BESTPRAC

Australian Pastoral Property Innovation Manual

Rangeland Best Practice and Innovation

awi Australian Wool Innovation Limited

CARING FOR OUR COUNTRY

Australian Pastoral Property Innovation Manual

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Australian Pastoral Property Innovation Manual Development

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awi Australian Wool Innovation Limited

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Elders

PEAK HILL INDUSTRIES
The Sheep Handling Equipment Specialists

Contents

Welcome to the Australian Pastoral Property Innovation Manual

This manual has been specifically designed for Australian pastoral land managers and graziers. The Australian Pastoral Property Innovation Manual has documented a range of on-property innovations from pastoral areas and from other industry and geographical regions of Australia that are applicable to Australian rangeland businesses.

The innovations documented in this manual have been identified through group-based on-property sessions as part of Bestprac in QLD, NSW, SA and WA, road trips conducted as part of this project and Bestprac innovation forums held throughout Australian in 2009. Bestprac, an Australian Wool Innovation program, is a network of arid zone rangeland wool and meat producers who meet at different times throughout the year in small facilitated groups. Innovations have also been identified by non-Bestprac members from across Australia.

The value of an innovation is not always recognised when the invention is made. It may take sometime before the innovation is appreciated within and by the market. Often innovation is not recognised because things have had to happen out of necessity to solve an issue or problem and the inventors themselves do not recognise the invention as an innovation. Innovations profiled in the manual show to be at least one of the following:

New product/s

New use for existing products

New material for existing product/s

New process

New business model/s

New distribution system

New source of supply

New supply chain relationship/s

Innovations that are profiled in this manual have shown either business growth, improved standards of safety, enhanced quality, created better outcomes for the environments, increased productivity and/or increased efficiency.

The innovations included in the manual may not have necessarily originated from a pastoral property, however all innovations are applicable for adoption into Australian pastoral businesses.

The Australian Pastoral Property Innovation Manual aims to share practical on property innovations that have shown improved outcomes for the innovator whilst encouraging innovative thinking of the readers of this manual. We hope this manual inspires you to make innovative improvements to your business and property.

Innovation – a natural competitive advantage for pastoralists

Managing sheep meat and wool businesses in a pastoral environment can be challenging and rewarding. Typical challenges include:

Managing variable weather (normally varying degrees of dryness).

Matching feed requirements of livestock with feed that is available.

Sourcing, motivating and retaining employees and contractors.

Efficiently and effectively managing livestock so all tasks are productive and enjoyable.

Growing the business so it remains competitive, sustainable and ahead of declining terms of trade.

Working in isolation, this means there is not a natural flow ideas between producers.

An effective way to manage all these issues is to have an innovative culture within the business. An innovative culture involves looking at all business operations, policies and practices and asking the question:

"How can this practice be done differently so it is cheaper, easier to do, quicker, safer, more productive or makes more money?"

This manual has been designed to 'harvest' innovations that are being implemented on pastoral properties across Australia. Because of isolation there is often not a natural flow of ideas between properties. Adopting a new practice always has an element of risk, so gaining insights from producers about what has worked and more importantly not worked is critical to developing a competitive pastoral rangelands meat and wool industry. In some instances, these insights are supported by a simple cost benefit analysis. The purpose of this is to outline the potential benefits that will result from adoption of an innovation, where sometimes the initial cost or outlay can seem daunting.

The Bestprac network was seen as a logical source of innovation. For many years individual group members have been discussing and observing innovations. The purpose of this project was to harvest innovations across the whole network and present these in a way that is accessible to all Bestprac members irrespective of whether they are a member of a group.

Bestprac

‘It’s more than group meetings’

Bestprac is a program that provides support and coaches rangeland wool and meat producers to improve their business and production performance. Typically Bestprac groups participate in a combination of workshops, field days, research trials or study tours.

But Bestprac is ‘more than just group meetings’; it is about networking, social support and motivation in an often harsh and isolating environment. The specific Bestprac approach has empowered groups and individuals to innovate and remain in the industry.

Bestprac groups operate in Queensland, New South Wales, South Australia and Western Australia. Groups can be found in the rangelands zone in these states; see page 12 for locations where groups are active. Many of these groups have been operating for ten years or longer.

The Bestprac program is based on the Continuous Improvement and Innovation (CI&I) cycle. This cycle is a proven technique to improve the rate of adoption of new information and innovation. The process focuses on identification of areas for improvement, action planning, regular reviews to maintain focus, project implementation and celebrating successes. To ensure maximum success, groups make contact every 90 days, either face to face or via teleconferences. The implementation of the CI&I process within Bestprac allows for continued development and innovation within and between the businesses involved.

As well as working through project implementation within the Bestprac groups, the groups also serve another important function; social networking and support. Distance is often the greatest battle to overcome when getting groups together due to the location. Many participants have indicated that if it wasn't for the support they found in the group, they wouldn't be on land to this day. Groups form a special bond as they share personal and business successes, goals and experiences.

Bestprac has been fortunate to have continued support from Australian Wool Innovation Limited (AWI) throughout the project life. AWI provides valuable funds for the support and coordination of this network. The Bestprac project is managed by a National Coordinator. This role reports to a National Project Advisory Panel, which consists of pastoralists involved in the project and delegates from Australian Wool Innovation.

Bestprac is pleased to be associated with the compilation and distribution of the Australian Pastoral Property Innovation Manual.

For more information about Bestprac please visit our website **www.bestprac.info**, where you will find group updates, latest news, best management practice tools and the Australian Pastoral Property Innovation Manual can be downloaded.

Bestprac Coordination Team
David Heinjus and Carlyn Mellors
Rural Directions Pty Ltd

Bestprac Group Profiles

Bestprac groups operate in Queensland, New South Wales, South Australia and Western Australia. Many of these groups have participated in the development of the Australian Pastoral Property Innovation Manual. This section provides profiles of current Bestprac groups who have participated in gathering innovations. The profiles describe the benefits of Bestprac, the future direction of the individual groups and outlines reasons why other Australian livestock producers should be involved in Bestprac.

Current Bestprac groups

Group Name	Location
Gascoyne Bestprac Group	Geraldton, Carnarvon, Denham (Shark Bay), WA
Carrieton Bestprac Group	Carrieton, SA
NEED and Yunta Bestprac Group	Burra and Yunta, SA
Blinman Bestprac Group	Blinman, SA
Hawker Bestprac Group	Hawker and Quorn, SA
Wunkar Bestprac Group	Wunkar, SA
Vanguard Business Services Resilient Business Groups	Coonamble, Forbes, Cowra, Wellington and Dubbo, NSW
Western Grazing Bestprac Group	Wilcannia and White Cliffs, NSW
Wilcannia Bestprac Group	Wilcannia, NSW
Cunnamulla Bestprac Group	Cunnamulla, Qld
Blackall Bestprac Group	Blackall, Qld
Tambo Bestprac Group	Tambo, Qld
Muttaburra Bestprac Group	Muttaburra, Qld
Lower Nebine Bestprac Group	Bollon, Qld

North East Eastern Districts and Yunta Bestprac Group

Gascoyne

Geraldton, Carnarvon, Denham (Shark Bay), WA

Years in Bestprac Over five years

Facilitator

Jane Garrett, Global Composition Pty Ltd

Benefits of Bestprac

Learning and motivation to consider wider industry issues and do something outside the daily chores; educational sessions; peer to peer mentoring; networking (a chance to meet other people in the same industry and share experiences); innovation (inspiration from other's ideas and experiences); mutual support and 'time out' away from the 'coal face' to consider the business without daily pressure.

Carrieton Bestprac Group

Carrieton, SA

Years in Bestprac Approximately 10 years

Facilitator

Wendy Davidson,
Wendy Davidson Enterprises Pty Ltd

Benefits of Bestprac

We have benefited by interacting in benchmarking and generally bouncing ideas off each other at a time when wool prices were low and drought prevalent.

Future direction of Group?

The group continues to evolve by an innovation approach to property management, creating relationships with appropriate stakeholders and benchmarking.

Wunkar

Wunkar, SA

Years in Bestprac 3 years

Facilitator

John Squires, Rural Directions Pty Ltd

Benefits of Bestprac

All of the group members run mixed cropping and livestock businesss in a marginal cropping area. Group members act as a reference panel and provide ideas to improve the planning and implementation of individual projects.

North East Eastern Districts and Yunta

Yunta and Burra, SA

Years in Bestprac Up to 10 years

Facilitator

Chelsea Muster and David Heinjus, Rural Directions Pty Ltd

Future direction of Group?

We enjoy our meetings and always find them valuable. We enjoy field trips and being able to see projects other properties are implementing.

We choose various forms of benchmarking and will continue to use this to set goals for our group and our businesses in the future. We welcome any new members to the group.

'Others should be involved in Bestprac because…'

It is an opportunity to gain ideas, perspectives and knowledge in a non-threatening, non-competitive environment.

Blinman Bestprac

Blinman, SA

Years in Bestprac 6 years

Facilitator

John Squires, Rural Directions Pty Ltd

Benefits of Bestprac

Bestprac has allowed the group to meet regularly and to compare ideas on improving the performance of sheep and cattle enterprises. The group consists of a number of different partners from businesses which provides good diversity in discussions. The group has been an important social network in recent years when poor seasons have put pressure on people and businesses.

Hawker Bestprac

Hawker and Quorn, SA

Years in Bestprac 6 years

Facilitator

John Squires, Rural Directions Pty Ltd

'Others should be involved in Bestprac because…'

It's a great way to see different approaches to sheep, tourism and business management. There is always good discussion and the opportunity for everyone to learn new ideas.

Blackall Bestprac Group

Vanguard Business Services Resilient Business Groups

Coonamble, Forbes, Cowra, Cobar, Wellington and Dubbo, NSW

Years in Bestprac

Many of these groups have been associated with the Bestprac network for over 5 years.

Facilitator

Mark Gardner, Vanguard Business Services

Benefits of Bestprac

The benefits of these groups are found for individuals, at the group level and also at network level, in yearly activities such as conferences and field trips where cross group activities occur. All groups focus on innovative and regenerative farming approaches which are profitable, improve resource condition and celebrate the role of family in business. Innovation is a theme.

'Others should be involved in Bestprac because…'

To be involved in one of Vanguard Resilient Business groups is to benefit from the ideas and options of innovative farm family businesses, and also to contribute to the success of other businesses through your inputs and experiences.

Wilcannia

Wilcannia, NSW

Years in Bestprac 11 years

Facilitator

Trudie Atkinson, NSW DPI

Benefits of Bestprac

Benefits are; the group dynamics leading to sharing and furthering ideas, in depth analysis of our businesses, introduction of new technologies, leading to fine tuning of operations.

Future direction of Group?

Consolidation of our businesses, which have all evolved rapidly over the past 10 years, the group will continue to work together.

Western Grazing

Wilcannia and White Cliffs, NSW

Years in Bestprac 3 years

Facilitator

Trudie Atkinson, NSW DPI

Benefits of Bestprac

Changing practices to be more profitable

Learning new things

Gaining new ideas

Meet and talk with other producers about how they run their business.

Get away for a few days and have a look at what other producers in different parts of Australia are doing.

Analyse your own business, compare it to others and try to improve it.

Blackall Bestprac Group

Blackall, Qld

Years in Bestprac 11 years

Facilitator

Mick Alexander, Grazing BestPrac

Benefits of Bestprac

Forum for local families to discuss business issues.

Networking with like minded people.

Group process for ongoing training in industry best practice.

Promote innovative projects within the community

'Others should be involved in Bestprac because…'

It provides a forum for likeminded people to share information and learn new skills in managing land, livestock, people and the business.

Muttaburra Bestprac Group

Tambo Bestprac Group

Muttaburra Bestprac Group

Muttaburra, Qld

Years in Bestprac 5 years

Facilitator

Mick Alexander, Grazing BestPrac

Future direction of Group?

To provide a forum for sharing information, learning from each other and running community activities

To conduct benchmarking activities

Succession planning

Pasture management

To support members in their business decisions

To assist other groups to form in the region

'Others should be involved in Bestprac because…'

Bestprac is an organisation which provides support for local grazing families to network and share information and skills, and to implement exciting new grazing management and business practices.

Tambo Bestprac Group

Tambo, Qld

Years in Bestprac 9 years

Facilitator

Mick Alexander, Grazing BestPrac

Benefits of Bestprac

As a group, we always learn new information and skills from the activities and processes run by Bestprac. Being involved in activities allows us to share information and get involved with neighbours and friends and their on-property projects. We often look at property development planning projects, innovations and business benchmarking.

'Others should be involved in Bestprac because…'

Bestprac is a group of grazing families, who are locally managed and externally facilitated around group issues, so that members achieve their individual goals. It's success is that all activities are professionally facilitated so that members have fun, and also learn from activities which are group directed.

Lower Nebine Bestprac Group

Bollon, Qld

Years in Bestprac 12 years

Facilitator

Phil Brownhalls

Benefits of Bestprac

Bestprac provides a network of like minded producers facing similar issues. It gives exposure to specialists and the opportunity to take home what is required, as well as being a smorgasbord and springboard of innovation which can be implemented if desired. It allows producers to keep abreast of current issues and trends while providing a good social outing 4 times a year.

'Others should be involved in Bestprac because…'

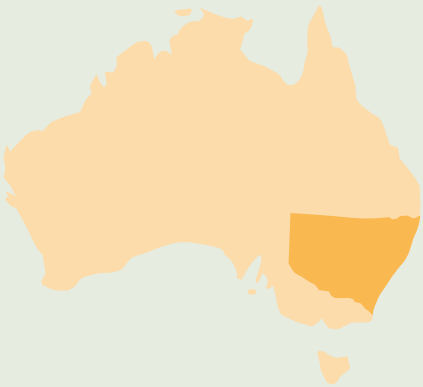
It allows producers an opportunity to identify common issues and to take steps to address these, as group dynamics can often produce a better outcome than can individual effort - good advice and research from the right sector is the closest one can get to time travel.

Business Management and Administration Innovations

Corporate Governance

Record Keeping

Monitoring and Evaluation



The Colli Ridge Merino Breeders Group

Managers/Owners:
Robert and Therese Turnbull

Property Name:
Bando

Property Location:
Lightning Ridge/Collarenebri, NSW

Size of property:
10,984ha

Brief enterprise description:
Merino sheep, cattle and cropping

The innovation is a:

New process
New source of supply

The Innovation:

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Producers attend a ram selection workshop hosted by the Colli Ridge Merino Breeder's Group at 'Bando' in 2008.

Impetus Behind the Innovation

Robert and some other like-minded producers started the group mainly due to being disheartened by the situation the wool industry was in at the time. Robert recognised the value of combined buying power with regards to the purchase of farm supplies as well as the benefit associated with value adding farm products.

Additionally, 2001 was around the time when there was a large focus on reducing the fibre diameter of merino flocks so the group was investigating the possibility of purchasing an OFDA (optical fibre diameter analysis) machine to share between members.

How the Innovation Works

The Colli Ridge Merino Breeder's Group is comprised of approximately 19 producers from the Lightning Ridge, Collarenebri and Walgett areas of NSW. Originally formed in 2001 the group has continued to move from strength to strength and undertakes a variety of activities such as a forum for discussion, innovation and value adding.

The group tries to meet quarterly but this has been reasonably flexible depending on circumstances, particularly during the drought. They have a policy that if a motion has to be passed, six members must be present in order to do so.

Key Features

Each year the group put together a collective estimate of how many sheep, cattle and hectares of crop they have and from this estimate the quantities of chemicals and other supplies that will be required for that 12 month period. They then invite local resellers to submit a tender for guaranteed prices and service over the twelve months. Robert believes that although cutting costs is important, the real value in this situation is by way of the provision of service, for example, if a reseller can deliver products on-farm that eliminates the need for him to make a half day trip to town.

The group meets quarterly (when possible) to discuss current issues. They attempt to secure a guest speaker to attend each meeting and address the group. Group members are consulted as to the type of speaker they would like to hear from and their choice often depends on what is topical at the time. Past speakers include dog trainers, fencing or chemical reps, Telstra and NSW Department of Primary Industries.

Due to the number of producers in the group, they have the ability to be able to secure and host workshops on farm. Examples of workshops run in the past include sheep reproduction workshops and a ram selection workshop.

The group often initiates and hosts local field days that are open to producers from the wider area. The field days may be quite general with trade displays and resellers on show or they may have a specific focus, such as the mitchell grass field day that was run at 'Bando' in 2008. This provides an opportunity for the group to showcase some of their innovations to the broader community.

Interest in initiatives taken by other producers have led to organised farm tours to properties and droughtlots and a supply chain focus led to an excursion to visit a meat processing plant.

Key Benefits

Group power provides leverage for access to cheaper products and superior service.

Regular meetings allow producers to exchange knowledge and share ideas.

The group is able to access and benefit from guest speakers.

The group is large enough that it can attract training organisations to run workshops on-farm.

If it is necessary to lobby against political legislation, a letter from the Colli Ridge Merino Breeder's Group would hopefully wield more power than a letter from an individual.

Members have the benefit of social interaction with other producers and the ability to get off the farm which is important, particularly in times such as drought.

Key Materials Required

Lke minded, proactive producers.

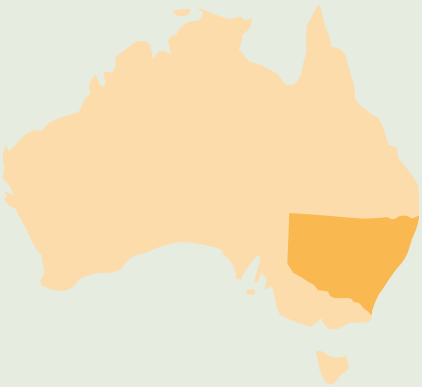
The ability to allocate time to organising and facilitating group meetings.

Potential Cautions and Risks

As with any group, the members have to be dedicated and committed in order to ensure the survival of the group in the long term. Flexibility within the group has prevented members from losing interest due to an inability to dictate what is important to them.

What Could be Done Differently Next Time

As far as the group is concerned, it has evolved as needed. It began as a merino breeder's group and has since expanded into other enterprises. The group is constantly evaluating what it does to ensure that members still consider the process to be worthwhile and relevant.



Business Advisory Board

Managers/Owners:

Adam and Leonie Coleman

Property Name:

Wilgara

Property Location:

16km west Quambone, eastern side of Macquarie Marshes, NSW

Size of property:

1920ha plus Beralba, 1244ha

Brief enterprise description:

Beef cattle on native grass and grain production in zero till system

The innovation is a:

New process

The Innovation:

Drives growth

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Wilgara Advisory Board Feb 2009: L to R Andrew Mulholland (Principal, Darcy Kennedy Accountants and advisers), Leonie Coleman (Partner, Wilgara), Mark Gardner (Partner, Vanguard Business Services), Emma Polack (NAB Agribusiness Manager) and Adam Coleman (Partner, Wilgara).

Impetus Behind the Innovation

Adam and Leonie were meeting individually with the key advisers. It was more efficient and effective to create an annual planning meeting with all of their advisers, to allow for each individual adviser to understand the big picture and not to give their advice in isolation from each other. It has given everyone involved a better understanding of the business, and has created synergies.

How the Innovation Works

At Wilgara, Leonie and Adam have assembled their accountant, banker and farm consultant to meet annually on farm to have all the key players in their business together, to allow cross pollinating of ideas and for the advisers to get a better understanding of the holistic goals they have.

The group is the forum for major yearly planning and discussions.

They also incorporate quarterly phone teleconference and email contact with the bigger picture business happenings on the farm. The meetings are structured with an agenda and minutes from previous meetings. The agenda normally includes financial indicators, a summary of the season, what has happened, and the projected cash flow.

Key Features

Key players – Owners, Banker, Accountant and Farm Consultant.

A team approach allows for good brainstorming ideas sessions.

Accountability of decisions and professional approach to farm business management.

Key Benefits

All the key players in the business are coming from the same common point but get to share their angle, interpretation and expertise on the issues arising.

Add great value and depth to the business due to the common understanding of how the business operates.

Creates an accountability forum, to make sure management adds rigor to its decision making.

Key Materials Required

Key players owners, banker, accountant and farm consultant.

Good organisation and communication – to organise the meetings, get agendas out and follow up with minutes.

Making the time to 'work on the business'.

Potential Cautions and Risks

The costs/investment could be seen as a risk but it is offset by the benefits.

Not following through with decision or actions made.

Bad advice (hopefully minimised).

What Could be Done Differently Next Time

Start the concept earlier.

Cost Benefit Analysis

Costs	Perceived Benefits
Accountant, Farm Consultant and Banker $2100/day in total plus bank interest	Many benefits, some short term financial gains other longer term

Office Recording System - Invoice Voucher

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km²

Brief enterprise description:

Wool production

The innovation is a:

New process

The Innovation:

Increases efficiency

Star rating

Ease of use

Degree of innovation

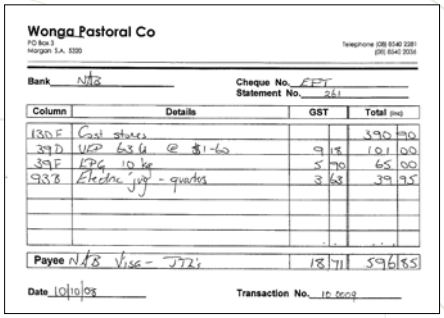
Impact on business

Application to other pastoral businesses

Figure 1
John and David Lindner, of Wonga Station.

Impetus Behind the Innovation

Numerous people in our business have the authority to purchase goods. To create a more efficient system to enter data for taxation records which corresponds with the cash transaction, we needed a system to substantiate in a brief form what was purchased and where it would be allocated to on the P&L (cost codes). Our invoice filing system needed improvement. At times we need to look back a couple years for things such as warranties etc. and spent hours trying to find the paperwork.



Wonga Pastoral Co

Bank NAB Cheque No. EFT Statement No. 261

Column	Details	GST	Total
130 F	Cost stores		390 90
39 D	UFP 63 L @ $1·60	9 19	101 00
39 F	FPG 10 kg	5 90	65 00
9338	Electric jug - quarters	3 68	39 95

Payee NAB Visa - JJ2; 18 711 596 55

Date 10/10/05 Transaction No. 10 6008

How the Innovation Works

We have developed a voucher that when ever a purchase is made, is filled in that details how the purchase was made, the total amount of the purchase, the various items purchased and the cost codes of the purchase. This then is filed with the account from the supplier, and is easier for the person entering the data into the computer to know which cost codes to assign to various items.

Filing is now on a monthly basis and when we need to find an invoice, a quick look on the computer will show the transaction number and lead us directly to the required paperwork as they are filed in transaction order. It also reduces accountant's time.

Key Features

The sheet is easy to use and not time consuming to complete.

Each fiscal year on different colour paper.

Once voucher filled out, anyone can enter data into financial software.

Key Benefits

Increases efficiencies in book keeping.

Decreases the amount of time tracking down invoices and cost codes.

Improves taxation reporting standards, such as substantiation and proof in an audit.

Reduces accountant time to find required invoices.

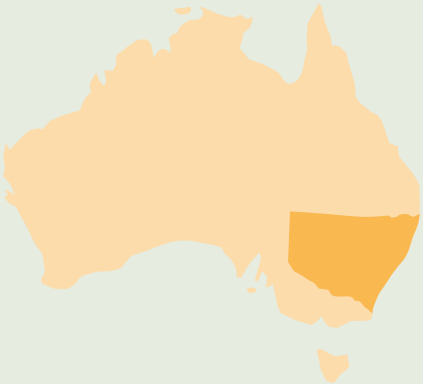
Key Materials Required

The template

All employees know how to use the template correctly.

Potential Cautions and Risks

This does not replace the conventional book-keeping system!



Development of Statement of Capabilities

Owners/Managers:

Adam and Leonie Coleman

Property Name:

Wilgara

Property Location:

16km west Quambone, eastern side of Macquarie Marshes, NSW

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The innovation is a:

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Drives growth

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Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Adam and Leonie have found that they are often following up grant applications and business opportunities. Having this document has helped them to clearly outline their skills and capabilities as well as their business goals. It has saved time, but also has created a professional impression.

How the Innovation Works

At Wilgara, Leonie and Adam Coleman have taken the time to prepare a seven page document called 'Statement of Capabilities'. This is a document that succinctly documents the skills and capabilities that Adam and Leonie have developed as Farm Business Managers, and provides documented evidence of their financial and environmental management capabilities. It covers:

Their business purpose and values.

An overview to their property and enterprises, educational background and skills.

Photos of their achievements and results from their monitoring of business performance and land condition changes (with photos).

Key Features

Documentation of business goals and values.

An outline of skills and experiences.

Business and Environmental management capabilities are documented.

A professional image is created.

Key Benefits

Saving time presenting the same information to a large number of groups and organisations throughout the year.

The enforced discipline of having to put 'pen to paper' and document the information.

Creating an image of professional business and land managers.

Key Materials Required

The document needs time to develop, and needs to be run past a few key people to enhance it.

Photos have been important.

Having documentary evidence over a few years of changes in land health such as increased ground cover, reduced distance between perennials, and improved species diversity and perennially is important.

The document has been made in Microsoft Word.

What Could be Done Differently Next Time

Start the concept earlier.

Cost Benefit Analysis

Costs	Perceived Benefits
Time is the major input	Difficult to quantify but important

Animal Health Recording Sheet

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New process

The Innovation:

Increases efficiency

Enhances quality and improved quality standards

Impetus Behind the Innovation

We needed a system to allow us to keep accurate records of the 'treatments' (vaccinations, drenches etc) given to sheep, so we can 'prove' if necessary, to authorities, what sheep have received which treatments and when. NLIS audit showed deficiencies in records.

How the Innovation Works

We have redesigned the tally book to incorporate a simple recording system for shearing or crutching that details the date, class of sheep and the treatment given. This sheet is then filed and can be used to determine which sheep have been treated, when and gives the opportunity for full traceback.

Key Features

Simple and easy to use.

Key Benefits

Allows us to keep simple but detailed records and is a risk management strategy.

Records all information for NLIS requirements.

Key Materials Required

The recording sheet.

Potential Cautions and Risks

Data could be recorded wrongly.

The sheets could be lost or misplaced.

What Could be Done Differently Next Time

The data could be entered into the computer and catalogued accordingly.

Date

Description of sheep

Pen	Name	Counts 1	2	3	4	5	6	7	8	Totals Day	C/F	To Date	Notes
1													
2													
3													
4													
5													
6													
	Totals												

Dose

Dip Name | Batch No. | Expiry Date | ESI

Other Treatments

Date

Description of sheep

Pen	Name	Counts 1	2	3	4	5	6	7	8	Totals Day	C/F	To Date	Notes
1													
2													
3													
4													
5													
6													
	Totals												

Dose

Dip Name | Batch No. | Expiry Date | ESI

Other Treatments

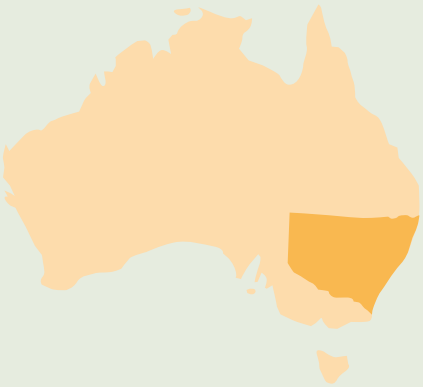
Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses



Expiry Date Tracker

Owners/Managers:

Annette and Barry Turner

Property Name:

Polpah Station

Property Location:

15km north east of White Cliffs, NSW

Size of property:

26,000ha

Brief enterprise description:

Organic certified wool (Merinos) and meat (Dorpers and Suffolks)

The innovation is a:

New product

New process

The Innovation:

Increases efficiency

Improves standards of safety

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Scanning the barcodes of products in the medical chest using the personal digital assistant.

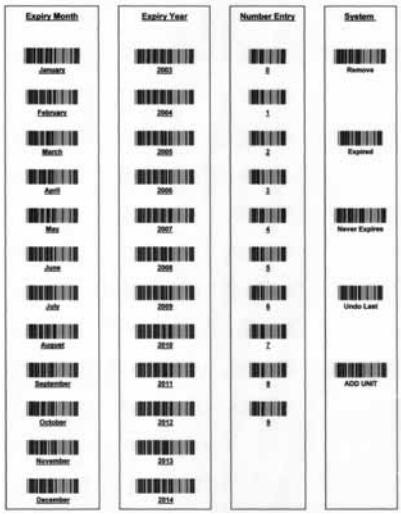
Impetus Behind the Innovation

Polpah Station has a Royal Flying Doctor Service medical chest that contains a range of items including pharmaceutical products. Medical officers may provide instructions to use these products when treating patients remotely. The medical chest needs to be kept up to date and fully stocked. Annette wanted to develop a system that ensured products were available and in date if required during an emergency.

How the Innovation Works

Annette Turner uses a system for tracking expiry dates to ensure Polpah Station's medical chest is up to date and fully stocked. Annette's company Turner Warburton Solutions Pty Ltd developed the system. The system stores the barcode information of products and their corresponding expiry date using a scanning device and tailored software notifies the user when the product expiry date is reached.

Figure 2
A sheet of barcodes representing days, months and years is used to enter expiry dates.



Key Features

Entering data into the system is simple and user-friendly. The user scans the barcode of the product using the personal digital assistant and the corresponding expiry date is entered using a sheet of bar codes that represent days, months and years. This information is then downloaded into a computer software package that processes and stores the data and notifies the user via e-mail that a product's expiry date has been reached.

The system can keep track of any product that has a barcode. Hence, it has numerous applications such as managing chemical storage, fire extinguisher maintenance, staff training requirements and machinery servicing. It is flexible and can be tailored to suit the requirements of a particular application or business.

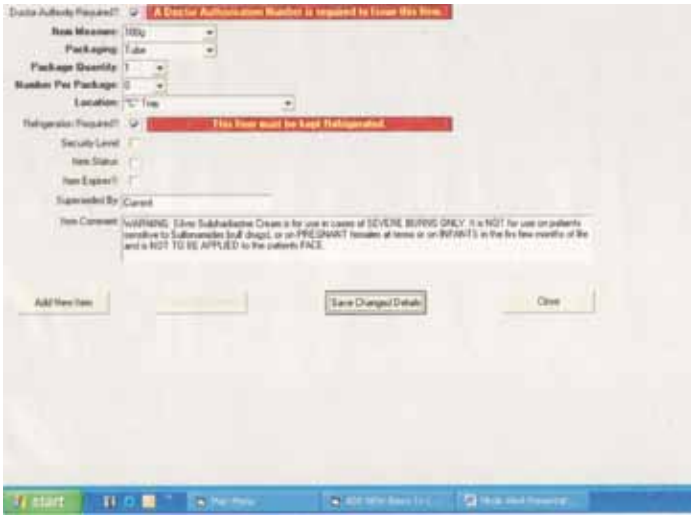


Figure 3
Software notifies the user when the product expiry date is reached.

Key Benefits

The system improves safety by ensuring safety equipment is kept up to date and ready for use. For example, Annette is now confident that if a product from the medical chest had to be used in an emergency it would be in date.

Using the system improves efficiency, rather than having to check all products periodically the user only has to locate and replace the product that has expired when notified by the software system. The potential for data entry error is reduced due to the simple and user-friendly data entry system.

Key Materials Required

The materials required to implement the system include:

A scanning device such as a personal digital assistant (PDA) to read the barcodes.

A sheet of barcodes representing days, months and years to enter expiry dates.

A computer and software.

Potential Cautions and Risks

Annette has not identified any risks associated with using the system.

What Could be Done Differently Next Time

Annette is currently happy with the way the system works and how easily it has been modified to numerous applications for use in the pastoral industry and other industries. In the future there is the potential to develop a re-ordering facility with suppliers of the products that are being tracked.

Using Climate Website Information in Decision Making

Managers/Owners:
Ben and Susan Carn

Property Name:
Wootoona

Property Location:
Quorn, SA

Size of property:
8000ha

Brief enterprise description:
Merino sheep for wool and meat

The innovation is a:

New process

New business model

The Innovation:

Increases productivity

Saves money, saves time, aids decision making

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

To keep track of updates on forecasts: some sites daily, others monthly; I needed to access these sites quickly, without wasting time.

How the Innovation Works

On the Favourites section of my homepage on the internet, I have created a 'Weather' folder with about 10 websites. Some are updated weekly, some monthly; so I name and date them.

Eg. BOM 3 month outlook (due 24/5/09).

Key Features

A list of my most commonly used websites to make or add to your own 'Weather' folder under your Favourites, and some tricks to using some sites:

Water and the Land:

www.bom.gov.au/watl/

BOM climate site that has SO much! Have a look at:

4 Day Forecast, Recent Drought Report, 3 month outlook (different format from the other one), ENSO forecasts, POAMA experimental model, and my favourite, Australian Climate Influences. Click on any of the named influences and it will link into a really good explanation of how, when, and where it can affect Australian climate.

Bureau of Meteorology 3 month outlooks:

www.bom.gov.au/climate/ahead/rain.seaus.shtml

Updated around the 24th of every month.

For checking Indian Ocean Dipole (IOD):

http://ioc3.unesco.org/oopc/

Shows current status of Indian and Pacific Ocean temperatures. Updated every few weeks.

Click on DMI for a graph of the last 2 years (Red is bad!).

Click underneath: Full Series for a graph of readings from 1981 until now.

Typically positive and negative dipole years alternate, but 06,07,08 have stayed predominantly positive. Very unusual!

Go back to Last 2 years and click on SETIO. This graph shows the ocean surface temperature for the south east Indian Ocean which affects our rainfall patterns (Blue is bad!).

Click on Full series for 1981 on for this graph too.

For checking Southern Oscillation Index (SOI):

www.longpaddock.qld.gov.au/SeasonalClimateOutlook/SouthernOscillationIndex/index.html

Look at the 30 day reading for where it is now.

It also shows where the last 3 months ended up.

For example:

Jan +8.17

Feb +15.22

Mar -1.26

Click on SOI Graph. An El Nino shows up as consistently negative, a La Nina as consistently positive.

JAMSTEC Monthly Predictions:

From Japan Agency for Marine-Earth Science & Technology:

www.jamstec.go.jp/frsgc/research/d1/iod/

click on Seasonal Prediction under parameter click Precipitation anomaly.

APEC Climate Center Predictions:

Can be viewed at www2.apcc21.net/climate/climate01_01.php

Get monthly breakdowns for eg. For May, June and July by scrolling down to Deterministic MME forecast, under Month click down arrow, under region click Australia. This is updated monthly.

For checking the Madden-Julian Oscillation (MJO):

http://www.bom.gov.au/bmrc/clfor/cfstaff/matw/maproom/RMM/phase.Last40days.html

This is a graph showing the movement of MJO phases and where it is currently. Updated daily.

http://www.bom.gov.au/bmrc/clfor/cfstaff/matw/maproom/RMM/composites/index.htm

This shows the different phases and on a map of Australia when each phase enhances chances of rainfall:

On top row, choose months eg. MAM (March, April, May), and down the side choose weekly rainfall probabilities. Click Australia map, then click the phase you want to look at.

Unfortunately the MJO phases which enhance rainfall can be blocked by positive IOD events.

Key Benefits

Easy and quick access to websites. We use it to help us make informed decisions on all of our farming practices, like when and if we should sow crops, whether to buy or sell stock etc. All of the information is from scientific data.

Key Materials Required

Home computer and internet access.

Potential Cautions and Risks

Taking the information found on these sites as gospel! Or only looking at one site and not getting the big picture. It helps to have a basic understanding of the weather systems that effect Australia, but this information can be found on the BOM's site Water and the Land.

What Could be Done Differently Next Time

Get faster internet access!

Business Diversification Innovations

On-Farm Enterprises

Off-Farm Enterprises

Investigating Organic Cattle Farming

Managers/Owners:
Matt & Paula Hammerquist

Property Name:
Mount Augustus

Property Location:
Mount Augustus, WA

Size of property:
404,695ha

Brief enterprise description:
Cattle

The innovation is a:

New process

New business model

New distribution system

The Innovation:

Drives Growth

Enhances quality and improved quality standards

Impetus Behind the Innovation

To widen the available markets to give more choice of markets we to sell into and of secondary importance, to increase the sale value.

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

How the Innovation Works

Investigate the requirements for Organic Certification and the costs involved. We wanted to determine what needs to be changed so the cattle can be sold with the 'organic stamp' including: changes to the station itself (possible removal or moving of the arsenic dips), changes to the animals inoculation (or obtain an exemption certificate), developing a sick paddock for unwell animals, changes to the feed (5% per annum of non-organic hay can be fed), reviewing new markets to sell into and the cost of transportation. The process to become organic will take approximately 3 years.

Key Features

A diary of animal injections must be kept; development of a 'sick' paddock, changes made to the animal feed and payment of 1% of revenue on the sale of organic animals to the Australian Certified Organic and payment to the same organisation of annual and application fees.

Key Benefits

The ability to sell into an extended market at a higher price.

Key Materials Required

Paperwork and outlay of capital! Inspection of soil, cattle yards (prevent damage (brusing) to cattle), sick paddock, change to animal injections (tetanus) or an exemption certificate. Having a ready-made market to sell into.

Potential Cautions and Risks

Cost of production could increase with return on investment at least 3 years away. Drought produces skinny cattle and is a production risk. Distance; the market for organic cattle is smaller and fewer animals are sold to a single buyer (20 to 30). To be economically effective, given the location of the station, about 200-500 cattle (to fill a Roadtrain) need to be sold at any one time to make mustering cost-effective.

What Could be Done Differently Next Time

The investigation is complete but the organic farming not implemented. Two things need to happen before the project is taken further (a) to visit the organic farmers in the south and learn more about the benefits and, (b) finding someone interested in buying organic cattle in the north west (station cattle have a repuation for being wild, whilst this may have been true 10-15years ago, it is now not the case).

Cost Benefit Analysis

Costs	Perceived Benefits
Nothing has yet been expended; the exercise has been purely an investigation.	After spending the fees and set up costs the benefits will not be measureable for 3 further years.

Organic Lamb Production

Owner:
Steve Cresswell

Property Name:
Annalara

Property Location:
Wilcannia, NSW

Size of property:
24,000ha

Brief enterprise description:
Organic lamb production

The innovation is a:

New supply chain relationship

The Innovation:

Drives Growth

Value adding a product

Figure 1
Four to six month old organic white dorper cross lambs killed at Junee abattoir.

Impetus Behind the Innovation

Steve Cresswell changed from merinos to a meat producing white dorper flock as a result of ongoing drought conditions and low lambing percentages in the merino flock. In addition, prices for organic lamb are usually higher than conventional lamb.

How the Innovation Works

Organic certification of 'Annalara' was acquired in 2005 through NASSA (National Association for Sustainable Agriculture Australia). Over 3000 ewes that are in the later stages of upgrading from merinos to white dorpers are used to produce the organic lamb. Lambs are sold above 40 kg live weight less than 1 year of age. They are killed at the organically certified abattoir located at Junee (near Wagga Wagga) in NSW.

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 2
Steve and Jack Cresswell displaying rams at the 2008 Kilfera Field Day at Ivanhoe, NSW.

Key Features

Firstly there was a change of sheep breed from a wool producing Merino to a meat sheep white dorper flock on Annalara. This change allowed a significant reduction in chemical use to the point where only some organic accredited fly control is used at marking around the elastrator rings. Worms have never been a problem at Annalara and to date lice have not caused problems. The next step was to apply and obtain full certified organic accreditation, which took three years.

Key Benefits

Prices for organic lamb that fit within the grid are generally significantly higher than the prices for conventional; Steve Cresswell has achieved net premiums of up to 150c/kg above traditional non organic lamb prices. In addition, Steve expects the organic lamb market to grow. This is backed by market research which states that organic lamb is less than one percent of total lamb production in Australia and demand for organic lamb will continue to increase as the industry expands further into export and domestic markets. Consumption of organic lamb is expected to increase in line with increases in demand for other organic products (Supplying Organic Lamb, Viv Burnett, RIRDC publication 2008).

Key Materials Required

Allow a minimum of six years to upgrade from a merino flock. Aim to upgrade to a highly fertile, flexible joining meat sheep breed with high growth and meat yield that thrives in an arid environment. Shedding breeds reduce the threat of fly and lice problems. The arid conditions assist with reducing worm problems. Review management and chemical applications on the property. Apply to a national certifying body to become organically accredited.

Potential Cautions and Risks

Steve Cresswell's accreditation involved an initial visit by an accredited inspector to whom he supplied property mapping and a farm plan. Soil tests were taken from cropping and sheep yard sites to detect any chemical residues. Surprisingly, one site at a sheep yard tested for DDT, so he had to remove twenty centimeters of soil and replace with clean soil, burying the contaminated soil. He is now required to have yearly audits and inspections which generally take less than a day, where he has to supply a chemical log of any inputs and paper work on all consignment of organic sales and paddock and cropping histories. NASSA charge an annual fee plus a 1% fee of annual gross sales of lamb.

At present under the organic system, producers have to pay the kill fee at the abattoir, which equates to around 70 cents/kg dressed on average eg a 22 kg dressed organic lamb would gross about $108 less a $15.40 kill fee. In addition, the closest organically certified abattoir to Wilcannia is located at Junee, so the problems with lengthy transportation and the extra trucking charges need to be considered also.

Due to the limited number of organic processors, there is lack of competition for organic lamb and the super market chains who are the major retail customers of organic lamb are dictating the pricing and killing grids. The usual dressed weight grid for organic lamb is 18 to 23 kg which makes it hard at times to send a larger consignment that fits within this grid. There are very large discounts for lambs dressing outside the grid. Despite the extreme dry times, Steve Cresswell has been successful in selling all his lambs at the target live weight of 40 kg before one year of age, except for only a handful of tail lambs.

What Could be Done Differently Next Time

If able, Steve would have sold all his merino ewes and bought white dorper cross ewes so that the breeding program was accelerated. Steve found the time factor an issue when breeding from a Merino base. The ewes at Annalara are now 5th cross and Steve is able to cull non shedders.

References

Burnett, V. 2008, 'Supplying Organic Lamb' RIRDC Publication No 08/177, Australian Government Rural Industries Research and Development Corporation. Retrieved from

https://rirdc.infoservices.com.au/items/08-177

Goat Trading Business

Managers/Owners:
Rick and Joanne Gates

Property Name:
Burndoo

Property Location:
Wilcannia, NSW

Size of property:
25,000ha

Brief enterprise description:
Goat trader

The innovation is a:

New supply chain relationship

The Innovation:

Drives Growth

Figure 1
Rick and Jo Gates drafting a consignment of goats purchased from a landholder

Impetus Behind the Innovation

The Gates have been woolgrowers in the Wilcannia area since the 1920s. In 1988, Rick and Joanne bought Burndoo. Low wool prices coupled with dry seasons were the catalyst to look for alternative sources of income. Rangeland goats were bought to fill a spare paddock at a time when their neighbours were also moving into goats. As the paddocks on Burndoo were emptied of sheep, they were re-fenced and filled with goats. It soon became obvious that large numbers of goats could be bought and resold quickly rather than obtaining numbers by breeding.

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 2
Weighing a consignment of goats on Burndoo

Figure 3
Rick Gates with his Holland stock lift race

How the Innovation Works

The aim is to run a goat trading business from Burndoo. Rangeland goats are sourced from about 135 landholders located within a 250 km radius of the property. The Gates use their own trucks to pick up goats and bring them back to the depot. Landholders are requested that stock be off water for 18 hours prior to pick up. The goats are off loaded at the depot and drafted by sex and size. The mobs are then weighed in a weighing pen and the weights returned to the landholders within 12 hours. The drafted goats are released into larger goat paddocks. Payment is at a competitive rate minus the freight charge to collect the goats and is sent to landholders no later than 10 days after pick up. The average mob size bought ranges from 1200 to 1400 goats. Goats are trucked to abattoirs early in the week and are sold over the hook. Approximately 2000 goats are trucked out each week using contract trucks. Most of the goats are killed for the export market, while 10% are killed for the domestic market. Billies over 25 kg are also live exported by aircraft out of Adelaide, Melbourne and Sydney. These goats need to have correct weight, horn type and conformation for this market. Small goats below 23 kg are sold to re-stockers.

Key Features

Rangeland goats for the depot are sourced locally and in relatively large numbers. As a depot, they can deliver large numbers of goats that meet specific market specifications to various locations.

Key Benefits

Profitable enterprise that works on the property.

Direct selling – no middle man.

All year supply.

Able to use profits to set up whole property with goat fencing and yards.

Low stocking rates because of turnover; average 6 ha/goat.

Key Materials Required

Stock trucks.

Goat proof fencing.

Yards – yard cover is a must in this environment for personnel.

Weighing pen built into the yards so large numbers of goats can be weighed at once.

