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 2004. We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research: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- Financial information—costs and returns listed in this publication are out of date.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 2004. 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 brassica 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.

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.
Want more information? This section helps direct you to other important providers and sources of brassica information. The Contacts directory contains the names and contact details of people and organisations serving the brassica industry. The References section contains a list of information that is useful reading for anyone involved in the industry.

**Contacts**

*Grower associations, special product suppliers, market information, consultants and technical information services*

**References**

*Books, articles, journals, magazines, reports and internet sites*
Contacts

The Department of Primary Industries and Fisheries and the authors give no warranty as to the quality or suitability of goods or services provided by companies and businesses listed in this book.

Names are provided solely for helping readers to make contact with individuals and organisations serving the brassica industry. Inclusion of a person or organisation does not constitute an endorsement by the Department of Primary Industries and Fisheries or the authors, nor does it endorse a particular person or organisation over others not mentioned. The authors regret any omissions.

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Grower associations

Queensland associations

Growcom
Floor 1, St Pauls Terrace
PO Box 202
FORTITUDE VALLEY QLD 4006
Ph: (07) 3620 3844; Fax: (07) 3620 3880
Members hotline: 1800 654 222
E-mail: info@growcom.com.au
Web: www.growcom.com.au

Vegetable Industry Development Officer (Queensland)
Mathew Dent
Floor 1, St Pauls Terrace
PO Box 202
FORTITUDE VALLEY QLD 4006
Ph: (07) 3620 3844; Fax: (07) 3620 3880
Mobile: 0408 135 042
E-mail: mdent@growcom.com.au
Web: www.growcom.com.au

National associations

AUSVEG
RMB 5307
STRATHBOGIE VIC 3666
Ph: (03) 5790 5247; Fax: (03) 5790 5259

Horticulture Australia Limited
Level 1, 50 Carrington Street
SYDNEY NSW 2000
Ph: (02) 8295 2300; Fax: (02) 8295 2399
E-mail: info@horticulture.com.au
Web: www.horticulture.com.au

Organic grower associations

Note: These organisations do not have the resources to provide a general advisory service about organic production. Their main function is to provide information about certification standards and processes. Special services are also provided to members after joining. Kits containing information on membership and certification standards and processes are available for purchase.

Bio-Dynamic Research Institute
c/- Post Office
POWELLTOWN VIC 3797
Ph: (03) 5966 7333; Fax: (03) 5966 7433

Biological Farmers of Australia (BFA)
PO Box 530
CHERMSIDE QLD 4032
Ph: (07) 3350 5716; Fax: (07) 3350 5996
E-mail: info@bfa.com.au
Web: www.bfa.com.au

National Association for Sustainable Agriculture Australia Ltd (NASAA)
PO Box 768
STIRLING SA 5152
Ph: (08) 8370 8455; Fax: (08) 8370 8381
E-mail: enquiries@nasaa.com.au
Web: www.nasaa.com.au

Organic Federation of Australia (Australia’s Organic Industry Peak Body)
Suite 502 ‘Park Place’
3 Waverly Street
Bondi Junction
SYDNEY NSW 2022
Ph: (02) 9340 7808; Fax: (02) 9340 7807
Email: info@ofa.org.au
Web: www.ofa.org.au

Organic Food Chain Pty Ltd
PO Box 2390
TOOWOOMBA QLD 4350
Ph: (07) 4637 2600; Fax: (07) 4696 7689
E-mail: ofc@organicfoodchain.com.au

Seed suppliers

Bejo Seeds Pty Ltd
PO Box 5627
CRANBOURNE VIC 3977
Ph: (03) 9782 2811; Fax: (03) 9782 2445
Seedling nurseries

In south-east Queensland, there are two major seedling nurseries servicing the brassica industry. Check the yellow pages for seedling nurseries in your local area.

Quickstart Seedlings
811 Tenthill Creek Road
GATTON QLD 4343
Ph: (07) 5462 7227; Fax: (07) 5462 7377

Withcott Seedlings
PO Box 9145
WITHCOTT QLD 4352
Ph: (07) 4630 3372; Fax: (02) 4630 3551
Web: www.wseedlings.com.au

Farm chemicals

AVCARE Ltd
National Association for Crop Protection & Animal Health
Locked Bag 916
CANBERRA ACT 2601
Ph: (02) 6230 6399; Fax: (02) 6230 6355
E-mail: info@avcare.org.au
Web: www.avcare.org.au

Australian Pesticides & Veterinary Medicines Authority
(The APVMA is the National Registration Authority for Agricultural and Veterinary Chemicals)
PO Box E240
KINGSTON ACT 2604
Ph: (02) 6272 5852; Fax: (02) 6272 4753
E-mail: contact@apvma.gov.au
Web: www.apvma.gov.au

Charlcon Seeds
220 Eighth Drive
AUSTRAL NSW 2171
Ph: (02) 9606 0522; Fax: (02) 9606 9817
E-mail: charlcon@hotkey.net.au

Fairbanks Selected Seed Company Pty Ltd
542 Footscray Road
FOOTSCRAY VIC 3011
Ph: (03) 9689 4500; Fax: (03) 9687 7089
Web: www.fairbanks.com.au

Henderson Seeds
PO Box 118
BULLEEN VIC 3105
Ph: (03) 9850 2266; Fax: (03) 9850 6794

Lefroy Valley (Queensland)
PO Box 7506
Toowoomba Mail Centre
TOOWOOMBA QLD 4352
Ph: (07) 4635 2099; Fax: (07) 4635 2138
Web: www.lefroyvalley.com.au

Rijk Zwaan Australia Pty Ltd
PO Box 284
DAYLESFORD VIC 3460
Ph: (03) 5348 9000; Fax: (03) 5348 5530
E-mail: vegieseeds@rijkzwaan.com.au

Seminis Vegetable Seeds
Suite 3, upstairs
77 Upper Heidelberg Road
IVANHOE VIC 3077
Ph: (03) 9499 9800; Fax: (03) 9499 9199
Web: www.seminis.com

South Pacific Seeds
102 Andrew Street
WYNNUM QLD 4178
Ph: (07) 3393 3766; Fax: (07) 3893 1522
E-mail: infoupdate@spseed.com.au
Web: www.southpacificseeds.com.au

Syngenta Seeds
Locked Bag 1335
DANDENONG SOUTH VIC 3164
Ph: (03) 9706 3033; Fax: (03) 9706 3182

Terranova Seeds Pty Ltd
13/19 Chifley Street
SMITHFIELD NSW 2164
Ph: (02) 9725 1088; Fax: (02) 9725 1066
ChemClear
(A collection and disposal service for unwanted rural chemicals)
GPO Box 816
CANBERRA ACT 2601
Ph: 1800 008 182; Fax: (02) 6230 6710
E-mail: info@chemclear.com.au
Web: www.chemclear.com.au

DrumMUSTER (national office)
GPO 816
CANBERRA CITY ACT 2601
Ph: (02) 6230 6712; Fax: (02) 6230 6713
E-mail: drummuster@drummuster.com.au
Web: www.drummuster.com.au

John Whitehead
Farm chemicals consultant
172 Bourbong Street
CHAPEL HILL QLD 4069
Ph: (07) 3378 6552

ChemCert Australia
For training in pesticide application contact ChemCert to find your nearest accredited trainer.

ChemCert Training Qld Inc
Ph: (07) 5460 1295
E-mail: chemcertqld@bigpond.com.au

ChemCert Australia National Office
E-mail: national@chemcert.org.au
Web: www.chemcert.org.au

Farm chemical supplies
Check the yellow pages for suppliers of chemicals/fertilisers in your local area.

