

final report

| Project code: | B.PRS.0088 |
|--------------------------|--|
| Prepared by: | Jamie McTaggart |
| | North West Sheep Meat Production Group |
| | |
| Date published: | 31 Jan 2009 |
| Date published: ISBN: | 31 Jan 2009 9781741915082 |

PUBLISHED BY Meat & Livestock Australia Limited Locked Bag 991 NORTH SYDNEY NSW 2059

Remote Individual Animal Monitoring

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

This publication is published by Meat & Livestock Australia Limited ABN 39 081 678 364 (MLA). Care is taken to ensure the accuracy of the information contained in this publication. However MLA cannot accept responsibility for the accuracy or completeness of the information or opinions contained in the publication. You should make your own enquiries before making decisions concerning your interests. Reproduction in whole or in part of this publication is prohibited without prior written consent of MLA.

2007/S02 - North West Sheep Meat Production Group

Remote Individual Animal Management (RIAM) Jamie McTaggart 8 Cobbin Street PT AUGUSTA 5700 SA

MUTTON & LAMB

BUDGET \$14,830.00

Aim:

Implement the new RIAM technology to assess the economic advantages. Evaluate and integrate the new remote weighing technology and incorporate changes to the infrastructure so the technology will work successfully and efficiently in the SA pastoral environment.

Objectives:

To identify the return on the capital invested of \$25,300 for the remote weighing system on South Australian Pastoral properties.

Co-ordinator's Comments

- 24/02/2009 This group has provided a very good Final Report, working well through a difficult period and the very new technology that is the basis of the project. Together with their techs at Stockman Telemetry Systems the group has established that UHF can be used over long distances for all monitoring of sheep. They were able to send good quality pictures via UHF to show the sheep at water and the tank levels. Data from the walkover weigh bridge also transmitted well but the WOW still lacks accuracy. Software for weigh sorting is still not industry ready.
- 15/11/2008 Weighbridge is still giving trouble so moved to property over at Quorn which gives easier access for tech help. Field day held 30th October. Final Report has been moved out till 14th January 2009.
- 2/10/2008 Project is going well. Walkover weighbridge is improving but not yet getting good data. It is being moved to a Quorn station. Two field days are being held at Rudall 28th October and Quorn 30th October 2008.
- 30/04/2008 Progress is good with telemetry but walk over weighbridge needs more tech help. Group recording their cost/benefit data to try to provide a return on investment bottom line.
- 8/01/2008 Slow start as group found sourcing this equipment difficult. No commercial walk over scales available. Spent \$28k including

portable yards. This funded by \$100k from National LandCare fund!! Group now setting up equipment, putting etags in and trialing weigh bridge.

- 20/10/2007 Group has now received federal funding of \$100,000 to cover capital costs of weigh bridges and auto drafters.
- 16/05/2007 Sent for Contracting

2007/S02 - North West Sheep Meat Production Group





Remote Individual Animal Management (RIAM)

2008 Final Report



$PRODUCER INITIATED RESEARCH DEVELOPMENT \ . PIRD Program$









Department of Agriculture, Fisheries and Forestry National Landcare Programme



Contents

Page

- **3 Project Summary**
- 4 Introduction and Aims
- 5 Method
- 7 Results
- 18 Discussion
- **19 PIRD** process
- 20 Appendix 1 Vegetation monitoring results
- 28 Appendix 2 Promotion of work

Acknowledgments

Funding from the Australian Government, National Landcare Program through the South Australian Arid Lands Natural Resources Management Board

Funding from Meat and Livestock Australia - PIRD Program

Jamie McTaggart and Scott Herde from Saltbush Livestock for providing property and sheep to be used in the project.

Tim Stockman from Stockman Telemetry Systems for technical support on telemetry technology

John Lehmann from Cousins Merino Service for the technical support with the walk over weighing software and data analysis.

Liam Ryan from Tru-Test

The team at Observant Pty Ltd - Remote Management Systems



Applying a electronic tag to a Dorper lamb

Project Summary

A remote walk over weighing (WOW) system was installed in February 2008 and worked reliably for the duration of the project, which ended in December 2008.

The results

- There is no complete WOW system available to purchase off-the- shelf
- There are limited service providers and people with technical know-how of the WOW system
- Telemetry is cost effective and reliable for receiving data remotely
- Accuracy of weights collected from WOW system are very low
- No data was used for individual animal management or management decisions
- Vegetation monitoring completed showed the vegetation is in a healthy condition but was not linked to animal performance
- A spear gate able to be opened and closed via telemetry was developed

Recommendations

- Producers should not install a WOW system on property based on findings from this project.
- Time needs to be spent on developing a race design to enable collection of accurate animal weights before automatic drafts can be added and portable systems made
- Software needs to be developed to analyse the data so it can be used to make management decisions



Sorting sheep at the walk over weighing site

Introduction

The project was initiated by the North West Sheep Meat Production Group. The Sheep Production Group was started in July 2007 to support producers who have made the transition from wool production to meat production in the Pastoral Zone of South Australia. Group members predominantly have wool-shedding breeds of Dorpers and Damaras.

The group was successful in receiving Australian Government funding from the National Landcare Program through the SA Arid Lands NRM Board. The PIRD funding of \$14,830 supported the main project called Remote Management Systems Technologies Piloted to Improve Sustainability and Land Condition which received funding of \$100,985.

Changing enterprises on these pastoral properties introduces new challenges. With decreasing labour resources and increased costs, adoption by pastoralists of technology is essential for future viability, sustainability and better management of the natural resources in the rangelands. The project provided a opportunity to pilot and assess remote weighing technology that had been trialled by the Sheep CRC in the rangelands.

Aims

PIRD Aims

- Implement the new Remote Individual Animal Management (RIAM) Technology to assess the economic advantages
- Evaluate and integrate the new remote weighing technology and incorporate changes to the infrastructure so the technology will work successfully and efficiently in the SA pastoral environment.

NLP Project Aims

- To utilise the enthusiasm and drive from a group of pastoralists to test the practical application of remote weighing systems technology for determining sheep condition, and making more timely management decisions as natural resource managers.
 - As sheep enter water points their weight will be automatically recorded and sale lambs will be marketed as appropriate following self-drafting.
 - Assess the weight figures with the standard rangeland monitoring system to investigate if this is indeed a suitable longer-term determinant for timely grazing management and NRM decisions.
- To provide a focus for these pastoralists to continue to interact as a group to improve information sharing and problem solving as a result of this project.
- To implement a pilot program for one year to set up and demonstrate the benefits of the technology, with the anticipation that the infrastructure and monitoring sites will be utilised and monitored for a number of years. Further funding would be sought from interested stakeholders based on the results of the pilot year.

