



Programme and Abstracts

APEN International Conference 2013



TRANSFORMATIVE CHANGE: Chosen or Unchosen

*Pathways to innovation,
resilience and prosperity*

26 - 28 August 2013
Christchurch, New Zealand

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Welcome and Conference Overview

On behalf of the organising committee for the APEN International conference 2013 - welcome!

We chose as the theme for this conference *'Transformative Change: Chosen or Unchosen'* because it best described the current challenges we face. We are convinced that increasing uptake of practices and technologies needs systemic change beyond our current thinking. Many of the powerful drivers behind the challenges involved in working with people in industries and communities to achieve change are beyond the farm (or orchard, forest, mine, boat?!) gate. These wider social, economic, environmental and regulatory drivers influencing change must be considered. True innovation, therefore, requires changing the right parts of the whole system to ensure desired impacts are realised.

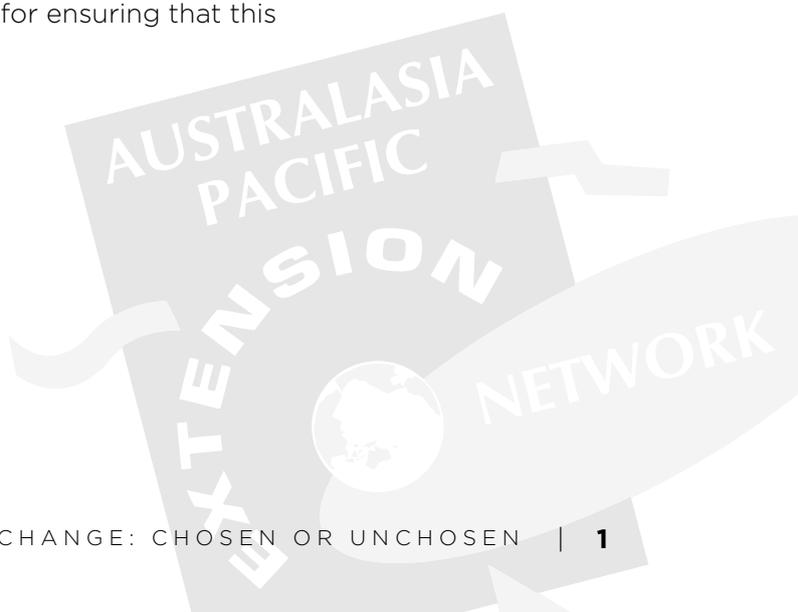
And there is no better place to start thinking about this than an APEN conference! The collection of presentations here from New Zealand, Australia and further abroad provides a comprehensive mix of the new and the old. No matter what your background or experience, they represent lessons learnt; they explore possibilities for extension both now and in the future, and provide processes for dealing with the rapidly changing world in which we live.

I would like to thank the hard working organising committee - Victoria Westbrooke, Ian Tarbotton, Toni White, Carole Hollier, along with members of the Management Committee - Austin McLennan, Warren Hunt and Greg Mills, and our wonderful APEN secretariat - Rosemary Currie, for being enthusiastic enough to make this conference happen. In addition, a huge thank you to our sponsors in Australia (HAL, GRDC and MLA) and New Zealand (Beef+Lamb NZ, Ballance, AgResearch, DairyNZ, Ministry for Primary Industries and OneFarm) for ensuring that this conference is a success.

Enjoy!

Denise Bewsell

Convenor, APEN ICNZ13



A few words from the sponsors ...



Beef + Lamb New Zealand belongs to New Zealand sheep and beef farmers. It's funded by farmers, investing together to benefit the whole industry and it's guided by farmers, through our Farmer Councils in the regions and our farmer-elected Directors. This collective investment and oversight delivers outcomes to farmers that couldn't be achieved alone.

The New Zealand red meat sector is big. It contributes around \$8 billion each year to the New Zealand economy. Its success is critical to everyone who lives in New Zealand – that's why it's known as the backbone of the country.

Beef + Lamb New Zealand is your organisation and it plays a role at many points in the value chain, providing independent information, tools and services that can help farmers make the best business decisions.

We deliver the activities through four programme areas – Farm, Market, People, and Information.

It's all geared towards making continuous improvements on your farm, securing better access to overseas markets, and elevating the status of New Zealand beef and lamb to boost demand for the meat you produce.



Ballance is a New Zealand farmer owned co-operative that aims to help its customers to improve profitability and to maintain a sustainable farming business.

From our core business of fertiliser manufacturing and supply, we have grown to offer farmers and growers a full suite of science-backed nutrient products for the soil, plants and animals.

Our reputation for sound science has earned us \$9.75 million in Primary Growth Partnership funding towards our \$32 million Clearview Innovations programme, which aims to increase the productive capacity of New Zealand's primary sector while minimising environmental impacts and improving nutrient use efficiency.

A key component of our programme is the development and implementation of 'best practice' science extension to educate the rural sector. The objective of this is to more effectively communicate the science underpinning our products, advice and technology to customers, to increase adoption of new products and farming practices.

Science extension is critical to the future success of Ballance as we extend our complete nutrient management offering with new products and technologies and provide the best advice for our customers on how to manage their nutrients most efficiently and sustainably.

Helping farmers adapt to a changing operating environment, and improve the profitability, sustainability and competitiveness of New Zealand dairy farming is the core purpose of DairyNZ. We are the industry organisation for New Zealand's dairy farmers, funded by a levy on milksolids and in 2012/13 we are investing more than \$60 million on farmers' behalf.

We deliver value to farmers through leadership, influencing, investing, partnering with other organisations and through our own strategic capability.

We want farmers to have the tools and knowledge they need to farm in a competitive and responsible way and retain our position as the world's most efficient pastoral dairy farmers.

We invest and work in research and development to create practical on-farm tools, lead on-farm adoption of best practice farming, promote careers in dairying and advocate for farmers with central and regional government.

DairyNZ, in conjunction with Federated Farmers, the Dairy Companies Association of New Zealand (DCANZ) and Dairy Women's Network have recently released Making Dairy Farming Work for Everyone, the Strategy for Sustainable Dairy Farming 2013-2020. This strategy builds on earlier industry strategies, providing leadership, priorities and a plan of action for dairy industry stakeholders.

Guided by the strategy, a key investment area for DairyNZ is driving practice change on farm through a co-ordinated, focused and accountable regional approach and improving the relevance, reach and impact of extension projects. This integrates the efforts of our consulting officers and regional leaders with our researchers, development teams and adoption partners.

For more information, visit www.dairynz.co.nz

AgResearch is New Zealand's largest Crown Research Institute and supports the country's pastoral sector through scientific research and innovation.

Our purpose is to enhance the value, productivity and profitability of New Zealand's pastoral, agri-food and agri-technology sector value-chains to contribute to economic growth and beneficial environmental and social outcomes for the country.

We do this by partnering with the pastoral sector to identify the innovation that is needed and deliver our collective expertise to create value for New Zealand.

Agriculture, and the food, textiles and other products that arise from it, is the backbone of the New Zealand economy - generating more than \$21 billion in export earnings, directly employing 128,000 people and providing images that convey "New Zealand" to so many of our international visitors.

AgResearch engages with the pastoral, agri-food and agri-technology sectors and related food and textile industry stakeholders to bring about a step-change in performance and competitiveness.

We do this through the provision of research and transfer of technology and knowledge in partnership with key stakeholders, including industry, government and Māori.

For more information about AgResearch and our work visit agresearch.co.nz



The Ministry for Primary Industries (MPI) is focused on growing and protecting New Zealand. MPI is a New Zealand government ministry and works across the sector from primary producers through to retailers and consumers.

Key functions include:

- Providing policy advice and programmes that support the sustainable development of New Zealand's primary industries
- Being the Government's principal adviser on fisheries and aquaculture management
- Providing "whole of system" leadership of New Zealand's biosecurity system
- Managing forestry assets for the Crown
- Providing or purchasing services to maintain the effective management of New Zealand's fisheries
- Ensure food safety standards for consumers of New Zealand food

Enabling business growth

Building a more productive and competitive economy is one of the Government's key strategic priorities. As part of this, it has signalled an intention to focus on supporting business success. The Ministry for Primary Industries (MPI) is a key contributor to the programme that is driving this, called the Business Growth Agenda (BGA).

Building export markets

The Government's goal for exports is to "increase the ratio of exports to GDP from the current 30% to 40% by 2025".

The primary sectors rely on export markets, and MPI has a critical role in negotiating and supporting market access. Almost everything the Ministry does is part of the chain from the land or sea through to customers all around the world.

Encouraging innovation

Successful innovation makes available new or improved products, processes or methods that can increase output and competitiveness. The performance of New Zealand's primary industries has long been underpinned by successful innovation.



OneFarm, the Centre of Excellence in Farm Business Management is a joint venture between Massey and Lincoln Universities that has been made possible by the support of New Zealand dairy farmers through DairyNZ and MPI through the Primary Growth Partnership. We combine the capability of Massey and Lincoln farm management academics, AgResearch and other researchers, farm consultants and international specialists, and co-ordinate research and professional development to meet industry capability needs.

Our research programme is formulated through industry consultation to address critical knowledge gaps and improve current thinking in farm business management and on-farm decision making. Linked to this and feeding from the research outcomes an education and training infrastructure for industry growth in Rural Professional and farmer farm business capability is being developed.

A vital component for success is the ability to connect with the broadest possible rural and farm business management community and deliver tangible, user-friendly outcomes. The 'OneFarm' website www.onefarm.ac.nz provides the platform from which the Centre of Excellence in Farm Business Management can connect on a real time basis with rural professionals, farmers, academics and the wider agricultural industry.

GRDC Working with you

GRDC
Grains
Research &
Development
Corporation
Your GRDC working with you



GRDC is working with growers to invest in research that delivers productivity and profit gains to the Australian grains industry.

- Connecting globally to give Australian growers faster access to new technologies and genetics
- Coordinating nationally to avoid duplication and fund projects that deliver the best returns to growers

- Delivering regionally to give growers and their advisers the tools they need to address local issues.

Help shape your future and get involved through GRDC's Regional Cropping Solutions Network and Regional Panels.

Visit www.grdc.com.au/rcsn and www.grdc.com.au/panels

Grains Research and Development Corporation
Level 1, Tourism House
40 Blackall Street, Barton ACT 2600
PO Box 5367, Kingston ACT 2604
T +61 2 6166 4500 | F +61 2 6166 4599
E grdc@grdc.com.au

www.grdc.com.au



Horticulture Australia Limited (HAL) has provided sponsorship to support horticulture industry personnel to attend APEN ICNZ13.

HAL is the third-largest of 15 RDCs and works in collaboration with its members to identify their research and development (R&D) and marketing needs, and commissions R&D and marketing projects to meet those needs. HAL currently has over 40 members, covering 43 separate industries and more than 80 commodities, including fruits, nuts, vegetables, mushrooms, nursery, turf and cut flowers.

The gross value of production of the Australian horticulture sector is in excess of A\$9 billion per annum. HAL's investments are funded by levies and voluntary contributions from industry that are matched dollar-for-dollar by the Australian Government. Total investments exceed A\$100 million per annum. In 2011/12, HAL's top five areas of R&D investment were:

1. Plant health: Pathology/Virology/Nematodes
2. Breeding & Biotechnology
3. Biosecurity and Market Access R&D
4. Industry Development Services (Extension)
5. Industry Communications

SPONSORS



Meat & Livestock Australia (MLA) creates opportunities for Australia's cattle, sheep and goat supply chains. We provide marketing and research and development (R&D) services that deliver benefits to livestock producers.

MLA is a producer-owned service company, and does not represent the industry, lobby government or regulate the industry.

MLA invests more than \$170 million in marketing and R&D programs annually. This funding comes from transaction levies on livestock sales, Australian Government dollar-for-dollar funding for investment in R&D, and voluntary contributions from other industry stakeholders.

MLA creates opportunities across the cattle, sheep and goat supply chains by optimising the return on collective investment in marketing and R&D through four strategic imperatives:

- Maintaining and improving market access
- Growing demand
- Increasing productivity across the supply chain
- Supporting industry integrity and sustainability

MLA has developed a series of 15 focus areas that direct the company's marketing and R&D into programs that we expect will deliver a strong return on producers' levy investment to 2015.

Visit www.mla.com.au for more information.

spare space

Programme

Transformative Change: Chosen or Unchosen
Pathways to innovation, resilience and prosperity

Sunday 25 August

4:00 - 6:00pm Informal Welcome function
Venue: Stewart foyer

Monday 26 August

8:00am Registration opens

9:00am Conference starts
Venue: Stewart 1
Welcome & Opening Address
Chair: Ian Tarbotton

10:00am **Keynote Speaker:**
Professor Caroline Saunders, Lincoln University
Transformative change and agricultural innovation in New Zealand
Venue: Stewart 1

10:45am **Morning tea**
Venue: Stewart foyer

11:00-1:00am **Session 1: Adaptive management**
(Please choose one option in each timeslot from the lists below):

11:00-11:25am **Room: Stewart 2 (S2)**
Speaker: Alexander Murray
A solution to rigid government NRM planning requirements through adaptive management

Room: Stewart 1 (S1)
Speaker: Andrew Dunningham
Finding authoritative resources on climate change: Introducing the climate cloud: a digital library of NZ climate change related resources

Room: Commerce 1 (C1)
Speaker: Megan Hill
Where do farmers seek information when making agricultural purchasing decisions?

Room: Landscape (D6)
Speaker: Rabi Maskey
Irrigators' considerations for change and investment in farm irrigation systems using economic criteria

11:30-11:55am **Room: Stewart 2 (S2)**
Speaker: Christine Thompson
Planning the Profit: the effectiveness of profit planning as the basis for building resilient farm businesses

Room: Stewart 1 (S1)
Speaker: Jill Walcroft
Listening to end-users facilitates transfer of climate change knowledge

Room: Commerce 1 (C1)
Speaker: Terry Parminter and Jeremy Neild
Just knowing: tacit knowledge

Room: Landscape (D6)
Speaker: Felicity Taylor
Using Grower Groups as Extension Tools- the Grain and Graze 2 Experience

12:00-12:25pm

Room: Stewart 2 (S2)

Speaker: Danielle England

*The stepped adoption of grazing crops in Western Australia***Room: Stewart 1 (S1)**

Speaker: Elske van de Fliert

*Changing functions of extension: a framework to facilitate climate change adaptation in Mongolia***Room: Commerce 1 (C1)**

Speaker: Lesley Hunt

*Changing what it means to be a 'good farmer': a study from ARGOS of the impact of neoliberalism on New Zealand farmers***Room: Landscape (D6)**

Speaker: Mark Blackwell

SmartSAMM extension program seeks transformation to achieve mastitis and milk quality targets

12:30:12:55pm

Room: Stewart 2 (S2)

Speaker: David Stevens

*Impacts of a winter feeding management on-farm extension programme in Southland***Room: Stewart 1 (S1)**

Speaker: Cam Nicholson

*Analysing and discussing risk in farming businesses***Room: Commerce 1 (C1)**

Speaker: Janet Reid

*Enriching the farm-management consultancy theory: practice nexus***Room: Landscape (D6)**

Speaker: Nick Cradock-Henry

Characterising resilient dairy farming: evidence from the Bay of Plenty

1:00pm

Lunch

Venue: Stewart foyer

2:00-3:00pm

Session 2: Change - an opportunity or limitation*(Please choose one option in each timeslot from the lists below):*

2:00-2:25pm

Room: Stewart 2 (S2)

Speaker: Jeanette Long

*Adaptive management groups-grain and graze East SA***Room: Stewart 1 (S1)**

Speaker: Daniel Healy

*Understanding and developing farmers' adaptive capacity to effectively extend research results and achieve practice change***Room: Commerce 1 (C1)**

Speaker: David McCall

*Responding to the challenge of getting significant change on-farm at pace***Room: Landscape (D6)**

Speaker: Penny Shaw

Coping with Unchosen Change-An extension practitioners perspective

2:30-2:55pm

Room: Stewart 2 (S2)

Speaker: Victoria Westbrooke

Business strategies of farm owners with small dairy herds in the Waikato, NZ

Room: Stewart 1 (S1)

Speaker: Geoff Kaine

Predicting the rate of adoption of agricultural innovations

Room: Commerce 1 (C1)

Speaker: Bill Long

Decision support systems (DSS)- Where success is failure of continued use

Room: Landscape (D6)

Speaker: Neels Botha

Distress and burnout among NZ dairy farmers

3:00pm

Afternoon Tea

Venue: Stewart foyer

3:30pm

Sector session – industry think tank

4:00-5:00pm

Session 3: Resilience – building and encouraging resilience on farm, in the community

(Please choose one option in each timeslot from the lists below):

4:00-4:25pm

Room: Stewart 2 (S2)

Speaker: Jennifer Moffatt (Ruth Nettle)

Workforce development planning and action in primary industries: opportunity or necessity?

Room: Stewart 1 (S1)

Speaker: Heather Collins

Resilience through change: beyond reasonable drought

Room: Commerce 1 (C1)

Speaker: Chrissy Stokes

Overcoming challenges in supporting remote and regional growers

Room: Landscape (D6)

Speaker: Carla Wegscheidl

The role of agricultural extension in improving the health and resilience of the Great Barrier Reef

4:30-4:55pm

Room: Stewart 2 (S2)

Speaker: Rupert Tipples

Beyond Regulation – ‘Decent Dairying’ for more ‘Decent Work’ in New Zealand

Room: Stewart 1 (S1)

Speaker: Jonathon England

Building resilience through grazing crops

Room: Commerce 1 (C1)

Speaker: Liz Alexander

All for one and one for all: the story of “Harcourt” and the Dawson Valley Cotton Growers

Room: Landscape (D6)

Speaker: Tracy Payne

Evaluating the effectiveness of deer learning packages

5:15 pm

APEN AGM

Venue: Stewart 1

7:00 pm

Informal dinner

Venue: Recreation Centre Hall



Tuesday 27th August

8:30-10:30am

Session 4: Collective action – broader community, farming

(Please choose one option in each time slot from the lists below):

8:30-8:55am

Room: Stewart 2

Speaker: Ruth Nettle

Innovative pathways for developing advisory capacity: opportunities and challenges from an Australian dairy industry context

Room: Stewart 1 (S1)

Speaker: Brad Warren

Extension and social licence

Room: Commerce 1 (C1)

Speaker: Tim Hollier

Bestwool/bestlamb and BetterBeef networks; a successful model for private and public sector delivery partnerships

Room: Landscape (D6)

Speaker: Ina Pinxterhuis

Supporting on-farm change to balance environment, productivity, animal welfare and profit

9:00-9:25am

Room: Stewart 2 (S2)

Speaker: Ian Tarbotton

DairyConnect-topic specific buddying of farmers to improve outcomes

Room: Stewart 1 (S1)

Speaker: Rebecca Wallis

Making collaboration last longer than your average marriage – Lessons in supporting grower groups in extension over the 11 years of the Grower Group Alliance

Room: Commerce 1 (C1)

Speaker: Carole Hollier

What do farmers want?

Room: Landscape (D6)

Speaker: Barbara King

Private-public advisory networks: An Australian dairy pasture seed case study

9:30-9:55am

Room: Stewart 2 (S2)

Speaker: Jill Greenhalgh

Mentoring in agriculture: Growing the next generation of farmers

Room: Stewart 1 (S1)

Speaker: Rebecca Pike

A story 50 years in the making: The Benwell surface water management system

Room: Commerce 1 (C1)

Speaker: Bridgid Buckley

Implementing variation 6: getting 3,500 dairy farmers through the resource consent process

Room: Landscape (D6)

Speaker: Terry Parminter

Facilitation of Regional Public Consultation for Natural Resource Policy

10:00-10:25am

Room: Stewart 2 (S2)

Speaker: Matthew Pickering
Coaching for achievement in agriculture

Room: Stewart 1 (S1)

Speaker: Shane Max
Learning from global orchardists responses to the PSA epidemic

Room: Commerce 1 (C1)

Speaker: Glenda Steain
Kangaroo Valley Sustainable Land Management Group
Engaging community in cross property planning

Room: Landscape (D6)

Speaker: Denise Bewsell
Building adaptive management capability to deliver sustainable pastoral farm systems

10:30am

Morning tea

Venue: Stewart foyer

11:00am

Poster session

Venue: Stewart foyer

11:30am

Keynote Speaker:

Tom Fraser, AgResearch
Background to farming in Canterbury and "systems" extension
Venue: Stewart 1

12:00 noon

Field trip weather permitting

(Alternative activities will be offered if poor weather)
Exploring Canterbury

4:30pm

Return from field trip

5:30pm

Coach departs outside Recreation Centre for Wine tasting followed by the Conference dinner at Melton Estate Winery in West Melton

7:00pm

APEN Conference Dinner

(sponsored by Ballance Agri-Nutrients)
APEN awards

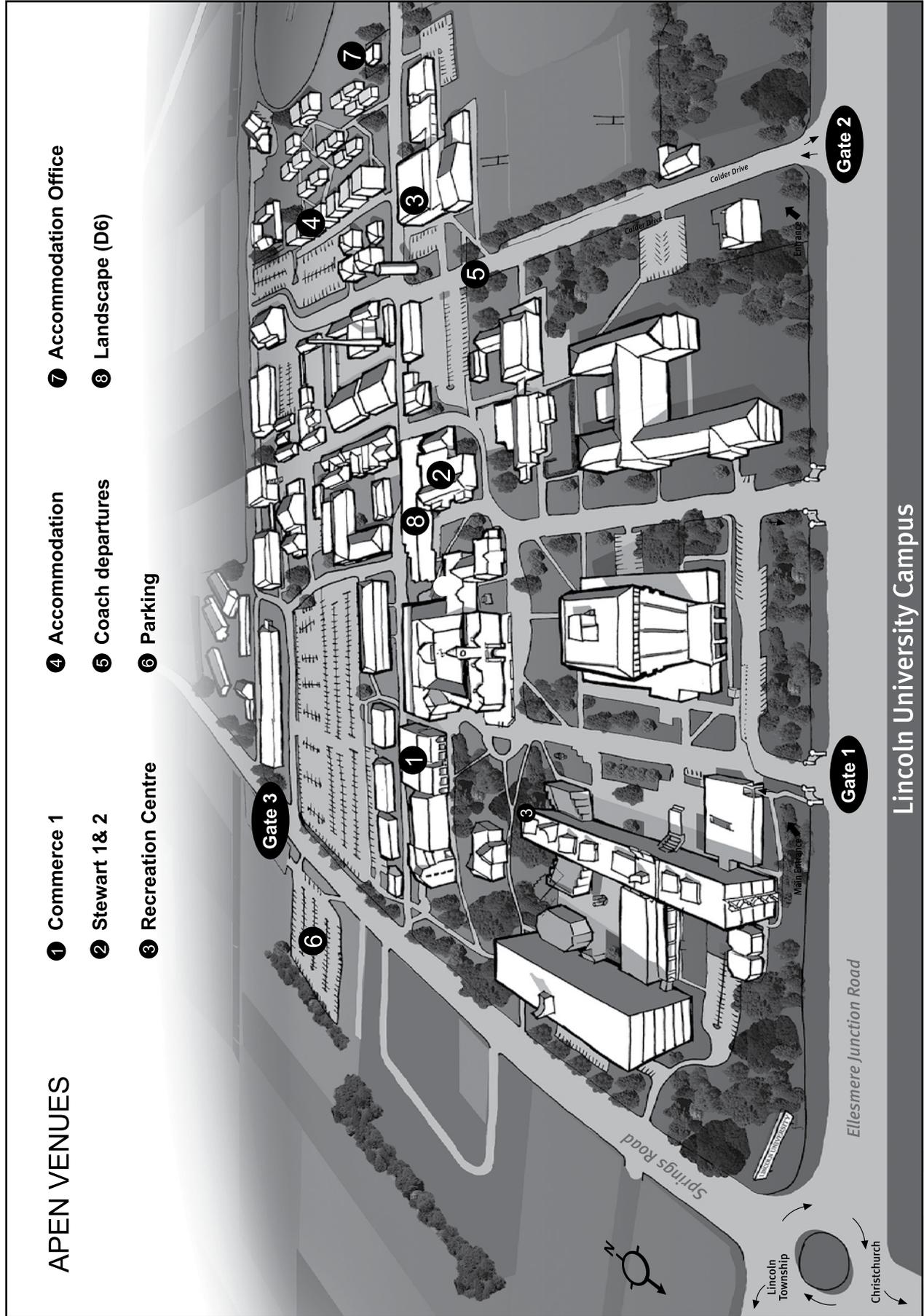


Wednesday 28 August

9:00am	Keynote Speaker: Assoc. Professor Lauren Klerkx, Wageningen University, Netherlands Sponsored by Ministry for Primary Industries <i>The Agricultural Innovation Systems perspective: what's its use in research and practice?</i> Venue: Stewart 1
9:45am	Session 5: Agricultural Innovation Systems Facilitated by: Neels Botha (AgResearch) Roy Murray-Prior: <i>Developing an innovation system to meet the needs of smallholder farmers in developing countries</i> James Turner: <i>Challenges to effective interaction in the New Zealand agricultural research and extension system: an innovation systems analysis</i> Venue: Stewart 1
11:00am	Morning tea Venue: Stewart foyer
11:30-12.30pm	Session 6: Future trends in extension and advisory services <i>(Please choose one option in each time slot from the lists below):</i>
11:30-11:55am	Room: Stewart 2 (S2) Speaker: John Cook <i>Bringing smart technology to kiwifruit growers</i> Room: Stewart 1 (S1) Speaker: Sue Pickering <i>Transformational change must engage hearts as well as minds</i> Room: Commerce 1 (C1) Speaker: Warren Hunt (double session 11:30-12:25pm) <i>Avenues for reforming the Australian agricultural research, development and extension system</i>
12:00-12.25pm	Room: Stewart 2 (S2) Speaker: Laura Garland <i>Combining research, demonstration, producer input and decision support for informed tactical management</i> Room: Stewart 1 (S1) Speaker: Marie McEntree <i>Moving to more sustainable agriculture: Beyond the linear approach to technology transfer</i> Room: Commerce 1 (C1) Warren Hunt continued Workshop session
12:30 pm	Panel session – Q&A (chaired by Austin McLennan)
1:00pm	Lunch Venue: Stewart foyer
2:00-3:00pm	Session 7: Professor Gregorio Billikopf, University of California Sponsored by OneFarm <i>Staff management and conflict resolution – changes and challenges</i> Venue: Stewart 1
3:00pm	Official closing of Conference Venue: Stewart 1
Evening	Option to join the informal gathering for the NZ Agricultural & Resource Economics Society Conference

APEN VENUES

- ① Commerce 1
- ② Stewart 1 & 2
- ③ Recreation Centre
- ④ Accommodation
- ⑤ Coach departures
- ⑥ Parking
- ⑦ Accommodation Office
- ⑧ Landscape (D6)



Lincoln University Campus

CAMPUS MAP

APEN Committee

Convenor

Denise Bewsell

Organising Committee

Rosemary Currie

Denise Bewsell

Victoria Westbrooke

Ian Tarbotton

Toni White

Secretariat

Heather Stevenson

Conference & Events, Lincoln University

Editor

Victoria Westbrooke

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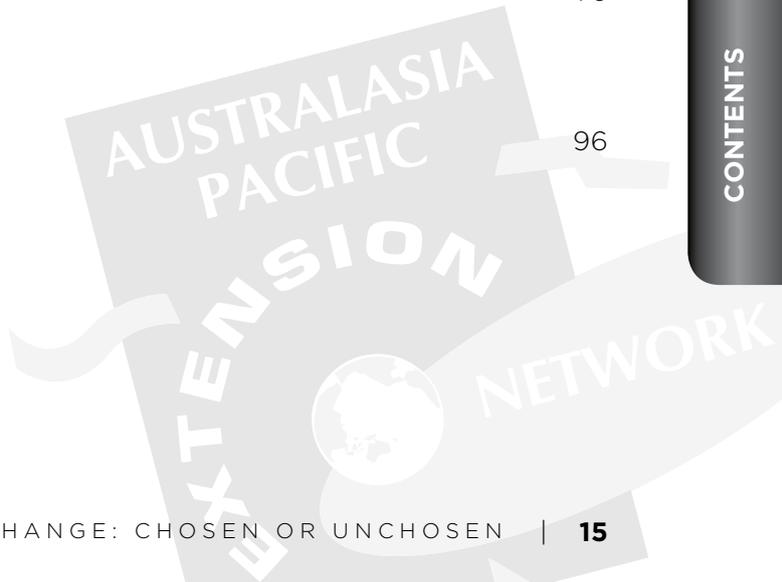
Pathways to innovation, resilience and prosperity

26 - 28 August 2013 Lincoln University, New Zealand



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Keynote Biographies



Professor Caroline Saunders has 20 years research expertise in the UK and New Zealand. She has over 100 publications specialising on sustainable economic development. Her current research includes evaluating trade and the environment including assessment of international markets policies and their impact on development. This includes developing and using the Lincoln Trade and Environment Model to assess impacts on trade of various factors including changing policy, market trends, energy use and greenhouse gas emissions and the development of new technologies, as well as research into such issues as food miles. She has undertaken research for a wide range of private and public bodies both in NZ and overseas. These include the EU commission, MAF, MFAT, Treasury, MFE, MED, NZTE, Fonterra, Meat Industry and various other sector groups.