Holland stock lift race for ease of ear tagging and ear marking goats.

Aeroplane for checking property, mustering and meeting new clients before buying goats.

Potential Cautions and Risks

Quality control of goats.

Extreme drought conditions e.g. 2001–02 resulted in poor goats and no supply.

Overseas markets can be fickle.

Low commodity markets mean landholders do not sell their goats.

Expense to set up business. About $1 million was spent on 'extra' infrastructure for the goat depot including upgrading fencing, extra yards and yard cover, trucks and sheds, a plane and hangar and extra watering facilities.

What Could be Done Differently Next Time

We would have started earlier and gone harder and faster.

Enterprise Based Conservation (EBC)

Managers/Owners:

Garry Hannigan

Property Name:

Churinga

Property Location:

130km east of Broken Hill, NSW

Size of property:

50,000ha

Brief enterprise description:

Meat sheep and goats, certified organic operation

The innovation is a:

New business model

The Innovation:

Drives Growth

Creates better outcomes for the environment

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
Garry Hannigan manages 4000 ha of his property exclusively for conservation, under an Enterprise Based Conservation agreement.

Figure 2
An example of the landscape in the Churinga conservation area.

Impetus Behind the Innovation

Initially, the main consideration and motivation for undertaking an EBC agreement was the alternative income source. However, the concept and other benefits to the business (such as public approval for environmental stewardship) have become much more important than the annual payment. Overall, the idea of managing a proportion of the property exclusively for conservation fits with Garry's passion for looking after the property.

How the Innovation Works

On Churinga 4000 ha (eight percent of the property) is managed and monitored exclusively for conservation, under an EBC agreement. The area is managed to reduce soil erosion, to provide a safe haven for flora and fauna (in particular those impacted by grazing) and to provide habitat for threatened species. Practically, this means not stocking and maintaining the fencing to exclude domestic stock from the paddock, managing goat numbers by either trapping goats using self-mustering enclosures or mustering, controlling excessive kangaroo grazing pressure and baiting foxes and cats twice annually. Biodiversity studies and photo points are used to monitor the conservation area. An annual payment is received for managing the conservation area.

Key Features

EBC provides a public funded payment for actively managing private land for conservation outcomes. The Churinga area has been managed for conservation since a conservation agreement was successfully tendered, as part of the WEST 2000 Plus EBC pilot program in 2003. A current agreement administered through the Western Catchment Management Authority will see the area managed for conservation until 2012.

Nine businesses in the Western Division of NSW have been involved in EBC since 2003. The landholders in this group share information and experience regarding managing private land for conservation, particularly at their group meetings that are held annually.

Key Benefits

World class products (i.e. organic lamb and goat meat) are produced in harmony with the environment at Churinga and the conservation area helps demonstrate this to the public. The entire property is certified organic and managing for conservation in conjunction with production fits well with organic principles. In addition, the conservation area provides an opportunity to utilize low value grazing land and receive an alternative income source that does not vary with season or market fluctuations.

Garry believes the concept of EBC is a viable alternative to National Parks and it helps to maintain family structure in the local community. Also in the future, the concept has the potential to replace the current structure of government support during exceptional circumstances.

The superb landscape within the conservation area provides an area on the property for recreation and retreat with family and friends. It also provides an opportunity to incorporate a tourism enterprise into the business in the future.

Involvement in the EBC group has provided an opportunity to interact with other like-minded landholders. The information and experience shared within the group has been beneficial.

Figure 3 Western Grazing Bestprac group during a field tour of the Churinga conservation area.

Key Materials Required

The following infrastructure and materials are required to manage the conservation area:

Fencing adequate to exclude domestic livestock (i.e. five line plain wire with a top barb wire)

A self-mustering enclosure around one water

Monitoring sites

Fox and cat baits

Potential Cautions and Risks

Conservation agreements are legally binding contracts and management needs to comply completely with the conditions, for example, not grazing the area. It is important to know and understand all the implications before undertaking an agreement.

The opportunity cost of taking land out of production must be accurately estimated and considered. The productive capacity and the potential return under production need to be calculated to be able to determine if the annual payment is sufficient.

What Could be Done Differently Next Time

Investment in infrastructure to assist management of the area could have been better negotiated at the commencement of the project e.g. funding to upgrading existing fencing to hinge-joint. There could have been more extensive monitoring of flora and fauna at the start of the project, which could now be used as base information to measure change that has occurred.

Cost Benefit Analysis

The annual incentive payment provides a comparable income to the productive returns that could be achieved on the land over time. The area delivers considerable public benefits such as conservation of rangeland ecosystems, improvements in biodiversity and the maintenance of a social structure in the region's community.

Enterprise Based Conservation Project

Owners:
Connellan family

Property Name:
Narwie and Geraki

Property Location:
Balranald, NSW

Size of property:
11,117ha

Brief enterprise description:
Crossbred fat lambs

The innovation is a:

New business model based on ground cover payments

The Innovation:

Drives Growth

Creates better outcomes for the environment

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

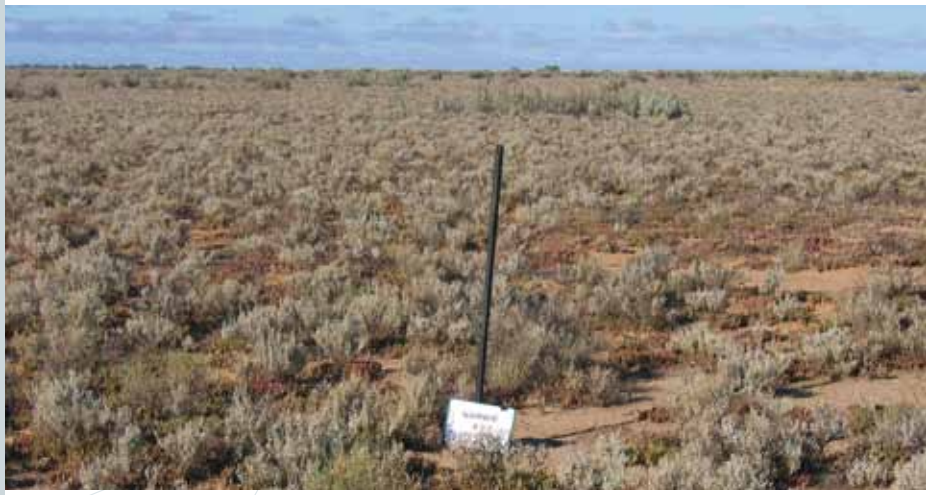


Figure 1
Site 6 - one of the ground cover monitoring sites situated on 'Geraki'

Impetus Behind the Innovation

The Connellan family have been rotationally grazing their property for over 80 years. It is a grazing system that was established by Paul and Andrew's grandfather to suit the stock management program. Each year, the stock (approx. 3000 DSE) are moved from the saltbush country (Geraki) to the river country (Narwie) in November/December for shearing. The sheep graze the river country from 2 to 5 months depending on the availability of feed and are than mustered 12 km back to the saltbush country. For over 80 years, the program has allowed excellent stands of Bladder and Old Man saltbush on Geraki and good perennial grass cover in the river country. The family read about the EBC program and thought that the ground cover on Geraki would meet the 40% ground cover minimum target. The Connellans submitted their case model to the WEST 2000 PLUS program for approval and were successful with their application.

How the Innovation Works

The Connellan family were a successful applicant in the Enterprise Based Conservation (EBC) program in 2004 through WEST 2000 PLUS.

The program was initially a four year pilot project to determine if a payment based conservation system would be effective on private properties. The Connellans have just signed up to the program for another four years.

The Western Catchment Management Authority now administers the program. The program works on ground through a series of monitoring sites that are assessed annually by an independent assessor – in this case, the assessor is currently staff from the NSW Department of Primary Industries.

Twenty monitoring sites have been established by NSW DPI on the Connellan's 8000 ha saltbush block 'Geraki'. The ground cover at these sites is assessed by NSW DPI to determine if there is a minimum of 40% ground cover in each of the paddocks. A step point technique is used to assess the ground cover in March, which is considered to be a time of low plant growth after the hot summer months and before the onset of autumn rain.

Once the data is collected, it is analysed by NSW DPI and results sent to the Western CMA. The Connellan family receives an annual payment from the Western CMA based on the number of sites that maintained 40% groundcover. This ground cover target is adjusted for annual rainfall received at the property for both poor and good seasons.

Despite the very low rainfall received at Geraki over the last five years, the Connellans have managed to maintain a minimum ground cover of 50%.

Key Benefits

The Connellans have not had to make any changes to their 80 year old management program to accommodate the EBC program. If the ground cover at the twenty monitoring sites at 'Geraki' meets the minimum ground cover target of 40% in March, and allowing for the annual rainfall that has fallen on the property, they receive an annual payment as a reward for being good land managers. In addition, Paul Connellan attends a meeting each year with other landholders in the program and these annual meetings have become an excellent forum for exchanging ideas with like minded people and developing a network base of innovative people.

Key Materials Required

Acceptance into the Enterprise Based Conservation program.

Signed management agreement with Western CMA.

Monitoring sites on property.

Potential Cautions and Risks

It is possible that the ground cover targets may not be met at each monitoring site and therefore decisions would have to be made about how to reach the targets. This issue over the last four years, which have been extremely dry, has not been a concern.

What Could be Done Differently Next Time

As the Connellan family no longer crop on the river block 'Narwie', they would consider offering that country to the EBC program in the next funding round.

Native Grass Seed Harvesting

Managers/Owners:

Ian, Ruth and Matthew McKenzie

Property Name:

Loyola

Property Location:

32km west of Coonamble, NSW

Size of property:

3328ha

Brief enterprise description:

Cropping and opportunity livestock trading

The innovation is a:

New use for existing products

The Innovation:

Drives Growth

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Harvesting native grasses

Impetus Behind the Innovation

To utilise our own natural farm resources to harvest native grass seed. This perennial native grass seed has been sown across the property to speed up regeneration after drought and recovery of pasture. Pasture cropping and rotational grazing methods have significantly regenerated our land and have allowed the native grasses to establish, and set seed across large areas of the farm. Seed has also been sold. Mitchell grass has been the main seed harvested to date but seed harvested includes: mitchell grass, native millet and windmill grass.

Figure 2
Native grass nursery on 'Loyola'

How the Innovation Works

The innovation is using an air-front (Figure 1) on a conventional rotary header to capture native grass seed, from a nursery block (Figure 2). This has created a new, high value enterprise for the business, and is harvested on an opportunity basis.

Key Features

Enhancing and developing the stand of Indigenous/local native species.

Improve biodiversity over the farm by sowing seed.

Ability to harvest pure mitchell grass and sell this for $18/kg.

Can harvest from both seed nursery paddock and general pasture paddocks.

Alternative enterprise for the farm as opportunities arise.

Key Benefits

Utilising your own natural resources – mitchell grass, native millet, windmill grass etc.

Cheaper than buying in native grass or introducing perennial grasses across large areas by purchase of seed.

Palatability and persistence of native grasses is high, we are spreading grasses that are well suited to our farm.

Drought hardiness and tolerance of the natives makes this a good activity.

Pastures have good ability to recover after rain events, through greater level of perennials grasses.

Good ground cover and enhances biodiversity.

Key Materials Required:

Header – air reel (could use contractor).

Cost Benefit Analysis

Costs	Perceived Benefits
$18/kilogram for mitchell grass. Some 50 kg were purchased for nursery paddock Header costs were low	2 tonnes were harvested $36,000 @ $18/kg sold

Aquaculture of Tropical Fish

Managers/Owners:
Guy and Susie Morrison

Property Name:
Wahroonga Station

Property Location:
120km SE of Carnarvon, WA

Size of property:
83,000ha

Brief enterprise description:
Property Diversification to improve economics in time of drought

The innovation is a:

New product

New process

New business model

The Innovation:

Drives Growth

Business Diversification

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Jamie Morrison holding the outlet of the artesian bore. The bore was put down in 2000 which is used to run the fish enterprise.

Impetus Behind the Innovation

The pastoral region of Western Australia is not only renown for its production of fine merino wool, beef cattle and rangeland goat meat but also for the fact that at times it can be struck by devastating drought. It is in these periods of drought that the economic viability of the region is at extreme risk.When pastures are unable to support the required amount of animals to uphold a business, alternatives have to be sort to protect the long term future of the environment and pastoralism. Diversification represents an option to provide alternative income.

How the Innovation Works

The project investigated the use of artesian water in a remote pastoral region, known for its production of merino wool, that could provide income during time of drought. The objective of the aquaculture project was to investigate the possibilities of developing an alternative industry in the production of tropical fish using the artesian water and the liklihood that this could provide alternative income to the station. The project involved research into the ability of egg laying ornamental goldfish and other oramental fish species to spawn effectively in low saline artesian water.

Figure 2
Figure 2 Di Morrison cleaning weed from breed stock baskets. These baskets go in the big tanks, preventing adult fish eating the babies.

Figure 3
Electric Yellows

Figure 4
Praecox

Figure 5
Electric Blues

Key Features

The most essential ingredient in the business of Aquaculture is water. The water needs to be of a quality that will not only sustain life but have characteristics that will maintain that life at the highest levels to promote fecundity, rapid growth and overall good health. At the same time that this water is supporting the cultured fish, the outflow of water from the system needs to have no detrimental effect on the environment.

In the beginning it was necessary to devise a water treatment system as the water on reaching the ground surface has a temperature of 42 degrees Celsius and a high iron content, both lethal to fish. The natural pressure of the bore will raise the water 10 metres above the ground surface so with this advantage of height it has been possible to gravitate the water through a system of cooling blinds and into a settlement tank. This process not only cools the water to an acceptable level but through this oxygenation, iron levels are brought to an acceptable level. Once the water is exposed to air a chemical reaction causes a shale like substance to form on the inside of the pipes. Gundrill Water Magnets were trialed in an endeavor to keep these solids in suspension rather than adhering to the pipe walls. The presence of this shale like substance caused management problems within the plumbing system but seems to have no detrimental effect on the fish.

A hole in the ground is filled with water. The fish introduced were Poecilia sphenops [Mollies] and Poeciliidae Xiphophorus helleri [Sword Tails] ovooviparous fish producing live young which are known to tolerate a range of water quality. In the warm environment these fish produced prolifically. Black pearlscale goldfish broodstock were purchased and introduced to the artesian water and successfully grown over several months to sexual maturity but spawning was not in commercial quantities. Results produced from the spawning trials were mixed. The variation between species, depending on their preferred environment, has been considerable, however as the desired outcome was to prove that egg laying ornamental fish could produce viable embryos in artesian water, the project has been a resounding success.

Australian and New Guinea Rainbow Fish [Melanotaeniidae] herbertaxelrodi , praecox and bosmarni's normal habitat is that of fast flowing shallow streams and rivers with a preferred water temperature of 24 to 29 deg C. These fish were introduced into the system without any difficulty and spawned continuously in large numbers. The brood stock are housed in floating cages of approximately 50lt in 2000L tanks. At the end of approximately 30 days the brood stock are removed to a clear tank to continue spawning and the fry are left to mature. The fry reach maturity or marketable size in 4 to 6 months depending on the species, water temperature and feeding program.

Feather Fin Catfish [S.eupterus] are a high value aquarium fish that underwent trial. The brood stock conditioned successfully and at the first spawning attempt large quantities of healthy eggs were obtained. The milt was seen to be adequate but the eggs failed to be fertilised. The inherent hardness or salinity of the water may have caused the egg casing to harden preventing the sperm from entering. Being a fresh water fish it may be necessary to spawn the fish into fresh water and then transfer the fry to the artesian water once a degree of maturity has been achieved.

Poecilia reticulata [syn. Lebistes reticulatus] Guppies are known to breed in the most diverse water conditions in the wild, and are an extremely attractive fertile fish ideally suited to the home aquarium. Because of there willingness to breed in captivity they are a low value fish however the market demand is constant. By maintaining broodstock in floating cages the bloodlines can be controlled and colour variations maintained. Most Guppies are currently imported into Australia from Sri Lanka and Singapore with the ability to bring disease with them. The production trial carried out on this species proved commercial potential.

To make effective use of waste water from the aquaculture tanks a small grass trial was initiated. A trial plot was planted using perennial grasses currently grown by the Ever Green group in the mid west and Queensland as stock fodder crops. The grasses have grown prolifically and set seed with no obvious signs of salt stress. Further work is required to ascertain if eventual build up of salts in the soil will become a problem and how to deliver this water to the crop to minimise the effect of surface evaporation. The build up of shale like substance in all delivery pipes is a problem to be dealt with in future trials.

Figure 6
Di Morrison packing fish for sale.

Key Benefits

Initial results show that the innovation could provide the basis for a future viable industry not relient on regular rainfall and pasture growth. The industry would have little impact on the environment and be in a position to utilise the natural attributes of the region to gain economic advantage. Having access to warm, disease and chemical free water flowing under a natural pressure has distinct advantages in the culture of oramental fish.

With the input of grant funding a tunnel house, 20x 2000lt tanks, plumbing and an aeration system were installed enabling this work to be carried out effectively. Once full production levels have been achieved with current infrastructure it should be possible to turn out approximately 48,000 juveniles pa. With a 15% loss during grow out due to deaths and deformities 40,000 fish should be available to market, with an average price per juvenile of $2 producing a gross income of $80,000 pa.

Perrenial grasses planted at Wahroonga Station have flourished and although the winter season has provided above average rainfall the small plot has shown sufficient evidence to say that the artesian water has had no undue effect. In future if production levels and therefore water output from the aquaculture unit was increased the outflow water could be used to irrigate a grass area. These grasses would be most likely cut for hay to be used to condition rams prior to mating or as a supplement feed for animals being held in confinement before trucking.

The major result however is that fancy goldfish will produce viable fry in artesian water if the water is kept in their preferred temperature range. It is this required temperature range that bought about a shift in activity. As Wahroonga is in a sub-tropical region and the water available has a high temperature, tropical species were considered to be more compatible with the environment. The majority of fancy gold fish are currently imported into Australia from China and Indonesia so an opening exists within Australia to fill a market demand. It is known that goldfish can be successfully breed in a warm fresh water environment but little is known of their tolerance to saline water and especially to saline water with a cocktail of other minerals.

The production of ornamental fish in Australia is so small that it is not even considered as part of the world market. Estimates of the global industry vary widely between US$1-5 billion. It is estimated that the world market is growing by around 8% a year with the US importing $41 million ornamental fish from over 60 countries around the world in 2003. Compared to the world total food fish aquaculture production of US$ 61.4 billion in 2001 the ornamental production is very low; only about 1% of the world total production. About 95% of the fish are farm bred with 5% caught from the wild. Recent surveys show that that the highest numbers of enthusiasts exist amongst the 11-15 year old age group.

Australia is in the fortunate position of having few diseases affecting its cultured fish production. It is a position that should be closely guarded. In 2003 Japan suffered a mass mortality of cultured common carp through the introduction of the koi herpes virus.

Key Materials Required

Water of a quality that will sustain life and has characteristics that maintain that life. A hole in the ground, tropical fish, a market, cooling system for the water, settlement tanks.

Potential Cautions and Risks

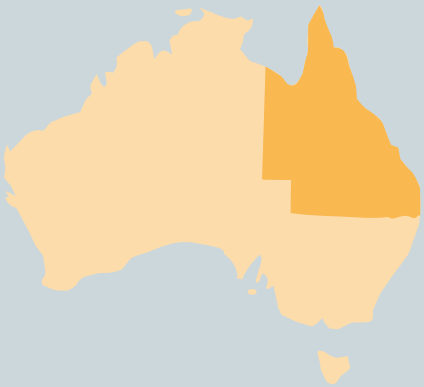
It was believed that the salinity levels of the water could possibly cause a process of reverse osmosis through the egg wall thus leading to the death of the embryo and the ultimate demise of any breeding potential on which to base a future industry diversification. The aquaculture industry is both competitive and poorly regulated...an industry in which cards are held close to the chest. Business advantage is gained by breeding success and it is this knowledge that is closely guarded.

What Could be Done Differently Next Time

We would have started earlier and gone harder and faster.

Cost Benefit Analysis

Costs	Perceived Benefits
Infrastructure Development $3,000 Food $2,000 per year Labour	$25,000 per year added revenue



Carbon Trading

Owners/Managers:
Paul Flipo

Property Name:
Kuballi

Property Location:
Bollon, Qld

Size of property:
22,000ha

Brief enterprise description:
Grazing goats, sheep and cattle

The innovation is a:

New use for existing products

New process

The Innovation:

Drives growth

Improves standards of safety

Enhances quality and improved quality standards

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Improves financial position at the risk of environmental management

Star rating

Ease of use

Degree of innovation

Impact on business

Impetus Behind the Innovation

We had high financial stress and limited management options due to government legislation imposed on native vegetation.

How the Innovation Works

We have commenced Carbon trading utilising the natural resources we have available.

Key Features

Selling standing timber.

Key Benefits

We have made a financial return from carbon trading by utilising our natural resources.

We received income (and hence cash flow) up front.

The carbon stored in the standing timber was valued more than the land was worth on the open market. This was when carbon was valued at only $4/t (the price has since increased).

The carbon buyer has credits to offset against their carbon outputs.

Key Materials Required

Legislative opportunities.

The standing timber required to meet legislation.

Potential Cautions and Risks

Negative effects on vegetation management.

Long term (121 year) contract.

Some loss of grazing income.

Government policy and legislation gave me very limited opportunities.

What Could be Done Differently Next Time

There are many things to consider. Carbon is valued at approximately ten times what I received when I commenced trading.

Cost Benefit Analysis

Costs	Perceived Benefits
Nil	Income up front

Waste Management Services

Managers/Owners:

Bill and Jane McIntosh
Brendan and Carmel Reynolds

Business Name:

Flinders Management Services (FMS)

(Gum Creek Station/Willow Creek Station)

Property Location:

Flinders Ranges, SA

Brief enterprise description:

Waste management services for the Flinders Ranges

The innovation is a:

New use for existing products

New process

The Innovation:

Drives Growth

Creates better outcomes for the environment

Risk Diversification

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Gecko Fire Logs are manufactured by flinders management services

Figure 2
The paper shredder

Figure 3
The briquette machine

Figure 4
The Gecko Fire Logs

Impetus Behind the Innovation

Poor wool prices and poor seasons have enticed Bill and Jane McIntosh and Brendan and Carmel Reynolds into looking at alternative income sources apart from pastoralism.

Both properties, owned and managed by two separate entities, adjoin the Flinders Ranges National Park. With an area of 95 000 ha, and breathtaking scenery, the park attracts thousands of visitors per year.

Bill and Jane, and Brendan and Carmel set up FMS in 2004 and won a contract to manage a new waste disposal and recycling depot on the Park which would also accept waste from Wilpena Resort. The contract required the design and manufacture of specialised equipment including a mini-compactor trailer built to pull behind the 4WD to collect rubbish from segregated bins.

Once the contract was operational FMS was faced with large amounts of waste paper and cardboard and the expensive option of transporting large distances for recycling.

The two businesses therefore researched the use of a 'Briquette' machine that would allow the cardboard collected to be locally compacted into small briquettes, which will then be made available for sale as supplementary campfire fuel within the park.

The briquettes are marketed under the brand of Gecko Fire Logs through the national park.

Key Benefits

Has ceased the need to transport waste to distant recycling options.

Has created an effective local recycling mechanism.

Has created an alternative enterprise.

Park users create a 'feel good' feeling of burning recycled paper and cardboard.

Key Materials Required

The briquette machine and shredder are manufactured overseas and interstate respectively. The shredder shreds the paper into small pieces. The briquette machine then compacts this paper into small cylinders 75mm in diameter.

Potential Cautions and Risks

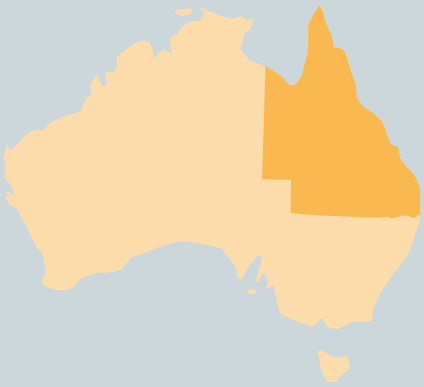
240V power is required to run the machine, and due to location, grid power is inaccessible.

Necessary safety precautions will be required when operating the machinery.

A sound marketing strategy will need to be implemented to ensure the product sells.

What Could be Done Differently Next Time

Looking at expanding the geographical location of where the bricks are sold.



Risk Management - Off Farm with Commercial Sheds

Managers/Owners:
Peter and Ann Sanderson

Property Name:
Westbourne

Property Location:
Tambo, Qld

Size of property:
22,000ha

Brief enterprise description:
Self replacing merino flock and beef cattle

The innovation is a:

New business model

The Innovation:

Drives growth

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Succession and retirement planning are an important issue within our business. We found the only way we could achieve our goals was to look off farm at alternative business structures and investments. These would generate income and growth when the grazing business was not generating a profit. This effectively reduced the impact of the down periods.

How the Innovation Works

Establishing a commercial growth business off farm to enable risk management during dry years and to support the succession planning process for family members. Most farms and rural businesses have large amounts of equity which is largely unused and can be to reduce risk and potentially grow the business. We have reduced the climatic risk by purchasing commercial rental sheds instead of either shares or private rental properties.

Key Features

This is an off-farm investment.

The commercial sheds are based in Toowoomba, Qld.

Positioned on the major highways for accessibility.

Low maintenance.

Get to know the tenants (relationships).

Enables business to use equity to grow.

Commercial sheds can be managed by owners.

Rents from sheds cover the business interest cost.

Aim for net returns of at least 8.5% annually.

We enjoy the challenge.

Key Benefits

Reducing risk of low income in poor seasons.

Highly profitable as well as a growth asset.

Enables business to use equity to grow.

Enables family members to have investments outside the main grazing business.

Business can be managed by family members.

It enables a succession plan to be structured.

It expands your knowledge and personal growth.

Adds diversity.

Key Materials Required:

Education in off farm investments.

Education in real estate investing.

Find a specialist who you can work with.

Equity in your business.

Potential Cautions and Risks

Be business savvy.

Getting the right investment.

Look for commercial sheds with long term tenants.

Position on major highways with good access and parking.

Do the numbers – aim for minimum of 8.5 % net returns.

Position, position, position.

When starting off, buy multi-tenant sheds.

What Could be Done Differently Next Time

We have based our commercial sheds in Toowoomba, Queensland. Next time, we would explore different towns for investments. We will also include an annual rental increase of 4% as standard growth similar to a CPI increase.

Cost Benefit Analysis

All investment sheds generate a minimum of 8.5% net return and some sheds are up to 14% net.

Production
Innovations

Measuring Livestock Performance

Water Management

Feedlots and Droughtlots

Supplementary Feeding

Fox and Wild Dog Control

Fleece Testing

Managers/Owners:

Colin and Ros Bowman

Property Name:

BlueGum House

Property Location:

Orroroo, SA

Size of property:

1000ha

Brief enterprise description:

Wool and sheep meat production and cropping

The innovation is a:

New process

The Innovation:

Drives growth

Enhances quality and improved quality standards

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Colin Bowman

Impetus Behind the Innovation

Colin noticed that the profitability of his sheep flock was declining. With a passion for sheep, the flock needed to work harder to be economical.

How the Innovation Works

Colin undertakes fleece testing with Lazerline annually, testing 400 hoggets. Colin recognises that females within his flock contribute to half the genetic pool of the off-spring, and testing the females wool quality is as important as knowing the wool quality of rams.

Mid-side samples are taken at shearing and sent to Lazerline for testing of yield, comfort factor and gross fleece weight. Results rank the animals against selected qualities, indicating top and bottom performers. Colin can determine objectively which animals require culling.

Colin determined that micron testing itself was not a suitable measurement to determine true performance, and yield testing is also a base level requirement.

In the first year of testing, all ewes were tested to ensure those of poor quality wool were culled. Now, visual culling removes the first 10% and a further 25% are culled based on test results. The females are only tested once over their life time.

Key Benefits

Colin has reduced the average micron from 23.5 to 21.5 over 4 years, whilst increasing fleece weight by 750g. Based on Clean Fleece Weight alone, and an average price of 800c/kg, in the fourth year a gain of $6/head was achieved.

This does not include the benefits and income gain from the fibre diameter decrease.

Although the test results can be used to improve information for wool sales, the main benefit has been the improvement in wool quality within the flock in such a short time period. This gain would not be possible in this time frame through only selecting rams.

Visual culling does not necessarily give accurate results. Colin visually culled and fleece tested some animals. The objective fleece testing showed that Colin was going to disperse his 4th best sheep in the flock based on visual culling!

Key Materials Required

Good identification of animals is crucial so the correct animals are tested and either kept or culled accordingly.

Access to the services of Lazerline (or similar).

Potential Cautions and Risks

Ensure you have a sound breeding objective in mind, and stick to what you are aiming for so you can measure your improvements.

Cost Benefit Analysis

Costs	Perceived Benefits
$3 per test (per animal over the life of the animal)	In the fourth year alone, each animal gained an additional $6

Electronic Ear Tags and Data Recording

Owners:
George and Sally Falkiner

Property Name:
Haddon Rig

Property Location:
Warren, NSW

Size of property:
22,000ha

Brief enterprise description:
Mixed farming business including Haddon Rig Merino Stud, 15,000 head of sheep, 1,000 head of cattle and cropping 8000ha with some irrigation

The innovation is a:

New use for existing products

The Innovation:

Drives growth

Improves standards of safety

Enhances quality and improved quality standards

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

The use of electronic ear tags has been adopted to increase the efficiency and accuracy of recording information about the selected sheep. Reducing the labour requirements needed for collecting information was also a motivation behind the adoption of this technology as were the safety considerations surrounding the restraint of rams to check ear tag numbers.

How the Innovation Works

Electronic cattle tags are used on sale rams, special stud ewes and AI lambs. Approximately 2,500 tags are used annually. Haddon Rig aims to tag animals where data is collected from them at least four times a year.

Haddon Rig are also currently running two experimental flocks that are mules free. One mob is horned while the other is a polled mob, each of 200 head. These animals are tagged and full EBV and pedigree information is being collected.

Key Features

The electronic ear tags are being used to collect and record full EBV and pedigree information.

Key Benefits

Increased safety of personnel when handling rams to collect ear tag information. The process using the electronic tags and wand is fast and accurate. Using this system saves one labour unit at sheep classing and two at shearing when collecting data.

Records pedigree information.

Recording of ram and ewe body weight and fleece weight.

Collation of data from each sale ram which is made available to the client.

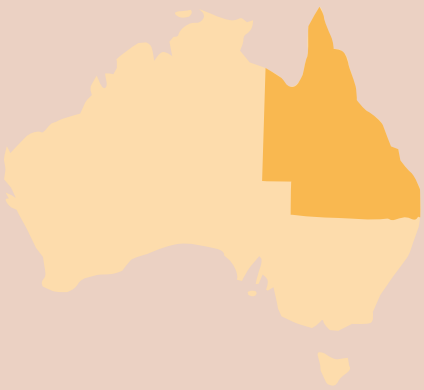
Key Materials Required

Commercially available electronic ear tags - $2.20 each

TruTest scales monitor - $2,500

Allflex reader for electronic identification - $1,500

Some equipment that is only used a couple of times a year is hired.



Electronic Sheep Technology

Name:
Blackall and Benlidi Bestprac Group

Property Location:
Blackall, Qld

Size of property:
100,000ha (seven properties)

Brief enterprise description:
Wool and meat production from sheep and beef breeding enterprises

The innovation is a:

New process

The Innovation:

Drives growth

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Blackall Bestprac group members accepting the Central West (Qld) innovations award for the E-Sheep Innovation in early 2009

Impetus Behind the Innovation

In the past decade, the biggest single issue for local producers in the central west has been the difficulty in sourcing labour for sheep and cattle husbandry practices. The district has lost a large proportion of its sheep, endured a number of dry seasons and lost a large proportion of its workforce. Today, producers need to find ways of running their business with less staff, without losing production. Local member Bill Cripps, 'Melrose' Blackall, prompted the group to look at trialing the latest electronic sheep management equipment, being promoted by the Sheep CRC, as a method of reducing the impact of labour. At the same time, the Blackall Bestprac Group was successful in securing a federal government Agfund project to promote the technology to the community.

How the Innovation Works

Just picture a sheep yard or shearing shed where the notebook is not needed to record numbers or information. Sheep are automatically recorded electronically by ear tag, weighed, drafted and all you have to do is keep pushing them up. At the end of the day, you move the flocks back to their paddocks and download the data from the laptop. The future is here.

Blackall and Benlidi Group members purchased electronic ear tags, drafting, weighing equipment and readers to establish a trial in central western Queensland.

This is a dual innovation –

1 Members of the Blackall Bestprac Group trialed the latest technology 'E-Sheep' precision sheep production on each of their properties.

2 Group members and the Tru-test, Allflex and Prattley (TAP) consortium promoted the E-Sheep equipment to the broader community in central western Queensland.

3 Members worked with facilitator Mick Alexander (Grazing BestPrac) to develop the project and Steve Eussen (Tru-test Regional Manager) to establish the most appropriate equipment and a trailer which could be used for transporting the equipment (Prattley 3 way auto draft, scales, readers and all electronic equipment) between properties.

4 The E-Sheep equipment was trialed at several onfarm demonstration days during 2008 and also demonstrated at major activities at Charleville, Blackall, Barcaldine and Muttaburra.

Key Features

Group members working together to promote E-Sheep equipment.

Members and other groups can utilise the equipment.

The group promoted the uptake of new technology.

Graziers trialing and promoting the technology.

Accurate recording of stock weights and other parameters.

The project effectively promoted the equipment to 3 major field days and 7 secondary on farm days.

Demonstrates the importance of using E-Sheep technology to measure individual animal productivity and profitability.

Key Benefits

Reduces labour requirements during peak demand periods.

Increases accuracy of recording/matching animals to data.

Can enable a life history of animals to be recorded.

Auto draft will draft specific weight or other parameters.

Using E-Sheep technology and software to enable the selection of the highest producing sheep for meat and wool.

Measuring and correlation of weight gains, micron measurements and pregnancy rates using E-Sheep technology.

Assessing and demonstrating the latest innovations in weighing, scanning and managing sheep.

Demonstrating the use of auto-drafting technology to reduce time and improve efficiency in managing sheep.

Assessing the latest technology in measuring micron and fleece weight from specific lines of sheep on-farm.

Using on-farm data to make effective management decisions, maximising productivity and profitability.

Assessing the latest NLIS electronic readers for sheep.

Figure 2
Steve Eussen from Tru-test explaining the E-Sheep technology at the Blackall Bestprac Innovation Forum 2009

Figure 3
Oona Banks using the pregnancy scanner

Key Materials Required

Prattley autodraft

Tru-test scales

Printers and readers

Bar coder

Software and computer

Training course in hardware and software use

Training and support

Allflex electronic ear tags

Potential Cautions and Risks

Sourcing the best electronic ear tags.

Sourcing the most appropriate equipment for your requirements.

Back up and support – ensure you can get support.

What I would do differently next time

Work with Steve Eussen (Tru-test) from the beginning.

Cost Benefit Analysis

Cost: $30,000

Measuring White Dorper Stud Ram and Ewe Performance

Owners:
Andrew and Megan Mosely

Property Name:
Etiwanda

Property Location:
Cobar, NSW

Size of property:
26,500ha

Brief enterprise description:
White Dorper Stud

The innovation is a:

New process

The Innovation:

Increases productivity

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
Using performance measurement has enabled the Moselys to provide an Australian Sheep Breeding Value for each white dorper ram that they sell. These values can help buyers select Etiwanda rams that best suit their breeding focus.

Impetus Behind the Innovation

After Andrew completed his degree, he worked for 3.5 years for BREEDPLAN, the beef equivalent of LAMBPLAN, which is the database used by Sheep Genetics Australia. This provided Andrew with a good grounding in the use of performance recording and its role in animal breeding. Both Megan and Andrew believe it is important to obtain objective measurement of the genetic performance of their sheep to ensure they are providing people with animals that will take their commercial sheep forward. Andrew and Megan have been collecting performance information at Etiwanda since their white dorper stud started.

How the Innovation Works

Data collection for the Etiwanda White Dorper stud commences at lambing time. Lambing of the 300 stud ewes and the 660 crossbred recipient ewes that are carrying embryos starts in mid July in small lambing paddocks (10-40ha). Megan and Andrew drive through the lambing paddocks morning and afternoon and immediately tag all new born lambs and manually record the lamb's tag number and the ewe's tag number plus note whether the lamb is a twin or single, male or female and whether the ewe needed assistance at birth. For the recipients, they know the origin of the embryos that the ewe is carrying. They also know the sire for the stud lambs as they undertake single sire joinings. They do not weigh lambs to obtain birth weight as it is just not practical with such a large number of sheep. White dorper lambs are usually born small and it is the ease of lambing that is important to maintain.

The lambs are marked and vaccinated at 8 weeks. At 12 weeks they are weaned and whilst in the yards they receive their booster vaccination, are weighed and their weaning weight recorded.

At 7 months, both ewe and ram lambs are returned to the yards. Their post weaning weight, eye muscle and fat depth is recorded. Registered LAMBPLAN scanners from Advance Livestock Services in Hamilton, Victoria undertake the scanning for the eye muscle and fat depth. Andrew and Megan also measure scrotal circumference in the rams at this time.

The majority of rams are sold before they are 12 months old. Those rams kept for the stud, have their yearling weight recorded at 12 months.

Once all the data is collected it is submitted by email in January to Sheep Genetics Australia. The processed data is returned 2 to 3 weeks after it is sent to Armidale. This returned data means we can sell our rams and ewes with ASBVs (Australian Sheep Breeding Values) thus providing our buyers with objective information that enables them to choose stock that best suits their breeding program.

Key Features

Megan and Andrew Mosely offer stud white dorper rams and ewes for sale with full recorded performance measurement. They use the data to class their stock as well as assessing them visually. The aim for their ram breeding program is to breed rams that have progeny with high post weaning weight enabling lambs to be turned off by 7 months.

They put pressure on the performance of their sheep but they select under rangeland conditions and use a brand called 'Rangeland Ready' which means their sheep are unpampered, range-reared, hardy and ready to work. Etiwanda White Dorpers are used to grass based diets and do not fall to pieces when put to work in the paddock. It also ensures that the key trait of natural feed conversion is not lost from the dorper breed. This is very different to other studs that select their sires after growing them out on a grain based diet.

Key Benefits

Use of objective measurement in the Etiwanda White Dorper Stud means Andrew and Megan know the true genetic performance of their sheep for a range of important traits. These traits directly impact on the profitability of their pastoral lamb business and also their clients. For example, a client who wishes to increase the weight and decrease fatness in their white dorper lambs can use the information the Mosely's provide on their sale rams to select a ram that has the genes to best meet this objective. As a ram provides half of the total genetics of each lamb born, the potential to increase genetic gain from directly selecting for such specific traits is high and much quicker than other traditional ram selection methods. The ASBVs provided also cover the fertility and maternal traits that you are not able to visually assess.

Key Materials Required

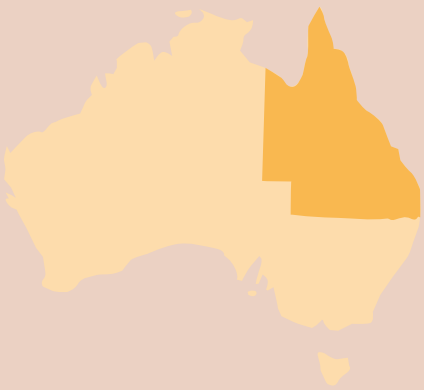
If buying rams with ASBVs then you need to ask ram breeders for this information when making your ram selections. If choosing to breed and sell rams with ASBVs then you need to maintain pedigree records, dates of birth, weigh sheep at weaning, 7-8 months, scan for eye muscle and fat depth at 7-8 months, weigh sheep at 12 months and weigh ewes at joining. You may also measure scrotal circumference on ram lambs at 7-8 months.

Potential Cautions and Risks

Need to avoid single trait selection as extremes in any one trait will produce undesirable outcomes. For example selection for high growth will negatively impact birth weight and the size of lambs born which can lead to a higher percentage of dead lambs at birth. It is important to maintain balance within any breeding objective.

What I would do differently next time

Utilise electronic tag technology to streamline measurement and recording operations.



Monitoring Water Quality

Managers/Owners:

Will and Fia Hobbs

Property Name:

Tarrina

Property Location:

Tambo, Qld

Brief enterprise description:

Dual purpose sheep enterprise and beef cattle

The innovation is a:

New process

The Innovation:

Drives growth

Improves standards of safety

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Telemetry infrastructure at water storage

Impetus Behind the Innovation

In 2005, we developed a reticulated watering system, which would allow all stock to be watered off the same water source. In this case, it was a bore, which could be backed up by the Ward River and several dams. We expected the consistency of the water would be good for production.

However, after setting up the new watering system, we noticed the stock were looking unthrifty and the wool yield was reduced to 36,000 kg, in 2006. We checked stock for worms and had a vet carry out blood tests to check for disease issues. All were clear.

After carrying out a water analysis, we found the water to have a pH of 8.9 (too high for stock). It was essential to bring the pH down to 7, to improve stock health and performance. At the same time, our water was also being medicated with urea. It is important to note that, we had no control group of stock in this system and the changes are on farmer observation only.

Figure 2
Hydrochloric acid shuttle, 1,000L

Figure 3
pH meter for water storage

How the Innovation Works

The innovation was to manage the water quality (pH) by:

Setting up an acid injector.

Injecting hydrochloric acid into the main pumping line at the bore.

Monitoring the pH of the main storage tank, using a pH probe and a telemetry system.

Maintaining the pH to a reading of 7.

We worked with a technician in Melbourne (Electrosense Technologies Pty Ltd) to develop the probe and telemetry system. Now, the pH is monitored hourly and we can check on it any-time of the day from anywhere in the world.

Key Features

Simplicity of maintaining water quality, once established.

The pH has been reduced from 8.9 to 7 by the addition of hydrochloric acid through an acid injector.

pH can be monitored every hour, using a probe and telemetry.

The telemetry allows us to check on the pH from anywhere in the world via mobile phone.

Production can be increased by reducing pH.

Key Benefits

Improving wool production by 33% (36,000 kg to 48,000 kg).

The bigger the enterprise, the more there is to gain.

Improving water intake by 200%.

Ability to monitor pH constantly from anywhere in the world.

Key Materials Required

Setup Costs for pH Injection and Monitoring

Acid Injector $800

pH Probe unit $450

Telemetry setup $1,200

Total $2,450

Ongoing Costs of pH Management

Hydrochloric Acid $2,000/year

Telemetry cost $120/year

Potential Cautions and Risks

You will need to be trained in using hydrochloric acid (be aware of dangers).

Transporting and handling of acid – short and long term (employees and staff).

What I would do differently next time

Look at the water quality (test first) before deciding which water to use.

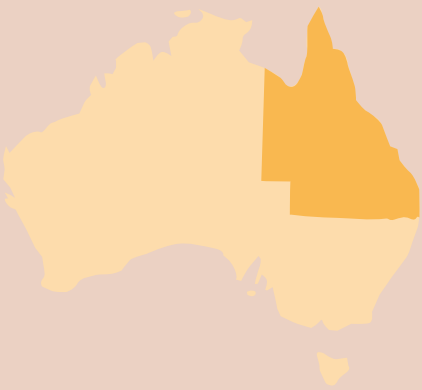
Check pH and assess cost of managing for long term.

We may have looked at a different aquifer for our bore.

Hydrochloric Acid is not approved for organics certification.

For more details on the pH telemetry unit, contact:

Electrosense Technologies Pty Ltd
PO Box 948
Templestowe,
Victoria 3106
Phone: 03 9846 1510
Email: info@electrosense.com.au



Bore Drain Replacement Scheme

Managers/Owners:
John and Joy Hardie

Property Name:
Verastan

Property Location:
Muttaburra, Qld

Size of property:
12,184ha

Brief enterprise description:
Beef, wool and prime lamb production

The innovation is a:

New distribution system

The Innovation:

Drives growth

Enhances quality and improved quality standards

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Government subsidy.

Saw benefits of having watering points distributed throughout each paddock.

Opportunity to divide larger paddocks up into smaller ones.

Better distribution of watering points throughout each paddock.

How the Innovation Works

Piping scheme with tanks and troughs which replaced bore drains for watering stock.

Key Features

Each paddock has access to 2 pipelines which involves a system backup if one line breaks down.

Water points 2kms apart.

2 of the 3 pipelines are gravity fed, plus bore pressure.

Only 1 line is pumped.

The bore totally waters neighbouring property.

Lamb step and aprons on troughs.

Native snails helping to keep some troughs free of algae.

Key Benefits

Stock walk no more than 1km to any point for water.

