

Final Report

The Australian potato growers' manual

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AgCommunicators

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The Australian potato growers’ manual (PT19003)

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Public summary

The Australian Potato Growers Manual has been developed by Hort Innovation and its project partners as a comprehensive reference guide for Australian potato growers and their advisers.

Potatoes are by far the most significant vegetable crop grown in Australia, with well over one million tonnes harvested every year. Potatoes are grown across the country under a wide range of soil and climatic conditions.

Around 60% of Australia’s annual potato production is processed for crisps and fries, with the balance being sold fresh to local consumers or exported. In 2021, Australia’s sold 30,759 tonnes of fresh and chilled potatoes overseas, earning \$22.4 million. The key overseas market is South Korea, followed by the Philippines, Malaysia, Singapore, and Hong Kong.

As fits such a significant industry sector, there has been substantial investment in potato industry research over many years – both in Australia and overseas. However, Tasmanian potato grower and industry advocate Daryl Lohrey identified the need to collate this information into a single, comprehensive resource for the Australian industry and suggested the concept of this Growers Manual to Hort Innovation.

The first challenge was simply defining the scope of the Manual. After much discussion, it was decided the Manual would be most valuable if it included entry-level knowledge that would benefit new industry entrants and serve to refresh essential information for established operators.

A structure was agreed, based on the key stages of potato production:

- Overview
- Potato Growth Requirements
- Seed Quality
- Growing The Crop
- Harvest
- Storage
- Precision System Technologies

The Content Development Team were then able to research and write their individual chapters. Each chapter is designed to compile available industry knowledge, past research findings, online resources, current best practices and available technologies for each subject area.

This draft content was reviewed for accuracy and practical validity by members of the Technical Oversight Committee, along with industry representatives including growers and potato processors.

We believe the Australian Potato Growers Manual will quickly establish itself as a valuable, practical and highly accessible resource for the Australian Potato Industry – and especially for independent participants such as smaller growers.

The Manual can be used online or downloaded and used independently of internet access.

The PDF platform can be easily accessed on almost any device. It has the capacity to support significant interactivity within the text, while ensuring the integrity of the Manual’s appearance and layout regardless of how or where it is viewed.

This electronic delivery model removes a publication cost for users and it can be seamlessly updated to subsequent editions as new information and industry feedback is incorporated.

The Australian Potato Growers Manual will be published on the Potatolink platform and via the Hort Innovation website

Awareness of the Manual has been promoted through the AusVeg *PotatoLink* industry magazine, emails to industry leaders and on social media.

Keywords

Potato; potatoes; potato manual; potato guide; potato production; seed potato; potato diseases; potato storage; vegetable cropping; crop rotation; agricultural technology

Introduction

The Australian Potato Growers Manual is designed to be a comprehensive reference guide for Australian potato growers and their advisers.

Potatoes are easily Australia's most significant vegetable crop, and a significant crop globally.

Most aspects of potato taxonomy, growing conditions, nutrition and irrigation, pests and diseases and production processes have been subject to extensive research both in Australia and overseas.

This Manual was conceived as a resource for Australian potato growers and advisers that would bring this disparate knowledge together in a single publication.

It was important to recognise that the huge volume of published information could not all be included in one document. Indeed, it could barely be contained in one library!

Instead, a decision was taken early on to include all essential information with a reasonable depth of detail, such that a new entrant looking to build their knowledge, or an established grower looking to refresh their memory, would find the Manual highly useful.

In order to make the Manual usable, however, the depth of detail has been tempered by the extensive use of hyperlinks to external online resources that can be accessed to enhance the information provided. This approach recognises and respects other publications and contributors, as well as providing additional knowledge for those who want it.

Methodology

In order to produce a new Australian Potato Growers Manual, delivery partner AgCommunicators identified suitable subject matter experts and convened a Content Development Team comprising:

- Dr Melissa Fraser, South Australian Department of Primary Industries and Regions (PIRSA)
- Dr Michael Rettke, South Australian Research and Development Institute (PIRSA-SARDI)
- Dr Nigel Crump, Australian Seed Potato Industry Certification Authority (AusPICA)
- Dr Jenny Ekman, Applied Horticultural Research (AHR)
- Dr Julie O'Halloran, Department of Agriculture and Fisheries, Queensland

The objective for this team was the selection, compilation, structuring and drafting of content for the Manual.