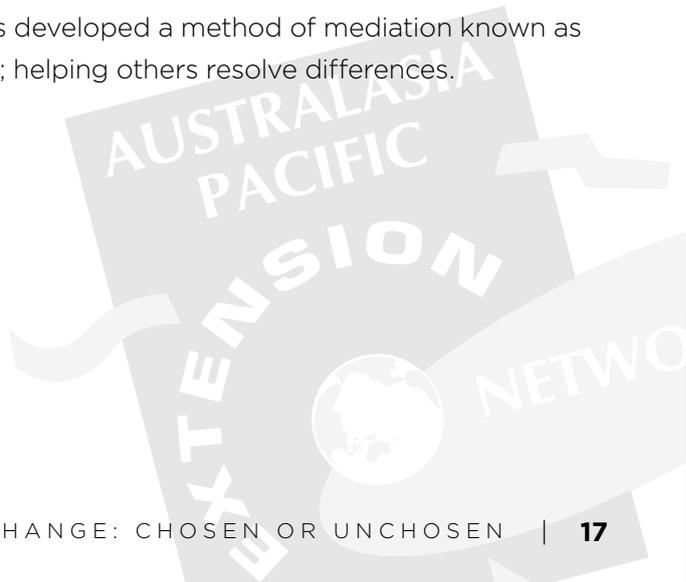
Tom Fraser has worked for DSIR Grasslands and AgResearch since 1969, focussing on plant breeding and evaluation of pasture plants for the New Zealand pastoral sector. Currently Tom works in the Farm Systems team and his research is concentrated on the whole farm system approach to research and as such brings together a wide variety of research disciplines. As well as conducting research projects carried out at the research station Tom is heavily involved with research with farmer groups through funding from Producer Boards and MPI. This work puts him in contact with a large number of farmers throughout New Zealand. He has conducted many workshops for sheep, beef, dairy and deer farmers in the topics of pasture quality, forage establishment and species selection, sheep efficiency, brassica best management practices, and feed planning. Recent awards include: Life member NZGA 2011; Recipient of Ray Brougham Award NZGA 2012.



Associate Professor Laurens Klerkx is at the Knowledge, Technology and Innovation Group at Wageningen University. He holds a MSc in Tropical Agriculture, and a PhD in Communication and Innovation Studies. His research takes place in the realm of agriculture and the life sciences and focuses on: demand articulation and multi-stakeholder negotiations for demand-driven research and innovation; newly emerging intermediary structures for matching demand and supply for knowledge to support innovation (innovation brokers); how such innovation brokers affect the dynamics in innovation networks and how they are perceived by 'traditional' knowledge intensive service providers (such as research institutes and consultants) and end-users of innovation; the structural dynamics of innovation networks over time and corresponding role divisions in innovation networks. Besides being active in academic research and teaching, Laurens work informs policy makers, through contributions in policy oriented publications and oral presentations for organizations like the World Bank, the European Commission and the Organization for Economic Cooperation and Development (OECD).



Professor Gregorio Billikopf, University of California
Gregorio Billikopf is a Labour Management Farm Advisor with the University of California (since 1981) and Visiting Professor of the Faculty of Agricultural Sciences of the University of Chile (since 2005). His agricultural extension research and teaching efforts have focused on such topics as employee selection, compensation, quality control, performance appraisal, discipline and termination, supervision, interpersonal relations, conflict resolution, and interpersonal negotiation skills. Gregorio is well known for his knowledge and work in the area of conflict resolution, he has developed a method of mediation known as party directed mediation; helping others resolve differences.



Important Information

Registration Information Desk

The Registration desk will be open in the Stewart foyer as follows:

Sunday 25 August	4:00-6:00pm
Monday 26 August	7:30-9:00am and at break times
Tuesday 27 August	8.00am-9:00am and at break times
Wednesday 28 August	8:30 am-9:00am and at break times

Catering

For those in accommodation, catering is in the Recreation Hall.

Catering hours are as follows:

Breakfast	7:30 – 8:30am
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Poster Presentations

Velcro dots will be available for mounting your poster at the registration desk.

Refreshment Break-Food

All teas and lunches will be catered during the conference programme. Some delegates in accommodation have paid for an evening meal on campus on Monday 26 August. Alternatively, there are several restaurants, cafes and takeaway outlets in the Lincoln Village, a short 900m walk from the University, as well as a supermarket en route.

Conference Dinner

This function is for people who have pre-paid on the registration form. A dinner ticket will be in the conference registration envelope. If you are not sure whether you have, please check with the Registration Desk. The Conference Dinner will be held at Melton Estate starting at 6:00pm on Tuesday night. Coaches will depart promptly at 5:30pm outside the Recreation Centre (see map)

Field Trips

Please assemble at 12 noon outside the Recreation Centre. Alternative activity will be offered if poor weather. Please wear appropriate clothing and footwear.

***Departs at 12:00pm and returns to Lincoln University
at 4:30pm – packed lunch provided.***

Medical

Lincoln Pharmacy, 8 Gerald Street, Lincoln

Telephone (03) 325 2666

Lincoln Medical Limited, Market Square, Gerald Street, Lincoln

Tel: (03) 325 2411

In an emergency dial 111**Earthquake**

- Identify nearest exit points
- If you feel an earthquake: DROP, COVER, HOLD
- Evacuate normally to the muster area

Taxis

Blue Star Taxis 03 379 9799

Gold Band Taxis 0800 3 795 795

Lincoln Shuttles 027 231 0397

Selwyn Shuttles 0508 735996

The taxi fare from Christchurch Airport to Lincoln University is approximately \$75.

Internet Access

There is Wifi access on campus in hotspot locations including:

- Commerce building
- Library
- Central lawn
- Recreation Centre
- Landscape Architecture building

Cell Phones

Cell phones must be turned off at all times during sessions.

Valuables

Please keep all valuables safe. The conference organisers cannot be held responsible for any loss or damage of personal items while attending the APEN Conference. Any found property should be taken to the Registration Desk located in the entrance foyer of the Stewart building.

The Lachlan Catchment's solution to rigid government NRM planning through adaptive management

Alexandra Murray¹ and Lyndal Hasselman²

1 Lachlan Catchment Management Authority, 2 Sherrif St, FORBES, NSW, 2871, Australia.

www.lachlan.cma.nsw.gov.au Email alexandra.murray@cma.nsw.gov.au

2 Lyndal Hasselman Email lyndal.hasselman@cma.nsw.gov.au

Abstract

The health and resilience of a system regularly involves adaption to crisis and prosperity and is often far from being stable or in a state of equilibrium.

The Lachlan Catchment Management Authority (CMA) governs natural resource management initiatives with local land managers and community to facilitate a healthier system with greater social, economic, and ecological resilience. A Catchment Action Plan was developed with collective input from State, Federal and local government, researchers, non government organisations and community groups. The 10 year plan was approved by the NSW Minister for Primary Industries and this requirement limits flexibility for adaptive management that is responsive to changing circumstances and knowledge.

The Monitoring and Adapting framework was developed in conjunction with the plan to drive performance management and guide continual improvement of the Catchment Action Plan's implementation.

The framework guides effective evaluation and incorporates feedback loops to communicate lessons from implementation to policy making. The framework offers advancement upon standard evaluation, to an adaptive evaluation model that is consistent with continuous systems

support: the degree of change and the kind of change that will occur in our social-ecological systems. Adaptive management is applied at different levels of management in different contexts, during different phases of the system's resilience cycle. This builds skills, institutional and community capacity in monitoring and evaluation and enables findings and adaptive natural resource management and evolution of the strategic plan.

The Lachlan (Kalare) Action Plan 2013-2023 and its support chapters provide an example of an adaptive management solution to the challenge of rigid government planning requirements. This solution addresses lessons from past planning. The plan needed to be structured with desired outcomes and priorities to provide direction whilst limiting constraints to flexible and responsive approaches to achieve the strategy. Collective input on adequate performance will maintain rigor in reporting to government and community. Monitoring and adapting frameworks needed to be embedded into planning and governance processes to encourage implementation. The Minister has now approved our solution to the juxtaposition of adaptation and rigid government planning requirements.

Keywords: *Adaptive evaluation, Resource Management, Resilience, triple-loop-learning.*

Planning for Profit: the effectiveness of profit planning as the basis for building resilient farm businesses.

Christine Thompson¹

¹ Department of Agriculture and Food WA,, 3 Baron-Hay Court, South Perth, WA 6151. www.agric.wa.gov.au
Email christine.thompson@agric.wa.gov.au

Abstract

Managing risk induced by changes in climate, environment and markets requires farm business managers to build greater resilience into their farm management approaches to remain viable in the long term.

During 2010 much of the Western Australian wheatbelt experienced one of the driest growing seasons on record. Below average yields across the wheatbelt resulted in many farm businesses experiencing financial strain. The capacity to make better management decisions is critical to recovering profitability after poor seasons and to capturing opportunities in good seasons. Generating more profit is the most effective way farm business managers can deal with the ever increasing costs of farming and improving their family's future, quality of life, personal wealth and financial security.

A profit planning approach was developed including proof of concept, content development, delivery and evaluation of pilot workshops between March and August of 2011. The Planning for Profit workshop was redesigned in partnership with financiers and consultants and delivered in autumn 2013. It has been designed to support farm businesses to identify effective strategies to improve profitability.

Planning for Profit is based on a very simple,

innovative approach to farming as a business focussing on farm net profits as the reason and future for their farming operation. It provides our growers with an effective understanding of the profit drivers of their business – price, production, operating costs and business costs – and the motivation to proactively manage their farms based on driving initiatives to increase their net profit margins using a simple profit plan. Planning for Profit is a continuous, ongoing process of improvement and innovation where the business manager actively revisits and adjusts their production, financial and marketing plans as information about each season becomes more certain.

Three key lessons learnt from the development and delivery of this project:

1. The importance of partnering with financiers and consultants ensures consistency of concepts and support for capacity building programs
2. Timeliness and need are key drivers in both the development, delivery and uptake of new programs
3. Scenario planning is an effective tool to validate and capture participant knowledge and experience and facilitate learning outcomes.

Keywords: *Resilience, profitability, risk, scenarios, innovation, planning*

Biography

Christine Thompson is the Manager of Department of Agriculture and Food Western Australia's (DAFWA) Pathways to Resilience Project. In the past 15 years, she has worked in various roles within the Department of Agriculture and Food WA most recently as Senior Policy Officer responsible for the development of DAFWA's Plan to Support Grains Industry Development. Other roles include coordination of the RIRDC Rural Women's Award and the Rural Remote and Regional Women's Network, and facilitation of the Better Business and Farmbis programs. Prior to joining DAFWA, Christine developed and delivered mobile family counselling and community education services throughout the Great Southern region of WA. She is a partner in a broad acre farming business in Great Southern. Christine has a Bachelor of Social Sciences, a Bachelor of Social Work, a Certificate in Counselling, an Advanced Diploma in Business and Diploma in Project Management. Christine was the Program Director for the APEN International Conference held in Busselton WA in 2009.

The stepped adoption of grazing crops in Western Australia

Danielle England¹

¹ Planfarm Pty Ltd, PO Box 1126, Narrogin, Western Australia 6312. www.planfarm.com.au
Email Danielle@planfarm.com.au

Abstract

The process of adoption of grazing crops into Western Australian mixed grains and livestock farming systems has been documented by Grain and Graze 2's Adaptive Management project. It provides an example of how new farming practices can be adopted into large farming systems and outlines the critical style of information and support required at each stage.

Grazing crops is the practice of grazing planted crops that will be harvested at the end of the growing season. Grazing crops can lead to large farming system benefits including increased available feed for livestock during winter, increased area sown to crops, increased stocking rates and most importantly increased grain income.

In the four farming businesses studied by the project, there was a three-step process in the introduction of grazing crops into each farming system. It was: 1) Trialling of grazing crops on a small area (<30ha); 2) grazing one or two paddocks of crop; and 3) incorporation of the practice into the whole farming system.

In the first step, the farmers used a specific grazing crop variety (generally a winter variety),

and the area planted and grazed according to recommended industry practices. It was managed as an on-farm trial, and farmers generally did not plan to harvest any grain, any grain harvested was considered a bonus. This small trial enabled each of the farmers to gain confidence in the practice with little risk of negative business impacts. They were able to monitor crop stages, observe crop recovery and experience the livestock benefits associated with grazing crops. All important aspects of trialling new farming systems practices.

In the second year the farmers took their new skills and grazed a greater area, including spring cereal varieties and canola, with different classes of stock. This further increased their knowledge, skills and confidence in the practice that allowed them to incorporate grazing crops across their whole cropping program in year three, thus fully integrating it into their farming system.

The WA case studies show there are large business profits and farming system benefits to be gained from grazing crops in a mixed farming system.

Keywords: *Grains, sheep, whole-farm benefits, grazing crops.*

Biography

Danielle England is an agricultural project management consultant based with Planfarm Pty Ltd in Narrogin, Western Australia. She is the Relative Advantage project officer for Grain and Graze 2 in Western Australia, and is a coordinator of the National Relative Advantage reporting project.

Danielle has a strong background in agricultural extension and change management programs across Australia including Top Crop and Sustainable Grazing Systems. She has a Post-Graduate in Rural Systems Management (Rural Extension) from the University of Queensland, and is a member of the WA branch of the Australasian Association of Agricultural Consultants.

Impacts of a winter feeding management on-farm extension programme in Southland

David Stevens¹, Marie Casey² and John Scandrett³

1 AgResearch Ltd, Private Bag 50034, Mosgiel, New Zealand. Email David.stevens@agresearch.co.nz

2 PGG Wrightson Consulting, P.O.Box 1961, Dunedin, New Zealand. Email mcasey@pggwrightson.co.nz

3 Scandrett Rural Consulting, P.O. Box 901, Invercargill, New Zealand. Email Scandrettrural@xtra.co.nz

Abstract

The 'No More Bearings' Sustainable Farming Fund project investigated the impacts of different winter grazing managements on ewe nutrition and the incidence of vaginal prolapse in ewes in late pregnancy in Southland, NZ. Part of the project was to inform farmers of the findings to help ensure that farmers had the opportunity for practice change. A survey of farmers was conducted to investigate the level of awareness and potential uptake of the messages from the project. The survey was answered by attendees at two major field days, in July and August 2011. There were 140 replies to the survey of whom 80% were farmers. The farm types mainly represented intensive sheep (51%) and hill country sheep (35%) When asked about the official Sustainable Farming Fund project 'No More Bearings' 61% of the respondents had heard of the project, while 33% had not. More of the respondents had heard of 4-day shifting during the winter (79%) with 33% recognising the

practice from the media coverage, 31% from field days and 26% recording a personal interaction with the team members. When asked whether they had tried the 4-day shifting, 56% of the farmers indicated that they had already tried the technology and 93% of respondent would continue with the practice. Source of information and it's relative worth are also discussed. The Sustainable Farming Fund project and the concept of 4-day shifting were relatively well known after 3 years. This may reflect the type of respondent, as they were at specific technology transfer days. The project has had a positive outcome regarding the uptake of the concept of 4-day shifting.

Key learning's from this research include: the high level of uptake may reflect the low risk, low transaction cost of entering and leaving the technology, and the benefits of reducing labour costs.

Keywords: *risk, transaction cost, labour, personal interaction.*

Biography

Dr David Stevens has been involved in the development and extension of research into feeding systems in sheep, beef, deer, and dairy farming for the past 30 years. David has been involved in the Sheep and Beef Monitor farm programme since its inception and more recently in the Telford Dairy Demonstration farm and the development and delivery of the Deer Industry NZ Focus Farm network. David's contribution to the delivery of technologies to farmers has been acknowledged by the New Zealand Grassland Association in 2006 and 2012 as well as the New Zealand Society of Animal Production in 2008.

Finding authoritative resources on climate change: Introducing the Climate Cloud: a digital library of NZ climate change related resources

Andrew Dunningham¹, Jill Walcroft², Don Wilson³, Anna Taylor⁴; Toni White³

1 Scion, Rotorua, New Zealand. www.scionresearch.com. Email: Andrew.Dunningham@scionresearch.com

2 AgResearch, Grasslands, Palmerston North, New Zealand. www.agresearch.co.nz

Email jill.walcroft@agresearch.co.nz

3 AgResearch, Ruakura, Hamilton, New Zealand. www.agresearch.co.nz Email toni.white@agresearch.co.nz;

4 AgResearch, Lincoln, New Zealand. www.agresearch.co.nz Email anna.taylor@agresearch.co.nz

Abstract

This presentation details a MPI funded digital library project that allows land managers and advisors to obtain information that will guide decision making towards successful adaptation or mitigation of the effects of climate change. The presentation will detail the development of the library, metadata, audit procedure, and the collection statistics by type and subject, as well as provide a demonstration and methods for adding resources.

Greater information on impacts, and associated risks, opportunities and adaptation strategies of climate change allows primary-sector land based managers to develop adaptive capacity and build resilience around a changing climate. Resilience and adaptive capacity is developed from “paying explicit attention to *learning about past, present and future climate threats*, accumulated memory of adaptive strategies and anticipatory action to prepare for surprises and discontinuities in the climate system.” (Tschakert & Dietrich, 2010)

The Climate Cloud (www.climatecloud.co.nz) is a digital library of climate change resources from NZ and overseas. The aim of the digital

library is to provide primary information on climate change causes, risks and impacts; sector specific areas of risk and vulnerability as well as adaptive strategies so as to aid the development of resilience within primary production sector institutions and businesses.

Each resource in the library has been reviewed for applicability and quality, and metadata on the resource including the subject and content has been developed so that sophisticated search can easily locate the resource. The resources available for download are primarily reports and also include facts sheets, case study, presentations, video & audio. Links are made where copyright restrictions prohibit the inclusion of resources.

The digital library has climate change resources that have metadata on the contents of the resource and useability, and where the resources are restricted to those from reputable sources that are based on science. The climatecloud thereby provides authoritative, relevant resources at a single location that land manager and extension professions can use to understand, mitigate and adapt to a changing climate.

Keywords: *Information, climatecloud, resourcebank, adaptation*

Biography

Andrew Dunningham is the informatics research leader in the Forest Informatics team at the CRI Scion. Mr Dunningham has current research interests in innovation systems, climate change communication and adaptation, and integrates these with his training in systems analysis and science education. Mr Dunningham was the lead author on the Forestry chapter in the MPI report on impacts of climate change on land based sectors and adaptation options.

Listening to end-users facilitates transfer of climate change knowledge

Jill Walcroft¹ and Anna Taylor²

1 AgResearch, Grasslands, Palmerston North, New Zealand. www.agresearch.co.nz
Email jill.walcroft@agresearch.co.nz

2 AgResearch, Lincoln, New Zealand. www.agresearch.co.nz Email anna.taylor@agresearch.co.nz

Abstract

Knowledge transfer is enhanced by engaging the end-users in the development of the tool or platform that facilitates the transfer. The design of the platform is critical to successful uptake of knowledge by the end-user. In the context of a changing climate the end-users of the tool discussed here are New Zealand land-managers and their rural advisors. The large amount of information available on climate change coupled with the debate and conflicting opinions makes this topic potentially overwhelming to the end-user. Having access to evidence-based information that supports resilient land-management decision-making will help manage the risks associated with climate change.

In order to provide land managers and their rural advisers with high quality information a digital library of resources on climate change topics has been developed and is available via an internet website. The website and library need to be accessible and useable (Jeng 2005) for knowledge transfer to occur. As the developers we constructed the library with

several key indicators in mind, such as; credibility, trustworthiness, attractiveness and functionality (Schaupp 2006). We endeavoured to discover what in particular these criteria mean to the end-user and to uncover other design elements that might assist in successful uptake of the library's offerings. We present outcomes from end-user engagement through a series of workshops and feedback from individuals in their own work environments. The workshops were structured to cater for adult learning preferences (Mezirow 1997) and to allow for social exchange. The insights gained about the key indicators from the workshops and individual testing enabled the digital library developers to design and implement features specifically for the needs of the land-mangers and their advisors. This gives us greater confidence that the library will be used and as a result of this, knowledge transfer will occur because end-user expectations are met. Future indication of successful knowledge transfer will be repeat visits to the library and end-user recommendations of the library to others.

Keywords: *engagement, resilience, decision making, resources, indicators.*

Biography

Jill Walcroft is a social researcher in the People and Agriculture Team in the Land and Environment Group at AgResearch. She is currently working in a government funded Climate Change Technology Transfer Programme and an industry funded Dairy Risk Management programme. She has worked on other climate change projects in the past as well as aspects of sustainable farm management, pasture measurement, pasture renewal, and how farmers innovate.

Changing functions of extension: a framework to facilitate climate change adaptation in Mongolia

Elske van de Fliert¹ and Erdenebolor Baast²

1 Centre for Communication and Social Change, The University of Queensland, St Lucia QLD 4072, Australia. www.uq.edu.au/ccsc, Email e.vandefliert@uq.edu.au

2 Centre for Sustainable Rural Development, Mongolian State University of Agriculture, Ulaanbaatar 17024, Mongolia. www.msua.edu.mn Email b.erdenebolor@gmail.com

Abstract

Over the past few years, livelihood risks of herding families in Mongolia have increased due to decreasing productivity, rapidly increasing household consumption expenses, low competitiveness, and the effects of climate change. Herders' livelihood mainly depends on herd size; however, increasing livestock numbers has already led to overgrazing of most rangeland areas. Climate change has lately been causing major challenges such as warming, drying, increasing frequency and intensity of zuds, desertification, and reduction of water resources. The extreme weather conditions in the 2009-10 winter led to the death of around 10 million animals, with 33,000 herder households, which is one out of five, suffering a 50% or higher loss of their livestock. Government and international agency efforts have primarily focused on disaster response coordination and the facilitation of alternative livelihoods for herders. Extension Officers and rural Service Providers, who are close partners of herders, however, have received little development assistance since 2005, when the international projects establishing an

agricultural extension service terminated. To effectively facilitate climate change adaptation under the current ever-changing conditions, rural extension officers and service providers need to build critical skills among herders for adaptive household and farm management and better-informed decisions making, facilitate local collective initiatives for climate change adaptation, and provide access to information and services in emergency cases. With funding from AusAID and the assistance of the University of Queensland and the Mongolian State University of Agriculture, the National Agricultural Extension Centre of Mongolia is developing a framework that will address these new functions of the organisation. This paper will describe the current structure of the Mongolian agricultural extension system, analyse its strengths and limitation to address the issue of climate change adaptation among rural herder communities, and present the elements of an improved framework that allows the extension system to better respond to contemporary challenges and needs of herder households.

Keywords: *critical skill development, collective action, herder households*

Biography

Elske van de Fliert is Co-Director and Principal Research Fellow at the Centre for Communication and Social Change, The University of Queensland. She obtained a PhD in Communication and Innovation Studies from Wageningen University, The Netherlands, in 1993. Prior to joining UQ in 2006, Elske worked for the Food and Agriculture Organisation, the International Potato Centre and as a freelance consultant in a range of countries, mainly in Southeast Asia, in research, development and teaching positions. Her main research interests are in the areas of participatory development communication and impact assessment of sustainable rural development and social change.

Analysing and discussing risk in farming businesses

Cam Nicholson¹

¹ Nicon Rural Services (Grain and Graze 2 program), 32 Stevens Street, Queenscliff, VIC 3225
Email: nicon@pipeline.com.au

Abstract

Farming is the most volatile sector of the Australian economy and by inference the most risky. To cope with this volatility, many farmers have developed strategies for production and price variability so they remain in farming. Diversification or mixed farming is one strategy that is used and on the whole has worked well.

Agricultural extension can take little credit for farmers current approach to risk management. Most farmers have developed risk strategies based on intuition and experience rather than on useful extension materials and knowledgeable advisory support. The information available to farmers and advisors is based on averages. Analysis using averages for prices, yields and costs tells us nothing about the risk. Neither does sensitivity analysis.

Understanding and managing risk is not about the middle, it is the opposite - it's what happens at the extremes that are important. This includes managing for the inevitable poor results but equally important is what we do when we get a good result.

One component of the Grain and Graze 2 program is to support farmers, advisors and consultants to understand risk. A pilot program

conducted in Southern Victoria has developed a risk analysis and discussion format to help farmers quantify the risk in their farming business (the risk profile) and then discuss the implications of the results. It is based on the @Risk program.

This paper presents the approach used and feedback from more than 30 farmers, advisors and bankers who were involved in the pilot study. It highlights the key elements to make the risk analysis effective. These include:

- Understanding concept around risk, including opportunity, odds, choice, not about being right or wrong and a good versus a right decision
- The need to conduct individual analysis for a farming business rather than a 'typical farm for the area'
- Access to localised price and production data so appropriate risky distributions can be created
- A high level of inter personal skills because discussion invariably leads to issues such as capacity, personal preference, stage in life, debt levels, succession and importantly the amount of risk you wish to take on.