Encourages use of grass in areas where it once was a long walk to get water so area was rarely used to full potential.

Reduces potential growth of woody weeds eg prickly acacia and parkinsonia.

Increased cattle to sheep ratio.

Key Materials Required

$$$$$

40km of poly pipe (63mm and 75mm in diameter)

Poly tanks 23,000L – 47,000L

Cement troughs

Cooling pond with copper pipe

Ongoing Costs of pH Management

Hydrochloric Acid $2,000/ year

Telemetry cost $120/ year

Potential Cautions and Risks

Troughs/tanks running dry due to breakdown in system eg broken float, leaks.

Watching stock numbers especially cattle in hot conditions.

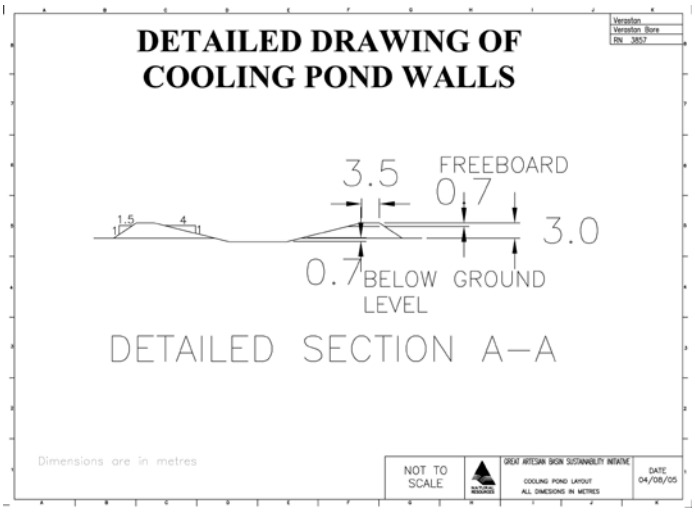
Neighbouring property also on scheme from same bore , therefore system coping in hot conditions can be difficult if they have large cattle numbers.

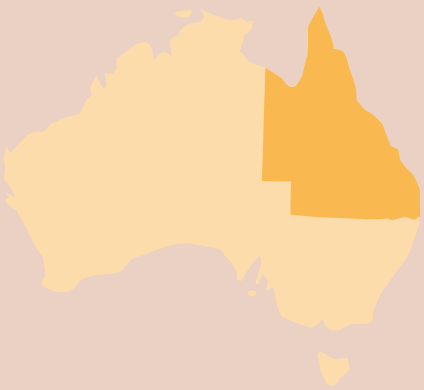
What I would do differently next time

Cooling pond not necessarily needed to be above ground, therefore reducing the cost putting it in at ground level.

Cost Benefit Analysis

Costs	Perceived Benefits
$140,000	Run more cattle Increased breeders numbers by 75% Plus agistment





Watering the Land

Managers/Owners:

Jack and Rhonda Banks

Property Name:

Springleigh

Property Location:

Blackall, Qld

Brief enterprise description:

Merino wool and lamb production and beef breeder operation

The innovation is a:

New process

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

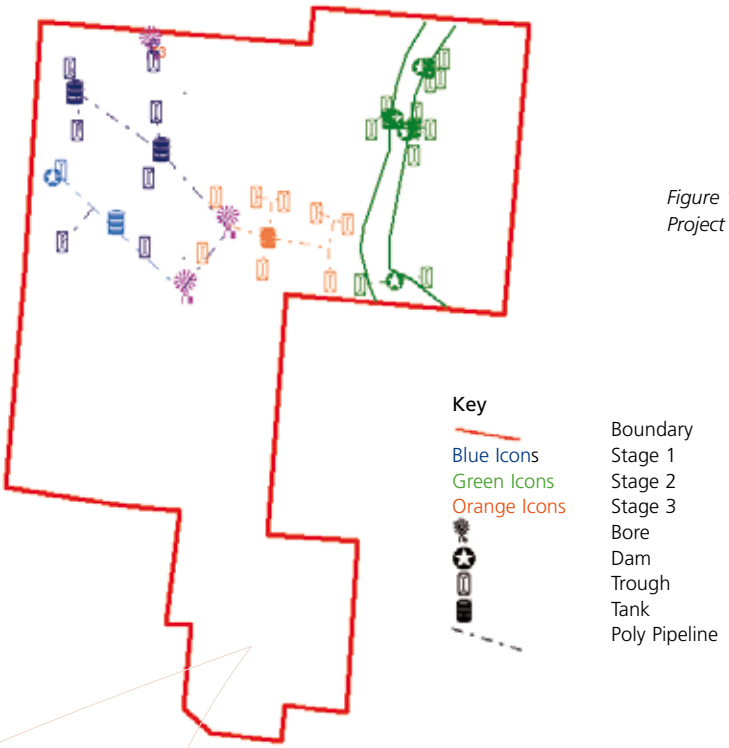


Figure 1
Project Map

Impetus Behind the Innovation

The long dry years post 2000 showed the need for improved stock water supply. In 2003, we had many areas of the property which had available grass, but was too far from available water. Stock were walking up to 8km to water, with areas around the waters becoming seriously degraded. We developed a whole of property plan within the Bestprac program, while working with Mick Alexander and Grazing BestPrac. The plan demonstrated the ideal distance between watering points should be less than 3km.

How the Innovation Works

Develop a whole of property management plan (16,000ha).

Work out the ideal water radius (walking distance to water).

Develop a watering plan with a maximum distance of 3km between waters.

Design a fencing plan to maximise the establishment of watering points.

Over a three year period, establish waters and fence riparian areas and fence to land type.

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

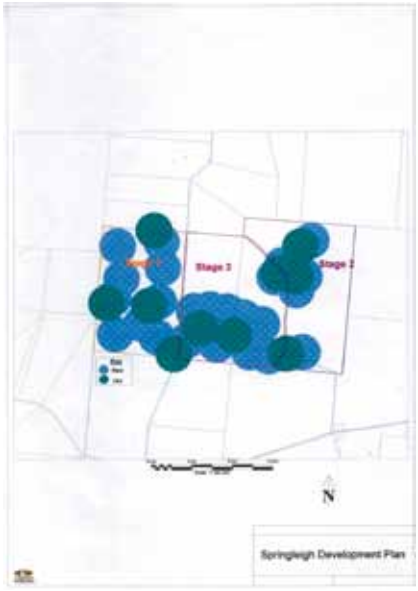


Figure 2
Springleigh development plan showing water circles

Key Features

Land which was unusable for production in the past is now able to be fully stocked.

Whole property plan developed in stages, using GPS.

Property plan on GPS mapping software.

Water is pumped to 14 troughs through 24km of 63mm poly pipe, to water 16,000ha.

Maximum distance between waters of 3km.

Reduce grazing pressure on individual waters.

Key Benefits

Improved water access for stock (maximum distance to walk to water of 1.5km).

Improved productivity.

Ability to rest pasture and rotate stock.

Riparian areas able to be rested and managed.

Key Materials Required

Ability to see the big picture.

The latest satellite imagery, showing required detail.

Ability to borrow funds for development.

A good consultant.

GPS mapping software and a Garmin 76 GPS.

24 km 63mm and 75mm poly pipe and 14 troughs.

Lots of energy.

Ability to work with the NRM group for planning and funding projects.

Potential Cautions and Risks

Develop a full property plan.

Cost each stage and analyse the benefits (increased carrying capacity).

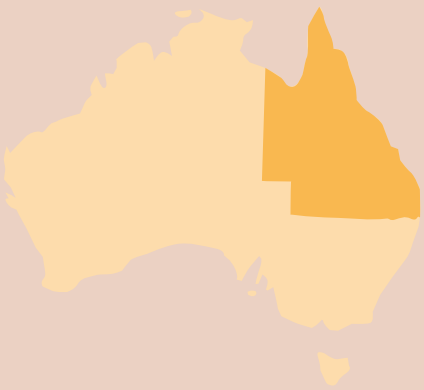
Ensure that water quality and quantity are adequate.

Be careful how big the projects are (time taken to complete).

What I would do differently next time

Don't bite off too much at once – stage the development.

Figure 3
Blackall Bestprac group inspecting the new troughs in Springleigh's watering system



Low Stress Paddock Moves

Managers/Owners:
Graeme McDonald

Property Name:
Albeni

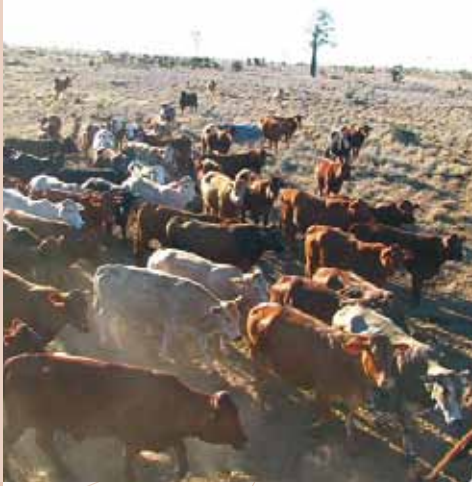
Property Location:
Tambo, Qld

Size of property:
16,200ha

Brief enterprise description:
Beef breeder and growing operation

The innovation is a:
New use for existing products

The Innovation:
Drives growth
Improves standards of safety
Increases productivity
Increases efficiency



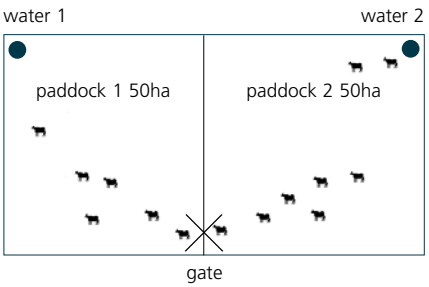
Impetus Behind the Innovation

We needed to be able to manage breeders in a rotational grazing program, with less stress and to allow the breeder to look after the calf. Albeni is partly developed to run intensive rotational grazing of pastures, all cattle move around a number of paddocks, allowing each paddock to be rested for up to 300 days per year. Cattle move on a daily or weekly basis and this may at times create a lot of stress amongst individual animals in the mob.

In order to reduce stress, the paddock moves have been simplified, so that stock are allowed to drift through in their own time and are allowed time to come back to pick up young calves if needed.

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	



How the Innovation Works

All stock are managed flexibly:

Mobs of 500 – 1,000 head or more.

A rotational grazing program (min 50 paddocks/mob).

Daily to weekly moves depending on the pasture growth rate.

Paddocks are 50 ha in size.

When stock are moved between paddocks:

The water in paddock 1 is turned off, the water in paddock 2 is turned on, the gate is opened between paddock 1 and 2, and stock are allowed to drift through to water in paddock 2.

The gate is shut when you have time (within 2 days).

Key Features

Flexibility – open the gate when intended, and close the gate as time permits.

It can work with any size mob.

Stock are always moving to a fresh paddock, so the more moves the stock have, the more comfortable they are with moving between paddocks.

No miss-mothering of calves.

We are more relaxed.

Key Benefits

Stock are moving into fresh pastures.

Stock are allowed to move at their own pace.

Reduced stress on labour and needing to have to clean out (muster) paddocks.

Animals are happy and contented.

The cow can move through to feed and come back to pick up the calf (no pressure to move together).

Key Materials Required

Fencing to subdivide paddocks to 50ha

Watering system to water 1,000 breeders

Walking distance to water – 500m

Multiple waters/ paddock

Skills to manage large herds

Ability to mob breeders into large groups

Potential Cautions and Risks

This will not work in large set stocked paddocks.

Water quality and quantity for large mobs (be careful to get it right).

Management required is high initially compared to set stocking.

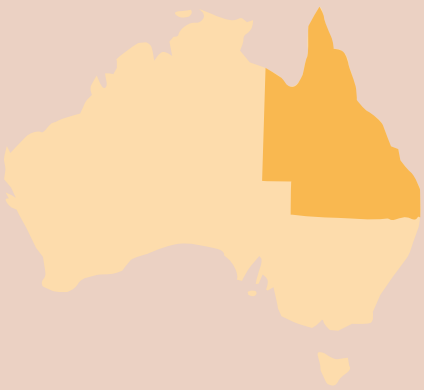
You may need to pay too much income tax – too profitable.

What I would do differently next time

More waters and do it sooner.

500 metres to water.

Water supply to be a minimum of 3L/sec at the trough.



Using EID's to Compare Growth Rates

Managers/Owners:

Peter and Lorna Evans

Property Name:

Woodbine

Property Location:

Blackall, Qld

Size of property:

19,400ha

Brief enterprise description:

Prime lamb production and beef breeder operation

The innovation is a:

New process

The Innovation:

Drives growth

Increases productivity

Enhances quality and improved quality standards

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Impetus Behind the Innovation

Monitoring the growth rates of stock is the biggest advantage a grazing business can have in the pastoral regions. However, in the past, we have not been able to assess the growth rates of each breed or individual animals, except for monitoring sale weights and the overall profitability of various mobs. The introduction of the NLIS (National Livestock Identification Service) has been a big opportunity for us to get a better handle on our growth rates and stock management. The simplicity of downloading data from the scales and readers and then using excel to manage the data has meant we can assess which breeds, mobs and animals are most productive (kg/day growth).

How the Innovation Works

Our cattle yards are set up with scales and electronic readers for NLIS ear tags.

Breeders are run in mobs of 100 – 180 head.

Breeder groups are allocated specific paddocks (landtypes).

Breeders are control mated (4 months).

Calves are ear tagged and weighed at branding (2 – 16 weeks of age).

Scales are setup up in the waiting pen before the branding cradle.

Calves are then also weighed at weaning and other times as required.

Information is used to assess the growth rates of all stock (Average Daily Growth for each animal).

Decisions are made as to the success of various herds, breed types and paddocks.

Key Features

Breed comparisons - we are able to compare three distinct herds on various landtypes, to see which ones are performing best. They include a Santa-Gertrudis Herd, Shorthorn herd and a Brahman herd, with various composite crosses.

NLIS - We are making the most of the NLIS introduction by tagging our calves at branding (as young as possible).

Accuracy – the information/ data is gathered using computer software (no human error).

Simplicity – the animals ID and weights are recorded as they walk over the scales.

Lifetime records - animals are followed from branding to sale and matched to mobs.

Decision making - we have enough information to make future decisions as to enterprise selection.

Key Benefits

All of the data which we have been given in past years, comparing growth rates from various landtypes and enterprises has been generalised and not a direct comparison. We are able to compare the enterprises on a property basis, production and profitability on the same landtype in the same season.

Own on-farm data - The ADG (growth rates) are our own data (not just district averages).

Decisions - We can make timely decisions (sell or feed), depending on growth rates.

Higher average growth rates – We are able to removal of unproductive animals.

Select most productive breeders - We can use the information to increase the numbers of the breeders with the highest growth rates.

Key Materials Required

Purchase of scales

Yard set up to enable scales setup

Electronic Identification ear tags

Computer and Excel software

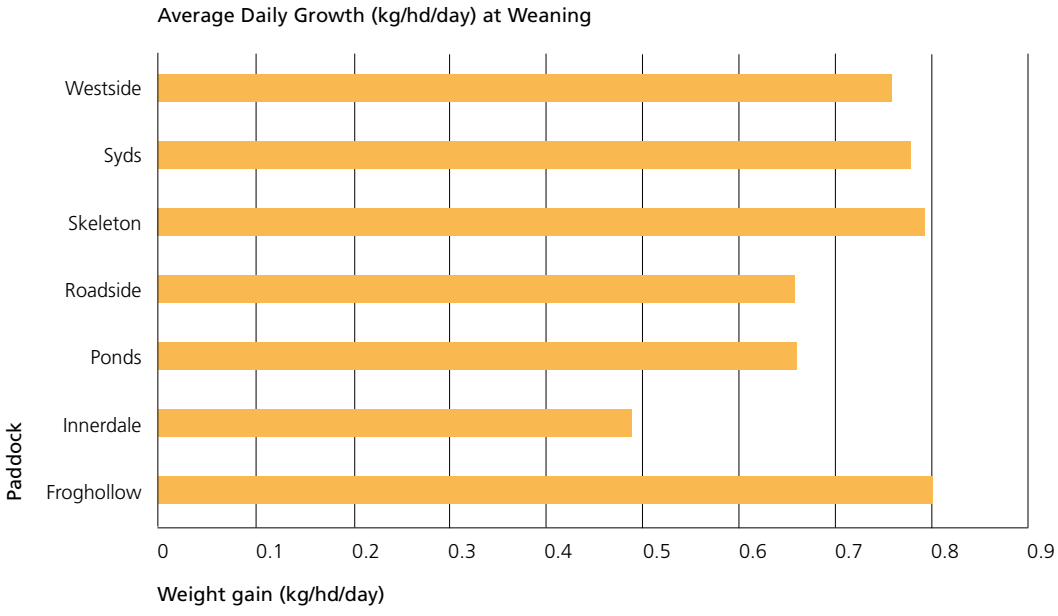
Potential Cautions and Risks

Time taken to set up yards.

Finding the best ear tags (some have high loss/ failure rates) and the best scales and readers (some have no backup).

Time taken to learn how to use the readers and software (training required).

Collecting information which can be used for decision making. (some information is nice to have, but may be of no use).



Stress Free Stockmanship

Managers/Owners:
Bruce Maynard and Family

Property Name:
Willydah

Property Location:
Narromine, NSW

Size of property:
1476ha

Brief enterprise description:
Beef cattle, meat sheep production and cropping

The innovation is a:

New process

The Innovation:

Improves standards of safety

Enhances quality and improved quality standards

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Bruce Maynard practicing stress free stockmanship techniques

Impetus Behind the Innovation

These methods were introduced to Australia from the United States of America approximately 10 years ago. At this time Bruce experienced the methods and he implemented the practices in 1998 and has seen higher production benefits as well as ease of livestock management.

How the Innovation Works

Innovative livestock handling techniques that not only enable easier husbandry but actively de stresses animals.
By de-stressing animals, they exhibit their natural behaviours. This leads to more even grazing across the landscape. Handlers adopt these new methods to change from a predator-prey relationship to a herder – livestock relationship (Figure 1). This leads to increased production and reproduction.

Key Features

A higher level of understanding of methods of handling livestock is necessary. The process involves the initial investment of learning what is involved in this livestock management technique. The handler behaviour around animals changes drastically. Handlers tailor their interaction to the animals needs. Handlers move and work in a way that decreases stress upon the animals while still achieving work in an efficient manner. It is about recognising the stress triggers of livestock.

Key Benefits

Immediately higher production from existing animals. Individual animals will produce to the maximum genetic potential if stress triggers are removed. Reproduction has also shown to be much higher with reduced stress. Research has shown that illness in animals is greatly reduced with less stress imposed on them.

Willydah has experienced a reduction of illness and losses in calves that are purchased from multiple sources and breeds. As a result, health costs have be reduced due to the new system.

Key Materials Required

Education of the handler about sheep and cattle behaviour and stress triggers as well as the effects of stress on production. Reference materials for this method of livestock handling are readily available on the internet.

Cost Benefit Analysis

Based on a 1000 head herd

Old System	Perceived Benefits
Health Costs - $5/hd - $5,000 5% animal loss (40 head) @ $400/hd - $16,000	Health Cost – 50c/hd - $500 No loss due to new handling system Calf mortality to less than 1% per annum 8hd @ $400 - $3,200
Total: $21,000	Total: $3,700
Net Benefit	$17,300

Potential Cautions and Risks

This method has minimal risks, however it entails a change in attitude from the producer to adopt this method. It involves people changing their natural instincts to effectively manage livestock and their natural instincts.

What Could be Done Differently Next Time

Nothing, this system is working well in our business.

Lamb Finishing Feedlot Design

Owners:
George and Sally Falkiner

Property Name:
Haddon Rig

Property Location:
Warren, NSW

Size of property:
22,000ha

Brief enterprise description:
Mixed farming business including Haddon Rig Merino Stud, 15,000 head of sheep, 1,000 head of cattle and cropping 8000ha with some irrigation

The innovation is a:

New use for existing products

New process

The Innovation:

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Fences are covered with used silo bags as windbreaks.

Impetus Behind the Innovation

With prolonged drought conditions experienced since 2001 and average annual rainfall of 450mm, it has been difficult to finish lambs on native pastures. Such conditions also resulted in the inability to irrigate pastures. A feedlot system will allow the business to finish merino and first cross lambs.

How the Innovation Works

The feedlot is currently being constructed adjacent to the wool shed and sheep yards. It aims to have a capacity of up to 2000 lambs. It has been constructed using some materials available on farm to reduce costs.

Figure 2 Old lamb feeders are being upgraded for the feedlot as shown in Figure 3.

Figure 3 Modified feeder suitable for the feedlot.

Figure 4 Water trough

Figure 5 The caps on the end of the trough can be removed to assist in cleaning them

Key Features

Pens are fenced using standard fencing techniques with a plain wire top wire for internal fences and barbed wire for feedlot boundary fences (Figure 1).

Wind breaks fixed to fences using recycled 250t silo bags (Figure 1).

The use and upgrade of old stud ram feeders that have been converted to lamb feeders (Figure 2 and 3).

Low volume PVC water troughs (Figure 4).

Key Benefits

Feeders

Low capital investment, feeders sourced on farm or from clearing sales as second hand items.

Having a lid on the feeders will keep feed out of the weather, preventing spoilage and not require filling as regularly as if in the open (Figure 2 and 3).

PVC Water Troughs

Low maintenance, low volume water troughs, therefore there is less water wasted when cleaning the trough (Figure 4).

The end caps can be removed for ease of cleaning. A pipe will be fitted for waste water to be piped to nearby trees (Figure 5).

Wind breaks

A secondary use for the silo bags. The business has found that the silo bags are damaged easily by birds and foxes. Using them as windbreaks reduces the cost of investment (Figure 1).

True benefit of finishing system will be realised when the feedlot is operational.

Key Materials Required

Second hand ram feeder, adapted for feedlot feeders fixed to a concreted pad. Galvanised steel to adapt the mouth of the feeder, for reduced flow – aids in maintaining feed freshness and minimising wastage.

6m length of 6in PVC ball casing with the tops cut out for water troughs and all other plumbing equipment required to install water trough.

Potential Cautions and Risks

A caution includes the difficulty in accessing second hand ram feeders in good condition, while a risk is the rust potential of the feeders.

Awareness of the right water flow rate to ensure suitable water temperature for the sheep.

Be aware of the National Code of Practice for Intensive Sheep and Lamb Finishing Systems and ensure the feedlot complies.

What I would do differently next time

Unknown as the feedlot is currently in the development stage.

Lamb Feedlot

Managers/Owners:

Ian, Ruth, and Matthew McKenzie

Property Name:

Loyola

Property Location:

32 km west of Coonamble, NSW

Size of property:

3328ha

Brief enterprise description:

Cropping and opportunity livestock trading

The innovation is a:

New use for existing products

The Innovation:

Enhances quality and improved quality standards

Increases productivity

Increases efficiency

Impetus Behind the Innovation

We initially required a drought feeding measure – now the feedlot is transformed to finish off lambs bred on farm and value-adding to grain, as well as buying other lambs to finish if there is a sufficient gross margin in it. It allows us to better manage stock in dry periods, creates another option to finish stock, and minimises risk. It keeps animals off the land, and helps to maintain ground cover when dry.

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

How the Innovation Works

We have built an 8 pen drought/feedlot with self-feeders in each pen. Each pen can carry up to 400 lambs/sheep with a total capacity of 3200 head.

Key Features

8 pen, 3200 head feedlot.

Used for lambs or ewes.

Flexibility – We use in conjunction with rotational grazing – if there is not enough paddock feed, we can put stock in the feedlot.

Key Benefits

Not selling unfinished stock – we can always finish the product.

An increase in carrying capacity on the property with lower risk caused by dry periods.

Finish stock with the market, when economics allow.

Lambs can be finished on an opportunity basis when economics allow.

Low capital needed.

Key Materials Required

Ring-lock fencing for pens

Self-feeders for grain/hay

PVC troughs for water

Conveyer belt to put under troughs.

Potential Cautions and Risks

Costs can escalate – need to be aware and careful with Gross Margins and maximise feed conversion – easy to blow out costs in feedlot if feeding for too long.

Best works for a targeted short feed.

Introduction period onto grain – attention to detail needed for animal health and production reasons.

Remove under performing stock and finicky eaters.

Clean water troughs out daily.

Longer feedlot time for merinos is needed.

Be aware of the National Code of Practice for Intensive Sheep and Lamb Finishing Systems and ensure the feedlot complies.

What I would do differently next time

Add more slope on pens for drainage.

Build it sooner, its has created good advantages to our business.

Cost Benefit Analysis

Costs	Perceived Benefits
The infrastructure needs to be costed for individual situation	Every animal makes a profit – Gross Margin has been $10 a head or more (includes a costing for labour and grain)

Creative Wool Classing

Managers/Owners:

John, Will and David Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Merino Sheep – wool and meat production

The innovation is a:

New process

The Innovation:

Increases productivity

Increases efficiency

Increases profit

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Lack of compatibility of wool types when applying price comparisons if top knots are left in the pieces lines or crutchings. There is no price difference for quality included.

How the Innovation Works

Creating a separate line of wool which only contains top knots. For shearing, the top knots do not really match PCS specifications and their true quality is not paid for. Low vegetable matter content, higher yield but often shorter puts them in a completely different category. Crutching top knots or wiggings have no stain and low vegetable matter content.

Key Features

Another line of wool to be sold as a large lot to get true value.

Key Benefits

Higher price per kilogram of wool sold. Sale costs are however higher – AWTA for a 2 bale line cost approximately $16/bale which is approximately $13/bale higher.

Main shearing prices received:

2007 AAAM PCS 280c/kg
Top Knots 480c/kg

2008 AAAM PCS 340c/kg
Top Knots 511c/kg

Crutching prices received:

2008 CRT 261c/kg and Top Knots 390c/kg

2009 CRT 214 c/kg and Top Knots 322c/kg

Key Materials Required

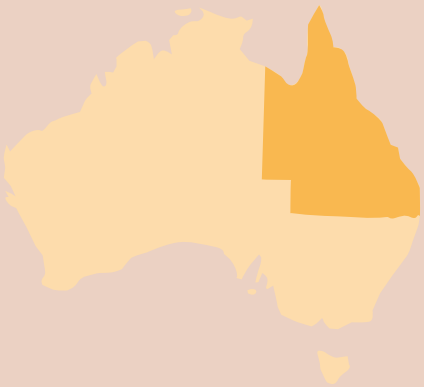
Nothing new. There are no additional on farm costs.

Potential Cautions and Risks

Keep a close watch on the VM% and staple length for wool at shearing.

Cost Benefit Analysis

Costs	Perceived Benefits
$40 (3 bales)	$890 more for 3 bales of top knots as an average on four sales. $290/bale on average.



Cost the Supplementation Program

Managers/Owners:

Bill and Sally Cripps

Property Name:

Melrose

Property Location:

Blackall, Qld

Brief enterprise description:

Merino wool with prime lambs and 30% SAMM lamb production and beef breeders.

The innovation is a:

New use for existing products

The Innovation:

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

In the drought seasons, we needed to feed pregnant ewes, to ensure they had sound nutrition. Most of the commercial feed sources are costly. We had to find a low cost source of protein to feed pregnant ewes a protein source when protein availability is low through the year. Many producers simply do not feed stock, due to cost.

How the Innovation Works

To understand the components of supplementation and to be able to produce the lowest cost supplement. Begin with a grain base with low protein and add required protein source to boost to 21% protein.

Key Features

Educate yourself about nutrition.

Find a nutritionist you can work with.

Don't be scared of asking questions.

Find the cheapest grain available and add a commercial protein source.

Mix the supplement yourself.

Key Benefits

Low cost of supplement.

Tend to use it more often if it is lower cost.

Have a target period for feeding (do not drought feed).

Reduced stress on family members.

Improved lambing percentages and healthier sheep.

Key Materials Required:

The costed ration to be used for pregnant ewes included:

- Grain
- Minerals
- Bypass protein
- Molasses (energy)
- And other protein source depending on cost.

Potential Cautions and Risks

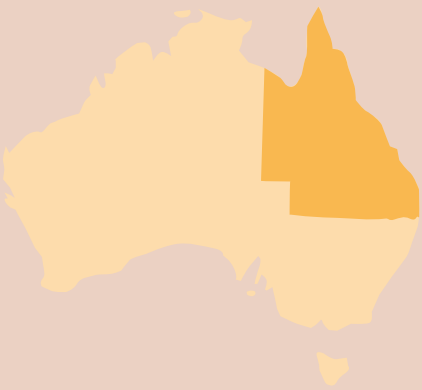
Need to work with a nutritionist (get good advice).

Use lime (calcium) in the mix.

Cost of feed will vary from season to season – it is important to cost the brew each time.

What Could be Done Differently Next Time

Use the cheapest feed available and add extra nitrogen from other sources.



Supplementing with Sulphur

Managers/Owners:

Phil and Fran Brownhalls

Property Name:

Ryandale

Property Location:

Cunnamulla, QLD

Size of property:

22,000ha

Brief enterprise description:

Beef cattle, merino sheep

The innovation is a:

New use for existing products

The Innovation:

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

We found using some supplements caused inefficient grazing, impacting on the environment as grazing pressure was increased. Unless stocking rates are reduced, this can cause degradation to the environment. After 30 months of NIRS sampling showing faecal N was always within the correct limit, the driver was to find an alternative for rumen bacteria stimulation and health.

How the Innovation Works

To increase or maintain during drought, productivity, through healthy rumen function, without using urea in hard Mulga country.

Key Features

The use of Sulphur – Sulphur is a limiting nutrient in Mulga country (along with other nutrients) and its role is to stimulate rumen flora in the digestion of Mulga where protein is bound by tannins, and to promote wool growth in sheep. A loose lick high of Sulphur, giving cattle the required 1.6g of Sulphur per 100kg live weight plus adequate Phosphorus in a salt carrier, has been used throughout the drought with very good results. Sheep are able to utilise the same mix.

Key Benefits

The stock are utilising the feed available more efficiently, with increased environment benefits.

There is no risk of urea poisoning giving peace of mind.

The rumen performs efficiently.

It is low cost as cattle only have to eat 100g/day to get sufficient S and P.

Key Materials Required

Salt, Sulphur powder, not Gran-am and Kynefos, shovel, tubs and man/woman power.

Potential Cautions and Risks

There appears to be no risks to livestock. As with all rumen care licks, it should not be allowed to run out. Availability of S and P are the biggest risks along with the price hikes over the last year. Goggles should be worn when preparing the licks as it burns the eyes.

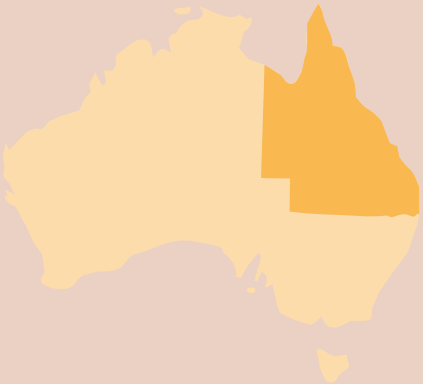
Efficient and effective use of Mulga can also require supplementation of Metabolisable Energy and Crude Protein, depending upon the class of animal you are trying to maintain. Ensure the animals are receiving the correct nutritional requirements for their class. Seek advice where necessary.

What I would do differently next time

Stockpiling Kynefos particularly would be of benefit. Getting the lick made commercially could be an option.

Cost Benefit Analysis

Costs	Perceived Benefits
0.98/Kg $0.10/hd/day $0.69/hd/wk benefits	Effective Low cost Environmental Calves and lambs learn to eat lick at an early age with their mothers as leaders
Total: $35.67/beast/yr	



Wild Dog Control - Blackwater Dog Trust

Managers/Owners:
Rick and Jenny Keogh

Property Name:
Amaroo

Property Location:
Blackall, Qld

Size of property:
13,500ha

Brief enterprise description:
Merino stud, commercial wool and beef breeders

The innovation is a:

New process

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Don Salway, a well known, experienced dogger in Qld

Impetus Behind the Innovation

Prior to 1962 most of the dog netting fences were still intact and people generally looked after their own patch through trapping and repairing dog fences.

In 1962 a group mainly in the Blackwater Creek catchments formed the Blackwater Dog Trust (BDT) and decided to employ a permanent dogger to help with the control of wild dogs. This was to be backed up with the ongoing maintenance of dog fences and the distribution of strychnine baits. Funds were raised from a levy on a pro-rata basis on how many sheep each property ran. Baits were distributed by vehicle and even at this early stage by plane. This continued with varying degrees of success depending on how good the dogger was until the advent of 1080 poison in the late 60's early 70's. It took about 3 years of 1080 distribution through plane and vehicle to clean up the dogs with baiting being carried out in June. The meat was obtained by the property owners (no-one asked from where) and consisted of beef, mutton, horse, kangaroo, emus and everything else that moved. Some of it was fresh and a lot of it was half rotten.

These were considerable campaigns that involved the insemination of 2,500kg of meat and distribution over approximately 200,000 ha. It was also coordinated with other dog trusts in the area mainly the Terrick Trust. Members of the trust put aside a week to prepare for baiting and it was a major event on the calendar year.

It can't be under estimated how successful this wild dog strategy was. Dingo traps went rusty in the sheds and the expertise that went with them was to a very great extent lost. Dog netting fences were let deteriorate and fall down and wild dogs were only mentioned in passing conversations. 1080 was like a vaccination that had cured a very debilitating disease. This level of wild dog control was maintained for the next 20 years by the BDT and the surrounding trusts. In about the mid 90's the Blackall shire council started compensating dog trusts for the cost of the meat provided and took up the cost of the distribution by plane. This was very welcomed by the trust members who for a few years kept supplying their own meat and were paid for it. By doing so the BDT accumulated a $10,000 surplus. After about 3 years of this the trust members decided that the meat should be directly purchased from the roo works in Blackall.

At about this time the down turn in the sheep and wool industry began to have an impact and people drifted out of sheep into cattle and properties for one reason or another began to change hands. The group participation focus was lost and baiting programs were organised and carried out by 3 or 4 people as there was no active collation of meat and no annual get together for the insemination and distribution. Meat quantities began to drop and distribution began to develop holes where some properties didn't want to be baited.

In the early part of 2000 there were reports of dogs getting into the eastern portions of the trust area and soon after came reports of stock losses. We are situated on the western side of the trust and didn't have sightings or losses until 2005. Effects and stock losses increased dramatically over the next 3 years culminating at the point where we were losing over $50,000 a year through wild dogs and I suggested to Jenny that we had a limited time in the sheep and wool industry while we remained at Amaroo.

In 2007, Scott Bredhauer and I got our heads together and discussed why things had broken down so badly and so quickly. Things had effectively worked well for 30 years without any breakdown in the system... so why?

- *We had moved away from the group mentality of responsibility and participation.*
- *We were using bought meat and not supplying our own.*
- *Factory baits at the time were not working.*
- *The quantity of meat distributed had halved.*
- *The distribution of baits had developed holes.*
- *Adjoining trusts had become less active and efficient as ours had.*
- *We were all dealing with dogs that would not take baits and had become residential.*
- *According to Lee Allen's (Qld DPI) work we were baiting at the wrong time of year.*

Scott who is the current president of the BDT then jumped on the phone and rang around all relevant people within the trust and some interested parties on the perimeter of the trust and organised a meeting. There were 17 properties involved of which 6 still ran sheep and all the rest cattle. 15 of the properties decided to participate and 2 didn't want to have anything to do with it. I can't under estimate the endeavour and the value of the work Scott did on this.

Figure 2
Don Salway with catches

How the Innovation Works

All participating properties to contribute $2,000 each (15 properties x $2,000).

Supply our own meat for baits with everyone being active in this. Back this up with sausage baits.

Employ a professional dogger to clean up the problem dogs.

Change our baiting date to when the pups were dispersing.

Don Solway was engaged as the dogger (Figure 1 and 2). We were very lucky to get Don's services as he is very much in demand. He arrived in June 2008 and spent 6 weeks in the eastern areas of the trust and then 6 weeks in the western side. He ended up catching 62 dogs for which he was paid $500 for adults and $100 for pups. He left with a cheque for $26,000. We thought we had 3 dogs working on Amaroo and he caught 8. He also went right out into the western extremities of the trust and cleaned out the dogs there as well. Then in November we all gathered at the Lynbrydon strip with 1,500kg of our own meat and carried out a baiting campaign.

Key Features

This is a coordinated effort across the district.

The cost of $2,000 per property is low compared to the benefits.

We are able to clean out the damaging dogs which have survived past campaigns.

We started baiting the tops of the hills as well as the dams.

We employed a highly skilled trapper.

We could control dogs across a multitude of properties in one program.

Key Benefits

As a collective group in our area we kicked some real goals in fighting the wild dog problem.

We have higher lambings and higher productivity.

We haven't seen evidence of dogs until after the rain in May 2009.

Our lambing percentage rose 25% even though it had started a month before Don started.

Collectively as a group we could achieve a positive outcome despite having different enterprises.

From the positive results of the last 12 months we will repeat the program again.

Key Materials Required

Someone to drive the process.

Use a good dogger.

Be prepared to pay for success.

A group mentality of responsibility and participation.

Using our own meat/ bait – ensure there is enough.

Ensure good distribution of baits.

Get support from adjoining trusts.

Bait when pups are dispersing.

Potential Cautions and Risks

The dogs that were affecting us had been there for up to 3 years and had survived a multitude of baiting campaigns.

Apart from extended dry periods the dogs had enough water in the hills in rock holes to survive and didn't have to water on dams. Therefore we started baiting the tops of the hills as well as the dams.

Trapping dogs is an extremely highly skilled job.

The neighbours dogs were definitely our dogs too.

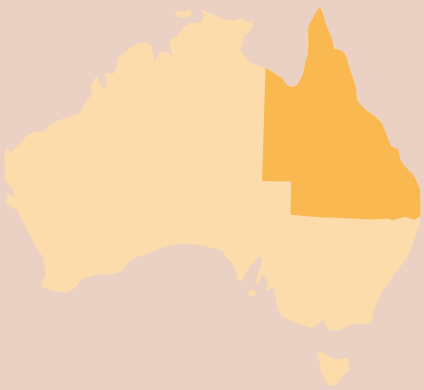
There didn't need to be any substantial evidence, for dogs to be doing damage, especially at lambing.

What I would do differently next time

Continue to use a dogger and baiting program.

Cost Benefit Analysis

Costs	Perceived Benefits
$2,000 per property meat and time $1,000	30% lift in lambing 600 lambs @ $35 = $21,000 150 Stud ewes @ $100 = $15,000
Total: $3000	Total: $36,000
Net Benefit	$33,000



Wild Dog Control

Innovation Contributor:

Phil and Fran Brownhalls
(on behalf of Paroo Shire Council)

Location:

Paroo Shire, South West Qld

Brief enterprise description:

Paroo Shire is sheep orientated (wool and/or meat production)

The innovation is a:

New process

The Innovation:

Increases productivity

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
Field day at Phil and Fran Brownhall's. Experienced dogger, Don Salway, is demonstrating how to set traps.

Impetus Behind the Innovation

Producers were losing production by taking an uncoordinated approach to wild dog control. There was a need to move from almost denial to awareness and action.

How the Innovation Works

Integrated and strategic approach by Local and State Governments, South West Natural Resources Management, producer stakeholders, private contractors and researchers to solve a wide spread and increasing wild dog problem. Every entity provides their expertise, facilities, funding and time to work towards a common goal, of controling wild dogs, preventing economic loss in the sheep industry and to a smaller extent, the cattle industry.

Figure 2
Experienced dogger, Don Salway.

Figure 3
Pups were found living in the log. The log was opened to remove the pups.

Figure 4
Don Salway holding one of the pups found in the log shown in Figure 3.

Key Features

Organisation of a strategic, integrated and informed approach, education by way of field days (Figure 1) (sponsored by SWNRM), monitoring, communication and support from stakeholders.

Key Benefits

Greatly reduced stock losses from 10% to 3% and the resultant flow on effects from not having stressed stock where sheep graze paddocks more evenly. Sheep are in better condition and grow more wool and are easier to handle. Wild dog impact can keep sheep in score 1-2 condition constantly.

Integrated approach model has evolved to handle local problems. There has been success from cooperation between all stakeholders.

It ensures sheep production will continue providing employment and strengthening of local communities.

An unintended consequence from the baiting has been control of foxes and to some extent cats. Controlling these ferals has seen an increase in native animal sitings. EPA is currently doing some research in this area of the shire on native fauna and flora.

Key Materials Required

An agreed strategic plan is tailored to local conditions. The Paroo Shire Council provided funding for baits and aerial distribution, meeting facilities, minute taking and budgeting. The State government provided accredited 1080 personnel to bait the meat. The SWNRM provided funding for field days. An experienced dogger for trapping and monitoring was employed (Figure 2). A key ingredient is cooperation from landholders.

Potential Cautions and Risks

Wild dog invasion from areas that do not have an integrated approach once the wild dogs in this shire are controlled. This program was run for an initial 3 year period. The risk is that producers will become complacent after being supported.

What I would do differently next time

Recognise the problem earlier.

Cost Benefit Analysis

Costs	Perceived Benefits
Paroo Shire Council - $60,000 pa (cover baits, aerial bating, trapping and monitoring) In kind contribution by producers In kind contribution by DPI and DNR	Financial benefit undetermined at this stage

Wild Dog Control and Eradication

Managers/Owners:
Brian and Mary Wake

Property Name:
Hamelin Pool Station

Property Location:
Shire of Shark Bay, WA

Size of property:
200,000ha

Brief enterprise description:
Sheep and goats

The innovation is a:

New use for existing process

The Innovation:

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1 Bait Rack

Impetus Behind the Innovation

Dogs moving into area where historically not been before.

Previously dog control was a specialist skill but people with these skills are no longer available.

The effect that dogs have on productivity and and consequently the income stream.

Lack of perception of the problem by pastoralists in the region.

Lack of skills to deal with the problem.

Can only be effective if work together.

Figure 2
Hamlin Pool Station

Figure 3

How the Innovation Works

Trialling different methods of dog control on pastoral properties in an area which is seeing an increasing presence of wild dogs. The aim of the exercise is to achieve involvement and participation of the wider community and not just individual properties. There is also a need to raise the awareness of the problem. Optimally a situation could be achieved where baiting or trap setting occurs the day that dog tracks are seen. The ultimateaim is to achieve control of the wild dog problem.

Key Features

Sourcing a good supply of baits.

Training in bait preparation and laying.

Improving baiting techniques.

Building a community bait rack.

Individuals gaining accreditation to inject baits with 1080.

Training day/s to trap dogs effectively.

Identifying dog activity by recognising tracks, carcasses killed etc. (If you don't know what to look for, you don't recognise there is a problem).

Cooperation of individual property owners.

Key Benefits

The potential to eradicate dogs in the local region before the problem gets out of hand and there is a significant loss in production of livestock. People will become much more aware of the problem and become proactive. They will become familiar with the signs to look out for where previously there has been complacency about the presence of dogs.

Key Materials Required

Community awareness and cooperation

Experienced personnel for training

Good quality meat for baits

Funding

Potential Cautions and Risks

Baiting occurs in areas where there could be access by the public.

There is a risk of underestimating the guile and cunning of the dogs eg care needs to be taken not to compromise baits and traps with day to day contaminates such as oil, diesel, sun screen and human scents.

What I would do differently next time

We would preferentially use fresh kangaroo meat. However due to the inquisitive nature of dogs we would utilise a variety of other meat sources.

We would put more emphasis on bait injection technique.

We would use a combination of 1080 oats and injection.

There is a need to implement strategies for safeguarding domestic and working dogs. eg use of muzzles.

It is not efficient to delegate baiting to inexperienced people.

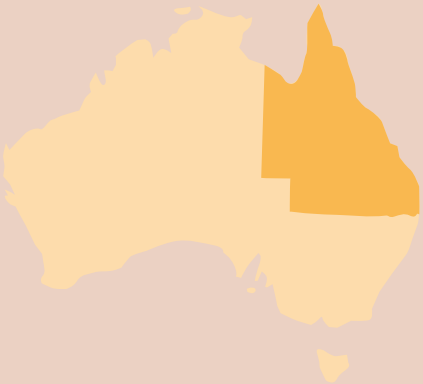
More training on how to prepare baits would be an advantage so there is less contamination such as above.

Wider regional involvement would be beneficial eg support from stations in east where dogs originate. The project is on going.