Their work and output was overseen by a Technical Advisory Committee, made up of industry representatives including:

- Anne Ramsay, Potato Processing Association of Australia (PPAA)
- Peter O'Brien, AgAims
- Frank Mulcahy, The Spud Doctor
- Daryl Lohrey

Working together via Teams meetings, to negate the constraints of COVID-19 and distance, these two committees soon agreed that the sheer volume of already available information on potato production made producing a manual that was all-encompassing would be quite impossible.

Instead, it was agreed that the Manual would be most valuable if it included entry-level knowledge that would greatly benefit those contemplating potato production for the first time or after a long break, while providing a valuable source of essential and refresher information for established operators.

Within this framework, the Manual would be able to reference – and provide easy access to – a wealth of more detailed information for growers to follow up as appropriate.

The Manual structure was then agreed, based on the key stages of potato production. Members of the Content Development Team were then able to research and write their individual chapters as follows:

- Overview Dr Melissa Fraser, PIRSA

- Potato Growth Requirements Dr Melissa Fraser, PIRSA
Dr Michael Rettke, PIRSA-SARDI
- Seed Quality Dr Nigel Crump, AusPICA
and Nellie Malseed, AusPICA
- Growing The Crop Dr Melissa Fraser, PIRSA
with Dr Paul Horne, Integrated Pest Management Technologies
and Dr Michael Rettke, PIRSA-SARDI
and Sarquin Hunt, PIRSA
- Harvest Dr Nigel Crump, AusPICA
and Nellie Malseed, AusPICA
- Storage Dr Michael Rettke, PIRSA-SARDI
and Dr Jenny Ekman, Applied Horticultural Research (AHR)
- Precision System Technologies Dr Julie O’Halloran, DAF Queensland

This draft content was reviewed for accuracy and practical validity by members of the Technical Oversight Committee, along with industry representatives including growers and potato processors including.

- Michael Hicks, Snackbrands
- Tony Gietzel, Pepsico
- Louw Lourens, LambWeston
- Sam Humphries, formerly Pepsico
- Josh Opas, McCain
- Daniel Grayling, McCain

Toward the end of the revision process, the content draft was also reviewed by Hort Innovation. Feedback was received by AgCommunicators via Jason Hingston and incorporated into the final content draft.

Once the text had been finalised the Manual content was designed for electronic publication as a PDF file.

This electronic delivery model removes a publication cost for users and it can be seamlessly updated to subsequent editions as new information and industry feedback is incorporated. It is also navigable and hyperlinked. Extensive use is made of these features to allow users to move between related sections within the Manual, and to view many external resources for additional or more in-depth information.

The design of the Manual utilises a distinct colour theme for each section, to help users navigate the different chapters.

Imagery has been sourced from a range of sources – including considerable contributions by members of the Technical Advisory Committee and industry representatives. Additionally, AgCommunicators undertook a two-day photography session at Mitolo Family Farms Nildottie and Pyap for general potato crop imagery.

The wide range of contributors ensured a range of potato farms and growing conditions are reflected in the Manual. The images cover a diversity of growing locations and their regional growing nuances, from the Atherton tablelands in Queensland to northern Tasmania to the South Australian Mallee were all represented.

Permission to use images and graphics from a range of quoted external sources was also sought and obtained.

Image acknowledgements have been provided throughout the manual.

Results and discussion

The Australian Potato Growers Manual will be published on the PotatoLink platform and via the Hort Innovation website.

The Manual is designed to be used online or downloaded and used independently of internet access.

In addition, AgCommunicators has produced a media release along with social media tiles and post text that can be used to encourage uptake of the Australian Potato Growers Guide by industry, and subsequent input for future editions.

This Australian Potato Growers Manual, 1st Edition, June 2022, should prove to be a very useful resource for Australian potato producers.

By doubling as a convenient reference and a curated portal to other online resources and research, the Manual can be an indispensable asset – especially for smaller, independent growers and advisers.

The PDF platform can be easily accessed on almost any device. It has the capacity to support significant interactivity within the text, while ensuring the integrity of the Manual’s appearance and layout regardless of how or where it is viewed.

