



Organic viticulture: An Australian manual

David Madge

Department of Primary Industries
Primary Industries Research Victoria
Irymple, Victoria

Organic viticulture: an Australian manual

David Madge

Department of Primary Industries

Primary Industries Research Victoria

email: david.madge@dpi.vic.gov.au

Published by

Department of Primary Industries

Box 905 MILDURA Victoria 3502

Australia

Tel: (03) 50514500

Fax: (03) 50514523

Also published on www.dpi.vic.gov.au

© State of Victoria, Department of Primary Industries 2007

This publication is copyright. No part may be reproduced by any process except in accordance with the provisions of the Copyright Act 1968.

First published June 2005

Revised edition January 2007

ISBN 1 74146 388 2 (Hard copy & Internet version)

ISBN 1 74146 396 3 (CD-ROM version)

Note. The following pages are blank in the printed version of this manual and have been removed from the electronic versions: ii, 2-8, 2-12, 3-8, 3-12, 4-4, 5-28, 8-6, 9-12, 9-16, 9-26, 10-28, 11-4, 12-6 & 17-6.

Find more information about DPI on the Internet at www.dpi.vic.gov.au

Disclaimer

The advice provided in this publication is intended as a source of information only. Always read the label before using any of the products mentioned. The State of Victoria and its employees do not guarantee that the publication is without flaw of any kind, or is wholly appropriate for your particular purposes and therefore, disclaims all liability for any error, loss or other consequence that may arise from you relying on any information in this publication.

Table of contents

| | | | |
|--|-------------|---|-------------|
| Acknowledgments | iv | Grapevine scale | 10-9 |
| 1 Introduction | 1-1 | Grasshoppers & Locusts | 10-10 |
| 2 Principles, standards & inputs | 2-1 | Leaf and root-eating weevils | 10-12 |
| 3 Vineyard establishment & conversion | 3-1 | Lightbrown apple moth | 10-14 |
| 4 Environment & landscape management | 4-1 | Mealybugs | 10-17 |
| 5 Soil management | 5-1 | Mites | 10-18 |
| Managing the soil as a resource | 5-2 | Nematodes | 10-20 |
| Managing the nutrient cycle | 5-8 | Phylloxera | 10-22 |
| 6 Water management | 6-1 | Snails | 10-24 |
| 7 Weed, disease & pest overview | 7-1 | Wood-boring beetles & weevils | 10-26 |
| A whole system approach | 7-1 | Wood-boring caterpillars | 10-27 |
| Aiming for a balance | 7-2 | 11 Vertebrate pest management | 11-1 |
| Integrated management | 7-3 | Birds | 11-1 |
| 8 Weed management | 8-1 | Rabbits & hares | 11-3 |
| 9 Disease management | 9-1 | 12 Contamination risks | 12-1 |
| Black spot | 9-1 | 13 Machinery | 13-1 |
| Botrytis bunch rot | 9-2 | 14 Waste management | 14-1 |
| Downy mildew | 9-5 | 15 Useful resources | 15-1 |
| Eutypa dieback | 9-6 | 15.1 Organic industry regulation | 15-1 |
| Phomopsis | 9-7 | 15.2 Organic industry representation | 15-1 |
| Powdery mildew | 9-8 | 15.3 AQIS-accredited organic certifiers | 15-1 |
| 10 Invertebrate pest management | 10-1 | 15.4 Pest & disease diagnostic services | 15-2 |
| African black beetle | 10-1 | 15.5 Soil & plant analysis services | 15-3 |
| Ants | 10-3 | 15.6 Biological control suppliers | 15-4 |
| Budworm | 10-4 | 15.7 Other suppliers | 15-5 |
| Cutworm | 10-5 | 15.8 Organic vineyards on the Internet | 15-6 |
| Earwigs | 10-6 | 16 References | 16-1 |
| Fruit fly | 10-7 | 17 Bibliography | 17-1 |
| Grapevine moth | 10-8 | 18 Index | 18-1 |

Acknowledgments

This publication is a product of the research project 'Best practices for organic winegrape production'. The author gratefully acknowledges and thanks the following organisations and individuals for their assistance and support for this project:

