SOILpak – vegetable growers - Readers' Note

This document is part of a larger publication. The remaining parts and full version of the publication can be found at:


Updated versions of this document can also be found at the above web address.

This document is subject to the disclaimers and copyright of the full version from which it is extracted. These disclaimers and copyright statements are available in the appropriate document at the above web address.
SOILpak for vegetable growers

Compiled by

Bernie McMullen
Industry Development Officer
(Horticulture)
NSW Agriculture
IMPORTANT: PESTICIDES AND ALLIED CHEMICALS ACT 1978
You must use a registered product.
You must not use it for any purpose or in any way not specified on the labels, unless a permit has been obtained under the Act.

© 2000 NSW Agriculture.
This publication is copyright. Sections of this publication may be copied, providing that you include in a prominent position the words, 'reproduced with permission of NSW Agriculture'. Permission is not granted to make a copy where the copy is made saleable or where a charge is made for making and supplying that copy.

SOILpak™ is a registered trademark of NSW Agriculture

First edition 2000

Copies of this manual can be purchased from NSW Agriculture.
For 24-hour service, ring 1800 028 374 or fax 1800 642 065.

ISBN for the SOILpak series
0 7310 9848 X
ISBN for the title 0 7347 1168 9

Edited by Ann Munroe,
Warriewood NSW 2102
Photography by Graham Johnson, Justin Hughes, Col Begg, Don Blackmore, Ben Rose Bernie McMullen, Guy Van Owen and Ashley Senn
Typeset by Barry Jensen,
NSW Agriculture, Orange
Contents

Foreword

Preface

Disclaimer

Part A  Introduction
   Chapter A1  Users’ guide
   Chapter A2  Summary of NSW vegetable production districts
   Chapter A3  Features of soil
   Chapter A4  Trouble-shooting guide

Part B  Common problems and strategies
   Chapter B1  Common problems
   Chapter B2  Weed control
   Chapter B3  Harvesting on wet soil
   Chapter B4  Poor seedling emergence
   Chapter B5  Does my soil need lime?
   Chapter B6  Does my soil need gypsum?
   Chapter B7  Managing saline soils
   Chapter B8  Dispersion
   Chapter B9  How do I control erosion?
   Chapter B10  Does my soil need fertiliser?
   Chapter B11  Case study 1

Part C  Vegetable-growing landscapes
   Chapter C1  Sandhill soils
   Chapter C2  Red brown earths
   Chapter C3  Transitional red brown earths
   Chapter C4  Alluvial soils
   Chapter C5  Self-mulching clays
   Chapter C6  Case study 2

Part D  Soil testing and management
   Chapter D1  Soil examination and structural rating
   Chapter D2  Soil texture tests
   Chapter D3  Chemical tests
   Chapter D4  Slaking and dispersion
   Chapter D5  Sodic soil management
   Chapter D6  Improving soil structure by crop rotation
   Chapter D7  Cultivation and soil structure
   Chapter D8  Landforming and soil management
   Chapter D9  Irrigation scheduling
## Part E  Key checks

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Key checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Key checks for productive irrigated soils</td>
</tr>
<tr>
<td>E2</td>
<td>Management strategies for key checks</td>
</tr>
<tr>
<td>E3</td>
<td>Case study 3</td>
</tr>
</tbody>
</table>

## Appendixes

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Glossary and index to glossary</td>
</tr>
<tr>
<td>2</td>
<td>Soil description sheets</td>
</tr>
</tbody>
</table>
Foreword

Healthy soil produces enough food, fibre and timber to provide for our daily needs and export to the rest of the world so that we can enjoy a high standard of living.

But Australia’s soils are old and fragile and need to be well cared for, if agriculture is to be economically and environmentally sustainable.

Problems of salinity, fertility, acidity, soil structure, erosion and water quality have led to growing acceptance by land managers, Governments and environmentalists that some agricultural practices must change to ensure a viable future for primary production. This is especially true in vegetable production where the soil needs to be maintained in as ideal a condition as possible for sustained returns to growers.

While this manual concentrates on diagnosing soil problems, its main aim is to prevent these problems occurring. There are sections on managing soil structure, preventing and treating erosion, acidity and salinity and determining how best to apply fertiliser.

Funding for the manual has come from the Natural Heritage Trust, through the National Landcare Program.

It has been prepared by Mr Bernie McMullen, Industry Development Officer (Horticulture) with NSW Agriculture, and Mr Justin Hughes, a Technical Officer with the Department of Land and Water Conservation. Members of the vegetable industry were consulted throughout the manual’s development.

I commend all those involved for their thoroughness in bringing together so much valuable information on sustainable soil management for vegetable growers. I am sure this manual will be an essential tool for all those involved in vegetable growing throughout the state.

Richard Amery
Minister for Agriculture
Minister for Land and Water Conservation
Preface

This publication is designed to help vegetable growers and advisers make on-farm soil management decisions.

Vegetables in New South Wales are grown on a wide range of soil types under varying production regimes. This SOILpak targets the main soil groups used for vegetable growing and addresses the key soil management problems and strategies.

Farmers seeking to make soil management decisions should use this manual in association with their local knowledge and information supplied by district horticultural advisers.

FUNDING

National Heritage Trust and sponsors (Hi Fert Pty Ltd and Phosyn International Ltd).

REVIEWERS

Ian Daniells, Soil Scientist, NSW Agriculture, Tamworth
Martin Blumenthal, Program Leader (Soil Management) NSW Agriculture, Orange
Mark Hickey, District Horticulturist, NSW Agriculture, Yanco

CONTRIBUTORS

Bernie McMullen, Industry Development Officer (Horticulture), NSW Agriculture
Justin Hughes, Formerly Soils Advisory Officer, NSW Agriculture, Deniliquin

ADMINISTRATIVE ASSISTANT

Freda Garside, Clerical Officer, NSW Agriculture, Bathurst Agricultural Research Station.
Disclaimer

It is important to read this disclaimer before using the manual.

NSW Agriculture, by releasing and printing this manual and the information contained in it, does not assume any liability for any crop loss, animal loss, public health impacts, safety or environmental hazards caused by the use of any part or the whole of this manual.

Whilst every attempt has been made to ensure the accuracy and integrity of the information and description sheets supplied in this manual, it should be understood that (due to new research information, new industry experiences, unpredictable weather and variations in the way individual farmers set up equipment or have access to equipment) no warranty or guarantee is given or implied by the above organisations, nor by the people working or contracted by those organisations to supply the information. The manual does not claim to be complete and all inclusive, but it aims to grow with the input of all who use and report on it.

Where trade names of products and equipment are used, no endorsement is intended, nor is criticism implied of products not mentioned.

This manual does not contain a complete statement of all relevant legal obligations. You should seek your own legal advice as to both legislative and general legal obligations, in particular those legal obligations arising under environmental laws and the general laws of negligence.