Figure 4
Baited meat on bait racks

Cost Benefit Analysis

Costs	Perceived Benefits
Material for Racks $1500 Approx Training* Preparing Baits* Time* *Too difficult to quantify	If successful, producers can continue to run small stock units profitably in the rangelands



Natural Wild Dog Management

Managers/Owners:
Graeme McDonald

Property Name:
Albeni

Property Location:
Tambo, Qld

Size of property:
16,200ha

Brief enterprise description:
Beef breeder and growing operation

The innovation is a:

New process

The Innovation:

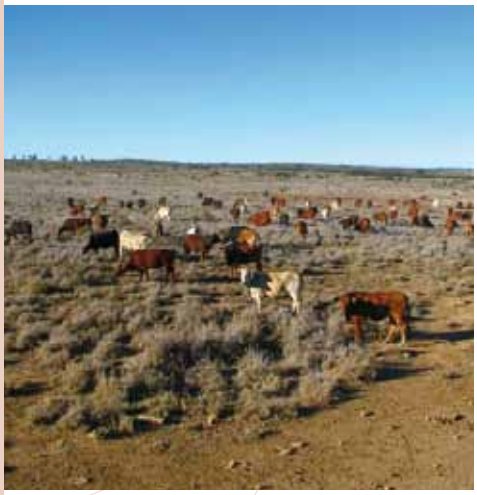
Drives growth

Increases productivity

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	



Impetus Behind the Innovation

Wild dogs have been a serious threat to all livestock enterprises for many years in the Queensland pastoral regions. However, in the recent years, attacks have become more regular and many producers are moving from sheep to cattle to reduce losses. We believed that the wild dog would normally be preying on native marsupials during much of the year (9 months) and that if we could make the calf less accessible, it would reduce potential for losses.

In the beef cattle herd, the most dangerous period is when the breeder is calving. It stood to reason that this is the time when the most losses will occur. Therefore, if we can shorten the calving period and intensify the herd movements, it would reduce the risk of calf losses, during calving.

How the Innovation Works

Breeders are managed in a more natural way:

Mobs of 1,000 head or more.

A controlled mating situation (40-60 days).

Paddocks of approximately 50ha.

A fast rotational grazing program.

Due to the density of stock (20 head per hectare plus calves), wild dogs are not willing to risk attack from a number of cows. Cow density is high enough, that a wild dog cannot single out a particular animal to attack. Cows tend to create a protective barrier from wild dogs.

Confining the breeders to a small area also allows us (manager) to see 90% of cattle every day and to see if there are any wild dogs in the area. We will still control wild dogs if we see them in the area, using other methods.

Key Features

Simplicity – Manage the herd in rotation and on a 60 day calving window to reduce losses (10% losses to less than 1%).

Fear factor - During calving, wild dogs must enter the very intense breeder herd and risk their own lives to take a calf.

Protection in numbers – the larger 1,000 breeder mobs concentrated in 50 ha makes a formidable situation. No animal can be singled out by dogs.

Cows operate in crèches where many calves are cared for by a group of cows, while other cows feed.

Key Benefits

More control of stock (quiet and contented).

Calf protection while young and unable to defend against dogs.

Restores the dingoes' natural balance of feeding on marsupials.

Reduced losses to less than 1% deaths (savings of more than $80,000/year).

Paddocks are in better condition (environmental).

No dog damage (bites).

Reduced labour costs.

Key Materials Required

Fencing to subdivide paddocks to 50ha.

Watering system to water 1,000 breeders in a rotation.

Skills to manage large herds.

Ability to mob breeders into large groups.

Potential Cautions and Risks

This will not work in large set stocked paddocks.

Water quality and quantity for large mobs.

Cost Benefit Analysis

Costs for baiting, trapping and hunting, $5,000 annually.

Our gains have been 400 calves @ $200 each annually ($80,000).

Maremma Magic

Managers/Owners:
Ninian and Ann Stewart-Moore

Property Name:
Dunluce

Property Location:
Hughenden, Qld

Size of property:
46,500ha

Brief enterprise description:
Wool and prime lamb production and beef breeders

The innovation is a:

New process

The Innovation:

Drives growth

Improves standards of safety

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Ninian and Ann Stewart-Moore own and manage Dunluce, a 46,500 ha property in the Hughenden district of Queensland. They were one of only a few families in their district with a sheep flock in 2002. Most other sheep producers had either sold out or changed to a cattle enterprise due to the major problem with wild dogs decimating sheep numbers. The 1080 baiting, shooting and trapping was not working effectively. It got to a point in 2002, when they had lost more than 15% of the flock to wild dogs and had decided something had to be done or they would not survive.

They had heard about Maremma guardian dogs and with a little research on Google, found people to talk to, providing enough information to prompt them to take the plunge. They purchased 24 dogs from Victoria for $20,000, to protect 20,000 sheep.

In 2009, the traditional wild dog control methods are still not working in this area.

How the Innovation Works

The use of Maremma dogs to protect livestock has been known in southern Australia for several years, but was a new concept for central northern Queensland and even newer on large scale paddocks (1,000, - 2,000ha). The Maremma will bond with sheep and cattle over a period of weeks and then become their protector from predators.

Maremma's work best in groups of 1 to 3 per flock of sheep, or mob of cattle. They live with and move with the flock, roam the boundaries and generally keep all intruders away from the sheep. The main protection that the Maremmas give is that they occupy the territory. All dogs are territorial, that was the problem in the past, one lot of wild dogs would be eradicated, often at great expense, and the next week there would be new ones in their place. Maremmas are nocturnal by habit and have a loud, deep bark. Only limited evidence of altercations with wild dogs has been observed.

There are a number of essential elements to the success of running livestock protection dogs:

All problems are solved by successful bonding of the dogs to the livestock that need to be protected, including lambs, calves etc. This process ideally starts as soon as the pups' eyes are open and continues until around 7 months when they are mature enough to be desexed and put out to work.

Do not use entire males or females in a free range situation. Keep any breeding stock under control near the house. Not only is there a risk of interbreeding, there are no other unwanted distractions and there are no downside effects.

Figure 3
Sophia drinking at the trough with the sheep

Figure 4
Mareema feeding stations

It is also essential to be absolutely sure of the pedigree of any dogs purchased. A half breed Maremma will look like a Maremma and have very confused and undesirable instincts.

Do not over humanise pups as they are growing up, they will tend to want to come home to be with you and leave their stock unprotected. It is a fine balance of being able to handle them when needed, whilst allowing them to be with their livestock as a priority.

Young dogs must be monitored during the first 12 months, to ensure they do not become too playful with their charges.

Key Features

Maremma's occupy a territory, which deters wild dogs from entering that territory.

They protect the flocks 24 hours a day, seven days a week.

They work in groups of 1 to 3 dogs.

Maremma dogs are fed dry dog food at self feeding stations, and meat is taken on water runs on a weekly basis.

It is advisable to start with a number of dogs to adequately create a territory.

Key Benefits

Ninian and Ann are still in the sheep and wool industry – without Maremma's, they would not be.

Ninian and Ann have confidence to expand the sheep enterprise.

Maremma's are a low cost alternative to fencing or other strategies.

Annual costs of running guard dogs are around 50c/sheep per annum.

Cattle breeders can be protected in the same way.

Annual savings are estimated at 1500 sheep.

Key Materials Required

Livestock Guardian Dogs such as Maremmas, purchase costs can be up to $1,000 per dog

Knowledge on how to manage LGD's

Patience

Commitment and passion

Potential Cautions and Risks

Successful bonding of dogs is essential.

Essential to check pedigrees and breeding history of dogs to be purchased.

No entire dogs in the open paddock, keep breeding stock under control in secure paddocks.

Monitor young pups for first 12 months.

What I would do differently next time

Should have done it sooner.

Cost Benefit Analysis

Costs	Perceived Benefits
Up to $1,000/dog $0.50/sheep pa	$30,000 annually Would not be in sheep industry today

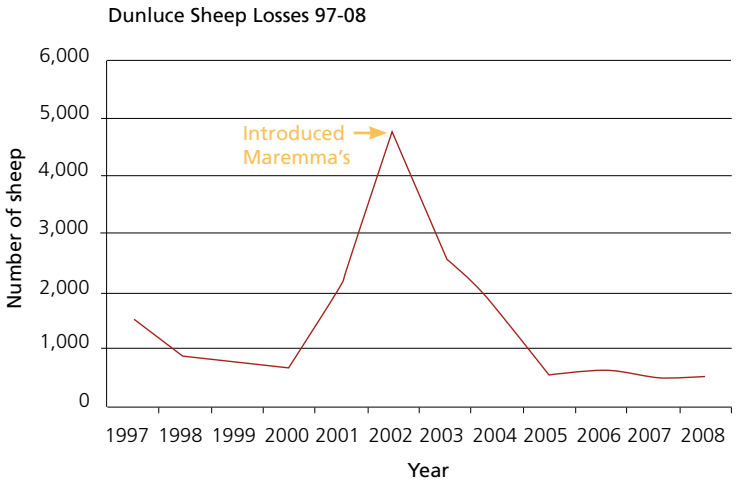


Figure 1
Total sheep losses from 1997 - 2008

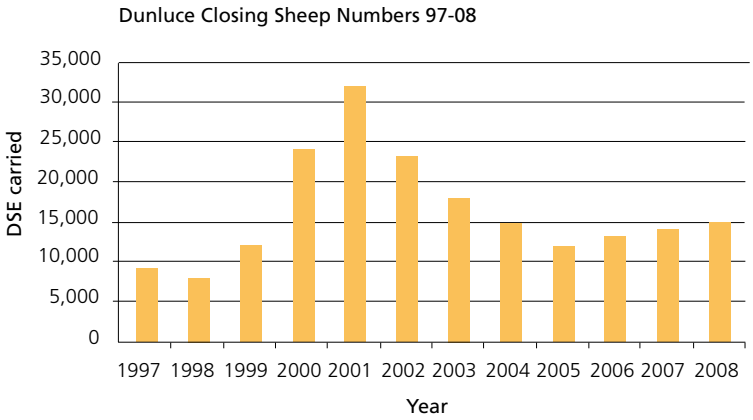


Figure 2
Total DSE carried from 1997 - 2008

Alpacas - Guardian Animals

Managers/Owners:
Andrew and Louise Martin

Property Name:
Toolmaree

Property Location:
Tambo, Qld

Size of property:
14,974ha

Brief enterprise description:
Organic wool, lamb and beef

The innovation is a:

New use for existing products

New process

The Innovation:

Enhances quality and improved quality standards

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

In early 2000 the viability of the sheep (and most likely the cattle because of disease threat) operation was threatened by not only a wild dog explosion but heavy fox infestation. An off-farm business about 300km away took up a lot of management time, and at the time management was 1 person with a part time pensioner.

The priority therefore was to find an 'easy care' wild dog deterrent that was not requiring any more than casual maintenance, and was bait proof.

Alpacas had not been used in any way west of Marburg, but there was a small amount of information from both NSW DPI and WA Dept of Ag mostly in relation to fox, hawk and maybe pig control in intensive areas. There was the odd reference to dog and mountain lion protection particularly in South America.

Alpacas were however known to be camelids, and had a long life span (15- 20 yrs), easy on fences waters etc, but needed yearly shearing.

How the Innovation Works

The methodology is to briefly bond or introduce the alpacas to the animals that they will be guarding/living with.

The next step is to ensure that there are enough alpacas per mob of sheep, and then to ensure that there is a good mix of trained and 'to be trained' alpacas.

Key Features

Easy care, low enviromental impact guardian animal.

The wool of the Alpaca is a magnificent fibre, that can be worth good money, and maybe will be at some stage.

Minimal contamination threat, as the fibre is actually wool.

Key Benefits

Alpacas protect flocks of sheep from predators such as wild dogs/ dingos.

They are easy to manage and maintain.

They pose no threat to wool production or sheep being managed.

They graze with the sheep.

They will live for more than 10 years.

Key Materials Required

15 - 20 alpacas per 1,000 ewes

Knowledge to manage the alpacas

Potential Cautions and Risks

The main requirement is to asses the wild dog threat (ie the odd "tourist" or packs) and then ensure the right alpaca to sheep ratio.

Packs of wild dogs would need large numbers of alpacas, and even then succes would not be guaranteed.

The threat to us has always been the odd lone dog and maybe two or three pups on an outing with a bitch.

About 15 to 20 Alpacas per mob of around 1000 ewes is working.

The other caution is to find a supplier who is not charging a fortune.

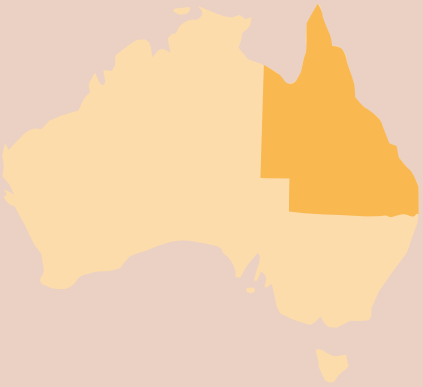
What I would do differently next time

I would have probably bought breeding stock at the start, to try a self replacing flock, and given the benefit of hindsight, waited for the price fluctuations, to buy added numbers.

Hard to judge really because at the time the dogs were biting!

Cost Benefit Analysis

Costs	Benefits
$300-$400/animal	Needed only to save at the time 8/10 lambs to justify their initial cost. Multiply that by life span on average of say 10 years.



1080 Bait Station Identification

Managers/Owners:
Paul Flipo

Property Name:
Kuballi

Property Location:
Bollon, Qld

Size of property:
12,145ha

Brief enterprise description:
Grazing - goats, sheep, cattle

The innovation is a:

New process

The Innovation:

Improves standards of safety

Increases efficiency

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Concern for working dogs with the use of 1080, together with the loss of goat kids to foxes has led me to using 'Fox Off' 1080 baits which have been very effective in reducing fox numbers.

How the Innovation Works

This idea is to clearly mark sites so that baits may be monitored and recovered if necessary. Bait sites are placed along roads and water points (we have bore drains) where they are easily accessed. The bait is buried as recommended, then a large X is scratched in the dirt over the bait, with a stubbie placed a couple of metres further along the track. This is spotted easily when driving, while the X indicates the exact location of the bait.

Key Features

Increases the visibility of bait sites.

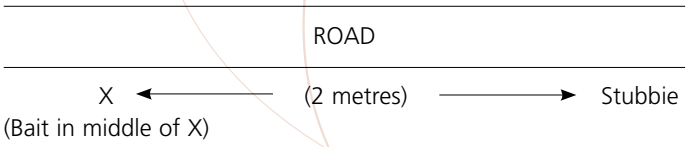
Key Benefits

Increases safety for working dogs.

Allows for an accurate count of baits taken.

Key Materials Required

Mattock, shovel or garden trowel, depending on soil type and lots of empty stubbies and baits.



(Bait in middle of X)

Environmental Innovations

Grazing Systems

Cropping Systems

Weed Management

Managing Ground Cover and Encouraging Regeneration

Managing Grazing Pressure

Rotational (Cell) Grazing

Managers/Owners:
Neil and Antoinette Sleep

Property Name:
Willangi

Property Location:
Peterborough, SA

Size of property:
3845ha

Brief enterprise description:
Sheep meat and wool production

The innovation is a:

New use for existing products

New process

The Innovation:

Drives growth

Enhances quality and improved quality standards

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1

Impetus Behind the Innovation

Cell grazing has been used by Neil Sleep since 2004. Neil was noticing that the profitability of the cropping enterprise was decreasing, and the natural resources seemed to be deteriorating, rather than improving as he would have liked.

After attending a Grazing for Profit course, Neil decided to implement cell grazing and focus on the livestock enterprise within his business, as he believed that it is more resilient.

Cropping is still undertaken on the property, but is 'opportunistic' cropping, where by the right conditions have to be presenting themselves before Neil would start to sow a crop.

Neil describes that previously he was monitoring his animals continually and ensuring they were in the correct condition. He now says that his focus has changed from monitoring the animals to monitoring the land, and if the land is in the right condition, the sheep are automatically in the right condition.

Average annual rainfall of the Peterborough district has been approximately 312mm. Neil believes the land is better suited to the re-establishment of native pastures for grazing, rather than cropping. The photos shown depict the land systems present on Neil's property (Figure 1 and 2).

Figure 2

Figure 3
Three plain wires and a barb are now used as the fencing system

How the Innovation Works

Neil has segregated his paddocks into an area of between 10-12 ha each, which are rotationally grazed with a minimum of 120 day rest period. Each paddock is grazed between 2-5 days at an interval. Neil uses a grazing chart to estimate the number of grazing days available in each paddock, and if stock should be sold, or more stock brought in. The number of grazing days available is directly related to the amount and timing of rainfall received, and also influences the number of stock on the paddock.

Neil aims for at least 120 days of rest for each paddock, but this is dependant upon the paddock size, resources and rainfall. Neil has determined that approximately 120 days has given the paddock sufficient time to regenerate and be in the right condition for grazing again. To allow the system to function correctly, understanding the correct resting period is critical, rather than the number of grazing days available in the paddock.

Neil has found that the sheep become accustomed to regularly being moved, and begin to wait for the sound of the motor bike! The sheep are generally run in one mob of between 900-1,000 ewes. This mob is broken into two smaller mobs during lambing to make shifting lambing ewes easier and as half the mob is mated to Merino's, and half terminal sire. During lambing, the principle of drift lambing is used so as not to disturb the ewes during lambing.

The sheep are generally quieter and more content. As such, fencing infrastructure has decreased, with three plain wires and a barb used with droppers. This has significantly reduced the amount of money required to build fences.

The move to cell grazing, and planting of 100 ha of saltbush has decreased the reliance on hand feeding sheep over summer and autumn, with no hand feeding being required since 2005, even with considerable drought.

Ground cover is of most importance to the system, with a variety of grasses present. Neil has noticed less Saffron and Salvation Jane present as the native grasses are in a 'healthier' state. Onion weed is now the biggest 'weed' problem.

The cells have been designed in line with an overall property management plan that depicts where fences will go and how the sheep will be managed over the property. Thought and careful management has resulted in the paddocks being strategically fenced, with one water being able to provide for five paddocks, with up to 900 sheep watering off one watering point.

Feral animals are controlled by turning off watering points when they are not in use. Because all the sheep are run in one mob, there is only the need for one watering point to be accessed at any point in time, and therefore all other watering points are disabled.

Because Neil is able to control where and when the sheep will be grazing, Neil has designed his system that the sheep are in the paddock closest to the shearing shed at shearing time, crutching and lamb marking. This decreases the amount of time Neil spends mustering. Shifting the sheep between paddocks is not time consuming, as the sheep are not mustered from one end of the property to the other, but instead generally into the paddock 'next door'. This allows Neil to invest his time in other areas of the business.

Key Features

Fencing paddocks to the correct size.

Investing in the correct infrastructure from the start.

Understanding your land and it's capabilities.

Continually monitoring the land.

Understanding the number of resting days required in the paddock and how many grazing days are available in a paddock, grazing accordingly.

Be willing to change and innovate.

Be willing to sell stock when needed.

Key Benefits

Improvement in natural resources and continued improvement.

Increased carrying capacity of the property.

Less time is spent on mustering, especially for shearing.

Healthier, more content sheep.

Less resources spent on key infrastructure.

Accessing funding has been made easier as the funders can visually see the benefits of the system and where funding is being invested.

A resilient system.

No need to hand feed sheep.

Key Materials Required

The desire to make a change.

Understanding grazing management principles and holistic management.

Infrastructure (fencing, waters).

Time and patience.

Potential Cautions and Risks

Understanding your land and its capabilities is essential, along with strategically placing fence lines and watering points. Time is needed to carefully prepare the best positioning of fences and watering points.

The manager must be prepared to continually monitor the land and adapt to changes where possible. This also includes investing time into understanding the grazing chart, and continually upgrading the chart.

What Could be Done Differently Next Time

Neil is continually refining his system. Since starting the cell grazing system, he has further reduced the size of his paddocks, and learning new ways of fencing, planting saltbush and caring for the land.

Neil and Antoinette have recently purchased more land which will be subdivided into a cell.

Rotational (Cell) Grazing

Owners:

Ian, Ruth and Matthew McKenzie

Property Name:

Loyola

Property Location:

32km west of Coonamble, NSW

Size of property:

3328ha

Brief enterprise description:

Cropping and opportunity livestock trading

The innovation is a:

New process

The Innovation:

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Cell grazing on Loyola has significantly improved native grass populations

Figure 2
Original paddock layout of 'Loyola'

Figure 3
New paddock layout where 40-50ha paddocks have been fenced for rotational cell grazing

Impetus Behind the Innovation

The old conventional mainly set stocking system allowed invasive species like poverty bush to flourish, allowed no flexibility with the grazing system in dry and drought conditions – hand feeding had to occur. Ground cover was reduced.

Large paddocks (400ha) were divided into smaller paddock 40-50ha (Figure 2 and 3). Now paddocks which were not grass paddocks currently have great stands of grass and feed. We have seen significant regeneration of native grasses (Figure 1).

Figure 4

How the Innovation Works

Rotational Cell Grazing is a concept of dividing paddock into smaller paddocks (Figure 3) to allow animals to consistently graze paddocks and be moved easily, so paddocks are allowed to rest to recover from grazing. Rest periods vary according to the needs of the desirable perennial plants.

At Loyola, a laneway from the shearing shed has full power via a Gallagher energiser, then hot wires on the radius of the cells into the smaller paddocks. This has reduced fencing costs and has got power to outlying paddocks (Figure 1).

Key Features

Pasture allowed to recover.

Enhance utilisation of pasture across the paddock.

Increase productivity of pasture and stock.

Increased ground cover.

Better quality species moving in with improved grazing.

Key Benefits

Maintaining ground cover with no wind or water erosion.

Resting pasture, makes it more productive.

Regeneration of pasture, new species and more diversity.

Flexibility with stock, able to plan ahead for surplus or deficiency in feed.

Improved water infiltration, with more available soil moisture allowing plants to revive quicker than from scratch.

More consistent condition of stock.

A great understanding of grazing country – where each paddock is up to – if they are recovering or not. And how much feed is in front of you (set stocking all at same stage).

Increased carrying capacity overall.

Better control of the grazing enterprise.

Key Materials Required

Electric fencing – energiser (large)

Hot wires

Existing fence and new laneway fence

Time to plan grazings and recovery period

Potential Cautions and Risks

Investment in fencing, trough and electric fencing, need to plan well.

Stock numbers need to be adjusted to suit feed available.

Mob size – lambing needs to be thought through.

Cashflow while in development stage.

Can be difficult to source one type of stock to fit into grazing plan.

What Could be Done Differently Next Time

No changes – it is a system which needs to be adapted to the conditions and would change from one property to the next. This system will allow us to use the period coming out of drought to our best advantage.

Intensive Rangeland Grazing Management and Tourism

Managers/Owners:
Graham and Cathy Finlayson

Property Name:
Bokhara Plains

Property Location:
35km North of Brewarrina, NSW

Size of property:
7,000ha

Brief enterprise description:
Grazing & tourism

The innovation is a:

New business model

The Innovation:

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
By grazing large mobs of cattle for short periods of time, Graham and Cathy are able to break up scalded claypan country, trapping rainfall and promoting germination of perennial grasses.

Impetus Behind the Innovation

Drought! Graham and Cathy have lived at 'Bokhara Plains' since 1994 and purchased the property in 1999 as the family partnership was dissolved. 'Bokhara Plains' had been termed a 'heartbreak block' and this rang true considering they had experienced a good year in 2000 and mostly drought from then on. They realised that in order to protect the landscape from further damage, they must destock completely and the tourism business was developed to provide a much needed source of income.

How the Innovation Works

Intensive planned rotational grazing

The Finlaysons use high stocking rates to provide the animal impact required to break up scalded claypan country. Using agisted cattle provides them with the ability to adjust numbers quickly and easily as well as benefit from additional income.

Graham believes they turned a corner in 2001 when a friend gave him a book on Holistic Management, which changed his way of thinking.

The Finlayson's have destocked a total of four times since taking over 'Bokhara Plains' but hope this will not be required once they have increased the capability of their land.

Tourism

'Bokhara Hutz' can accommodate 19-20 people per night. Their main clientele are business people working in the Brewarrina area. The tourism venture has proved to be a valuable income source, particularly throughout prolonged drought.

Figure 2
Fencing infrastructure leading into water point on 'Bokhara Plains'. The Finlaysons have turned 8 paddocks into 68 and hope to increase this number to 105 by the end of 2009. Having large numbers of paddocks enables them to give the pastures adequate rest periods following grazing.

Key Features

Intensification of their grazing enterprise by originally turning 8 paddocks into 35, then 68 by the end of 2008, and controlling livestock density with water access. They are hoping to have 105 paddocks by the end of 2009.

Accommodation is synergistic with the cattle enterprise; instead of competing with it as would be the case with farming for example.

Key Benefits

Diversification has built resilience into their business and somewhat 'drought-proofed' it. Improved pasture conditions, particularly on claypan country.

Greater control over land and pasture management.

Ability to plan their grazing 6-10 months ahead.

Key Materials Required

Fencing

Water infrastructure

Hard hoofed animals

Potential Cautions and Risks

Knowledge, planning and monitoring are essential ingredients when intensively grazing animals.

Must have a thorough understanding of stocking rates and carrying capacities.

Management can be a risk – must be able to make decisions based on rainfall received (not rainfall expected or desired).

What Could be Done Differently Next Time

Fencing design: Graham feels that if he were starting again, he would design the infrastructure with the long term in mind, ensuring that expansion will not be inhibited by infrastructure limitations. At present, there are some small design flaws that make stock movement more difficult when dealing with large mobs.

Animal impact: In 2008 Graham and Cathy used sheep and cattle together in their rotation, but would not do this again until further landscape improvement has been demonstrated as cattle are currently far more effective at providing the result they want.

Trough design: They started with long troughs but had problems with water quality and damage caused by cattle. They are now using round concrete troughs and have found these are working much better.

If they were to run more cattle, Graham and Cathy may need to lift their tanks to get more head. It is crucial to get water working efficiently, particularly during the hot summer months.

Cost benefit

Graham and Cathy estimate the total cost to set up their cell grazing system stands at around $195,000. This cost includes all labour (including their own), fencing products, solar energizer, poly pipe, troughs, tanks, pumps and access to artesian water. Although the cost appears to be significant, Graham and Cathy believe that their estimate of improving their carrying capacity by 50% in five years is conservative. Their ten year goal is to double the long-term capacity and as far as they are concerned, achieving these results more than justifies the cost of the infrastructure.

Using 'Flerds' to Regenerate Western NSW Grasslands

Managers/Owners:
Andrew and Megan Mosely

Property Name:
Etiwanda

Property Location:
Cobar, NSW

Size of property:
26,500ha

Brief enterprise description:
White dorper stud and grazing property

The innovation is a:

New business model

The Innovation:

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Foxy's grassland Feb 2008. Thick and flourishing perennials. This paddock has been pasture cropped and planned grazed for 5 years. Perennial grasses have established from natural seed (it has not been sown) and is 50% higher in organic carbon than the unmanaged country on 'Etiwanda'. This paddock yielded 380 DSE/D/Ha for 1 graze period in March (3 weeks).

Impetus Behind the Innovation

The Mosely family were concerned about the effects of continuous grazing on their properties, particularly as there were signs of accelerating degradation and profitability was decreasing. They noticed that their soils were becoming capped and rainfall penetration was poor, allowing less grass to be grown and causing an increase in the percentage of bare ground. As a result, the dry periods were becoming increasingly more difficult to manage.

How the Innovation Works

The power and necessity of livestock in healthy rangelands is often overlooked or seen as negative to pasture management. The Mosely family are proving this theory wrong by using 'flerds' (flocks and herds) as tools for land restoration. Large mobs of mixed livestock move in a planned way through grazing cells, harvesting pasture plants, causing soil disturbance and producing free fertiliser in the form of dung and urine. This then creates an ideal environment for new plant seedlings to grow and the right surface to catch and hold rainfall.

The use of these 'flerds' has been complemented by adopting pasture cropping on approximately 1000 ha of their country. Using the pasture cropping system, a crop can be sown through direct drill without damaging the native perennial grasses that are present, whilst also providing valuable income from grain. The stubble provides both cover for the soil surface and increased opportunity for native perennial grass seedlings to establish and flourish. An increase in organic matter (from root mass) improves the soil's ability to store moisture.

Figure 2
Rested land at Cobar 2008. This photo was taken directly across the road from Etiwanda, same land type but with no domestic stock or disturbance for over 30 years.

Key Features

The Mosely's believe that animals are a critical part of the carbon cycle in brittle environments. This is because biological activity slows once the rainy period stops. Animals are able to harvest the residual dry matter and the biological process of digestion can continue the carbon cycle in the animal's gut. Manure and urine are then returned to the soil for further plant growth. The other critical function is the removal of the dry matter from perennial grasses which allows fresh growth and sequestering organic carbon.

Many common misunderstandings surround the correct method when grazing perennial grasses. The critical points are the length of the grazing period and the length of the recovery period. The Mosely's believe that in their environment, a minimum of 180 days is needed for perennial plant recovery.

Key Benefits

The planned recovery periods appear to be having a positive impact on the root growth of perennial plants and higher levels of soil organic carbon. The roots are longer, the soil is less compacted, more soil moisture is captured and stored, and biodiversity above and below the ground improves. This is going to make plants more resilient in dry years and also give them the ability to respond more rapidly following each rain event.

The pasture cropping provides the added benefit of the creation of organic matter through roots, stubble and biomass in addition to the stubble creating a micro environment for germination of perennial grass following seasonal rains.

Key Materials Required

Grazing charts to plan recovery periods.

Periodic disturbance with domestic animals and ploughs.

Fencing subdivisions (at least 20 paddocks if possible).

Potential Cautions and Risks

Use your available resources.

Become educated on the use of grazing charts and Holistic Management.

Find a mentor.

Hasten slowly.

Ensure you are clear on your vision for your land, finances and family (or employees).

Draw up a plan.

The Mosely's believe that the process is relatively simple, however the human aspects of dealing with change can be challenging.

What Could be Done Differently Next Time

Don't try to re-invent the wheel – follow the process.

Get to the 30 paddocks per mob as quickly as resources allow. This helps achieve a 180 day recovery period.

Be prepared to make tough decisions early e.g. selling stock.

Set critical dates for action, for example, selling stock if no rain received.

Planting Saltbush for Improved Pastures Management

Managers/Owners:
Neil and Antoinette Sleep

Property Name:
Willangi

Property Location:
Peterborough, SA

Size of property:
3845ha

Brief enterprise description:
Sheep meat and wool production

The innovation is a:

New process

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Saltbush plantations on Willangi

Impetus Behind the Innovation

Poor seasons were having a negative impact on cash flow, and Neil and Antoinette realised they needed to make a change to their business in order to remain viable and successful. Cropping within the district was no longer profitable, and the country was deteriorating.

After attending a Grazing for Profit course, they decided to focus on their livestock and improving their natural resources.

How the Innovation Works

Saltbush plantations have been developed in conjunction with implementing a cell grazing regime. The saltbush plantations have increased the amount of grazing days available on the property, and provide a good forage crop during the summer months.

Figure 2
Sheep grazing saltbush on Willangi

Figure 4
Getting the row spacings correct is vital to the success of grazing saltbush

Figure 3
A young saltbush stand; less than 12 months old

Key Features

Neil aims to plant 2-3 paddocks per year (each 10-12ha) with approximately of 10,000 plants per paddock.

The saltbush planting, along with the implementation of cell grazing, has increased the carrying capacity of the paddocks by over 400%, and visually improved the state of the natural resources, with no supplementary feeding required over summer and autumn.

Key Benefits

Carrying capacity has increased by over 400% over the property.

Supplementary feed over summer and autumn is no longer required.

The general health of the natural resources of the property has increased.

The business is now viable and sustainable.

Funding is easily sought for further improvements.

Even grazing shown over the paddock. When the sheep enter the paddock, they have usually covered the paddock within 3 hours.

Key Materials Required

Saltbush seedlings are bought from Weston's nursery at Waikerie for $0.24 each. Old Man Saltbush seedlings are planted.

A cultivar is used to rip the ground prior to planting. The bush is planted in pairs two metres apart, with four metres between each pair of rows. Figure 3 shows the rows planted throughout the paddock, and the spacings between the rows. Neil, in conjunction with Reece Weston, has developed an automatic planter to increase the efficiency and effectiveness of the planting.

The spacing of the rows is vital to the success of the grazing of the bush and overall sheep nutrition when grazing the saltbush. These rows allow for other grasses to grow successfully in between the rows, and allow a selection of grazing plants for the sheep, rather than pure saltbush. The four metre spacings are wide enough for the cultivator to pass through in the event that Neil will also try pasture cropping.

Paddock size varies between 10-12 hectares with 600 plants to the acre.

The plants are lightly grazed in the first 12 months of planting, and grazed rotationally there after.

To this point, grazing has been able to control the plants to their optimum height, with only the occasional bush growing too high and 'rank'. The bushes are grazed more heavily (higher stock densities) to control this throughout a 12 month period.

Potential Cautions and Risks

Ensure the ground is correctly prepared prior to planting with good seedling stock. Poor seedling stock has been known to fail.

Optimum grazing of the paddock will only occur if the saltbush are planted at the correct spacings, with a variety of grasses and forbs to complement the grazing system.

Grazing must also be carefully managed so as to not either over graze or under-graze the bush. Neil's mob is generally 900-1,000 head, and at lambing around 500 ewes per mob to easily control and manipulate lambing.

What Could be Done Differently Next Time

Neil will experiment with planting the saltbush in a circular formation in the future. This will allow the saltbush to provide optimum shade and shelter for the sheep flock.

If planting in rows again, Neil will trial three pairs of rows, each two metres apart rather than four.

Salt Bush Alley Plantings

Owners:

Bruce Maynard and Family

Property Name:

Willydah

Property Location:

Narromine, NSW

Size of property:

1476ha

Brief enterprise description:

Beef cattle, meat sheep production and cropping

The innovation is a:

New process

The Innovation:

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Cattle in saltbush April 2002

Impetus Behind the Innovation

To establish a drought reserve while allowing full access for pasture growth, regular grazing and cropping operations (Figure 2). Reduction of soil surface evaporation was a major consideration. It was also important to re establish a shrub layer in the landscape to encourage natural functions.

How the Innovation Works

This innovation involves planting salt bush in patterns across the landscape that adds to the production capability while only subtracting a small amount of existing production. The saltbush alleys occupy up to 15% of the total area and at Willydah it has doubled the carrying capacity of this area. The plants are planted to establish effective windbreaks (Figure 1).

Figure 6
Herringbone saltbush pattern on Willydah

Figure 2
Diversity of plant species in curved saltbush layout

Figure 3
Curved saltbush plantings June 2008

Figure 4
Cattle grazing amongst saltbush

Figure 5
Saltbush before and after grazing (right) during summer 2008

Key Features

The amount of total area occupied, layouts and planting density are all considerations which are dependent on the location and landscape. Layouts that mimic natural processes provide the best return on investment. Willydah has experienced much greater benefits with saltbush planted in curved layouts (Figure 3). Consideration of planting along contours is a practical way of achieving the same result.

Key Benefits

Greatly increases livestock production.

Drought resilience for the business by providing fodder reserves.

Increases grass production between the rows of saltbush.

Reduces wind speed resulting in lower evaporation rates.

Provides shade for livestock that pays for itself.

Salt bush is drought tolerant, providing a year round source of protein for livestock (Figure 4 and 5).

Key Materials Required

Access to saltbush seedlings.

Spray to prepare lines for planting.

Tillage equipment to establish lines.

Specialised planting machinery (contractors are available for this operation).

Potential Cautions and Risks

Planting failure as a result of inadequate preparation.

Incorrect planting technique.

If using straight lines there is the potential for wind erosion down the alleys. This may be overcome by planting on a slight curve.

What Could be Done Differently Next Time

After planting salt bush in straight lines and in herringbone patterns (Figure 6), Willydah is planning on planting future salt bush seedlings in a curved pattern. The curved pattern aims to alleviate wind tunneling between rows and to provide greater protection for livestock from wind whilst providing increased areas of shade.

Cost Benefit Analysis

The Central West CMA (2008) reports that it costs approximately $163/ha to establish Old Man Saltbush in alley configurations. Maintenance is required for the following few years after establishment. Livestock can graze the saltbush from year 2 or 3, with the return from the planting then being realised. When grazing the saltbush at a rate of 5DSE/ha, the initial investment is paid back in the 3rd year and a profit is made. The example provided from 'Willydah' in the report indicates that with stocking rates above 4DSE/ha, the investment will pay for itself in under 4 years.

References

Central West Catchment Management Authority 2008, 'The Economic Benefits of Well Managed Perennial Pastures' Central West Catchment Management Authority, NSW Government Central West Catchment Management Authority. Retrieved 26 March 2009 from http://www.cw.cma.nsw.gov.au/cwcma_BMPs.htm

No Kill Cropping

Owners:
Bruce Maynard and Family

Property Name:
Willydah

Property Location:
Narromine, NSW

Size of property:
1476ha

Brief enterprise description:
Beef cattle, meat sheep production and cropping

The innovation is a:

New process

New business model

The Innovation:

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Bruce Maynard in No Kill Cropping Oats in 2008.

Figure 2
No Kill cropped oats 2008.

Figure 3
No Kill crop sown between salt bush alleys.

Impetus Behind the Innovation

As a result of unpredictable climate and the need to minimise risk, the business has the desire to grow profitable crops while not simplifying the grassland function at all. The original idea was to be able to grow crops without killing any existing vegetation. An additional benefit of this system is to add considerable dry matter production while only incurring minimal additional cost to a grazing enterprise.

How the Innovation Works

No Kill cropping sows the desirable plants into existing grasslands without killing existing grassland plants (Figure 1). It does this by using five principles:

- Sowing dry
- Coulter type equipment
- No fertiliser
- No herbicides or pesticides
- Effective grazing management

No Kill cropping can be used as a regeneration technique to regenerate groundcover while bringing profitable grain production into areas that would be usually unsuitable for grain production. It grows annual crops in a symbiotic relationship with existing annual and perennial plants to provide additional high nutrition source that more evenly spreads grazing pressure over the landscape (Figure 2).

Production aims are not part of this system but profit is, as this is a low investment strategy. High return on investment is an essential goal for applying No Kill Cropping. This business, since 1996 has employed No Kill where cereals including wheat, barley, oats and summer crops of millet and forage sorghum have been grown.

Key Features

The key features are very low cost, simple procedure and low economic risk. Crops or pasture plants are sown using a coulter disc implement to place the seed within the grassland within a dry situation so that no existing plants are disturbed. When moisture conditions are appropriate, the seed germinates and competes quite readily with all existing plants. This additional layer of desirable plants adds further dry matter without taking away any existing dry matter. Thereby ensuring all progress is forward.

Key Benefits

Applying this technique means that businesses can profitably regenerate areas that were low or of no productivity. It also enhances the productivity of existing areas. This leads to a higher dry matter production across a whole farm basis at the lowest possible production cost and therefore the ability to increase livestock carrying capacity (Figure 3). It is also a method that does not add greatly to overheads or labour requirements. Initial capital investment is low as are ongoing maintenance costs. Grain production could be anticipated in the marginal cropping zones and in arid areas this method would be suitable to regenerating degraded areas.

There is no ecological risk to the soil or the vegetation structure by applying this method. The low disturbance factor means that the soil surface is not put at risk, and all existing litter and plant material is retained on site. As a result of this, biodiversity is completely maintained and at times enhanced because of the increased organic activity above and below the soil.

Key Materials Required

Adaptation of existing seeding equipment is usually required. This is not a complex task, as it involves placing modern coulter disc units onto the seeding machine that is available (Figure 4 and 5).

Potential Cautions and Risks

There is a minimal amount of economic risk as the expenditure of any money placing seed in the environment may not be repaid within one year. Extensive knowledge of the correct application of the No Kill Cropping method is essential to avoid ecological damage and financial risk.

What Could be Done Differently Next Time

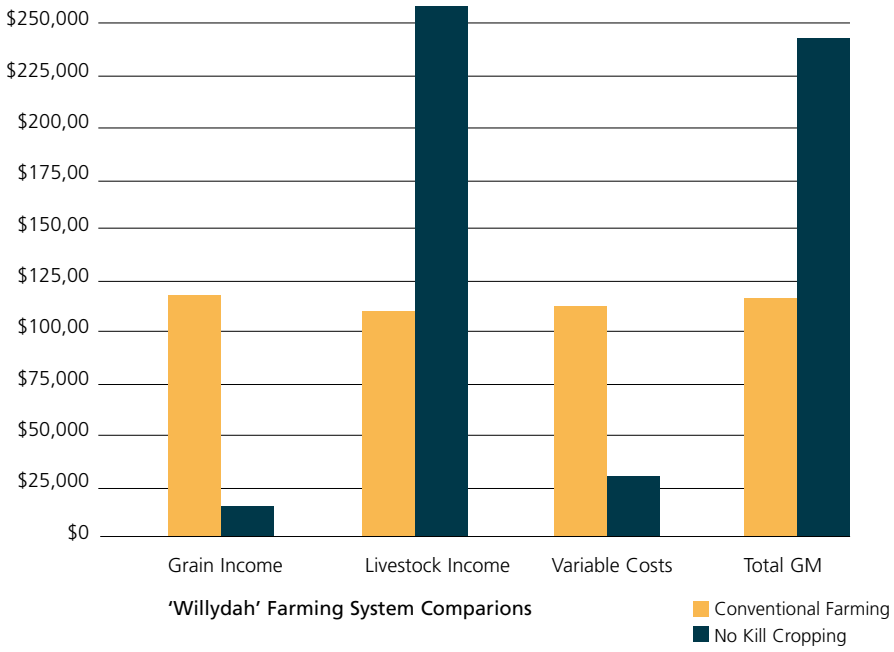
Increase experimentation with more crop varieties.

Figure 4
Coulter discs installed onto existing combine.

Figure 5
Combine is pulled behind the ute. Costs have been reduced significantly using this system.

Cost Benefit Analysis

Utilising data from Central West CMA (2008) an analysis of the past and current systems used by 'Willydah' was undertaken. Prior to 1996 the business was direct drilling wheat in rotation with lucerne. This system is compared to the current system, adopted from 2003 where the business has been operating a lower input system with a focus on livestock production. The total gross margin is significantly increased through the adoption of No Kill Cropping techniques.



Average gross margin or returns per hectare was as follows:

Farming System	Total Gross Margin	Average Gross Margin/Ha
Conventional Farming – Pre 1996	$105,527.33	$73.08
No Kill Cropping – Post 2003	$222,838.00	$222.84

References

For more information about Bruce's No Kill Cropping system see www.nokillcropping.com and for reference articles go to www.ftp.nokillcropping.com

Central West Catchment Management Authority 2008, 'The Economic Benefits of Well Managed Perennial Pastures' Central West Catchment Management Authority, NSW Government Central West Catchment Management Authority. Retrieved 26 March 2009 from http://www.cw.cma.nsw.gov.au/cwcma_BMPs.htm

Pasture Cropping - Winter and Summer

Managers/Owners:
Ian, Ruth, and Matthew McKenzie

Property Name:
Loyola

Property Location:
32 km west of Coonamble, NSW

Size of property:
3328ha

Brief enterprise description:
Cropping and opportunity livestock trading

The innovation is a:

New use for existing products
New process

The Innovation:

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 3

Figure 4

Figure 1

Impetus Behind the Innovation

To increase ground cover and improve the pasture base to improve productivity (Figure 1). In 2005 a contractor with zero tillage equipment was used to try this technique in a paddock – the crop establishment in this trial paddock was better than the normal cropping country.

How the Innovation Works

Pasture cropping is a technique of sowing annual cereal crops via zero till (Figure 2) into living perennial (in this case, usually Australian native perennial plants) pastures and having these crops grow symbiotically with the existing pastures with real and advantageous benefits for both the pasture and the crops. A crop is harvested and grazing obtained.

Figure 2

Key Features

Building pasture and harvesting a crop on the same area boosts productivity and profit.

Having more ground cover over the year with associated benefits to moisture retention.

Grazing pasture and harvesting a crop off the same area in a year (Figure 1 and 3).

Key Benefits

Ground cover which leads to improved water use efficiency.

Improved environment with native grass

Increased utilisation of soil moisture.

Perennial pasture base (quicker to regenerate than annual pasture base).

Utilising land to its full potential – making it more productive rather than buying more land to produce the same end product.

Key Materials Required:

Seed

Sowing equipment, after seeing the benefits we bought a zero-till ro-grow machine – you could use a contractor or modify existing equipment at lower costs.

Planning: it's important to sow into pasture, not just bare ground (Figure 4).

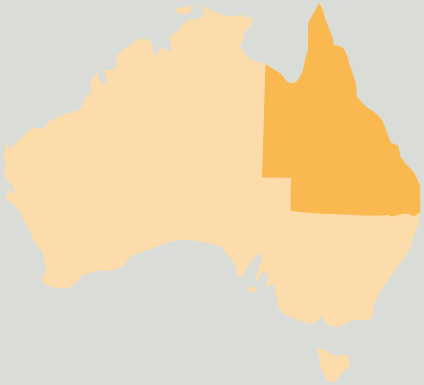
Potential Cautions and Risks

If you plant the seed too shallow, it can germinate on not enough rainfall, dry out and die, therefore the right depth is important.