Keywords: *Risk, volatility, mixed farming, whole farm analysis.*

Biography

Cam Nicholson is a partner in Nicon Rural Services, a consulting business near Geelong working with the grazing and cropping industries and in natural resource management. Cam is the regional co-ordinator for the Grain and Graze 2 program in Southern Victoria and is project manager for the Woody Yaloak Landcare Catchment Project. He provides consultancy advice to farmers and lectures on animal and pasture systems to students at Marcus Oldham College.

Cam has a Bachelor of Agricultural Science and a Masters in Applied Science. He and his wife run a 320 ha sheep and beef farm on the Bellarine Peninsula.

Where do farmers seek information when making agricultural purchasing decisions?

Megan Hill¹, Roger Ashburner² and Geoff Kaine³

1 Department of Primary Industries, Tatura, Victoria, Australia. Email: megan.hill@dpi.vic.gov.au

2 Ashburner & Associates, PO Box 235, Murchison, Victoria, Australia. Email: roger@elix.bigpond.com

3 Geoff Kaine, Geoff Kaine Research, Mooroopna, Victoria, Australia. Email: geoffkaine@geoffkaineresearch.com

Abstract

When designing agricultural extension it would be useful to be able to predict where farmers are likely to seek information when making a decision. Towards developing a method to achieve this we drew on social psychology and marketing theory to test whether farmers level of “involvement”, or the importance of a product influenced how many sources of information the farmers used when making an agricultural purchase. While it has been well documented that people making high involvement decisions use more sources of information than when making low involvement (routine or less important) decisions, there is little evidence of these concepts being tested in agriculture.

Forty farmers were surveyed in regard to their level of involvement and where they sourced information when making agricultural purchases. Data was collected on sixty purchases, including farmer machinery, fertilisers, livestock and consumables, all of which were likely to range in importance to the farmers.

Consistent with the literature, we found that the higher the level of farmer involvement with the purchase, the more sources of information they used. Highly involving products were generally those that were expensive, novel or

risky to purchase, such as farm machinery, and some livestock and consumables. The farmers used a number of sources of information to inform their decision making including: interpersonal, experiential and independent sources. Routine or low risk purchases such as dog food and fertiliser were low involvement for most farmers and they sought little, mainly retail, information when making these purchases.

The implications of these findings for the design and placement of extension material are discussed. We also suggest that methods used in this research could be used to assess farmers' level of involvement in other agricultural decision making, such as the adoption of R&D innovations.

Some key learnings are; that involvement is a good indicator of the amount of effort farmers will spend sourcing information. There are patterns in farmers' information seeking and decision making, and hence it should be possible to predict where and how much information farmers will seek in regard to specific decisions. And that the results of this study suggest that other aspects of the marketing literature may also be fruitfully applied to inform agricultural extension.

Keywords: *involvement, agricultural, interpersonal, complex decision making.*

Biography

Megan Hill, BAppSci (Hort), BSc (Hons), MaAgibus. Megan has been conducting research and extension for 20 years with the Department of Primary Industries in Victoria, Australia. For the last five years Megan has been linking her knowledge of agriculture with her skills as a researcher by studying how and why growers and farmers adopt technical innovations, where they seek information when making decisions, and how extension information can be designed to best support this process.

Just knowing: tacit knowledge

Jeremy Neild¹ and Terry Parminter²

1 ASL, PO Box 1635, Palmerston North, 4440. www.agservices.co.nz Email jeremy.neild@agservices.co.nz

2 PACT Consulting, PO Box 354, Paraparaumu, New Zealand 5032. www.pactconsulting.co.nz

Email terry.parminter@pactconsulting.co.nz

Abstract

This paper reports on a study examining the role of tacit knowledge to industry innovation, based upon a theoretical review and the results of two farmer workshops. It examines possible ways that an understanding of tacit knowledge might be used in future directions for professional development in agriculture.

Tacit can be understood as the intuitive understanding that people have and that cannot be separated from them and the way that they behave. In contrast explicit knowledge tends to be knowledge that has been written down or recorded and transmitted through a variety of organised processes independent of the sources involved. Farmers with a high managerial ability appear to rely upon the tacit dimension of their knowledge that has been built up through experiences that assimilate and adapt the explicit knowledge they have acquired from external sources.

The farmers attending the workshops closely associated certain types of personality with acquiring tacit knowledge. They also acknowledged the importance of social networks for sharing information and all forms of knowledge.

Tacit knowledge was closely associated by the farmers with learning from ones' own experiences and through observing others. However, the process and contribution of tacit knowledge to learning based upon explicit knowledge, was not very well understood. The participants generally considered lifelong learning to be important for professional farming managers. This was more likely to be learning by reflecting on experience than attending formal courses. However, the participants identified that they would value learning more about how to learn and how to establish peer networks for critical reflection and encouragement.

The study has highlighted three areas for incorporating tacit knowledge in building professional capability amongst farmers. The first of these is that building self-awareness amongst farmers about their learning capabilities and how these can be enhanced was associated with generally encouraging greater innovation across agricultural industries. Secondly, tacit knowledge is acquired from experience and personal contact with recognised experts. Finally, courses designed for conveying explicit knowledge are not easily adapted to include tacit knowledge.

Keywords: *professional farming, capability building, farmer innovation, farming styles, networking, personality.*

Biography

Jeremy Neild is an Agricultural Economics and Agribusiness Consultant based in Palmerston North. He is employed by ASL, a consultancy and business development company owned by the Primary Industry Training Organisation. The parent company organises and facilitates vocational training in New Zealand's agricultural and horticultural industries and ASL supports this focus work through human capability building, industry training solutions and workplace productivity consultancy assignments and projects.

Jeremy has a Masters degree in Agricultural Economics and Business from Massey University and has nearly 40 years' advisory and consultancy experience in the pastoral agricultural sector, firstly as a Farm Adviser for 10 years and then as an Agricultural Economic and Business Consultant for the past 30 years, covering a wide range of projects - economic and financial analysis, rural health and safety, human resource management, farm systems analysis, rural policy development, project management, business development, and training and extension programmes.

Changing what it means to be a 'good farmer': A study from ARGOS of the impact of neoliberalism on New Zealand farmers

Lesley Hunt¹, Chris Rosin², Hugh Campbell³ and John Fairweather⁴

1 AERU, Lincoln University, PO Box 84, Lincoln, New Zealand 7647. www.lincoln.ac.nz
Email Lesley.Hunt@lincoln.ac.nz

2 CSAFEE, University of Otago, PO Box 56, Dunedin, New Zealand 9054. www.otago.ac.nz
Email Chris.Rosin@otago.ac.nz

3 CSAFEE, University of Otago, PO Box 56, Dunedin, New Zealand 9054. www.otago.ac.nz
Email Hugh.Campbell@otago.ac.nz

4 AERU, Lincoln University, PO Box 84, Lincoln, New Zealand 7647. www.lincoln.ac.nz
Email John.Fairweather@lincoln.ac.nz

Abstract

A recent part of the transdisciplinary study of New Zealand farming carried out by social scientists from the Agriculture Research Group on Sustainability (ARGOS) was a retrospective interview of all ARGOS sheep/beef, dairy and high country farmers, and kiwifruit orchardists. In this interview their responses to 'shocks' over the past forty years was explored in order to examine farmer resilience and pathways to sustainability. What was apparent was how the 'good farming' model followed by New Zealand farmers and orchardists was expanding to include the notion that it was culturally acceptable to think of

farming as a business. This change, which could be attributed to the influence of the environment of neo-liberalism in the policies of the New Zealand government since the 1980s, was freeing up farmers and orchardists to think of themselves and their role in new ways that provide unexpected and exciting possibilities for the resilience and sustainability of the agricultural and horticultural sectors in New Zealand. This paper illustrates some of the unexpected consequences of Government policy, showing how long it can take for policy to result in identity change and how closely identity is linked to practice.

Keywords: *good farming, good farmer, neo-liberalism, business, sustainability, resilience.*

Biography

Dr Lesley Hunt is a Senior Research Officer in the Agribusiness and Economics Unit at Lincoln University. For the last nine years she has worked as a sociologist in the transdisciplinary team of the Agriculture Research on Sustainability (ARGOS) programme. As a former biometrician in AgResearch and now as a qualitative researcher she has had the privilege of drawing together ARGOS data to determine the pathways that farmers and kiwifruit orchardists have actually followed over the past ten years. Her particular interest is in how people live meaningful lives as exemplified in her paper 'Interpreting orchardists talk about their orchards: the good orchardists'.

Enriching the farm-management consultancy theory: practice nexus.

Janet Reid¹, David Gray¹, Hannah Bruce¹

¹ Institute Agriculture and Environment, Massey University, Private Bag, 11222, Palmerston North, New Zealand. www.massey.ac.nz Email J.I.Reid@massey.ac.nz; D.I.Gray@massey.ac.nz; hannahmbruce@gmail.com

Abstract

The poor link between farm management theory and practice is argued by a number of authors. Whereas the focus of a significant body of research and effort is directed at aligning farmers' actions and theory, this paper reports on research into the link between farm management consultancy practice and theory. Consultants' role in assisting farmers to develop more resilient farming systems is growing in importance as farmers face increasingly turbulent operating environments. However, little is known about the practice of farm management consultants. The normative farm management literature suggests that whole farm planning and the use of linear programming is a useful approach for designing improved farming systems. However, limited research has explored how farm management consultants design improved farming systems in practice and how well this practice is reflected in current theory. Recent survey data suggests farm management consultants do use formal analytical tools, but these tend to be simulation models rather than linear programming models. This paper reports findings from on-going research that is capturing and describing how experienced farm management consultants work with farmer clients to enhance on-farm change. This paper

will describe how an experienced sheep and beef farm management consultant in New Zealand designs an improved farming system for a farmer client. Based on qualitative case study research, data was gathered through in-depth interviews and field observations of the consultant. Transcribed interviews were analysed using qualitative data analysis techniques and verified with the consultant. The research illustrates how formal analytical tools are used to support and complement experienced-based consultancy 'know how'. The consultant uses informal triangulation, comparative analysis, benchmarking and classification techniques during the farm visit to assess and develop 'a rich picture' of the farm family, farm resources, production system and its physical and financial performance. The farmer's cornerstone enterprise is identified and modelling tools are used to explore potential changes to the farming system. Although this research informs the agricultural consultancy theory: practice nexus; the paper argues for the need for greater emphasis on empirical research to enrich understanding of the consultant/ extension agent: farmer interface in attaining transformative change and on-farm resilience.

Keywords: *resilience; farm systems design; case study*

Biography:

Principal authors are Janet Reid & David Gray. Both authors are senior lecturers in the Institute of Agriculture and Environment at Massey University. Janet's research interests and expertise is in agricultural extension, soft systems methodology in agricultural systems and the governance of sustainable agriculture. Dave's expertise is in farmer decision making, farm management and agricultural consultancy with both involved in research into farmer learning and co-innovation in agriculture.



Irrigators' considerations for change and investment in farm irrigation systems using economic criteria

Rabi K Maskey¹, Will Dalton² and Terry Batey³

1 Department of Primary Industries, 255 Ferguson Road, Tatura, Victoria 3616, Email: Rabi.Maskey@dpi.vic.gov.au

2 Department of Primary Industries, 1 Spring Street, Melbourne, Victoria 3001, Email: Will.Dalton@dpi.vic.gov.au

3 Department of Primary Industries, 255 Ferguson Road, Tatura, Victoria 3616, Email: Terry.Batey@dpi.vic.gov.au

Abstract

Many irrigators in northern Victoria are in the process of making decisions on investment in new farm irrigation technologies and linking their farm system to a modernised irrigation delivery system. These decisions require consideration of a complex combination of human, production, environmental, economic and financial components of the business.

Irrigators across northern Victoria have been provided with opportunities to participate in the Commonwealth Government On-Farm Irrigation Efficiency Program. The program provides investment opportunities to upgrade and convert farm irrigation systems to generate water savings shared between the Commonwealth Government and irrigators. Benefits reported from such investment include reduction in watering times, water use and water logging. These benefits were expected to generate improved pasture and crop production. However, the actual benefits and impact on farm profitability from farm irrigation investment and linkages to the modernised irrigation delivery system is less understood. Thus, some of the questions that irrigators are asking are: should I participate in the program; is it viable to invest in irrigation infrastructure given the production system that I have; what water

savings and / or productivity benefits should I achieve to make the project viable?

As a part of this study, both qualitative as well as quantitative data was collected during structured interviews with irrigators. Two commercial dairy farms were chosen to examine the impact of farm irrigation infrastructure investment on the economic viability of projects adopted through the On-Farm Irrigation Efficiency Program. A partial discounted cash flow approach was used and considered appropriate given the complexity behind the farm business management decision-making process.

If labour savings and productivity gains are realised, participating in such a program provides a very attractive return on investment. However, any benefits from increased production or water-use efficiency are dependent on the existing level of farm irrigation infrastructure development and the irrigators' complex decision making skills. The study indicated that the viability of investments is particularly sensitive to the productivity increase generated from such investments. This highlights the need for irrigators to understand potential productivity gains that could be made under their own circumstances before considering farm irrigation investments.

Keywords: *decision making, return on investment, productivity increase*

Biography:

Rabi Maskey is a Project Leader, Irrigation Services Dairy with the Department of Primary Industries based at Tatura. Rabi has been leading extension works in the area of irrigation and drainage technology. He is currently involved in developing case studies to determine the economic worth of irrigation infrastructure investments on-farm. He was involved in the development of a set of guidelines to provide direction for farmers going through the process of selecting an appropriate irrigation system for their requirements. He is interested in exploring the possibilities of linking research results to extension activities.

Agriculture Extension through Grower Groups – a focus of Grain and Graze 2

Felicity Taylor¹

¹ Facey Group, 40 Wogolin Road, Wickiepin, WA 6370. www.faceygroup.asn.au Email eo@faceygroup.asn.au

Abstract

Grower groups such as the Facey Group and Southern DIRT are becoming widely recognised by industry as a key partner for the delivery of key research and extension activities into the future. This paper outlines the benefits for successful project delivery through grower groups and details the Grain and Graze 2 (GG2) project in Western Australia as a case study. The strengths of these community based groups' lies with their strong networks across all sectors of the agricultural industry which allows for the key learning's from the GG2 project to be disseminated through a wide network starting at the farm gate. These two groups have not only have strong farmer membership but connections with agribusiness, government agencies and the research sector which also allows for effective multi way communication through the entire industry. Grower Groups such as Facey Group and Southern Dirt facilitate state wide projects such as GG2 by combining on farm demonstrations and research with traditional extension methods such as field days and

workshops. These groups are trusted information sources within their areas and the wider industry which allows for a participatory approach for the growers and industry alike.

Both groups are managed by farmers and it is their dedication to the development of information relevant to their local conditions, teamed with professional staff and strong resources that allows for delivery of outcomes for projects such as GG2. The grower group staff, along with the farmers hosting the research take responsibility for planning, implementing and monitoring the project activities which allows for greater farmer "ownership" over the research outcomes. While having a focus on local issues, these well organised and resourced groups have the capacity to assist other project teams such as those from tertiary, state and federal research organisations or private companies with research requirements to not only deliver their research goals but to extend the knowledge gained from the research activities to a critical mass.

Keywords: *on farm demonstrations, research learning's, agricultural communication.*

Biography

Felicity Taylor has been Executive Officer of the Facey Group since 2008, the Facey Group is one of the largest and most active mixed system grower driven groups based in Wickiepin Western Australia. Mrs Taylor currently represents the group and region at an industry level by sitting on the GRDC Regional Cropping Solutions Network, DAFWA Focus Paddocks and My Crop Advisory Committee and currently she is currently the Chair of the UWA Future Farm Advisory Committee. Mrs Taylor has completed further training with the Curtin University/ DAFWA Agribusiness Training Program in Strategic Evaluation, Effective Communication and Extension and Group Facilitation. Mrs Taylor is also a cereal and sheep producer in the southern Wheatbelt area of WA.

SmartSAMB extension program seeks transformation to achieve mastitis and milk quality targets

Mark Blackwell¹ and Jane Lacy-Hulbert¹

¹ DairyNZ, Hamilton, New Zealand, 3240 www.dairynz.co.nz

Abstract

SmartSAMB is the New Zealand dairy industry's new mastitis extension program, building on the SAMB Plan (Seasonal Approach to Managing Mastitis), first released in the early 1990s. SAMB relied on a "one-size-fits-all", technical approach to mastitis extension, whereas SmartSAMB aims to help farmers develop customised solutions for their herd. The SmartSAMB website, released in June 2012, includes Technotes, Guidelines and Mastitis Focus adapted for New Zealand from Dairy Australia's Countdown program.

SmartSAMB aims to achieve industry milk quality targets by 2016, specifically somatic cell count reductions in bulk milk supply of 10,000 cells/mL and all milk from all herds below 400,000 cells/mL. This would achieve for the first time a national average somatic cell count of 150,000 cells/mL, meeting the SAMB Plan target set two decades ago.

In 2012 SmartSAMB refreshed its 2009 adoption plan with more rigour towards the 2016 targets. The ADOPT software suggested we would need ten years to reach the targets. So change on farm would need to be transformational, not incremental, if targets were to be met within five years. Farmer case studies with advisor input

do report such "transformational" changes, of creating a "new norm", indicating sustainable changes can be made.

Further analysis estimated the required uptake of SmartSAMB, and performance improvement, to reach industry targets by 2016. Following farmer market segmentation analysis, channels of influence have been identified and prioritised. The challenge now is to combine Technology Transfer, Problem Solving and Facilitation of SmartSAMB principles and program interventions, through four complementary channels: 1) Marketing and communications, 2) The veterinary channel, 3) Advisor networks, and 4) Milk processors. From this we expect transformational learning to occur, resulting in sustainable behaviour change amongst the whole farm team. The plan incorporates in the design Key Result Areas, and Success Outcomes Markers, as a basis for evaluation against targets and expected outcomes.

Key lesson is that working back from targets, using outcomes thinking, applying market segmentation principles and ADOPT software can assist extension program design and evaluation.

Keywords: *Adopt, technology transfer, problem solving, facilitation*

Biography

Mark Blackwell is a Senior Developer with DairyNZ and currently project managing SmartSAMB. He is also involved in the adaptation of InCalf for New Zealand dairy farming. Both these extension programs involve collaboration under an MOU between Dairy Australia and DairyNZ, whereby knowledge and resources are freely shared. Mark has many years' experience in extension as a Consulting Officer in New Zealand, with an interest in innovative extension design, delivery and evaluation.

Characterising resilient dairy farming: evidence from the Bay of Plenty

Nick Cradock-Henry¹ and Claire Mortimer²

1 Landcare Research, PO Box 40, 18 Gerald Street, Lincoln 7608. www.landcareresearch.co.nz
Email cradockhenryn@landcareresearch.co.nz

2 Landcare Research, 231 Morrin Road, St Johns, Auckland 1072. www.landcareresearch.co.nz
Email mortimerc@landcareresearch.co.nz

Abstract

Resilient systems have been characterised as those that have a higher capacity to absorb shocks and stresses; have the ability to self-organize into flexible and responsive networks for learning, distribution and change, and; have a high capacity for learning and adaptability through feedback mechanisms within the system. While these concepts have been well developed in the literature as theoretical and conceptual frameworks, there are few examples of operationalizing and empirically applying these concepts, particularly for agroecosystems which are among the most complex of social-ecological systems.

Using a 'bottom-up' and participatory-based approach, we reviewed and empirically applied a set of behavioural indicators across three different types of dairy farm systems in the Bay of Plenty, New Zealand: organic, low-input or grass-based, and high-input, or intensive

systems in which supplemental feed is the major input. Results show significant differences in the resilience of the different farm types. The 'lock in trap' of highly intensive systems, while profitable in the short term, may be less resilient to climatic shocks as these will likely occur in conjunction with changing market and financial risks. Low-input systems are less dependent in particular, on fossil fuels, and were associated with higher levels of farmer satisfaction and well-being. The research demonstrates that in-depth, robust qualitative assessments of resilience can provide a complement to quantitative metrics. The characterisation of resilient dairying also has the potential to contribute to broader sustainability frameworks for agriculture. The findings have implications for the future of New Zealand's productive sector, the world's largest exporter of dairy products.

Keywords: *intensification, indicators, resilience, sustainability, agroecosystems, dairying*

Biography

Nick Cradock-Henry is a research scientist at Landcare Research, in Lincoln. He began his career as a geologist, working on landslide and debris flow hazards, and then slowly moved into social-impacts, vulnerability and resilience assessment, with a focus on high mountain and agroecosystems. The majority of his work is currently focused on 'wicked' and 'messy' problems associated with water management, climate change, and governance for more sustainable futures in New Zealand and elsewhere.

Adaptive Management Groups – Grain and Graze East SA

Jeanette Long¹

¹ Ag Consulting Co Pty Ltd, Ardrossan SA 7751 www.agconsulting.com.au, jeanette@agconsulting.com.au

Abstract

Everyone perceives change differently. Most are challenged by change and may view change as disruptive and unsettling. Creating change also brings with it an element of risk taking and uncertainty.

Some prefer to do things the way they always have and like the sense of security that comes with familiarity, others seek change deliberately and enjoy the challenges it brings.

Under the Grain and Graze 2 program (funded by GRDC and Caring for Country), we formed 5 “Adaptive Management groups” across eastern SA. Each group comprises 8-10 farming businesses and professional farm business support personnel who are interested in developing their skills in managing and adapting to change.

The aim is for participants to drive their own learning agenda and increase their capacity in planning and decision making processes.

Groups have been facilitated by local advisers, key influencers in the region, and supported by a younger adviser as a mentee. Both have undertaken training in facilitation skills and professionals have been brought in to deliver some of the sessions.

This paper will explore what’s worked well in the group facilitation process and what we have learnt about running farmer groups in this manner. It will also review the benefits and challenges for the facilitators and mentees who participated in the program.

Keywords: *facilitated groups, farmer driven learning*

Biography

Jeanette Long is a trainer, facilitator and coach who focuses on building people skills in agriculture. She works with her husband Bill in their consultancy business, Ag Consulting Co. Programs include extension and adoption training, farmer decision making, Myers Briggs personality Types, Mentoring and coaching.

Jeanette has been the leader of the Adaptive Management theme for the East SA component of the Grain and Graze project for the last three years.

Business strategies of farm owners with small dairy herds in the Waikato, New Zealand

Victoria Westbrooke¹

¹ Lincoln University, PO Box 85084, Lincoln 7647, Christchurch
Email: Victoria.westbrooke@lincoln.ac.nz

Abstract.

In the last thirty years the size of the average New Zealand dairy herd has almost tripled (Dairy Statistics, 2013). Despite this growth, 36% of herds are considered small with less than 250 cows. It is important to develop an understanding of the goals and future business strategies of owners of small farms. In the Waikato region of New Zealand owners of small farms (n=13), were interviewed using a semi structured qualitative approach.

The farmers' two key goals were flexibility and time for non-farming activities, and sufficient

funds for the family and business. The business strategy was to generate a strong annual cash surplus and reduce debt a low level by retirement. Then funds previously used to repay debt could be used to employ staff, to milk the cows

The key lesson was that farm owners with small herds follow a strategy that focuses on generating a strong cash-flow and debt management or minimisation. This information will allow extension programs and commercial products and services to be tailored to the needs of owners of small herds.

Keywords: *small dairy farms, capital, debt, survival, business strategies.*

Biography

Victoria is a Lecturer in Farm Management at Lincoln University. She teaches second year B.Ag.Sc and B.Com Ag students, and has research interests in extension, farm profitability and farming innovations. Victoria completed a B.A.Sc.(Hons.) at Lincoln University before working as a Consulting Officer with the now DairyNZ in the Waikato. She then worked at AgResearch, linking farmers and scientists before heading off to the UK to work with farmers implementing grass based farming systems. She has recently completed her PhD on 'the odour attributes of milk from cows on different commercial farming systems' Southern Cross University, Australia.

Understanding and developing farmers' adaptive capacity to effectively extend research results and achieve practice change.

Daniel Healy¹, Kate Roberts¹ and Danielle England²

¹ Roberts Evaluation, Suite 1006, 343 Little Collins St, Melbourne, Vic 3000 www.robertsevaluation.com.au
Email dhealy@robertsevaluation.com.au

² Planfarm, Unit 1/2 Williams Rd, PO Box 1126, Narrogin WA 6312 www.planfarm.com.au
Email danielle@planfarm.com.au

Abstract

Grain and Graze 2 is a four year program aimed at encouraging practice change on mixed farming enterprises to improve productivity, profitability and sustainability. This is currently being undertaken across 7 regions of Australia, with research and extension conducted by a range of groups including service deliverers, research groups and industry groups. A key component of this program is the focus on building farmers' and advisors' capabilities in decision making and adaptive management. This includes promoting an improved understanding of risk, seeking out information, making informed decisions, trialling new methods and reflecting on the outcomes. As such, this program goes beyond extending research results or implications of the adoption of new practices and builds capacity and facilitates the uptake of information. Another key feature is the utilisation of ongoing groups for the promotion of adaptive management principles. With regard to practice change, increased adaptive capacity should allow for the informed assessment of new approaches and the willingness to adopt them where appropriate.

To understand the processes and implications

for adaptive management and practice change, evaluation has been built into all stages of the program. A national benchmarking survey was conducted on farmers' practices as well as their perceived vulnerability, resilience, and sources of influence in making decisions.

An example of how this information was used will be provided in detail with a case study of the Western Australia region. In WA, the benchmark results were examined for each practice to identify areas to target for maximum effect. These were based on relevant practices for the region and the reported knowledge, attitudes and skills of farmers and advisors. A plan was developed to identify gaps and barriers that could be effectively addressed.

Results of the follow up study in mid 2013 will highlight changes in practices as well as adaptive management capacity. The key lessons from this work to date are that in order to have effective engagement it is necessary to understand the level of knowledge, attitudes, and skills; use and promote adaptive management principles; and take a tailored approach to increase the uptake of practices.

Keywords: *Adaptive management; practice change; decision making.*

Biography

Dan has extensive experience in social research and quantitative analysis of large scale data sets. His doctoral research was on the adoption of rural land use practices. After completing his PhD in 2009, Dan undertook a postdoctoral research fellowship at the UQ Business School, investigating the factors promoting innovation and commercialisation in nationwide work teams within CSIRO. At Roberts Evaluation, he has led projects on agriculture and natural resource management. Dan has presented his research internationally and has several years' experience teaching at the university level. In 2001, he coordinated an award winning Landcare education program in Queensland primary schools.