Farm safety
For information on workplace health and safety and the Managing Farm Safety Program:

Farmsafe Queensland
The Queensland head office is located in Townsville
PO Box 785

Thuringowa QLD 4817
Ph: (07) 4774 0522; Fax: (07) 4774 0289
Freecall: 1800 818 006
E-mail: jcupples@farmsafe.com.au
Web: www.farmsafe.com.au

Farmsafe Australia
The national head office is located in Moree, NSW
Ph: (02) 6752 8218
E-mail: mail@farmsafe.org.au
Web: www.farmsafe.org.au

Pest animal, bird and vermin control
Environmental Protection Agency/Queensland Parks and Wildlife
Central Office
160 Ann Street
BRISBANE QLD 4000
Ph: 07 3227111
Web: www.env.qld.gov.au

For information on controlling native animals and wildlife permits:
Ecoaccess Customer Service Unit
Ph: 1300 868 326

Department of Natural Resources, Mining and Energy (NRM&TE)
For information on pest animal and weed control.
Ph: (07) 3896 3111
Web: www.dpi.nrme.qld.gov.au

Diagnostic services
Biological Crop Protection
Dr G. Stirling
3601 Moggill Road
MOGGILL QLD 4070
Ph: (07) 3202 7419; Fax: (07) 3202 8033
Mobile: 0412 083 489
E-mail: biolcrop@powerup.com.au
Suppliers of beneficial insects, traps and lures

Australasian Biological Control (ABC), the association of beneficial arthropod producers, maintains a list of suppliers of beneficial insects on their website:
www.goodbugs.org.au

Beneficial Bug Co.
PO Box 436
RICHMOND NSW 2753
Ph: (02) 4570 1331; Fax: (02) 4578 3979
E-mail: info@beneficialbugs.com.au
Web: www.beneficialbugs.com.au

Biological Services
PO Box 501
LOXTON SA 5333
Ph: (08) 8584 6977; Fax: (08) 8584 5057
E-mail: fruitdrs@sa.ozland.net.au

Bio-Protection
PO Box 384
KILMORE VIC 3764

Ph: (03) 5781 0033; Fax: (03) 5781 0044
E-mail: rcoy@hyperlink.com.au

BioResources Pty Ltd
PO Box 578
SAMFORD QLD 4520
Ph: (07) 3289 4919; Fax: (07) 3289 4918
E-mail: richard@bioresources.com.au
Web: www.bioresources.com.au

BioWorks Pty Ltd
PO Box 203
NAMBUCCA HEADS NSW 2448
Ph: (02) 6568 3555
E-mail: bioworks@tsn.cc

Bugs for Bugs
Bowen Street
MUNDUBBERA QLD 4626
Ph: (07) 4165 4663; Fax: (07) 4165 4626
E-mail: info@bugsforbugs.com.au
Web: www.bugsforbugs.com.au

Horticultural Crop Monitoring
PO Box 3725
CALOUNDRA QLD 4551
Ph/Fax: (07) 5491 4662
E-mail: pjones@hotkey.net.au

IPM Technologies
PO Box 600
HURSTBRIDGE VIC 3099
Ph: (03) 9710 1554; Fax: (03) 9710 1354
E-mail: ipmtechnologies@bigpond.com

Traps and lures
Entosol (Australia) Pty Ltd (AgriSense agent)
Roger Allanson
PO Box 28
ROSELANDS NSW 2196
Ph: (02) 9758 4552; Fax: (02) 9758 4882
E-mail: sales@entosol.com.au
Web: www.entosol.com.au

Texas (Scentry traps)
Web: www.scentry.com
Soil, plant, water and product testing services

The National Association of Testing Authorities (NATA) is the Government-endorsed provider of accreditation for laboratories and similar testing facilities. Contact NATA for assistance with choosing an accredited laboratory.

National Association of Testing Authorities (NATA)
Brisbane Office
80 Jephson Street
TOOWONG QLD 4066
Ph: (07) 3870 3844; Fax: (07) 3870 4570
Web: www.nata.asn.au

Soil, plant and water testing
Casco Agritech Laboratory Services
PO Box 549
214 McDougall Street
TOOWOOMBA QLD 4350
Ph: (07) 4633 0599; Fax: (07) 4633 0711
E-mail: info@casco.com.au
Web: www.casco.com.au

Crop Tech Laboratories Pty Ltd
410 Langbeckers East Road
BUNDABERG QLD 4670
Ph: (07) 4155 6344; Fax: (07) 4155 6656
E-mail: croptech@croptech.au
Web: www.croptech.com.au

Incitec Pivot Ltd
GPO Box 1322L
MELBOURNE VIC 3001
Ph: (03) 8694 4400; Fax: (03) 8695 4419
Toll free: 1800 803 453
Web: www.incitecpivot.com.au

Simmonds & Bistow Pty Ltd
40 Reginald Street
ROCKLEA QLD 4106
Ph: (07) 3710 9100; Fax: (07) 3710 9199
E-mail: david@simmondsbristow.com.au

Microbial and chemical testing—product and water
Casco Agritech Laboratory Services
PO Box 549
214 McDougall Street
TOOWOOMBA QLD 4350
Ph: (07) 4633 0599; Fax: (07) 4633 0711
E-mail: info@casco.com.au
Web: www.casco.com.au

Centre for Food Technology
19 Hercules Street
HAMILTON QLD 4007
Ph: (07) 3406 8555; Fax: (07) 3406 8665
Web: www.dpi.qld.gov.au/food

Crop Health Services
Institute for Horticultural Development
DPI Victoria
Private Bag 15
KNOXFIELD VIC 3176
SOUTH EASTERN MAIL CENTRE
Ph: (03) 9210 9356; Fax: (03) 9800 3521

Food and Agriculture Laboratories of Australia Pty Ltd
41 Rosedale Street
COOPERS PLAINS QLD 4108
Ph: (07) 3274 9111; Fax: (07) 3274 9119
Web: www.health.qld.gov.au

Simmonds & Bistow Pty Ltd
40 Reginald Street
ROCKLEA QLD 4106
Ph: (07) 3710 9100; Fax: (07) 3710 9199
E-mail: david@simmondsbristow.com.au

Symbio Laboratories
47 Manilla Street
EAST BRISBANE QLD 4169
Ph: (07) 3391 7558; Fax: (07) 3391 6160
E-mail: symbio@powerup.com.au
Quality assurance and environmental management

Enviroveg
National Program Manager
Ph: 03 9544 8998
Web: www.enviroveg.org

Mailing address:
AUSVEG
Suite 9
756 Blackburn Road
CLAYTON NORTH VIC 3168

EurepGAP
Contact the Department of Agriculture, Fisheries and Forestry
Ph: 02 6272 3317
E-mail: eurepgap@daff.gov
Web: www.eurep.org

Farmcare Code of Practice
Growcom (previously Queensland Fruit and Vegetable Growers)
Floor 1, St Pauls Terrace
PO Box 202
FORTITUDE VALLEY QLD 4006
Ph: (07) 3620 3825; Fax: (07) 3620 3880
Members hotline: 1800 654 222
E-mail: info@growcom.com.au
Web: www.growcom.com.au

Food Operations
7 Leeds Street
RHODES NSW 2138
Ph: (02) 9736 8266
E-mail: training@foodoperations.com.au
Web: www.foodoperations.com.au

Freshcare Ltd
PO Box 247
SYDNEY MARKETS NSW 2129
Ph: (02) 9764 3244; Fax: (02) 9764 2776
E-mail: freshcare@freshmarkets.com.au
Web: www.freshcare.com.au

ISO 9002 and ISO 14001
Contact Standards Australia

Ph: 1300 654 646
Web: www.standards.com.au

SQF 2000SM and SQF 2000SM
Contact the Australian Information Desk
Ph: 1800 77 33 77
E-mail: info@sqfi.com
Web: www.sqfi.com

Woolworths Quality Assurance Standard (WQA)
Contact a Woolworths buyer or merchandise manager.
Web www.woolworths.com.au

Market information

Ausmarket Consultants
The Ausmarket Consultants group offers historic and current fruit and vegetable market price information, market intelligence, outturn reporting and product assessment. Participants in the network operate separate businesses within Australia’s major markets. Details can be found on their web site:
Web: www.ausmarket.net.au
Individual members of the network are:

Brisbane
Market Information Services
PO Box 229
BRISBANE MARKET QLD 4106
Ph: (07) 3379 4576; Fax: (07) 3379 4103
Mobile: 0417 712 427
E-mail: info@ausmarket.net.au

Recorded market reports
Infocall: 1902 262 580 ($2.75 per minute, covers faxed reports from Adelaide, Brisbane, Melbourne, Perth and Sydney).