Investment in Zero till equipment, in this case it is utilised for other farming and contracting – you could use a contractor or modify existing machinery.

Cost Benefit Analysis

Costs	Perceived Benefits
Capital cost $200 000 machinery OR Use a contractor	Long-term: Increased carrying capacity Improved profitability Less risk: using rainfall more effectively Business has reduced risks, if crop fails, cost structure is lower (less inputs needed) Better use of rainfall, lower evaporation



Controlling Woody Weeds with Goats

Managers/Owners:

Ross and Kate Webster

Property Name:

South Plains

Property Location:

Paroo Shire, Cunnamulla, Qld

Size of property:

126,367ha

Brief enterprise description:

Merino Sheep, wool and meat production, beef production.

The innovation is a:

New use for existing products

New process

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Area grazed by goats in the foreground with woody weeds over the fence.

Impetus Behind the Innovation

The proliferation of woody weeds is a big problem in many of the rangeland ares of western Queensland, and the quest for a cheap and efficient method to control these weeds, has long been sought after by many graziers in these areas.

How the Innovation Works

Short term, intensive grazing of goats on areas of land degraded by the invasive growth of woody weeds.

Key Features

Fencing, with a goat proof fence, the degraded area to be rehabilitated.

Stocking this area intensively with goats, until they have grazed the woody weeds.

Key Benefits

To return the land back to productive use with the regrowth of native pastures which always used to grow there.

The added benefit of having a paddock to hold and manage feral goats ready for marketing.

While this stratergy may not be the absolute solution to this problem, long term benefits to the well being of the land remain.

Key Materials Required

Fencing materials to fence the area being treated.

Potential Cautions and Risks

You must be careful you do not to over graze with goats, as the well being of these animals must be monitored to ensure they are getting sufficient fodder.

What Could be Done Differently Next Time

Explore the use of electric fencing in containing the goats.

Cost Benefit Analysis

Costs	Perceived Benefits
2,500/km of fence mustering of feral goats	Long term production increases

Native Grass Recruitment in Roly- Poly Infested Country

Managers/Owners:

Adam and Leonie Coleman

Property Name:

Wilgara

Property Location:

16km west Quambone, Eastern side of Macquarie Marshes, NSW

Size of property:

1920ha plus Beralba, 1244ha

Brief enterprise description:

Beef cattle on native grass and grain production in zero till system

The innovation is a:

New process

The Innovation:

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1 Sowing into roly-poly

Figure 2
An aerial shot showing a test strip left unsown, very little perennial grass establishment compared to the areas that were sown to millet

Impetus Behind the Innovation

This paddock used to have irregular flooding events prior to construction of Burrendong Dam in the mid 1950s. Since this time the country has moved from a semi aquatic system to a dryland system. Historically it had been managed through set stocking with cattle. The result of reduced flooding and set stocking has seen a depletion of ground cover and a dominance of roly poly which has colonized the area.

The paddock was one of the least productive on the farm. A change to rotational grazing saw some improvements but we wanted to speed up the regeneration of the perennial grasses, and to kick start the ecosystem processes.

How the Innovation Works

This innovation has involved the use of a Daybreak disc seeder on 50cm spacing's to sow Millet directly into roly poly with no pre work, herbicide or fertiliser use prior to sowing in November. The purpose being to reduce the dominance of roly poly, to promote conditions for native perennial grasses to establish, and to kick start the ecological processes through a modified Pasture Cropping/ No Kill approach. It is a pastoral 'pasture renovation program'.

Rotational grazing has been over laid on this trial area.

Figure 3
Close up of roly poly dominated areas after sowing with Millet, early summer 2008. The sowing grooves was where the majority of the seedling recruitments occurred.

Figure 4
Pasture crop

Key Features

Roly poly: A reduction in dominance is evident.

Native grass recruitment – dryland system recovery has been enhanced as new perennial native grasses have reestablished.

Overlay with rotational grasses to prevent depletion of native perennial grasses which establish.

Key Benefits

Improved productivity from a paddock that was very unproductive due to dominance of Roly Poly, and at very low cost.

Improved biodiversity: The Millet allowed for organic matter to be introduced, and the small disturbance from the sowing grooves caused by the Day Break created a seed bed for native perennial grasses and this is where seedlings established. A wide range of species is now coming back into this country.

Key Materials Required

Disc seeder is essential.

Animals - Rotational grazing will make sure that any established seedlings obtain adequate rest to establish into mature plants. 120 days or more is required.

Seed – Preferably C3 plants (such as oats or barley) may be better so not to compete directly with summer growing native perennial grasses.

Potential Cautions and Risks

Not receiving rain to germinate sown seed. At the same time input costs are very low, so it's fairly low risk.

Sowing seed that will be out competed by native grasses (not a risk if this is desired result).

Not managing grasses to reduce risk of overgrazing – ie set stocking.

What Could be Done Differently Next Time

Not sow C4 (millet) as this was out competed by Native grasses (not a bad thing).

A narrower spacing than the 50cm for the sowing process to create more biomass from the barley/oats/millet.

Would have run the disc seeder through the paddock with no seed, or used Oats/ Barley.

Cost Benefit Analysis

Costs	Perceived Benefits
Seed $800 Machine $3,000 Fuel $250	Have renovated a previously non productive paddock
Total: $4,050 or about $10/ac	Total: Difficult to quantify

Regrowing the Environment using Ponding Banks

Managers/Owners:
Sam Fenny / Rick Fenny

Property Name:
Boolardy Station

Property Location:
Murchison Shire, WA

Size of property:
356,000ha

Brief enterprise description:
Revamping the property

The innovation is a:

New distribution system

The Innovation:

Creates better outcomes for the environment

Drives growth

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Downstream the country was being washed away and it was suggested that we look at resolving this by slowing the water down at the head of the stream rather than the making repairs downstream. The homestead flooded in 2002 and there was a need to control the water to improve the vegetation and prevent flooding.

How the Innovation Works

We created ponding banks in 9 inch falls along the river to slow down the flow of water and maintain it on the ground for longer. This improved the growth of vegetation; quality of the water, reduced silting and reduced the amount of fencing required; focussing the animals in a smaller area. A smaller area is now fenced to maintain the animals. Water flows from a gully into a flat area. There are 280 banks in total and 55 ponds were created last year. Banks are 150m in length and of even height and width.

Key Features

We have better control over the flow of water, more control over the animals, re-growth of plants and re-seeding of vegetation that have not been seen for many years. We have also seen and improvement of water quality and reduction in the cost of fencing.

Key Benefits

Reduction of erosion, more available water in a drought and improvement in condition of the breeding stock.

Key Materials Required

Bulldozer and laser level to ensure the 9 inch falls were accurate (otherwise water runs back into a gully). We worked closely with other stations that use the water supply.

Potential Cautions and Risks

We have constructed the ponds in a controlled way; putting in too many at once may slow the water to a stop and kill the lower levels. We need to plan where to put the levels; levels at the top are about 100m apart and at the bottom 1km apart.

What Could be Done Differently Next Time

Make more alterations and repair rather than create new ponds.

Cost Benefit Analysis

Costs	Perceived Benefits
$450 for use of the bull dozer $1,500 for the bank including time and materials and survey.	Re-establishment of vegetation in scalded areas and therefore better grazing.

Ripping Areas

Owners:

James and Julia Clarke

Property Name:

Pamatta Station

Property Location:

Carrieton, SA

Size of property:

17,000ha

Brief enterprise description:

Wool and sheep property concentrating on heavy cutting soft wooled sheep

The innovation is a:

New process

The Innovation:

Creates better outcomes for the environment

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Despite rest from stocking, a small area in a holding paddock has remained scalded and there is evidence of rising salt. As the dry conditions continue we are concerned that scalding and salt affected areas will increase across the property, despite destocking. Working with the small areas around the holding paddocks allows us to research this issue in a manageable manner.

How the Innovation Works

We are ripping areas and planting native vegetation to reduce scalding and rising salt before the issue becomes unmanageable. The salt affected area has increased in size slowly with the continued dry seasons. We will plant the area with a mix of locally collected seed from grasses and shrubs growing adjacent to the area. We will also purchase larger trees as seedlings to allow for some deep rooted plants. These will be sown during the planting season.

Key Features

Ripping and planting to stop the spread of this area.

Reducing spread of salt.

Increased native vegetation.

Key Benefits

We are discovering methods to combat scalding and salt affected areas on the property. It will allow us to discover the best types of vegetation to use in salt affected areas through a trial and error technique. The main benefit will be a better outcome for the environment as well as maximising productivity.

Key Materials Required

Tractor with ripper fitted.

Salt tolerant plants, ideally sourced from the local environment.

Potential Cautions and Risks

Planting the wrong type of vegetation.

Ripping disturbs the soil and continued dry seasons means the effected areas may increase in size and become windswept.

What Could be Done Differently Next Time

Have vegetation on hand in a more timely manner to take advantage of rainfall.

Cost Benefit Analysis

Costs	Perceived Benefits
Ripping time: $70 Purchase of vegetation:$80 Time planting: $600 Collection of local seeds: $150 Research time: $120 Plant identification day at Glenroy Estate and purchase of plant books. $120 Total: $1,140	Catchment of seed Time saved in raising seedling ourselves Establish cover on affected area and prevent spread of salt affected areas into productive areas Ensuring the area is as environmentally true as possible Internet and phone call research in order to determine which methods have been successful in the past in different areas More confident identification of local native vegetation and education of which plants are most suitable for the planting in the area Creating a productive, environmentally sound area from non productive land as well as educating ourselves to combat this issue in the future.

Regenerating Clay Pans

Owners:
Ian and Sue Warnes

Property Name:
Woolgangi Station

Property Location:
63km North East of Burra

Size of property:
302km²

Brief enterprise description:
Wool and sheep meat production

The innovation is a:

New use for existing products

The Innovation:

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1

Impetus Behind the Innovation

A desire to continually improve the natural resources and environment led to the application of funding for these projects.

There were areas infested with African Boxthorns and an eradication program was needed to control their infestation.

We have clay plans that average 50-100 acres, and on windy days, dust rises, loosing valuable top soil. Bush and vegetation around the pans were covered in dust making the bush unpalatable.

How the Innovation Works

Envirofund funding has been accessed to implement the projects:

- Removal of 20 000 African Boxthorns
- Ripping and of claypans for re-growth and break up surface tension on windy days

Key Features

We needed to get other people interested and involved in what we are trying to achieve so results are made on a landscape scale.

We monitor continuously, and analysed the situation before and after to measure success.

Key Benefits

Pastures have improved with a general improvement of the environment and dust reduced by 80%.

We have shared the costs, allowing us to implement the project on a larger scale.

The production benefits have included an increase in carrying capacity due to the increase in pastures productivity, and we have healthier stock with improved nutrition, resulting in better wool yield.

Figure 2
Removal of Box Thorns

Figure 8
Monitoring points have been set up to monitor the change in the paddocks

Figure 3
Using the front end loader to remove Box Thorns

Figure 4
Cultivar used to rip clay pans

Figure 5
Clay pans ripped using the grader blade

Figure 6
Grasses have been regenerating since spreading sheep manure into the furrows

Figure 7
Bush has regenerated along the rip lines

Key Materials Required

To access the funding, we had good advice from people who understood what we were trying to achieve.

We needed patience and time to complete the application form!

To remove the African Boxthorns, we hired a contractor with a front end loader and bucket to 'pluck' out the thorns (Figure 2 and 3). Within 13 days, the contractor was able to cover 5000 ha and removed over 20 000 plants. Because it has been so dry, we have not noticed any revegetation from the thorns that have been removed. If it had been wetter, we may have had to look at ways of removing the remaining roots.

We are working in conjunction with our neighbour who is also ripping clay plans. I am ripping the pans using the grader blade at 60cm deep. My neighbour is using a 3 pronged cultivar behind his tractor (Figure 4).

I am currently ripping 8-10 metres apart, and we will determine which method has been most effective in allowing water capture and regeneration (Figure 5).

To rip, I am ripping across the flow of the water to capture the water within the rips. Otherwise, the water would run down the rips and be used as channels for water flow.

We have noticed regeneration of saltbush and blue bush within the rips, but not significant grasses. To encourage grass regeneration, I spread sheep manure from the shearing shed into the furrows. This has had significant impacts, and we now see clovers and other grasses regenerating within the furrows (Figure 6). In the future when I rip, I will fill my feeding cart with the manure and place behind the grader.

We established 3 monitoring points, monitoring 360 degrees across the paddock, 2 km apart. It is important to capture 360 degrees to give a true indication of paddock health. To establish the monitoring point, I put in a centre dropper, marked 10m due south, and put in a dropper that I painted white. I repeated the process for North, East and West, marking each dropper a different colour. When I examine the photos back in the office, I can tell which dropper is which direction. I monitor the points every 12 months.

Potential Cautions and Risks

When accessing funding, make sure you know exactly what you want to do, and the project fits with the guidelines of the fund you accessing.

What Could be Done Differently Next Time

Talk to someone who has applied for grants previously.

Cost Benefit Analysis

Costs	Perceived Benefits
Contractor: $20,000 Miscellaneous: $2,450 In-kind contribution: $26,061	Unlimited
Total: $48,515	

Increasing Groundcover on Claypans

Manager:
Ashley Bell

Property Name:
Raby

Property Location:
Warren, NSW

Size of property:
8525ha

Brief enterprise description:
Stud merino, beef cattle, broad acre cropping (irrigation and dryland)

The innovation is a:

New process

The Innovation:

Creates better outcomes for the environment

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Over the last ten years, this area has significantly increased with groundcover. This area originally looked like the area shown in Figure 2.

Figure 2
Area of claypan where hay has not been spread before.

Figure 3
Area recently fed out with hay with evidence of plant emergence through the spread hay.

Figure 4
Green growth on areas where hay spread (April 2009).

Impetus Behind the Innovation

Raby has experienced drought for several years. Lower than average rainfall and consequently less plant growth has resulted in low ground cover and increased risk of erosion. Hand feeding of stock has been common throughout this time.

Feeding hay out on the bare areas of claypans allows the opportunity for the sheep or cattle to spread the hay over the area and wind movement scatters the seed over the clay pan. This increases the potential for the seed to lodge and grow, increasing ground cover and preventing overall erosion susceptibility (Figure 1).

How the Innovation Works

Livestock are fed hay on bare areas of claypans (Figure 2).

Key Features

Increasing ground cover on erosion scalded claypans as a consequence of selectively choosing feeding locations (Figure 3).

Key Benefits

Livestock disturb the soil surface while feeding on the hay and their manure provides a source of fertiliser. The hay acts as mulch, conserving moisture. The manure and extra moisture allows plants to grow (Figure 4). The wind helps to spread the seeds, whether they are favourable or unfavourable species, and as a result ground cover is increased.

Potential Cautions and Risks

Claypans in this area allow for water catchment to fill dams. The key is to find the balance between achieving groundcover without limiting the ability to harvest water.

What Could be Done Differently Next Time

May consider deep ripping some claypans to allow water infiltration. This would mean these areas would not be smooth, which could hinder travelling across the paddock and mustering. Diesel prices also inhibit this idea as the benefits would take some time to be realised as these areas are not being rehabilitated through strategic planting of bush and trees.

Direct Seeding

Owners:

Darren and Debera Solly

Property Name:

Yednalue Station

Property Location:

Carrieton, SA

Size of property:

12,950ha

Brief enterprise description:

Wool and sheep cattle livestock production

The innovation is a:

New process

The Innovation:

Creates better outcomes for the environment

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1

Figure 2

Figure 3

Figure 4

Cost Benefit Analysis

Costs	Perceived Benefits
40 hrs tractor $3,200 Cost of seed unknown Hire of direct seeder $100/day for 5 days estimated $500	Trapping moisture and seed to improve germination of native seeds Direct seeding of native plants to increase the survival rate
Total: $3700	

Impetus Behind the Innovation

With the rainfall events of the past years, we are getting lots of water running away down the creeks to no great effect. By deep ripping we are trapping moisture in the soil for future plants to germinate and revegetate the area (Figure 1). By direct sowing acacia or small trees we will be able to reduce our carbon foot print and sell carbon neutral wool that may be demanded by the consumer (Figure 2).

How the Innovation Works

Ripping was carried out in February 2008 with good results directly adjacent to rip lines. To enhance the ripping we want to direct seed between the rip lines – improving gemination and growth next to rip lines. By direct seeding small shrubs, trees and native vegetation etc. there is more chance of survival as the seeds stay in the soil until timely rains germinate them, some times months after seeding. If we use tube stocks the sowing has to be linked with a rainfall event to ensure survival. The linking of sowing to rainfall is the hard part.

Key Features

Improvement of the environment by trapping water in rip lines to help germinate vegetation and seeding plants to reduce our carbon foot print.

Key Benefits

More plants for animals to graze.

Slow the water run off on sloping areas.

Reducing our carbon foot print.

Increasing the germination of seeded areas and improving the germination of natural plant generation (Figure 3).

Key Materials Required:

Seeds, direct seeder, labour, tractor big enough to pull seeder safely, investigation of plants that are carbon sinks and palatable.

Potential Cautions and Risks

Direct seed on contours and not up and down hills.

Plant seeds that are native to the area and will not become a weed.

Planting seeds that will produce shrub / tree vegetation that in turn will be a carbon sink and help the environment.

What Could be Done Differently Next Time

Rip lines closer together to trap more water (Figure 4) and rip larger areas.

Mitchell Grass Hay for Feeding and Reseeding

Managers/Owners:
Robert and Therese Turnbull

Property Name:
Bando

Property Location:
Lightning Ridge/Collarenebri NSW

Size of property:
10,984ha

Brief enterprise description:
Merino sheep, cattle and cropping

The innovation is a:

New process

The Innovation:

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Robert Turnbull in a paddock of Mitchell grass on his property 'Bando'.

Impetus Behind the Innovation

In 1997, when the Turnbulls took over 'Bando', it was during a drought and the mitchell grass was deteriorating. They recognised that it was very important to look after this dominant native pasture and investigated ways to do this. Individual mitchell grass plants live for 20 to 30 years so looking after existing plants is critical. Robert (Figure 1) had heard stories about people cutting mitchell grass in earlier times and decided to try this process in an effort to conserve feed and use it to feed livestock in drier seasons.

The fact that their son is the fifth generation of their family to live in the Western Division provided an additional incentive to ensure the long-term viability of the property.

Figure 2
Bales of mitchell grass hay in the paddock from which they were cut. Note the new fresh growth of mitchell grass plants in the paddock.

Figure 3
Mitchell grass plant which has germinated from mitchell grass hay that was fed out previously. The uneaten hay has provided mulch which has provided a moist environment for the plant to germinate.

How the Innovation Works

The Turnbulls opportunistically produce hay from their mitchell grass pastures in an effort to effectively utilise feed whilst it is in abundance. If adequate rain has been received over spring and summer, mitchell grass (*Astrebla spp*.) will grow at a rate far exceeding that which is able to be eaten by livestock hence causing the pasture to go rank and suffer a significant reduction in digestibility.

Research has shown that mitchell grass will die out over time if it is neither grazed nor burnt, resulting in lower plant density and yield. By cutting hay from mitchell grass pastures, the plant is benefiting from a process similar to grazing which in turn generates pasture growth.

Feeding the hay to livestock during drier periods aids in reseeding of mitchell grass in areas that have previously been void of the species.

Key Features

So as not to inhibit the natural reseeding of mitchell grass areas, Robert does not cut the grass for hay until after it has seeded and dispersed seed. The grass tends to go off after seeding and then comes back again at which time it is cut for hay. It is important to cut and condition the hay whilst it is still green, ensuring higher feed quality. This usually takes place in May before the cold weather hits and the plant becomes dormant (Figure 2).

Robert and Therese have found that the uneaten remnants of the bales provide surface mulch which is valuable for retaining moisture and providing protection for the new plants. The mulch utilises smaller falls of rain (5mm -10mm) which would otherwise be insufficient for germination.

Once these mitchell grass seedlings have germinated successfully, they are then able to develop the deep root system that allows them to survive during times of drought.

Key Benefits

After feeding out mitchell grass hay, there is a certain amount of waste left on the ground uneaten by livestock, this provides mulch that protects germinating mitchell grass plants until they become established.

Ability to harvest native pastures when they are in abundance and use them when feed is in short supply.

In dry periods hay can be very expensive and availability can be an issue. Making your own hay is less expensive and reduces the risk of introducing weeds.

Robert has been able to increase the presence of Mitchell grass on his property through feeding hay out on areas such as claypans (Figure 3).

Key Materials Required

Hay baling equipment (or contractor).

Sound knowledge of perennial grass systems.

Potential Cautions and Risks

The Turnbulls have found that it is best not to unroll the round bales as sheep will walk over them, thus reducing the quality of the feed and significantly increasing waste.

Robert and Therese prefer round bales as they seem to dry out well following rain which makes them suitable for stacking in the paddock. Square bales on the other hand tend to require either shedding (which they don't have the capacity to do) or covering with tarps which then provides a haven for mice. They have round bales that are four years old and are still good when opened even though they have had rain on them.

When stacking the bales, it is important to leave some space between each bale to allow water to run down the sides. This prevents rotting.

What Could be Done Differently Next Time

Through trial and error, Robert has learned that when making pasture hay, the species of mitchell grass can significantly affect the quality of the end product. He says that curly mitchell grass (Astrebla lappacea) is superior in terms of feed value as it has plenty of leaf and therefore a high digestibility. Hoop mitchell grass (Astrebla elymoides) and barley mitchell grass (Astrebla pectinata) tend to be a bit more stalky with less leaf therefore producing hay of lower digestibility. Bull mitchell grass (Astrebla squarrosa) is the least nutritious and seems to be the most unpalatable to stock. It grows quite tall and is often the last to be eaten due to its low digestibility, therefore making it inferior for hay when compared to the other species.

Changing Regenerative Practices

Managers/Owners:

Guy and Susie Morrison

Property Name:

Wahroonga Station

Property Location:

120kms SE of Carnarvon, WA

Size of property:

83,000ha

Brief enterprise description:

Improvement of business profitability whilst at the same time improving rangeland condition, to show that resource conservation is compatible with profitable pastoralism.

The innovation is a:

New use for existing products

New process

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
December 2000 – Low intensity fire

Figure 2
August 2001 – Heavy kangaroo grazing pressure evident

Impetus Behind the Innovation

Pastoralists in Western Australia identified that more profitable production systems are critical to the future of the industry, and this project was developed as a result. The primary aim of the project is to facilitate a fundamental change in grazing livestock management towards regenerative practices, while enhancing financial returns.

How the Innovation Works

The main thrust of the Wahroonga project is to improve weaner productivity by:

- Ensuring weaner mortality does not exceed 2 – 3%,
- Wool cut at the first shearing increases from an average of 1.5 kg per head to 1.8 kg per head greasy, and
- Ensure the ewe weaners are sufficiently grown (40-45 kg liveweight) by 19 months age for joining so their first lamb is as a two year old.

Joining ewes to lamb at 2 year old rather than 3 years old is also about having sufficient suitable paddocks in which to run weaners. Currently the number of suitable weaner paddocks (small paddocks with good water and soft country) is limiting the number of ewes which are joined. Hence this is one of the reasons that ewes are currently joined to lamb as a 3 year old.

Ewes are traditionally run on the western section of the station and wethers on the eastern section. The aim is develop suitable weaner paddocks in the eastern section. This will require water, fencing and TGM infrastructure, which is being funded by Envirofund.

Originally, this eastern country was considered unsuitable for weaners, however following a fire in 2000 which burnt parts of North 6, Pannikin, Wedgebill and South 6 Paddocks, it has become evident that, with suitable management following a fire, this country can be made very productive. This increase in productivity together with the infrastructure requirements being funded by Envirofund, will result in additional suitable country becoming available for weaners.

Part of this project will also be about monitoring the changes in the Gidgee country as a result of the fire and subsequent management.

Figure 3 September 2005 - Site condition is very good, with abundant broad leaf wanderrie and cotton bush

Some preliminary monitoring was conducted in 2001 with a follow up in 2005. However to obtain useful management information this monitoring needs to be extended. Monitoring sites will be set up in three areas to monitor:

- Shrub cover
- Ground Cover
- Desirable species

In addition to this fixed point monitoring, the following information will be collected:

- Food on offer assessments at critical times,
- A recording of Body Condition Score of the sheep grazing those paddocks
- Actual stocking rates (using Grazing Charts)
- Rainfall

The 3 'treatments' which will be monitored in relation to fire are:

- Burnt and destocked
- Burnt and stocked
- Not burnt and stocked

It is envisaged that the monitoring will be done at joining, lamb marking and weaning each year.

In addition to this fire monitoring, monitoring sites will be set up in paddock South 6 to monitor the effects of changes in ground cover, shrub cover and desirable species following fencing and better quality water being piped into the paddock. It is also envisaged that South 4, 5, and 6 are paddocks which could be subject to a controlled burn when conditions allow, and hence having monitoring in place prior to a fire would be advantageous. Four monitoring sites will also be established in the ewe country to the west of the homestead.

Business performance monitoring will continue and form part of the overall monitoring program.

Key Features

Work carried out to date:

The first two project goals of weaner mortality not exceeding 2 – 3%, and wool cuts at their first shearing averaging 1.5 to 1.8 kg greasy have not been achieved to date due to the drought. Mortality from weaning to the second shearing in the 2006-07 financial year (red tag ewes and wethers) was 60%, while the lamb wool cut at the 2007 shearing was 0.90 kg per head greasy. With the exceptional season experienced in 2008, it will be possible to achieve the productivity goals of mortality and wool cut. The challenge will then be to keep it at the levels we aiming for!

In 2007, the ewe weaners were joined to lamb at 2 years of age, however there were only a handful of these ewes due to sales and deaths. Having the ewes lambing as 2 year old will still be difficult in the future as the Envirofund project has not been completed which was to have opened up more country for ewes. The delay with the development work has been caused by a large workload, a lack of labour, and a lack of cashflow.

Key Benefits

A program of monitoring has been put in place so that we are getting good feedback about business performance on a regular basis. This monitoring involves:

- Estimating food on offer (carrying capacity) – done at joining, lambing, lamb marking, end of growth season and weaning/shearing
- Recording plant information such as ground cover, desirable species, and perennial species – done at same time as food on offer estimates
- Recording BCS of the ewes – done at same time as food on offer estimates
- Measuring stocking rate using the grazing charts – done monthly
- Livestock production – done annually
- Business performance – done annually

We are collating all this information onto a 'poster' so that we can easily see what our goals were at the start of the year, what strategies we put in place to achieve these goals, and then what we achieved in terms of country, livestock and the business. By being in a poster format it is easy to then determine why we did or didn't achieve our goals, and what strategies we need to change in the future.

More fire work:

With 2008 being such a good year, we are confident that conditions will be right this summer to burn more of the gidgee country. In preparation for this we have installed monitoring sites in paddocks South 4, 5 and 6 and have made the first recordings of vegetation, ground cover etc. The fire breaks are currently going in.

Business Management:

With Susie and myself taking over the management of the station, we have also been getting some assistance with the office side of things – budgeting, recording and analyzing all the financial and economic information, learning to use Agrimaster, and learning to do our grazing charts to monitor stocking rates.

Estimated returns from development:

Additional goats trapped in South 6 area	200 x $27 net	$5,400
Additional wethers which could be run in the South 6 area	200 x $20 per head gross margin	$4,000
Additional goats trapped with 3 TGMs in northern country	100 x $27 net	$2,700
Additional 450 wethers run in northern country due to fencing	450 x $20 per head gross margin	$9,000
Total additional return		$21,100
Less additional overhead costs of water checking, mustering etc		- $2,500
Less interest cost of capital		- $5,318
Estimated net return from development		$13,282
Estimated cost of development (materials, machinery & labour)		$100,000
Estimated return on capital invested (after interest paid)		13.3%

If these estimates are accurate, it appears that the return on the development work, after interest costs are taken into account, would be 13%.

Key Materials Required

Notify neighbours, FESA & DEC; grading & clearing around paddock – 3 cuts with grader & cut line through paddock for access. Engage community help with fire. Good communications are essential.

Potential Cautions and Risks

Burning out of the district.

No rain after fire - can leave dessert.

Fire can be too hot and burn everything, a cool fire and burning at night is better.

Risk to self.

Loss of fences.

Weather conditions - winds and wind direction.

Caution when grazing after the fire.

Paddocks are very productive after rain and useless without it.

What Could be Done Differently Next Time

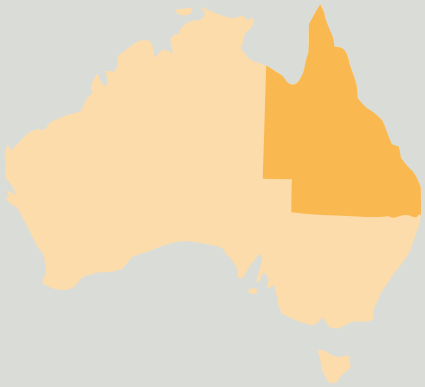
Good communication.

Work with wind.

Graze country if had rain to minimise gidgy growth.

Monitor fire country closer (now have monitoring sites).

Use back burning more to control fire.



Firebreaks Without Disturbing the Soil

Owners/Managers:
Phil and Fran Brownhalls

Property Name:
Ryandale

Property Location:
Cunnamulla, Qld

Size of property:
13,500ha

Brief enterprise description:
Sheep and cattle

The innovation is a:

New product

The Innovation:

Creates better outcomes for the environment

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

There is a need to build fire breaks in hilly and ridge country. Traditional methods of grading leads to very bad erosion gullies. Contractors are also reluctant to put their machines onto this country.

How the Innovation Works

The cremator is a steel box attached to the 3 point linkage of the tractor. The box is 2.4m x 0.5m and is either gas fired or diesel fired. The cremator burns grass as it passes over at approximately 3 – 4 km/hour.

Key Features

A firebreak is achieved without disturbing the ground. It is possible to burn grass that isn't completely dry, because of the heat from the cremator.

Key Benefits

No ground disturbance.

Reduced erosion.

Cremator can burn material that might not usually burn.

Very effective at creating an immediate fire break.

Key Materials Required:

Gas or diesel burner.

A 2.4m metal box attached to the 3 point linkage of the tractor.

Expert advice on safety and combustion.

Potential Cautions and Risks

Fire getting away.

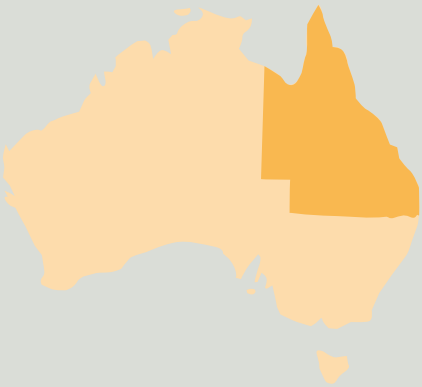
There is a need for a water cart to follow the cremator.

What Could be Done Differently Next Time

This device needs to be engineered properly. It needs commercial experimentation and development. The prototype was crude yet effective and could have serious workplace issues, if not properly researched.

Cost Benefit Analysis

Costs	Perceived Benefits
$1,000	Environmental



Satellite-Assisted Feed Budgeting

Managers/Owners:
Simon and Christine Campbell

Property Name:
Norwood

Property Location:
Blackall, Qld

Size of property:
24,000ha

Brief enterprise description:
Terminal beef crossbreeding, and beef cattle trading enterprise

The innovation is a:

New use for existing products

New process

New business model

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

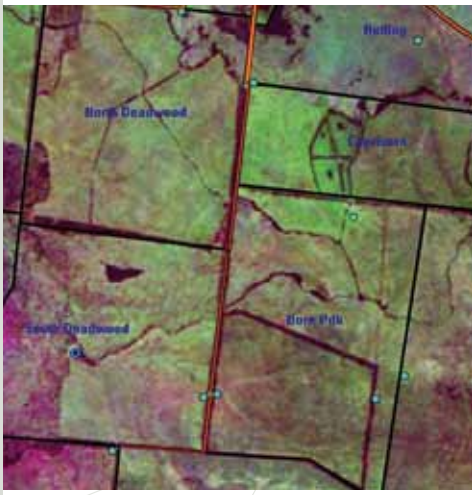


Figure 1
Satellite image showing several paddocks

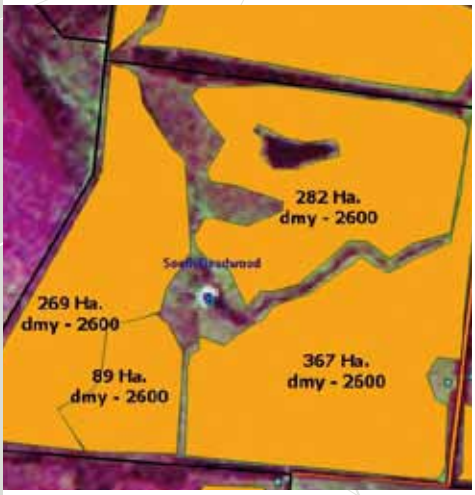


Figure 2
Paddocks with yield estimates

Impetus Behind the Innovation

To enable us to match the stocking rate (mouths) to the carrying capacity (amount of feed).

To improve climate and financial planning and risk management.

To take advantage of 'boom' grass years for additional stock numbers for trading and do this accurately (not running out of feed before the production goals are met).

To back up financial budgets with written feed budgets to streamline dealing with finance suppliers (and periodic re-quoting of finance services).

Table 1
Stocking assessment twelve months or over winter

1	ID	Paddock	Pasturetype	Condition	Yield est	Ha.	% Utilise	Useable KG	Steers 1 year	Dry Cows, 2 yr Steer/ Heifer	Cows & Calves
112	136708	South Deadwood	buffle+herb	B	2200	367	28%	226072			
113	136710	South Deadwood	buffle+herb	B-	900	89	28%	22428	Possible stock numbers		
114	136801	South Deadwood	buffle+herb	B+	1000	282	28%	78960			
115	136711	South Deadwood	herbage	C+	300	269	28%	22596			
116		**South Deadwood Total**				**1007**		**350056**	**137**	**109**	**73**
117	108137	Top Bargo	buffle	B+	3900	153	35%	203083			
118	108138	Top Bargo	buffle			168	35%	164484			
119	108140	Top Bargo	buffle			15	35%	7660			
120	108141	Top Bargo	buffle			88	35%	123722			
121	108142	Top Bargo	buffle								
122	108143	Top Bargo	buffle	B-	2500						
123		Top Bargo	other	X	800						
124		**Top Bargo Total**							265	212	141

Slightly reduced from 30% normal utilisation as need to nurse some repulled country along

Could run 137 dry steers for a year (slightly less as body wgts increase)

Could run 73 wet cows for one year

	A	B	C	D	E
1	Utilisation rate			30% %(can range 25% to 35%)	
2	Utilisation rates from GDM-school 2006 =			22% mitchell	
3	**Sheep consumption**	**Kg/p.a.**		**DSEs >**	450
4	Weaner	360 kg p.a.		0.8	
5	Wether			1.0	
6	Dry ewe			1.0	
7	Pregnant ewe			1.2	
8	Lactating ewe			1.4	
9	Ram			2.0	
10	**Cattle consumption**		**A.E.s**		
11	Calves under 1 yr	1600	0.5	3.6	
12	Heifers one year	2240	0.7	5.0	
13	Steers one year	2560	0.7	5.7	
14	Heifers two years	3200	0.9	7.1	
15	Steers two years	3200	0.9	7.1	
16	Bulls	4000	1.7	8.9	
17	Cow & calf	4800	1.4	10.7	
18	Cow no calf = 1 AE	3200	1.0	8.0	
19	Animal Equivalent (AE)	3200	1.0	9.0	
20					
21	**RUEs** for Blackall area		3 << using currently		
22			(can range from 2 to 10 kg/ha per 1 m		
23					
24	all data on this sheet from the Grasscheck Manual by Karen Forge ISBN 07 24254080 Qld Govt 1994		From Blackall Pasture Growth.ppt file given at Blackall Thurs 12-10-00 by QCCA & Janelle Park		
25					
26					
27					
28					
29					

Simon Campbell: Edge Network Grazing Land Management Longreach 26-28 April '08 Unit 3 Managing

Reconcile 30 June 2008 / Feed Budget Summary Report

Table 2
Consumption information used in assessment

Figure 3
Sheep grazing mitchell grass pasture on Norwood

How the Innovation Works

Annual satellite images (Figure 1) are used in combination with on-ground yield estimates taken at fixed photo-sites. These provide pasture quantity estimates at a paddock scale (Figure 2) in late summer. These objective feed estimates are used to define forward stocking numbers appropriate to feed reserves, and a stock management plan for the year.

1 We use the colors assigned from the annual satellite images to group areas/ paddocks/ land-types of the property (Figure 1).

2 We then need to ground truth the group of paddocks to assess the standing feed. Our focus is aimed at assessing the end-of-summer standing feed reserves. So in table 1, there is 350,056 kg available standing feed at 28% utilisation (less than 30% as some was re-pulled and seedlings need looking after).

3 Next, work out - How many wet cows can I run in this paddock over winter and into next summer (in theory, for 12 months, in practice, no rain at all would mean about 8-9 months… don't care what the manuals say!) we go as follows –

There are four areas in the paddock, so if using just one area with ref no. 136,708 (Table 1), of area 367 ha this calculates -

Estimated yield 2,200 kg/ha x 367ha = 807,400 kg x 28% = 226,072 kg useable (at 28% utilisation rate). This in indicated in the top line of Table 1.

There are four areas all with different sizes and different dry matter yields. The areas are of similar yielding pasture, and mapped on the computer (Figure 2). The sum of useable standing dry matter (at 28% utilisation) across the 4 areas is 350,056kg.

A wet cow eats 4800 kg/per annum (As shown in Table 2).

Therefore, 350,005 kg of dry matter/ 4,800 kg/pa = 72.9 (or rounded to 73) head of wet cows. Similar calculations are undertaken for the other two classes being assessed (1 year old steers and dry cows) as highlighted in Table 2.

Key Features

A comprehensive feed budget to permit correct matching of stock numbers to available feed to maximise productivity and profit.

Key Benefits

Improved profits in good years.

Better understanding and management of risk and feed resources in a very variable climate.

Better land and perennial grass care (no excessive domestic stocking pressure).

Improved management and forward planning results in reduced stress and better decisions.

A range of other decisions are assisted by the folio of annual whole-property-scale photos which detect changes in pasture/ tree composition and stocking effects.

Key Materials Required

Annual satellite image supplied as *.tiff in preferred bandwidth mixes (and a suitable competent and reliable repeat supplier for these is very important).

Photo-standards for local pasture (DPI supplied).

Fixed photo-sites and annual photographs taken.

Geographical Information System (GIS) software to combine above information.

Livestock nutrition requirements for all classes of livestock.

Normal stock inventory information.

Potential Cautions and Risks

As in most planning in an uncertain environment, ensure that a backup strategy or exit strategy is worked out in advance of the running of the plan.

Use other resources and evolving information, such as understanding the implications of the MJO and using this for key decision points.

What Could be Done Differently Next Time

This system is fundamentally simple but requires a commitment in time to collect data, to map areas, and produce results to be used for decision making.

Initially we found that sourcing appropriate knowledge of: satellite image interpretation, appropriate image supply, a cost-effective GIS program, and one-stop-shop livestock consumption and nutrition information, was difficult.

However for anyone starting their own satellite-based feed budget system, the evolution (since we started 15 years ago) of knowledge and existing available courses such as the Edge courses is substantial, so the task should now be relatively easy. Define at the outset what you want to achieve with a feed budget system, and plan towards that point.

Managing Grazing Pressure

Managers/Owners:

Adam and Leonie Coleman

Property Name:

Wilgara

Property Location:

16km west Quambone, Eastern side of Macquarie Marshes, NSW

Size of property:

1920ha plus Beralba, 1244ha

Brief enterprise description:

Beef cattle on native grass and grain production in zero till system

The innovation is a:

New product

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Impetus Behind the Innovation

Human enhanced climate change will have the greatest impact upon the agricultural sector compared to all other industries. Primary producers income has been and will continue to be determined by changes in weather patterns, and increasingly we need to be accountable for our emissions, particularly beef producers, considering agriculture is one of the top three contributors to climate change.

How the Innovation Works

A portable weighing system that can be easily installed at water points in a rotational grazing system to provide the beef producer with real time live weight gain information, using existing NLIS ear tags as well as a monitor water at the trough, tank and electric fences. The information gathered will be collected and remotely downloaded via a telemetry system to a base station at the office or any internet connection. This will arm the livestock producer with information to help mitigate over-grazing of native pastures in times of climatic change.

Key Features

As producers we need to have a detailed understanding of our pastures and livestock weight gains on a daily basis so we can make informed management decisions on our grass/weight efficiencies. This information can then be used in the following ways:

- The livestock producer can monitor in real time how various native pastures change in nutritional value as they mature and the seasons change.
- Over stocking or overgrazing will be identified and action taken before the percentage of groundcover is compromised.
- Optimum or efficient stocking rates will be determined over time as the amount of data collected increases; this will help to mitigate methane emissions.
- Breeds of cattle and genetics that efficiently convert grass to meat will be identified.
- The livestock producer can better target markets before getting livestock to stockyards and placing undue stress on them.
- Sub-lease from the bank.

Key Benefits

Livestock water can be monitored remotely and any breakdown in the water delivery system will be identified before stress is placed on livestock.

The livestock producer can reduce their carbon footprint by not spending unnecessary time travelling to check stock water when the system is operating smoothly.

Water consumption of livestock can be monitored to improve water use efficiency.

Electric fences can be also be monitored remotely saving both time and resources.

There is potential to add on an auto draft system that will reduce undue stress to cattle from mustering and yard work.

There is also the potential to draft and additional feed livestock that are 6 weeks out from market, while they still remain the overall mob.

It also provides a daily roll call, so the producer is alerted to a death or stray within a 48hr period.

Able to provide end user with individual animal history of weight gain related to pastures.

Key Materials Required

Electronic scales with interface, software and cables - Trutest

Large tag reader

BP 80W Solar panel x2 with a regulator 15 amp

C2 with heavy duty 4.5dB UHF antenna

L1-2400 level sensor

Ultrasonic water meter model 350

3G Data Modem

Multiband 6.5dBI COL antenna

Observant Software

Weighing platform/mini-race on wheels

Potential Cautions and Risks

Investment

Technology failure

Failure to condition animals correctly

Not using outside expertise – e.g. getting a professional to set-up – walk over weighing parameters, for example, don't want to record weighing non-target species such as foxes etc.

Not utilising the data correctly.

What Could be Done Differently Next Time

We are currently only in set-up stage.

Cost Benefit Analysis

Costs	Perceived Benefits
$18,800 to initial set-up	Monitor stock without bringing them into the yards – animal welfare Help manage in grazing decisions Marketability – target markets Known stock number and weight daily Automatic-remotely draft cattle
Total: $18,800	

Goat/Sheep Trap

Managers/Owners:
Sam Fenny and Rick Fenny

Property Name:
Carbla Station

Property Location:
SharkBay, WA

Size of property:
101,175ha

Brief enterprise description:
Sheep and Goat production

The innovation is a:

New product

New process

The Innovation:

Creates better outcomes for the environment

Increases productivity

Increases efficiency

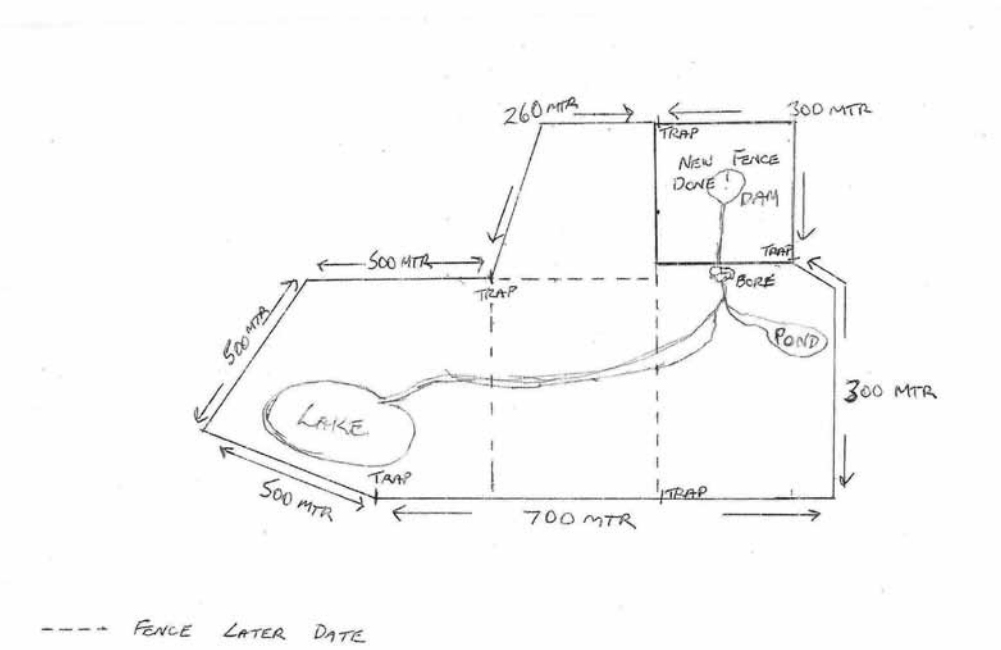
Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses



Impetus Behind the Innovation

Our main reason for constructing the sheep and goat trap was to reduce grazing pressure in the area.