- To undertake a cost benefit analysis with regard to its integration into pastoralism to increase sustainability, productivity and profitability, through more timely marketing of stock and an associated reduction in grazing pressure on the natural resource.
- To provide the opportunity to demonstrate the use of the technology to SA pastoralists and to other districts within the Arid Lands region
- Impacts of improved grazing management practices and decisions on vegetation condition and recruitment. Total grazing pressure and timely decision making based on quantitative data
- Species diversity- maintenance and enhancement, the result of more timely decisions from matching animal condition and land condition and the associated reduced grazing pressure with lambs being sold earlier.

Specific NLP Outcomes

- Adoption of sustainable and innovative practices by primary producers throughout rural and regional Australia
- Increase skills and knowledge through sharing of information on sustainable practices
- A pastoral group working to improve sustainability

Method

NLP Proposed Activities and Methodology

An evaluation trial site will be established on a station 120km north of Port Augusta. The demonstration site will utilise telemetry technologies, walk over weighing software, scanning and a drafting facility to collect information on sheep weights as they enter for water. Using electronically tagged sheep and having the system operating remotely will enable data to be collected daily. Rural Solutions SA's rangeland monitoring team will set up standard Pastoral Lease assessment vegetation assessment sites, enabling monitoring of vegetation condition and changes over the season and in the longer term to see any correlation of live-weight and allow more timely decisions with rangeland management.

PIRD Proposed Methodology

Two different weighing systems from two different suppliers will be trialled to compare their performance.

- Two producers from the group will fence off a watering point and develop a system so a weighing crate and automatic three-way drafter can be fitted. The system will be operated by a solar panel and also include a panel reader to read the RFID tags. The system will be set up to use the CDMA network so data can be remotely sent to an office computer and downloaded into a spreadsheet for analysis.

The mob size on a watering point varies between 500 and 700 ewes plus lambs. All the stock on the watering point will get a RFID tag so weights of individual animals can be recorded.

- Six producers will continue to use their current management practices but will record labour input, lamb sale weights, time of sales, marketing decisions and management decisions to compared labour input and management decisions based on the remote weighing system. This will be used in the economic analysis of comparing the new technology and the current management systems.

- Monitor weights of ewes.

- Monitor weights and growth rates of lambs.

- Assess the technology for workability, reliability, precision, portability and how it can be used in different situations.

- Assess different management options due to knowing weights of lambs eg. sending to a feedlot or forward contracting.

- Hold a field day to make people aware of the technology and of its advantages / disadvantages.

Actual Project Methods

- Held steering committee meetings
- Investigated the best walk over weighing system
- Investigated the most suitable way to transmit data over long distances
- Set up telemetry system and walk over weighing at a site 130km north of Pt Augusta
- Completed work on race design to improve accuracy of weights
- Moved walk over weighing system from Pernatty site to a property at Quorn to be more assessable to work on improving accuracy
- Completed data and cost benefit analysis on limited data available
- Two vegetation monitoring sites established and monitored four times

Project Activities

2007

NWSM Production Group meetings

Purchase of remote weighing equipment

2008

- Remote weighing site established
- Monitoring of remote weighing site
- NWSM Production Group Meetings
- Vegetation Monitoring
- Field Days
- Remote access training day

2009

Final Reports

July & August End December

February February to December April & October Feb, June, Sep, Dec April & October April

January

Results

Setting up remote access of walk over weighing (WOW) data

Options for transferring, collecting and receiving data remotely were investigated. The options available at the start of the project were:

- Telemetry (UHF CB radio)
- Next G network formally CDMA network
- Satellite

The system chosen for the project was the telemetry system due to the very low ongoing running costs. Most properties do not have access to Next G and the satellite equipment and airtime (usage) cost was too high.

The diagram on page 8 illustrates the telemetry system used. Tim Stockman from Stockman Telemetry Systems installed the Observant Remote Management System. Installation of the telemetry system took two people two days.

Telemetry typically refers to wireless communications to transfer data. In this project UHF CB radio was used to transmit the data and the dedicated telemetry channels are channel 22 or 23.

Data can flow both ways in the system illustrated on page 8. Information from the base station can be sent to the trial sites and the data collected at the trial sites is sent to the base station.



The following map shows the location of the project.

Telemetry System





Base station at Pt Augusta station computer

Jamie McTaggart at base





Site 2 - Quorn WOW site

Equipment Used







Observant C1CameraObservant C2The observant C1 and C2 have the ability to take data from the Tru-Test and cameraand send via repeaters to the base station computer.

Screen at base station computer – Observant C1 manager



All data from the trial site can be accessed at the base station computer.

Cost of Telemetry System

| Telemetry | |
|----------------|--|
| Base Station | \$1,500 |
| Repeaters (x2) | \$4,400 |
| Trial Site | \$4,000 (includes software program to collect data from camera |
| and Tru-Test) | |
| Camera | \$2,525 |
| Total | \$12,425 inc GST (includes instillation) |

An additional Observant C2 was purchased for the Quorn site

On going costs of telemetry

- Battery replacement every 3-5 years \$100

- If a private channel is required it cost less than \$100 annually (initial set up cost of \$600)

- Replacement of damaged cables

Results of using Telemetry to transfer data

Tim Stockman from Stockman Telemetry Systems was an extremely competent supplier of the telemetry system and was very professional in installing the system.

The distance that the data was required to be transmitted via the telemetry system had never been trialled before. The telemetry system worked reliable throughout the project. There were no workability problems and it was a very successful method of transferring data remotely from the WOW sites both at Quorn and Pernatty. The camera and solar panels required cleaning regularly to remove dust build up. There were some minor issues with the system, which are listed below.

The data from the Tru-Test was updated at the based station computer every 15 minutes. The camera was scheduled to take photos every two hours or on demand.

There are alarms that are displayed on the C1 manger screen that indicated if there are any problems with the telemetry system.