Brisbane Market Produce Surveyors
PO Box 229
BRISBANE MARKET QLD 4106
Ph: (07) 3379 4576; Fax: (07) 3379 4103
Mobile: 0418 713 688
E-mail: info@ausmarket.net.au
Adelaide
SAFF Market Intelligence Pty Ltd
PO Box 6014
ADELAIDE SA 5000
Ph: (08) 8349 6480; Fax: (08) 8349 5894
Mobile: 0419 868 265
E-mail: bbishop@saff.com.au

Melbourne
Melbourne Market Reporting Service (DataFresh)
Box 170 Melbourne Markets
FOOTSCRAY VIC 3011
Ph: (03) 9689 1234; Fax: (03) 9689 1232
Mobile: 0419 335 802
E-mail: info@datafresh.com.au

Rudge Produce Systems Pty Ltd
Box 177 Melbourne Markets
WEST MELBOURNE VIC 3003
Ph: (03) 9689 1234; Fax: (03) 9689 1232
Mobile: 0419 335 802
E-mail: administration@rudgeproduce.com.au

Perth
West Coast Produce Consultants
c/- Perth Market Authority
Mail Point 1, Market City
280 Bannister Road
CANNING VALE WA 6155
Ph: (08) 9455 2900; Fax: (08) 9455 2902
Market reports: 1900 983 304 (recording); 75c per minute

Sydney
The Sydney Market Reporting Service &
Sydney Produce Surveyors Pty Ltd
PO Box 350
FRENCHS FOREST NSW 2086
Ph: (02) 9746 3437; Fax: (02) 9746 1075
Mobile: 0416 108 639
E-mail: cqs@accsoft.com.au

Resolving payment and other disputes
If you have a disagreement about payment for produce, or other matters relating to the retail grocery industry, the Retail Grocery Industry Ombudsman (RGIO) may be able to help.

The RGIO is funded by the Commonwealth Department of Industry, Tourism and Resources and is responsible for assisting industry participants in the retail grocery sector resolve commercial disputes. The industry includes fruit and vegetables, dairy, meat, eggs, flowers, fish, cotton, grains etc. Common disputes are over payment and/or contractual terms between growers, packers, transporters, wholesalers, retailers and/or exporters.

The RGIO and his staff may be telephoned for advice and will formally respond to all queries and dispute notifications within five working days of a written application being lodged. Contact details for the Ombudsman are:

Retail Grocery Industry Ombudsman (RGIO)
GPO Box 1422
SYDNEY NSW 2001
Ph: 1800 004 444 (Free call)
Fax: 1300 760 220
E-mail: ombudsman@rgio.com.au
Web: www.rgio.com.au

Wholesaler information
If you want a list of registered farm produce commercial sellers the following contacts should be helpful.

Australian Chamber of Fruit and Vegetables Ind.
PO Box 6
SYDNEY MARKETS NSW 2129,
Ph: (02) 9764 3244; Fax: (02) 9764 2776
E-mail: thechamber@freshmarkets.com.au
Web: www.freshmarkets.com.au
(lists the contact details for the Chamber in each market)

Adelaide
Adelaide Produce Markets Ltd
Diagonal Road
POORAKA SA 5095
Ph: (08) 8349 4493; Fax: (08) 8349 6574
E-mail: apml@adelaidemarkets.com.au
Web: www.adelaidemarkets.com.au
South Australian Chamber of Fruit and Vegetables Industries
c/- Adelaide Produce Markets Ltd
Diagonal Road
POORAKA SA 5095
Ph: (08) 8349 4528; Fax: (08) 8260 5922

Brisbane
Brisbane Markets Ltd
PO Box 80
BRISBANE MARKETS QLD 4106
Ph: (07) 3379 1062; Fax: (07) 3379 4903
Marketline: 1800 631 002
E-mail: admin@brisbanemarkets.com.au
Web: www.brisbanemarket.com.au

Brismark
PO Box 70
BRISBANE MARKETS QLD 4106
Ph: (07) 3379 3061; Fax: (07) 3379 3792
E-mail: brismark@brismark.com.au
Web: www.brismark.com.au

Melbourne
Melbourne Market Authority
Box 1
WEST MELBOURNE VIC 3003
Ph: (03) 9258 6100; Fax: (03) 9687 7714
Email: info@melbournemarkets.com.au
Web: www.melbournemarkets.com.au

Victorian Chamber of Fresh Produce Wholesalers Inc.
(Trading as Fresh State)
PO Box 113
FOOTSCRAY VIC 3011
Ph: (03) 9689 3233; Fax: (03) 9689 9223
E-mail: vicchamber@freshstate.com.au
Web: www.freshmarkets.com.au

Perth
Perth Market Authority
Mail Point 1, Market City
CANNING VALE WA 6155
Ph: (08) 9455 2900; Fax: (08) 9455 2902
E-mail: pma@perthmarket.com.au
Web: www.perthmarket.com.au/
produceinfoframe.htm

West Australian Chamber of Fruit and Vegetables Industries
PO Box 1464
CANNING VALE DC WA 6970
Ph: (08) 9455 2742; Fax: (08) 9455 4923

Sydney
Sydney Markets Ltd
PO Box 2
SYDNEY MARKETS NSW 2129
Ph: (02) 9325 6200; Fax: (02) 9325 6288
E-mail: info@sydneymarkets.com.au
Web: www.sydneymarkets.com.au

NSW Chamber of Fruit and Vegetable Industries Inc.
PO Box 6
SYDNEY MARKETS NSW 2129
Ph: (02) 9764 3244; Fax: (02) 9764 2776
E-mail: nswchamber@freshmarkets.com.au

Export associations

Australian Horticultural Exporters Association
Institute of Horticultural Development
Private Bag 15
FERNTREE GULLY DELIVERY CENTRE
VIC 3156
Ph: (03) 9210 9380; Fax: (03) 9210 9381
E-mail: ahea@ahea.com.au
Web: www.ahea.com.au

AQIS offices

For information on exporting brassicas contact an export inspector at the closest office of the Australian Quarantine and Inspection Service, Department of Agriculture, Fisheries and Forestry.
The address and contact numbers for state offices are listed below, or Freecall 1800 020 504

Adelaide
PO Box 63
Port Adelaide SA 5015
Ph: (08) 8305 9700; Fax: (08) 8305 9825
Contacts and references

Brisbane
GPO Box 778
BRISBANE QLD 4000
Ph: (07) 3246 8755; Fax: (07) 3839 9313

Canberra
GPO Box 7193
FYSHWICK ACT 2609
Ph: (02) 6239 7979; Fax: (02) 6230 7986

Darwin
GPO Box 1970
BERRIMAH NT 0828
Ph: (08) 8999 2075; Fax: (08) 8999 2108

Hobart
PO Box 347
NORTH HOBART TAS 7002
Ph: (03) 6233 3626; Fax: (03) 6234 6785

Melbourne
PO Box 1006
TULLAMARINE VIC 3043
Ph: (03) 8318 6700; Fax: (03) 8318 6701

Perth
WA AQIS
PO Box 1410
CANNING VALE WA 6970
Ph: (08) 9311 5333; Fax: (08) 9455 3052

Sydney
PO Box 657
MASCOT NSW 1460
Ph: (02) 8334 7444; Fax: (02) 8334 7555

Senior Operational Support Officer
Animal and Plant Health Services
Department of Primary Industries and Fisheries
GPO Box 46
BRISBANE QLD 4001
Ph: (07) 3239 3330; Fax: (07) 3211 3293

Information on interstate requirements
Requirements change regularly. To check on latest requirements, here are the contacts for each state.