Predicting the rate of adoption of agricultural innovations

Geoff Kaine¹, Sam Longley², Eloise Seymour³ and Vic Wright⁴

1 Geoff Kaine Research, Mooroopna, Victoria, 3629. www.geoffkaineresearch.com
Email geoff@geoffkaineresearch.com

2 Department of Primary Industries, Ferguson Rd, Tatura, Victoria 3616. www.dpi.vic.gov.au
Email samantha.longley@dpi.vic.gov.au

3 Department of Primary Industries, 124 Chiltern Valley Rd, Rutherglen, Victoria 3685. www.dpi.vic.gov.au
Email Eloise.seymour@dpi.vic.gov.au

4 University of New England, Armidale, NSW, 2351. www.une.edu.au Email vwright5@une.edu.au

Abstract

Predicting and estimating the extent and rate of adoption is central to assessing the benefits to be had from research into agricultural innovations and evaluating the success of marketing and extension programs. The question arises then, as to how to best characterise the adoption process of primary producers. After reviewing the literatures on consumer and organisational purchasing Wright (2011) concluded that the dual-process models of consumer decision making proposed by Bagozzi (2006) would be most suitable for modelling adoption decisions by producers, and subsequently rates of adoption.

In the dual-process models goal desire plays the key role in determining the urgency that is attached to an adoption possibility. In these models goal desire is influenced by anticipated emotions, anticipatory emotions, and affect towards the means of achieving goals. Wright (2011) argued the influence of these factors would depend on the type of innovation under consideration: incremental, modular, architectural or radical (Henderson and Clark 1990). These factors may be relatively trivial in the case of incremental and modular innovations but critically important in the case of architectural and radical innovations.

We report on a preliminary investigation into the associations between type of innovation and anticipated emotions, anticipatory emotions, and affect towards the means. Qualitative and quantitative data in relation to these variables were collected from a small sample of grain farmers in the Wimmera and southern Riverina. The results indicated there were significant associations between the complexity of an innovation and measures of the strength of anticipated emotions, anticipatory emotions, and affect towards the means. This suggests the dual-process model has the potential to provide a richer description of the factors influencing the rate of adoption of innovations and, as a consequence, provide better guidance as to how rates may best be influenced.

The lessons from this research are (1) agricultural innovations can be classified into meaningful types; (2) that goal desire can play an important role in the rate with which agricultural innovations are adopted; and (3) that the dual-process model shows promise as a method for predicting the rate of adoption of agricultural innovations.

Keywords: *innovation types, farm systems, consumer behaviour, consumer action, decision making.*

Biography

Dr Kaine is a specialist in the adoption of agricultural innovations. He has twenty-five years research experience in agriculture covering irrigation, animal health, animal breeding, pest and disease management, soil management and nutrient emissions.

Dr Kaine has served as an advisor on agricultural and natural resource policy to the Victorian, Queensland, New South Wales and New Zealand governments. He has written over 50 journal articles and more than 100 research monographs and industry reports.

Dr Kaine was the leader of the social research team in Farm Services Victoria, DPI before leaving to establish Geoff Kaine Research.

Responding to the challenge of getting significant change on-farm at pace

David G. McCall¹

¹ DairyNZ, Newstead, Private Bag 3221, Hamilton 3240, New Zealand. www.dairynz.co.nz
Email david.mccall@dairynz.co.nz

Abstract

Significant and sustained changes in practices are increasingly needed to produce meaningful results on New Zealand dairy farms and meet industry targets. At the forefront is improving farm profitability through efficiency gains and managing profitably within nitrogen discharge limits.

This is challenging our traditional extension practices aimed at broad reach through discussion groups. Level of farmer reach is not the issue. This has been growing in our industry to about 45% with well-structured extension programmes and increasing capability of staff.

Even with clear action plans and initiatives to engage rural professionals to support the extension agenda, meaningful change in farm profit is hard won. Providing support for change is the issue. This is because many issues we face are farm system issues and require new skills and disciplines.

A recent initiative with 58 dairy farmers highlighted what can work. A three year intensive programme was required. It combined a demonstration farm, group discussion and one-on-one follow-up with a farm consultant. It took

three years for significant results to show. When they did they amounted to an increase of \$600/ha in farm profit above a regional benchmark.

Getting farmers to initially commit was a factor, and was more successful coming from a team of farmer leaders. The discipline on the farmer to gather information, plan and act was a key benefit of one-on-one in early stages. Support with skills to implement actions was also a benefit. By the end of the process almost a third of farmers engaged their follow-up consultant commercially.

While this combination of traditional extension and managed follow-up brings results, strategic challenges remain. Costs per farm are 3 to 4 times higher for the intensive period of change. This limits the breadth of the approach given a fixed resource. Motivating factors for farmers are also a challenge. In the absence of forced change, they may need an inspirational target to sign on to (eg 10% increase in profit).

Because of cost, the process is best suited to change that can proceed from smaller cohorts of farmers making significant change. In our context this is farmers facing forced change.

Keywords: *Farm-system, motivation, profit, target.*

Biography

David McCall is the General Manager for Development and Extension at DairyNZ in New Zealand. This group is responsible for facilitating and driving industry change among New Zealand's 11,500 dairy farmers. The mission is to enhance the industry's profitability, sustainability and competitiveness.

David started his career as a farm systems research scientist. He pioneered farm simulation and decision support modelling in pastoral agriculture. His interest in extension arose from here. He has also worked in science management, business-development for contract-R&D and as new-ventures manager in a Biotech company. He has been 6 years at DairyNZ.

Decision Support Systems (DSS) – Where success is failure of continued use

Bill Long¹ and Kevin Parton²

1 Ag Consulting Co, Adrossan SA 5771, www.agconsulting.com.au, bill@agconsulting.com.
2 Charles Sturt University, Orange, NSW

Abstract

The erratic uptake and use of Decision Support Systems (DSS) by the farming community has frustrated DSS developers for many years. Researchers have produced DSS as a way of extending research outcomes to farmers and yet uptake and adoption of the systems has been poor. Discussion on reasons for poor adoption have focussed on factors such as farmer age, computer literacy, complexity and design of the DSS yet little discussion exists on where farmers source information or actually how they make decisions.

Methods

Over 50% of farmers across Australia employ the services of a consultant to assist in decision making. Thirty farm consultants across South Australia and Victoria were interviewed on their use of DSS. Questions focussed on how they

made decisions with their farmer clients with specific emphasis on the role and function of DSS in that process.

Results and Findings

DSS are learning tools. Farm consultants are the main users of DSS and they are used by consultants as learning tools to support and reinforce intuitive knowledge. Once a principle finding from the use of the DSS has been understood, and “rule of thumb” established, the DSS will no longer be used. Knowledge and information informed by DSS will be transferred from the consultant to the farmer, and include a range of variables including personal factors that impact on the decision. Developers of DSS should target consultants as users and accept discontinued use of DSS as success.

Keywords: *decision support tools, learning tools*

Biography

Bill Long is an experienced company director, agronomist, agribusiness manager, business consultant, farmer and accomplished research and extension manager. Bill has a long and successful track record of leading adoption and new technologies and concepts in Australia’s crop production systems.

Bill is the founder and Managing Director of Ag Consulting Co, a Yorke Peninsula based agricultural consulting business established in 1996. The company provides agronomic and farm business management advice across SA and conducts a range of research. Bill is currently completing a Masters Degree in Agricultural Science in the use of decision support tools and farmer and advisor decision making processes. He is a member of the GRDC Southern Panel and in 2009 was awarded a Churchill Fellowship.

Coping with unchosen change - an extension practitioners perspective

Penny Shaw¹ and Philip Shannon²

1 Department of Primary Industries, cnr Annesley St & Ogilvie Ave, Echuca, Victoria, Australia.
Email penny.shaw@dpi.vic.gov.au

2 Shannon Farm Consulting, 538 Cobram South Road, Cobram, Vic 3644. Email shannonfarm@bigpond.com

Abstract

Much has been written about human behaviour during unchosen change, but there is little documentation about the extension practitioners guiding farmers through unwanted change. Based on the case study of 10 years of drought in Northern Victoria, the learnings of extension practitioners are explored. Using a framework of self, team, collaborators and clients, a number of tips have been identified for those planning, delivering and living with the aftermath of unchosen change.

During the planning phase awareness of self, team, collaborators and clients enables quality programs to be developed. Preparation in periods of uncertainty may seem difficult but there are some tools that can be used to help understand ones own strengths and weaknesses, and how individuals and team members behave under stress. The importance of maintenance of networks and the utilisation and strengthening of existing collaboration is demonstrated.

During the period of delivery, it is demonstrated how important communication of the situation is to all those involved. Whether it be supporting collaborators by sharing experiences or utilising evaluation techniques to keep investors and stakeholders informed. Timing of communication is more important than ever as often the situation is still evolving while the solutions are being designed.

Post the unchosen change understanding your own reaction to the aftermath of the change is important. Why did self, team, collaborators and clients behave the way they did? Observations are also made on how things are made different when dealing with the changed world views, priorities and networks as you design your next extension program. Particularly, the impact of a changed view of risk, by self, team, collaborators and clients on future success of extension programs.

Keywords: *Drought, self, team, collaborators, clients, programs*

Biographies

Penny has managed public agricultural extension projects within the Department of Primary Industries for over 20 years. Working with dairy industry since 2000 she has led a team of extension practitioners who have helped dairy farmers through transformational change brought on by deregulation, drought and water reform. Her current position involves the improvement of services to dairy farmers in the state of Victoria, Australia. Phil worked in dairy extension for the Victorian Department of Primary Industries for 16 years prior to starting his own private consulting business. During his time with DPI he worked extensively with both land managers and industry service providers to design and deliver programs to support the industry manage through a period of significant change associated with Drought, deregulation, and water reform.

Distress and burnout among New Zealand dairy farmers

Neels Botha¹ and Toni White²

1 AgResearch, East Street, Hamilton, New Zealand 3240. www.agresearch.co.nz
Email neels.botha@agresearch.co.nz

2 AgResearch, East Street, Hamilton, New Zealand 3240. www.agresearch.co.nz
Email toni.white@agresearch.co.nz

Abstract

The wellness and wellbeing of farmers are crucial to uphold sustainable agricultural production and maintain resilient farming communities.

Dairy farming is one of the most intensive forms of pastoral farming in New Zealand and is characterised by long hours of monotonous hard work. Tipples (2008) for example estimated that one third of the New Zealand dairy labour force worked at least 70 hours per week, almost twice the normal working week. The consequences for many farmers could be distress and burnout. As these two mental states influence sufferers' decision making abilities it can cost the country many millions of dollars per year.

The aim of the research was to get a baseline understanding, and yearly updates thereafter of New Zealand dairy farmers' mental health status, as indicated by distress and burnout, and to indicate how extension and other farming service providers could play a role to assist. An online community of interest and several workshops were used to identify how affected farmers can be assisted.

530 dairy farmers were interviewed during 2010 and 295 during 2011 when they attended Farmer Health Pitstops at major dairy events

nationally. Data analysis of 2012 is underway. Using the self-report PHQ-4 primary health care screening instrument depression and anxiety symptoms were used during both years as an indicator of distress. During 2011 and 2012 the Oldenberg Burnout Inventory (OLBI) was used to assess burnout as well. Extrapolation to the general dairy farming population is unreliable.

Respondents hugely underreported the status of their own mental health. About 50% did not seek help or support even when they were seriously stressed. During 2010 17% screened positive for depression and or anxiety issues and 10% in 2011. The prevalence of high, average and low disengagement levels was 11%, 86% and 2% respectively, while, in total, 11% respondents had a high burnout score, and 88% scored average in 2011. Exhaustion was a bigger issue than disengagement from work (21% vs. 11% respondents).

The three key lessons from the work are that farmers are more stressed than they are willing to acknowledge, exhaustion is a problem on farms and extension can play a role to identify and refer those experiencing stress issues.

Keywords: *depression, anxiety, disengagement, fatigue, extension, resilience*

Biography

Neels came with his family to New Zealand in 2000 when he joined AgResearch as the team leader of its social research group. Before that he worked as an extension officer in Namibia and taught extension and rural development at the University of Pretoria as a full professor. He has a keen interest in human behaviour and behaviour change and has done research in this area for over 30 years. His current focus areas are farmer resilience and Agricultural Innovation Systems.

Workforce development planning and action in primary industries: opportunity or necessity?

Jennifer Moffatt¹ and Ruth Nettle¹

¹ The University of Melbourne, Royale Parade, Parkville, Victoria 3010. www.unimelb.edu.au
Email jennifer.moffatt@unimelb.edu.au; ranettle@unimelb.edu.au

Abstract

The opportunity exists for primary industries in Australia to take a strategic, collective, industry or regional approach towards addressing the long-standing recruitment and retention challenges. The predominance of small family farms in Australian agriculture limits their capacity to offer such incentives such as a career path or development opportunities which could help attract employees. Consequently these smaller businesses, individually, are less able to influence at a regional level. However, strategically-focused collective action on workforce development, whether industry-led or regionally-based has the capacity to convert this challenge to an opportunity, to achieve a more sustainable agricultural workforce. With Australia's food system increasingly shaped by global demand, and the need for a sustainable competitive food and fibre supply, one may ask if workforce development planning and action in primary industries is not a necessity.

We report here early results from research in the cotton industry in Queensland.

Case study methodology was used, combining interviews and a survey.

Participants from the cotton industry, agriculture, extension officers and others who

provide support services and regional stakeholders alike, all reported that the recent mining boom has exacerbated an existing scarcity of employees. This was created initially by a lengthy drought quickly followed by record flooding. Shortages were reported in the cotton industry, on-farm and in ginning, in agriculture more broadly, in agronomy and other support services such as re-sellers, and machinery firms. While many skilled agricultural employees left the industry, mining now draws on the few who are returning because a similar skill set is required in agriculture and in many support industries. The higher cost of living and poorer service access resulting from the mining boom, contribute to recruitment and retention issues. Key adaptive measures in the cotton industry have been the purchase of equipment to reduce labour demand and extensive use of back packers.

Learnings to date are that farmers continue to demonstrate their capacity to adapt to structural constraints, there is an overlap of skills sets in two dissimilar industries, and extension officers are well placed to play a pivotal role in facilitating a collective strategic approach to workforce development.

Keywords: *agriculture; cotton; extension; mining recruitment; retention;*

Biography

Dr Moffatt's current position as Research Fellow (Workforce Change & Rural Development) at the University of Melbourne, is primarily funded from a Cotton Research and Development Corporation grant won by Associate Professor Ruth Nettle. This builds on Jennifer's doctoral work on sustainable development in agriculture conducted in rural and remote Queensland. She continues work on a rural health theme from her postdoctoral position at the University of Queensland, School of Medicine, Rural Clinical School.

Beyond Regulation – ‘Decent Dairying’ for more ‘Decent Work’ in New Zealand

Rupert Tipples¹, Ken Wilson & Roberta Hill²

1 Department of Agricultural Management & Property Studies, Faculty of Commerce, Lincoln University, Lincoln 7647, NZ, www.ruralemploymentrelations.org, Rupert.Tipples@lincoln.ac.nz

2 WEB Research, www.webresearch.co.nz/, ken.wilson@webresearch.co.nz, roberta.hill@webresearch.co.nz

Abstract

Dairy farming is a significant part of the New Zealand economy. However, the industry’s social sustainability is questionable. New Zealand dairy farming has been based largely on a share-milking system, which minimized the need for employed labour. Recent farm conversions to dairy farming have resulted in larger enterprises largely dependent on migrants. Share-milking, with the chance of farm ownership, provided the motivation to continue twice a day (TAD) milking, in spite of the long monotonous hours. Employees do not have that incentive. Such long hours are also implicated in high accident rates. Fatigue at work can kill or cause serious injury or impairment of cognitive powers. Having to rush and being fatigued are serious barriers to safety.

These are good reasons to change dairy farming’s basic systems, but Once-a-Day (OAD) milking, which gives more sleep, better choices and work organisation, and less stress, does not fit culturally. How then to ‘intervene’ in the practices of the dairy farm and family so that they are motivated to alter their current behaviours and become safer, healthier, and less stressed?

New Zealand has a detailed system of labour

laws, but dairy workers are disadvantaged by their remoteness from its administration/enforcement, together with reluctantly compliant small employers. Using Cultural Historical Activity Theory (CHAT) and Finnish Developmental Work Research (DWR) tools, our research addresses fatigue and stress in the Dairy industry and the development of plans to overcome farmer resistance to cultural change. Change workshops include not just farmers/share-milkers, but also legislators and farm managers/workers, and other related parties too.

Initial ethnographic fieldwork is complete and workshops to explore long term, practical solutions to the problems of overwork, fatigue and stress are underway. Initial results suggest a farmer-led proactive approach is needed to establish ‘decent dairy farming’ practices, based on what a ‘decent’ dairy farm has, what a ‘decent’ dairy farm does, and what characterises a ‘decent’ dairy farm employee. Our three learnings are that overcoming cultural change is not easy, but our research based process shows great promise although costly in time and dollars. Good research does not come cheap.

Keywords: *Farming, employment, fatigue, stress, research, DWR/CHAT.*

Biography

Rupert Tipples M.A., PhD (Cambridge) has worked at Lincoln since 1977 on people aspects of primary production. He is currently Senior Lecturer in Employment Relations and also teaches Management Research Methods to department postgraduates. He leads Lincoln University Consortium (Lincoln + WEB) who bid successfully in 2010 for the dairy fatigue component of DairyNZ’s Farmer Wellness and Wellbeing Programme 2010-2017.

Resilience through change: “beyond reasonable drought”

Heather Collins¹

¹ Collins Consulting, 52 Lanark Lane, RD1, Blenheim 7271. Email collins.h@clear.net.nz

Abstract

Concerned at declining annual rainfall, increasing erosion and falling profitability, a group of south Marlborough farmers initiated an SFF funded dryland farming project. The project – Beyond Reasonable Drought–explored how farmers could adapt to a changing and variable climate by developing more resilient farming systems. System changes at the Avery family’s Bonavaree have increased profitability, biodiversity and leisure time which proves the resilience and sustainability of the new system. Behavioural change research investigated the impact of

Beyond Reasonable Drought on farmers and rural professionals. Both groups are more aware of dryland farming issues. Farmers have changed farming systems and rural professionals have changed their advice to clients. Doug and Fraser Avery’s management skills, personal commitment, and the system changes at Bonavaree were the key factors leading to behavioural change. An extension project that demonstrates practical and achievable outcomes, lead by innovative and inspirational farmers, will bring about behavioural change.

Keywords: *sustainability, dryland, climate change, behavioural change*

Biography

Heather Collins is an experienced facilitator, social researcher and project manager and a highly effective communicator and extension specialist. She has a practical and theoretical understanding of sustainability in the agricultural and horticultural sectors and works with farming communities and groups to help them achieve their desired outcomes. Clients include farmer groups, The Landcare Trust, regional councils and Government. She was the project manager for the Beyond Reasonable Drought dryland farming project in Marlborough.

Heather is starting a PhD full-time in farm management at Massey University in 2013.

Building resilience through grazing crops

Jonathan England¹

¹ Department of Agriculture and Food Western Australia, 10 Doney St, Narrogin, Western Australia, 6312. www.agric.wa.gov.au Email jonathan.england@agric.wa.gov.au

Abstract

The power of mixed farming enterprises are their synergies and inherent resilience due to their mixed nature. However in broadacre Western Australia, it is common for sheep to struggle at the expense of the crop, while the crop relies solely on the value of the grain harvested to generate a return.

Grazing crops allow farmers to further improve their resilience through reduced reliance on slow growing pastures at times of peak animal requirement, with increased options for in-season management of canopy, disease and maturity of crops. Grazing crops can allow area cropped and/or stock numbers to be increased due to reduced dependence on winter pastures, while generating value to the cropping enterprise regardless of yield.

This should be a pretty compelling case for widespread adoption, however fear of yield reduction, despite the other benefits has generally limited uptake to the early adopters and early majority.

Confidence is key, but there is no one recipe for grazing crops. How do farmers decide whether to graze early when they are desperate

for feed or do they wait for good biomass and graze late? Should they graze hard or lightly? If they seed early, can they delay flowering to reduce the risk of frost and what is the risk of reducing yield due to insufficient recovery time post grazing.

Confidence can be increased by providing information regarding the recipe and by showing farmers the tangible “see it with your own eyes” component. GRDC funded time x height cutting sites across WA in 2012 sought to investigate these parameters. More powerful were the site demonstrations, allowing farmers to see crop recovery rates and compare grazed treatments across time with ungrazed crop. Certain treatments could be discounted immediately, but a broad range of treatments visually showed little impact, something the yield data and the total return when including the value of grazing supported.

Widespread adoption of grazing crops to improve the resilience of mixed farming enterprises depends on farmer confidence. Confidence can be built with a good recipe, real data and the chance to “see it with your own eyes”.

Keywords: *Synergies, adoption, confidence, broadacre, recipe, demonstration.*

Biography

Jonathan England is a Development Officer with the Department of Agriculture and Food WA in Narrogin. He works in sheep management with an emphasis on nutrition. His interest in grazing crops started in 2008 with a farmer in a Lifetime Ewe Management course.

Jonathan is keen to get farmers and agribusiness professionals' confidence levels up, increase the resilience of mixed farming enterprises and make managing sheep nutrition easier when feed is scarce. He is also married with a daughter and runs a small mixed farm in his spare time.

Overcoming challenges in supporting remote and regional growers

Chrissy Stokes¹

¹ Zespri International Ltd, 400 Maunganui Road, Mount Maunganui 3116, New Zealand.
www.zespri.com, Email chrissy.stokes@zespri.com

Abstract

The New Zealand kiwifruit industry comprises approximately 2,700 orchards, from Kerikeri in the north of the North Island to Nelson at the top of the South Island. Eighty percent of the industry's productive orchards are currently located in the Bay of Plenty (BOP), the remaining 20% are spread amongst 10 regional growing centres.

With the recent release of three new commercial kiwifruit varieties, each with unique growth habits, the requirement for technical growing support to regions outside the BOP has increased. Also with the arrival of the *Pseudomonas syringae actinidae* epidemic and the impact it has had in the BOP the commercial significance of other kiwifruit growing regions has increased and, hence, strategically supporting these regions to increase productivity is an imperative.

Providing technical support to a wide geographical area provides challenges. Each region has a unique growing environment and industry infrastructure and, therefore, different extension requirements. In terms of technical support most of the regions outside of the Bay of Plenty do not have dedicated technical personnel. Access to technology can be barrier in accessing

information as rural broadband is not yet available to many kiwifruit growers.

To overcome some of these challenges Zespri has taken steps to support regional growers. A role in Zespri's Orchard Productivity Centre (OPC) team was created which is dedicated to developing programmes and frameworks to facilitate effective extension to these regions. Part of the focus of this role is to develop

regional technical networks to assist with the dissemination of messages and coordination of technical events. Another priority is to evaluate options to use technology such as webinars to communicate the most up-to-date information

It is also important that data is collected specific to each region so information is relevant to their growing environment. To date, OPC has implemented on-orchard monitoring programmes and regional growers are being empowered to undertake their own trials to evaluate new ideas or validate science findings in their environment.

The key is having a multifaceted approach in both the collection and dissemination of technical information, ensuring that information is targeted at each region's unique growing environment.

Keywords: *kiwifruit, geographical spread, networks, regional, technology*

Biography

Chrissy Stokes is Regional Technical Officer within Zespri's Orchard Productivity Centre team. She has come to kiwifruit via the wine and fresh-cut salad industries and is passionate about taking science and turning it into practical solutions for growers. Chrissy has a BSc and a PGDip in plant biology from Massey University.

All for one and one for all: the story of “Harcourt” and the Dawson Valley cotton growers

Liz Alexander¹ and Mike & Debbie Austin²

1 Blue Dog Agribusiness, PO Box 2240, Emerald, Queensland 4720. Email bluedogag@bigpond.com.au
2 “Harcourt”, Baralaba, Queensland 4702. Email debbieaustin@bigpond.com

Abstract

Documented extension theory suggests an unsafe or threatening environment detracts from the ability of adults to learn, and that lack of financial viability inhibits the adoption of new practices. What role then does extension play in supporting communities experiencing extraordinary financial stress and psychological trauma following natural disaster?

The Dawson River received record breaking floods in 2010 causing more than \$36 million in lost income and damaged infrastructure to 22 irrigated cotton farms, centred on Theodore, Queensland – over \$1.5 million per family enterprise. While other regions experienced tragic loss of life and extreme trauma, this small community attempted to cope with their homes and businesses being flooded twice in one year.

Prior to the floods the Dawson Valley Cotton Growers Association (DVCGA) had a

strong history of environmental stewardship, implementing initiatives to reduce soil and water contaminants into the Great Barrier Reef for more than two decades.

Between June 2011 and December 2012, the DVCGA members attended workshops covering environmental and agronomic practices, supported by a comprehensive monitoring and evaluation framework. Growers identified actions to improve practices and infrastructure design using the industry’s voluntary Best Management Practice (myBMP) program, and were supported with incentive funding by the Fitzroy Basin Association and the Australian Government when significant water quality outcomes could be demonstrated.

Abstract continued on page 50

Keywords: *Best Management Practice, Community, Floods, myBMP, Natural Resource Management, Resilience*

Biographies

Through her consultancy Blue Dog Agribusiness, Liz undertakes research, project management, strategic communication and extension delivery across eastern Australia. Currently she supports cotton growers in Central Queensland to participate in myBMP and Reef Rescue incentive programs for the Fitzroy Basin Association and Cotton Research Development Corporation, and coordinates the national Better Sunflower program for the Australian Oilseeds Federation. Her representative roles include Director of Cotton Australia, committee member of the Australian Cotton Conference, and the Central Queensland Regional Planning Committee. Liz holds a Masters of Rural Systems Management and is a graduate member of the Australian Institute of Company Directors. Mike Austin was born and raised on a cotton farm in Theodore. After boarding in Rockhampton, and a brief time working in Yeppoon, he returned to cotton farming, which remains his passion to this day. Debbie and Mike married in the 1980’s; Debbie, having lived all her life in Brisbane, became wife, mother, book keeper and occasional farmer. They are co-owners and managers of “Harcourt” and “Riverland”, a family owned flood irrigation and dryland cropping and grazing enterprise near Baralaba. Both these properties are on the Dawson River, which is a source of great delight and importance to their family.

By December 2012 growers had undertaken significant repairs and improvements to their farming systems and achieved the highest rate of adoption of myBMP of any Australian cotton growing region. This presentation shares the journey from an extension perspective, a grower's personal experience, and notes highlights including:

- Strong integrated coordination of extension and industry activities across key stakeholders and organisations.
- Genuine engagement by community and local farmers working in partnership.
- Building long term, local support networks for growers by training service industry members.
- Regular scheduling of workshops provided growers with measurable gains over time.

Applying theories of adult learning made the workshop experience a positive one; however no single principle explains the amazing outcomes. One cotton grower explained, "you can eat an elephant, one small bite at a time, and still wake up the next morning with an appetite".