Issues with Telemetry system

- When initially installing the system it was important to establish exact GPS points to enable analysis using the Link Analysis Software. The Link Analysis Software predictions were not accurate because points were taken from Google Earth. This is more of an issue due to the large distances.
- 2) As a result of using Google Earth points the initial antenna on Mt Horrocks had to be changed from an omni directional to a more powerful directional antenna rather than relocating the antenna site.
- 3) The original C1 battery initially installed in the Mt Horrocks repeater was too small so on cloudy days the battery would go flat and no data could be transferred. This was replaced with a larger battery.

| 🕅 Radio Link | | | | | | × |
|---|---|------------------------------------|---|----------------------------|--|---|
| <u>E</u> dit <u>V</u> iew S <u>w</u> ap | | | | | | |
| Azimuth=326.1* PathLoss=151.4dB | Elev. angle=-0.8 E field=28.8dBµ | 87° Obstructior V/m Rx level=-5 | n at 75.12km 94.3dBm | Worst Fres Rx level=4 | nel=-0.5F1 1 | Distance=155.18km Rx Relative=10.7dB |
| Transmitter | AL | 55 | Receiver- | son | | 55 J |
| Role Tx system name Tx power Line loss Antenna gain | Command Yagi14 5w 5 W 1.5 dB 14 dBi | 36.99 dBm 11.85 dBd | Role Rx system Required Antenna Line loss | m name IE Field gain | Subordinate OBSERVANTB/ 18.14 dBµV/m 8.15 dBi 0.5 dB | ASE 6 dBd |
| Antenna height (m) | 2 | ERP=94.22 W Apply | Antenna | nvity height (m) | 1.26 μv 2 | Apply |
| Net 2 | | • | Frequency Minimum 476 | ı (MHz) | Maximum 478 | Apply |

Below shows the Link Analysis Software predictions

Accessing Data Remotely

The base station computer has broadband, which allows access to the base station computer via a program called Logmein.

All group members with internet access could access the base station computer in Pt Augusta via Logmein. This requires a special password. The program cost up to \$100 per year.

It also allows technical support to have access to the telemetry system and rectify any technical problems.

Data can be transferred from the base station computer to any other computer using the Logmein program.

Operation Manual

A Base Station Computer Operation Manual was produced providing step-by-step instructions on how to operate the Logmein program and Observant management system.

Walk Over Weighing System

The information required for setting up the walk over weigh (WOW) system was obtained through consultation with the Sheep CRC.

Upon thorough investigation of the walk over weighing system market, it was found that there is no complete system that can be bought off-the-shelf. Therefore a system suitable for the rangelands had to be developed. There are limited service providers of the technology.

Site Set Up – Refer to photos below

- A trap yard was made around a water point.
- Spear gates were located at either end of the yard (one in, one out) A spear gate is a one way gate were sheep can go through but can not come back out.
- Portable sheep yard panels used to funnel sheep into weighing race
- Race located near water
- The race was where the weigh platform and panel reader (tag scanner) was located
- Sheep weighed on their way into water. On the way out was not trialled
- Hock bars or cement slabs used in race to space animals and slow down
- No race specifications due to still being in development phase

The sheep flowed through the in spear gate, are funnelled into the weighing race, walk over the weighing platform as their electronic ear tag is read, then have a drink before leaving the trap yard through the out spear gate at the opposite end of the trap yard.









In Spear gate View of system from camera One of the race designs trialled is shown in the above photos.

Panel Readers Weigh platform



Equipment stored in an old fridge to protect from the weather and dust. Was also lockable.

Equipment Used and Costs of WOW

| Walk Over Weighing | | Extra |
|-------------------------------------|--------------|---------------------------|
| Allflex Flexi Antenna system | \$2,350 | 30 Cyclone panels |
| \$4340 | | |
| True Test XR 3000 with WOW software | \$3,185 | Allflex & Leader RFID Ear |
| tags \$2 each | | |
| MP 600 Load bars | \$1,035 | Miscellaneous eg spear |
| gates, | | |
| Solar panels and batteries | \$3,900 | cement etc |
| \$1500 | | |
| Total | \$10,470 inc | c GST |

Panel Reader (Electronic Tag Scanner)

- Panel reader must be fenced off so once sheep are in the trap yard they can not be inquisitive and have their tag read again
- Panel reader should be mounted on wood to avoid interference to the signal from steel panels. Although mounting on the steel panels did not affect performance.
- No ideal position of the scanner in relation to the platform was discovered but for the majority of the time the panels were located at the end of the platform.
- All tags that went through the system were being scanned and recorded with no accuracy issues.

Training sheep to go through system

- Ideally sheep should be trained gradually to go through the system.
- At the Pernatty site, the sheep were pushed through the spear gates once, then the spear gates and race was set and left.
- The sheep found their way to water with no troubles.
- The first race design was straight through so the sheep could get use to a simple race before going through a U-shape design.
- Make sure the spear gates are set correctly so animals cannot get in through the out gate.
- At no stage did any animals get stuck in the race and the camera was used to keep watch.

Data received from Walk Over Weighing System

Table 1 . Sample format of how the data is down loaded from the base station computer.

| | | | | | FILE_NUM | |
|------------------|--------|-------------------------|------------|----------|----------|---------------|
| TAG | WEIGHT | FULLDATE | DATE | TIME | BER | RECORD_NUMBER |
| 982 000094495195 | 30 | 2008/08/02 09:35:00 CST | 2008/08/02 | 09:35:00 | 0 | 5281 |
| 982 000094512020 | 43.5 | 2008/08/02 09:36:00 CST | 2008/08/02 | 09:36:00 | 0 | 5282 |
| 982 000094512024 | 50.5 | 2008/08/02 09:36:00 CST | 2008/08/02 | 09:36:00 | 0 | 5283 |
| 982 000094504045 | 54 | 2008/08/02 09:38:00 CST | 2008/08/02 | 09:38:00 | 0 | 5284 |
| 982 000094511735 | 68.5 | 2008/08/02 09:38:00 CST | 2008/08/02 | 09:38:00 | 0 | 5285 |
| 982 000094511769 | 58 | 2008/08/02 09:38:00 CST | 2008/08/02 | 09:38:00 | 0 | 5286 |
| 982 000094511858 | 42.5 | 2008/08/02 09:38:00 CST | 2008/08/02 | 09:38:00 | 0 | 5287 |
| 982 000094511733 | 59.5 | 2008/08/02 09:40:00 CST | 2008/08/02 | 09:40:00 | 0 | 5288 |
| | 36 | 2008/08/02 09:40:00 CST | 2008/08/02 | 09:40:00 | 0 | 5289 |
| 982 000094511891 | 0 | 2008/08/02 09:40:00 CST | 2008/08/02 | 09:40:00 | 0 | 5290 |
| 982 000094511718 | 0 | 2008/08/02 09:41:00 CST | 2008/08/02 | 09:41:00 | 0 | 5291 |
| 982 000094511740 | 49 | 2008/08/02 09:42:00 CST | 2008/08/02 | 09:42:00 | 0 | 5292 |
| 982 000094504131 | 54.5 | 2008/08/02 09:42:00 CST | 2008/08/02 | 09:42:00 | 0 | 5293 |
| 982 000094511855 | 52.5 | 2008/08/02 09:42:00 CST | 2008/08/02 | 09:42:00 | 0 | 5294 |



Graph 1 . Weights of a wether lamb from 6/6/08 to 3/7/08

Table 1 shows the data the Tru-Test indicator captures when an animal walks through the race. Each animal has an individual electronic ear tag that is scanned when the animal walks through the race. A weight, date and time is recorded against the individual identification.