New South Wales
Regulatory Operations Coordinator (Plants)
Locked Bag 21
ORANGE NSW 2800
Ph: (02) 6391 3583; Fax: (02) 6391 3605

Australian Capital Territory
Quarantine & Inspection Officer
Environment ACT
PO Box 1038
TUGGERANONG ACT 2901
Ph: (02) 6207 2265; (02) 6207 2268

Victoria
Supervisor Plant Standards
Department of Primary Industries
Private Bag 15
Ferntree Gully Delivery Centre
KNOXFIELD VIC 3156
Ph: (03) 9687 5627; Fax: (03) 9687 6746

Tasmania
Senior Quarantine Officer
Quarantine
Macquarie Wharf Number 1
HOBART TAS 7000
Ph: (03) 6233 3352; Fax: (03) 6234 6785

South Australia
Program Leader—State Quarantine Inspection Service
Pest Eradication Unit
46 Prospect Road
PROSPECT SA 5082
Ph: (08) 8344 1203; Fax: (08) 8344 6033

Information on interstate movement provisions

Interstate Certification Assurance (ICA) and Inspections for interstate produce shipments
For the names of local inspectors and information on interstate requirements, contact the DPI&F Animal and Plant Health Services.
Western Australia
Senior Inspector
Western Australian Quarantine & Inspection Service
PO Box 1410
CANNING VALE WA 6970
Ph: (08) 9311 5333; Fax: (08) 9455 3052

Northern Territory
Senior Inspector (Interstate Quarantine)
Primary Industry and Fisheries Department of Business, Industry and Resource Development
PO Box 990
BERRIMAH NT 0801
Ph: (08) 8999 2138; Fax: (08) 8999 2111

Government services

National
CSIRO Australia—Scientific and Industrial Research
Web: www.csiro.au

Department of Agriculture, Fisheries and Forestry (DAFF)
Web: www.affa.gov.au

FarmBis Australia
This program provides financial assistance to primary producers to undertake business and natural resource management training.
Web: www.farmbis.gov.au

State
Queensland
Department of Primary Industries and Fisheries (DPI&F)
GPO Box 46
BRISBANE QLD 4001
E-mail: callweb@dpi.qld.gov.au
Web: www.dpi.qld.gov.au

Call Centre. Helps you access DPI&F’s information services and products. Queenslanders can ring 13 25 23 from 8 a.m. to 6 p.m. Monday to Friday, excluding public holidays, for the cost of a local call. Interstate callers can phone (07) 3404 6999.

GrowSearch. An information service for producers of horticultural crops. Fee-for-service.

Ph: (07) 3821 3784; Fax: (07) 3286 7618
E-mail: growsearch@dpi.qld.gov.au
Web: www.dpi.qld.gov.au/growsearch

Department of Natural Resources, Mining and Energy (NRM&E)
Ph: (07) 3896 3111
Web: www.dpi.nrme.qld.gov.au

For information on natural resource management for example soil, water, vegetation, erosion, salinity etc.

Environmental Protection Agency/Queensland Parks and Wildlife
Ph: (07) 3227111
Web: www.env.qld.gov.au

For information on environmental planning, technical services and management of parks, forestry and wildlife.

New South Wales
NSW Department of Primary Industries (NSWDPI)
Locked Bag 21
ORANGE NSW 2800
Ph: (02) 6391 3100; Fax: (02) 6391 3336
E-mail: nsw.agriculture@agric.nsw.gov.au
Web: www.dpi.nsw.gov.au

Victoria
Department of Primary Industries (DPI)
E-mail: customer.service@dpi.vic.gov.au
Web: www.dpi.vic.gov.au

Department of Sustainability and Environment (DSE)
E-mail: customer.service@dse.vic.gov.au
Web: www.dse.vic.gov.au
Call Centre. Helps you access information services and products, from DPI and DSE ring 136 186 from within Australia.

Tasmania
Department of Primary Industries, Water and Environment (DPIWE)
GPO Box 44
HOBART TAS 7001
Ph: 1300 368 550 (toll free in Australia)
E-mail: FAF.Enquiries@dpiwe.tas.gov.au
Web: www.dpiwe.tas.gov.au

South Australia
Department of Primary Industries and Resources (PIRSA)
GPO Box 397
Adelaide 5001 S A
E-mail: pirsa.sardi@sa.gov.au
Web: www.pir.sa.gov.au

Western Australia
Department of Agriculture (DAWA)
Locked Bag 4
BENTLEY DELIVERY CENTRE WA 6983
Ph: (08) 9368 3333
Email: enquiries@agric.wa.gov.au
Web: www.agric.wa.gov.au

Northern Territory
Primary Industry and Fisheries—part of the Department of Business, Industry and Resources Development (DBIRD)
GPO Box 3000
DARWIN NT 0801
Ph: (08) 8999 2292; Fax: (08) 8999 2049
Web: www.nt.gov.au/dbird/dpif

Agricultural booksellers
These booksellers specialise in agricultural books.

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E-mail: madhu@johima.com.au
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E-mail: publishing@csiro.au
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Morescope Publishing
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Ph: (03) 6260 2094

DPI Information Centre
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EAST MELBOURNE VIC 3002
Ph: (03) 9637 8325; Fax (03) 9637 8150
E-mail: customer.service@dpi.vic.gov.au
Web: www.dpi.vic.gov.au
Contacts through the Yellow Pages

The following Yellow Pages headings cover the main topics for which contacts may be needed. Check the listings under the appropriate heading.

Seedlings and seed
Nurseries
Seedsmen

Chemicals/fertilisers
Chemicals, agricultural
Chemical suppliers
Fertilisers
Insecticides, herbicides and fungicides
Lime
Soil conditioners and treatments

Consultants
Farm and agricultural advisory services
Quality Assurance Services
Horticultural consultants

Economics and marketing
Fruit and vegetable wholesalers
Grain and produce
Transport services

Equipment, irrigation, machinery
Agricultural machinery
Engineers
Farm contracting services
Farm equipment and supplies
Instruments—scientific
Irrigation

Pesticides and spraying
Aerial spraying
Fertiliser and/or insecticide spreading
Protective clothing
Spray equipment and/or supplies

Postharvest handling and packaging
Boxes and cartons
Cold room builders/designers
Cold stores
Food processing and/or packing machinery
Fruit and vegetable packing and/or packs
Labels
Polystyrene products
Grain and produce packaging materials
Refrigerated transport trucks and equipment
Scales and weighing equipment
References

This is not an exhaustive list of references for brassicas. It consists of references and internet sites which the authors recommend as useful sources of information and reading for the brassica grower. If you require more detailed information on a subject, use the literature search facilities available from most libraries.

DPI&F information products

Books


*Insect pests of fruit and vegetables* (2nd edn), Swaine, G., Ironside, D.A. & Corcoran, R.J. (1992), Department of Primary Industries and Fisheries, Queensland.