- * The Grape and Wine Research and Development Corporation and Department of Primary Industries (Victoria) for funding the project.
- * The following organic grape growers and vineyard managers for their time and willingness to share their considerable knowledge and experience for the benefit of the organic viticulture industry:

| | | | |
|--|--|---|-------------|
| Bruce & Susan Armstrong | Jeffrey & Sue Dickinson | Stephen Morris; Pennyweight Winery | Jenny Vonic |
| Ian, Gary & Neil Armstrong | Andrew Jones | Tony Scherer; Frogmore Creek Vineyard | Ann Wells |
| David Bruer & Plamen Paraskevov; Temple Bruer Wines | John Kalleske; Kalleske Enterprises | John Matz, Greg Harrold & Petra Donaldson; Penfold's Clare Estate | |
| Steve Caracatsanoudis; Robinvale Wines | Kevin & Trina Karstrom; Botobolar Vineyard | Richard & Sam Statham; Rosnay Organic Farms | |
| Julian & Carolann Castagna; Castagna Vineyard | Ron Loughton; Jasper Hill Vineyard | Leigh Verrall; Glenara Vineyard | |

- * The organic certification organisations: Australian Certified Organic, National Association for Sustainable Agriculture Australia, Organic Growers of Australia and Tasmanian Organic-Dynamic Producers for assistance in contacting their certified organic grape producers.

- * The following specialists for assisting with technical information, data or advice:

Martina Bernard, Entomologist, Centre for Environmental Stress and Adaptation, La Trobe University, VIC.

Troy Clarkson, Soils Project Leader, Department of Primary Industries VIC.

Mary Cole, Pathologist, Monash University, VIC.

Peter Crisp, Pathologist, School of Agriculture & Wine, University of Adelaide, SA.

Bob Emmett, Pathologist, Department of Primary Industries VIC.

Duncan Farquhar, Horticulturist, Department of Primary Industries, Water & Environment, TAS.

David Gadoury, Pathologist, Cornell University, Geneva, USA.

Gervaise Gaunt, Livestock Research Scientist, Department of Primary Industries VIC.

Jeffrey Granett, Entomologist, Department of Entomology, University of California, Davis, USA.

Doug Gubler, Pathologist, Department of Plant Pathology, University of California, Davis, USA.

Stewart Learmonth, Entomologist, Department of Agriculture WA.

Peter Magarey, Pathologist, Primary Industries and Resources SA.

Glenn McGourty, Co-operative Extension Adviser, University of California, Mendocino County, USA.

Michael McKenry, Nematologist, University of California, Riverside, USA.

Mahabubur Mollah, Agricultural Engineer, Department of Primary Industries VIC.

Chris Penfold, Senior Research Officer, Agronomy & Farming Systems, University of Adelaide, SA.

Michael Treeby, Plant Physiologist, CSIRO Plant Industry, VIC.

Steve Wratten, Ecologist, National Centre for Advanced Bioprotection Technologies, Lincoln University, NZ.

- * The following technical referees for reviewing and commenting on specific sections of this publication:

Viv Burnett, Troy Clarkson, Maxine Schache, Jenny Treeby, Greg Buchanan, Malcolm Campbell, Christiane Jaeger, Bob Emmett, Mahabubur Mollah and Lyn McMahon. Thanks also to Lyn McMahon for checking the grammar throughout the publication and Alan Roberts for reviewing all chemical references.

- * The following for use of their photographs (page number in brackets):

Australian Museum: Little Mastiff bat (7-8)

Greg Buchanan: Bird-pecked grapes (11-1)

DPI Farm, Irymple: Sprayer in vines (7-2)

Graphic Science 2000: Locusts (10-10 & 10-11)

Julie Hawtin: Parasitised caterpillar (7-3), Predatory shield bug (10-8), quarantine sign (10-23), snail (10-24) & vineyard spraying (12-1)

Miriam Pywell: Grapevine scale (7-3) & *Cryptolaemus* ladybird (10-18)

Deborah Walton: Dwarf sheep (8-1)

1 Introduction

For some years, the market for organic food has been amongst the fastest growing market sectors internationally, as consumers exercise their choice for 'clean' and environmentally friendly products. However, primary producers seeking to adopt organic methods or make the change to full organic production often find it difficult to source the information they need. In many cases the information required does exist, but must be obtained from a diverse range of sources which is a time-consuming task.

