



**Australian Government**  

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**Rural Industries Research and  
Development Corporation**

# **New Crops 2004**

## **The Second Australian New Crops Conference**

University of Queensland Gatton  
September 2004

**A report for the Rural Industries  
Research and Development Corporation**

by Dr Rob Fletcher

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***New Crops 2004 – The Second Australian New Crops Conference***

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# Foreword

The Rural Industries Research and Development Corporation has supported three major new crops conferences in Australia since 1996: the First Australian New Crops Conference, held at the University of Queensland Gatton Campus in July 1996, the Australian New Industries Conference mounted by Western Australia Agriculture in Perth in 1999 and the Second Australian New Crops Conference, mounted at the University of Queensland Gatton Campus in September 2004.

This report summarises the outcomes for New Crops 2004, the Second Australian New Crops Conference. More than fifty presentations were made at the conference, focussing on the process of new crops commercialisation throughout the world; these presentations were augmented by workshops and field trips to view new crop development in South-east Queensland and Northern New South Wales. Speakers travelled from most states of Australia, the USA, Canada and South Africa and encouraged lively discussions on new crop commercialisation, the benefits and opportunities for collaboration and cooperation, the advantages of new relationships and partnerships as well as the likelihood of opportunities for new commercial initiatives, technology and processes.

A new crop has been defined as a crop which has not previously been successfully commercialized in a specific geographical area. Successful new crops increase the range of commercial options for primary producers and their products offer new initiatives for processors, traders and the consumer. They diversify the landscape and improve farming system sustainability, as well as augmenting Australia's local economy and our international terms of trade.

This project was funded from RIRDC core funds which are provided by the Australian Government.

This report is an addition to RIRDC's diverse range of over 1500 research publications. It forms part of our New Plant Products R&D sub-program which aims facilitate the development of new industries based on plants or plant products that have commercial potential for Australia.

Most of our publications are available for viewing, downloading or purchasing online through our website:

- downloads at [www.rirdc.gov.au/fullreports/index.html](http://www.rirdc.gov.au/fullreports/index.html)
- purchases at [www.rirdc.gov.au/eshop](http://www.rirdc.gov.au/eshop)

## **Peter O'Brien**

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Very special thanks go to the Conference organiser, Ms Sally Brown, Principal of Sally Brown Conference Connections, Brisbane, who was also the organiser of the First Australian New Crops Conference in 1996. Phone 07 3201 2808; Email: [sally.brown@uq.net.au](mailto:sally.brown@uq.net.au)  
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The committee is also grateful for the contribution made towards early planning of the conference by Mr Anthony Smith, former Marketing Coordinator, NRAVS Faculty, University of Queensland Gatton.

## Abbreviations

RIRDC Rural industries Research and Development Corporation

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# Executive Summary

The Rural Industries Research and Development Corporation has supported three major new crops conferences in Australia since 1996: the First Australian New Crops Conference, held at the University of Queensland Gatton Campus in July 1996, the Australian New Industries Conference mounted by Western Australia Agriculture in Perth in 1999 and the Second Australian New Crops Conference (New Crops 2004), mounted at the University of Queensland Gatton Campus in September 2004.

A new crop has been defined as a crop which has not previously been successfully commercialized in a specific geographical area.

Presentations at New Crops 2004 focussed on the process of new crops commercialisation throughout the world; these presentations were augmented by workshops and field trips to view new crop development in South-east Queensland and Northern New South Wales.

Perhaps most significant at this conference was the active involvement of the participants in the new crop industry and their concern for what could be termed the more advanced issues, such as supply chain management, intellectual property protection and access, food standards and pesticide regulation and registration.

The networking during the conference encouraged many new initiatives to be established, including the creation of a peak body in the herb and spice development industry, which held its initial meeting during the conference and has established an executive.

A workshop was held on the last day of the conference to canvass the participants' view of the role of RIRDC in new crop research and development and commercialisation. Several of these ideas will be incorporated in an upgrading of the Australian New Crops Website which is planned for the near future.

# Introduction

New Crops 2004, the Second Australian New Crops Conference, was held from Monday 20 September 2004 until Friday 24 September 2004 at the University of Queensland Gatton.

Workshops were mounted on the first two days of the conference, focussing on initial new crops planning (Do Our Own Marketing Research (DOOR Marketing): the original new crops short course), strategic planning with business and marketing plans (Fresh Fields), Supply Chain Management and waxflower benchmarking and nutrition (in collaboration with the local waxflower industry).