DPI&F notes and web pages


Asian leafy brassica vegetables


DPI&F notes are available on the Internet at: www.dpi.qld.gov.au or on Prime notes on CD-ROM

DPI&F information products are available from:
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Department of Primary Industries and Fisheries
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E-mail: books@dpi.qld.gov.au
Web: www.dpi.qld.gov.au/shop

Other DPI&F products
Crop weeds of northern Australia CD Rom, Wilshire, B. et al (2003), Department of Primary Industries and Fisheries, Queensland.

Infopest—Agvet CD-ROM and Infopest—MSDS CD-ROM

Available from:
Infopest
Animal & Plant Health Services
Department of Primary Industries and Fisheries
GPO Box 46
BRISBANE QLD 4001
Ph: (07) 3239 3967; Fax: (07) 3239 3510
E-mail: infopest@dpi.qld.gov.au
Web: www.dpi.qld.gov.au/infopest

Other books


Available from:
CSIRO Publishing
PO Box 1139,
COLLINGWOOD, VIC 3066
Ph: 1300 788 000 (to order)

Australian farmers guide to the internet—second edition, RIRDC

Available from:
Rural Industries Research and Development Corporation
Level 1, 10 Macquarie Street
BARTON ACT 2600
Ph: (02) 6272 4539; Fax: (02) 6272 5877
Web: www.rirdc.gov.au/farmersguide

Available from:
Australian Government Printing Service
GPO Box 84
CANBERRA ACT 2601


Quality description language:
- broccoli, O'Donnell, D.
- cauliflower, Vujovic, S. et. al.
- cabbage, Vujovic, S. et. al.
- Chinese broccoli, Morgan, W. and Chew, M.
- Chinese cabbage, Morgan, W. and Chew, M.
- Chinese chard, Morgan, W. and Chew, M.
- Shanghai Chinese chard, Morgan, W. and Chew, M.

Available from:
DPI Information Centre
PO Box 500
EAST MELBOURNE VIC 3002
Ph: (03) 9637 8325; Fax (03) 9637 8150
E-mail: customer.service@dpi.vic.gov.au
Web: www.dpi.vic.gov.au


Integrated pest management for cole crops and lettuce, Flint, M.L. (ed) (1992), Division of Agriculture and Natural Resources, University of California, USA.

National Standard for Organic and Bio-Dynamic Produce, Department of Agriculture, Fisheries and Forestry, Canberra.


Reports

Asian vegetable industry—a situation assessment, Hassall and Associates (2003) RIRDC, Publication No 02/168

The above report and a number of other reports on Asian vegetables are available at:

Rural Industries Research and Development Corporation
Level 1, 10 Macquarie Street
BARTON ACT 2600
Ph: (02) 6272 4539; Fax: (02) 6272 5877
Web: www.rirdc.gov.au/farmersguide

Guidelines for on-farm food safety for fresh produce, Working group on Safety and Quality Systems’ Equivalence, (2001), Department of Agriculture, Fisheries and Forestry, Canberra.

Available at:
Department of Agriculture, Fisheries and Forestry (DAFF)
For the EUREGAP guidelines
Ph: (02) 6272 3317
For the On-farm food safety guidelines
Ph: (02) 6272 4161
E-mail: foodinfo@affa.gov.au
Web: www.daff.gov.au

Annual publications

Brisbane markets business directory
Available from:
Brisbane Market Authority
PO Box 8
BRISBANE MARKETS QLD 4106
Ph: (07) 3379 1062; Fax: (07) 3379 4903
Web: www.brisbanemarket.com.au

Prices and throughput for the Brisbane market
Available from:
Market Information Services
PO Box 229
BRISBANE MARKET QLD 4106
Ph: (07) 3379 4576; Fax: (07) 3379 4103;
Mobile: 0417 712 427
E-mail: info@ausmarket.net.au
Web: www.ausmarket.net.au

Melbourne markets business directory
Available from:
Melbourne Market Authority
PO Box 1
542 Footscray Road
FOOTSCRAY VIC 3011
Ph: (03) 9258 6100; Fax: (03) 9687 7714
E-mail: info@mma.vic.gov.au
Web: www.melbournemarkets.com.au

Sydney markets users guide
Available from:
Sydney Market Ltd
PO Box 2
SYDNEY MARKETS NSW 2129
Ph: (02) 9325 6200; Fax: (02) 9325 6288
E-mail: sydma@sydneymarkets.com.au
Web: www.sydneymarkets.com.au

The Sydney markets yearly prices for fresh fruit & vegetables
Available from:
The Sydney Market Reporting Service
PO Box 350
FRENCHS FOREST NSW 2086
Ph: (02) 9746 3437; Fax: (02) 9746 1075;
Mobile: 0416 108 639
E-mail: cqs@accsoft.com.au

Journals and magazines

American Vegetable Grower
Available from:
American Vegetable Grower
37733 Euclid Avenue
WILLoughby OHIO 44094 USA

Good Fruit & Vegetables
Available from:
Good Fruit & Vegetables
PO Box 160
PORT MELBOURNE VIC 3207
Ph: (03) 9287 0900; Fax: (03) 9287 0999
Subscriptions: Ph: 1800 035 351

Useful internet sites

Brassica sites
UC IPM Online—Cole Crops—University of California
http://www.ipm.ucdavis.edu/PMG/selectnewpest.cole-crops.html

Brassica projects—Department of Primary Industries Victoria
Includes club root project
### Diamondback moth management

Department of Primary Industries, Victoria  
For the DBM sampling plan, contact the project team or follow the pest & diseases link


National DBM resistance management strategy Avicare  
http://www.avecure.org.au

International working group for diamondback moth  
http://www.nysaes.cornell.edu/ent/dbm/

### Asian vegetables

Access to Asian vegetables—Department of Primary Industries Victoria  
Australian New Crops web site—University of Queensland  
http://www.newcrops.uq.edu.au/

The New Rural Industries—RIRDC handbook  

Asian Foods Research Program - Rural Industries Research and Development Corporation  

### Other sites

AGRIFOR—The UK’s Gateway to Internet Resources in Food, Agriculture and Forestry  
Web: www.agrifor.ac.uk

Austrade—Australia’s export and investment facilitation agency:  
Web: www.austrade.gov.au

Australasian Biological Control:  
Web: www.goodbugs.org.au

Australian Centre for Agricultural Health and Safety—the University of Sydney  
Web: www.acahs.med.usyd.edu.au

Australian Farm & Rural OHS Resources:  
Web: www.worksafe.gov.au/OHSInformation/Agriculture

Australian Government Agricultural Portal:  

Australian Pesticides and Veterinary Medicines Authority (APVMA):  
Web: www.apvma.gov.au

Australian Quarantine & Inspection Service (AQIS):  
Web: www.aqis.gov.au

AQIS—export conditions database (phyto):  
Web: www.aqis.gov.au/phyto

Avicare, National Association of Crop Production and Animal Health:  
Web: www.avcare.org.au

ChemClear—Farm chemicals:  
Web: www.chemclear.com.au

Cool chain, South Australian Research and Development Institute:  

Crop Protection, The Official Journal of the International Association for the Plant Protection Sciences:  
Web: www.elsevier.com/locate/cropro

Department of Agriculture, Fisheries and Forestry:  
Web: www.affa.gov.au

Department of Agriculture Western Australia  
Web: www.agric.wa.gov.au

Department of Natural Resources, Mines and Energy—Fact Sheets:  
Web: www.nrm.qld.gov.au/factsheets
Department of Primary Industries and Resources South Australia  
Web: www.pir.sa.gov.au