The role of agricultural extension in improving the health and resilience of the Great Barrier Reef

Carla Wegscheidl¹ and Jeff Coutts²

1 Queensland Department of Agriculture, Fisheries and Forestry, PO Box 1085, Townsville, Queensland 4810. www.daff.qld.gov.au Email carla.wegscheidl@daff.qld.gov.au

2 Coutts J&R Pty Ltd, PO Box 2681, Toowoomba, Queensland 4350 www.couttsjr.com.au
Email jeff@couttsjr.com.au

Abstract

Australia's iconic Great Barrier Reef is internationally recognised for its unique values. Although numerous pressures are threatening the health and resilience of the Reef, a priority is to reduce diffuse pollutant loads emanating from agricultural land uses adjacent to the Reef. To address this issue, a collective of governments, industry and community organisations, have come together under the auspices of the Reef Water Quality Protection Plan 2009 (Reef Plan) to increase the adoption of agricultural land management practices that reduce nutrient, sediment and pesticide exports to the Reef.

Agricultural extension is recognised as having an important role in facilitating land management change by rural landholders and this is a key action in Reef Plan. An Extension and Education Strategy was developed and piloted to enhance extension coordination and delivery to accelerate the rate of change. The pilot project was undertaken with the sugarcane, beef cattle, banana, dairy, cropping and forestry industries in two catchments of North-East Queensland. The key objectives were to improve extension services to producers, increase coordination and communication between stakeholders,

and build the capacity of practitioners to enable change.

Extension efforts were targeted to achieve agronomic, economic and water quality benefits. There were significant capacity gains reported by producers, with evidence of land management changes with the potential to reduce nutrient, sediment or chemical runoff from 42,000 hectares of land. Stakeholder networks were established leading to significant improvements in communication and collaboration between allied programs. Multi-industry stakeholder groups were a unique part of the project, allowing different industries, governments, researchers and community groups to work together to tackle water quality issues at a catchment scale.

The lessons and recommendations from the project are being used to provide strategic direction for the next phase of Reef Plan and guide future delivery of extension services throughout Reef catchments. Focussing extension on enhancing both business performance and water quality outcomes; integrating program delivery and establishing stakeholder networks to improve communication are key lessons from the project.

Keywords: *land management, water quality, practice change, stakeholder, engagement.*

Biography

Carla Wegscheidl is the project leader of Reef extension for the Queensland Department of Agriculture, Fisheries and Forestry, responsible for the implementation of the Reef Plan Extension and Education Strategy. With a background in freshwater wetland and estuarine habitat management she has a particular interest in the link between sustainable farm management and aquatic ecosystem health.

Evaluating the effectiveness of deer learning packages

Tracy Payne¹, David Stevens² and Marie Casey³

1 AgResearch Ltd, Ruakura Research Centre, Hamilton, Waikato 3240. www.agresearch.co.nz
Email tracy.payne@agresearch.co.nz

2 AgResearch Ltd, Invermay Agricultural Centre, Mosgiel, Otago 9053. www.agresearch.co.nz
Email david.stevens@agresearch.co.nz

3 PGG Wrightsons, 184 High St, Dunedin 9016. www.pggwrightsons.co.nz
Email: mcasey@pggwrightson.co.nz

Abstract

The deer industry is a small but vital part of the NZ economy. In the quest for industry improvement, the AgResearch Deer group has incorporated deer biology and farm practice into a set of learning packages designed to help farmers. Several of these packages have been presented to the Deer Industry Focus Farms. The research outlined in this paper aimed to evaluate the effectiveness of the delivery of these learning packages at two Focus Farms. Twenty farmers were interviewed in an open question format with a set list of questions relating to the learning package approach. All respondents said that they attended the focus farms to improve their knowledge, although this highlighted the development of tacit knowledge, rather than specific management changes. Responses identified the importance of the organisation of the field day and presentation style as two key drivers of success. Successful delivery of the learning packages was attributed to a single technical focus, practical take-home messages of both physical and financial outcomes and linking science with the on-farm activities and information. In contrast, the approach was less successful when there were too many speakers, linkage between the science presentation and

focus farm practices was lacking, and time management of the day was poor. The time for formal and informal interaction between farmers and scientists was identified by all respondents as enhancing learning. Discussion between the facilitator and the scientist to develop a theme that integrated the science with the on-farm practice prior to the day was important to the success of the learning package presentation. Key learnings from this research:

1. A Focus Farm Day should have a single technical focus with the science first, then linked with on-farm practice, while providing opportunities for interaction between scientists and farmers.
2. It is important to present information in several ways
 - a) Formal presentation of the science and its practical outcomes
 - b) Opportunities for question and answer
 - c) Reinforcement using on-farm information and examples
 - d) Provision of reading material for future reference
3. It is important that facilitators understand the process and the information required to ensure good technical learning.

Keywords: *deer farming, focus farms, field days, learning package, scientific presentations*

Biography

David Stevens has been involved in the development and extension of research into feeding systems in sheep, beef, deer, and dairy farming for the past 30 years. David has been involved in the Sheep and Beef Monitor farm programme since its inception and more recently in the Telford Dairy Demonstration farm and the development and delivery of the Deer Industry NZ Focus Farm network. David's contribution to the delivery of technologies to farmers has been acknowledged by the New Zealand Grassland Association in 2006 (Technology Transfer in Pastoral Farming Award) and the New Zealand Society of Animal Production in 2008.

Innovative pathways for developing advisory capacity: opportunities and challenges from an Australian dairy industry context

Anne Crawford¹ and Ruth Nettle¹

¹ Rural Innovation Research Group, Department of Agriculture and Food Systems, Melbourne School of Land and Environment, The University of Melbourne, Parkville Victoria, Australia 3010. Email acra@unimelb.edu.au

Abstract

The agricultural advisory sector plays a critical role in facilitating on-farm change. Extension sector reform necessitates new approaches for implementing change agendas and building the required capacity to facilitate such changes. Increasingly, a range of different people and groups, of varied backgrounds and expertise, and not necessarily affiliated with any single extension organisation, are involved in such change management programs. There are many challenges associated with these new approaches to change management.

Using a case study from the Australian dairy industry, this paper explores some of the main challenges in enrolling farm advisers in facilitating change in the area of people management in dairy farming.

Effective farm working relationships underpin agriculture's ability to attract, retain and develop people (including farm family members). In 2006 The People in Dairy program was established to address the issues of work-life balance and good employment relations, and improve sustainability for Australian dairy farms. In developing the program, advisers were identified as playing a significant role in supporting and achieving change on-farm in the area of people management. The change program design includes professional development of advisory services as a core element, with the design and

implementation of an industry-specific Diploma of Human Resource Management.

Research is underway to understand the nature of advisory 'change in practice' in this emerging domain, using a targeted in-depth interview approach with advisers and farmers. Advisers are broadening their skills base and business practice to consult on people management issues, beyond the traditional concerns of animal nutrition and husbandry, feedbase and business management. There has been an increased demand for such advice, as farms increase in size and employ additional staff.

Early findings suggest a diversity of motivation, action and approaches to advisory interventions in people management on-farm, in part dependent on the adviser's assessments of the position of the farmer with respect to change, a common issue in advisory relations. However, other critical issues are also identified amongst advisers, including: not all advisers trained go on to advise or use their newly developed capacity; multiple interactions with farm businesses are required to achieve change in such a complex area; and ongoing professional development, networks and the integration of current research into advisory practice are important to maintain relevance and currency. The paper concludes with possibilities for re-conceptualising advisory development for future farming systems.

Keywords: *Advisers, capacity building, human resource management, on-farm change, extension sector*

Biography

Anne Crawford is a Research Fellow with the Rural Innovation Research Group at the University of Melbourne's School of Land and Environment. Anne leads evaluation projects for Dairy Australia's People in Dairy program and the Gardiner Foundation's Strengthening Small Dairy Communities Pilot project, as well as contributing to teaching at both undergraduate and Masters' level. She has a background in farming systems RD&E and multidisciplinary approaches, and has recently completed her Master of Evaluation.

DairyConnect – topic specific buddying of farmers to improve outcomes

Ian Tarbotton¹

¹ DairyNZ, Newstead, Private Bag 3221, Hamilton 3240, New Zealand. www.dairynz.co.nz
Email ian.tarbotton@dairynz.co.nz

Abstract

Farmers have a broad responsibility and need to be able to embrace a range of topics in today's agricultural sectors. There is also more regulations and compliance impacting on farming. Through contact with smaller scale dairy farmers and visiting remote districts it became clear that there was significant isolation. This is at a time when there is more need to be connected to make good farm decision related to staff, feed, finances and environmental management.

As part of a project on Social network mapping of farmers in the New Zealand dairy industry it was identified that there was considerable motivation to share ideas and experiences between farmers. There was also a lot of change being implemented without fellow farmers who had "been there and done that" providing guidance.

We initiated an approach which we term DairyConnect takes into account the considerable value there is in farmer experience. Farmers have appreciated us actively matching them up on specific topics where one of them has made a successful change and another is considering making that same change. Connectivity in the regions is enhanced through these connections as some stay in contact and others remain an acquaintance

Three key lessons from this work have been i) there is much more diversity in the dairy industry than most people realise, ii) often farmers are looking to make change in one part of their farm business at a time and iii) extension can have a valuable role in brokering connections between farmers and to professionals rather than being the source of advice themselves.

Keywords: *farmer network, listening, decision making, DairyConnect, brokering*

Biography

Ian Tarbotton is the Farmer Network Leader at DairyNZ in New Zealand. This is a dairy industry organisation which has as its' mission to enhance the industry's profitability, sustainability and competitiveness of New Zealand dairy farmers.

Ian started his career doing pastoral farm systems research in hill country. He moved into social research looking at farmer decision making and change as well as the fit of technology into farm systems. From this work a keen interest in extension emerged and a role as extension strategist in the dairy sector.

He has also worked in research, strategic planning and co-development for agricultural R&D. Ian's focus recently has been on understand how "people connections" impact on positive change.

Mentoring in agriculture: growing the next generation of farmers

Jill Greenhalgh¹ and Philippa Rawlinson²

1 Lincoln University, PO Box 84, Lincoln 7647, New Zealand.
<http://www.lincoln.ac.nz> jill.greenhalgh@lincoln.ac.nz

2 Lincoln University, PO Box 84, Lincoln 7647, New Zealand.
<http://www.lincoln.ac.nz> philippa.rawlinson@lincolnuni.ac.nz

Abstract

Mentoring or one-to-one coaching offers an alternative or complementary learning option that is not new in agriculture, but has not been particularly well embraced by the industry. Research shows that mentoring has a number of benefits for mentees (protégés), mentors, and organisations. Mentoring in agriculture should be investigated as one of several options to achieve an increase in farm productivity and profitability.

Agriculture is an increasingly complex industry with a need for knowledge far beyond the technical aspects of producing milk, meat and fibre. Farmers need advanced business skills and leadership ability to manage labour and skills shortages, financial planning, risk, people and environmental management, strategic thinking, negotiation and decision-making, as well as strategies for coping with legal and policy issues. Knowledge is gained in many ways. Each individual has their own preferred method of learning which is influenced by their career pathway. Most farmers learn their skills on the farm, supplemented by formal on-the-job training, and through informal learning such as peer learning and discussion groups. Mentoring is an informal way of passing on

industry knowledge from the experienced to the inexperienced.

Mentoring comes in many forms and for a range of purposes. It can take a formal, functionalist approach building on deliberate and purposeful goals, or a relational approach where trust and respect are key components in the relationship. There are examples from agriculture of mentoring systems, both in New Zealand and overseas. Some of these appear to work well while others have been less successful. These examples provide lessons for developing sustainable mentoring programmes in farm business management. There are clear guidelines for establishing a successful mentor-mentee relationship based on research and the experiences of mentoring programmes.

The three main points of learning are: that mentoring offers another method of supporting young farmers to become better farm business managers; successful mentoring requires a strong commitment to the process by mentors and mentees and a good match between the two; and best practice suggests that suitable training is required, along with a support coordinator who can act on regular feedback.

Keywords: *one-to-one coaching, expert guides, mentee, trust relationships*

Biography

Jill Greenhalgh works as a research officer in the Department of Farm Management and Property Studies, Lincoln University and for the Centre of Excellence in Farm Business Management. She completed a M.Appl.Sc. (Hons) where her thesis investigated the role of rural contractors in the sheep/beef cattle sector in New Zealand, and has since undertaken mostly dairy-focussed research around education/training, farm employment, culture change on farms and farm systems.

Coaching for achievement in agriculture

Matthew Pickering¹

¹ Coach Approach Ltd, P O Box 1143, Cambridge 3450, New Zealand.
www.coachapproach.co.nz, email matthew@coachapproach.co.nz

Abstract

Coaching is a leadership literacy that Coach Approach Ltd has been delivering to the Agricultural industry for 5 years. It is being utilised by agricultural businesses to unleash the potential of leaders, staff, customers and stake holders across all roles. Coaching is a chosen event, just like the continual choice of whether to be reactive or proactive.

Coaching develops thinking. Developing someone's ability to think is a gift of intangible riches. Today's workforce is becoming less and less tolerant of being told what to do. They want to be part of the solution and they want to know how their contribution makes a difference. Required is a shift in mindset that unlocks the coaching process. A shift in thinking from 'solving others' problems' to 'unleashing their potential' is the key. Awareness of this insight provides choices; to keep doing what have always done or to break away from that habit and try the other options that are identified. Devoid of this awareness the individual will default to the 'norm' that is imposed by others and by the environment they live/work in.

Coaching leads to action. The skills of coaching include Listening for the essence of what is not being said, Questioning to discover new pathways and solutions and the sharing of wisdom wisely through Feedback and providing perspective. Without action the best laid plans come to nothing. Anchored to a proven coaching model these 'soft' skills produce 'hard' results.

Coaching delivers positive change. Coaching focuses actions on how to shift from where one is at now to where one wants to be. It is future orientated – a positive and fun place to hang out! This applies to any dimension such as business strategy, annual plans, personal development and family conversations.

To date, lessons learnt from coaching in the agricultural sector are; always start with the vision of what is to be achieved, keep an open mind to the ideas and options of others and focus on identifying and then developing strengths as this is where significant gains in effectiveness come from.

Keywords: *Excellence, mentoring, alignment, succession, success, growth.*

Biography

Matthew's 21 year career in rural banking culminated in a regional manager role responsible for the growth and development of over 100 staff. Since 2007 Matthew has been a director for Coach Approach Ltd, a New Zealand wide business whose purpose is to enrich people's lives through growing and developing leaders. This coaching approach foundation is producing sustainable and effective leadership across industries such as rural, education, veterinary, accountancy, banking and manufacturing. Over his life Matthew has survived four life threatening incidents from which he blends the humbling learning into the business and surf life saving work that he undertakes.

Extension and social licence – telling industry’s story

Brad Warren¹

¹ OceanWatch Australia, Locked Bag 247, Pyrmont, NSW 2009.
www.oceanwatch.org.au brad@oceanwatch.org.au

Abstract

Improvements in efficiency and environmental performance often go hand in hand in commercial wild capture fisheries.

The presentation will showcase extension techniques utilised by OceanWatch Australia’s SeaNet program, to aid transfer of knowledge and technology within the Australia seafood industry, and some lessons learned from the evolution of an extension network over a period of fourteen years. A case study discussing the extension outcomes of a Fisheries Research Development Corporation (FRDC) sponsored research project Effectiveness of larger mesh size in reducing the capture of juvenile target species in select NSW beach seine operations—FRDC 2008/036 will be used to underscore the role

of targeted extension in the prioritisation of end users research needs, as well as industry adoption of completed research leading to productivity and environmental gains.

Most importantly though, the case study highlights potential social licence benefits derived from extension of industry research outcomes to the local community, e.g. through an annual community awareness raising activity, the annual “Loaves and Fishes BBQ”.

Extension is not only a tool to disseminate research outputs, or a mechanism to ensure end users are engaged throughout research projects, but has applications in the procurement and maintenance of social licence.

Keywords: *social licence, SeaNet, Loaves and Fishes*

Biography

Brad, currently Executive Chair of OceanWatch Australia, Chair of the SeaNet National Steering Committee and member of the NSW Fisheries Research Advisory Body, has been a commercial fisher for the past 20 years. Brad’s capacity to forge effective working relations with government, industry and the community is based on his broad experience as an owner/operator and in representing the fishing industry in diverse forums. Brad’s particular interest concerns telling the story of the local seafood industry, and informing the community about the positive role the local seafood industry plays in providing fresh, local, and sustainable seafood to consumers.



Making collaboration last longer than your average marriage – Lessons in supporting grower groups in extension over the 11 years of the Grower Group Alliance

Susan Hall¹ and Rebecca Wallis²

1 Grower Group Alliance, University of Western Australia (M082), 35 Stirling Highway, Crawley WA 6009.
www.gga.org.au Email susan.a.hall@uwa.edu.au

2 Grower Group Alliance, University of Western Australia (M082), 35 Stirling Highway, Crawley WA 6009.
www.gga.org.au Email rebecca.wallis@uwa.edu.au

Abstract

During the past decade of on-going change in the grains RD&E environment, particularly in extension, the Grower Group Alliance has supported an expanding grower group network, of varying yet effective groups delivering primarily extension to growers in WA.

This paper will examine key lessons and outputs of the collaborative model in extension delivery, and participatory research as development, as the GGA winds-up into a new model from 2014, after more than 11 years of support from the Grains Research and Development Corporation.

The bottom-up model has built capacity of groups to deliver extension, created a peer-group of those working in similar roles to learn from and share information with, and created two-way communication pathways between grower groups and various stakeholders, including researchers, government agencies, agribusiness and funding bodies.

It will also explore progression of the network approach in the past 11 years, to delivering GGA's three key outcomes of improved communication pathways between grower groups; improved collaboration between groups, researchers and industry; and more effective and efficient grower groups.

Keywords: *extension, participatory research, collaboration, grower groups.*

Biography

Susan Hall is Project Leader of the Grower Group Alliance, a GRDC-supported project linking grower groups, researchers and industry partners to improve communication and collaboration in grains RD&E. She has spent her career working in the agricultural and food industry, and is particularly passionate about the grains industry, capacity building, and extension. She sits on the GRDC Western Panel, chairs HARVEST – Young Agri-Food Professionals and is on the committee of the Australian Grains Institute. She has an MBA from the University of Western Australia and Bachelor of Media and Communications.

A story 50 years in the making: The Benwell surface water management system

Rebecca Pike

1 Department of Primary Industries, PO Box 441, Echuca, Victoria 3564. www.dpi.vic.gov.au,
Email rebecca.pike@dpi.vic.gov.au

Abstract

Located approximately 20km north of Kerang in Northern Victoria, the landowners of the Benwell Catchment have been advocating for a surface water management system since the floods of 1956. Throughout their journey towards achieving this goal, participants have displayed great resilience and an ability to maintain collective action despite the many setbacks they have experienced along the way.

Fifty years of persistent lobbying for funding has seen the project recently complete eleven kilometres of primary drainage system with another seven and a half kilometres of community drain currently being designed. This drainage network is designed to remove irrigation induced rainfall runoff to reduce the impacts of water logging and salinity on both productivity and the environment. The completion of the project will ultimately service 4,840 hectares of irrigated land and approximately \$5.8 million has been invested in the project to date with more works proposed for the future.

During their long journey, local landowners have never given up hope that they would one day achieve their goal and neither have the North Central Catchment Management Authority and Department of Primary Industries staff that have also advocated for the project. It is a shared belief in the possible productive and environmental benefits that has contributed to the projects persistence and eventual success.

This paper documents the journey of the Benwell Community Surface Water Management System through the eyes of those involved and identifies why participants in this project have persisted where others would have given up. It also explores the landowner's vision of how they hope to learn from these experiences and continue this momentum into the future.

Key lessons learned from this project include the importance of a respected community leader whom all parties trust, the value of sharing a common goal to maintain project focus over long timeframes and the importance of a positive attitude.

Keywords: *Persistence, collective action, resilience, common goal.*

Biography

Rebecca Pike is currently employed as Project Manager: Surface Water Management based at Echuca and working with Community Surface Water Management Projects located within both the North Central and Goulburn Broken Catchment Management Authority areas. In her almost 12 years with the Department of Primary Industries Rebecca has worked on irrigation projects within Northern Victoria including Whole Farm Planning and Drainage Re-use and also the implementation of Local Area Planning within the Shepparton Irrigation Region as well as leading the Community Surface Water Management program for the past 4 years.

Learning from global orchardists responses to the Psa epidemic

Shane Max¹, Dr. Sonia Whiteman², Severine Brun³, Callum Kay⁴

1 Zespri International, Box 4043, Mount Maunganui, New Zealand, www.zespri.com Email shane.max@zespri.com
 2 Ballance AgriNutrients Ltd. 161 Hewletts Rd Mt. Maunganui. www.ballance.co.nz Email SWhiteman@ballance.co.nz
 3 Zespri Global Supply. Residence Romance 1 rue de Berdot 40100 DAX Email severine.brun@zespri.com
 4 Zespri Global Supply. Cistererna di Latina, Italy callum.kay@zespri.com

Abstract

Recent outbreaks of *Pseudomonas syringae* actinidae (Psa) in the international kiwifruit industry highlighted the challenges of crisis extension. The failure to control the outbreak was hampered by a lack of preparedness and lack of knowledge on the bacteria's epidemiology. Best practice bacterial disease techniques and sharing of field experiences were used to provide control recommendations. However the lack of an effective toolbox to manage the disease, the misinformation provided by so called experts with little knowledge of the bacteria, and grower perception that a "silver bullet" would be found, resulted in a failure to effectively control the epidemic. Grower stress and anxiety created by a lack of a "sure fire" control plan and the associated financial uncertainty contributed to irrational decision making. Many failed to respond to put protective measures in place before the disease arrived, even when industry financial incentives were implemented.

Zespri lead an international extension programme to respond the outbreak. The more effective techniques included the rapid development of best practice materials to

assist with consistent messaging, weekly technical meetings with key technical staff to discuss and learn from field observations and engaging knowledgeable scientists with excellent extension skills. As experiences grew the use of influential orchardists was used to influence their peers. Overseas trips were arranged for key orchardists to educate themselves, interacting with affected growers overseas. They were then used to front grower meetings directly and via video clips. Profiling worst case scenarios associated with inaction had to be carefully balanced to avoid creating a sense of helplessness. Best practice information was supplied at the same forums. Adoption of best practice began in earnest once an orchard contracted Psa or during the second season of the disease. This meant for many however that response was too late.

At the commencement of the global Psa epidemic, effective extension occurred with the delivery of consistent best practice messaging, largely derived from experience and delivered by knowledgeable professionals and influential growers.

Keywords: *Kiwifruit, Zespri, stress, extension, crisis*

Biography

Shane Max leads Zespri's Orchard Productivity Centre's team. It is responsible for the effective extension of innovative industry ideas and research findings that allow Zespri's global growers to improve their productivity and fruit quality. Present initiatives revolve around the successful introduction of new varieties, Psa management and ensuring Hayward growers continue to improve their profitability. Shane's background is in commercial horticulture and research orchard management. He was awarded the NZIAHS AGMARDT Tech Transfer award in 2012 in recognition on his achievements in the New Zealand kiwifruit industry.

Bestwool/Bestlamb and BetterBeef networks; a successful model for private and public sector delivery partnerships

Tim Hollier¹, Lyndon Kubeil² and Dougal Purcell³

1 Victorian Department of Primary Industries, Chiltern Valley Rd, Rutherglen, Victoria 3685. www.dpi.vic.gov.au
Email tim.hollier@dpi.vic.gov.au

2 Victorian Department of Primary Industries, Benalla, Victoria 3672. Email lyndon.kubeil@dpi.vic.gov.au

3 Victorian Department of Primary Industries, Mair st Ballarat, Victoria, 3350 Email dougal.purcell@dpi.vic.gov.au

Abstract

Beef and sheep producers currently manage over 40% of the rural landscape of Victoria. These 17,000 farm businesses account for 31% of Victoria's total agricultural production, valued at \$2.6 billion per annum. In 2009 the Department of Primary Industries Victoria (DPIV) launched a new service delivery strategy "Better Services to Farmers" that emphasises a collaborative service delivery approach with other service providers and Industry to provide more targeted, accessible and relevant services to Victorian farmers. Victoria has two flagship extension programs for the sheep and beef sector named BestWool/BestLamb and BetterBeef that are managed by DPIV. These industry network programs seek to increase the productivity and profitability of their respective industries through providing a route to market for research outcomes and accelerating the adoption of proactive change within a network of beef and sheep producers. Products and services used within the networks include producer groups,

accredited and non accredited training groups, workshops, conferences, schools, field days, phone seminars, webinars, electronic newsflashes and newsletters. Currently the network has over 60 service providers involved with 40 from the private sector and 20 from the public sector. The program has implemented a professional development program to build service provider capability. The partnership with private services providers was initially based on a fee for service approach, however as the relationships have matured the relationship have become more collaborative with mutual benefits. A number of collaborations have been initiated by either party in project, activity and training module development. The partnership has utilised a mentoring approach in capability development in group coordinators and service providers. In case studies following involvement in network program activities we have seen improvements in enterprises productivity of 30% and enterprises gross margin of 16%.

Keywords: *Collaboration, service providers, capability building, productivity, beef and sheep producers*

Biography

Tim Hollier is the Senior Specialist Beef and Sheep with Meat and Wool Services Branch with Victorian Department of Primary Industries. He has over 30 years experience in beef and sheep sectors working in research, biosecurity and extension. In the past he has managed the Beef and Sheep extension team and as a program manager has overseen the development and delivery of the flagship projects Bestwool/Bestlamb, BetterBeef and EverGraze.

What do farmers want?

Carole Hollier¹, Dougal Purcell² and Avril Hogan³

1 Department of Primary Industries, Chiltern Valley Road, Rutherglen, Victoria 3685.
Email carole.hollier@dpi.vic.gov.au

2 Department of Primary Industries, 402 Mair Street, Ballarat Victoria 3350 Email dougal.purcell@dpi.vic.gov.au

3 Inshightrix Research Pty Ltd, PO Box 992 Horsham Victoria 3400 Email avril.hogan@insightrix.com.au

Abstract

Service delivery operates within an increasingly complex and diversified agricultural sector and rural community. Not all farms or farmers are the same. Improved understanding of target markets or farmer segments is becoming an increasingly important prerequisite in the design and delivery of contemporary extension programs that address farmer needs and adoption of new technologies and innovations. In practice, market segmentation is a strategic process to group farmers into segments having similar needs, wants or demand characteristics. The objective is to ensure that the extension design and delivery mix matches the expectations of farmers in the target segment. In this study, we interviewed medium to large scale livestock producers to profile the segment and improve understanding of their productivity aspirations, information sources, preferred information distribution channels and appetite to participate in a producer network focused on skill development activities. The approach has informed the design and delivery of the Department of Primary Industries BetterBeef network. This network currently engages with more than 1500 individual beef businesses. It is based on a collaborative

extension approach with the private sector to build more effective partnerships with both public and private service providers.