In an effort to address the information needs of grape growers, this publication records practices currently used for organic grape production in Australia, together with other approaches and research findings that provide opportunity for advancing the organic sector of Australian viticulture.

The information has been collated from a range of sources including Australian and international research programs, literature and importantly, the experience of organic grape growers in South Australia, Victoria, Tasmania and New South Wales. Many thanks go to those vineyard managers who willingly shared their experiences in order to help others learn and advance.

It is hoped that this publication will be a useful guide for those contemplating a move into organic viticulture, as well as those who simply want to modify certain practices in their progression towards more sustainable viticulture. This information is also intended to assist existing organic grape growers in the continual improvement of their production systems.



Scope of this document

This publication focuses on the practicalities of grape production from an organic management point of view. It does not present all the basic information necessary for viticultural success, such as determining nutrient requirements, detailed pest biology or spray application techniques, as this is well documented elsewhere (refer to the Bibliography and References).

Grape growers will gain most value from this document by considering it in conjunction with other appropriate viticulture guides. These include the grape "Diseases and Pests" book (Nicholas et al. 1994) and the "Code of environmental best practice for viticulture" (McConnell et al. 2003). The Bibliography and Reference list contain details of these and other useful publications.

Layout

In general, each major section of this document contains the following parts:

What the National Standard says:

These are brief, pertinent extracts from the Principles and Standards sections of Australia's National Standard for Organic and Bio-Dynamic Produce (Organic Produce Export Committee 2002).

The actual 'Standards' list the minimum criteria that must be satisfied, for the vineyard and its produce to achieve and maintain organic certification.

1 Introduction

The 'General principles' of organic standards provide a brief outline of some key principles of organic agriculture that underlie the standards relating to the specific topic. To develop a sound organic vineyard, a grower needs to understand and apply the principles, not just comply with the standards.

Growers should consult the Standards of their particular certifier (see sections 2 and 15.3) for a complete listing of recommendations and requirements.

An introduction:

For major topics - their relevance and importance from an organic perspective.

For secondary topics such as specific pests - a brief description of the pest.

Acceptable inputs:

This is a generic list of organically acceptable vineyard inputs such as nutrient sources and pesticides.

Management techniques:

Approaches and techniques used in Australia and overseas to address specific issues with organic practices.

Grower experiences and practices:

These are brief notes on current practices and experiences of organic grape growers in Australia. They are summarised under rough climatic groupings where appropriate, to allow the reader to relate specific management approaches more closely to their own situation. The climatic groupings relate to mean January temperature (MJT) and growing-season rainfall (October to March) as follows:

Cool-warm = MJT of 21°C or less

Warm-hot = MJT greater than 21°C

Moist = growing season rainfall of 350mm or more

Dry = growing season rainfall of 280mm or less

As would be expected amongst a number of growers, some experiences and practices are repeated. This repetition has been maintained in the notes, to indicate how common particular experiences and practices are.

Research:

Recent or current research with implications for organic management programs.

A note on inputs for weed, disease and pest management

Pesticides registered with the Australian Pesticides & Veterinary Medicines Authority (APVMA) for weed, pest and disease control are listed as 'Acceptable registered inputs' if one or more of Australia's organic certification organisations has approved their use in certified organic production systems. These substances are referred to by their generic name, like 'sulphur' and 'pyrethrum extract' rather than by the trade names of all the individual products that are currently registered. Input products that are organically acceptable and do not require APVMA registration are listed as 'Other acceptable inputs'.

Because organic certifiers can differ in the input products they accept, it is important for certified grape growers to confirm the acceptability of specific inputs with their particular certifier.

Further information

Sources of further information can be found in the References list for articles cited in the text by the author and year, and in the Bibliography.

Some information can be difficult to access. Wherever possible, links have been included to relevant information available on the Internet. To get round the problem of broken or lost links, the author has archived copies of the documents referred to in this publication. In the event that a desired reference cannot be easily obtained, please contact the author.