Plenary sessions on the third day explored both international and Australian new crops policy, networking in new crop industries, especially the role of the cooperative and new generation cooperatives, the role of intellectual property in the development of new crop industries, the requirements for the regulation of agricultural chemicals in Australia and the requirement for food standards in new, functional and novel foods.

Plenary sessions on the morning of the fourth day focussed on future trends in horticulture and the food industry, the roles of innovators and supply chains, new crop development in southern Africa and the US High Plains, the commercialisation of Australian native wildflowers and food safety.

Six sessions of contributed papers focussed on the topics of new crop development in Canada, carbon sequestration, minimum residue levels in herbs, the energy extractable from biofuels, fruit tree design, the functionality of native foods and reviewed several new crop groups such as fibres, cereals and pseudocereals (discussing hemp, kenaf, pearl millet and amaranth), fruits and nuts (American paw paw, custard apple, red bayberry, pistachio, pitaya, cactus pear and fruit tree design), oilseeds and legumes (linseed, stock, borage, evening primrose, crambe, turnip rape, camelina, noog, mustard and *Medicago rigidula*), vegetables (Japanese taro, bitter melon), Australian native foods (including native finger limes etc) green tea and Tasmanian wasabi.

A workshop on the final day discussed the role of RIRDC in new crop research, development and commercialisation in the presence of the chairperson of the Board of RIRDC and two RIRDC program managers.

The final session provide an opportunity for the chairperson of the Board of RIRDC and a venture capitalist to look to the future in new crop commercialisation.

# Program

The full program for the conference was as follows:

## Plenary sessions

Professor Gary Jolliff, Oregon State University

Are new crops worth the effort? Anticipation. International new crops policy, risk in new crop commercialisation, exclusivity, the problem of the free riders

Mr Derek Foster, Queensland Department of Primary Industries

Australian new crops policy, the trends within extension, the nature of rural innovation, the sociology and anthropology of new rural industries, the funding of new crop development in Australia

Dr Peter Goldsmith, University of Illinois

Networking in new crop industries, the role of the cooperative and new generation cooperatives, limited liability partnerships etc

Dr Simon Hearn, RIRDC, Australia

Opening of the conference and launching of the New Rural Industries Handbook (Second Edition)

Professor Brad Sherman, Australian Centre for Intellectual Property in Agriculture, Griffith University and ANU (ACIPA)

Intellectual property and its role in the development of new crop industries, brands, logos, copyright and plant breeders rights

Mr Alan Norden, Australian Pesticides and Veterinarian Medicines Authority (APVMA), Canberra  
Regulation of Agricultural Chemicals in Australia – requirements, implications and opportunities for new crops and minor use industries

Marion Healy, Food Standards Australian and New Zealand (FSANZ), Canberra

The role of food standards, functional and novel foods, the nature of health claims etc

Alan George and Roger Broadley (Australia) Can Australian Horticulture Survive and Meet The Global Challenge?

David Milstein (Australia) Food Trends

## Commercialisation

Prof Wijnand Swart and Prof Schalk Louw (South Africa) Holistic new crop development in southern Africa: A novel approach to old issues

Dr David Baltensperger (USA) The role of the Universities of Nebraska and Wyoming in development of alternative crops for the US High Plains

Dr Lilly Lim-Camacho (Australia) Idealists, operators and achievers: Supply chains in new rural industries - which one are you?

Gerry Parlevliet (Australia) Commercialisation of Australian native wildflowers

Kim Bryceson (Australia) The Innovator's Dilemma and Solution in New Crop Development - A Case Study of Australian Guar



Dr John Faragher (Australia) Food safety issues for new crops

Scott Templeman (Australia) New Crop Opportunity or Another Spectacular Failure?

Prof Wijnand Swart (South Africa) Disease management strategies in pistachio orchards in South Africa

Prof Seef Pretorius (South Africa) The potential of plants with antifungal properties as future new crops

## **Field crops: Fibres, cereals & pseudocereals**

Philip Warner (Australia) Natural Technical Fibres: 'A complete new industry'

Tanya Jobling (Australia) On-farm trials of Industrial Hemp for viable commercial production

Raylene Hansen (Australia) Industrial hemp trials in the tropics

Dr Amir Aynehband (Iran) Introducing the amaranth as a new crop into Iranian cropping system for the first time

Dr Peter Lawrence (Australia) Grain pearl millet – a new crop for Australia

Prof Wijnand Swart (South Africa) Diseases associated with the cultivation of kenaf in South Africa