Application of market research to improve understanding of the target segment has enabled the development of extension design and delivery to equip medium and large scale producers with the latest technologies to improve their profitability and sustainability. It has provided new knowledge on target clients to help create an environment to facilitate adoption and accelerated practice change. Jointly funded by the Department of Primary Industries and Meat Livestock Australia, the BetterBeef network is an example of the effective utilisation of market research to improve the understanding of target clients to support more efficient delivery of both industry and government priorities. The three key lessons from the study are (1) understand your target audience (segment) to inform the service design phase and refine service delivery (2) engage industry experts in the design of market research and (3) utilise market research on producer segments through authentic engagement with next users or service providers.

Keywords: *Service design, service delivery, segmentation, livestock producers.*

Biography

Carole Hollier is a senior officer with the Department of Primary Industries in Victoria. She leads the partnership team in Farm Services Victoria, Divisional Performance and Service Innovation. Carole has over 15 years experience in extension design and delivery and has a strong interest in market research and knowledge brokerage. She played a key role in the development of a new extension program to provide services and information to new landholders and the small farm segment. Carole currently leads research in market analysis and engagement strategies targeted with private providers.

Implementing Variation 6: Getting 3,500 dairy farmers through the resource consent process

Brigid Buckley¹

1 DairyNZ, Private Bag 3221, Hamilton 3240. www.dairynz.co.nz Email brigid.buckley@dairynz.co.nz

Abstract

In 2012, the Waikato Regional Council (WRC) introduced a set of rules relating to the taking and use of freshwater throughout the Waikato Region. For the majority of the region's 4,200 dairy farmers, this means a change from the traditional 'permitted activity' status of their activities to a regulatory one, whereby resource consent is now required if they take more than 15 cubic metres of water per site, per day.

The rules 'grandparent' water takes that existed prior to 2008 and are used for milk cooling and dairy shed wash down. If applications for these takes are lodged before 1 January 2015, they will be granted.

Given the large number of consents required in a relatively short timeframe, WRC is asking for applications on a catchment-by-catchment basis. This will enable them to streamline the consenting process and potentially lead to cost savings for farmers.

The challenge for DairyNZ is to ensure that farmers apply for resource consent by 1 January 2015 and, that they apply for the right volume of water for their system, rather than accepting a default volume of 70 litres per cow, per day.

We developed a simple decision tree that enables us to target information and advice to generic groups of farmers. We have also initiated a study to demonstrate the importance of knowing how much water to apply for and how to measure it accurately.

Farmer responses to the regulation have been mixed, but generally negative. There has been a lot of angst and confusion as to why they were suddenly being regulated for doing something that they had always done and the resource consent process. However, through our tools and study we have been able to improve farmer understanding of the policy development and consent processes and associated water use monitoring.

We have learnt (1) that you can alleviate a lot of fear and anxiety held by farmers by keeping things simple and straightforward, (2) the importance of working with farmers to ensure support is appropriate and will meet their needs, and (3) ensure that messages to farmers are consistent and clear.

Keywords: *regulation, dairy farmers, Waikato, water restrictions, resource consents*

Biography

Brigid Buckley joined DairyNZ in 2011 as a Developer in the Sustainability Team. Her role is focused on developing tools and resources to support and help farmers improve their environmental performance, with a focus on nutrient management, and to meet regional council regulatory requirements. Prior to this role, Brigid worked as a resource management consultant in Tauranga and Christchurch and as a policy analyst in Wellington.

Kangaroo Valley Sustainable Land Management group engaging community in cross property planning

Glenda Steain¹, Tony Cox² and Andrew Britton³

1 NSW Trade & Investment, Locked Bag 4 Richmond, NSW, 2753. www.dpi.nsw.gov.au
Email glenda.steain@dpi.nsw.gov.au

2 NSW Trade & Investment Locked Bag 21 Orange NSW 2800. www.dpi.nsw.gov.au/minerals
Email tony.cox@industry.nsw.gov.au

3 Southern Councils Group, Southern Rivers CMA, PO Box 148 Kiama, NSW 2533. www.smallfarms.net.au
Email britton@southerncouncils.nsw.gov.au

Abstract

The Kangaroo Valley Sustainable Land Management group (KVSLM), formally known as the Kangaroo Valley Fireweed Group, has been established for over 30 years. However, the group recently had a name change to focus on landscape scale management change, while still addressing the management of noxious weeds including fireweed and Giant Parramatta grass (GPG). This group has joined forces with NSW Department of Primary Industries, Shoalhaven City Council, the Southern Councils Group and Sydney Catchment Authority, with the aim to achieve long term improvements in weed control/eradication for the Kangaroo Valley.

The KVSLM group's initial concern was to raise community awareness both in the Kangaroo Valley and surrounding districts. Landholders are frustrated with having to continually control fireweed and GPG on their properties, while neighbors fail to treat their ever increasing infestations. Therefore, a strategy was required to inform all concerned landholders, that help was available to wage war on Fireweed and Giant Parramatta Grass.

Therefore, the KVSLM group in conjunction with all concerned stakeholders, held a community information day attended by over

95 concerned local residents from the Kangaroo Valley and surrounding districts. The day provided an opportunity for landholders to join the KVSLM group and, an introduction to the management of noxious weeds with the aid of cross property planning. Attendees could take home a Farm Bio-security Sign for their farm gate, participate in weed identification, paddock plant & soil testing sessions, find out how biological control can assist in the control of Giant Parramatta Grass and, why fireweed has now been declared a Weed of National Significance.

Continued farm visits in the Valley are providing an understanding of the landholder's management issues and, are building relationships prior to the commencement of CPP. In addition, fifteen landholders from the KVSLM group are involved in the assessment of individual management issues, to provide a template in the development of farm plans to incorporate management options for Cross Property Planning (CPP) outcomes. Evaluation of the process is being reviewed and adjusted accordingly, while continued stakeholder support is providing a more strategic approach to landscape scale management.

Keywords: *Fireweed, Giant Parramatta Grass, awareness, information, farm plans, landscape scale management.*

Biography

I have worked and studied in the area of natural resource management with NSW DPI since 1992. During this time I have contributed to the sustainable management of natural resources in the Sydney Region and Regional NSW. Some areas covered include the development and implementation of the Strategic Plan for Sustainable Agriculture in the Sydney Basin, followed by the implementation of industry guidelines in consultation with ornamental horticulture for a Masters in Extension & Rural Development. State aquatic weed management later became a focus with the success of an integrated management strategy that rebuilt enthusiasm and encouraged cooperation between community and agencies. I am currently working as a project officer in developing a Cross Property Planning Strategy with Landholders in the Kangaroo Valley and Dorrigo Plateau to develop management options for noxious weeds.

Supporting on-farm change to balance environment, productivity, animal welfare and profit

J.B. Pinxterhuis¹, D. Dalley¹, I. Tarbotton², M. Hunter³, T. Geddes⁴

1 DairyNZ Lincoln, PO Box 160, Lincoln University 7647, Lincoln, New Zealand. www.dairynz.co.nz
Email ina.pinxterhuis@dairynz.co.nz; dawn.dalley@dairynz.co.nz;

2 DairyNZ, Private Bag 3221, Hamilton 3240, New Zealand. Email ian.tarbotton@dairynz.co.nz

3 Roslin Consultancy, Trotter Road, RD 1, Invercargill, New Zealand. Email miranda.hunter@xtra.co.nz

4 DairyNZ Invercargill, c/- Federated Farmers Building, 70 Forth Street, Invercargill 9810, New Zealand.
Email tessa.geddes@dairynz.co.nz

Abstract

Wintering dairy cows on forage crops in New Zealand is under increasing scrutiny from society due to potential environmental and animal welfare issues. Farmers in the southern South Island are looking for options to improve the performance of their wintering systems. However, they need to balance a range of objectives for their farms including profitability, labour requirements, feed supply, effects on the environment, and animal health and welfare.

The Southern Wintering Systems Initiative aims to maintain profitability on dairy farms while improving environmental performance and animal welfare during winter in the southern South Island by identifying and demonstrating good farm management practices across the range of wintering systems currently practiced in the region. This farm systems project integrates research findings with farmer experience through a region-wide monitor farm network, associated communities of interest and extension events.

This paper provides details of the approach, including a description of how radar plots are used to demonstrate the wintering system performance against a range of objectives. This tool is used to discuss options to balance

multi objectives in the dairy industry, to avoid unintended negative consequences when changes are based on only one aspect of the system, and to introduce farmers to minimum standards and benchmarks for a range of objectives. Initial results of the project and the radar plots are presented and discussed.

Key lessons from the work reported are (1) the extensive farmer survey at the beginning of the project provided understanding of current wintering practices and criteria farmers use to assess a system; this proved important to achieve high interest in the project and fast uptake of lessons learned; (2) careful selection of monitor farmers supported research and extension: they were respected by peers, were willing to learn from the monitoring (e.g. changed practice), and they engaged actively in communication; (3) monitor farmers gained insight into their business and the environmental issues from data presented to them, and valued highly the interaction with researchers and policy makers that the approach provided; (4) radar plots received mixed reactions, but did stimulate the discussions the project team envisaged.

Keywords: *dairy farming, farm system, radar plot, research, extension*

Biography

Ina Pinxterhuis works for DairyNZ as a Senior Scientist based at Lincoln, in the South Island of New Zealand. Her background is farm systems research and facilitation of co-development or co-innovation projects in The Netherlands. Her passion is bringing science and farming together to increase impact of research and improve sustainability of the farm business. Currently she is involved in DairyNZ co-funded projects that focus on nutrient management: Pastoral 21 and Southern Wintering Systems.

Private-Public advisory networks: An Australian dairy pasture seed case study

Barbara King¹ and Ruth Nettle¹

¹ University of Melbourne, Melbourne School of Land and Environment Melbourne 3010 Australia
www.unimelb.edu.au Email kingbj@unimelb.edu.au

Abstract

There is an increasingly complex mix of private and public advisory and extension services operating in Australia however there is limited understanding about how this mix of organisations and individuals influence farmers' decision making. This project considers implications of the current private-public advisory network for dairy farmers' pasture seed selection decisions. Findings highlight the importance of informal relationships (non-hierarchical, within and across organisation) among researchers, advisers, seed companies and farmers for sharing knowledge about farmers pasture seed selection decisions.

A study was conducted using a mixed method research strategy including social network analysis and ethnographic semi-structured interviews. Interviews were conducted with representatives of seed companies, seed resellers, public and private advisers during 2012-2013. Each participant was asked about whom, in their opinion, influences dairy farmers' seed selection decisions as well as other issues that may affect farmer's decisions with respect to their selection of superior pasture seed genetics. The data collected was used to create a visual social network map of the dairy pasture seed network

and qualitative data was used to interpret the network.

Three key lessons from this work include firstly that there are multiple sources of advisory influence on dairy farmers' seed selection decisions but public extension and independent advisers prefer to offer pasture management advice at a farm systems level (for example, the feedbase mix of forage crops, perennial, biennial or annual ryegrasses). These advisers refer farmers to commercial seed specialists for advice about specific seed varieties. Secondly the dairy pasture seed industry is currently a 'crowded marketplace' with multiple seed companies offering a large number of seed products that favours low-cost, margin driven pricing strategies by resellers. There is a perception by some advisers that farmers' preference for receiving service from those with whom they have trusting, long term relationships is changing in favour of cost related decisions, particularly as dairy farmers are experiencing low milk prices. Thirdly advisers who are regarded as 'credible' are likely to be a preferred source of influence on farmers' seed selection decisions regardless of whether or not they work independently of an organisation with a commercial seed sales interest.

Keywords: *advisory influence, credible advice, relationships, feedbase*

Biography

Barbara King is currently a Research Fellow with the Rural Innovation Research Group of the Melbourne School of Land and Environment at the University of Melbourne. She completed a PhD in 2011 and prior to this was involved in horticulture extension in New Zealand, in both the private and public sector. Her current research interests include processes that support effective innovation through Research, Development and Extension (RD&E), application of social network analysis to provide insights to the relational importance of knowledge sharing and decision making.

Facilitation of regional public consultation for natural resource policy

Terry Parminter¹

¹ PACT Consulting, PO Box 354, Paraparaumu, New Zealand 5032. www.pactconsulting.co.nz
Email terry.parminter@pactconsulting.co.nz

Abstract

Greater Wellington Regional Council is one of a number of regional councils currently preparing its regional plan under the resource management act to guide the management of natural resources in the region. The Wellington Region includes Wellington City (New Zealand's capital city), the agricultural districts in the Wairarapa plains and hill country, and horticultural areas around the Kapiti Coast and Martinborough. It has an approximate total population of 500,000 people. The planning process has required consultation with the general public, resource users, stakeholders, and Māori from Treaty-partner iwi.

A consultation process was needed that could be flexible enough to cope with large numbers of people, and to enable them to all contribute towards policy development, regardless of their background or their life experience. The consultation process needed to follow the stages in statutory policy formulation from issue identification, to setting objectives, policies and rules. Each stage was marked by strategic workshops with Councillors to discuss and prepare options for their later consideration.

The consultation strategy was developed

that addressed the multiple groups and policy stages and provided for a range of consultation methods. Methods included videos, web-based surveys, closed workshops, deliberative workshops, seminars and conferences. Several thousand people were engaged in consultation throughout the process. Facilitation was provided by Council staff and these people needed to be developed and mentored in different facilitation methods as they were required. The process, the resource material used, and some of the results are described in the paper.

Experience in designing, organising and implementing the strategy has highlighted three areas that provided lessons for learning. The first is that when the results will form part of a statutory document, participatory methods need to be developed that can assist participants to make the greatest use of their contribution to that process from the material that they can provide. Secondly, in a policy setting, conflict between groups is most effectively addressed when the parties involved are assisted to negotiate their differences objectively. Finally, facilitation of public consultation is not complete until the results have been incorporated in policy decision making.

Keywords: *Wellington, regional planning, workshops, surveys, deliberation, conflict resolution.*

Biography

Terry Parminter has a Bachelor of Agricultural Science from Massey University and spent the first 20 years of his career as a Farm Advisory Officer with the Ministry of Agriculture and Fisheries extension service in Nelson and the Waikato. Terry then joined Research Division as an Extension Scientist and stayed in that role as Research Division morphed into MAFtech and AgResearch. In 2010 Terry completed a systems PhD with the Management School at Waikato University and is now a private consultant for industry strategy and natural resource management.

Building adaptive management capability to deliver sustainable pastoral farm systems

Denise Bewsell¹, Bill Kaye-Blake², Alec Mackay³, Robyn Dynes¹, Oscar Montes³, Margaret Brown³ and Liz Wedderburn⁴

1 AgResearch Limited, Lincoln Research Centre, corner Springs Road and Gerald Street Private Bag 4749, Christchurch 8140. www.agresearch.co.nz Email denise.bewsell@agresearch.co.nz/robyn.dynes@agresearch.co.nz

2 New Zealand Institute of Economic Research (NZIER), L13, Grant Thornton House, 215 Lambton Quay, Wellington 6011. www.nzier.org.nz Email bill.kaye-blake@nzier.org.nz

3 AgResearch Limited, Grasslands Research Centre, Tennent Drive Private Bag 11008, Palmerston North 4442. www.agresearch.co.nz Email alec.mackay@agresearch.co.nz/oscar.montes@agresearch.co.nz/margaret.brown@agresearch.co.nz

4 AgResearch Limited, Ruakura Research Centre, East Street, Hamilton 3214. www.agresearch.co.nz Email liz.wedderburn@agresearch.co.nz

Abstract

The Rural Futures programme, a multi-disciplinary, multi-agency project is developing a portfolio of tools, systems and processes to support the New Zealand pastoral industry to adapt and remain sustainable into the future. The ability to adapt to a world where there will be constraints on natural resources and the need for limits on inputs is vital to the continued success of the pastoral industry. In the first part of the project an innovation platform, including a collective learning approach and the identification of tools and analytical processes was developed. A key part of the latter half of the project was to better engage with stakeholders through testing the innovation platform in two regions of New Zealand, the Hawkes Bay and Southland. In each region the platform was used to help community stakeholders generate strategic thinking; develop an appreciation of other's visions for each region 20-30 years out; gain an understanding of the multiple, interacting drivers for sustainability, finite resources and unintended consequences of actions, strategies and policies; and identify the step and actions required to make progress towards a new vision for each

region. Four workshops were held over two years. The stakeholders in each group included local government, landholders and industry representatives. A challenge we encountered was integrating participant's experiences and visions for each region, with the data on each region presented by scientists. Overcoming this hurdle involved the use of an agent based model, developed for the project, to explore 'what-if' scenarios.

The three key lessons from this collective learning approach are:

1. The need to engage with and to keep engaged, a range of stakeholders that have an overview of the region and a willingness to discuss and debate issues;
2. The need to have scientists on the team who can deliver relevant, robust data, while being willing to listen and respond to challenges and questions on that data, for the success of the learning platform; and
3. The need to finish the process in a way that ensures that participants are keen to continue to engage with each other and pursue on-going collaborations for change in their region.

Keywords: *Innovation Platform, action learning, sustainable development, strategic thinking.*

Biography

Denise's background is in agricultural extension having worked for a number of years as an extension officer with the Department of Primary Industries in Victoria, Australia. Her interest in understanding the adoption of innovations in agriculture prompted a move into research, working at the University of New England, New South Wales, Australia, before joining AgResearch in 2002. Denise works on projects exploring Rural Futures and the adoption of new technology, using an Innovation System approach.

Developing an innovation system to meet the needs of smallholder farmers in developing countries

Roy Murray-Prior¹

1 Agribiz RD&E Services, Qld, Australia. www.agribizrde.com Email roy@agribizrde.com

Abstract

Smallholder farmers will be critical to meeting the growing demand for food in the next 40 years. However, currently they face many challenges in meeting the changing demands of modern markets, including the effects of climate change, deficiencies in their enabling environment, resources, capacities and institutional models for change and development. These deficiencies have implications for development of the smallholder sector. A dualistic agribusiness systems framework can help focus analysis on the interactions in the system and the complexity of the problems and highlights the need to develop new institutional approaches to linking smallholder farmers to markets and to improving their productivity. Contract farming and traditional cooperatives will only be relevant to a limited range of contexts, while cluster marketing arrangements will be another important solution, because they are suited better to smallholder resources and capacities.

Ultimately, rural advisory services are about economic development that will improve the livelihoods of rural and urban communities,

directly and indirectly. Economic development in rural communities requires a vibrant Agricultural Innovation System (AIS) to provide the relevant innovations to enable the development that will provide the food, fibre and energy required by the growing world population. Incorporating farmers into the AIS, in particular smallholder farmers in developing countries, requires us to develop new frameworks or systems that integrate research, development and extension (RD&E) so that it can quickly develop relevant solutions that meet the needs of farmers and their associated supply and value chains.

This paper proposes some ideas about what this framework might include by expanding the framework of extension models Coutts et al. (2005) proposed to show the role of RAS in capacity building into a broader model for how RAS can play a pivotal role in integrating the RD&E systems with smallholder farmers. It draws on theory and the authors experiences with research and extension in developing and developed countries in the Asia-Pacific region.

Keywords: *agribusiness, development, cooperatives, clusters, value chains, AIS*

Biography

Roy is principal of Agribiz RD&E services. He was Associate Professor in Farm Management and Agricultural Extension at Curtin University in WA. Apart from WA, he has worked in NSW, USA, and the South Pacific (lecturing in agricultural extension, initially as an Australian Volunteer Abroad) and Tasmania (as an extension officer). Roy has been involved in R&D projects in the Philippines, Indonesia, East Timor, PNG, and South Africa, WA and Qld. His research interests are in the application of pluralistic soft and hard systems approaches to research and development of agribusiness systems, farming systems, management decision making, adoption and rural development. His undergraduate training was in Rural Science (Hons-UNE) with postgraduate training in Agricultural Economics (Cornell-MSc; UNE-PhD) and a Graduate Diploma in Agricultural Extension from Melbourne University.

Systemic challenges to innovation in the New Zealand Agricultural Innovation System

James Turner¹, Kelly Rijswijk², Tracy Williams³ and Tim Barnard⁴

1 AgResearch, East Street, Private Bag 3123, Hamilton 3240. www.agresearch.co.nz james.turner@agresearch.co.nz

2 AgResearch, East Street, Private Bag 3123, Hamilton 3240. www.agresearch.co.nz kelly.rijswijk@agresearch.co.nz

3 Plant & Food Research, Private Bag 4704, Christchurch 8140.

www.plantandfood.co.nz tracy.williams@plantandfood.co.nz

4 Scion, Private Bag 3020, Rotorua 3046. www.scionresearch.co.nz tim.barnard@scionresearch.com

Abstract

Concern exists that technology transfer in the NZ primary sector is under-delivering the potential of new technological advances. Addressing poor technology uptake requires systemic change beyond technology transfer alone. The wider social, economic, environmental and regulatory drivers influencing technology impact must be considered. True innovation, therefore, requires changing the right parts of the wider agricultural system to ensure beneficial impacts and outcomes are realised.

The purpose of this study was to evaluate the current status of the NZ Agricultural Innovation System (AIS) and particularly the systemic barriers that affect participants in the NZ primary sector ability to innovate successfully. We used the systemic innovation policy framework of Wiczorek & Hekkert (2012) to integrate two streams of innovation system enquiry – structural and functional. This enabled analysis of the effectiveness of the functions that support innovation, along with the presence and quality of the structural components that are needed for these functions to be effective. Successful innovation requires seven functions; effectively developing and sharing knowledge, testing new technological opportunities, selecting promising

technologies, mobilizing needed resources, and creating legitimacy and forming markets for new technologies. These functions are undertaken by a mix of actors, and the interactions among these actors, which are governed by various institutions.

We undertook 30 semi-structured interviews with individuals from government, industry, research and technology users in the NZ pastoral, forestry and cropping sectors. Participants were interviewed on the perceived effectiveness of the innovation functions and the roles of actors, interactions among actors and institutions in delivering these functions. The analysis of interviews was cross-referenced with secondary data sources from the organisations interviewed.

Key lessons from the interviews are the need in the NZ AIS for (i) incentivising new capabilities, particularly individuals that are able to effectively translate between science and farmers or growers, (ii) continued strengthening of links between research organisations as developers of new knowledge and industry good bodies as disseminators of that knowledge, and (iii) financial and institutional support for greater collaboration among government, industry, research and users if the increasingly complex challenges in the NZ primary sector are to be successfully addressed.

Keywords: *innovation system, technology transfer, innovation, interviews, innovation processes*

Biography

Dr James Turner is Senior Economist in People and Agriculture at AgResearch. James has 18 years research experience in the New Zealand forestry and pastoral sectors focusing on analysis of the economic and land management impacts of international and domestic policies in the agricultural and forest sectors. More recently James' research has focused on practical approaches to achieving collaboration among diverse interests across government, industry and civil society to address water management challenges and undertake innovation. In undertaking this research James has applied approaches, such as agricultural innovation systems, that enable a systemic analysis of enablers of collaboration.

Bringing smart technology to kiwifruit growers

Jayne Chamberlain¹ and John Cook²

¹ Zespri International Ltd, 400 Maunganui Road, Mount Maunganui 3116, New Zealand. www.zespri.com,
Email jayne.chamberlain@zespri.com
² Hay Wood Ltd, PO Box 322, TePuke 3153, New Zealand. Email John.Cook@endeavourkiwi.com

Abstract

It is recognised in international extension circles that the future rests heavily in web based mobile technology due to an increasing number of people utilising this technology. In New Zealand (NZ) the number of mobile broadband subscribers rose 34% to 2.5 million in the year ended June 2012, NZ's total population is c. 4.4 million source: Statistics NZ 2012.

In the NZ Kiwifruit Industry with the arrival of the *Pseudomonas syringae actinidae* (Psa) epidemic and the associated development of new varieties the quantity of information and associated synthesis into practical knowledge has grown exponentially. The ability to adopt new orchard management practices will have a significant impact on both the size and speed of the industry's recovery and ultimately industry growth. There is a risk of information overload in this period and to overcome this there is a strong need to provide timely, up-to-date, relevant information to growers in a user friendly way. The development of electronic mediums and forums provide several advantages to deal with this:

- Interactive tools allows for technical information to sit in the background with growers only having to deal with a user friendly front end.

- Data can be stored, sorted and accessed from anywhere, at anytime.
- It is how the younger generation naturally want to engage with information thereby facilitates succession.
- Over time it offers efficiencies to be gained as there is less reliance on hard copy information.

Zespri's Orchard Productivity Centre (OPC) has successfully developed a range of smart systems ranging from web based learning tools, electronic newsletters and electronic data reporting tools. Upcoming priorities are to develop electronic discussion forums, mobile applications, automated text alerts and to utilise social media to accelerate the generation and sharing of new ideas. Another of the focuses is to generate/heighten interest on using information technology on-orchard which will be helped by developing the tools listed above but will also be achieved by showcasing growers already taking this approach.

Mobile technology provides the opportunity to effectively and efficiently disseminate technical information to kiwifruit growers to help optimise their on-orchard decision making to maximise orchard profitability.

Keywords: *kiwifruit, mobile, electronic, information, tools, learning*

Biography

Jayne Chamberlain is the Licensed Varieties Manager in Zespri's Orchard Productivity Centre. Jayne is responsible for effective extension of innovative industry ideas and research findings that allow New Zealand kiwifruit growers to rapidly and effectively commercialise Zespri's new varieties. Prior to this role Jayne was part of the R&D management team in Zespri holding the role of Innovation Leader where she was responsible for the science portfolio's orchard profitability, health & nutrition, global supply and consumer sensory.

John Cook is a Kiwifruit grower in New Zealand who uses web based data capture technology to assist with management decisions, both operationally and administratively. Electronic orchard and farm management planning products have been limited to date, but John was able to use an orchard management program in a venture in Victoria, Australia, that assisted greatly with planning, execution and recording of data. Smart phone technology use will be the next step and leading growers have already become early adopters.

Combining research, demonstration, producer input and decision support for informed tactical management

Laura Garland¹, Kate Sargeant²

1 Victorian Department of Primary Industries, Rutherglen, Victoria, Australia, 3685.

Email laura.garland@dpi.vic.gov.au

2 Victorian Department of Primary Industries, Benalla, Victoria, Australia, 3672. Email kate.sargeant@dpi.vic.gov.au

Abstract

Assisting farmers to make better informed tactical management decisions, in a timely manner, can be enhanced through the combination of research outcomes, on-farm demonstration, web-based support, planning tools and producer input to form a suite of decision support information.

Farm systems are complex and unique in terms of their climate, soils, pastures, enterprises and management. When making decisions, farmers consider the opportunity costs of competing options in terms of cost, potential benefit, risk implications and management requirements. Therefore, recommendations from research need to be provided in a regional context, and with information that enables application to farm-systems.

Dynamic farm systems demand tactical decisions

Tactical decisions are those which are made for the short-term. These decisions are influenced by seasonal variables and market conditions, and affect within-year farm profitability. When making tactical decisions farmers need to consider such variables for a given year within their unique farm system.

Who gets the green feed?

As part of a national project, EverGraze, scientists at Wagga Wagga found that grazing lucerne for a short period through summer prior to joining, resulted in increased multiple-conceptions and more lambs born to ewes. Other research has also shown benefits of grazing lambs or weaners

on green-feed to increase weight gain, condition score or improve survival over summer.