How the Innovation Works

We constructed a large goat/sheep trap around a flowing artesian bore. Before we had the trap we couldn't control the stock around the water, which was heavily overstocked. It works in the same way as a normal stock trap just on a much larger scale. Once the animals are trapped inside we use motor bikes to push them to an area where we have set up a drafting race.

Key Features

The main features are double sheep/goat traps positioned around the enclosure. These traps enable the animals to be trapped inside with minimal time wasted mustering.

Key Benefits

The benefits of the construction of the trap are we have better control over the stocking rates of the area. This leads to better management of the land and we are able to destock the area if needed.

By controlling the stock numbers around the bore we are able to reduce the grazing pressure and therefore care for the environment.

Key Materials Required

The main materials needed are 10 line cyclone ringlock, steel posts, strainer posts, cement and aggregate and plain wire.

Potential Cautions and Risks

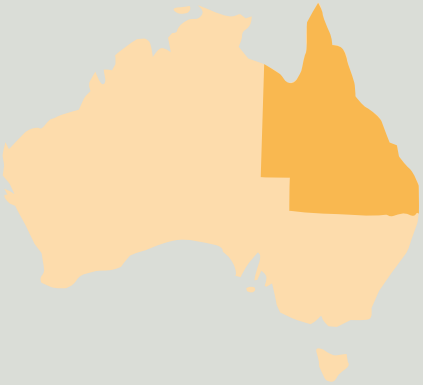
We had to take care when straining the fence as the tension of the wire could have caused problems.

What Could be Done Differently Next Time

We have no regrets about the project.

Cost Benefit Analysis

Costs	Perceived Benefits
Steel posts: $4000 Ring lock: $9500 Strainers: $1500 Labor: $5000	Goats trapped and sold first year of trap construction
Total: $20,000	Total: $50,000



Pasture Monitoring

Managers/Owners:

John and Joy Hardie

Property Name:

Verastan

Property Location:

Muttaburra, Qld

Size of property:

12,184ha

Brief enterprise description:

Wool, prime lamb and beef cattle production

The innovation is a:

New process

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

We have been discussing feed budgeting for several years, without fully participating.

2009 was a good season with excess grass and we did not want to waste the opportunity. We worked with the local Bestprac group and Mick Alexander to carry out a feed budget in a day.

How the Innovation Works

In a good season, we have abundant pasture which often is not utilised. Using photo-standards and weighing grass, we were able to estimate the amount (yield) of mitchell and flinders grass pastures available. Then using a formula, we estimated the available feed supply (kg) and matched that to the number of LSU/DSE on hand.

Key Features

Simplicity of conducting a feed budget.

It combines photographs and actually weighing the pasture.

It takes about a day to complete.

Need some support to do it well.

Key Benefits

We know how much pasture we have on hand and how many stock it will feed.

We have confidence in decision making.

We can plan the next 6 months stocking rates.

We can make an enormous profit in good years and save our country in poor years.

It is about managing the environment.

It can become a social occasion.

We can learn from each other.

Key Materials Required

Family and friends

Photo standards of local pastures

Notebook

Calculator

Scales

Potential Cautions and Risks

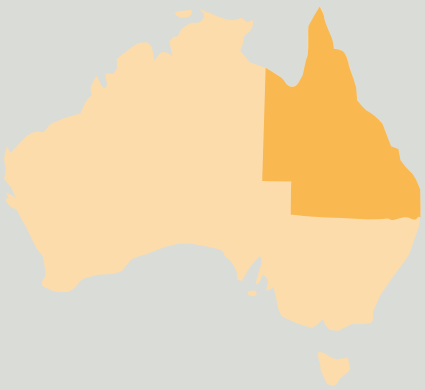
Ask a local pasture specialist to help out.

Be conservative and allow for the loss of pasture due to rainfall events.

Only aim to utilise 30% of standing feed.

Cost Benefit Analysis

Costs	Perceived Benefits
$2,000	$45,000
Net Benefit	$43,000



Growing More Grass

Managers/Owners:

Philip and Judy Tindall

Property Name:

Hillview

Property Location:

Muttaburra, Qld

Size of property:

20,000ha

Brief enterprise description:

Self replacing merino and trading/ agisting enterprise

The innovation is a:

New process

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Phillip Tindall in dense Mitchell grass pasture

Impetus Behind the Innovation

In the 1990s we were only achieving the average return on capital for the central western region of Queensland of 1 – 2 %. This was not even able to match the bank interest, let alone provide profit. We had to do more to be successful. We attended the Grazing for Profit courses and found it was possible to achieve success if we were to develop the property and implement a rotational grazing program. Our innovation was all about managing grass.

How the Innovation Works

Our main goal was to start managing the pasture better than what had been done in the past. We wanted to revitalise and enhance the pasture growth by implementing rotational grazing methods. We developed a whole of property plan for Hillview in 2000, which included the fencing of watercourses, to enable land types to be managed effectively. The plan was established on a water radius (stock walking distance) of 1,000m to the back of any paddock. This meant that we had to lay poly pipe, establish troughs, construct fences and eventually start rotating stock between paddocks.

About 80% of Hillview was set up on a 1,000m walking distance to water. In total, we constructed:

Poly pipe (63, 75 and 90mm)	62km	
Troughs	57	
Water storage	23 tanks	205,000 gallons
Electric Fencing	82 km	

Initial gains were made immediately following the completion of development due to better pasture utilisation. We believe that unless a rotational grazing program is also established, it is possible to destroy even more country unless pasture is rested and rotated. Our program had mobs of 1,000 – 2,000 LSU being rotated through 1,000 acre (400 ha) paddocks, on a weekly to two weekly basis.

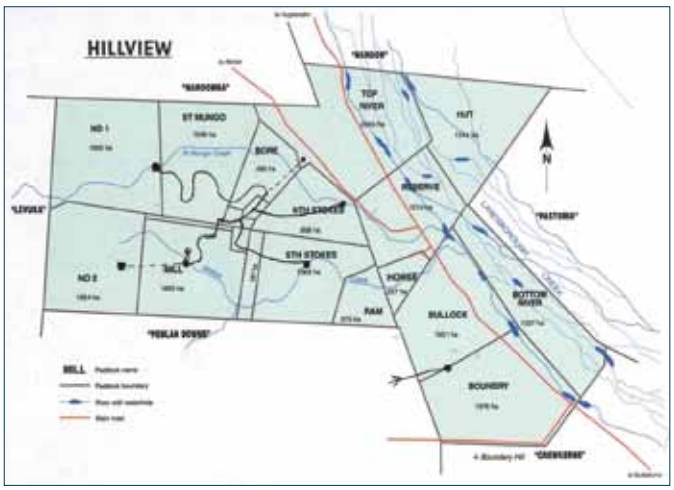


Figure 2
Hillview before development

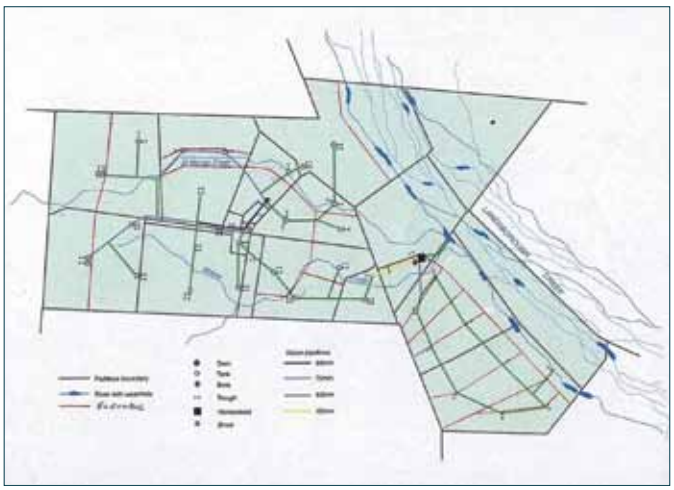


Figure 3
Hillview after development

Key Features

We know how much feed we have on hand.

We have a plan for the dry season every year.

We are moving stock to fresh paddock every few weeks.

Ideal paddock sizes are about 400ha (1,000 acres).

Key Benefits

Increased profits (7-12% ROA).

We felt good – happy and able to move forward.

Increased grass/ pasture productivity (doubled the carrying capacity).

Increased beef and wool production.

Pastures are evenly grazed.

The environment is healthy and degraded areas are recovering.

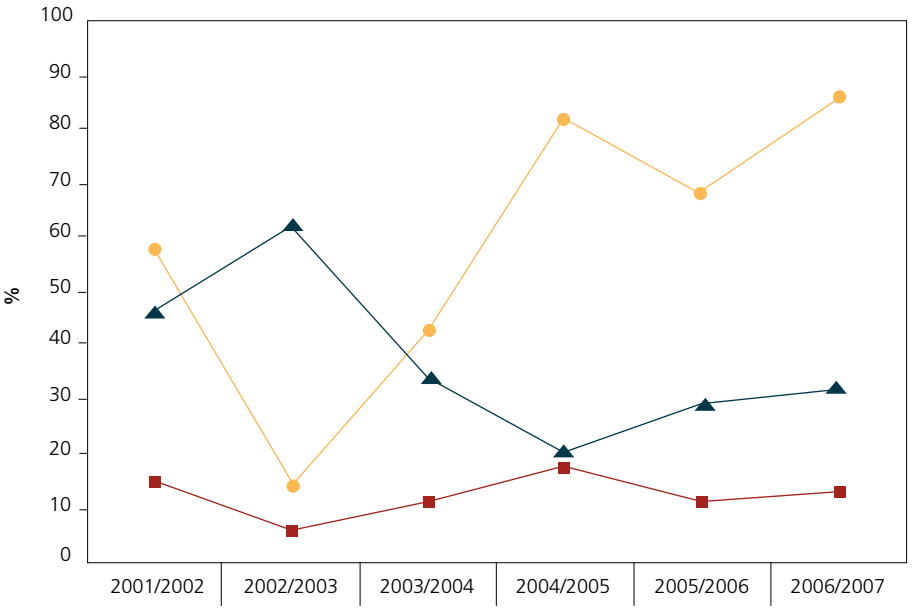


Figure 4 Key Performance indicators for Hillview pre and post development

Summary of Hillview Success

Long term carrying capacity (before rotational grazing)	2,050 head on 425mm rain/yr
Last 3 years average carrying capacity (with rotational grazing)	3,924 head on 350mm rain/yr
Extra stock carried with rotational grazing	1,874 head
Extra income earned at $2.75/hd/wk	$267,982 per year
Return on development costs of $368,630	72.7% Return on Capital per year

Figure 5
At the start of a graze

Figure 6
At the end of a graze; stock being moved

Key Materials Required

Training and a good consultant

Lots of support from people who have done it already

A whole of property plan

Poly pipe

Fencing materials

Tanks

Troughs

Determination and a will to succeed

Knowledge of and skills in rotational grazing

Item	Cost
Water Infrastructure cost	$332,800
Electric Fencing cost	$35,830
Total:	$368,630

Potential Cautions and Risks

Finding staff who can manage the system is difficult.

Do not over capitalise.

If you want to sell, the fences do not have any value.

What Could be Done Differently Next Time

Do it sooner.

Figure 7
Storage tanks on Hillview

Infrastructure and Equipment Innovations

Livestock Infrastructure

Paddock Infrastructure

Water Infrastructure and Equipment

Fencing Equipment

Livestock Equipment

Cropping Equipment

Infrastructure and Equipment to Improve Safety

Crutching, Sheep Weighing and Inspection Facility

Managers/Owners:
John and June Parnell

Property Name:
Glenroy Estate

Property Location:
Carrieton, SA

Size of property:
8,100ha

Brief enterprise description:
Wool and sheep property

The innovation is a:

New process

The Innovation:

Improves standards of safety

Enhances quality and improved quality standards

Increases productivity

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1

Impetus Behind the Innovation

The multi-purpose sheep handling facility is located close to the shearing shed. The facility shed size is 20m (L) x 8m (W) x 2.1m (H) (Figure 1 and 2).

Crutching - When sheep are crutched in the shearing shed, the crutcher has to walk into the catching pen, catch the sheep and roll it over then pull the sheep out and place it ready for crutching. This innovation, based on the crutching trailer concept brings the sheep up a race right next to the crutcher. The sheep is then pulled over a mid bar which rolls the sheep into the 'ready' position in one movement. There is a rubber mat provided for the crutcher (Figure 4).

Inspection facility - This under cover innovation allows for the sheep to be run down a cement raceway and can be inspected singularly, a mob of four or eight.

At the end of the raceway is a permanently located scale which just needs to be turned on to be ready for weighing. The scales can be connected to a computer and weights noted and sorted according to requirements. The scales can be located in the raceway for weighing, or removed sideways on a slide if not required (Figure 5)

Immediately after the scales is a three way draft.

Tailing is also completed at the facility.

Figure 2

How the Innovation Works

Incorporates under cover, a crutching, weighing, sheep inspection and drafting facility

Key Features

All work can be carried out under cover and sides are open for air circulation (Figure 1 and 3). This infrastructure improves the working environment, increases productivity and efficiency. Safety is further improved by reducing the risk of injury to workers because it reduces the number of actions in preparing the sheep for crutching, positions the sheep where they are completely controllable in the races or weighing facility and allows for full and unrestricted movement of personnel around the various facilities.

Key Benefits

Improved working environment.

Improved efficiency.

Improved production.

Improved safety.

Key Materials Required

Shed - purchased a shed from supplier, all pre cut with instructions. We erected it ourselves.

Cement floor on raceway and crutching area.

Used second hand panels.

Potential Cautions and Risks

In design, ensure the work area is uncluttered and movement can be carried out without stepping over fences for example (Figure 3).

Figure 3

Figure 4

Figure 5

Cost Benefit Analysis

Costs	Perceived Benefits
$10,000 Including concreting	Improved work environment Improved safety Improved efficiency Improved production

Shearing Shed Modifications

Owners:

George and Sally Falkiner

Property Name:

Haddon Rig

Property Location:

Warren, NSW

Size of property:

22,000ha

Brief enterprise description:

Mixed farming business including Haddon Rig Merino Stud, running 15,000 head of sheep, 1,000 head of cattle and cropping 8000ha with some irrigation.

The innovation is a:

New material for existing products

The Innovation:

Improves standards of safety

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Haddon Rig Shearing Shed
Est 1892

Impetus Behind the Innovation

The Haddon Rig shearing shed was built in 1892 from which time there has been no significant modifications. The need for improvement was recognised over time to increase the efficiency of shearers and improve standards of safety for shearers and others working in the shearing shed.

How the Innovation Works

Modifications to the shearing shed have included:

- Sloping floor in catching pens
- Sliding doors across chutes
- Chute modification to bring the drop closer to the sheep's front feet
- Replacement of 1.5m of board
- Sling supports
- Water troughs in large holding pens
- PVC cladding of shed (30 years ago)

Figure 6
Permanent slings supports

Figure 7
Purpose built water troughs in the large holding pens

Figure 2
Declining slope of floor to the front of catching pens for ease of drag

Key Features

Installation of sloping battens in the catching pens to assist the shearer in dragging the sheep. The slope declines to the board. Battens installed parallel to the drag of the sheep (Figure 2 and 3).

Sliding, removable doors across the chute aids in keeping the shearing shed clean, preventing, in particular umbrella grass entering the shed via the chute (Figure 4).

Recess modification to the chute by cutting into the board 3 inches makes it easier to push the sheep down the chute. On completion of shearing, the sheep is closer to the entry point of the chute (Figure 5).

The board has been improved by replacing a 1.5m deep section.

A permanent structure has been installed to suspend shearer's slings (Figure 6).

Water troughs using old 20L plastic drums have been installed in large holding pens with a float system (Figure 7).

Figure 3
Battens have been replaced to allow for ease of drag

Figure 4
Vertically sliding doors to cover the chute when not in use

Figure 5
The chute drop is now closer to the sheep for easier release

Key Benefits

All of the modifications have either improved safety standards or improved time efficiency; and in some cases the modification has done both. Benefits include reducing back strain on the shearers through the declining slope and battens in the line of the drag, a smooth board free of cracks, patches and nails, and safe infrastructure to suspend the sling. The modification to the chute allows the shearer to effortlessly put the sheep down the chute as their front feet are closer to the drop, therefore there is less resistance by the animal.

The doors across the chutes and the cladding of the shed save the business time in cleaning and shed preparation and repairs and maintenance. The PVC cladding has removed the need to paint the shearing shed whilst preserving the 1892 appearance (Figure 1).

Sliding Gate

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Increases efficiency

Improves standards of safety

Figure 1
The sliding extendable gate

Impetus Behind the Innovation

We wanted to improve the safety of the equipment in the shearing shed, whilst making it easier to move sheep between pens. We needed a system to open and shut the gates without necessarily swinging the gate, and a way to extend gates when necessary. This system also allows us to adjust the length of the gate, and the application can be applied to numerous other gates and systems.

How the Innovation Works

The gate can work as either a standard hinged gate or as fixed panel. There is an extension that is slid inside the gate to allow the length of the gate to be adjusted. The gate or panel is made from 25mm pipe and the extension is 12mm pipe. The smaller pipe is slid inside the larger pipe.

Key Features and Benefits

We do not have to swing gates, and therefore sheep do not get stuck behind gates when moving between pens. We are able to apply the system into other areas of the shearing shed, making temporary holding pens by sliding the gates across pens when required.

We are able to use existing materials.

Key Materials Required

Round piping

Welding materials

Potential Cautions and Risks

The usual precautions when welding.

Ensure the gate is stable and strong.

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Stable Drafting Gate

Managers/Owners:

Ian and Gloria, Scott and Coral Tiver

Property Name:

Netley Gap

Property Location:

Yunta, SA

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Increases efficiency

Improves standards of safety

Star rating

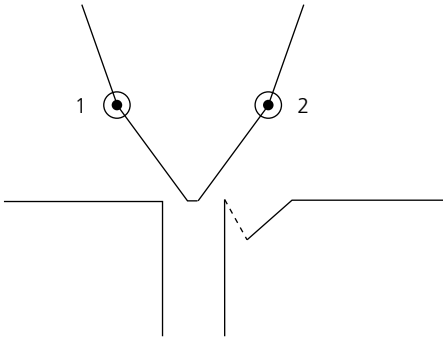
Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Placement of spring



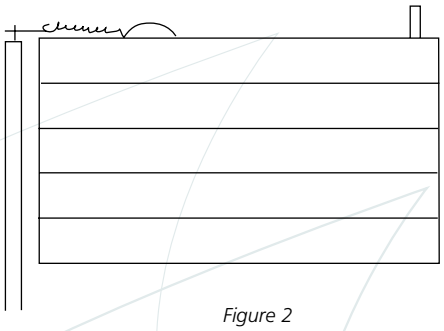


Figure 2

The Spring attached to the gate

Impetus Behind the Innovation

Ian found that when drafting sheep and the drafting gate was left unattended, it would often swing the wrong way.

How the Innovation Works

Attach a spring to the top of the gate and tension to the gate posts (Figure 1) keeping the spring in line to the centre of the race. When the gates are swung either way, the tension on the spring should keep them in position when unattended.

Key Features

Can be used from existing materials.

No need to alter the current race system.

Easy to install.

Key Benefits

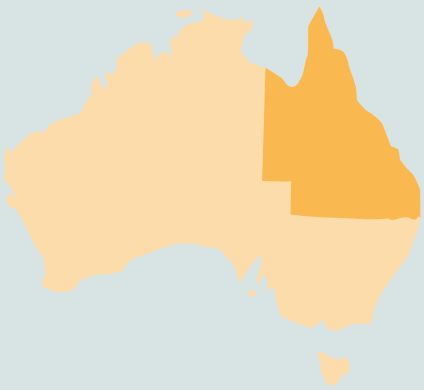
Ensures the gate is always in the correct position.

Improves safety as the gate stays in the one position.

Key Materials Required

Spring

Material to attach the spring to the gate.



Redesign of Stock Yard to Improve Efficiency

Managers/Owners:
Dougal Davidson

Property Name:
Macfarlane

Property Location:
Tambo, Qld

Size of property:
9,600ha

Brief enterprise description:
Cattle breeding operation

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Increases productivity

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Impetus Behind the Innovation

Stock were not moving through yards well – the time taken to handle stock in yards was excessive. We needed new yards and decided to look at the overall design features.

Designed our own yards and built to improve:

Safety of users (walkways around yards).

Yards filled in (poly belting) to reduce stress of stock.

How the Innovation Works

This is a redesign of a stock handling system for a cattle yard. It includes altering the design and material used in construction. The main mechanics include redesigning yards to improve flow of stock, reducing the time taken to handle animals, and improving operator safety.

We developed a pound with a side draft and forcing yard into the main race (pound draft).

Key Features

Curved panels

Closed in race (poly belting)

Walkway around the inside of the race

Covered working area

Stock are under cover all the time they are moving through the race.

Key Benefits

Improved safety for operators.

Smoother flow of stock through yards.

Reduced time taken to manage stock (33% time saved).

Reduced stock stress.

Key Materials Required

Steel yards – poly belting

Steel (RHS) and cattle rail/ RHS

Designed by Duncan and Dougal Davidson

Potential Cautions and Risks

To ensure that stock feed into a race (visual).

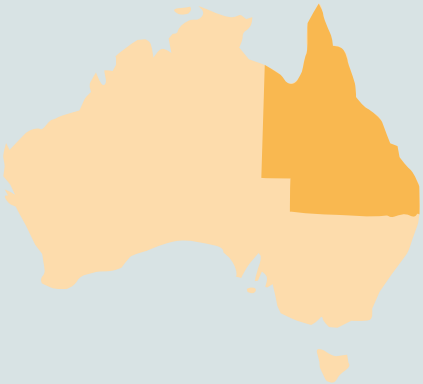
Cattle need to see where they are going.

Need a straight area on one side to improve visibility.

Risk of width of race being too wide or narrow.

What I would do differently next time

We needed to cover the whole race area, so that stock are not going from light to dark (reduce stress).



Cutting Corners to Let Stock Flow

Managers/Owners:

Peter and Pauline Nevell

Property Name:

Jynooma

Property Location:

Tambo, Qld

Size of property:

9,000ha

Brief enterprise description:

Wool and meat production from sheep and beef breeders

The innovation is a:

New use for existing products

New process

The Innovation:

Improves standards of safety

Increases productivity

Increases efficiency

Star rating

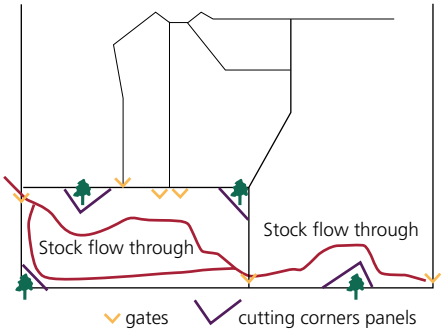
Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Cattle Yard Design at Jynooma



Impetus Behind the Innovation

Stock were not flowing through the cattle yards. They would bottleneck and hang in corners. Time taken to process stock could be reduced by 25% with better yard design. Yards also needed shade for stock and operators. The redesign is multifunctional in that it assists with animal movement and provides shade for animals and operators.

Figure 2

Figure 3

How the Innovation Works

This was a minor change to cattle yards which has made a significant difference to the overall animal handling. Our stockyards required both shade for animal welfare and some modifications to improve the flow of stock to handling yards. The first step was to cut out the tight corners and improve access to gateways for drafting. In doing this we had created areas for the establishment of shade trees, within the yard plan (Figure 1).

We added 3m panels at 45 degrees to the 90 degree corners, effectively acting as a flowing turn instead of a baulk. This has reduced the pressure points, where stock would simply stop moving. In behind the cut out corners, we have planted trees (Figure 2 and 3). In the situation where a gate exists in the middle of a yard, we have placed two x 45 degree panels to act as a guide into the gateway.

Key Features

Multi-functional design:

Improved flow of stock through yards.

Provides a place to plant shade trees.

Is easy to adapt to any stock yards.

Is easy to construct.

It can be trialed and removed quite easily.

Key Benefits

Reduce time taken to handle stock by 25%.

Improve operator safety (shade).

Improve animal well being.

Reduce cost of handling.

Reduce animal stress.

Improved environmental outcomes (trees in yards).

Improve aesthetics of stock yards.

Key Materials Required

Posts and rails may be sawn timber / steel or other material.

Your choice of shade trees.

What I would do differently next time

Develop an overall yard design incorporating an allowance for shade trees.

Marketing Paddock

Managers/Owners:

Charles and Fay Townsing

Property Name:

Cawkers Well

Property Location:

45km west of Wilcannia, NSW

Size of property:

30,400ha

Brief enterprise description:

Beef cattle production – Hereford Angus cross, breeding enterprise, currently with 360 cows joined

The innovation is a:

New process

New supply chain relationship

The Innovation:

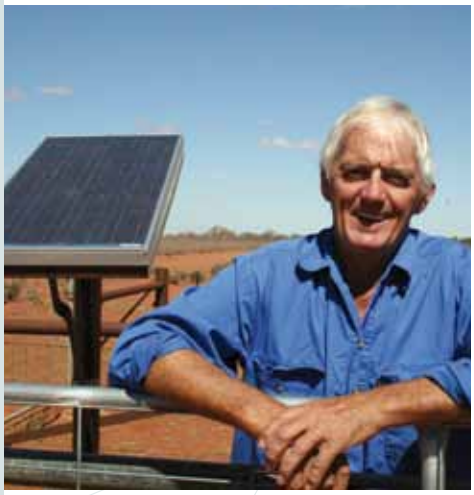
Enhances quality and improved quality standards

Increases efficiency

Star rating

Ease of use	★★★★★
Degree of innovation	★★
Impact on business	★★★★
Application to other pastoral businesses	★★★★

Figure 1
Charles Townsing with the 150 watt solar panel used to power the electric fence



Impetus Behind the Innovation

Charles and Fay want to sell quality store cattle on-property, direct to the purchaser rather than truck them long distances to markets. However, selling on-property often requires cattle to be held following mustering and sorting, until they are marketed and trucked. For example, cattle listed for sale by electronic online auction may need to be held for ten days. Prior to the construction of the paddock this meant re-mustering large paddocks (average 3230ha, requiring three people for two days) or sourcing and feeding hay. The cost of hay and delivery can be expensive and quality hay can be difficult to source at times, in some cases hay has been sourced from over 600km away.

Figure 2
Electric fencing

How the Innovation Works

A 2km^2 paddock was built to hold cattle while they are marketed to improve the capacity to sell store cattle on-property. The paddock is only used for this purpose and is only stocked for short periods (usually about 10 days) a few times per year. This ensures pasture condition is maintained so that the need to supplementary feed cattle before sale is reduced.

Key Features

The paddock is located next to the cattle yards. The paddock is securely fenced thus providing confidence that cattle released into the paddock can be easily recovered. The paddock is easy and quick to muster; one person can achieve a complete muster using a motor bike.

The pasture is in good condition and has a good mix of different vegetation types for example black bluebush (*Maireana pyramidata*), mitchell grass (*Astrebla spp.*) and a variety of herbage.

Key Benefits

The paddock provides more market options and will help the Townsings to develop a reputation with finishers and feedlotters as a reliable supplier of quality store cattle, as well as reducing the cost of freight. It allows for improved preparation of cattle prior to loading and trucking. Also, the need to purchase hay for supplementary feeding prior to sale is reduced.

The grazing regime the paddock receives (i.e. short duration, higher intensity stocking with long rest periods) will provide an alternative pasture management comparison over the long term.

Key Materials Required

The paddock was fenced partially by upgrading existing ring lock or plain wire fencing by adding a top barb and a single electrified plain wire. The remainder of the fence is new, consisting of a top barb wire and two electrified plain wires. The electric fence has a large gap (38cm) between the ground and the bottom wire to allow non-domestic animals to pass under the fence without causing damage. The electric fence is powered by a 150 watt solar panel that is backed up with solar (deep cell) batteries.

Potential Cautions and Risks

The paddock is rested from cattle grazing for most of the time. However, to maintain adequate levels of standing dry matter and pasture condition, management of non-domestic grazing pressure is a priority. A commercial kangaroo shooter manages kangaroo grazing pressure in the paddock.

Weaners need to be trained properly to respect electric fencing.

What I would do differently next time

There are currently no changes Charles and Fay would make to the paddock.

Network of Self-Mustering Yards for Controlling Goat Numbers

Managers/Owners:
Garry Hannigan
Property Name:
Churinga
Property Location:
130km east of Broken Hill, NSW
Size of property:
50,000ha
Brief enterprise description:
Meat sheep and goats, certified organic operation

The innovation is a:

New process

The Innovation:

Improves standards of safety

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1

Impetus Behind the Innovation

Goat numbers need to be controlled on Churinga to manage their impact on vegetation and competition with domestic livestock. Thousands of goats can be removed from the property each year. Goats were mustered conventionally before self-mustering yards were used. This involved two to four people on motorbikes and on some occasions a contract mustering aeroplane. The rugged and in some cases inaccessible terrain in some areas meant that mobs of goats were inevitability missed. Mustering goats on motorbikes in rugged terrain is dangerous and considerable wear and tear occurs on the motorbikes.

How the Innovation Works

Unmanaged rangeland goats are controlled using a network of self-mustering yards that control access to all stock watering points on the property. The self-mustering yards are constructed around a trough or dam using hinge joint with a top barb wire and gates that allow goats to enter but not exit. Goats push through the gates to get to water and are trapped in the yard. During a trapping exercise all the self-mustering yards are set at the same time for a period of one to two days.

Figures 1 to 5 demonstrate the three different self-mustering gates used to control goat numbers at Churinga station.

Figure 2

Figure 3

Figure 4

Figure 5

Key Features

All waters on the property have a self-mustering yard, hence total control of all water points can occur at the same time. This makes trapping more effective because it stops goats walking to another water point when a single trap is closed.

Figure 1 to 5 demonstrate the three different self-mustering gates used to control goat numbers at Churinga station.

Key Benefits

Mustering goats with self-mustering yards compared with conventional mustering is less expensive, requires less labour and has a lower occupational health and safety risk. Self-mustering yards on all water points improves effectiveness. On Churinga, if one water is closed approximately 70 percent of goats watering on that point will be captured, the remaining 30 percent will walk to another water. However, if all the self-mustering yards are set at the same time approximately 95 percent of the goats that are watering on the property will be captured. Having all the self-mustering yards operating together allows more goats to be captured at one time. This allows more efficient and cost effective freight options to be used.

Controlling goat numbers helps to manage total grazing pressure, allowing for better management of ground cover and pasture utilisation levels which improves pasture and landscape condition. Reducing goat numbers reduces the competition for pasture with livestock enterprises that provide a higher economic return. There is more value in converting pasture into organic lamb than rangeland goat meat.

Key Materials Required

Constructing self-mustering yards requires:

Fencing materials including 8:90:30 hinge joint, barb wire and strainers

Self-mustering gates

Weld mesh handling yard

Steel loading ramps

Potential Cautions and Risks

The system will not be effective when there has been rain and impermanent water sources are holding water e.g. rock holes in the hills.

When the self-mustering yards are closed it can exclude other stock from water, sheep tend to congregate outside the yard. Having a handling yard and loading ramp within the self-mustering yards allows the goats to be held in the handling yards or removed while sheep are given access to water during a trapping exercise.

Freight and marketing should be organised before the goats are trapped. This avoids delays in trucking the goats off the property. Garry also feeds the goats hay to minimise stress and weight loss while they are held to ensure they are in good condition for trucking.

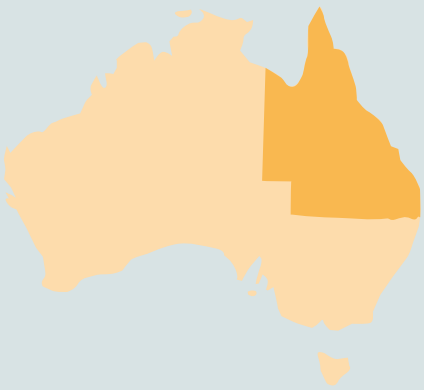
Self-mustering gates need to be set up properly. If the gates are set to wide the does will come back out or if they are set to narrow bucks will not push through. Self-mustering is more effective if the goats are trained to used the gates. This process involves gradually closing up the gate over a period of time, so the goats become use to pushing through.

What I would do differently next time

Garry would make sure that the construction of all the self-mustering yards was done properly the first time, using quality materials and designs so that the infrastructure is permanent. Doing a good job the first time saves having to replace or upgrade the self-mustering yards after a short period of time and also reduces the maintenance required.

Cost Benefit Analysis

On average the self-mustering yard costs $4,000 to construct. Recovery of this cost can be achieved via the sale of 160 goats at $25 per head. During a trapping exercise it would not be unusual to trap over 160 in one to two days.



Goat Containment

Managers/Owners:

Paul Flipo

Property Name:

Kuballi

Property Location:

Bollon, Qld

Size of property:

14,145ha

Brief enterprise description:

Grazing - goats, sheep, cattle

The innovation is a:

New use for existing products

The Innovation:

Increases efficiency

Impetus Behind the Innovation

Feral goats were constantly escaping yards.

How the Innovation Works

Weldmesh and other temporary yards are sometimes too low for some large/cranky/athletic feral goats. A light baulk is often sufficient to discourage them from jumping. It is a psychological barrier rather than a physical one. A few droppers can be attached to the temporary yard and some electric fence tape, light rope or poly pipe used to make the yard appear to be 15 to 20 cm higher.

Key Features

Electric fencing tape for visibility.

Key Benefits

Cheap and easy and with fewer feral goats escaping.

Key Materials Required

Short droppers or even sticks. Any material that's light, cheap easy to use; I use electric fence tape; old polypipe or hose would do.

Cost Benefit Analysis

Costs	Perceived Benefits
Low	Fewer losses

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Lift Up Fence

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing product

New material for existing product/s

New process

The Innovation:

Increases efficiency

Improves standards of safety

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 4
Weston fencing system using a slide attached to the dropper

Figure 1
Fence lifts allowing sheep to move through

Impetus Behind the Innovation

We found when mustering that there were certain gates that were difficult to shift sheep through because of their design or position, or we had to walk sheep extreme distances because of the location of gates. When crossing main roads with big mobs of sheep, stock would take too long to get through a gate or traffic do not slow down and would startle the sheep and push them over fences.

Figure 2
Cotter pin holding the sleeve onto the dropper

Figure 3
(right) Using Weston Fencing to achieve the same goal

How the Innovation Works

The fence design is based on plastic sleeves sliding over the top of a star dropper, the plastic sleeve placed against a dropper on a separate slide. The fence wires are attached to the plastic sleeve and are held in place by a cotter pin and plate that sits on top of the dropper.

If using Weston Fencing, we have designed a system where the plastic dropper can sit along side the steel dropper, and slides on its own slide, attached to the base of the dropper (Figure 4).

When the cotter pin is removed, (Figure 2) the fence and plastic sleeve slide up the dropper, creating a space underneath for the sheep to easily move under (Figure 1).

For ease, there needs to be a slight rise at one end of the run to create a natural height and strain, but we have used this idea on a flat piece of ground. Once the sheep have moved paddocks, the sleeve is placed back over the dropper and held in place with the cotter pin.

In a gentle gully situation, generally 100m is required. On flat ground, 150m may be required.

Key Features

Relatively cheap to implement, and some existing materials can be used.

Can be put on an existing suspension fence.

The system is safe and poses no real safety threats.

Key Benefits

The innovation utilises the natural strain of a fence to create a large gate way and therefore make the shifting of sheep from one paddock to another quick and easy.

Key Materials Required

DM Plastics triangular electric sleeve

Plastic sleeves (Weston Fencing)

Cotter pins (made by John Lindner)

General fencing materials

Potential Cautions and Risks

Ensure the natural rise of the fence in the gully situation does not hit you in the head.

When on flat ground, ensure enough sleeves are used to reduce weight and wire tension resistance.

General cautions when using fencing materials.

Cantilever

Managers/Owners:

Warren and Jane Luckraft

Property Name:

Bendleby Pastoral

Property Location:

Orroroo, SA

Size of property:

13,000ha

Brief enterprise description:

A sustainable merino sheep breeding enterprise with full organic accreditation, using rotational grazing.

The innovation is a:

New product

The Innovation:

Increases efficiency

Saves infrastructure damage, and time and money in repairing fences

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

After having re-fenced watercourses on numerous occasions, it was apparent that if there was a system for lifting the fence during floods to enable debris to be carried away with the water, and this allowed the fence to return to its normal position after the flood, there would be a great saving of time and money in repairing and reinstating fences in floodways.

How the Innovation Works

Designed and built a fence with cantilever across a water course. It is an automatic system to clear built-up debris from watercourse during floods.

Key Features

There are key strainers concreted in at appropriate intervals, and then a modified star dropper is attached to these with a D-shackle. The fence wires are threaded through the star dropper as you would normally do. The D-shackle allows the fence to pivot and the cantilever shape of the dropper causes the fence to lift when pressure is applied against the fence wires. When the pressure diminishes, the fence returns to its normal vertical position.

Key Benefits

Saves time and money in repairing floodways.

Key Materials Required

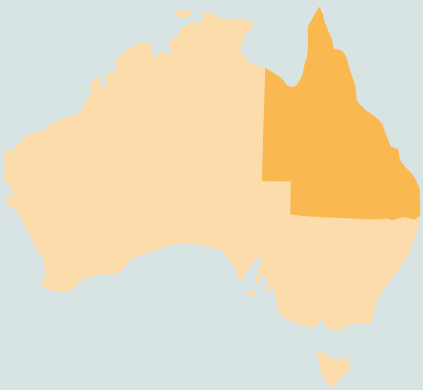
Strainer posts, modified star droppers, D-shackle and loop.

Potential Cautions and Risks

Normal risks associated with fencing.

Cost Benefit Analysis

Costs	Perceived Benefits
30% more than normal fencing (materials, time and labour) ($2,600/km)	Materials won't need to be replaced ($2,000/km) Minimal time needed to repair fence ($60/hr)



Lift-up Gate

Managers/Owners:

Phil and Fran Brownhalls

Property Name:

Ryandale

Property Location:

Cunnamulla, Qld

Size of property:

13,000ha

Brief enterprise description:

Sheep and cattle

The innovation is a:

New product

The Innovation:

Increases efficiency

Impetus Behind the Innovation

A need for a wide gateway to get stock through that was simple to install.

A gateway that could be installed without cutting a wire.

No need for expensive end assemblies.

How the Innovation Works

The gate pivots (hinges) from a solid post in the fence line, but at right angles to the fence. The length of the gate is the height of the gateway opening. The gateway opening width increases with the length of the gate. Some are high enough to drive a semi under.

Key Features

Simple

Wide opening

No time consuming work with end assemblies

Key Benefits

Can be installed without cutting a wire.

Gives a very wide gateway (up to 50 metres) to get stock through without any milling around and reduces dust.

Key Materials Required

Three posts and length of pipe.

Some innovations are required (locking devices) to keep gate up and down.

Potential Cautions and Risks

If the wires are very tight the gate can rise abruptly. The two posts at either end of the opening may need straining, depending on wire tension.

What I would do differently next time

Install more. Need to experiment with your own fencing, but the concept can be applied to most fencing types; particularly electric wires where stock are shy of gateways.

Cost Benefit Analysis

Costs	Perceived Benefits
$40	Many – reduced dust, easier stock movement
Total: $40	

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Grid Gates

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 2
The grid against the frame when not in use

Figure 3
The hinge that allows the gate to swivel back against the frame

Figure 4
The hinge that allows the gate to swing across the grid

Figure 1
The double hinged grid gates

Impetus Behind the Innovation

When mustering, we found that some sheep would jump over the grids, causing inefficiencies, as we would have to go chase the sheep back to the rest of the mob, especially in holding paddocks.

We have designed a gate system for the grid that allows the gates to be closed on the grid, and swing back and lean out of the way when not in use (Figure 1).

How the Innovation Works

The gates are doubled hinged on the one single hinge to allow the same gate to fold back against the frame to create the ramp side, while also allowing the gate to swing to close across the grid.

A frame has been designed that the gate sits in that can be removed from the grid and transported to alternative grids (Figure 2).

A short piece of RHS is slid over a 25mm pipe to create a horizontal hinge with some movement which allows the gate to lean back against the frame when not in use (Figure 3).

A 350mm piece of 20mm piping is welded underneath to a u shaped piece of steel that had a hole large enough to slide the 20mm pipe through. This is welded onto the RHS as described above to create a vertical hinge which allows the gate to swing in a normal action to shut across the grid (Figure 4). The 350mm pipe holds the gate upright.

Key Features

We are able to build the gate system in the shed and transport it easily to the site for construction. The gate can be easily removed from each grid and transported to other sites, saving duplication.

Key Benefits

We no longer have to chase sheep that have jumped over the grid during mustering, or when pushing them through the gate close to the grid or have mobs getting boxed between holding paddocks.

Key Materials Required

Steel

Mesh

Welding materials

Potential Cautions and Risks

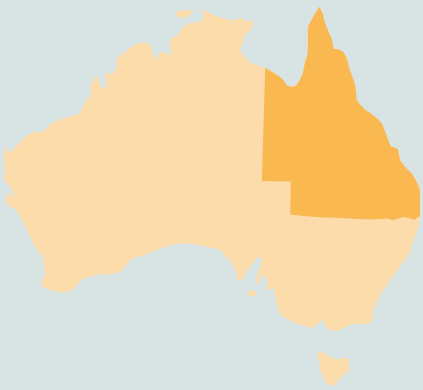
General cautions when welding.

Ensure you get the angles right of the hinges to allow them to swing easily and freely.

Just a note: more materials are required than a 'conventional' gate system.

What I would do differently next time

I will put reflectors on the gates to increase their visibility to ensure safety in the work environment.



Gate Post Savers - No More Dragging

Managers/Owners:

John and Pam Seccombe

Property Name:

Kenya

Property Location:

Muttaburra, Qld

Size of property:

23,700ha

Brief enterprise description:

Self replacing merino flock and beef breeding enterprise

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Everywhere we drive, we see vehicle gates which must be dragged or lifted and dragged to close them. We have found that with a little forethought and planning when fencing and designing the gate assemblies, we could create a system which was quick, simple and low cost. Gates which have no support swing place weight on the main gate posts at all times. The weight of most gates would mean that the post will eventually lean and cause the gates to drag on the ground.

That is unless it is possible to take the weight of the gate elsewhere.

How the Innovation Works

The gate post saver is a simple design to take leverage pressure off gate posts when the gate is both shut and open. It is a quick addition of:

A bracket on the forward gate post and a bracket on the strainer post, designed to take the weight of the gate at all times.

Key Features

Simplicity – can be made from any scrap steel.

Designed to take the weight of gate whether open or closed.

Ease of making them on farm (steel).

Time taken to construct.

Key Benefits

No tying gates back or dragging them.

Gate posts last longer.

It is a tidy, eye catching design.

No strain on gate posts now or in the future.

Cost is extremely low.

Key Materials Required

All brackets are made of 40mm steel pipe and flat iron.

All joints are welded (require a welder and welding skills).

Potential Cautions and Risks

Ensure the gate width is greater than the stay assembly width.

Cost Benefit Analysis

Costs	Perceived Benefits
$30/gate	No need to replace post assemblies or gates

Strainer Posts

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New product

New use for existing products

The Innovation:

Increases efficiency

Figure 1
The new strainer system

Impetus Behind the Innovation

We design and make our own fencing strainers and posts from materials we have available. Strainer posts and struts are generally steel and we find we do not have to replace them as often as timber.

Our traditional design of strainer post and strut was moving and bending due to ground movement, causing the fence to become 'slack' and gates to point in the wrong direction. We have designed a new system to prohibit this from occurring.