Department of Primary Industries Victoria - Notes information series  

drumMUSTER:  
Web: www.drummuster.com.au

Entosol (Australia) Pty Ltd (AgriSense agent):  
Web: www.entosol.com.au

Enviromental Protection Agency/ Queensland Parks and Wildlife Service  

Enviroveg:  
Web: www.enviroveg.org

EUREPGAP:  
Web: www.eurep.org

Farmsafe Australia:  
Web: www.farmsafe.org.au

Farmsafe Queensland:  
Web: www.farmsafe.com.au

Food Info Australia—Department of Agriculture, Fisheries and Forestry  
Web: www.affa.gov.au/foodinfo

Food Operations  
Web: www.foodoperations.com.au

Freshcare  
Web: www.freshcare.com.au

Growcom:  
Web: www.growcom.com.au

Horticulture Australia Limited:  
Web: www.horticulture.com.au

Integrated Crop and Pest Management Guidelines for Commercial Vegetable Production—Cornell university:  
Web: www.nysaes.cornell.edu/recommends

International Federation of Organic Agriculture Movements (IFOAAM)  
Web: wwwifoam.org

ISO 9002 and ISO 14001  
Web: www.standards.com.au

NSW Department of Primary Industries  
Web: www.agric.nsw.gov.au

Organic Federation of Australia  
Web: www.ofa.org.au

Postharvest technology, University of California, Davis:  
Web: http://postharvest.ucdavis.edu

Queensland Parks and Wildlife Service - Enviromental Protection Agency  

Queensland Rural Adjustment Authority:  
Web: www.qraa.qld.gov.au

Rural Industries Research and Development Corporation:  
Web: www.rirdc.gov.au

Rural Water Use Efficiency - Department of Natural Resources, Mines and Energy:  
Web: www.nrme.qld.gov.au/rwue/ 
factsheets.htm#horticulture/ www/ 
nrme.qld.gov/rwue/pdf/factsheets/brassica.pdf

Rural Safety Links:  
Web: www.whs.qld.gov.au/subject/ 
rural.htm#links

SQF 2000™ and SQF 2000™  
Web: www.sqfi.com

Standards Australia:  
Web: www.standards.com.au

Sustainable Agriculture Resources—Australian and New Zealand:  
Sustainable practices for vegetable production in the south, North Carolina State University:
Web: www.cals.ncsu.edu/sustainable/peet/index.html

Sydney Postharvest Laboratory
Web: www.postharvest.com.au

Texas (Scentry traps)—USA home page:
Web: www.sentry.com

University of California—Vegetable Research and Information Centre:
Web: http://vric.ucdavis.edu

University of Florida, Institute of Food and Agricultural Sciences:
Web: http://edis.ifas.ufl.edu

United States Department of Agriculture:
Web: www.usda.gov/Agriculture/

Woolworths Quality Assurance Standard (WQA)
www.woolworths.com.au

Workplace health and safety—Queensland:
Web: www.whs.qld.gov.au
If you have never grown cabbage, cauliflower or broccoli 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 decisions. The information here is brief and to the point. We provide more detail on important areas in other sections of the book. Symbols on the left of the page will help you make these links.

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A brief overview of the Queensland brassica industry

Official statistics suggest that the Queensland brassica industry is relatively static, although supply tends to fluctuate from year to year. In 2001–02, around 40 000 tonnes of cabbage, cauliflower and broccoli were produced from about 2 800 hectares. Table 1 shows the industry had a farm gate value of about $21 million and a gross value of around $32 million.

Table 1. The Queensland brassica industry

<table>
<thead>
<tr>
<th>Crop</th>
<th>Area (ha)</th>
<th>Production (tonnes)</th>
<th>Farm gate value ($ millions)</th>
<th>Gross value ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabbages</td>
<td>366</td>
<td>13,148</td>
<td>2.7</td>
<td>4.7</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>693</td>
<td>15,058</td>
<td>4.1</td>
<td>8.2</td>
</tr>
<tr>
<td>Broccoli</td>
<td>1758</td>
<td>11,569</td>
<td>14.3</td>
<td>18.8</td>
</tr>
<tr>
<td>Totals</td>
<td>2 817</td>
<td>39,775</td>
<td>21.1</td>
<td>31.7</td>
</tr>
</tbody>
</table>

Source: Australian Bureau of Statistics 2001–02 estimates

Most Queensland brassicas are grown in the south-eastern corner of the State in the Lockyer Valley, Eastern Darling Downs and the Granite Belt. Small growing areas exist in coastal areas and other horticultural production districts of the state.

The industry primarily supplies the domestic fresh market, either through the central market system or direct to supermarket chains which account for the majority of sales. There are small markets for semi-prepared or semi-processed product (coleslaw, salad and vegetable mixes).

Brassicas from Queensland are sold throughout Australia. Fresh cabbage, cauliflower or broccoli can be sourced from Queensland at any time of the year but the main supply period is from May to September when the Lockyer Valley and Eastern Darling Downs are in full production. During the warmer months, production is centred in the cooler highland areas of the Granite Belt and around Toowoomba.

Returns can vary greatly. Prices are often low during peak production in winter. Summer prices are often high. In regions with warm or hot summers such as the Lockyer Valley, lows yields, reduced head quality and pest and disease problems are often not offset by these higher summer prices.

Some larger brassica growers have actively pursued export markets for a number of years with some success. The major overseas markets for Queensland brassicas are south-east Asia and Japan, with $5.7 million of broccoli, $1.8 million of cauliflower and smaller quantities of cabbage exported during 2002–03 (Source: Australian Bureau of Statistics).
Know what you are getting into

The average price for broccoli, cauliflower and cabbage varies between seasons, making profitability and cash flow inconsistent and hard to estimate. The market is often oversupplied, particularly during winter and early spring, when returns may be below costs of production.

Consistent yields and quality can be difficult to achieve due to insect pests (for example, diamondback moth), disease problems (for example, head rots) and climatic factors. These include frosts, heat wave conditions or wet weather during harvest. Varieties also perform differently in various growing areas and under different growing conditions.

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

Successful production requires cool to mild growing conditions, a well-drained soil and reliable irrigation. Capital costs can be high depending on arrangements for harvesting and packing of product. Access to rapid pre-cooling and cold storage facilities is essential for broccoli and highly desirable for cauliflower. Cabbage can be cooled and stored in a conventional cold room.

Table 2 lists the some of the strengths, weaknesses, opportunities and threats (SWOT) affecting the brassica industry.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staple, well known products</td>
<td>Not suited to warm weather production</td>
<td>Value adding and semi-processing</td>
<td>Overproduction</td>
</tr>
<tr>
<td>High nutritional value</td>
<td>Cabbage and cauliflower not fashionable</td>
<td>Health aspects of the product</td>
<td>Lack of irrigation water (drought)</td>
</tr>
<tr>
<td>Versatile product</td>
<td>Generic promotions</td>
<td>Targeted promotion</td>
<td>Substantial price fluctuations</td>
</tr>
<tr>
<td>Value for money</td>
<td>Competition from southern states in domestic markets</td>
<td>New varieties</td>
<td>Club root</td>
</tr>
<tr>
<td>Convenient</td>
<td>Strong competition in export markets</td>
<td>Niche markets, organics, eco-labelling</td>
<td>Insecticide resistance problems</td>
</tr>
<tr>
<td>Reliable crop to grow in season with good management</td>
<td>Highly perishable product (broccoli, cauliflower)</td>
<td>New export markets</td>
<td>Labour, packaging and freight costs</td>
</tr>
</tbody>
</table>

Table 2. Factors affecting the brassica industry of Queensland

IMPORTANT
Do a marketing and business plan. This will give you a more accurate picture of what you are getting into.
What can you expect to make?

Yields vary considerably, depending on climatic conditions, pests and diseases, variety, season and planting density. Prices vary greatly, depending on supply and quality.