In deciding whether to graze ewes on lucerne, farmers need to consider the short-term profits from extra lambs compared to the cost-benefits of grazing other stock on green feed in the given season.

The approach

Biophysical research is able to provide recommendations for farm-systems however information developed is often limited to the given environment in which experiments are run. Demonstration is able to validate such research both on-farm and within a region while producer input provides greater understanding to the fit of technology into farm systems. Both components allow for greater insight into what needs to be considered when comparing tactical management options in an on-farm context.

Decision support tools can also provide farmers with information for comparing options in a given system. Within this example, a combination of research and producer input has been used to construct and test the validity and usability of a tool to compare the tactical decision of grazing ewes compared to other stock-classes on available green-feed.

By combining research, demonstration, producer input and decision support we can provide farmers with more relevant information required to make informed tactical management decisions in dynamic farm systems.

Keywords: *Farm systems, green-feed, lucerne, profitability, tools.*

Biography

Starting within the Victorian Department of Primary Industries this year, Laura Garland commenced the Victorian Public Service Graduate Program in late January and is currently working as a Project Officer in Grazing Management Systems. She is currently working within the Department of Primary Industries' Meat and Wool Services Branch and is located at Rutherglen in North-east Victoria. Prior to this Laura completed a Bachelor of Rural Science with Honours at the University of New England, Armidale.

Transformational change engages hearts as well as minds

Sue Pickering¹

¹ Horticulture NZ, PO Box 10232, The Terrace, Wellington 6143, www.hortnz.co.nz, sue.pickering@hortnz.co.nz

Abstract

NZ Horticulture Industry Strategy clearly indicates that, in order, for the industry to grow to meet its vision of growing from a \$6 billion industry to \$10 billion by 2020 it needs to make significant change and fundamental to this is a transformation of both attitude and behaviour by individuals and organisations. Through a suite of leadership development initiatives Horticulture NZ, alongside key partners, works with high potential emerging leaders, the aim being that they will, in turn, work with others through transformational leadership to catalyse the type of change envisaged.

We have recognised that to affect change you need to tap into people's underpinning drivers and emotions as well as offer tangible knowledge and skills development to support their leadership. While there are, on the face of it, several such initiatives in the wider primary industry HortNZ differentiates its programmes through a strong focus on individual development and providing tools to help people develop their own potential in their own context (both work and personal).

Many key insights have been learnt through a decade of development including:

1. Much of leadership within horticulture enterprise is still transactional where people are motivated by reward and punishment and the importance of the chain of command is high. However we have found emerging leaders are far more receptive to a more transformational leadership approach of setting vision, showing passion, injecting enthusiasm, walking the talk and supporting individuals to find their way forward.
2. Self awareness and emotional intelligence are major ingredients to successful and resilient leadership in today's business yet the primary industry tends to lag behind in this field.
3. The developmental "event" is just one part of the full equation. To fully leverage leadership programmes organisations of the participants and the wider community need to buy into the goals, the essence and the approach of the programme. Transformational change relies on collaboration before, during and after the event.

Keywords: *Transformational Leadership Development, Emotional Intelligence, Collaboration*

Biography

Sue Pickering is Senior Business Manager for Horticulture NZ (HortNZ) which represents NZ's 6000 commercial fruit and vegetable growers. Sue has been instrumental in building HortNZ's "People in Horticulture" portfolio, from a small base into a significant part of HortNZ's business. Major highlights of her current role include:

- developing Horticulture NZ's People Capability strategy towards the Horticulture Industry's Vision,
- spearheading the HortNZ leadership programme building a strong pool of high performing leaders
- establishing and leading the robust and popular Young Grower of the Year
- Acting Chief Executive while the CEO is on leave or extended business trips.

Moving to more sustainable agriculture: Beyond the linear approach to technology transfer

Marie McEntee¹

¹ School of Environment, The University of Auckland, New Zealand. www.env.auckland.ac.nz
Email m.mcentee@auckland.ac.nz

Abstract

Agricultural extension can provide a rich collaborative environment for scientists, industry and farmers to engage and is widely regarded as a platform for facilitating the transition to sustainable agriculture. Traditionally extension focussed on a linear transfer of information from scientist to farmer via an extension agent. However participatory approaches have challenged this approach by facilitating a means by which farmers' perspectives are embodied into decision-making. Arguably this ensures that research is relevant to end users, that it incorporates a wider base of expertise and that it facilitates a deeper understanding of problems and solutions. Policy and funding agencies in New Zealand have championed participatory methodologies as an effective mechanism for advancing agricultural sustainability. Despite support for participatory approaches, their implementation in science research projects remains poorly understood. This paper presents findings from the author's PhD research that compares the participatory process used in six publicly-funded extension projects seeking sustainability outcomes. By investigating the

dynamics that shape the participatory process the research finds that the success of extension projects is markedly influenced by the quality of stakeholder engagement. When extension projects focus solely on the development of an innovation and its subsequent transfer to end users, engagement is compromised and the project follows the transfer of technology model. This model is too simplistic for today's changing and uncertain agricultural environment. Furthermore it ignores the complexities of the social, biological, political and economic systems in which farmers and scientists operate. The paper concludes that for participatory approaches to be successful they must: facilitate an environment where stakeholders' expectations are clearly aired and understood; develop learning partnerships and platforms that in a supportive environment may challenge current practices and perceptions; foster an iterative and collaborative process that seeks, listens to and embodies stakeholder feedback and where extension is central throughout, not just tacked on the end to transfer information or technologies.

Keywords: *Agricultural extension, Participatory approaches, Applied research.*

Biography

Marie McEntee holds an MA (Hons) and is currently studying for a PhD in the School of Environment at The University of Auckland, examining the dynamics that shape stakeholder engagement in applied research. She coordinates an undergraduate course that addresses wider issues about the communication of science. Her research interests include science communication, agricultural extension, participation and engagement in science, and media communication of science and technology. Marie has sole authored a paper in an international journal on communicating and managing scientific risk and has presented oral papers at several international conferences on collaborative engagement in sustainable agriculture.

Avenues for reforming the Australian agricultural research, development and extension system.

Warren Hunt¹ (corresponding author), Colin Birch², Frank Vanclay³ and Jeff Coutts⁴

1 Department of Primary Industry and Fisheries, Darwin NT 0801 AUSTRALIA, Email: Warren.Hunt@nt.gov.au

2 Tasmanian Institute of Agricultural Research, University of Tasmania, Burnie TAS 7320 AUSTRALIA

3 Department of Cultural Geography, Faculty of Spatial Sciences University of Groningen, 9700AV Groningen, Netherlands

4 Coutts J&R, Toowoomba, QLD 4350, Australia.

Abstract

The Australian agricultural research, development and extension system requires reform. There is evidence of declining institutional capacity and the erosion of human capital of Australian rural industries. State and Territory government RD&E institutions have either been dismantled or have had their capabilities seriously reduced as a consequence of public policy decisions that have affected a withdrawal of investment from this area since the early 1990s. There are also comparable divestment trends and the loss of capacity and risks to future resilience of agricultural systems in other developed nations. Reforms in the late 1980s that legislated Commonwealth and industry co-investment via the Rural Research and Development Corporations and the Cooperative Research Centres were a major step forward in harnessing industry ownership and direction of RD&E investment decisions. Importantly, the RDC/CRC model was supported and its effectiveness enhanced by RD&E capacity remaining in the various State and Territory departments of agriculture, as this capacity effectively supplemented the efforts of the RDCs and CRCs. The effects of State and Territory Government

public policy decisions to reduce or discontinue services because of fiscal or ideological drivers is now resulting in a situation where expert RD&E capacity available to agricultural industries in Australia is under threat. This will impact upon the future resilience of rural industries. This paper proposes not an overthrow of Australia's current market-orientated agricultural paradigm, but a restructure of the RD&E system to deliver further autonomy and responsibility to the rural sector in terms of industry priorities, resourcing and carriage of services. The authors investigate, through five case study institutions, organisational innovations that may provide direction towards the future restructuring of agricultural RD&E effort in Australia. Institutions are seen as a preferable model as opposed to a sole reliance on the private or commercial sector. These insights have application to both the Australian and the international reader, warning about the consequences of reduced investment in agricultural RD&E, and learning about how research and extension can transition from traditional public sector models to systems that have greater flexibility and, importantly, ownership by the industries themselves.

Keywords: *Agriculture, extension, agricultural policy, capacity, resilience.*

Biography

Warren Hunt is an extensionist of 22 years experience. His career began in the pastoral zones of western New South Wales and Queensland working in rangeland management and wool. He progressed to program leadership roles, coordinating integrated pest management in Australian sugar, and later managing a state-wide sheep program for the University of Tasmania. He currently leads the extension effort of the Northern Territory Department of Primary Industry and Fisheries. He is also finishing a PhD investigating extension's contribution to capacity and resilience building in Australian rural industry. Warren is married with five kids—consequently he will never be a rich man.

ASHEEP Pasture Trials Program

ASHEEP and Jan Clawson

ASHEEP, PO Box 2445, Esperance WA 6450 Email janclawson@bigpond.com

Abstract

In 2011 with Subterranean Clover failing Esperance sheep producers, a group of 8 farmers participated in a tour to Corrigin and surrounding district to see what had been achieved using Legume Pastures. The tour participants saw pastures that had been grown under some extremely difficult conditions. The opportunity to see just what could be achieved first hand brought with it a level of confidence and enthusiasm.

These 8 farmers have become our local champions and have proceeded to impart their knowledge and enthusiasm on everyone around them.

The next step was to see what was already being grown in our local area and gain more knowledge. This came in the form of a local Field Day Tour, finishing the day with technical advice on how these same results could be achieved individually. Again being able to see and touch the results has enthused producers into getting more knowledge.

Still in the quest for knowledge and an understanding of what pasture varieties will be best suited in Esperance's extremely varied soil

types and rainfall zones ASHEEP decided to develop a Pasture Trials program.

These trial are paddock scale and 1ha plots sown with the farmers own seeding equipment.

We had five sites with between 4 and 5 pasture varieties sown in 1ha plots and 4 paddock scale trial sites, covering all soil types and rainfall zones from high rainfall sand plain through to low rainfall loam.

Probably the first thing we learnt was the requirement to insure trial site have good weed control before sowing, an ideal situation is an area coming out of a canola rotation mindful of chemical residue from SU class chemicals. This lead to two sites running herbicide trials across the 1ha plots to learn which chemical are best suited for weed control in the different varieties.

We then held a series of Field Day which we held over three consecutive days travelling to all the trial sites. 120 farmers and agronomists attended. Again giving producers the opportunity to see and touch the results as well as providing technical advice on how these results were achieved.

Keywords: *Knowledge, Confidence, Enthusiasm, Seeing Results Firsthand.*

Biography

Jan Clawson accepted the position of Executive Officer for ASHEEP in 2010, since her appointment ASHEEP has increased its membership, become financial secure through sponsorship and is developing producer driven project like the Pasture Trial Program. ASHEEP is a grower group representing sheep producers in the South East Agricultural region of Western Australia. ASHEEP or the Association for Sheep Husbandry Excellence, Evaluation and Production Inc. was established ten years ago to promote the role of sheep in the farming system. One of the key objectives of the group is to develop trials to raise production standards to maximize farm profitability.

Managing change in dairy regions: understanding the determinants of transformative capacity

Dr Margaret Ayre¹ and Associate Professor Ruth Nettle²

1 The University of Melbourne, Melbourne School of Land and Environment, The University of Melbourne, Parkville, VIC, 3010 Email mayre@unimelb.edu.au

2 The University of Melbourne, Melbourne School of Land and Environment, The University of Melbourne, Parkville, VIC, 3010 Email ranettle@unimelb.edu.au

Abstract

This research aims to define critical processes of significant change (transformation) in the dairy industry and communities and potential points for intervention to improve the way transformation happens. It draws on resilience thinking as a suitable framework for exploring continuous change in socio-ecological systems and aims to: understand how transformative processes contribute to community capacity building and collaborative action in the dairy industry, and; develop an expanded understanding of the transformation stage of the adaptive cycle in resilience thinking. The working hypothesis developed in this project is that the five categories of 'determinants' (of transformational capacity) proposed by (Walker et al., 2006) are required to develop effective interventions for supporting transformational change at a regional scale. In exploring this contention, preliminary findings from this research are that 'determinants' of transformation applied or valued by the main three different professional practice groups in dairy regions in northern Victoria (Australia)—farmers, service providers and government/s—are currently inconsistent and non-comprehensive. For example, dairy farmers, dairy industry and government professionals were found to propose regional change management associated with current water policy reform in Australia's Murray

Darling Basin in different ways. Governments have provided incentives programs to support 'structural adjustment' and participation in evolving water markets by farmers, however their practices focus on the economic factors and do not (to date) provide systemic support for adaptation. The dairy industry, although it demonstrates a broad recognition of the systemic nature of regional change, generally emphasises its role in supporting individual farmers to make strategic business decisions to enhance productivity. Farming practitioners, however, understand the practices of significant change to be determined by the collective action and leadership of farming communities.

The lessons from this research to date are: a) there is a need to better understand and coordinate the collective practices required to support regional transformation; b) new deliberative methods are required to support collaboration between professional practice groups in dairy regions; and c) transformational capacity of dairy regions will depend on systemic support for the five 'determinants' of 'incentives', 'reserves', 'awareness', 'experimentation' and 'governance' (Walker et al., 2006)

Reference: WALKER, B., GUNDERSON, L., KINZIG, A., FOLKE, C., CARPENTER, S. & SCHUTLZ, L. 2006. A handful of heuristics and some propositions for understanding resilience in socio-ecological systems. *Ecology and Society*, 11.

Keywords: *regional; dairy; practices; deliberative; water; Victoria*

Biography

Margaret has a Bachelor of Forest Science (Hons) and a doctorate (History and Philosophy of Science) from The University of Melbourne. Her doctoral thesis was on the development of contemporary, cross-cultural and sea management strategies on Aboriginal estates in northeastern Arnhem Land, Northern Territory. She is currently working as a Research Fellow in the Melbourne School of Land and Environment at The University of Melbourne. Her research interests are in the production of scientific knowledge and the relationship between science, technology and society in natural resource management policy and practice.

Building a prosperous Zespri grower base worldwide

Séverine Brun¹ and Shane Max²

1 Zespri Global Supply France, Residence Romance, 1 rue Berdot, 40100 Dax, France. severine.brun@zespri.com
2 Zespri International Ltd. 400 Maunganui Rd. PO Box 4043 Mount Maunganui 3149. New Zealand. shane.max@zespri.com

Abstract

Zespri has successfully developed a network of northern hemisphere growers who are contracted to grow its licenced varieties, thus supplying international customers in New Zealand's off-season. As in New Zealand, Zespri's extension staff supports these orchardists to produce high quality fruit whilst optimizing yield, to the benefit of orchardists and consumers alike.

Growing environments, industry infrastructures and cultures in offshore countries are considerably different to New Zealand. This is at the same time a huge opportunity and a significant challenge. In order to make the most of the global growing base, extension staff are composed partially or entirely of bilingual nationals, very exposed to New Zealand culture and kiwifruit industry, and to a lesser extent, to global Zespri kiwifruit industries. They are responsible for transmitting and tailoring not only techniques on the field but also communication channels to the country they work in, in order to encourage rapid adoption of appropriate production practices. To make it successful,

they have to use their knowledge of both countries: the one from which the information is issued and the one to which it will be adapted.

Within this system, the various grower groups are regularly exposed to the wider global supply base, utilizing English as a common language. As a result, Zespri has developed a "global family" with an extended base of experience, observations and innovation, where ideas and techniques from every country are rapidly shared through grower tours, direct information from extension staff and the translation of each other's extension material. Learning from field trials can be fast tracked as two years of data can be generated in one year, utilizing both northern and southern hemisphere growing seasons. By working collectively, rapid capability building in the global grower base has occurred as all benefit from the experiences of thousands of Zespri growers. A healthy yet competitive environment has developed as each country strives to continually improve both yield and quality.

Keywords: *Zespri, kiwifruit, extension, global, support, offshore*

Biography

Séverine Brun graduated from the National Institute of Horticulture (INH) in Angers in 2008. She has worked in the fruit industries in New Zealand as part of her studies both in Katikati and Kerikeri and joined the Zespri Global Tech Transfer team in December 2008. She is responsible for implementation of extension programmes and development of Zespri kiwifruit varieties in France, in conjunction with packhouse technical staff and local industry groups.

Building a prosperous Zespri grower base worldwide

Séverine Brun¹ and Shane Max²

1 Zespri Global Supply France, Residence Romance, 1 rue Berdot, 40100 Dax, France. severine.brun@zespri.com
2 Zespri International Ltd. 400 Maunganui Rd. PO Box 4043 Mount Maunganui 3149. New Zealand. shane.max@zespri.com

Context

Zespri's grower base was initially only found in New Zealand, but as part of a twelve month supply strategy, the company has successfully developed a network of northern hemisphere growers who are contracted to grow its licenced varieties, providing supply to international customers in New Zealand's off-season.

Zespri's worldwide growing programmes started in 2000 with successful commercial plantings now in Italy, France, Korea and Japan. Major differences in growing environments, industry infrastructure and cultures in offshore countries were quickly identified (see characteristics outlined Regional Differences).

Despite those differences, the Zespri system is global and aims at growing high quality fruit to the same standards in all locations. Zespri's extension staff, often bilingual nationals, are working within the Zespri system as well as the local rules and laws growers are subjected to in their home country.

In this context, they support orchardists by developing and adapting innovative techniques to ensure:

- Continual improvement of yields of high quality fruit in a sustainable manner
- Overcoming unforeseen challenges that arise e.g. deregistration of an agrichemical product, disease or pest outbreak, extreme weather patterns

When dealing with these issues, either planned or not, the global system presents opportunities and challenges.

Opportunities

On the positive side, one of the most useful characteristics of the system is **the counter season growing benefit**. It is possible to double or replicate the number of trials over 12 months and resolve problems much quicker. Two seasons of data can be generated in one year. Caution is needed when considering results since the

context is different. Generally, those trials can be classified in two types:

1. Undertaking trials in Country 1 to refine techniques developed in Country 2 (this trial is mostly useful for Country 2 and shows the relative effect of the treatment because of the error margin due to Country 1 characteristics).
2. Undertaking a trial in Country 1 in a modified form from that undertaken in Country 2 with the intent to determine appropriateness in Country 1. (this trial is mostly useful for Country 1 and show the absolute effect of a newly adapted technique, based on knowledge from Country 1 characteristics)

Secondly, this system **increases the general knowledge on kiwifruit vine physiology** because the environments the variety is growing in are very different. As a consequence, a new fruit rot issue in New Zealand could be solved faster thanks to historical Korean knowledge and experience. Lately, the importance of having in place a comprehensive spray programme in a wet spring to counteract the effects of bacterial disease *Pseudomonas syringae pv.actinidiae* (*Psa*) has been unintentionally strongly demonstrated in France, while the growers had to face their worst spring in more than 50 years. The proof of efficacy has been conveyed to New Zealand growers through the extension staff of both countries, in order to reinforce messages in place.

Thirdly, **it creates a wider base of experiences and techniques**. Recently, a new pest - *Metcalfa* was found attacking kiwifruit in France. In its behavior, this pest is very similar to a New Zealand pest, passion vine hopper. Both live on the plants, fly short distances, and suck the sap, weakening the plant and staining fruit. Growers in New Zealand had already started developing techniques to lower this pest pressure. Control techniques and technologies can be used as starting point for France. Another very good example is the covered growing structures that

are starting to be erected to protect vines from the vine killing disease Psa. Thanks to the Korean experience where growing in tunnel houses is standard practice, Zespri staff already knew much around management in greenhouse growing systems.

Finally, there is also **a wider innovation base due to industry structure and cultural difference.** For example, in Italy, growers typically use a multiple leader growing system, disregarded by French and Kiwi growers because it presents some disadvantages in terms of shading the wood and access for spraying and thinning. However, this system is very adapted to the Italian low cost growing culture where all the crop is sold regardless of its class, fruit not being thinned and growth regulators used to grow bigger fruit. Since the outbreak of the Psa, this multiple leader system has been adapted in other countries to address the risk of losing leaders from infection and thus minimizing the yield loss. Indeed, when losing one of four leaders, it is only 25% of the crop that is gone. When losing one leader in the traditional growing method 50% of a vine's crop is lost.

Challenges

Firstly, it can be **difficult to keep pace** with the information creation in each country. Extensive coordination is necessary so as to avoid doubles up. Thorough planning is done generally through New Zealand.

Secondly, it is easy to **make false assumptions in how best to manage orchards** when not having enough knowledge on growing conditions, industry structures and labour costs. This has previously led to recommendations that were inappropriate for countries like France or Korea even though they were working perfectly in other growing countries. In France high winter chilling and high labor costs combined change the whole growing system from establishment to winter pruning, wood choice, shoot type thinning, and even scale spraying.

Thirdly, a **proven technique will not always give positive results in another country.** To the surprise of both New Zealand and French extension staff, a common NZ growing technique, trunk girdling; that increases fruit size, had no effect in French orchards. This demonstrates the need for validation trials before giving general recommendations.

Growers are aware of those differences and while they recognize their fellow growers from other countries as being very experienced and successful in kiwifruit growing, they do not necessarily undertake practices advised by their foreign counterparts in own orchard. The **furthest away the innovative techniques come from, the more the grower will think it is unsuitable** and the longer it can take to implement it. This is also about finding the right balance between the "prestige" status which makes people listen because you are innovative and different, and the "difference" factor when they will not implement the change because you are too innovative and different and they can not relate enough to what you explain.

In this global system, extension staff are active interfaces turning local challenges into global opportunities, and also turning global knowledge into adapted local solutions. To do this efficiently, not only the techniques need to be tailored to the audience. Adaptive management is also applicable to communication and dissemination channels.

Adaptive management in communication

It is a well known technique in marketing that you need to tailor your messages to your audience. When dealing with growers, the same rule applies. Depending on the industry they work in, their business structure, their age, their experience and their culture, they will not receive the message the same way.

Within a country

A lot of effort goes into tailoring the channels to increase information circulation within a country. Here are a few examples.

There are strong differences in the way growers relate to new technologies in different countries. Despite having the youngest grower base, France is not very strong on the use of websites as a communication tool with very few growers connecting, while their New Zealand counterparts are used to seeking information on the internet. As a result a significant resource is put into the Zespri Canopy, the New Zealand website, while the French La Canopée is seen more as a library to retrieve information from—but is not relied on for diffusing information.

Korean growers are very receptive to information communicated to them by texts.

As a consequence a system of management and weather alerts is sent by text. It led to good results in terms of greenhouse management to minimize impact of severe weather events.

An initiative in Japan was launched to promote bigger orchard areas. Called the Issho Club, it was based on the Japanese cultural pride of being part of an elite club with limited number of members.

In countries where kiwifruit is a major industry, informal discussions between growers occur reasonably frequently and are an important way to progress sharing of ideas. In France, this is not part of the culture. Extension staff is working on creating a network/community so that knowledge sharing can be maximized. This is done by holding field days at different grower's places, or offering drinks for people to stay around and share more about their on-orchard operations. When kiwifruit is only one of a basket of crops grown by a producer, it is also about keeping people interested and focused when they may be busy with other crops. This can also be done by utilizing more interactive channels, like videos of major orchard operations. Timing of meeting and information release and quantity is also carefully considered.

The same thing that applies for techniques and technologies, also applies for communication tools: they need to be trialed and assessed so as to achieve the extension goal.

Between countries

The most powerful tool used in communication between countries is grower tours. Ideas and techniques from each country are very rapidly shared, and immediately assessed for their efficiency. It appealed to the kinesthetic learning style often found amongst growers. Recently, French growers who visited New Zealand came back with a technology to prune grafting scions and some implemented it into their orchard for their next grafting session. However, generally extension staff have to guide growers as to what the differences in between the growing

conditions are and why this may not be readily suitable for implementation or how it should be implemented to potentially reach the same effect.

Other tools of communication between countries involve publication and translation of each other's extension material.

Conclusion

The speed of learning and adoption can be rapid in a global orientated company if advantage is taken of the diversity of grower knowledge and experiences and counter season time frames are well utilized. Extension staff working in a global environment need to recognize the importance of adapting information, which often can result in the creation of new knowledge. Consideration should be given not only to adapting management techniques but also the dissemination and communication channels as what may work well in one country may not in another.

At a time when Zespri looks at offering the opportunity to extend its supply base with Portuguese, Spanish, Turkish and Mexican growers, better understanding of principles for worldwide extension techniques are crucial to a successful outcome.

Three key learnings:

1. Adapt is the key word. Take experiences of others but try for yourself.
2. When leading change in an industry, often it is how as well as what you communicate that determines success. Have the right levers being identified – this is easier to do when you understand the culture well.
3. If you are too different from the person you are trying to convince, they will think the change is not appropriate for them or you don't know what you are talking about. If you are too similar, you will lose your power over them because they will have no special reason to listen for you. There is a right balance to find.

Trialling a web-based 'discussion-support' tool in the Australian sugar industry: Stakeholder responses are encouraging ...

Neil Cliffe¹, Roger Stone¹, Jeff Coutts², Shahbaz Mushtaq¹, Kathryn Reardon-Smith¹

1 Australian Centre for Sustainable Catchments, University of Southern Queensland, Toowoomba Q4350 Australia
Email: neil.cliffe@usq.edu.au; roger.stone@usq.edu.au; shahbaz.mushtaq@usq.edu.au; kathryn.reardon-smith@usq.edu.au

2 Coutts J&R, PO Box 2681 Toowoomba Q4350 Australia www.couttsjr.com.au Email: jeff@couttsjr.com.au

Abstract

Well designed participatory learning processes focussing on stakeholder discussions can lead to significant learning, skill development and decision-making outcomes. This research trials and evaluates a discussion support tool (Second Life machinima) that could be used in a range of situations, without technical experts physically present in a discussion. The prototype machinima discussion focuses on managing climate risk in the Australian sugar industry. Web-based simulated discussion approaches may provide an alternative information delivery method in an extension environment where funding and policy support is declining and access to high speed internet is increasing globally.

Seventeen semi-structured interviews were conducted with canefarmers (7), extension officers (6) and Canegrowers organisation representatives (4). Data collected evaluated the machinima, identified climate information delivery needs and collected demographic information. Comments were coded thematically and interviewees rated the value of the tool in 'supporting canefarmers to take some action, small or large, in relation to the information presented'.

First impressions of the machinima were positive except for two interviewees who would

have preferred the use of real people rather than animated characters. Most interviewees identified readily with the characters and settings depicted in the machinima, and related the animation to a canefarmer shed meeting. Key messages identified were consistent with the informational objectives of the script developed for the machinima. Mean ratings for the value of the tool varied between stakeholder groups: Farmers 6.9; Extension Officers 7.2; Canegrowers organisation 6.4 (1-low value to 10-high value).

The machinima message could be improved by targeting farmers who have a higher level of understanding of climate and production risk rather than those with a limited understanding. Improving the machinima graphics would significantly improve the visual appeal for viewers.

