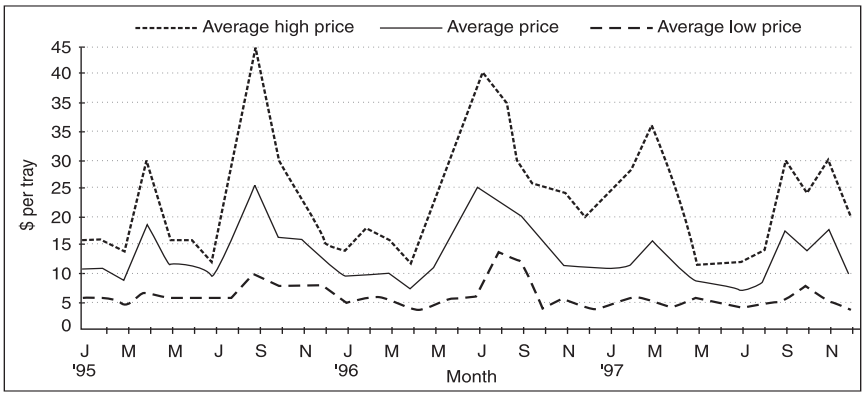

Figure 5. *Average monthly price per tray of cherry tomatoes at the* ***Sydney*** *market 1995 to 1997*

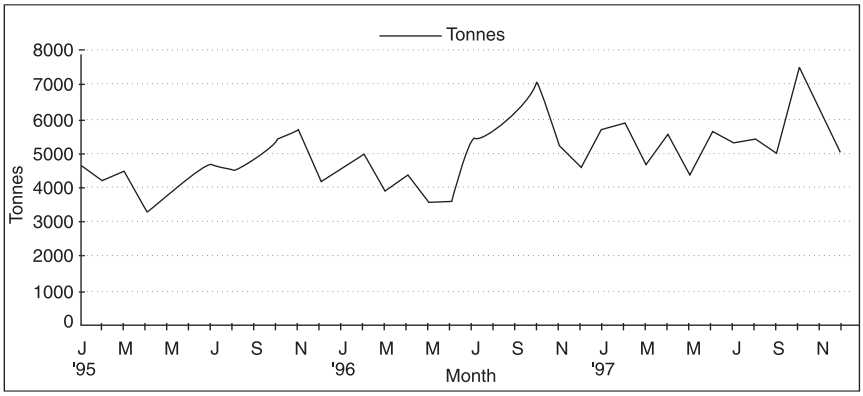

Figure 6. *Throughput of tomatoes at the* ***Sydney*** *market 1995 to 1997*

Production costs

Table 1 shows the estimated average costs of producing normal round tomatoes in $/ha.

Table 1. *Estimated average costs in $/ha*

Costs	Ground crop (3000 cartons/ha)		Trellised crop (5000 cartons/ha)	
	$/carton	$/ha	$/carton	$/ha
Growing	1.92	5 760	1.75	8 730
Harvesting (pick, pack, cool and carton)	4.74	14 220	3.26	16 300
Marketing (freight and commission)	2.54	7 615	2.62	13 100
Total	**$9.20**	**$27 595**	**$7.63**	**$38 130**

Gross margin

A gross margin
Section 4 page 6

The gross margin (income after deducting growing, harvesting and marketing costs) is shown in $/ha in Table 2 for a market price of $10 per carton. To determine your net income, deduct fixed costs such as rates, depreciation, electricity and living expenses.

Table 2. *Estimated average income in $/ha*

Ground crop (3000 cartons/ha)	Trellis crop (5000 cartons/ha)
$2 405	$11 872

The capital you require

The capital investment to set up a tomato production unit growing 40 ha per year is likely to exceed $1 million (this includes land, shed, improvements, machinery and equipment).

Growing the crop
Section 3

The farm you need

Soil

Tomatoes grow best in deep, well drained, medium textured soil, for example, 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

Tomatoes are sensitive to very low and very high temperatures. Heavy frosts will kill plants, while light frosts will kill the tops of plants and can cause fruit to crack. Pollination is reduced outside the optimum temperature range of 18° to 24°C. Affected fruit may be puffy because few seeds and little gel are formed, or scarred by a disorder commonly known as catface. There is a noticeable reduction in fruit set when temperatures fall outside the range of 10°to 27°C. Varieties respond differently to temperature variation.

