Brassica information kit

Reprint – information current in 2004



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 We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research: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- Financial information—costs and returns listed in this publication are out of date.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 <u>www.deedi.qld.gov.au</u> 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.



GROWING GUIDE

Brassica grower's handbook

Sue Heisswolf David Carey Bronwyn Walsh

Craig Henderson John Bagshaw

Bob Davis

Contributing authors

Jerry Lovatt

Peter Rigden

Coordinator

Loraine Chapman

Department of Primary Industries and Fisheries



Brassica grower's handbook

First published 2004 Grower guide series: ISSN 0727 6273 Information series: QI04009 ISBN 0 7242 6727 1

National Library of Australia Cataloguing-in-Publication

GROWING GUIDE: Brassica grower's handbook

Includes index.

ISBN 0 7242 6727 1

1. Brassica - Queensland. I. Heisswolf, Sue. II Queensland Department of Primary Industries.

635.34

[®] The State of Queensland, Department of Primary Industries and Fisheries 2004

Copyright protects this publication. Except for purposes permitted by the Copyright Act, reproduction by whatever means is prohibited without the prior written permission of the Department of Primary Industries and Fisheries.

Enquiries should be addressed to:

Department of Primary Industries and Fisheries PO Box46 Ann Street Brisbane Qld Australia

Call Centre: 132523 Fax: (07) 5441 2235 Int Code: + 61 7 Web:www.dpi.qld.gov.au/agrilink

Disclaimer

This book is distributed by the Department of Primary Industries and Fisheries as an information source only. The information contained in it and other material incorporated by reference is provided solely on the basis that the reader will be responsible for making his/her own assessment of the content and seek professional advice. Readers must note that the information contained in this book has been developed for growers in Queensland, and the Department of Primary Industries and Fisheries and its collaborators in this product give no warranty that the information is suitable for conditions outside the Australian areas for which it is written.

Contents

	Acknowledgments iv	
	About the authorsv	
	Using this guide vi	
hapter 1	Before you start	
hapter 2	Common questions	
hapter 3	Growing the crop	
hapter 4	Key issues	
hapter 5	Contacts & references275 a list of industry organisations, product suppliers and further reading	
hapter 6	Chemical handy guides 297 a list of chemicals currently registered in Queensland and their registered uses	
Chapter 7	Index	

Acknowledgements

This Brassica grower's handbook is the next generation of a series of integrated information kits based on concepts developed by Brian Cull and Noel Vock at the Maroochy Research Station during the early 1990s.

The authors are grateful for information and advice provided by Noel Vock, John Duff, Peter Deuter, John Hargreaves, Denis Persely, Glen Geitz, Susan Hardcastle, Tim O'Hare, Eric Coleman, Shane Dullahide, Siva Subramaniam, Gary Fullelove, Steve Harper and Heidi Martin from the Department of Primary Industries and Fisheries; Rob O'Brien, Dan Tan, Brian Richardson, Dan Galligan and Peter Stephens formerly from the Department of Primary Industries and Fisheries; and Gary Dwyer formerly from the Department of Natural Resources, Mines and Energy.

Other valuable information and advice was kindly provided by Lockyer Valley Brassica growers Keith and Hazel Jackwitz, Kevin Niemeyer and Ian Rickuss; Gerard Fullerton formerly of Incitec, Graham Price of Incitec; Troy Muller of South Pacific Seeds; Mark Raitelli of Withcott Seedlings; Julian Winch of Valley Crop Monitoring Services; Mike Furlong and Ray Collins of the University of Queensland; John Whitehead of Farm Chemicals Consultants; and Jamie Cupples of Farmsafe Queensland.

The following publications and documents provided valuable information and reference material for the handbook:

Cauliflower, Broccoli, Cabbage and Brussels Sprouts in *The Physiology of Vegetable Crops,* Wien, H.C. (ed.) and Wurr, D.C.E. (1997) CAB International. pp 511-552.

Diseases of vegetable crops, Denis Persely (ed), (1994), Department of Primary Industries, Queensland. Field guide to pests, diseases and disorders of vegetable brassicas, C. Donald, N. Endersby, P. Ridland, I. Porter, J. Lawrence and L. Ransom, (2000), Department of Natural Resources and Environment, Victoria.

Growing Broccoli in Queensland, S. Heisswolf and P. Deuter, (1992), Department of Primary Industries, Queensland.

Growth Stages of Brassica crops for crop protection purposes, Theunissen, J. and Sins, A. (1984) Scientia Horticulturae 24: 1-11.

Health and safety of workers in the rural industry, Summary report No. 2000-2001, Qstats, Queensland Government.

Insect pests of fruit and vegetable crops, G.A. Swaine, D.A. Ironside, R.J. Corcoran (eds.) 2nd Edition, (1991), Department of Primary Industries, Queensland.

Managing Farm Safety – difficulties and solutions, Australian Centre for Agricultural Health and Safety, The University of Sydney.

Plant nutrient disorders 3, Vegetable crops, R.G. Weir and G.C. Cresswell, (1993), New South Wales Agriculture, Sydney.

Chemical information was extracted from the *Infopest* database on-line (September 2004) produced by Department of Primary Industries and Fisheries. The summarised market price information was kindly provided by Market Information Services, Brisbane and Flemington Market Reporting Services, Sydney.

Photographs were kindly provided by the book's authors; Peter Deuter or sourced from *Pests and beneficials in Brassica crops*, S. Heisswolf and E. Brown, (1997), Department of Primary Industries and Fisheries.