## **Horticultural crops: Fruits and nuts**

Roger Meyer (USA) American Paw Paw-*Asimina triloba*

David Noel (Australia) Base-Up Tree Crop Design -- designing new tree crop varieties using nature, logic, genetics, and family connections

Roger Broadley (Australia) Breeding And Selecting New Varieties And Rootstocks Of Custard Apple (*Annona spp.* Hybrids) In Subtropical Australia

Prof Daryl Joyce (Australia) Production and post-harvest characteristics of red bayberry (*Myrica rubra* Sieb. and Zucc.): a brief overview

Prof Schalk Louw (South Africa) Patterns over time: Implications of insect phytophagy on pistachio development in South Africa

## **Field crops: Oilseeds, legumes and forages**

Dr James Krall (USA) Performance of *Medicago rigidula* (WY-SA-10343) over two springs in Southeastern Wyoming

Margaret Campbell (Australia) Alternative Oilseeds for Southern Australia

Paul Saffigna (Australia) Carbon sequestration.

## **Horticultural crops: vegetables and cactus**

Roger Meyer (USA) Pitaya, Pitahaya, Or Dragonfruit - A new crop worthy of attention

Prof Schalk Louw (South Africa) The importance of sanitation in cactus pear orchards in South Africa: A case study

Dr Geoff Woodall (Australia) New vegetable crops from the mega-diverse South West Botanical Province of Australia

Daniel White (Australia) Development of sato-imo (Japanese taro) production for export to Japan

## **Herbs, spices, medicinals and native food**

Maarten Ryder (Australia) Cultivation of Native Food Plants in South-eastern Australia

Prof Mohammad Jalaluddin (USA) Bitter Melon (*Momordica charantia* L.) a vegetable for special nutritional and medicinal values in America

John Burt (Australia) Developing green tea as an export crop in the Manjimup area mainly for the Japanese market

Nola Caffin (Australia) Quality and functionality of native plant food products

Shelley Everton and Nola Caffin (Australia) Native finger limes – detecting the differences

## **Experiences**

Stanford Blade (Canada) Crop diversification in western Canada – lessons learned

Joe Horak (Australia) Experience with new crop opportunities – Tasmania

Angela Sparrow (Australia) Tasmanian wasabi

Jane Parker (Australia) Minimum residue levels in herbs

David Bennett and Hongwei Wu (Australia) A template for biofuels

## **Concluding session**

Nick Macleod (Australia) Experience of innovation in new crops

Bob Peterson (Australia) Kevin Bacon and .... A small world approach to commercializing innovation

Mary Boydell, Chairperson, RIRDC (Australia) RIRDC, this conference and future directions in new crops research

# RIRDC workshop

The question was asked of the participants at New Crops 2004 if they could describe what RIRDC had been doing to meet the needs of the new crop industry in Australia. The responses were categorised in terms of what the organisation had been doing to satisfy needs or what RIRDC may consider doing in the future to further satisfy needs.

The chairperson of the board of RIRDC, Ms Mary Boydell and two RIRDC Research Managers (Mr Max Bourke, New Plant Products, Wildflowers and native plants) and Mr Tony Byrne (Asian foods, essential oils and plant extracts) were present as observers during the workshop.

The participants thought that the RIRDC activities which were **effective in satisfying the needs** of the industry (in no particular order) included:

1. RIRDC publications and their availability
2. The RIRDC web site: <http://www.rirdc.gov.au/>
3. The valuable information contained in the RIRDC publications, on the website and from contacts with RIRDC and their staff; especially the fact that all reports were published
4. Support for meetings such as New Crops 2004
5. Provision of funds for new crop research and development
6. The focus on commercialisation and outcomes from research and development, from the initial application for funding
7. Personal contacts with RIRDC staff.

8. The sensible manner in which the programs of RIRDC have been grouped:

- Dr Jeff Davis, General Manager, Research

Honeybee, rice, global competitiveness, fodder crops and pasture seeds

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- Dr Caroline Lemerle, General Manager, Research

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- Roslyn Prinsley

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The participants thought that the Australian new crops industry could benefit from the following:

1. Pushing boundaries in what the industry is doing; thinking outside-the-box etc.
2. The creation of associations such as the Californian Rare Fruits [There are, however, already several associations of this type in Australia and they often do excellent work in their regions in publicising issues, encouraging networking and training etc. These organisations are usually regionalised or focussed on particular species and can often be only short term, but this should not discount their value; naturally, they do not attract the attention that the Californian Rare Fruits does.]
3. Focussing on the meeting of consumer needs.
4. The creation of international linkages: visitors enquired about the possibility of linkages with South Africa, perhaps through New Crops Associations linked with industry or via agency linkages.
5. The creation of an International New Crops Society.
6. The inclusion of an extension component in any research and development project (RD&E).