Key learnings include:

Comments across stakeholder groups indicate that machinima could be useful to support discussion of climate risk as well as other industry issues.

Developing scripts appropriate to the target topics for discussion is critical in ensuring audience engagement with the machinima.

Developing a seamless link between current climate forecasts and discussions about specific decisions remains a technical challenge.

Keywords: *Participatory learning; Climate risk; Machinima*

Identifying farmer priorities and preferences to achieve change

Alison Hall¹ and Lesley Irvine¹

¹ Tasmanian Institute of Agriculture, PO Box 3523 Burnie, Tasmania, 7320, www.tia.tas.edu.au,
Email A.F.Hall@utas.edu.au

Abstract

The Tasmanian dairy industry is currently experiencing an unprecedented demand for growth in milk production due to a rapid expansion in milk processing capacity in the state. Tasmania has a strong history of dairy extension, particularly in the area of pasture management, however novel approaches to extension are required to assist current and new entrants achieve sustainable growth of the Tasmanian dairy industry. The objective of this study was to identify farmer priorities and preferences for change. Face-to-face interviews were conducted with fifty randomly selected dairy farmers from all dairying regions in Tasmania. Farmers were asked about key farm practices and attitudes regarding dairy farming, farm management, challenges, and drivers of decision making. Training needs and preferences for learning methods were also determined along with where farmers currently sourced information.

Improving profit and reducing time spent

on operational tasks, and addressing the major challenges within the dairy industry were identified as priorities. Attracting and retaining staff, animal health and welfare, public perception, and sustainable growth were also identified as key industry challenges. Many farmers also identified a need to focus on more specific areas within their farming business. The interview process gave a heightened understanding of what motivates farmers to farm, key drivers of decision making and the main challenges dairy farmers feel need to be addressed in order to grow the industry in a sustainable and resilient manner.

Results of the survey were then used to develop an extension program tailored specifically to the priorities and preferences of Tasmanian dairy farmers. This was achieved by moving away from traditional larger groups to smaller groups that are able to focus more intensively on farmer priorities.

Keywords: *Dairy, Tasmania, challenges, growth, extension, learning.*

Biography

Alison Hall is a Dairy Extension and Development Officer with the Tasmanian Institute of Agriculture, where she has been a member of the extension and development team for 18 months since finishing her undergraduate degree in Agricultural Science at the University of Tasmania. During this time she has worked in the areas of pasture, animal and business management, in addition to establishing several farmer discussion groups. Alison was also involved in conducting and evaluating the series of interviews with dairy farmers across Tasmania which has assisted the TIA extension team in developing their extension program going forward.

Helping farmers to help themselves

Nita Harding¹

¹ DairyNZ, Private Bag 3221, Hamilton 3240, New Zealand www.dairynz.co.nz Email nita.harding@dairynz.co.nz

Abstract

In New Zealand a number of industry-good organisations support the primary production sector. Dairy farmers pay a levy on milk solids production that supports their industry-good organisation, DairyNZ. DairyNZ carries out research, development and extension activities to enhance the productivity, sustainability and competitiveness of the New Zealand dairy industry.

The Animal Husbandry and Welfare team within DairyNZ has a specific role to provide up to date and relevant information to farmers to assist with animal husbandry practices on farm, and to provide a support service for farmers who face animal management challenges on farm. This service, called the Early Response Service, is designed to support individual farmers with decision making when the going gets tough.

The aim of the service is to work with farmers in a supportive manner to provide the right

advice from trusted professionals for the on-going management of the farm, a very different approach to the prevailing view at the time of penalising those who struggled to meet minimum standards. In this way the welfare of the animals, the well-being of the farmer, the viability of the farm business and ultimately the reputation of the New Zealand dairy industry are protected.

The focus of the service is on supporting farmers while they adapt to change, whether this be from climatic events, business management or personal and family issues. Providing a support network involves the broader rural community and also assists with building resilience on farm. The key learnings after 2 years of operation are the farmer must drive the process, the focus must be on support and that rural professionals that the farmer trusts and respects should be used in the support team.

Keywords: *Early Response Service, DairyNZ, support, resilience, community, animal welfare*

Biography

Nita trained as a veterinarian at Massey University and started her career in small animal practice in New Zealand and the UK. However most of her career has been spent in industry, with time spent in the meat industry, providing technical support to the AHB Tb control programme, and in the live animal export area. Her current role is that of Development Team Leader for Animal Husbandry and Welfare at DairyNZ. This role is a mix of business management and technical advisory work, and involves working with a range of people both within DairyNZ, and external to DairyNZ.

A multidiscipline approach to solving Waikato's pasture persistence problems

Phil Irvine¹ and Chris Glassey²

1 DairyNZ, Cnr Ruakura & Morrinsville Roads, Newstead, Hamilton, NZ. www.dairynz.co.nz
Email phil.irvine@dairynz.co.nz

2 DairyNZ, Cnr Ruakura & Morrinsville Roads, Newstead, Hamilton, NZ. www.dairynz.co.nz
Email chris.glassey@dairynz.co.nz

Abstract

In the 2008 – 2011 dairy seasons, poor pasture persistence was identified as the No.1 concern facing Waikato's 4,500 dairy Farmers. A Black Beetle epidemic and droughts had come together to cause devastation to the regions pastures. Farmer morale about the benefits of pasture renewal were at an all-time low. The cost to local farmers was in the order of \$400/cow in lost milk solids production and extra feed and pasture renewal costs. This paper describes the multidiscipline approach to quantifying the size of the problem, providing answers to solving the problem and initiatives on an industry- wide front to provide agreed and consistent messages for farmers.

Some of the main initiatives included 1) Quantifying the need via the Farmer Network interviews 2) Establishing a Pasture Renewal Leadership Group representing key industry groups. 3) Forming a Pasture Improvement Focus Farm where 5 field days were held over an 18 month period with 450 farmers and industry personnel attending. This initiative was driven by local concerned farmers. 4) Industry funding via the DairyNZ levy was channelled into pasture persistence research and extension initiatives and 5) a Forage Value Index for ryegrass was launched.

The results of a concerted industry effort to address pasture persistence has been very encouraging and forms a model for others to follow in addressing major issues facing farmers.

Keywords: *Ryegrass, Drought, Extension, Black Beetle, Endophyte*

Biography

Phil Irvine is a Senior Consulting Officer with DairyNZ in the North Waikato region. He started his career with MAF Farm Advisory Service then moved into Agribusiness Sales Management before joining DairyNZ. Phil's farming clients have been greatly impacted by pasture persistence issues and he has been heavily involved in extension efforts to educate farmers on pasture renewal.

Chris Glassey is a Senior Developer, Farm Systems with DairyNZ. He started his career as a Consulting Officer and then joined DairyNZ's predecessor as a Farm Systems researcher. Chris is a member of the Pasture Renewal Leadership Group, an across industry team charged with leading pasture improvement initiatives and messages to farmers.

China's agricultural production patterns transformation: challenges, pathway and prospect

Yu Ji¹

Abstract

After 9-years' consecutive harvests, China's agricultural production capacity has seemed to reach a high level. However, it is still facing many constraints by increasing production cost and shortage of youth labor forces due to migrating to the cities during further industrialization and urbanization, which may cause potential threat to its future development. To ensure national grain security and stable urbanization, the agricultural production patterns have to be transformed

from traditional small-scaled household farming to new collectives, including professional farms, family-run big farms and co-operatives in which a socialized agricultural service supply mechanism is a must. Hence, both the public benefit service systems and the market-oriented service organizations should be strengthened. Correspondingly, the government will provide targeted policies on land transfer and financial subsidy to promote the transformation.

Keywords: *small-scaled household farming, new collectives, a socialized agricultural service supply mechanism, targeted policies*

Biography

Dr. Yu Ji, is presently an associate professor of China Executive Leadership Academy Pudong (CELAP), a Shanghai-based national institution funded by the central government. After graduating from Renmin University of China in July, 2004 with a doctor degree majored in agricultural economy, she has been working at Department of Academics of CELAP since then. She was designated a member of the central lecturer group for "Building a new socialist countryside" in the period of 2006-2007. She has published several books and papers on agricultural and rural development and received some awards for her prestigious work.

Farmer perspectives on adaptation to climate change

Electra Kalaugher¹

¹ Department of Earth and Ocean Sciences, University of Waikato, Private Bag 3105, Hamilton 3240, New Zealand.
Email ek52@waikato.ac.nz

Abstract

Dairy farms are dynamic systems, constantly adapting to the biophysical, social and economic environments in which they operate. The aim of this study was to solicit expert farmer knowledge about what factors contribute to the resilience of their farms, as well as to identify some of the key socio-ecological feedback cycles that may positively or negatively impact the adaptive capacity of New Zealand dairy farms to future climate change.

Based on interviews with decision-makers on six dairy farms from different regions of New Zealand, a farmer perspective is provided on how climatic risks are positioned within the broader context of continuous change and development.

Although modelling has shown some negative impacts from climate change, the farmers interviewed were confident in their capacity to cope with these changes. They provide insights on what they see as the major risks to their farming systems and how the conditions specific to each individual farm affect their capacity to cope with change.

The study highlights the interconnectedness of different pressures facing farmers, the diversity of strategies that can contribute to resilient farming systems, and the import role of flexibility and strategic thinking in maintaining adaptive capacity.

Keywords: *Risk, farmer knowledge, systems thinking, adaptive capacity, resilience, dairy.*

Biography

Electra Kalaugher is completing a PhD on adaptation of New Zealand dairy farms to climate change through the University of Waikato, and recently started work as an environmental farming systems adviser for the Waikato Regional Council. Past roles have included working for the Food and Agriculture Organization of the United Nations (FAO) in Rome and as one of the editors of LEISA Magazine, which shares on-the-ground experiences from around the world with efforts to make agriculture more sustainable.

Understanding and documenting farmer perceptions: getting it right with soil erosion management in Northwest Vietnam

Oleg Nicetic¹, Pham Thi Sen², Le Thi Hang Nga², Le Huu Huan² and Elske van de Fliert¹

1 Centre for Communication and Social Change, School for Journalism and Communication, The University of Queensland, Brisbane, Qld 4072, Australia, www.uq.edu.au/ccsc/, Email o.nicetic@uq.edu.au

2 Northern Mountainous Agriculture and Forestry Science Institute, Phu Tho, Vietnam, www.nomafsi.com.vn
Email phamthisenprc@gmail.com

Abstract

Soil erosion is a major limiting factor for sustainable maize production in the northern mountainous region of Vietnam. Various technologies to manage erosion, including mulch-based direct sowing, mini-terraces, intercropping with legumes and diversification and rotation of crops, have been developed through several international and Vietnamese government funded projects. While these technologies have proven to be effective at research sites, farmers tend not to integrate them into their production systems. In the context of a maize farming systems research project, a scenario-based social inquiry into farmers' perceptions of risks imposed by erosion on their livelihood was conducted as a basis for developing effective outreach approaches.

The inquiry revealed that farmers are aware of both the problem of erosion and methods of mitigation but they have other priorities and shorter term livelihood goals that need to be addressed. For them erosion, with all its associated problems, is a longer term risk that the next generation will have to deal with. In this context any erosion management strategy to be implemented by farmers must have short term benefits. Equally, any outreach approach

should emphasise opportunities for generating additional income and/or reducing production costs. Consequently, our initial outreach approach changed from designing printed and video materials to raise farmer awareness of erosion to developing participatory videos and photo stories that show difficulties farmers face in implementing the new cultivation methods. They also emphasise benefits that farmers have experienced as a result of improved soil fertility, moisture conservation and use of legumes. We learned that while scenes of soil washed away from fields shocked us, the outsiders, they do not impact on farmers' motivation to change their practices. We also learned that it is imperative to include farmers in the research process to adapt erosion management methods to ensure that they match with and improve existing practices. The collaborative research process allowed farmers to document and communicate their own experiences with the research process, as well as the new methods and the positive impacts these methods had on their livelihood, which appears to be a more effective way to facilitate change on a larger scale.

Keywords: *farmer perceptions, participatory video, photo stories*

Biography

Oleg Nicetic works for the Centre for Communication and Social Change at University of Queensland as a Research Fellow on an ACIAR funded project on sustainable production systems in Northwest Vietnam. He has worked in SE Asia for last 10 years and has expertise in adaptive management of agricultural systems, communication for rural development and value chain analysis and development.

Industry-led Natural Resource Extension in the Tararua District

Terry Parminter¹, Scott Ridsdale² and Keith Riley³

1 PACT Consulting, PO Box 354, Paraparaumu, New Zealand 5032. www.pactconsulting.co.nz Email terry.parminter@pactconsulting.co.nz

2 RD Consulting Limited. Manawatu

3 22 Bevan St, Woodville Email kriley@xtra.co.nz

Abstract

The DairyLink – Tararua project was initiated by the Manawatu River Leaders Forum in 2011, in response to the Manawatu-Whanganui Regional Council One-Plan. Although the project was reduced from 36 to 18 months, good progress was made and the farmers involved have continued to build on the project results. This poster illustrates the potential effectiveness of well led, intensive short- term extension campaigns.

DairyLink involved dairy farmers and industry and community leaders from the Tararua district working together to:

1. reconcile farmers' goals for profitable production, responsible use of natural resources and continued "freedom to operate",
2. encourage dairy farmers to use practices that reduce losses of nutrients, sediment and pathogens, and
3. increase farmer's control over their natural resource issues.

Three farmers in the District provided learning hubs for the project and hosted regular field days on their properties.

After 18 months of the project, good progress was made, as the farmers involved began linking their management decisions with environmental conditions and risks. Farmers were reviewing ways that they could increase the efficiency with which natural resources were used, manage their farm investment and operational costs, and work within societal expectations.

Subsequent work by the regional council and DairyNZ has focused on engaging with individual farmers and agricultural agencies to increase the use of environmental practices. The three host farmers have built on the DairyLink project to incorporate environmental considerations into their investment priorities, as well as changing their operational practices.

Keywords: *Resource management, environmental innovation, Tararua District, dairy farming.*

Farmer adoption characteristics in Tibet

Carol Rose¹

¹ NSW DPI, Email carol.rose@dpi.nsw.gov.au

Abstract

As part of the ACIAR funded project, 'Integrated crop and dairy systems in Tibet Autonomous Region', a survey was undertaken among Tibetan farmers to examine current levels and attitudes to technology and the characteristics of adoption.

An attitudinal survey was conducted in 2009 and 2011 with the semi subsistence farmers who practice intensive cropping and livestock production in the cropping dominated central zone of Tibet. The 2011 APEN paper (Rose 2011) reviewed the process of developing and conducting the survey while this paper discusses the results of the survey.

The median Tibetan farm household of 6 people had a farm size of 1 ha (cropping), 3 cattle and 21 sheep. Over 90% of farmers believed that cropping and livestock production could

be improved, and were motivated to do so by wanting education for their children and a better life. Major perceived constraints to improvement were lack of money, machinery, labour and water.

Education levels were low, with 40% having no schooling, limiting the value of written information. The major sources and most trusted information was from family members, local farmers and the village committee.

Use of fertilisers, seed treatment, pesticides and herbicides was adopted widely (in greater than 70% of households) by 2000, while uptake of new cereal varieties, tractors, AI and fodder cropping had increased since 2001.

Critical success factors for adoption are low risk, low cost and demonstrated success stories, that fit within farmers' world views.

Keywords: *survey, dairy, cropping, technology, attitudes, ACIAR, adoption*

The Continuous Improvement and Innovation model can reinvigorate horticultural extension in the Northern Territory, but requires an understanding funding agency

Stuart Smith¹ and Warren Hunt¹

¹ Department of Primary Industry and Fisheries, GPO Box 3000, Darwin, NT 0830.

http://www.nt.gov.au/d/Primary_Industry/index.cfm?header=Plants Email stuart.smith@nt.gov.au

Abstract

Government run horticultural extension activities in the Northern Territory (field days, demonstrations etc) are often conducted irregularly on an as needed basis to communicate the outputs of research. The ultimate aim, however, of these activities is to achieve positive change in the rural community. For one reason or another, projects conclude after one or more activities because resources or energy run out, without knowing if anything has been changed, or without any idea of how to reinvigorate activities in the direction of the positive change desired.

The Continuous Improvement and Innovation model, and specifically the better practices process was used to reinvigorate the extension efforts of two mid-term projects in the Top End of the Northern Territory of Australia. This process has six steps, 1. Situation analysis; 2. Impact analysis; 3. Action planning; 4. Taking action; 5. Observing and 6. Learning and Creating. One of these projects is focussed on reducing greenhouse gas emissions for improved nitrogen

management on NT farms and the other on characterisation and improved management of Fusarium wilt of watermelon. The six steps in the process were not applied linearly, with analysis of current activities needed before replanning for more action. The analysis showed that given the small size of the industries involved, it was economically viable to plan more face to face extension activities. In conjunction with this, evaluation of the impact of the project on change can be measured.

The three key lessons from the application of this process were 1. Getting a clear focus of what is to be changed can reinvigorate a tired extension program 2. Reflection and analysis of what has already happened in a structured way is a great catalyst towards new ideas on ways to achieve the change and 3. Application of a continuous improvement and innovation process requires flexibility in contract arrangements with external funding organisations, as milestones and activities will need to be rewritten mid-project.

Keywords: *continuous improvement, innovation, project re-evaluation*

Biography

Stuart Smith is a Senior Research Officer at the Department of Primary Industry and Fisheries, Northern Territory. Stuart worked in horticultural consulting and environmental weed management in Tasmania from 1993-2005. Since moving to tropical Darwin he has worked in rural merchandising and now in government research and extension programs. He has worked extensively with farmers from the Non-English Speaking Background sector who have properties in the Darwin rural area. His major projects at present focus on greenhouse gas reduction in horticulture and extension in the melon industry.

RSS Technology: potential to automate the distribution of technical information

William Max¹

¹ Zespri International Ltd, 400 Maunganui Road, Mount Maunganui 3116, New Zealand. www.zespri.com,
Email william.max@zespri.com

Abstract

With new kiwifruit varieties being commercialised and the arrival of the *Pseudomonas syringae actinidae* (Psa) epidemic, kiwifruit growers want and need to be updated with the most current technical information as quickly as possible. The affordability of smart phones, tablets and 3G networks means more New Zealanders are connected than before. Rich Site Summary (RSS) technology may be a tool to help ensure kiwifruit growers are receiving the information that is most relevant to them.

Rich Site Summary (RSS) was released in 1999 and became adopted in 2000 to 2003, so is a well-established communication form used by technology firms, news firms and other business. RSS feeds allow subscribers to receive a message when new content is uploaded or updated on a website. This empowers subscribers to select which type of information they are interested in and also to judge if the current RSS feed is worth reading.

The advantages of the use of RSS feeds include: the speed of which information is distributed, no replication in communicating information, and the website becoming the central portal for communication.

The disadvantages involve the requirement to use a program known as an RSS reader and there is no easy way to track the number of subscribers and therefore it is difficult to evaluate uptake. The barriers that will interfere with adoption are online connectivity and that growers will need to subscribe and proactively check their RSS reader regularly. It should be noted that Google is now closing Google Reader, an online RSS reader that allows you to aggregate RSS feeds from various websites. This question now is whether this service being closed is due to Google redirecting its efforts towards social media and Google plus, or a signal of the end of RSS technology.

Evaluating smarter more efficient ways to disseminate technical information to kiwifruit growers is an imperative in the New Zealand kiwifruit industry's current challenging environment. RSS feeds, or future new technology, may provide one tool to achieve this by empowering growers to filter the technical information they would like to automatically receive to assist them with their on-orchard decision making.

Biography

William Max is the Field Technician for Zespri's Orchard Productivity Centre. William has worked for Zespri and Kiwifruit Vine Health since the Psa outbreak focused on grower trials, monitoring projects and data analysis. William has a Bachelor of Management Studies and a Post Graduate Diploma in Computers.

Supporting Farmer Profitability Through Farm Change and Innovation – Dairy Australia’s National Strategy

Neil Webster

Program Manager – Extension and Change. Dairy Australia – Farm Team
Dairy Australia, Level 5, IBM Centre, 60 City Road, Southbank, VIC, 3006
nwebster@dairyaustralia.com.au www.dairyaustralia.com.au

Abstract

Extension is essential to farmer profitability as it unlocks the value of research and development. For this reason, Dairy Australia has invested in extension for a number of years through co-funding arrangements with State governments, industry organisations, Regional Development Programs, private providers, national and regional projects, and through programs, such as Countdown, InCalf, The People in Dairy, and others.

With the changing extension and vocational training landscape in Australia, Dairy Australia has recognised the need to provide leadership for the industry to achieve effective outcomes to support farmers to meet significant challenges. The reduction in investment from state governments and a changing mix of public, private and VET capability makes each of Australia’s eight dairying regions different, both in terms of requirements and the capacity to meet them.

Dairy Australia aims to ensure there is much better planning and coordination at a regional level, along with relevance to regional needs to

provide good outcomes for farmers. Through working in collaboration with its Regional Development Programs, Dairy Australia’s extension efforts will be better aligned with regional priorities. In addition, there is a need to develop the capability required to meet future extension and farm change needs.

The change in services provided by State Governments is significant and, in some regions, has reached a point where the lack of public extension services is having a detrimental effect on the adoption and implementation of practice changes on farms. Dairy Australia will broaden the discussion around this, and in the context of change on farms all of the activities that support that are considered including extension, education, training, development and communication.

Better integration of RD&E is needed, with the ‘E’ component better informing R &D investment. Further, better integration of extension, education and training will lead to better alignment, collaboration and use of industry resources.

Keywords: *extension, capability, alignment, integration, value, industry.*

Biography:

Neil Webster is the Program Manager – Extension and Change for Dairy Australia. His role encompasses the management of Dairy Australia Levy investments in extension including the development and implementation of a national strategy for farm change and extension. Neil has had 15 years experience with a major dairy processor where he managed supplier engagement and development nationally, following four years as a field officer working in northern Victoria. Prior to this Neil worked in the TAFE sector, teaching and managing the delivery of dairy programs.

An integrated approach to using the InCalf Programme with farmers and rural professionals

Kate Wynn¹ and Mark Blackwell²

1 DairyNZ, P.O. Box 1551, Whangarei Email kate.wynn@dairynz.co.nz

2 DairyNZ, Private Bag 3221, Hamilton, New Zealand Email mark.blackwell@dairynz.co.nz

Abstract

Declining in-calf rates are common in many herds throughout New Zealand. In 2009, Northland vets estimated the average 12 week empty rate was 15% across the region. The InCalf programme, a learning package of tools, resources and training for both dairy farmers and advisors, was launched in 2008 by DairyNZ to address poor on-farm reproductive performance. By 2010, there were 12 trained InCalf advisors in Northland but day to day use of the resources was limited. To address this, a novel approach to the InCalf Farmer Action Group was tested. The purpose was to generate a catalyst for collaboration amongst the advisor network and forge a transition in mode of operation of advisors from reactive technicians to proactive advisers, addressing the fundamental causes of reproductive failure on farm and not just treating signs. Additionally, advisors observed how the programme could be used successfully and were taught tools to adapt this to their own businesses. With this new approach to the Farmer Action Group, they worked through the steps required on farm at crucial times of the year and adapted this for their own client base. Twenty

farmers representing twelve farms completed a year-long group programme. Nine InCalf-trained advisors and four private farm consultants joined the group. The 6-week in-calf rate of the group increased an average of 3.4% and the average empty rate decreased 2.5% from the start of the programme to the end of the following season. Participants were surveyed to identify reasons for the changes and there was overriding agreement that participation in the programme had been the catalyst for change. Advisors and private consultants were very positive about the programme and two went on to run their own farmer groups. Others have preferred to work with farmers on an individual basis but all report using the InCalf tools more regularly but not necessarily in a programmed approach. The lessons learnt by farmers and advisors were that 1. They had control over herd reproductive performance, 2. Working together was motivating and rewarding, and 3. They understood that incremental changes lead to improvements in reproductive rates within the industry.

Keywords: *reproduction, empty rate, advisor, action group, Northland, resources*

Biography

Kate Wynn is a Regional Science Manager for DairyNZ, based in Northland. Her work is focussed mainly in the area of developing farm systems for the region and has involved on-farm research projects including a comparison of kikuyu- and ryegrass-pasture based systems, improving the design and maintenance of stand-off pads while understanding the welfare implications of standing cows off pasture for long periods of time and the impact of different sowing rates and cultivar selection on ryegrass pasture persistence.

Boosting banana production in decentralised way – an innovative experiment from Kerala, India

Esakki Muthu¹, Dr.C.Bhaskaran²

1 PG Student,2-Professor-Kerala Agricultural University,Dept.of Agricultural Extension, College of Agriculture, Vellyani

Abstract

Though some of the poverty alleviation programme in India is not shown the expected results, the 'Samagra' project on Banana cultivation is a flagship project with multistakeholder partnerships in Kerala, India. Launched in 2007 by the Thiruvananthapuram District Panchayat and Kudumbashree Mission(one of the world's leading and successful poverty eradication programme), the aim of the project is enhancing banana productivity through the promotion of innovations in technical backstopping. The study was conducted in three Grama Panchayats of Thiruvananthapuram district. Three categories of respondents namely beneficiary respondents(60), implementing officials(30) and people's (30) were involved with respondents.

The dependent variable innovations in technical backstopping was measured in terms of perception about the innovative procedures, processes and institutions. The major findings of the study indicate that majority of the beneficiary respondents, officials and people's representative, rated that innovative procedures, innovative processes and innovative institutions adopted in the 'Samagra' were excellent. The findings regarding the attitude of beneficiary respondents revealed that 60 per cent of the beneficiary respondents had favourable attitude towards 'Samagra' and 93.3 per cent of the implementing officials had favourable attitude.

All the independent variables had significant relationship with the dependent variables innovative procedures, processes and institutions. The constraints such as lack of land, lack of village knowledge centers, lack of video conferencing, problems in transportation, lack of processing facilities were ranked as the most important constraints in the implementation of 'Samagra' Project.

The following recommendations are made to ensure effective implementation of the 'Samagra' Project in future: More awareness must be created among the farmers about the benefits of grading, marketing, value addition and processing of their produce through campaigns and trainings so that banana cultivation becomes economically more sustainable. Export of agricultural produce must be promoted by increasing the area under commercial crops, and by providing necessary post harvest management and other infrastructure required. Information on prices prevailing at international markets must be furnished to the farmers' groups regularly. Modern cold storage facilities must be set . Production centered banana processing industries are to be promoted to minimise wastage of agricultural products. The model 'Samagra' Banana Project of Thiruvananthapuram District Panchayat must be scaled up to benefit farmers in other districts also for which the Government of Kerala should ensure the policy support.

Keywords: *multi stakeholder partnerships, technical backstopping, innovative procedures, innovative processes , innovative institutions, production centered*

Biography

Esakki Muthu, is a promising PG student of department of agriculture is a budding scientist who wish to carry research. He has written relevant articles both popular and research in various journals in India.

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