Graph 1 shows the weight of the wether lamb recorded each time it walks through the system in the period from 6/6/08 to 3/7/08. The lamb was manually weighed on the 2/8/08 and it weighed 43.5kg. The above graph and other data that was analysed showed that the weighs being recorded were not reliable and were not accurate.

Sheep used in trial and reference weights

Dorper sheep were trialled through the system. At Pernatty the rams are in all year round so there were ewes with lambs at foot from a few days old up to 50kg, plus dry ewes and rams going through the system. Only ewes and lambs were trialled.

At tagging the sex, age and initial weight was not captured which could have been used for cross-referencing actual records with records from the WOW. Some actual weights and animal class were recorded throughout the project, which allowed WOW weights, and records to be compared which showed the WOW weights were not accurate. An example of the type of error occurring was when weighing ewes and lambs the weight of the ewes was being recorded on the lamb's identification.

Issues with obtaining accurate weights

Many race designs were trialled to improve the accuracy of the weights and there are a number of issues that contribute to inaccurate weights.

The main issues with the WOW system are

- 1) Gates that move to stop sheep on platform are required but not wanted.
- 2) Slowing the sheep down so that one sheep is on the platform at one time.
- 3) Having the sheep on the platform long enough to get a weight. A sheep needs to be on the platform for 0.8 seconds.
- 4) The time it takes for the WOW to reset before the next sheep gets on the platform is too slow.
- 5) Length and location of platform.
- 6) Location of scanner in relation to platform.

Multiple water points in a paddock.

Having more than one watering point in the paddock made it difficult to have constant data if rain put water in dams, water holes etc.

Software used to analyse data

With a mob of five hundred sheep watering up to twice a day a large amount of records are collected over a period of time.

A program called WeighMatrix developed by Steve Semple from the Sheep CRC was used to sort the data. The program took the highs and lows out of the individual data sets. The program was not user friendly and the data had to be analysed further if it was to be used for management purposes.

There is no suitable software program that can use the data and provide information which can be used for management purposes.

Mothering up / Pedigree matching

The most practical use of the data collected was to match lambs to their mothers. Both the ewe and lamb had individual identification and each time the lamb followed the ewe through the WOW system the tags were scanned and recorded. The repeatability of the ewe and lamb going through the system indicates that the lamb belongs to that mother. John Lehmann manually sorted the data and mothered up ewes and lambs but there is a computer program called Pedigree Matcher that the sheep CRC are developing which could assist this process.

Vegetation monitoring

Two photo point monitoring sites 1.5km from the water (trial site) were monitored four times throughout 2008. Monitoring took place in February, June, September and December. In general the trend across the year was that the vegetation remained in good condition with light grazing. Some differences were seen due to different rainfall events.

For the full monitoring results including photos and information on the monitoring method used refer to appendix 1.

Cost Benefit Analysis

A partial budget is a planning tool used to estimate the effect of a particular change. This project is looking at the purchasing of a remote walk over weighing system for \$22,500 and the partial budget below evaluates whether or not the proposed purchase of equipment would be more profitable than the current situation.

Due to the project being unable to collect accurate results and actually use it for management purposes the figures used in the partial budget are assumptions.

Advantages

The additional annual returns have been based on improved marketing decisions. The example used is selling 400 lambs at an extra \$5 per head.

The reduced cost is based on 5 days reduction in labour involved with mustering and weighing lambs to determine what is available for market. This includes fuel involved with travel and mustering.

Disadvantages

This is all of the associated cost involved with using the WOW system. There are no reduced returns from implementing the system.

Partial Budget - Purchase remote weighing system for \$22,500

| Advantages | | Disadvantages |
|-----------------------------|-----------------|-------------------------------------|
| Additional Annual Retu | irns | Additional Annual Costs |
| Improved sales | \$2,000 | Depreciation |
| \$1850 | | - |
| | | Interest |
| \$830 | | |
| | | Repairs |
| \$200 | | 1 |
| | | Insurance |
| \$185 | | |
| Total Added Annual F | Returns \$2.000 | Total Added Annual Costs \$ |
| 2,880 | | |
| Reduced Annual Costs | | Reduced Annual Returns |
| Labour costs | \$1000 | |
| Fuel | \$500 | |
| Total Reduced Annual | l Costs \$1500 | Total Reduced Annual Returns |
| \$0 | | |
| Total Advantages | \$3,500 | Total Disadvantages |
| <u>\$2,880</u> | | |

Estimated change in net farm income \$620 (advantages less disadvantages) Return on investment of \$22,500 is 2.75%

Non- economic factors – genetic gain, marketing decisions, time to do other work

The above partial budget based on assumed figures shows that there is only a small change in net farm income from implementing a remote walk over weighing system. The return does not take into account the non-economic factors listed above.

Other initiatives

A spear gate that could be opened and closed via telemetry was initiated as a result of the project.

This reduces the labour time required to travel and shut off trap gates when trapping sheep. At this stage the spear gate is being constructed. The system will be commercially available and the cost is yet to be determined.

Discussion

The group set out to pilot the remote walk over weighing system that had been trialled and developed by the Sheep CRC. After investigating the concept it was found that there was no complete system that could be bought off-the-shelf and implemented.

As a result, the system had to be developed by the group rather than using the system to obtain data and then using the data for management decisions, which was the main aim of the project.

Therefore, the main finding of the project was that the remote walk over weighing system in its current form is not practical to implement in the pastoral areas because the data that is collected is not accurate and cannot be used for management decisions.

No accurate weight data was collected so no linkage could be made with the vegetation data collected. The cost benefit analysis could not be completed accurately, as at this stage pastoralists would not be implementing the system.