Figure 2
The old system

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 3

Figure 4

How the Innovation Works

A 'triangle' stay system is used to support the strainer with a tensioning rod (Figure 1). The system uses the same features as the 'Stayblock™' system that puts the pressure on the stay (pressure downwards) rather than the strainer itself (pressure upwards).

We use old rubber tyres filled with cement to support the stay, and the stay is made of old pipe. The cement tyres are buried so the concave cement is showing. Steel strainer posts are cemented into the ground and a tensioning rod joined between the cement tyre and strainer (Figure 3 and 4). The stay is then placed between the tyre and strainer greater than 45 degree angle to the post. The stay is not welded, but each end cut at the correct angle to take the pressure (Figure 1 and 3).

Key Features

Able to use existing materials.

Able to make separate parts in the shed and simply assemble in the paddock.

Key Benefits

The system is stronger than that previously used.

Key Materials Required

2.2m of pipe to use as stay

Angle iron (to hold the stay on the strainer)

1.9m of ½ inch rod

Potential Cautions and Risks

Ensure the angles of the system are correct and the length of the stay is correct. If the pipe is too long, the stay can bend, and if it is too short, it won't support the strainer and can act as a hinge to lift the post out of the ground.

Weston Fencing

Owners:
Andrew and Megan Mosely

Property Name:
Etiwanda

Property Location:
Cobar, NSW

Size of property:
26,500ha

The innovation is a:

New product

The Innovation:

Drives growth

Creates better outcomes for the environment

Figure 1
A 810 mm Weston fence dropper. This is a sub divisional electric fence which has two hot wires and an earth wire.
A Weston fence dropper is clipped to the steel post with one Weston fence dropper between the steel posts. Bottom and top wires are live. This is a cost effective and easy to assemble sub divisional fence for sheep, cattle and goats.

Impetus Behind the Innovation

Andrew and Megan were looking for a low cost, robust fence design that would be good for sub divisional fencing. They were after a fence design that could withstand substantial wildlife pressure, but keep in their goats, white dorper sheep and cattle. They were looking towards subdividing their larger paddocks, in order to move towards a Holistic (Planned Grazing) approach to land management.

The three wire electric (two live and one earth) Weston Fence is a practical solution.

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 2
A seven wire Weston electrified fence can be used to exert a greater degree of control over Total Grazing Pressure. This fence can be good boundary fencing. Image Source: www.westonfence.com.au

How the Innovation Works

This innovation is the application of the Weston fence system. The Weston fence system has been designed by the Weston family near Nymagee in Western NSW. It is designed for the construction of a robust, low maintenance electric fence. It is fast and easy to erect and cost effective.

This fencing system is centred on the use of high-density polyethylene (HDPE) droppers and fastening high tensile spring clips. The droppers are made from high density polyethylene (HDPE) with 4% carbon black UV stabiliser added. It is the same material from which black poly pipe is made. Weston fence droppers offer strength and reliability, longevity, resistance to fire and UV stability. Their design reduces the chance of shorts when fences are electrified.

The droppers are made in a variety of heights with pre-drilled holes in them. Users have the option of different configurations of 3, 4, 5, 6, 7, 8 or 9 wires. The wire clips are manufactured from 4mm industrial spring wire. They are produced in two different designs: the steel post clip and the dropper clip. The Weston fence system only requires two clips per dropper.

Key Features

Easy to erect, saving time and labour.

Hiring a specialised 'pre loaded' trailer makes fencing a lot easier.

Two people are needed to roll out the fence using the trailer (1 vehicle driver and 1 trailer operator). A third person will make it more efficient, as they can drive a second vehicle and ready the next coil of wire to place on spinners.

The entire fence can be rolled out on the ground, and the trailer returned, before straining and clipping, to save on trailer hire.

Three people should roll out 5 to 10 km of fence in a day.

Key Benefits

This innovation allows for a low cost and practical sub divisional fencing to be used over large areas. Reducing the costs of traditional fencing means that it is economically possible to subdivide large paddocks into smaller ones. Increasing the number of paddocks means that:

Holistic (Planned Grazing) can start to occur.

Country can start to be rested from grazing by domestic animals creating significant production and ecological benefits.

Combining the three wire sub divisional fence with more robust boundary fencing means that significant control over Total Grazing Pressure can be gained. This allows the potential to reduce overgrazing of desirable plants, and maintain ground cover.

More control over grazing means that a higher level of management can be applied.

Key Materials Required

Steel posts are placed 10 - 30 metres apart. A more effective fence will be achieved by the closer post intervals.

A Weston fence dropper is clipped to the steel post with two Weston fence droppers between steel posts. Two clips per dropper are used.

Good quality wire is used. Cheap wire does not run off spinners without tangling, adding time and frustration to the job. Use 2.8 High Tensile wire for best results.

An even/level fence line is needed for best results.

Two live and an earth are used, power comes from a house supply, but solar can be used.

Potential Cautions and Risks

None really. Trailers can be hired from Weston Fence which makes the job a lot easier.

Cost Benefit Analysis

Approx costs/km: Based on dropper spacing of 15m and steel post spacing of 30m and 1 clip per dropper:

Steel posts 40/km $200/km

Weston Droppers 66/km $110/km

Weston Dropper clips 66/km $20/km

HT wire $140/km for 1 wire $420/km

Approx total costs free of GST, labour, end assemblies and power unit: $750/km.

Electric Fenced Laneway

Owners:

George and Sally Falkiner

Property Name:

Haddon Rig

Property Location:

Warren, NSW

Size of property:

22,000ha

Mixed farming business including Haddon Rig Merino Stud, 15,000 head of sheep, 1,000 head of cattle and cropping 8000ha with some irrigation

The innovation is a:

New use for existing products

New process

The Innovation:

New process

Creates better outcomes for the environment

Increases efficiency

Star rating

Ease of use	★★★★★
Degree of innovation	★★★
Impact on business	★★★★★
Application to other pastoral businesses	★★★★

Figure 1
13km electric laneway

Impetus Behind the Innovation

The laneway was erected to reduce the labour requirement of the business when moving sheep across the property; allowing those people working with the sheep to effectively work their dogs. The dogs that are used on Haddon Rig have been trained to effectively move sheep along the laneway without assistance from their handler. Electrifying the structure was a cheaper method of construction for the purpose of the laneway, compared to a conventional fence. The speed of assembly and cost effectiveness were also important aspects of the motivation behind this innovation.

Figure 2
Four plain wires running through Westonfence droppers

How the Innovation Works

A 13km electric laneway from the shearing shed to the southern boundary of the property.

Key Features

The fence was assembled eight years ago using four plain wires. A steel star dropper has been placed every 21m and Westonfence plastic droppers 7m apart. Every third Westonfence dropper is clipped to a steel post with two free standing droppers in between. These droppers insulate the two electric wires. The fence is connected to 'mains' power.

Key Benefits

Haddon Rig has been able to reduce the labour requirement of the business from six FTE's to two because of the infrastructure. Having well trained working dog handlers has also been an advantage. The handlers have trained their dogs to work in the laneway, significantly increasing efficiencies. With this infrastructure, employees are able to rely more on their dogs to move sheep along the laneway, allowing them to go ahead and open gates, prepare yards etc.

Other benefits include reduced chance of boxing mobs of sheep as well as less impact on the soil surface within pasture paddocks, as compaction has been restricted to the laneway.

Key Materials Required

Plain wire (used also as live and earth wires), steel posts/droppers, Westonfence 4-5 hole standard droppers, steel post and dropper clips, earth stakes and a power supply.

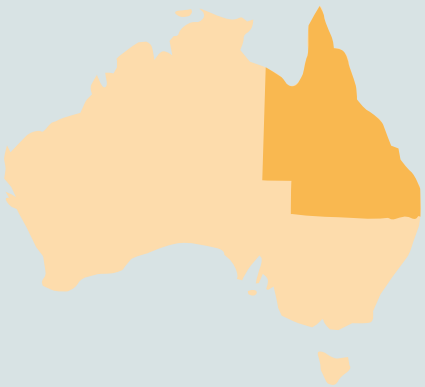
Potential Cautions and Risks

General precautions when using electric fencing.

Depending on the amount of vermin the property experiences, maintenance of the electric fence can be a disadvantage where shorting out of the fence may occur through kangaroos or emus for becoming entangled. Plant material being blown against the fence can also cause it to short out.

What I would do differently next time

Installation of more than one power supply.



Utilising our Creeks as Laneways for Stock Movement

Managers/Owners:
Hume Turnbull

Property Name:
Lansdowne

Property Location:
Tambo, Qld

Size of property:
62,000ha

Brief enterprise description:
Sheep stud and commercial cattle

The innovation is a:

New use for existing products

The Innovation:

Drives growth

Creates better outcomes for the environment

Increases productivity

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 2
April 2009

Figure 1
April 2008

Impetus Behind the Innovation

Originally, our property design always included the fencing of laneways for travelling stock between paddocks and to yards. Then we looked at fencing off rivers and creeks to enable the fragile riparian areas to regenerate. In doing this, we found the potential to achieve two goals with the one environmentally sound method. We found that the water courses were often running to major infrastructure (sheds, stock yards and buildings). So we could achieve the environmental goal as well as property planning goal.

How the Innovation Works

We have double fenced (both sides) our rivers and creeks to allow degraded areas to regenerate. These riparian areas are able to double as holding paddocks and laneways. The fencing includes both 6 wire construction and in some areas, hinge joint fencing, to control both cattle and sheep.

The laneways allow us to move stock between various paddocks as well as moving stock to yards and holding paddocks.

Key Features

Riparian areas are fenced and managed to reduce impact on vegetation, soil structure and water quality.

Fencing to land type.

Fencing will enable areas to be rested and rotated during low impact times of the year.

Use the riparian areas for ewes to lamb into for 2 months (provision of shade and water).

Key Benefits

Infrastructure has multiple uses – protection of riparian areas (reduces erosion, vegetation decline, water quality) and acts as a laneway for moving stock.

Reduces the cost of constructing laneways.

Protection of riparian areas and for travelling stock.

Ease of working stock.

Control stocking pressure in growing season.

Labour saving (1 person can move a mob rather than 2 or 3 people).

Creates a multitude of holding paddocks for shearing and ease of management.

Key Materials Required

Fencing materials – steel construction – 6 wire and hinge-joint.

Potential Cautions and Risks

Locking stock in laneways for too long.

Risk of kangaroos destroying the resting country.

Need to ensure watering points are accessible for stock while in laneways and paddocks.

What I would do differently next time

It is better to fence with hinge-joint on both sides to reduce impact of kangaroos on riparian vegetation.

The major change would be to have a whole of property plan prior to starting.

Yards and infrastructure may need to be moved when rebuilding, so the plan needs to be very long term.

Cost Benefit Analysis

Costs	Perceived Benefits
A plain wire (6 wire) fence costs $3,500/ km A hinge joint fence costs $4,000/ km Labour saving (1 person can move a mob rather than 2 or 3 people)	Annual savings of $4,000 during shearing $2,000 during crutching $2,000 during branding $1,000 during weaning

Mobile Water Trailer

Managers/Owners:

Tim and Chris Higham

Property Name:

Meedo Station

Property Location:

Carnarvon, WA

Size of property:

147,000ha

Brief enterprise description:

Pastoral enterprise with merino sheep and goats

The innovation is a:

New use for existing products

New process

The Innovation:

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

We needed to provide an adequate supply of water for larger mob sizes of sheep due to implementing rotational grazing.

How the Innovation Works

Portable water point trailer filled with a generator and pumps and tow along troughs and tanks, that can connect to water pipes or water sources around the station. This provides larger usable amounts of water in specific areas and enables larger mob sizes to have access to the water.

Key Features

Mobility of water means the need for fewer large water tanks around the property. Water on hand either from a water point or pipeline is needed and 50 to 60,000 litres of water is needed in an area before the mob arrives.

Key Benefits

Time saving and a reduction in infrastructure costs. Better utilisation of the land area, an increase in productivity and greater control of the grazing area producing an improvement in rangeland conditions with the ability to run larger size mobs.

Key Materials Required

Trailer, tanks on wheels, troughs on wheels, generator, water pumping equipment, access to water and piped water around the property.

Potential Cautions and Risks

Mechanical failure but a spare set of equipment is planned.

What I would do differently next time

Not sure yet!

Cost Benefit Analysis

Costs	Perceived Benefits
$15,000-$20,000	Yet to be analysed

Water Tank Red Ball Level Indicators

Owners:

George and Sally Falkiner

Property Name:

Haddon Rig

Property Location:

Warren, NSW

Size of property:

22,000ha

Brief enterprise description:

Mixed farming business including Haddon Rig Merino Stud, 15,000 head of sheep, 1,000 head of cattle and cropping 8000ha with some irrigation

The innovation is a:

New use for existing products

The Innovation:

Enhances quality and improved quality standards

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 2
George Falkiner demonstrating low water level in the tank

Figure 1

Impetus Behind the Innovation

The business had originally been reliant on rainfall to fill ground tanks (dams) and windmills to feed water to troughs. Since the onset of drought in 2001, the business realised the need to improve the reliability of stock water and the efficiency of checking waters. During this extended drought, watering points in all paddocks have been upgraded to ensure paddocks are always watered by two water sources. A bore has been installed with 30km of poly pipe feeding water troughs in all grazing paddocks. Rain filled dams are also utilised.

How the Innovation Works

Red ball water tank level indicators have been installed to all water tanks on the property that provide water for livestock. These markers have a float in the tank adjusting the height of the visible red ball indicating the volume of water available in the tank.

Key Features

The red ball water level monitoring device functions by a float mechanism. The red ball drops as the volume of the water in the tank declines as demonstrated in Figure 2.

Key Benefits

Implementing these indicators has significantly increased the efficiency of checking water on Haddon Rig. Waters can be checked in one hour by air, covering 22,000 ha. On the ground, the red marker is visible from approximately 500m or further using binoculars, removing the need to travel the full distance to each individual tank. Although the system does not remove the need to physically go out in the paddock to check water, it allows Haddon Rig to react to water supply issues more effectively. The red ball indicators are a cheap, effective system applicable to any business with water supply reliant on tank storage.

The reliance on windmills due to the upgraded watering system has reduced. The property has reduced the number of windmills from 18 to 6. This has consequently resulted in reducing time required for windmill maintenance.

For this property, this system of water monitoring is an effective and inexpensive system compared to that of comprehensive water telemetry systems.

Key Materials Required

The red ball water level indicators are commercially available at a cost of approximately $60 each. To install the water level indicators, a hand drill is required with a plastic drill bit, and a PVC threaded sleeve with two clamp washers. Installation takes approximately 15 minutes.

Water Management Telemetry System

Managers/Owners:
Len and Joy Newton

Property Name:
Mt Ive

Property Location:
200km west of Port Augusta in the Gawler Ranges, SA

Size of property:
85,400ha

Brief enterprise description:
Merino enterprise, the property has the capacity to run 9000 ewes, currently running 5000. The property also has a tourism enterprise that offers camping, caravan sites, accommodation and 4WD tracks.

The innovation is a:
New products
New process

The Innovation:
Improves standards of safety
Enhances quality and improved quality standards
Increases productivity
Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
This monitoring station located in a shed near the homestead is used to check the flow and level of water in tanks.

Impetus Behind the Innovation

The supply of stock water at Mt Ive comes mainly from ground water pumped from bores. Monitoring waters represented a considerable component of the labour requirement and production costs prior to the installation of the telemetry system. An entire water run covers 180km. In summer months a water run could be conducted as frequently as three times per week.

Mt Ive was a demonstration site for the Desert Knowledge Cooperative Research Centre's WaterSmart Pastoral Production™ Project and the telemetry system was installed as part of this project.

How the Innovation Works

A telemetry system using UHF transceivers, monitors the flow and level of water in tanks used for watering livestock. The telemetry system is a Stockman Telemetry system and was customised and installed by Tim Stockman. The property has ten remotely monitored water points, however the system can monitor up to 100. Waters can be checked at two monitoring stations, one is located in a shed near the homestead and the other is mounted on the dash of a 4WD vehicle.

Key Features

Sensors in the tanks allow the water level to be checked at 100, 75, 50 and 25 percent capacity. At each level the monitoring unit either indicates that the tank is full to this capacity or the tank level is below the corresponding sensor. A flow sensor monitors whether water is flowing into the tank. An alarm on the monitoring unit activates when the tank level falls below 25 percent of capacity.

The system works effectively even on distant waters surrounded by difficult terrain. For example, the 'Lake View' tank is 40 km north of the Mt Ive homestead and is surrounded by steep/high hills. This water point can be monitored effectively 40km south of the homestead using the vehicle mounted monitor.

The system has worked really well with no major problems since it was installed in March 2007. Len and Joy were impressed with how straight forward the set up of the system was, the service provider only required 1.5 days on the station to install the system.

Figure 2
Water monitoring telemetry system set up on a tank.

Figure 3
Components of the system in a solid water proof enclosure.

Figure 4
The system works effectively even on distant waters surrounded by difficult terrain.

Key Benefits

The main benefit has been the increased time available to spend on other activities on the property. For example, the tourism enterprise on Mt Ive has benefited and developed due to installation of the telemetry system. Occupational health and safety has been improved due to the reduction in time people are travelling on isolated station tracks. There has also been a reduction in travel costs and reduced wear and tear on vehicles. The WaterSmart Pastoral Production™ project using data collected by station staff calculated a 64% reduction in the number of hours spent checking waters and a 60% reduction in the kilometers travelled after the system was installed.

Key Materials Required

A global positioning system (GPS) is used to collect water point coordinates. These are used by the telemetry system provider to map and design the system. UHF transceivers are the basis of the system, along with custom designed modules and solid weather proof enclosures. Solar panels are used to provide power to run the system. Exposed cables are covered with steel reinforced conduit to prevent damage.

Potential Cautions and Risks

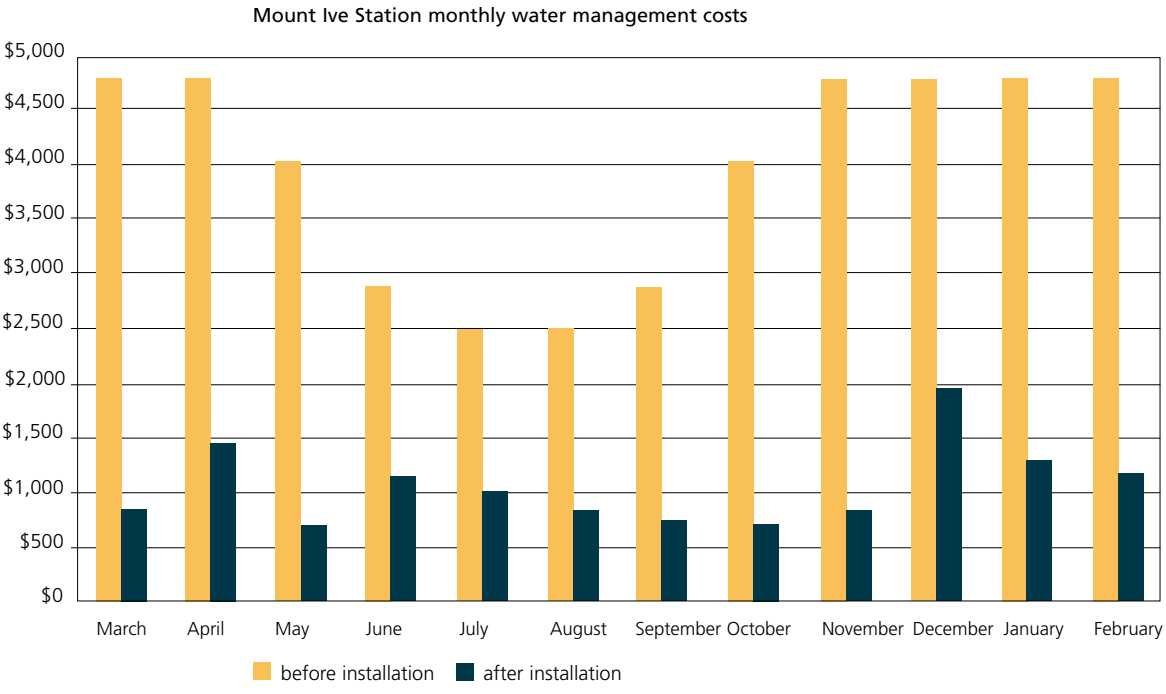
There appears to be no major cautions or risks associated with installing a telemetry monitoring system.

What I would do differently next time

Len and Joy Newton are happy with their current set up. However, the system will allow for additional technology to be added and improvements made over time. In the future, Len and Joy would like to include flow indicators on troughs and counters on self mustering trap gates, to enable them to remotely.

Cost Benefit Analysis

The total cost of the telemetry system was $25,000. The WaterSmart Pastoral Production™ Project calculated that the investment costs were recovered in less than nine months.



Source: Desert Knowledge Cooperative Research Centre's WaterSmart Pastoral Production™.

Water Telemetry

Managers/Owners:

Warren and Jane Luckcraft

Property Name:

Bendleby Pastoral

Property Location:

Orroroo, SA

Size of property:

13,000ha

Brief enterprise description:

A sustainable merino sheep breeding enterprise with full organic accreditation, using rotational grazing

The innovation is a:

New products

The Innovation:

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

This innovation is used because of the time it takes to drive to the tank to check the water level, the amount of fuel used, and wear and tear on the vehicle. If a UHF signal can be received at the base unit and at the remote tank site using an available channel, the system will work.

How the Innovation Works

Tanks at remote locations can be checked without leaving the house. A base UHF radio with cell call can be used to check water by calling a set channel. Another UHF hand-held radio (with a solar panel to charge the battery) is installed on the tank, which, when accessed by the base radio, will report on the amount of water in the tank, and if there is water running into the tank. A sensor on the inlet valve gives this information. Other initiatives can be added, such as rainfall measuring and trough monitoring with a web camera.

Key Features

Water volume and flow can be measured from a distance.

Key Benefits

Saving of time, fuel, wear and tear on the vehicle (and therefore money), in travelling to the tank to check how much water it has.

This system can be used over large distances, e.g. 150 km, if there is a common UHF signal receivable at both the tank and the base unit. Some repeater towers give a signal which covers this distance.

Key Materials Required

Water measure installed in tank.

UHF hand-held radio installed on tank lid.

Solar panel to charge radio battery.

Base UHF radio with cell call capability.

Sensor in the inlet valve.

(This system can also be set up using mobile phones if there is a signal for the phone, and not one for the UHF radio).

Cost Benefit Analysis

Costs	Perceived Benefits
$1,500/installation	60c/km to and from tank, – 2 hrs/wk Less time required to check tank Reduced wear and tear on vehicle
Total: $1,500	

Water Telemetry System

Managers/Owners:
Ben and Susan Carn

Property Name:
Wootoona

Property Location:
Quorn, SA

Size of property:
8,000ha

Brief enterprise description:
Merino sheep for wool and meat

The innovation is a:

New product

New process

The Innovation:

Increases productivity

Increases efficiency

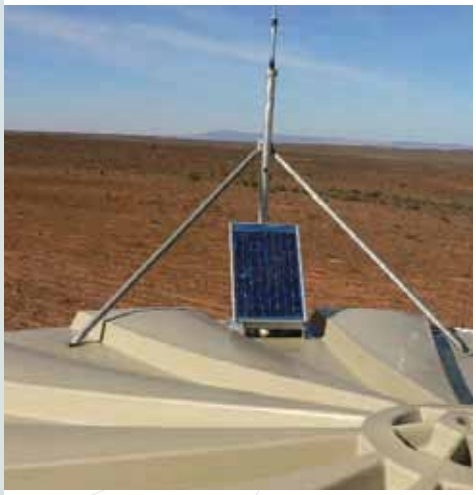
Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses



Impetus Behind the Innovation

Water run takes 3 hours

130km total distance around all waters

The main tank waters numerous pipelines

Diesel prices rising

Saves time

Gives peace of mind

How the Innovation Works

The main tank is located 40km east of the homestead - in direct line of sight for UHF. The radio at home sends call message. Computer in the monitoring system checks tank every 4 seconds, keeping the level in memory. Water monitor picks up cell call and sends back voice message telling the tank level and if the windmill is pumping 'Woolshed tank level above full, tank filling'.

Key Features

Can be set to check many levels. Ours is set up for full, 3/4, 1/2, and 1/4. Our unit will send a continuous cell call only to our radio if tank gets below 1/4 full. It will keep sending that message until it is answered. The unit is powered by a small solar panel on top of the tank.

Key Benefits

Savings in travel costs

Savings in time

Leaks identified early, therefore saving water

Stock benefits from assured water supply

Peace of mind

Key Materials Required

Home base cell call radio, and handheld on the tank, with aerial

Small solar panel

Electronics box

Potential Cautions and Risks

Could be giving false tank readings, therefore sheep could be out of water.

Still needs to be checked - does not eliminate water-runs entirely.

What I would do differently next time

No need to buy a home base radio next time = less cost and we will install unit ourselves next time.

Cost Benefit Analysis

Costs	Perceived Benefits
$2290	Travel $3432 per yr Time $1170 (78 trips x $15/trip @ $10 per hour) Reduced loss of water through leaks
Total: $2290	$4602 Net benefit in 1st year = $2312

Solar Pump Water Delivery

Managers/Owners:

Rick and Susan Howard

Property Name:

Moonavale

Property Location:

70km north west of Wilcannia, NSW

Size of property:

42,258ha

Brief enterprise description:

Self-replacing merino flock and poll hereford x santa gertrudis cattle

The innovation is a:

New product

The Innovation:

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
Solar pump and new tank

Impetus Behind the Innovation

The upgraded bore is a major supply source on the property watering 8,100ha. Pumping water from the bore with the diesel powered air compressor was becoming increasingly expensive and inconvenient. The pump had to be manually started and stopped, this required three visits per week during normal conditions and at least one visit per day in hot weather. Costs associated with running the diesel pump and travelling to the site had increased considerably due to the increasing cost of diesel. The bore is situated 20km from the homestead and adds a considerable component to the 120km trip required to check all waters on the property.

The air compressor was wearing out and was close to requiring replacement. Sand also infiltrates from the bottom of the bore, wearing out casing, columns and rods quickly.

How the Innovation Works

A solar pump (450 watt) was installed on a bore to replace a diesel powered air compressor (28.3L/min). The solar pump has six panels and a tracker that positions the panels to face the sun. In addition, the bore was re-lined with 12.7cm PVC casing, two tanks 117,960L and two troughs were installed as further improvements. Previously, the water was pumped into two ground holes.

These improvements are part of a progressive plan to upgrade the reliability and capacity of water points at Moonavale, to reduce time and costs associated with stock water delivery. The waters at the greatest distance from the homestead receive the highest priority for upgrade, as these will provide the greatest time and cost reductions.

Key Features

Solar is a renewable energy source. The solar pump is virtually maintenance free and installation took only two days. A gas filled pipe attached to the unit when heated by the sun, positions the panels to face the sun to most efficiently capture solar energy. The rate of flow from the pump can be regulated.

Key Benefits

The installation of the solar pump coupled with the other improvements to the water point reduced costs, improved reliability of supply and significantly reduced the time required to check and service the water. The need to visit the water has been reduced from approximately 181 trips per year to 60 trips per year.

Lifestyle benefits have also resulted. The upgrade has provided Rick and Susan with time for other activities, improved their flexibility to be away from the property and reduced ongoing concerns about being able to maintain water at this site. The reduced mechanical parts on the solar pump, as well as the reduced travel time (often late in the evening or early in the morning) have improved occupational health and safety.

The solar pump has been set up to produce a slower (1,361L/hour), more constant draw on the bore, which has reduced considerably the amount of sand being pulled from the bottom of the bore, compared with the more aggressive air pump that pumped 1,814L/hour.

The new tank has improved water storage capacity and saved water by stopping the evaporation and seepage that occurred when the water was pumped into two ground holes. The improvements will allow further upgrades with new technology, for example a telemetry monitoring system could be easily added to further reduce costs.

Key Materials Required

The material required to upgrade the bore and water point included:

Solar pump and panels

Two new tanks

Two new troughs

PVC casing

Mesh panels around tank and pump

Potential Cautions and Risks

Rick and Susan are monitoring pasture condition, as the improvements may result in more stocking pressure around the water. The troughs were placed away from the solar panels, as the dust generated from stock can settle on the solar panels reducing their efficiency and increasing cleaning requirements.

What I would do differently next time

Rick and Susan are currently happy with the bore upgrade and water improvements and would not make any changes to the set-up. However, in the future they may make further improvements for example, adding a telemetry monitoring system.

Cost Benefit Analysis

Costs	Perceived Benefits
Solar $15,000 Tank (installed) $7,000 PVC Casing $1,200 Two troughs $1,600 Mesh panels $100 Poly Tank $2,000	Reduced travel costs/year $7,168* Reduced labour costs (time)/year $2,880# Reduced diesel pumping costs/year $4,000
Total: $26,900	Total: $14,048/ year The costs of the upgrade will be recovered in less than 2 years.

Assumptions

*188 trips/year to water required prior to improvements (3 times per week for 44 weeks of the year and daily for 8 weeks of the year during hot weather). On average a trip to the water is 40km. A ute (cost-$2.20/km) was used 50 percent and a bike (cost-$0.60km) was used for the remainder. Following the improvements 60 trips/year were required (once per week for 44 weeks and twice per week for 8 weeks), the same distance and travel costs were applied.

Average time spent per trip 1.5 hours, time costed at $15/hour.

Inverted Hinges

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km²

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Increases efficiency

Enhances quality and improved quality standards

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 2 and Figure 3 The full hinge system

Figure 1
Inverted hinge system

Impetus Behind the Innovation

As we use mostly steel for our fencing materials, we found conventional hinges were rusting, gates would not swing therefore breaking the hinge and we are having to regularly replace them. We wanted a system that was reliable and reduced the cost in replacing hinges, keeping the gates workable for longer.

How the Innovation Works

The hinge is an 'inverted' conventional hinge, using the outside of the gate, rather than the inside as the hinge mechanism. The bottom of the gate is placed inside the cup.

A slot in the bottom of the cup allows water or dirt to fall out, preventing rust.

Key Benefits

We are able to use existing materials and we do not have to replace the conventional hinges as these hinges rust less.

We do not have to purchase commercial hinge kits which reduces costs on property.

Key Materials Required

Old bits of steel and round pipe.

Potential Cautions and Risks

Usual risks when welding.

This system requires an additional 1-2 inches of pipe on the bottom of the gate to sit in the cup. As we make our own gates, this is no issue, however, if purchasing commercial gates, this could be a problem.

Two Way Hinged Gate

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
Double hinged gate

Figure 2

Impetus Behind the Innovation

We needed a gate that would close in line with a fence but be able to swing both ways and fold flat against the fence no matter which way it was swung.

How the Innovation Works

We have developed a gate that works on two hinges. Pin hinges are used, and are welded onto the outer side of a rail iron post and piece of uneven angle that is the width of the post. The uneven angle sits flush against the post. On the other side, another set of pin hinges are welded to the edge of the uneven angle to which the gate is attached (Figure 1 and 2).

Key Features and Benefits

We are able to use existing materials for this innovation. The gate makes moving the sheep between pens easier, and reduces the risk of a gate swinging back and hitting someone. This application can also be applied to other gates and fencing systems around the property.

The whole gate is also able to be removed from the strainer and moved to alternative gateways.

We are able to use the gate to push sheep between pens, in either direction without a swinging gate getting in the way.

Key Materials Required

Uneven angle

Pin hinges (Figure 2)

Welding equipment

Potential Cautions and Risks

Ensure the angles of the gates and hinges are correct or the gate will not swing correctly.

Wire Winder

Managers/Owners:

Guy and Susie Morrison

Property Name:

Wahroonga Station

Property Location:

120kms SE of Carnarvon, WA

Size of property:

83,000ha

Brief enterprise description:

Merino production

The innovation is a:

New product

The Innovation:

Increases efficiency

Impetus Behind the Innovation

Looking for a tool so we can roll up more fences in a short time, to save winding it by hand, and be more efficient.

How the Innovation Works

It is a wire winder that is driven by an old header gear box and a 5.5hp Honda motor with a belt drive to drive the gear box which, in turn, drives a wheel on wire winder. A clutch engages and disenages the gear box. The wire winder is attached to a frame on the side of a vehicle. The motor turns a wheel slowley to pull one wire a time out of fence and roll into a 1500m roll. It enables us to re-use good, non rusted, old wire.

Key Features

The gear box - old header and 5.5hp Honda petrol motor, wheel winder.

Key Benefits

Faster and more efficient process, re-use of old wire - reduces waste.

Key Materials Required

Gear box out of old header (from a grain harvester), 5.5hp Honda petrol motor, wheel winder, steel plate and 40x40mm angle iron.

Cost Benefit Analysis

Costs	Perceived Benefits
$300	100%

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Wire Racks

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km²

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Reduces costs

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1

Impetus Behind the Innovation

We were sick of the wire we bought getting rusty from lying in the dirt and water, and loosing wire in this way. Rabbits would also like to dig under it.

We also realised there was a safety hazard of staff having to lift the wire from below the knees onto the back of the ute.

Figure 2

How the Innovation Works

The wire racks are made from old bore steel piping that allows the wire rolls to sit in the racks, off the ground, removing the wire from dirt and water. The racks are approximately 80cm off the ground. We have used steel piping which allows the rolls to be slid along easily, but any similar materials could be used.

As the rolls tend to slant more as they go along the rack, we have developed a lean to go between the rolls at any point of the rack so that a new batch is created (Figure 2). This can also be used to give access to or separate different grades of wire on the same rack.

Having the rolls at this height also means that staff do not have to lift the wire from ground height, which improves safety.

Key Features

We are utilising existing materials.

We are reducing potential lifting hazards.

It is cost effective and does not take significant time to erect.

A tractor can easily lift rolls or place a bundle of 10 rolls on the rack.

Key Benefits

Improved on farm safety.

Wire is kept in better condition.

Wire is easier to access.

Key Materials Required

Steel

Pipe bender

Welder

Potential Cautions and Risks

Bend with your knees!

Air Compressor Post Driver (Marchant Engineering)

Managers/Owners:
Neil and Antoinette Sleep

Property Name:
Willangi

Property Location:
Peterborough, SA

Brief enterprise description:
Wool and sheep meat

The innovation is a:

New product

The Innovation:

Improves standards of safety

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
The Marchant Picket Post Driver

Figure 2
Using the Marchant Picket Post Driver to drive in droppers

Figure 3

Impetus Behind the Innovation

Neil has implemented a cell grazing system on his property, and as such, has many kilometers of fencing to complete.

He required a more efficient and less strenuous method of driving in droppers.

How the Innovation Works

Neil uses a Marchant Engineering 'picket post driver' to drive in all his droppers. These are commercially available through Marchant Engineering Pty Ltd.

Key Features

Ability to be run off an air compressor with little labour required.

Key Benefits

Increases the ease of driving in droppers, and is quicker than manually banging in the posts, with less physical strain on the body.

The force behind the tool also allows droppers to be driven into ground that would not be possible through manually banging in the post.

Key Materials Required

Air compressor with a minimum of 100 PSI

Marchant Picket Post Driver

Enough hose to reach from the air compressor to where the post needs to be driven.

What I would do differently next time

The tool can be quite noisy; it is recommended to wear ear muffs.

¼ inch hose is not big enough to supply enough air, require 3/8 inch hose.

Post Hole Digger Frame

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Increases efficiency

Improves standards of safety

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
The frame allows the digger to stand independently

Figure 2 and 3

Impetus Behind the Innovation

We wanted a mechanism and easier way to unhook the post hole digger from the tractor, and allow the digger to stand independently without leaning it against the shed or tree. We identified that unhooking and current storage methods of this machinery was potentially a safety risk, and therefore wanted to make the operation safer.

How the Innovation Works

The frame is made of five horizontal 'legs' that balance the weight of the digger and allow it to stand independently (Figure 1). These are made of 40mm steel pipe and can be easily removed from the 50mm sleeving which is part of the main frame. An upright beam with steel plate on top provides a frame for the dolly to sit on together with another steel plate at the bottom which the main digger sits on.

The five legs are removable and the remaining frame can be transported with the machine, so the frame can be used out in the paddock (Figure 2 and 3).

Key Features

Uses existing materials

Is transportable

Quick to assemble

Light weight

Key Benefits

The frame improves the safety of hooking and unhooking the digger from the tractor, and allows it to be done with one person.

Digger is safe when not in use.

Key Materials Required

Steel pipe

Checker-plate or similar

Potential Cautions and Risks

Ensure all five legs are secure before placing weight on the frame.

Cemented Tyre Weights

Managers/Owners:
John, David and Will Lindner

Property Name:
Wonga

Property Location:
Morgan, SA

Size of property:
530km^2

Brief enterprise description:
Wool production

The innovation is a:

New product

The Innovation:

Increases efficiency

Improves standards of safety

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
Frame with tyres

Impetus Behind the Innovation

We use tyres filled with cement as weights, which are used for various operations around the property. We have developed a system that will allow us to fill multiple tyres at any one time, and decrease the amount of lifting required in the process.

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

How the Innovation Works

We have welded together a frame that will hold 4 tyres at any given point in time. This frame stands approximately 80cm off the ground, and is made of old steel (Figure 1).

Each of the tyres sits on the frame supported by three pins around 1/3 of the circumference of the tyre and a piece of flat metal that holds the tyre in place (Figure 2).

The position of these pins is able to be moved to adjust for different size tyres (Figure 3).

The tyre is placed on top of a concave disk (old disk plough) so cement does not fall straight through the tyre (Figure 4).

The tyre is filled with cement, and once filled to the top; another disk is placed as a concave onto the tyre to seal around the tyre rim and holds the cement in place. The Lindner family cut a small hole in the top of the tyre to allow extra cement to be filled into the rim of the tyre where it would not usually reach (Figure 5).

The Lindner's have designed their frame that the tyre then tilts at a 45 degree angle to ensure the cement fills the tyre completely and leave air space. This tilt action is also used to easily remove the tyre from the frame onto the ground, so it does not have to be lifted.

A bar has been designed to slide into the hole in the centre of the cement to easily 'wheel' the tyre to decrease the amount of lifting required (Figure 6).

Key Features

We can fill up to 4 tyres at any given point in time.

It is easy to use and does not require a lot of heavy lifting.

Key Benefits

We are able to make our own weights for various applications, including 'stays' for fencing strainers and this reduces our costs.

We use mainly recycled materials.

Key Materials Required

Old tyres

Cement

Rocks

Old steel for the construction of the frame

Potential Cautions and Risks

General precautions when lifting heavy materials.

What I would do differently next time

Instead of filling the whole tyre with cement, which can be expensive, use some rocks first to fill the tyre, and then fill the remaining space with cement.

Crutching Trailer Modifications

Managers/Owners:

Ben and Susan Carn

Property Name:

Wootoona

Property Location:

Quorn, SA

Size of property:

8000ha

Brief enterprise description:

Wool and sheep meat production

The innovation is a:

New use for existing products

The Innovation:

Increases efficiency

Improves standards of safety

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 3

Figure 4

Figure 1

Impetus Behind the Innovation

Ben and Susan purchased the crutching trailer to increase the efficiency of crutching on their own property, and to reduce the physical strain on Ben at crutching time.

Since the purchase of the trailer, it has also been used for contracting.

Additions have been added to the trailer as Ben has been working in the trailer and determined what required improving.

How the Innovation Works

The crutching trailer (Figure 1) was purchased second hand and is fitted with a Peak Hill Industries 'Air Powered Rotation' that allows easy access to the sheep for crutching. Modifications have been made to the trailer to increase the efficiency of operations.

The innovations and modifications that have been made to the trailer include:

Inclusion of rails up the race so larger sheep (wethers) can't jump over the race (Figure 2).

Enclosing the trailer for multi-purpose weather (Figure 1).

Adding a hand piece, ear tag and drench holder (Figure 3 and 4).

Adding an additional air bottle to increase efficiency.

Key Benefits

The trailer allows Ben to crutch between 200-220 sheep per run, with little additional labour required. Each animal is also able to be crutched quicker than in a standard crutching position.

Because of the set up, the sheep follow each other up the race and little time is needed to push sheep up the race.

The limited bending has increased OH&S and Ben finds he suffers less aches and pains.

Key Materials Required

Peak Hill Industries Air Powered Rotation handler

Trailer

Potential Cautions and Risks

Because the equipment is air operated, it should be treated with caution.

Figure 2

Wool Press Modifications

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
Indicating location of steel pin, replacing original plastic pin

Figure 2
Steel pin on wool press

Impetus Behind the Innovation

The corner pin on the monkey on the wool press was made from plastic and kept breaking.

How the Innovation Works

We have made a steel corner pin covered by a rubber sleeve to replace the plastic pin. The rubber sleeve is important so that the steel does not shear away.

Key Features

The pin no longer breaks, and we are not continually replacing it.

Key Materials Required

Steel pin

Rubber sleeve

Potential Cautions and Risks

General cautions when using a wool press.

Controlling Fly Numbers

Managers/Owners:

Ian and Sue Warnes

Property Name:

Woolgangi Station

Property Location:

63km North East of Burra, SA

Size of property:

302km^2

Brief enterprise description:

Wool and Meat production

The innovation is a:

New use for existing products

The Innovation:

Enhances quality and improved quality standards

Increases productivity

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
Bait bins used to control fly numbers

Impetus Behind the Innovation

We were suffering with fly blown sheep, and needed to look at alternative options with the cessation of mulesing. Reducing the fly population in the paddock seemed a logical first step.

How the Innovation Works

The aim of the innovation is to reduce the blowfly population in paddocks to reduce the likelihood of sheep being fly struck. Flies are attracted to the bait bins that are filled with a rotten carcass. The carcass is treated with Dipterex or similar, which kills the flies.

Key Features

The fly trap is simple, effective and cost efficient, with little labour input required. There is no need to monitor and check the traps regularly. A new carcass may be added at the start of a new fly season to ensure the attractiveness of the trap remains.

Alternatively, a commercial product, the 'LuciLure Sheep Blowfly Attractant' can also be used. The LuciLure Trap system is a specifically designed trap with a patented blend of chemical to attract and capture the Australia sheep blowfly (*Lucilia cuprina*). The trap is designed to reduce blow fly numbers and hence reduce the strike rate probability within a flock of sheep.

The LuciLure trap is a translucent bucket made from tough ultra-violet stabilised plastic with a removable lid. There are entrance cones that allow the blowfly to enter the trap, but do not allow the fly to leave the trap. Within each trap is an attractant to attract the flies to the trap.

The traps are generally attached to trees at sheep height off the ground and should be strategically placed around water courses, near dams, tree lines, yards, sheep camps, shearing sheds etc. It is recommended that one trap per 100 sheep are used.

These are distributed by Bayer Australia Limited, who are contactable on 1800 678 368.

Key Benefits

This innovation saves time and money, as we no longer have to chase fly blown sheep, and the costs associated with treating fly blown sheep are reduced.

Sheep deaths are reduced as we are eliminating the cause of the problem, and not having to spend resources trying to fix the problem.

The innovation covers a large area of land and is very effective, with only a few traps required.

Key Materials Required

Drums, 20 litres to 200 litres

20 litres of water

Rotten carcass

400 grams Dipterex (if you reside in NSW) or similar

Shade cloth to cover drums

Bait bins can be made from numerous materials, the most commonly used is a 44 Gallon drum. It is important that the bin is a rigid object, and not made from soft plastic. It has also been suggested that SULO (garbage bins) are used, as they can be easily wheeled in the paddock. Ian Warnes has made his bin from an old 44 gallon drum, with plastic on the top held down by an old tyre tube (Figure 1 and 2).

Flies are attracted to yellow. Therefore it is suggested that the bin be painted yellow to increase its attractiveness. (Figure 3).

The bin needs to be able to attract the flies in, but not allow for the flies to escape. Excluder wire, such as differentiator wire can be used over the entry point. Alternatively, a hot wire or drill can be used to make two or three rows of 15 or more holes, no greater than 5mm in diameter (Figure 4). It is important that the holes are the correct size so that larger blowflies are kept out of the drum.

A carcass is placed in the bottom of the bin to attract the flies. A carcass can last as an attractant up to 3 months in autumn and winter. To produce an instant smell, one litre of 20% sodium sulphide can be poured over the carcass. Figure 5 shows how a Sulo bin can be used to attract and kill the flies.