Outputs

Table 1. Output summary

Output	Description	Detail
Draft content structure – <i>Australian Potato Growers Manual</i> Completed July 2021	Proposed chapter and content structure, developed to outline and organise the content of the Manual as outlined in the M&E plan and further developed by the Project Team and Technical Review Committee. Presented for review by the Technical Advisory Committee and Delivery Partner. Used by the Project Team to develop their content for the document text.	The draft content structure was required to finalise the included subject matter and organise this content into a logical, meaningful and usable order. This process was required to manage what was briefed as a very complex and comprehensive industry guide. The structure resulted from several discussions to define the Manual’s intended use and users, required inclusions, level of detail and the most logical information architecture. The resulting document was presented as a draft table of contents, that was agreed by the Project Team and Technical Advisory Committee. The Project Team were then able to use this structure to source, compile and draft their chapter content.
1 st draft text – <i>Australian Potato Growers Manual</i> Submitted September 2021	Initial draft of Manual content, written by members of the Project Team. Presented for review by the Delivery Partner, the Technical Advisory Committee and Hort Innovations.	The draft text document was a compilation of chapter drafts submitted by members of the Project Team. Developing this draft content highlighted the extraordinary scope and complexity of the project to the Project Team members and the Delivery Partner. The draft text was presented for content review and editing by the Technical Advisory Committee, industry representatives, the Delivery Partner and Hort Innovations. Owing to the complexity of some content areas and the external pressures present during 2021, sections of the draft content were not fully complete until December (most notably Chapter 3 ‘Growing the crop’ and Chapter 6 ‘Precision system technologies’).
Australian Potato	Completed publication.	The completed final version of the first edition reflects the

<p>Growers Manual – 1st Edition</p>	<p>Ready for distribution and online publication by Hort Innovations</p>	<p>extensive revision, image sourcing, design and layout, and interactivity development that follows the drafting process.</p> <p>The Manual is arguably more complex than was first envisaged.</p> <p>This output is a high quality and highly detailed industry resource. The ability to include hyperlinked external resources makes the information available to Australian potato growers and industry for more extensive than would otherwise be possible.</p> <p>The Australian Potato Growers Manual is intended for use by the Australian potato growers, advisors and other industry stakeholders. Their hands-on use and feedback will continue to add value to future editions.</p>
<p>Media release</p>	<p>Media release announcing availability of the Australian Potato Growers Manual to industry.</p> <p>For publication in PotatoLink magazine and submission to other agriculture/horticulture outlets.</p>	<p>AgCommunicators has prepared a media release to advise industry that the new Australian Potato Growers Manual is available for uptake.</p> <p>This media release will be published in the national industry PotatoLink magazine’s Winter edition – providing highly targeted reach to industry stakeholders.</p> <p>The success of this output will be measured by views and downloads of the Manual, as tracked through metrics for the hosting web page server.</p>
<p>Social Media Collateral</p>	<p>Social media tiles (graphics) and post text for use on Hort Innovation social media channels.</p>	<p>Social media is a popular and highly responsive communication channel that is widely used by farmers.</p> <p>These social media assets are intended to help make industry stakeholders aware of the Australian Potato Manual and provide a direct link to the resource.</p>

Outcomes

The Australian Potato Growers Manual has been delivered as a comprehensive guide to potato production in Australia.

It is a 164-page PDF document that makes extensive use of interactive links to ‘include’ immeasurable further resources online.

Typography, colour, graphics and images have all been used extensively to enhance the usability of the document. The PDF format also incorporates active links between sections of the document, so users can easily locate and read relevant information in different parts of the Manual.

The format can be viewed and used online or downloaded to almost any screen device and referred to without internet access, so that the Manual can be referred to and applied in potato paddocks, where internet access may be poor.

Table 2. Outcome summary

Outcome	Alignment to fund outcome, strategy and KPI	Description	Evidence
Delivery of an online/electronic Australian Potato Growers Manual that compiles relevant best practice national and international potato research, industry standards, R&D findings, new technological advances and innovation.	Manual content (including structure, text and graphics) is aligned with aligns with the Potato Grower Strategic Investment Plan 2017-2021 strategy outcomes geared at increasing industry profitability, increasing growers average returns, increased on-farm innovation and improving average yields of tubers within premium specification.	Content development included the incorporation of feedback from members of the Technical Advisory Committee members and industry participants.	Relevance and usefulness of the Manual to the needs of Levy payers and industry stakeholders has been largely subjective – assessed though feedback on draft content from the Technical Advisory Committee members and industry contacts. The incorporation of suggestions to further improve the accuracy and relevance of the content is evidence that content has been developed in line with industry expectations.