The project did identify that telemetry can be used as a very cost efficient method to transfer data over large distances. The telemetry system that was installed was the real success of the project as it worked reliably.

The project identified that before pastoralists can adopt this new technology the technology needs to be refined to be able to collect accurate weights. This will involve a combination of understanding engineering design, animal behaviour and computer programs.

Once weights of animals can be recorded accurately, then data can be analysed and used for management decisions such as individual management and marketing.

Key Points

- Telemetry is cost effective and reliable for receiving data remotely over large distances
- ✤ Accuracy of weights collected from WOW system are very low
- Not recommended to install WOW system on property based on findings from project.

Producer Initiated Research Development Program

PIRD Process

This is the first time the group has been involved with a PIRD program and they have been satisfied with the program and its outcomes. It has allowed the pastoralists in the group to assess the new technology and sharing of management ideas among the groups.

In this PIRD, Daniel Schuppan, Rural Solutions SA Livestock Consultant amongst the group has been the main driver and coordinator of the project and collator of information and results. It is important for a PIRD to be successful that a member of the producer group or an external facilitator is committed to seeing the project thru to completion

Producers liked the PIRD as it was conducted on property and in their local area, so the results are relevant to the area. The group would be interested in being involved in another PIRD and would recommend it to other producer groups.

Appendix 1 – Vegetation Monitoring Results

First Vegetation Monitoring – February 2008 Land Systems

Y.M.G. Paddock lies within the Roxby land system, described by the Pastoral Land Management Group as: Extensive dunefield over a calcareous plain. Dunes of native pine and mulga woodland over hopbush, woollybutt and kerosene grass; swales of mulga woodland over sandhill wattle, hopbush and grasses; myall woodland plains over pearl bluebush and limestone copperburr; flats of saltbush, starbush and sea-heath with swamps of tea-tree, canegrass or lignum.

The Roxby land system is a fragile system. High stock numbers and low regeneration periods can lead the deep sand dunes to become unstable and drifty. Currently Y.M.G. paddock is stable with no drifting sands and soil stabilising cover of mixed age perennial and annual species in good densities.

Y.M.G. Paddock, Pernatty Station.

The South Australian Government Department of Water, Land and Biodiversity Conservation Pastoral Land Management Group manage and monitor tenure and land condition of South Australian Pastoral Leases. Monitoring includes permanent vegetation monitoring points (photopoints). Photopoints are installed approximately 1.5 km away from permanent waters to evaluate total grazing pressure and erosion caused by domestic stock, and introduced and native animal (kangaroos, goats, etc.) populations.

The dimensions of the photopoints are 100m by 150m. At each photopoint a photo is taken, a plant species and density list is recorded and quantitative data is recorded for perennial species over a 4m x 200m transect. For the purposes of the Remote Weighing project steppoints were also carried out to identify total ground cover including perennial and annual species. This consists of a minimum of 500 points taken over a determined route throughout the photopoint site and identifies and counts ground cover at these points to give an average coverage of the site.

Two photopoints exist off Jubilee Tank in Y.M.G. paddock. The first PP 3410 was installed in 1992 and had a subsequent visit in 2002 by Pastoral Inspectors. These two visits and the February 2008 visit allow discussion of the condition of the site over a 16-year period. The second photopoint (PP 8587) was installed in February 2008 for the purposes of the Remote Weighing project.

PP 3410 lies 1.5 km to the north-east of Jubilee Tank in a swale between mulga dunes. The vegetation composes of dense low bluebush (*Maireana astrotricha*) with sparse bladder saltbush (*Atriplex vesicaria*) and moderately dense short-lived perennials and annual species. Table 1 shows the increase in low bluebush numbers along the 4x200m transect in 1992, 2002 and 2008.

Site comments entered into the Pastoral Land Management Group database:

In 1992 the site was in good condition with regeneration of low bluebush. Site showed no signs of recent sheep activity, rabbit activity noted. No erosion noted.

In 2002 the site was in fair condition with an increase in biomass of low bluebush seen with a high number of juvenile low bluebush. All perennial grass dried off, however they have not being grazed. Site shows no sign of sheep grazing present. Ephemeral herbs dried off. Some cattle tracks are evident throughout the site.

In 2008 the site is in good condition with low bluebush lightly grazed and recruiting in moderate numbers. Lichen cover good with little disturbance of bare soils. Grazing most common on grasses. Stocked in July/Dec 2007 - first time in approx 15 yrs. Dead mulga overstorey with no younger plants. Only one bladder saltbush in site. All stable.

Table 1: Low bluebush transect numbers, PP 3410, Pernatty Station.

| Species | 1992 | | 2 | 002 | Feb 2008 | |
|--------------|-------|----------|-------|----------|----------|----------|
| | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile |
| Low Bluebush | 144 | 0 | 182 | 121 | 180 | 524 |

Step-point results for PP 3410 provided 515 points. The percentages show that bare ground accounts for the majority of ground cover (67.2%) as indicated by Table 2 below.

| Table 2: Step-point counts (% |), PP 3410, 2008 | , Pernatty Station. |
|-------------------------------|------------------|---------------------|
|-------------------------------|------------------|---------------------|

| Bare | Litter | Lichen | Perennial | Annual |
|------|--------|--------|-----------|--------|
| 67.2 | 9.5 | 0.55 | 12.7 | 10.05 |

It is not unexpected in a bluebush site that bare ground is encountered most during a steppoint. These areas are usually low in annual herbage between the perennial bushes. In Table 2 perennials are made up of low bluebush and copperburrs (*Sclerolaena sp.*), which are unpalatable short-lived perennials that provide good soil stability. While lichen was encountered only once this is not indicative of the site which had moderate lichen cover.

PP 8587 lies 1.65 km east of Jubilee Tank in a mulga woodland with diverse understorey of hopbush, perennial and annual grasses and copperburrs. Mulga is mixed age and there is good cover of woollybutt (*Eragrostis eriopoda*) and kerosene grass (*Aristida contorta*).

In Feb 2008 the site is in Good condition with mulga recruiting (young lightly grazed) and good cover of perennial grasses and kerosene grass. Soil stable with good litter cover. Hopbush and punty sparse through site. No noticeable grazing at site.

Identifying transect species counts at PP 8587 is not appropriate until further visits have been undertaken.

Step-point results for PP 8587 provided 526 points. The percentages show that bare ground again accounts for the majority of ground cover (54.6%) as indicated by Table 3 below.