Cabbages are usually supplied in bulk bins and sold on a per head basis. Sugarloaf cabbages are often sold in waxed fibreboard cartons. Cauliflower are sold either on a per head basis or, more commonly, in 78L cartons that hold 10 or 12 heads. Broccoli is usually sold in icepacks holding 8 kg of heads or in waxed fibreboard cartons holding 10 kg of product.

Production and marketing costs for cabbages, cauliflower and broccoli vary, depending on yields achieved, the size and efficiency of the operation and the cost structure of the business. Each farm is different. The estimates given in the following sections are intended only to illustrate the level of costs involved for growing, harvesting and marketing the different brassica crops.

Of the three crops, cauliflower is by far the riskiest crop to grow as production costs are high and yields can vary substantially. Cauliflower also require a fair amount of agronomic and management expertise to grow successfully. Cabbage and broccoli are easier to grow. However, since broccoli is the more perishable of the three products, timeliness of harvest and access to adequate cooling facilities complicate crop management.

Cabbage yields and prices

Marketable yields commonly range from 14 000 to 18 000 heads per hectare.

Price can range from $0.20 to $4.00 or more per cabbage head, but is usually in the $0.60 to $2.00 range. Figures 1 to 3 show average prices for ballhead cabbages on the Brisbane and Sydney markets and throughput of all cabbages at the Brisbane market for 2001 to 2003. The bigger the variation above or below the average price, the greater the opportunity or risk involved.
Figure 1. Average monthly price for ballhead cabbage on the Brisbane market 2001 to 2003

Figure 2. Throughput of cabbage on the Brisbane market 2001 to 2003

Figure 3. Average monthly price for ballhead cabbage on the Sydney market 2001 to 2003
Production costs for cabbage

Production and marketing costs in southern Queensland are at least $0.70 per head. Variable growing, harvesting and marketing costs range from $10,000 to $16,000 or more per hectare.

Table 3 shows the estimated average costs of a southern Queensland crop yielding 16,000 heads per hectare sold in fibreboard bulk bins at $1.00 per head on the Brisbane market.

**Table 3.** Example costs of producing and marketing a cabbage crop grown in southern Queensland

<table>
<thead>
<tr>
<th>Costs</th>
<th>$ per head</th>
<th>$ per hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growing</td>
<td>0.22</td>
<td>3,520</td>
</tr>
<tr>
<td>Harvesting (pick, pack &amp; bin)</td>
<td>0.37</td>
<td>5,920</td>
</tr>
<tr>
<td>Marketing (freight and commission)</td>
<td>0.25</td>
<td>4,000</td>
</tr>
<tr>
<td><strong>Total variable costs</strong></td>
<td><strong>0.84</strong></td>
<td><strong>13,440</strong></td>
</tr>
</tbody>
</table>

Gross margin

At an average yield of 16,000 heads per hectare and an average price of $1.00 per head, the gross return would be $16,000/ha. The gross margin (income after deducting growing, harvesting and marketing costs) for the yield, price and cost averages used here would be $2,560/ha. To determine your net income, deduct fixed and capital costs such as rates, vehicle registration, insurance, electricity, administration, interest and living expenses.

Cauliflower yields and prices

Marketable yields commonly range from 1,500 to 2,000 cartons per hectare. Yields can be substantially lower during unfavourable growing conditions.

Price can range from $2.00 to $50.00 per carton, but is usually in the $8.00 to $18.00 range. Figures 4 to 6 show average prices and throughput at the Brisbane market and prices at the Sydney market for 2001 to 2003. The bigger the variation above or below the average price, the greater the opportunity or risk involved.
Figure 4. Average monthly price for cauliflower on the Brisbane market 2001 to 2003

Figure 5. Throughput of cauliflower on the Brisbane market 2001 to 2003

Figure 6. Average monthly price for cauliflower on the Sydney market 2001 to 2003
**Production costs**

Production and marketing costs in southern Queensland are at least $9.50 per carton. Variable growing, harvesting and marketing costs are at least $14 000/ha, but can be $20 000 or more per hectare. The evenness of crop maturity will have a significant impact on harvesting costs.

Table 4 shows the estimated average costs of a southern Queensland crop yielding 1 700 cartons per hectare sold at $12 per carton on the Brisbane market.

<table>
<thead>
<tr>
<th>Costs</th>
<th>$ per carton</th>
<th>$ per hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growing</td>
<td>2.77</td>
<td>4 709</td>
</tr>
<tr>
<td>Harvesting (pick, pack &amp; carton)</td>
<td>5.61</td>
<td>9 537</td>
</tr>
<tr>
<td>Marketing (freight and commission)</td>
<td>2.35</td>
<td>3 995</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10.73</strong></td>
<td><strong>18 241</strong></td>
</tr>
</tbody>
</table>

**Gross margin**

At an average yield of 1 700 cartons per hectare and an average price of $12 per carton, the gross return would be $20 400/ha. The gross margin (income after deducting growing, harvesting and marketing costs) for the yield, price and cost averages used here would be $2159/ha. To determine your net income, deduct fixed and capital costs such as rates, vehicle registration, insurance, electricity, administration, interest and living expenses.

**Broccoli yields and prices**

Marketable yields commonly range from 700 to 1000 icepacks per hectare.

Price can range from $3.00 to $40.00 per icepack, but is usually in the $12.00 to $22.00 range. Figures 7 to 9 show average prices and throughput at the Brisbane market and prices at the Sydney market for 2001 to 2003. The bigger the variation above or below the average price, the greater the opportunity or risk involved.
Figure 7. Average monthly price for broccoli on the Brisbane market 2001 to 2003

Figure 8. Throughput of broccoli on the Brisbane market 2001 to 2003

Figure 9. Average monthly price for broccoli on the Sydney market 2001 to 2003
Production costs

Production and marketing costs in southern Queensland are at least $13.00 per icepack. Variable growing, harvesting and marketing costs range from $11 000 to $15 000 or more per hectare.

Table 5 shows the estimated average costs of a southern Queensland crop yielding 900 icepacks per hectare sold at $16.00 per icepack on the Brisbane market.

Table 5. Example costs of producing and marketing a broccoli crop grown in southern Queensland

<table>
<thead>
<tr>
<th>Costs</th>
<th>$ per icepack</th>
<th>$ per hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growing</td>
<td>4.75</td>
<td>4 275</td>
</tr>
<tr>
<td>Harvesting (pick, pack &amp; icepack)</td>
<td>6.66</td>
<td>5 994</td>
</tr>
<tr>
<td>Marketing (freight and commission)</td>
<td>2.50</td>
<td>2 250</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13.91</strong></td>
<td><strong>12 519</strong></td>
</tr>
</tbody>
</table>

Gross margin

At an average yield of 900 icepacks per hectare and an average price of $16 per icepack, the gross return would be $14 400/ha. The gross margin (income after deducting growing, harvesting and marketing costs) for the yield, price and cost averages used here would be $1881/ha. To determine your net income, deduct fixed and capital costs such as rates, vehicle registration, insurance, electricity, administration, interest and living expenses.

Capital required

Assuming that you own or have access to suitable land, it would cost around $250 000 to $300 000 to buy the minimum amount of new machinery, plant and equipment needed to set up a 20 to 30 hectare brassica enterprise. This will depend on which crop you grow and what harvesting and packing arrangements you use. Cabbage would generally be less capital intensive than broccoli or cauliflower.

To reduce capital outlays, you could lease or borrow equipment and contract harvesting and packing operations. Second-hand equipment prices are normally about half that of new equipment, depending on condition and age.