The participants thought that RIRDC could be **more effective in satisfying the needs** of the industry (in no particular order) by adopting the following principles:

1. Becoming less academic and focussing on industry needs; encouraging farmer-driven research.
2. Avoiding support for hopeless crops.
3. Securing more government funding and making the funding more stable and less prone to political influence.
4. Permitting the funding of more smaller crops [this encouraged some debate focussed on a number of issues, including the benefit to the industry of the outcomes from small grants, the availability of small grants from regional sources and the administrative difficulties of small grants]
5. Providing a forum perhaps on the website whereby clients could exchange views and discuss the solutions of problems.
6. Liaising with overseas providers for providing access to their research and development in Australia.

7. Providing overseas applicants with access to RIRDC funding for collaborative projects [this encouraged some debate with comments made about the availability of other forms of funding for such projects]
8. Establishment of a basic set of research standards [this provoked some comment re access to biometrical expertise etc.]
9. Improving the readability of the Application Form for RIRDC funding; the form was considered to be too complex.
10. Commencing an involvement in regional development: RIRDC was encouraged to become involved in preliminary regional investigations of the type encouraged by regional development agencies [the comment was made that RIRDC was not a regional funding body].
11. Promoting the findings of RIRDC projects more actively and some concern was expressed for a lack of wide distribution of research findings.
12. Encouraging supply chain involvement in projects funded perhaps by weighting the value of the industry contribution on the basis of the industry's role in the specific supply chain being targeted.
13. Supplying a satisfactory level of funding to have an impact on outcomes; some discussion of the manner in which various gearing ratios were used in various organisations to encourage funding.
14. Supporting mentoring of people or individuals who were not able to effectively prepare applications for funding by themselves, such as indigenous groups.
15. Increasing the focus on development: concern was expressed about the emphasis on research in the funding of applications rather than the appropriate emphasis on development as well.
16. Funding of innovators with no resources [this provoked some discussion from the participants focussing on the outcomes likely].
17. Preliminary testing of funding applications prior to funding of full proposals [Comments were made of the manner in which some projects are funded for a single year to determine likely progress in a longer term project].
18. Providing a check list for funding applicants to identify their proposed outcomes, especially if there are any regulatory concerns (perhaps motivated by the presentations at the conference about food standards, the regulation of pesticides and the concern about the management of intellectual property) and their supply chain role.
19. Interagency difficulties such as conflicting goals, objectives and priorities.
20. Providing workshops on the planning and preparation for Preliminary Research Proposals.
21. Providing feedback on applications for research that has already been carried out and is thus redundant; the establishment of linkages between researchers focussing on similar outcomes in different areas [this provoked some comment]
22. Publicising those topics of high priority to RIRDC [the comment was made that this does already occur]
23. Providing a follow-up to funded research projects after they have been completed; after two years, perhaps establish the industry advantages.

24. Encouraging sharing of experiences across the industry in quality assurance, trading with Europe etc.
25. Maintaining commercial-in-confidence where appropriate for the required period of time but providing access to information publicly once this requirement has expired.
26. Providing assistance with the estimation of in-kind contributions to projects.
27. Providing a readily accessible database of new crops information; import/export information; market information
28. Identifying regulatory problems with new crops, perhaps with linkages with other agencies, such as Horticulture Australia Limited (HAL).
29. Disaggregating of small volumes (product data) in import statistics.

# Conclusions

The Second Australian New Crops Conference provided a venue for those actively engaged in research and development of new crop commercialisation to meet and discuss the latest developments. Perhaps most significant at this conference was the active involvement of the participants in the new crop industry and their concern for what could be termed the more advanced issues, such as supply chain management, intellectual property protection and access, food standards and pesticide regulation and registration.

The networking during the conference encouraged many new initiatives to be established, including the creation of a peak body in the herb and spice development industry, which held its initial meeting during the conference and has established an executive.

Several of the ideas recommended during the workshop held towards the close of the conference will be incorporated in an upgrading of the Australian New Crops Website which is planned for the near future.

# Proceedings

The proceedings for the Second Australian New Crops Conference are available on:  
<http://www.newcrops.uq.edu.au/nc2004/proc.html>