Table 3: Step-point counts (%), PP 8587, 2008, Pernatty Station.

| Bare | Litter | Lichen | Tree | Perennial | Annual |
|------|--------|--------|------|-----------|--------|
| 54.6 | 36 | 0.2 | 0.4 | 5.1 | 3.7 |

The perennial component of the step-point consists mainly of perennial grasses which are indicative of mulga woodlands in good condition even with only 5.1% recorded. Litter plays an important role in mulga woodlands of stabilising bare sand and the current litter of 36% combined with the perennial and annual cover shows that soils are well protected at this site.

Second Vegetation Monitoring June 2008

Y.M.G. Paddock Pernatty Station

The paddock appears to be resilient to the increase in stock movements. Both photopoints remain in good condition with only moderate grazing on palatable species. Palatable perennial species have not experienced a large loss in numbers due to grazing. A lack of ephemeral cover is noted in June 2008 and is to be expected due to dry conditions. Ephemeral species no longer present were not palatable and the loss of these species is not due to grazing.

PP 3410: Reduced annual cover at site with grazing on sidas. Light grazing on low bluebush with reshooting. Increase in stock pads with the majority of soil crust remaining intact. Site remains in good condition.

Table 1: Low bluebush transect numbers, PP 3410, Pernatty Station.

| Species | 19 | 92 | 2002 | | Feb 2008 | | June 2008 | |
|-----------------|-------|----------|-------|----------|----------|----------|-----------|----------|
| | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile |
| Low Bluebush | 144 | 0 | 182 | 121 | 180 | 524 | 185 | 96 |

PP 3410 has increased slightly in the number of adult low bluebush. While many of the juveniles noted in February 2008 have died this is not unexpected for the species and a number of juveniles still remain. Low bluebush juveniles do not survive in large numbers and the June 2008 increase is considered to be adequate.

Table 2: Step-point counts (%), PP 3410, 2008, Pernatty Station.

| Period | Bare | Litter | Lichen | Perennial | Annual |
|-----------|------|--------|--------|-----------|--------|
| Feb 2008 | 67.2 | 9.5 | 0.55 | 12.7 | 10.05 |
| June 2008 | 66.6 | 12.8 | 0 | 18.8 | 1.8 |

Step-point counts for the site remain within the general range of the February 2008 visit with the loss of annual cover due to dry conditions. Of note is that bare ground has not increased with increased stock visitation.

PP 8587: Grasses, hopbush and sandhill wattle grazed light to moderate. Good litter cover

on soils. Site remains in good condition.

Table 3: Perennial species transect numbers, PP 8587, Pernatty Station.

| Species | Feb | 2008 | June 2008 | | | |
|-----------------|----------------|------|-----------|----------|--|--|
| | Adult Juvenile | | Adult | Juvenile | | |
| Woollybutt | 144 | 0 | 182 | 121 | | |
| Mulga | 3 | 0 | 2 | 0 | | |
| Bandicoot grass | 68 | 0 | 28 | 0 | | |
| Puntybush | 3 | 0 | 2 | 0 | | |
| Satiny bluebush | 1 | 0 | 1 | 0 | | |

It appears that this photopoint has experienced an increase in woollybutt and a decrease in bandicoot grass. Bandicoot grass is highly palatable and woollybutt is not which could explain the decrease in numbers. Woollybutt was also recruiting in June 2008 and may explain the increase in adult numbers. There is a small chance that misidentification has occurred between the species due to grazing and the subsequent loss of characteristic grass parts. In either case the perennial grass component of the site remains good. Palatable bandicoot grass remains and woollybut (an excellent stabiliser for deep sand) is still in high numbers.

Other species counted in the transect remain in low numbers and do not differ largely from the February 2008 counts.

| Period | Bare | Litter | Lichen | Tree | Perennial | Annual |
|-----------|------|--------|--------|------|-----------|--------|
| Feb 2008 | 54.6 | 36 | 0.2 | 0.4 | 5.1 | 3.7 |
| June 2008 | 45.9 | 38.7 | 0 | 2.7 | 8.2 | 4.5 |

Table 4: Step-point counts (%), PP 8587, 2008, Pernatty Station.

Step-point counts for June 2008 show that soil cover for this site has not changed dramatically. Bare ground has reduced since February 2008 and the soil cover (litter, lichen, etc.) which is vital to the condition of deep sand areas remains present despite the increase in stock visitation.

Third vegetation Monitoring – September 2008

Y.M.G. Paddock Pernatty Station

The sites remain in good condition with palatables still present in September. Grazing is only light and recruitment of bluebushes is still evident at PP 3410. Grazing occurs mostly on the small remaining number of annuals and perennial grasses. PP 8587 is remarkably resilient with highly palatable grasses still present, although grasses are no longer recruiting. Soils remain stable at both sites with only light to moderate tracking from stock evident.

PP 3410: Site remains in good condition with moderate recruitment of low bluebush, lightly grazed and reshooting. Soils stable with moderate sheep tracking. Bladder saltbush ungrazed. Large densities of unidentified annual grasses grazed and a diverse annual cover exists.

| Species | 1992 | | 1992 2002 | | Feb 2008 | | June 2008 | | Sept 2008 | |
|-----------------|-------|----------|-----------|----------|----------|----------|-----------|----------|-----------|----------|
| | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile |
| Low Bluebush | 144 | 0 | 182 | 121 | 180 | 524 | 185 | 96 | 167 | 48 |

Table 1: Low bluebush transect numbers, PP 3410, Pernatty Station.

PP 3410 has remained in stable condition in 2008 with high densities of low bluebush and continuing recruitment. Juveniles counted in June and September are likely to be the surviving plants from February as low bluebush is slow growing.

| Period | Bare | Litter | Lichen | Perennial | Annual |
|-----------|------|--------|--------|-----------|--------|
| Feb 2008 | 67.2 | 9.5 | 0.55 | 12.7 | 10.05 |
| June 2008 | 66.6 | 12.8 | 0 | 18.8 | 1.8 |
| Sept 2008 | 67.5 | 22 | 1 | 2.7 | 6.8 |

Table 2: Step-point counts (%), PP 3410, 2008, Pernatty Station.

Step-point counts have changed little with litter and annual cover providing protection for soils. Lichen cover remains naturally sparse and stock traffic was not noted as being high.