Sue Heisswolf is a Senior Extension Horticulturist with the DPI& at Bowen Research Station. She has 14 years experience working with the vegetable industry, specialising in brassicas and lettuce from 1990 to 2002 while at based at Gatton Research Station. Her expertise includes integrated pest management, property management planning, environmental management, and development and delivery of information and training to industry.

David Carey is a principal of the horticultural consulting company Vegetech, based in Toowoomba. He has 20 years experience working with vegetable producers from the Granite Belt, Darling Downs and Lockyer Valley. His expertise includes pest and disease management, nutrition, varietal selection, marketing and quality management, particularly in Brassica, celery and lettuce crops.

Bronwyn Walsh is an Entomologist with the DPI&F at Gatton Research Station where she has worked for the past 8 years. She has expertise in developing integrated pest management systems in a range of horticultural crops including brassicas, potatoes and strawberries.

Bob Davis worked for the DPI&F for over 30 years as an experimental officer and Senior Plant Pathologist. During that time he worked on a very wide range of field crops and vegetable crops. He has a wealth of experience in all aspects of managing plant diseases including those of brassicas and related crops. He retired in 2002 while based at Gatton Research Station.

Craig Henderson is a Principal Horticulturist with the DPI&F at Gatton Research Station. He has over 15 years experience in a range of vegetable crops including brassicas, lettuce, potato, onion, sweet corn, sweet potato, beets and vegetable legumes. His areas of expertise include integrated weed management and water management in horticultural production. John Bagshaw is a Senior Extension Horticulturist with the DPIEF at Indooroopilly Research Centre. He has worked in the horticultural industry for 30 years, first in South Australia and since 1987 in Queensland. He has a broad knowledge of the Australian fruit and vegetable industries with specific expertise in post harvest management, quality assurance, food safety systems and environmental management.

Jerry Lovatt is a Senior Information Extension Officer with the DPI&F at Bundaberg Research Station. Since joining DPI&F in 1967, he has worked at six centres around Queensland where he has accumulated a wealth of knowledge about horticulture, particularly vegetables. Jerry joined the Agrilink project team in 1993 and has been responsible for the development of eight information packages for vegetable crops.

Peter Rigden joined the DPI&F in 1997 and currently works as a Development Extension Officer at both Maroochy and Gatton Research Stations, providing an information and advisory service to growers in southern Queensland. Peter has 24 years experience in the horticulture industry with expertise in farm management, extension and information development. He has been involved in the production of seven Agrilink information kits.

Loraine Chapman is the Publishing Production Officer with DPI&F at Maroochy Research Station, Nambour. She has over 12 years experience in publishing, coordinating and editing Agrilink and other publications for DPI&F. Loraine has also published several information CDs including Agrilink Strawberry Information Online, Agrilink Citrus Online and Citrus Pests and their Natural Enemies.

Using this guide

The handbook is constructed around two important principles. Firstly, it focuses on the core information that is most needed and regularly used by growers. Hence, it does not provide detailed information on all areas of growing the crop; where additional information is available and considered useful for further study, references are provided. Secondly, the information is presented in line with how it has been sought from the authors over a number of years. Hence, there are different chapters of the handbook designed to suit different needs. Here is a brief roadmap:

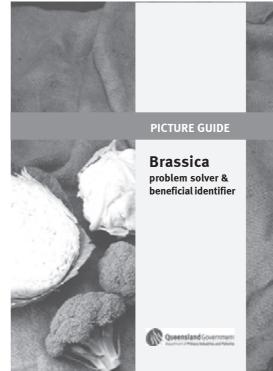
	If you are an:	Start with:
	Intending grower (thinking about growing brassica)	Before you start—a checklist of the things you need to know before you start growing the crop, and will give you the best introduction into other sections of the handbook. Other useful chapters are: Common questions—the most commonly asked questions about growing the crop Contacts—a list of industry organisations, prod- uct suppliers References—further reading
at k ex	New grower (about to establish a crop, in the process of doing so, or in the first year or two of growing the crop)	Growing the crop—the authors' guide for establishing, growing, harvesting and mar- keting the crop and will refer to other appro- priate sections of the handbook where needed. Other useful chapters are: Key issues—detailed information on the key decisions for brassica growers Contacts—list of industry organisations, prod- uct suppliers References—further reading Handy guides—list of chemicals currently registered in Queensland and their registered uses
	Established or more experienced grower	Key issues —this chapter contains the most detailed technical information on the key de- cisions for growers. Other useful chapters are: Handy guides —list of chemicals currently reg- istered in Queensland and their registered uses

Remember that the handbook contains a detailed index

Limitations

There are some limitations in using this handbook. These include:

• The book does not contain colour pictures of pests, diseases or other problems that occur in brassica crops. Phototgraphs of these, along with suggestions on how to solve them, are found in the companion book—*PICTURE GUIDE: Brassica problem solver and beneficial identifier.*



 We do not intend that the handbook be used as the only tool in reaching key management decisions. We always recommend that you also seek independent advice from consultants and other

professionals servicing your industry.

- Chemical registrations can change. Always check the registration details on the label before using the product. Sources of updated information are found in Chapter 5, *Contacts and references*.
- Varieties can also change quickly. Consult seedling or seed suppliers and other professionals servicing the industry for up-to-date varietal advice.

The book is available from most DPIF offices and **DPI&F Publications** GPO Box 46 BRISBANE QLD 4001 Ph: 1800 816 541 Fax: (07) 3239 6509 Email: books@dpi.qld.gov.au Web: www.dpi.qld.gov.au/ catalogue