You will also need to finance production and marketing of the crop. Brassicas are usually planted on a weekly schedule over a number of months. You may be looking at investing $100 000 to $200 000 in variable growing, harvesting and marketing costs before receiving a gross return from the first harvest.
The farm you need

Soil
Brassicas will grow on most soil types but the crop needs at least 300mm of friable, well-drained topsoil. Poorly drained soils or heavy clay soils become waterlogged after rain or irrigation, making crop management more difficult. Brassicas prefer a slightly acid soil (pH 6.0 to 6.5) but will tolerate a slightly alkaline soil, up to pH 7.5.

Climate
Brassicas grow best under cooler temperatures. Mild, sunny days with temperatures between 15° and 25°C and cool nights with temperatures between 10° and 15°C are considered ideal. Heavy winter frost (below – 4°C) can damage heads and will kill young seedlings. Some varieties will tolerate hot conditions but high temperatures will reduce both head quality and yields. Cauliflower is particularly sensitive to temperature extremes.

During extended rainy weather, plants are more likely to become infected with diseases such as black rot and bacterial head rots. These are difficult to manage once the disease is established in the field. Rainfall will also restrict machinery operations, particularly on heavy soils.

Brassica crops are attacked by a range of butterfly and moth larvae (caterpillars). These can be difficult to control, particularly in the warmer months.

Slope
Ideally slopes should be no more than 3%. A slight slope will provide better drainage while still allowing for efficient irrigation and use of machinery. Steep slopes will be more difficult and expensive to work. Uniform slopes are desirable but not essential. Soil erosion can be a problem on steep slopes while depressions can result in waterlogging.

Slopes above 5% require recognised soil conservation practices. Slopes above 8% make machinery operations hazardous and it can be difficult to maintain uniform irrigation.

Water
An adequate water supply is essential to ensure economic yields of high quality product. Each crop will require 2.5 to 4 megalitres (ML) of water per hectare, depending on season, soil type and crop type. This is equivalent to 250 to 400 mm of total rain and/or irrigation over one hectare of land.
When surface water, for example dams, is your main source of irrigation water, a storage capacity of 6 to 8 ML will be required for each hectare of crop grown. This will ensure that you have adequate water supplies to meet peak irrigation demands even in unseasonably dry conditions.

Brassicas are usually watered with overhead irrigation systems although some growers are switching to drip (trickle) irrigation.

The crop is moderately sensitive to poor quality water. Electrical conductivity is a measure of water salinity. Table 6 shows the water conductivity threshold for different soil types at which yield reductions may occur.

### Table 6. Water conductivity threshold for different soil types

<table>
<thead>
<tr>
<th></th>
<th>Sandy</th>
<th>Loam</th>
<th>Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabbage</td>
<td>3.5 dS/m</td>
<td>2.0 dS/m</td>
<td>1.2 dS/m</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>3.2 dS/m</td>
<td>1.8 dS/m</td>
<td>1.1 dS/m</td>
</tr>
<tr>
<td>Broccoli</td>
<td>4.9 dS/m</td>
<td>2.8 dS/m</td>
<td>1.6 dS/m</td>
</tr>
</tbody>
</table>

Source: NRM Facts, water series W55

Until recently water conductivity was reported in microSiemens per centimetre (µS/cm), however it is now reported as deciSiemens per metre (dS/m).

To convert from µS/cm to dS/m use the following formula.

\[
\text{microSiemens per centimetre (µS/cm)} \div 1000 = \text{deciSiemens per metre (dS/m)}
\]

Example: 1200 µS/cm divided by 1000 = 1.2 dS/m

To convert from deciSiemens per metre to microSiemens per centimetre multiply by 1000.

Example: 1.2 dS/m x 1000 = 1200 µS/cm

### The machinery and equipment you need

The machinery and equipment required will depend on the size of the enterprise and crop grown. Table 7 lists the machinery and equipment considered essential for brassica production on a small scale (20 to 30 hectares). Machinery, plant and equipment listed as desirable would make management easier by increasing flexibility and would be considered essential in a larger enterprise.

The prices listed in the table are estimates only. Rather than buying new machinery you could lease, borrow or buy second-hand equipment to reduce capital outlays. Harvesting, cooling and packing can be contracted out in most major vegetable production districts.
Table 7. Estimated cost of new machinery and equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>New price $</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ESSENTIAL</strong></td>
<td></td>
</tr>
<tr>
<td>Tractor (26 kW) for planting, cultivation, spraying, harvest</td>
<td>30 000</td>
</tr>
<tr>
<td>Tractor (45 to 60 kW) for discs, ripper, rotary hoe</td>
<td>60 000</td>
</tr>
<tr>
<td>Truck or tractor and trailer</td>
<td>10 000–40 000</td>
</tr>
<tr>
<td>Cultivation equipment</td>
<td>20 000–25 000</td>
</tr>
<tr>
<td>Bed-former</td>
<td>2 000</td>
</tr>
<tr>
<td>Transplanter</td>
<td>4 000</td>
</tr>
<tr>
<td>Fertiliser spreader</td>
<td>10 000</td>
</tr>
<tr>
<td>Spray equipment for crop</td>
<td>10 000</td>
</tr>
<tr>
<td>Irrigation equipment</td>
<td>80 000</td>
</tr>
<tr>
<td>Tractor mounted forklift</td>
<td>10 000</td>
</tr>
<tr>
<td>Pallet jack</td>
<td>700</td>
</tr>
<tr>
<td><strong>DESIRABLE</strong></td>
<td></td>
</tr>
<tr>
<td>Power harrows (1.5m width with bed-former)</td>
<td>17 000</td>
</tr>
<tr>
<td>Spray equipment for herbicides</td>
<td>4 000</td>
</tr>
<tr>
<td>Harvest aid</td>
<td>26 000</td>
</tr>
<tr>
<td>Shed forklift</td>
<td>30 000</td>
</tr>
<tr>
<td>Slasher/pulveriser</td>
<td>3 000–6 000</td>
</tr>
<tr>
<td>Sorting/packing tables and equipment</td>
<td>10 000</td>
</tr>
<tr>
<td>20 pallet coldroom</td>
<td>35 000</td>
</tr>
<tr>
<td>Forced air cooling facilities (8 pallet room)</td>
<td>50 000</td>
</tr>
</tbody>
</table>

The labour you need

One person could grow 10 to 15 hectares of crop over a six-month period with additional labour to help with transplanting, harvesting and packing. Cabbage production is less labour-intensive than cauliflower and broccoli growing.

Three people plus a driver are required for planting. This team could plant out around 5000 to 7000 transplants per hour.

A team of four can cut around three half-tonne bins of cabbage per hour. Six to eight people are needed to operate a harvest aid efficiently. Using a harvest aid, a team of eight could pick and pack between 40 to 50 icepacks of broccoli per hour or 60 to 80 cartons of cauliflower per hour. Cutting and packing rates would slow considerably when more than two or three passes are needed to harvest the crop.

Transplanting, harvesting, cooling and packing operations can be contracted out for all three crops; this reduces problems associated with managing a large number of staff.
Other considerations

Growing brassica crops involves hard, physical work. This includes land preparation, planting, spraying for weed, pest and disease control, fertilising, irrigating, harvesting and packing. There is a high labour requirement for transplanting, picking and packing, particularly for product sold in cartons or icepacks.

Management skills or access to consultants with these skills are required for managing finances, administration, staff and the crop. Good communication skills, or staff with these skills, are essential for successfully managing labour and organising markets. Skills in machinery operation and maintenance, the ability to read and understand chemical labels, and skill in observing and fixing problems in their early stages, are essential. Careful attention to detail is necessary to be a successful brassica grower.

Quality of the end product is most important in successful cabbage, cauliflower or broccoli growing. This starts with good land preparation, careful selection of varieties to suit the district and season and continues through the growing of the crop, harvesting, cooling, packing and marketing.

Brassica crops may be grown organically. However, it can be difficult to achieve adequate weed, pest and disease control.