Monitoring and evaluation

AgCommunicators and the Project Team, working with the Technical Advisory Committee and industry representatives, has delivered a new Australian potato Growers Manual that we are confident meets all the criteria for this project. We are confident we have delivered a comprehensive guide that useful and usable for the intended audience – especially potato growers.

Industry feedback on the content, text and layout of successive development drafts has been very positive.

However, a full evaluation of the effectiveness of the Manual – including its uptake and adoption by Levy payers, and its impacts on potato yields and marketability in particular – will require longitudinal research that is beyond the project scope.

Table 3. Key Evaluation Questions

Key Evaluation Question	Project performance	Continuous improvement opportunities
How well were beneficiaries engaged in the project	<p>Following project planning and content review meetings detailed in earlier reports, members of the Technical Advisory Committee and a further circle of industry stakeholders were almost continually engaged individually during the content development process.</p> <p>Draft content was circulated by email and feedback was collated by AgCommunicators, before being returned to the project Team members for incorporation in the draft.</p> <p>Where necessary, discussions were had by phone to clarify feedback.</p> <p>ON several occasions, members of the Project Team and Technical Advisory Committee engaged directly to work through substantial content areas. A noteworthy example of this is the collaboration between Melissa Fraser and Fank Mulcahy on sections of the ‘Growing The Crop’ chapter.</p> <p>Images were requested from and supplied by these Advisory and industry stakeholders.</p> <p>Images and graphics were requested and received from several international experts, as highlighted by the Project Content Team.</p>	
Mid Project Content Review	<p>Development drafts of the Australian Potato Manual were circulated to industry representatives for review and feedback</p> <p>Substantial feedback was received from the growing and processing sectors, and this was incorporated into the final draft.</p>	End user survey (see below) includes capacity for open feedback from industry, allowing users to continue having input on additional content, new practices, responses to changes in growing conditions, etc.
Industry evaluation: Improving knowledge and awareness of best practice potato management Increased adoption of industry	<p>Accurate and meaningful analysis of the impact of the Australian Potato Growers Manual will take at least one full cropping cycle to measure.</p> <p>Conduct and analysis of post-delivery usage and impact were noted as being beyond the timeframe</p>	Monitor and collate response data

<p>best practice.</p> <p>Increased percentage of produce meeting minimum quality requirements?</p> <p>Informed on-farm production decisions.</p> <p>Does the Manual provide content in a style that is useful to Levy payers.</p> <p>Has the Manual been downloaded from the Hort Innovations website.</p> <p>Has the knowledge in the Manual helped growers achieve productivity gains.</p>	<p>of this project.</p> <p>However, an end user survey has been developed to gather qualitative data on industry acceptance and impacts of the Australian Potato Manual.</p> <p>This survey will provide insights into the way industry accesses, relates to, uses and benefits from the Manual content.</p> <p>The survey has been created at: https://agcomms.typeform.com/AusPotatoManual</p>	
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Recommendations

While every effort has been invested in developing a complete and comprehensive Australian Potato Growers Manual, the Manual should exist as a 'living' publication.

In that regard, it should be responsive to industry feedback, technological progress and future research findings.

We would expect that suggestions, requests and recommendations will be forthcoming once industry participants have had time to digest and use the Manual in their own operations.

The PDF platform allows for subsequent editions to be published seamlessly as this feedback is compiled and incorporated.

We would recommend a six monthly, twelve monthly and twelve monthly thereafter review process where industry is actively invited to contribute their feedback for each revision. This will keep the content current, while also helping to maintain the Manual's industry profile through the calls for input.

Both aspects of this process will help ensure the Manual's wide uptake and regular use, which will maximise the return on Hort Innovation's investment.

Refereed scientific publications

None to report.

References

Not applicable

Intellectual property

No IP, commercialisation or confidentiality issues to report.

Appendices

1. Australian Potato Growers Manual.pdf
2. End User Survey
3. Media Release
4. Email to Industry
5. Social Media Materials