Rain and high humidity can increase development and spread of fungal diseases such as target spot and grey mould and bacterial diseases. Low humidity favours mites and powdery mildew while rainfall near harvest can result in skin cracking.

Wind can cause fruit rub and blemish and increase water stress, resulting in the development of the fruit disorder blossom-end rot.

Slope

Uniform slopes are desirable, but not essential. Erosion can be a problem on steep slopes, while depressions can result in waterlogging. The slope can also govern the type of irrigation that can be used.

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.

Water

At least four megalitres (ML) of water per hectare of crop are essential for trellis crops. Ground crops are in the ground for less time and 2 to 4 ML are usually enough. Most tomato crops are grown using trickle irrigation.

Tomatoes are moderately tolerant of saline irrigation water. Some decrease in growth and yields can be expected if irrigation water has a conductivity above 1500 microSiemens per centimetre (mS/cm). With furrow or trickle irrigation, water with a conductivity of up to 2800 mS/cm can be used on some soils with careful management. However, better quality water is required if sprinkler irrigation is used, because salt concentrates on leaves, causing leaf burn.

Irrigation management
Section 4 page 43

Yields can be reduced by up to 25% if water conductivity (salt content) is above 2400 mS/cm.

The machinery and equipment you need

Table 3 lists the machinery and equipment considered essential and optional for a tomato production unit growing 40 ha a year and packing about 150 cartons per hour. The prices listed in the table are estimates only. Second-hand machinery would normally be less than half the new cost.

Table 3. *Estimated cost of new machinery and equipment*

Equipment	New price $
Essential	
Tractor (26 kW) for planting, cultivation and spraying	30 000
Tractor (45 to 60 kW) for plough, ripper and rotary hoe	50 000
Bed-former, plastic and trickle tube layer with fertiliser box	8 500
Waterwheel transplanter	3 500
Main grader	40 000
Seconds grader	6 000
Bin tipper	1 000 – 5 000
Scales	1 800
Spray equipment for crop	10 000
Spray equipment for interrow herbicides	4 000
Half-tonne bins (each)	100 – 170
Buckets (each)	5
Shed fork-lift	30 000
Pallet jack	650
Cultivation equipment	20 000 – 25 000
Irrigation equipment ($/ha)	2 500 – 4 500
Optional	
Seedling nursery	5 000
Trellising equipment (stake driver, wire winder, stake puller)	10 000
12 to 20 pallet cold and ripening room	25 000
Mulch gatherer	8 500
Slasher/pulveriser	3 000 – 6 000

more info
Harvesting and marketing
Section 3 pages 45–62

The labour you need

Two field workers could grow 20 ha of ground crop and 8 ha of trellis crop. The main labour requirement is for harvesting and packing.

A standard picking rate is about 12 to 20 cartons per person per hour, depending on fruit set, harvesting method and colour of fruit being harvested.

A standard grading and packing rate is about 12 cartons per person per hour, but this depends on the quality of fruit and the equipment being used.

Other considerations

Growing tomatoes involves hard physical work. There is a high labour requirement in all facets of production. These include land preparation, laying mulch and trickle tube, pest, disease and weed control, irrigation, picking and packing.

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

Management (IPM) is highly desirable because of the intense pest and disease pressure in tomato production.

Growing tomatoes must be viewed as a medium to long term investment because of the high initial capital and cash requirements. It is not a speculative or opportunistic crop.

Quality of the end product is the most important factor in growing tomatoes successfully. This starts with good land preparation and variety selection and continues through the growing of the crop to the careful harvesting, grading and marketing of the tomatoes.

Tomatoes may also be grown organically or hydroponically. They are not well suited to organic production because of the serious pest and disease problems that affect them.

References on hydroponic production
Section 6 page 24

There has been an increase in the quantity of tomatoes grown hydroponically under cover, however, this is still only a small part of the Queensland crop. Many of these crops are grown in bags with drippers supplying water and nutrients. The varieties grown this way are indeterminate types and often unsuitable for outside production. Setting up for undercover production is very expensive, and a high level of skill is required for management, whether grown hydroponically or in the soil. Crop management, for example pruning and plant training, is labour intensive.