Figure 2
Bait bins made by Ian Warnes from old 44 gallon drum, plastic and bike tubes

Figure 3
Ian has painted the mid-section of the drum yellow to attract flies to the entrance points

Figure 4
Holes are drilled to allow the flies access

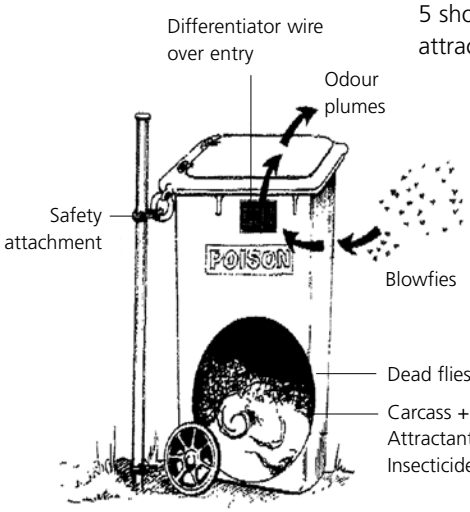


Figure 5
A typical bait bin that has been trialled at Fowlers Gap Research Station

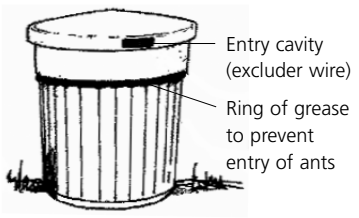


Figure 6
An alternative bin to a Sulo bin, using a galvanised garbage bin

An insecticide should be used in conjunction with the bait bin to kill the flies once they have entered the bin. If you reside in NSW, it is legal to treat the carcass with Dipterex (trichlorphon) which kills the flies that enter the bin and any maggots that may arise from eggs laid on the carcass. Ian has found that once the flies enter the bin, they are unable to leave, so even without the use of Dipterex, they will die in the bin.

It is suggested that one trap be used for every 1500 breeding ewes. Bait bins should be used towards the end of winter and March/April. When not in use, the holes should be covered to prevent other insects entering and developing immunity. It is good practice to place the bins in yards when sheep are mustered, and should remain in the yards up to 48 hours after the sheep are released. They can also be strategically placed around the property, as with the LuciTrap.

Potential Cautions and Risks

Keep away from children.

Handle chemicals with precaution and necessary with chemical handling equipment.

The bins can put out an unpleasant odour, so it suggested that the bins are not placed within the vicinity of dwellings.

It is important that the flies attract and lure *Lucilia cuprina* but not the green hairy maggot blowfly or brown blowflies. The Green Hairy Maggot blowfly and brown blowflies rarely breed on sheep, but successfully compete with the sheep on the blowfly carcass. Therefore, ensure that the entry holes to the bin are the correct size, as this allows smaller blowflies in and keeps the larger blowflies out.

Cost Benefit Analysis

Costs	Perceived Benefits
Approximatly $100 for chemicals and associated materials per bin	Unlimited

References

NSW Agriculture, 1990 Bait bins for lowering blowfly numbers, Agnote Reg4/14, NSW Agriculture

Weigh Ezy Auto Drafter

Managers/Owners:
Bill Byrne

Business Name:
Peak Hill Industries

Business Location:
Peak Hill, NSW

The innovation is a:

New product

New process

The Innovation:

Improves standards of safety

Increases productivity

Increases efficiency

Figure 1
Weigh Ezy and Auto Drafter in operation

Impetus Behind the Innovation

Clients were seeking a piece of equipment that had multipurpose functionality where it could be used to weigh sheep but also used as a handler to carry out other operations (Figure 1).

How the Innovation Works

The Weigh Ezy Auto Drafter allows for automatic drafting, weighing and data recording of sheep. It includes a standard three way draft that has the capacity to draft 9 ways. The equipment can be manually operated to perform other husbandry activities.

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 2
Sheep being restrained for weighing

Figure 3
Sheep drafted by automatic system by weight

Figure 4
Manual operation to perform husbandry duties

Key Features

The key features of Weigh Ezy Auto Drafter are its ease of use and the low labour requirement for operation. The Weigh Ezy, with the assistance of one person, can accurately weigh, record and draft sheep, significantly reducing labour costs (Figure 2 and 3). The Weigh Ezy restrains the sheep by a soft clamping mechanism. This allows the sheep to be restrained without movement for accurate weighing.

It features clear, see through access which ensures easy non forced self loading of each sheep without the risk of injury. It has a 12 volt power supply which runs the controls, utilises a 12cfm air compressor and consists of three main modules which clip together.

Electronic identification ear tags can be incorporated where recorded information for the tags or weight can be trasnsferred to a computer program or database for later data analysis.

The Weigh Ezy can also be used to restrain sheep to perform other operations including vaccination or drenching using the manual override function (Figure 4).

Key Benefits

Reduction in labour requirements.

Increases ability to accurately record and manage data.

Ideal for meat producers allowing them to quickly perform required activities.

Parts are easily accessible.

Figure 5

Figure 6

Key Materials Required

Steel construction

Air operated

Sophisticated electronics to operate the machine

The control module can be easily unplugged and replaced if needed

Modern weighing system (Figure 5 and 6)

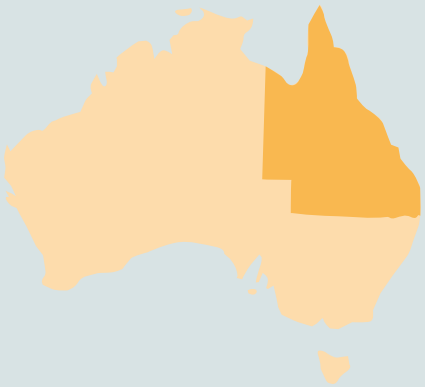
The Peak Hill Industries Weigh Ezy Auto Drafter can be purchased for approximately $20,000. A trailer is also available at extra cost which lowers for the equipment to be placed on the ground and has the ability to carry portable panels.

Potential Cautions and Risks

When using this equipment, personnel should be aware of automatic clamping and moving parts.

What I would do differently next time

Currently Peak Hill Industries is investigating the electronics of the system, looking into a wireless system to record weights and other data to eliminate wires being damaged. They are also researching alternative clamping methods to increase the functionality of the machine.



Labour Saving Wombat Mixer

Managers/Owners:

Bill and Sally Cripps

Property Name:

Melrose

Property Location:

Blackall, Qld

Brief enterprise description:

Merinos and merino wool with prime lambs and 30% SAMM lamb production and beef breeders

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

It is necessary to feed pregnant ewes a protein source during the low protein part of the year. However, feed supplements are generally difficult to mix in large quantities and even more difficult to get out to stock. Therefore many producers simply do not feed stock. We needed something simple, required little labour and no double handling of the supplement. This machine is similar to a feedlot feeder, but made for on-farm use and low cost.

How the Innovation Works

The Wombat feeder is used to mix and feed up to 1 tonne of supplement to pregnant ewes during dry seasons. It is a simple process which enables one man to feed hundreds of sheep at a single time without extra labour required or risk of accidents. It's basically a mixing bowl on wheels with an auger that moves around the side of the bowl, driven by a big universal joint at the bottom, and powered by a 5 hp petrol motor.

Key Features

Safety for operators (reduces risk of having children helping out).

Labour saving (one man job).

1 tonne grain/cotton seed/molasses/urea and minerals supplement (can hold large volumes).

Can mix a wet supplement with molasses

No back breaking lifting.

Enables production feeding of protein ration.

Key Benefits

Saving the cost of a full time labour unit ($800/week or $200/day).

Reduced stress on family members

Reduced back and leg injuries from feeding out.

Improved lambing percentages and healthier sheep.

Key Materials Required

The wombat is a very simple feed-out and mixing unit which can be purchased complete for $5,500. It is necessary to have a tractor with a bucket to fill the Wombat.

Potential Cautions and Risks

Be aware of workplace, health and safety around moving mechanical parts.

Waldo's Hornbuster

Managers/Owners:

C and P Walladge

Property Name:

Weampa

Property Location:

Willalooka, via Keith, SA

Size of property:

1500ha

Brief enterprise description:

Beef cattle and prime lamb production as well as cropping barley, canola and lucerne seed production

The innovation is a:

New product – first marketed in 1990

The Innovation:

Improves standards of safety

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Application to other pastoral businesses

Figure 1

Impetus Behind the Innovation

All shipped animals must be dehorned to ear length to meet animal welfare and safety standards of live shipment of cattle, rams, goats and buffalo. Traditionally, a hand guillotine was the available tool to dehorn, which had a three foot handle and animals were required to be bailed to apply the dehorner. This method caused much agitation and bleeding and only 30 animals per hour could be dehorned – which was a man killer. As a result Waldo's Hornbuster was created.

How the Innovation Works

12 volt powered, hydraulic guillotine with finger tip control and a 7.5m hose for access. It removes most cattle horns in 2 seconds and 4 seconds for buffalo. So quick they do not know what happened. It causes no agitation and little bleeding. 150-200 animals an hour can be dehorned. The total unit is in a carry pack 300x300x625. It has a total weight of 30kgs.

Figure 2
Carry Pack

Key Features

Speed

Ease of use

Improved Safety

Animal Welfare considered

Key Benefits

Savings of cost, time with improvements in safety. Confined animals immediately relax. There is no boss and the change in handling is incredible.

Key Materials Required

12 Volt hydraulic pump is readily available and made in the USA with hydraulic components. With a special steel guillotine, Keith has heard reports of up to 300,000 adult horns removed with one set of blades. To date, Keith has not supplied replacement blades to Buffalo clients.

Potential Cautions and Risks

Do not try and catch the guillotine if it is dropped.

PVC Water Troughs and Conveyor Belt

Managers/Owners:

Ian, Ruth and Matthew McKenzie

Property Name:

Loyola

Property Location:

32km west of Coonamble, NSW

Size of property:

3328ha

Brief enterprise description:

Cropping and opportunity livestock trading

The innovation is a:

New use for existing products

The Innovation:

Utilises capital resources

Impetus Behind the Innovation

We needed to have many watering points, in setting up the drought feedlot. This was a significant cost and the fixed infrastructure may not be used all that often. The PVC Sewer pipe is lower cost and portable, and can be moved around pens as required.

How the Innovation Works

6 metre lengths of PVC Water trough are used in the drought feedlot, with conveyor belt underneath the troughs as a pad. This pipe is 6" PVC sewer pipe, and we have cut drinking holes in it for sheep to access clean water. These troughs are portable, and low cost.

Key Features

Easy to assemble and move around and is of low cost

Key Benefits

Economics – $250 to make with 6 inch PVC pipe, ½ inch float and 6 metres of conveyor belt, as opposed to a cement trough and pad at $2000.

Light and portable.

Always fresh water available, as the trough is a lot shallower than a cement trough, so there is a lower volume of water with high turnover.

Less water is lost when cleaning – less to tip out and bog up.

Key Materials Required

6 metre PVC trough

PVC pipe

½ inch float

Used mining conveyor belting

Potential Cautions and Risks

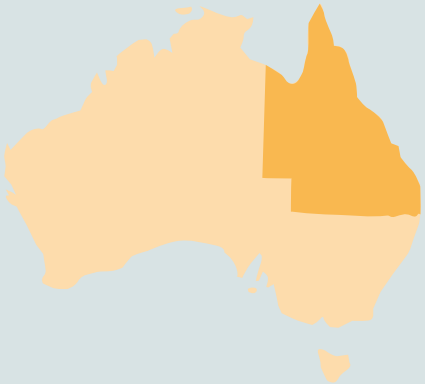
Low volume in trough – relies on water flow rather than capacity – check & cleaned everyday.

Small flow inlet – sometimes blocks up.

Awareness of the right flow rate to ensure suitable water temperature for sheep.

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	



Melrose Hilton Dog Kennels

Managers/Owners:

Bill and Sally Cripps

Property Name:

Melrose

Property Location:

Blackall, Qld

Brief enterprise description:

Merinos and merino wool with prime lambs and 30% SAMM lamb production and beef breeders.

The innovation is a:

New product

New use for existing products

The Innovation:

Enhances quality and improved quality standards

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Working dogs are a key to both stock management and the labour crisis in the pastoral zone. We found it was important to always look after these working dogs and to provide the most comfortable surroundings, as well as make the kennels easy to maintain.

How the Innovation Works

The dog kennels were designed by Bill Cripps to enable easy maintenance/ cleaning and feeding as well as to enable the dogs to be comfortable when in residence.

Key Features

Built off the ground for air circulation. (away from ticks and fleas).

Built in sprinkler system.

Easy open catches.

Covered for sun protection.

Easy to hose clean.

People are able to stand inside when necessary.

Each unit/ cage is partitioned from the others.

Each dog has privacy (corrugated iron) when necessary, in individual container.

Key Benefits

It keeps the working dogs happy.

Protects dogs from the weather.

Keeps dogs cool on hot days (built in sprinkler system).

Low cost of construction.

Easy to access and clean.

Kids can open the catches/ doors.

Key Materials Required

20 lengths 25mm x 25mm RHS @ $12/ length $240.

Crab pot mesh clearing sale 3 rolls $180.

12 bags cement @ $10/bag $120.

Sand and gravel out of creek.

8 Lengths 2 inch gal pipe replaced water pipe (seconds).

Kennels made out of timber and iron.

No record of time taken for construction.

Potential Cautions and Risks

Allowing enough space for each dog.

Kennels are 9 years old.

Cost Benefit Analysis

Costs	Perceived Benefits
$540	Happy dogs Ease of maintenance

Figure 1

Levelling Device for Chickpeas

Managers/Owners:

Ian, Ruth and Matthew McKenzie

Property Name:

Loyola

Property Location:

32km west of Coonamble, NSW

Size of property:

3328ha

Brief enterprise description:

Cropping and opportunity livestock trading

The innovation is a:

New use for existing products

The Innovation:

Enhances quality and improved quality standards

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 2
'Loyola' chickpeas

Figure 3

Figure 4

Impetus Behind the Innovation

The chemicals Simazine and Balance require level soil, otherwise rainfall events can cause water to pool in the furrows and cause herbicide injury to the crop.

How the Innovation Works

We crop wheat and chickpeas in a low rainfall variable climate (Figure 2). Moisture conservation and plant establishment is important. Lengths of 3m chain and 1/2m steel posts are used behind sowing equipment to level out the soil the sowing tyne kicks out – it removes the furrow, which is important when sowing chickpeas that are sown double spaced (Figure 1).

Key Features

Basic and practical.

Key Benefits

Recycle existing farm materials (Figure 3 and 4).

Eliminate a tractor pass with prickle chance or other operations – it is done with sowing.

Timeliness – can spray immediately – no waiting for second pass/operation.

Reduce herbicide injury to maximise full germination.

Harvest efficiency.

Key Materials Required

Steel posts (can be old and rusty).

Chain/tie wire (Figure 3 and 4).

Cost Benefit Analysis

Costs	Perceived Benefits
Used farm materials	At least $10/ha saved rather than going over country again Improved establishment

Safety Reflectors

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Impetus Behind the Innovation

We wanted to create a safe work environment for our employees, and ensure potential hazards when mustering and driving around the property are visible.

How the Innovation Works

At the end of the sheep race in the paddock, we have placed an old road side reflector, either attaching it directly to the end post, or digging it into the ground.

The reflector ensures the potential hazard of the end of the race is visible from a distance, but does not distract the sheep. It also increases the visibility of the area that the sheep need to be mustered to from a distance.

Key Features

We are utilising existing materials.

We are reducing potential hazards.

It is cost effective and does not take significant time to erect.

Key Benefits

Improved on farm safety and improved viability.

Key Materials Required

Old reflectors.

Star rating

Ease of use	5
Degree of innovation	3
Impact on business	3
Application to other pastoral businesses	4

Visible Gateways

Manager:

Ashley Bell

Property Name:

Raby

Property Location:

Warren, NSW

Size of property:

8525ha

Brief enterprise description:

Stud merino, beef cattle, broad acre cropping (irrigation and dryland)

The innovation is a:

New material for existing products

The Innovation:

Improves standards of safety

Impetus Behind the Innovation

It allows a way to increase the visibility of gates from a distance and identifying the gate when looking through scrub, creating a landmark when mustering.

How the Innovation Works

Gates on Raby are painted white to increase their visibility from long distances.

Key Features

Gates on the property are painted white.

Key Benefits

Visibility of gates is significantly increased by painting them white. This assists when mustering stock particularly in scrubby paddocks, the gates are visible through the vegetation. It is a low cost method to improve safety standards and efficiencies for employees.

Key Materials Required

White paint, paint brush and anything else required to paint the gates.

What I would do differently next time

Place the names of the paddocks on either side of the gate. The names would appear on the front of the gate detailing which paddock was being entered.

Star rating

Ease of use	5
Degree of innovation	2
Impact on business	2
Application to other pastoral businesses	5

Increasing Windmill Visibility

Owners:

Chris and Joan MacDonald

Property Name:

East Whydown

Property Location:

South West of Yunta, SA

Size of property:

245km^2

Brief enterprise description:

Sheep and wool production

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
The painted windmill blade on East Whydown improves visibility of the windmill from a distance

Figure 2
The windmill can be easily identified from a distance

Figure 3
The painted blade makes a great landmark for mustering

Impetus Behind the Innovation

To allow for new musterers and workman on the property to easily see the windmill from a distance, so it can be used as a landmark.

Painting the blade increases it's visibility, so staff can determine if the fan is turning from a distance. A rotating blade or fan does not necessary mean the mill is pumping, but it allows us to use it as a landmark.

How the Innovation Works

A windmill blade (fin) is painted on both sides in a bright colour so that it is visible from a distance. As Figure 1 demonstrates, a single blade on the windmill is painted.

Key Features

Simply paint both sides of a windmill blade (fin) in a bright colour (white). If each side of the blade was to be painted a different colour, in some cases it could be used to determine the direction of the wind, and hence the position of the sheep in the paddock.

Key Benefits

The painted blade decreases the chance of new people on the property getting lost by having an identifiable land mark. Using the mill whilst mustering can give a better guide and position as some hill outlooks can change when approached from different angles.

It saves time by not having to physically drive the whole distance to the windmill to determine if it is turning. This is shown in Figure 2, where the windmill, and the blade can be easily seen from a distance.

Key Materials Required

Old paint can be used, therefore with little cost to make the improvement. Alternatively, any paint can be sourced.

Potential Cautions and Risks

The normal safety issues whilst working from a windmill platform.

What I would do differently next time

Use a gloss, oil based paint as it may last a lot longer. Gloss paint also tends to reflect in the sun, increasing the visibility of the blade.

Sheep Yard Lighting

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Impetus Behind the Innovation

We were restricted by darkness to the amount of work we could undertake in the sheep yards.

We wanted to implement a cost effective lighting system that would light up large areas of the sheep yards, not all the yards at once but the ones that we are using.

How the Innovation Works

Instead of directly fixing a flood light to a concrete position on the shed to light up the yards, we fixed it on a mounted swivel pole. This position of this pole can be adjusted by anyone from ground level and therefore the light can shine out to various positions in the yard.

Key Features

We are only utilising one 500 watt flood light saving costs of numerous lights.

The light can be adjusted from ground height-no ladder required.

Existing materials can be used.

It is not costly nor does it require a lot of time to construct.

To replace a globe, it can simply be lifted off the swivel pole and laid flat on the roof or ground.

Key Benefits

We are able to shine the light to most parts of the yard, increasing safety, the length of hours we are able to spend in the yards and increases the ease of moving stock after dark.

Key Materials Required

Flood light

Swivel pole which is 40mm inner pipe and the outer pipe of 50mm fits over top (which you can manufacture).

Potential Cautions and Risks

Those associated with wiring lights.

Bore Pulling Winch

Managers/Owners:

Brian and Margie Rowe

Property Name:

Wolhalla Station

Property Location:

Hawker, SA

Size of property:

150km^2

Brief enterprise description:

Sheep – wool and meat

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Enhances quality and improved quality standards

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Impetus Behind the Innovation

Safety – This innovation is safer than using a vehicle and pulley blocks because a second person does not need to be driving the vehicle, following hand instructions to move in or out. This releases the second person to be at the mill helping to do other tasks. No mental or marital stress of misreading hand signals.

How the Innovation Works

The vehicle is backed up to the windmill. It is important to have it square to enable correct winding of winch. The tow hitch is removed from vehicle and the winch is connected into the slot. The winch is mounted onto a square piece of flat plate with a piece of tubing welded to it that slides into the hitch. The electric winch is connected to a battery and operated with a hand switch.

Two snatch blocks are required to pull pipes out of the bore, one at the top of the mill and one at the bottom.

Key Features

Ease of pulling bore and removing pipes from bore safely. Environmentally friendly by not running vegetation down. The safety aspects are the biggest feature and it is people friendly.

Key Benefits

Less time to pull the bore.

Easier physically.

Reduces stress.

Environmentally friendly.

Improvement in Occupational Health and Safety when pulling bores.

The system could also be used to load wool, pulling other vehicles out of a bog or winching animals.

Key Materials Required

Square plate

Piece of square tubing

A Magnum QK winch

Two snatch blocks

Potential Cautions and Risks

Should ensure you block the vehicle and the vehicle is square to the windmill.

The manufacturer has stated that there is no guarantee when using the winch to let weights down. However, the winch has worked successfully under these conditions.

Cost Benefit Analysis

Costs	Perceived Benefits
$1,200 winch $200 snatch blocks $50 scrap metal	Saves wear of clutch on vehicle Can be used for numerous applications on property
Total: $1,450	

Ute Ramp

Managers/Owners:

John, David and Will Lindner

Property Name:

Wonga

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 2

Figure 3

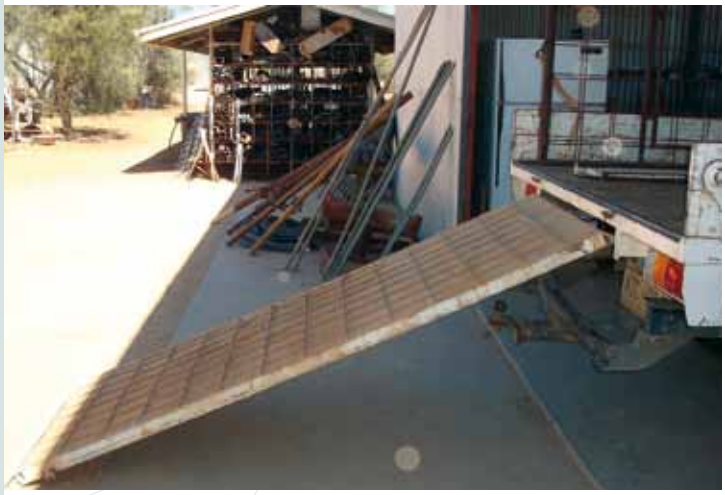


Figure 1

Impetus Behind the Innovation

We wanted an easy mechanism to load motor bike, sheep and other equipment onto the back of utes. One person needed to be able to use this innovation on their own, and therefore it had to be light enough to handle singly and not require two people (Figure 1 and 2).

How the Innovation Works

A ramp has been designed to slide under the tray of the ute. By being placed under the tray of the ute, it allows the ramp to be the full length of the tray, therefore, providing the right angle when it is extended to load equipment effectively.

The ramp is simply slid out the back of the tray and placed on the ground. It is light weight and easy to maneuver.

It is held under the tray using a locking system so the tray does not slide out when traveling along (Figure 3).

Key Features

Light weight, easily able to be used by a single operator (Figure 2).

Provides the right angle to effectively load equipment and motor bikes onto the back of the ute (Figure 1).

Key Benefits

Simple and quick to load and unload motor bikes or other equipment and be able to walk up beside them safely.

Simple and quick to load sheep as it is always with you.

Can be used as a table for smoko or lunch.

Key Materials Required

Steel

Checker plate, marine board with mesh grip or similar to stop slippage

Welding materials

Potential Cautions and Risks

Bend using your knees!

Solar Power Battery Maintainer

Managers/Owners:

Tim and Annette Stratton

Property Name:

Ningear

Property Location:

Coonamble, NSW

Size of property:

2279ha

Brief enterprise description:

Cropping and grazing property

The innovation is a:

New use for existing products

The Innovation:

Increases productivity

Increases efficiency

Improves standards of safety

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
12V Solar Panel Battery Charger: just plug into cigarette lighter to keep batteries charged during quiet periods.

Impetus Behind the Innovation

Looked for options as we got sick of engine or jump starting vehicles, sometimes impossible when there are six batteries to charge i.e. truck.

How the Innovation Works

A solar panel battery charger keeps a continual charge on the battery in vehicles during its idle days, weeks or months. A solar panel sits on the roof of the truck, leads come down to the battery, and the only energy source needed is the sun. This makes sure that when we want to use the vehicle, we know the battery is charged, and ready to go.

Key Features

Portability

Easy and simple to set up

Low cost

Reliable even in cloudy weather

Water proof

Key Benefits

Capturing solar energy

Easy solution

Low cost

Safer and easier than jump starting or tow starting, don't need two people

Just plugs into cigarette lighter.

Key Materials Required

Solar battery charger (we purchased ours off eBay).

Potential Cautions and Risks

None really, pretty straight forward.

What I would do differently next time:

None, works well. You can get bigger units if needed. Check out eBay!

Cost Benefit Analysis

Costs	Perceived Benefits
$30 plus freight of about $15 from eBay	Hard to quantify but well worth it for a small outlay
Total: $45	Total: Immeasurable – saves time and effort with jumpstarting

Pipe and Joiner Marker

Managers/Owners:

John, Will and David Lindner

Property Name:

Wonga Station

Property Location:

Morgan, SA

Size of property:

530km^2

Brief enterprise description:

Wool production

The innovation is a:

New use for existing products

The Innovation:

Improves standards of safety

Increases efficiency

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Impetus Behind the Innovation

We wanted to make sure we knew where pipelines had been laid underground, and where joiners in the pipes were, in the event that we needed to find the join. We also wanted to make sure that we did not dig through the pipeline at any stage. Droppers marking the pipeline in an open paddock or along a track are dangerous for motor bike riders or they simply rust off.

How the Innovation Works

We wrap a piece of light grade poly pipe (15mm) and fix it there with a short piece of 32mm pushed over the end, around the joiner or pipe at various intervals, making it long enough to stick out of the ground. We are able to see the poly pipe, and know that there is a pipe line there, or a joiner in a pipe. When digging for the pipe, following the marker down to find the short end makes it less likely to cut the pipe as you know the pipe lies just below that part of the marker.

Key Features

Off-cuts of poly pipe can be used.

Is cheap.

Does not take large amounts of time.

The poly does not pose a risk to safety or rust.

Can find the depth of the pipe easier with less risk of cutting it.

Is easy to dig out joiner as there is nothing next to the pipe and is easily removed when dug out and reused.

Key Benefits

Anyone can see where pipelines are across the property, reducing the risk of us cutting through the pipe.

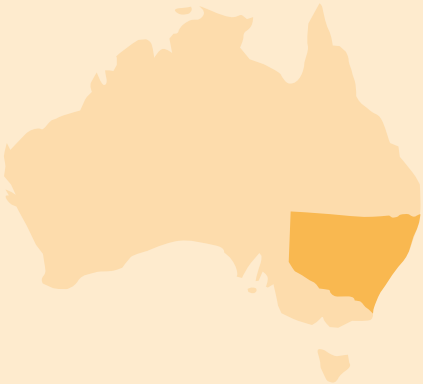
We can easily find the joins in the pipe when required.

Key Materials Required

Poly pipe

People
Innovations

Looking After the People
Labour Resourcing
Training and Development



Walking the Kokoda Track

Managers/Owners:

Richard, Sue and Tom Gordon

Property Name:

"Moonyanco"

Property Location:

Conargo – 20km North East of Deniliquin, NSW

Size of property:

6177ha

Brief enterprise description:

Grazing sheep and cattle, irrigation cropping including rice when water available. Set-aside conservation areas.

The innovation is a:

Challenge – personal, physical and mental

The Innovation:

Drives personal growth and reflection

Star rating

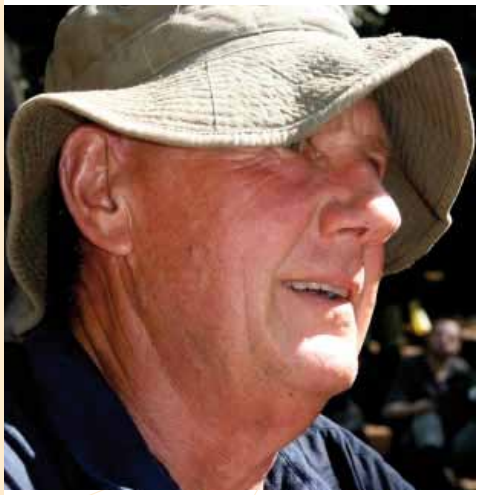
Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Richard Gordon



Impetus Behind the Innovation

As a returned solider, interested in World War 2 history and the battles to save Australia from Japanese invasion in 1942.

The personal challenge and intrigue to find out what really happened and re-live (in a small way) the experience our soldiers endured.

To trek with a fellow Vietnam Veteran and some of his friends.

How the Innovation Works

A nine-day walking and camping trek on the Kokoda Track (from North to South) included carrying all necessities with a food re-supply half way. A large group of 27 trekkers including 2 leaders from 'Our Spirit', the tour company and 24 native legends that carried packs for some of the trekkers. Richard carried his own pack.

The Kokoda Track is 96km of very rugged terrain, it is steep up and steep down again with a river or stream at the bottom of every descent. This very difficult trek includes rocks, roots, moss and mud in various combinations. It is very slippery and every step needs to be focused. The jungle encroaches from all sides and above, giving way to small clearings here and there which often contain small villages with subsistence agriculture.

Figure 4
The end of the trek – Richard and 3 fellow Vietnam veterans!

Figure 2

Figure 2 and 3 show the Australia Memorial at the Isurava Battle site (one of the most significant battle sites is Isurava – where in August, 66 years ago, the Aussie diggers fought a raging four day battle whilst being outnumbered ten to one. Here now stands a magnificent memorial. A monument of four huge granite columns (hewn from South Australia) – Courage, Endurance, Mateship and Sacrifice – There were countless acts of bravery and heroism as the diggers grimly held on.

Key Features

To understand some Australian Military History in relation to Japanese expansion into the Pacific Region.

The experience evoked an understanding of the war in New Guinea and the extreme circumstances the soldiers faced.

Achieving against insurmountable odds – untrained, poorly equipped and untested Militia soldiers of the 39th Battalion – averaged age 19 years old numbering about 450 had to walk the track to defend the only substantial airstrip, being that at Kokoda, against several thousand experienced Japanese troops. Not only did our Australian soldiers face the Japanese but also the inhospitable tropical jungle and terrain, disease, heavy causalities and re-supply problems.

The physical challenge.

Key Benefits

A real and personal understanding of the words which stand on four huge polished granite columns at the Isurava battle site epitomising the personal aspects of war along the Kokoda Track – COURAGE, ENDURANCE, MATESHIP AND SACRIFICE.

The personal challenge – emotionally you are choked and shed tears during periods of reflection. Physical and mental challenges pale into insignificance when you think about who and what had gone there before you.

Admiration for the Fuzzy-wuzzy Angels – the natives who helped the Australian war effort immeasurably, particularly with assisting Australian wounded, resupply and local knowledge.

Personal reflection – on being a returned solider, and a grateful Australian.

Comradeship – lifelong friendships created within the group.

Challenge – a step away from what you do everyday to give you a different perspective on daily life.

Fitness – personal acknowledgement that one's body can still do some hard yards.

Key Materials Required

Good walking boots

Six pairs of socks, wear two pairs (thick and thin)

Walking pole (important)

Backpack and water

Camping essentials and basic medical supplies

Not to many clothes but keep dry or damp in plastic bags

Tents, sleeping gear, camping gear supplied by the tour company.

Potential Cautions and Risks

Fitness and any medical issues.

Isolation – no contact with the outside world except an emergency sat-phone.

Illness – gastro intestinal upset, malaria a possibility.

Mental challenge – a highly emotional trek, the group regularly de-briefed.

A special feature of the trek was that the tour company had purchased two Pacific Star medals at auction. These were carried in turn by each of the trekkers across the track with an informal hand-over ceremony each morning which allowed each participant to express their thoughts and feelings. The medals were then returned to the families where they rightly belonged.

What Could be Done Differently Next Time

Take fewer clothes – as everything gets wet and stays wet – one set for every day and maybe two dry sets for nights. Most days you swim in the river.

I have a Japanese friend who has expressed an interest to do the walk and I would go for moral support (no Japanese walk the track – and very few visit the memorial at Kokoda).

Cost Benefit Analysis

Costs	Perceived Benefits
$5500 – 11 days from Brisbane to Brisbane - 9 days trekking	Appreciation Satisfaction Comradeship/ life long friendship Sense of achievement

Remote Personal Exercise Program

Managers/Owners:

Ron and Anne Mackay

Property Name:

Vatua

Property Location:

Coonamble, NSW

Size of property:

4200ha (owned and leased)

Brief enterprise description:

4000 merino ewes, 220 cattle and some cropping

The innovation is a:

New product

The Innovation:

Looks after the people

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 1
Bad Bag is used for a lot of the exercises along with light weights

Impetus Behind the Innovation

Many graziers such as Anne Mackay live a fair distance from a town where a gym or fitness program operates. As a consequence it's hard to be able to work on their general fitness, flexibility and strength. This program removes some of the barriers to good health and fitness. Anne is part of a group of 6 Coonamble graziers who have taken up the program in 2008 and 2009.

The group was concerned about their weight, flexibility, strength and stress during the 2008 drought. The program is undertaken individually, in your own house.

How the Innovation Works

Rod Fardell of Body Options (Dubbo) has created a remote fitness program specifically designed for graziers who can't get to a town with a gym or fitness program. It consists of a DVD outlining his program, and some light exercise equipment that can be used on property.

Rod coaches remotely via email and phone. The program is specifically designed for graziers; and focuses on flexibility, core strength, diet and general fitness.

A feature of the programs is use of the 'Bad Bag' for strength and flexibility.

Key Features

A simple program that is low cost, and is tailored to the needs of graziers. A focus on flexibility and core strength is important to save back injury (which is common) and build basic strength, which is often lost driving around in vehicles. It uses basic equipment to build fitness levels and manage weight, and also covers diet and healthy eating. Rod's follow up makes sure that you set goals, and then achieve them.

The key feature is that you do your own program that Rod designs, depending on your own goals. You do your exercise sessions in your own home, with basic gear, and then are supported via email and phone. Rod uses your interests and what you have on hand as part of the program (eg a bike or treadmill).

Key Benefits

The main benefit from the program for Anne has been extra energy and a feeling of well being. Her strength levels and flexibility have also improved. This is important as it reduces the chance of muscle injury. Anne also indicated that the education process about diet means that she and her family eat even better food.

Others in the Coonamble group have had weight loss goals, which they have made progress towards.

Key Materials Required

The Rod Fardell remote exercise program DVD and setting up your exercise program. Purchase of a Bad Bag and light weights is included in the sign up session.

Potential Cautions and Risks

Just follow the program! No real challenges, it's targeted to your goals, taking into account where you are at.

What Could be Done Differently Next Time

More group activities with others doing the program could help with motivation.

Cost Benefit Analysis

Costs	Perceived Benefits
$400 for 6 months. Includes DVD, initial session, Bad Bag and weights.	Intangibles, but very worthwhile
Total: $400	

A Winning State of Mind

Managers/Owners:
Ann Ballinger

Property Name:
Stockholm

Property Location:
Muttaburra, Qld

Size of property:
11,595ha

Brief enterprise description:
Merino sheep and cattle

The innovation is a:

New use for existing products

The Innovation:

Drives growth

Improves standards of safety

Enhances quality and improved quality standards

Creates better outcomes for the environment

Increases productivity

Increases efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses

Figure 2

Figure 3
Outbuildings

Figure 1
Homestead on 'Stockholm', Muttaburra, Qld

Figure 4
Meat House

Impetus Behind the Innovation

The main impetus was to organise a family wedding to be held on the property. However, the outcomes were far greater.

How the Innovation Works

Creating an oasis around the homestead and buildings will create a winning mind. The simplicity of this innovation was to clean up the area around the farm buildings, paint all surrounding buildings and creating a fresh happy appearance.

Key Features

The homestead becomes a place we enjoy.

It creates a feeling of happiness and freshness.

We have improved confidence and self esteem.

It is good for the soul.

If home is tidy, our minds are tidy.

Key Benefits

Improved confidence and self esteem.

A refreshing happy feel around the homestead.

A tidy mind, with less clutter.

A place to enjoy being and spending time.

Ease of finding things.

Key Materials Required

Time to collect and move unwanted materials.

Time and cost of painting the buildings.

Cost of minor renovations.

Potential Cautions and Risks

The only risk is feeling one has to justify our actions to other people. This innovation has enormous benefits to assist in placing people in a good state of mind.

What Could be Done Differently Next Time

Employ more people to help carry out the innovation.

Cost Benefit Analysis

How do you place a value on mental health?

Personal Tracking /Satellite Messaging Device to Improve Safety

Managers/Owners:

Annette and Barry Turner

Property Name:

Polpah Station

Property Location:

15km north east of White Cliffs, NSW

Size of property:

26,000ha

Brief enterprise description:

Organic certified wool (merinos) and meat (dorpers and suffolks)

The innovation is a:

New product

New process

The Innovation:

Improves standards of safety

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 1
Annette and Barry Turner use a SPOTTM personal tracking/ satellite messaging unit to improve safety on their property Polpah Station.

Impetus Behind the Innovation

Annette Turner often works away from the property and has ongoing concerns and uncertainty about Barry's safety while working alone on the property. Annette has a strong interest in technology and improving occupational health and safety. When researching what products were available on the market this system met all the requirements. It was a system that could improve safety and the ease of use was appealing.

How the Innovation Works

Annette and Barry Turner use a SPOT™ personal tracking /satellite messaging unit to improve safety on their property, Polpah Station. The device is a handheld unit about the size of a mobile phone, which Barry carries attached to his belt. The unit can be pre-programmed to send a variety of messages via satellite depending on the button pushed to up to ten mobile phones or computers. The unit used at Polpah has been programmed to suit their safety needs.

Button one sends a message 'Barry Turner- I am ok' plus the time and coordinates to Annette's and other nominated family and friend's mobiles and e-mail addresses. This provides reassurance and leaves Barry free to change his plans during the day, for example driving a different track home or make an unplanned visit to a neighboring station. Annette often found she would be concerned about Barry arriving home late or not answering the phone and this feature overcomes a lot of uncertainty.

Button two sends a message 'Barry Turner - I am ok but need help ASAP' plus the time and coordinates. This button can be used to get help in non-emergency situations from family and friends. For example, if the user falls off a motor bike and had some minor injuries and could not get the bike restarted.

Figure 2
Barry Turner uses the personal tracking mechanism when flying.

The third button activates the tracking mechanism, the unit sends coordinates every ten minutes to nominated computers and the movements can be tracked using Google Maps™. Barry uses this feature when flying or while doing dangerous work. Annette can monitor his movements on the home computer. It is also useful to keep a track of visitors on the property eg. recreational hunters.

Button four sends a help message to emergency services with the time and coordinates. The emergency services have been provided with background information and the contact numbers of two family members who are reliably contactable on the phone.

Key Features

The unit uses satellites for tracking and communication hence it can be used anywhere outdoors. The device runs off two AA batteries and does not need to be charged, a battery warning light flashes when the batteries are at 30 percent of their full capacity. The unit attaches to the user's belt which means it is transferable to a vehicle, plane, or motor bike.

Key Benefits

The main benefits the unit provides are improved occupational health and safety and peace of mind.

The user carries the unit rather than it being stored or mounted in a vehicle, this improves safety. For example, if the user is badly injured they can call for help without having to return to the vehicle. Communication occurs via satellite so the unit does not rely on having mobile phone coverage.

Key Materials Required

To operate this system the Turners needed the SPOT™ satellite personal tracker device, a contract with the SPOT™ company in the US to use the satellite, mobile phone and home computer.

Potential Cautions and Risks

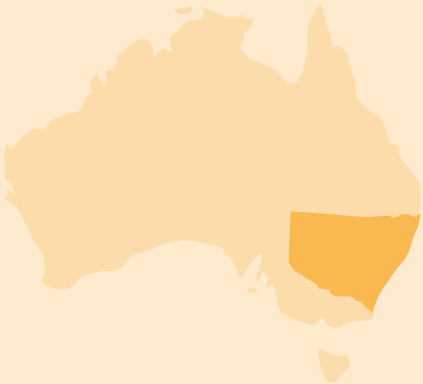
It has to become second nature for the user to pick up the unit before going out to work on the property.

What Could be Done Differently Next Time

Annette and Barry are very happy with the way the unit has worked. Using the unit has easily become part of the daily activities at Polpah Station.

Cost Benefit Analysis

The unit costs $347 and there is an on-going fee of approximately $140/year (the figure varies depending on the $US) for satellite use. There is also a $62/year charge to be able to use the tracking feature. Annette believes that this is a small price to pay for the peace of mind the unit provides.



Getting the Most Out of Your Working Dog

Owner:
Nick Ray (Overseer, Haddon Rig)

Business Name:
Yoroka Kelpie Stud

Business Location:
Warren, NSW

The innovation is a:

New process

The Innovation:

Enhances quality and improved quality standards

Increases productivity

Increases efficiency

Figure 1
Yoroka Kelpies

Impetus Behind the Innovation

Being a working dog breeder and trainer Nick in his role at Haddon Rig as overseer was looking at ways to decrease labour requirements while increasing efficiency.

Star rating

Ease of use	
Degree of innovation	
Impact on business	
Application to other pastoral businesses	

Figure 2
Ben working in the yards at Haddon Rig

Figure 3
Nick Ray

How the Innovation Works

Through his own experience, Nick has recognised that often the working dog is not recognised for its ability to increase efficiency of operations. There is a need for the owner to consider the potential of how dogs can be used better in their business. The owners need to be willing to experiment and trial their dog through training to maximise efficiencies.

Key Features

Becoming a better working dog trainer and understanding the potential of dogs is important as there are so many things a dog could assist with that can be adopted by the farmer/handler. There is little point in getting a dog, whether it was free or purchased, thinking it can do what is required without the owner putting in the necessary time and training the animal.

The number of jackaroo/jillaroos on Haddon Rig has reduced from 6 to 2 FTE's to carry out the same amount of work because dogs are utilised more effectively. The trainer/owner understands their dog and its capabilities. As the abilities and the reliability of the working dogs improved through training, this allowed the business to reduce the labour requirements.

Key Benefits

Nick and his colleagues at Haddon Rig have experienced a number of benefits of working with well trained dogs. They have found that the sheep are quieter, making them easier to move and handle. Other benefits include:

When working in the 13km electric laneway, handlers are able to leave their dog with the mob while they go and open gates or set up yards etc. The dog continues to move the sheep along the laneway. The handler learns how long it takes to move the particular distance. Therefore the handler can estimate the time to expect the dog home with the mob or when to next check the mob.

The combination of good working dogs and the electric laneway allows for multiple mobs to be moved with the use a dog. This is an advantage to Haddon Rig as they operate a Merino Stud, often moving small mobs of different grades of rams. Well trained dogs can move sheep without boxing. The handler moves between the mobs to instruct dogs if necessary.

Haddon Rig completes lamb marking operations in the paddock using portable sheep yards. The working dogs have been trained to hold the mob near the yards to allow for ease of mothering up.

Key Materials Required

Well trained trainer and trained working dog.

Potential Cautions and Risks

Spending the money on a working dog but not putting in the time to train it or the handler taking the time to acquire the skills to train the dog.

Consider the dog's welfare at all times. If leaving a dog alone to work in a laneway, it is essential to provide easily accessible water along the laneway.

Computer Training

Managers/Owners:
RA and KA Cribb

Property Name:
Murra Downs

Property Location:
Cunnamulla, Qld

Size of property:
12,140ha

Brief enterprise description:
Lamb and cattle production

The innovation is a:

New process

The Innovation:

Increases efficiency

Impetus Behind the Innovation

Members and non members are isolated from traditional courses.

Member's computer knowledge and literacy varies from beginner to advanced.

Some members don't use computers regularly enough to become competent.

People have different programs.

How the Innovation Works

Members either bring their own computers or use computers provided. They give trainers notice in advance on the areas where they require tuition and then the trainers come prepared. Members keep a register of needs for future computer programs. This is a two day program.

Key Features

Having multi-skilled trainers familiar with a wide range of computer programs and software.

Individual tuition.

Members are invited to bring own computers.

Key Benefits

Easier and more cost effective to transport trainers and computers to a single location.

Participants can go home each evening.

Learning with locals provides support post training.

Individual tuition on participants topics if choice.

Key Materials Required

Central location, room with plenty of space and power points.

Trainers skilled in many programs.

One computer per person.

Potential Cautions and Risks

Participants loose knowledge and skills through lack of regular use.

Need to continue to practice.

What Could be Done Differently Next Time

Trainers could produce cards that give simple instructions on how to do things like send an attachment or send photo's.

Be more efficient with administration.

Overall it worked well.

Cost Benefit Analysis

Costs	Perceived Benefits
$600/ workshop	Having four sessions per year keeps it fresh Improve skills and efficiency

Star rating

Ease of use

Degree of innovation

Impact on business

Application to other pastoral businesses



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