PP 8587: Site in good condition with mixed age mulga and good stands of woollybutt, bandicoot and kerosene grasses. Many other grasses are unidentifiable. Stable soils and light grazing only.

| Species | Feb | 2008 | June | 2008 | Sept 2008 | | |
|-----------------|-------|----------|-------|----------|-----------|----------|--|
| | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile | |
| Woollybutt | 144 | 0 | 182 | 121 | 10 | 0 | |
| Mulga | 3 | 0 | 2 | 0 | 2 | 0 | |
| Bandicoot grass | 68 | 0 | 28 | 0 | 47 | 0 | |
| Puntybush | 3 | 0 | 2 | 0 | 2 | 0 | |
| Satiny bluebush | 1 | 0 | 1 | 0 | 2 | 0 | |

Table 3: Perennial species transect numbers, PP 8587, Pernatty Station.

The change in woollybutt grass cover at PP 8587 is most likely due to stock treading on grasses and the subsequent death of grasses and the destruction of identifying parts. Bandicoot grass remains in adequate numbers considering it's high palatability. Grass cover overall is good for a stocked paddock providing fodder and soil stability.

| Period | Bare | Litter | Lichen | Tree | Perennial | Annual |
|-----------|------|--------|--------|------|-----------|--------|
| Feb 2008 | 54.6 | 36 | 0.2 | 0.4 | 5.1 | 3.7 |
| June 2008 | 45.9 | 38.7 | 0 | 2.7 | 8.2 | 4.5 |
| Sept 2008 | 62.1 | 33.1 | 0 | 0 | 2.4 | 2.4 |

Table 4: Step-point counts (%), PP 8587, 2008, Pernatty Station.

Bare ground and litter cover counts remain high at the site as is expected in a mulga grassland. A slight increase in bare ground may be attributed to the reduction in woollybutt noted in the site. While lichen is only present in small patches litter and grasses are often the more important soil stabiliser on deep sand.

Forth Vegetation Monitoring – December 2008

Y.M.G. Paddock Pernatty Station

The sites remain in good condition with palatables still present in December. Grazing is only light and recruitment of bluebushes is still evident at PP 3410. PP 8587 retains good densities of palatable grasses and an increase in biomass with green growth from recent rains.

PP 3410: Site remains in good condition with grazing only of unidentified grass to rear. Bladder saltbush remains very sparse. Extensive annual flush with recent rains. Moderate soil disturbance with recent water movement. Low bluebush continues to recruit in moderate numbers. Lichen cover remains intact.

| Table 1: Low bluebush transect numbers, PP 3410, Pe | Pernatty Station. |
|---|-------------------|
|---|-------------------|

| Species | 1992 | | 2 | 2002 | Fel | 2008 | Jun | e 2008 | Sep | ot 2008 | De | c 2008 |
|------------------|-------|----------|-------|----------|-------|-------------|-------|----------|-------|----------|-------|----------|
| | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile |
| Low Bluebush | 144 | 0 | 182 | 121 | 180 | 524 | 185 | 96 | 167 | 48 | 201 | 275 |
| Bladder saltbush | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |

PP 3410 has remained in stable condition throughout 2008 with densities of low bluebush remaining relatively stable and continuing recruitment. Some juveniles from previous visits have established as adults in December. Bladder saltbush is now present in the transect, indicating a rise in numbers throughout the site.

Table 2: Step-point counts (%), PP 3410, 2008, Pernatty Station.

| Period | Bare | Litter | Lichen | Perennial | Annual |
|-----------|------|--------|--------|-----------|--------|
| Feb 2008 | 67.2 | 9.5 | 0.55 | 12.7 | 10.05 |
| June 2008 | 66.6 | 12.8 | 0 | 18.8 | 1.8 |
| Sept 2008 | 67.5 | 22 | 1 | 2.7 | 6.8 |
| Dec 2008 | 67 | 2 | 0 | 9.5 | 21.5 |

Step-point counts have shown an increase in perennial and annual cover and a decrease in litter. This can be accounted for by the large flush of growth experienced from recent rains. Dry annuals usually account for much of the litter in a shrubland but currently much is green. Bare ground remains consistent in the site.

PP 8587: Site remains in good condition with increase in woollybutt biomass and prolific amounts of grasses and annual growth emerging from recent rains. Bandicoot grass remains ungrazed. Soils remain stable although gullying to rear is active due to rains.

| Species | Feb 2008 | | June 2008 | | Sept | 2008 | Dec 2008 | | |
|-----------------|----------|----------|-----------|----------|-------|----------|----------|----------|--|
| | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile | Adult | Juvenile | |
| Woollybutt | 144 | 0 | 182 | 121 | 10 | 0 | 7 | 0 | |
| Mulga | 3 | 0 | 2 | 0 | 2 | 0 | 4 | 0 | |
| Bandicoot grass | 68 | 0 | 28 | 0 | 47 | 0 | 58 | 0 | |
| Puntybush | 3 | 0 | 2 | 0 | 2 | 0 | 1 | 0 | |
| Satiny bluebush | 1 | 0 | 1 | 0 | 2 | 0 | 3 | 0 | |

Table 3: Perennial species transect numbers, PP 8587, Pernatty Station.

Numbers have remained relatively stable between September and December at this photopoint. Bandicoot grass remains ungrazed and along with woollybutt occurs in good numbers. This grass cover and the annual growth occurring currently offer excellent soil protection to the deeper sand. The younger mulga plants found are ungrazed and appear in good condition.

Table 4: Step-point counts (%), PP 8587, 2008, Pernatty Station.

| Period | Bare | Litter | Lichen | Tree | Perennial | Annual |
|-----------|------|--------|--------|------|-----------|--------|
| Feb 2008 | 54.6 | 36 | 0.2 | 0.4 | 5.1 | 3.7 |
| June 2008 | 45.9 | 38.7 | 0 | 2.7 | 8.2 | 4.5 |
| Sept 2008 | 62.1 | 33.1 | 0 | 0 | 2.4 | 2.4 |
| Dec 2008 | 55 | 5 | 0 | 0 | 1 | 39 |

Annual cover through the photopoint (and paddock) has increased dramatically since significant rainfall has occurred. Much of the annual count may consist of young perennial grasses as yet unidentifiable. The drop in litter is due to the consistently green cover as opposed to a dominance of dry grasses and annuals found in previous visits.



Photos taken at photo points PP 3410

Feb 08









Sep 08

June 08

29

Dec 08

Photos taken at photo points PP 8587



Feb 08

June 08



Sep 08

Dec 08

Appendix 2 - Promotion of work

Field Days

- Pernatty Site Field Day
- Dorper and Precision Sheep Management Field Days
- Elders Glendambo Field Day
- Blinman Best Prac Field Day



Pernatty field Day

Glendambo Field Day



Rudall Field Day





Example advertising of field days



Other Promotion

General increase in awareness of the technology in the community due to group members talking to neighbours and consultants and suppliers talking to clients.

Website links

http://www.observant.com.au/pirsa/pirsa.html

http://www.stockmantelemetrysystems.com.au

Group Training – Accessing the weighing system remotely Refer to base Station Computer Operation Manual

Farmer Group Visits

Group from Eyre Peninsula and Western Australia visited the site and had presentations given about the project.

Across the Outback Articles

Remote weighing technology trials

2

How would you feel if you jumped on the scales each day, and were watched while you did it?

For a mob of Dorper sheep north of Port Augusta, this will be happening each time they have a drink for the next 12 months.

have a dink for the next 12 months. Technology has been developed by the Sheep Industry (CC, based in New South Waies, that allows individual animals to be identified and weighed whenever they access water and data to be telemetered to a remote computer. This system is being piloted to assess its potential to improve profitability and enhance sustainability of sheep production in pastoral Seath Autorbits. South Australia.

The North West Sheep Meat Production Group is running the project, which has been funded through the SA Arids Lands NRM Board from the National Landcare Program.

The system has recently been set up and

- spear gates and a race that allow animals access to water in 'single file', while passing over a weighing platform; RFID (Radio Frequency Identification) tags
- applied to each animal; tag reader installed in the race in parallel th the weighing platform;
- · a scales indicator/computer that a input from both the tag reader and the weighing platform;
- telemetry equipment, using UHF repeaters to send data 200 km to an office computer, which allows downloading of tag numbers
- and weights; and batteries charged by solar panels to supply

The site has a cumera installed, which sends nages via UHF back to the computer, allowing nonitoring of stock movements and the trough nd tank levels.



A remote weighing system, located 150 km north of Port Augusta

Remote Weighing

by Daniel Schuppan

at Port Augusta

Pilot Project results

Monitoring livestock in the paddock

remotely from the station office could become

a routine management practice in the future.

The trial of the walk-over weighing system to remotely weigh meat sheep at a site 150 km north of Port Augusta has identified several issues that need to be addressed

before producers can successfully implement

The successful part of the project has been

the ability to receive data remotely through

the telemetry system. Daily sheep weights and photos from the system have been

retiably received at a base station computer

The telemetry system is a very cost effective.

Throughout the course of this project many

At the start of the project there was no

practical issues have been identified with the

walk over weighing technology.

way of receiving data over large distances

this technology in the rangelands.

Vegetation monitoring sites have established, so that the Group can a relationship between pasture cond

Once the system is fully functional and working smoothly, the Group hope to add an automatic (twoway) drafting race that can be programmed to draft the flock based on weight or tag number.

- Applications of this system may include monitoring stock remotely to minimise the need for regular physical checking.
- monitoring animal performance in relation to forward contracted specifications; · drafting of animals based on weight, e

for sale, supplementation or other husbandry practices;

drafting of animals on age or ot individual information that can be related the individual tag number; and

 selection of animals for genetic gain. If anybody is interested in being involved in the North West Sheep Meat Production Group or would like to know more information, ples contact Daniel Schuppan, Rural Solutions SA-Port Lincoln on (08) 8688 3010.



Improving Rangelands Sustainability Program - Project Update

Projects are progressing well with some ew exciting activities just getting started. Off with the fox

This project has been relevented and will trial the new and innovative M44 ejector device against traditional 1080 meat baits. The purpose of the trial is to test both techniques to help passionalists decide optimal fox control methods to improve preduction.

Expected outcomes for this trial include gaining in understanding of the effort required for regional fox control using both techniques,

complete system that could be purchased off the shelf. Different race designs have

been trialled in an attempt to slow the ewes

and lambs down sufficiently to get accurate weights. At this stage the accuracy of the weights is very poor and the data would be unable to be used for management decisions.

There have been no problems with the recording of individual animals using electronic car tags and through examination of the tag data, lambs can be matched to their mothers.

The pilot project was funded by the Australian Government through the SA Arid Lands NRM Board The project will continue for another 18 months with support from the Australian Government to look at improving the accuracy of the weight data.

For more information contact Daniel Schuppan, Rural Solutions SA, Port Lincoln (08) 8688 3010.

In October a field day was held at Quorn to demonstrate the system and related technologies in the sheep industry. Producers are pictured inspecting the walk over weighing system





Remote camera watches over sheep weighing

by Daniel Schuppan The automated, walk over weigh-race 150

km north of Port Augusta has been modified to improve its accuracy. An industrial remote camera has been

mounted at the site to ensure the sheep are flowing through the trap gates and aveighing race effectively. The camera is set up with the water level in the tank as well as the trough in full view. Due to its location it has proven impossible to physically check the site on a daily basis.

The camera will eventually capture video but is currently only taking still pictures, so they can be sent through the Observant Telemetry System back to the base station at Port Augusta

Currently the camera takes a photo every wo hours during daylight periods. Photos can also be requested remotely and take five to 10 minutes to be transmitted back to the base on. The resolution is station. The resolution is proving clear an individual sheep can easily be distinguished.

While this camera system is currently expensive, a less expensive version should be available in the near future.

The shape of the race itself - an improved U-shape - is also providing greater accuracy



and in the next edition of Across the Outback we should have some production data to share. For more information contact Daniel Schuppan Rural Solutions SA Port Lincoln

8688 3010

Remote management technologies to assist pastoral management

Recently the North West Sheep Meat Production Group has been successful in gaining National Landcare Programme Funds to run a trial to investigate the benefits of remote management technologies for managing pastoral properties.

The pilot program will be set up to demonstrate the benefits of technologies such as remote weighing stations.

Sheep will be tagged with electronic ear tags that will enable individual animal weights to be recorded as they come in to

water. The sheep will walk over the weigh station and sale lambs will be automatically drafted off. A cost benefit analysis of the use of this technology will also be undertaken based on the results achieved.

Funds have been approved initially to establish the trial and monitor progress for 12 months but it is hoped that further funding may be secured to ensure that the monitoring is continued for a number of years.

The Group has contracted Rural Solutions SA to establish and manage the trial, and conduct all the required monitoring. A steering group consisting of producers and industry representatives will provide guidance to the project team.

Progress updates will be regularly reported in Across the Outback. If you would like to find out more about this project then please contact the Project Manager, Daniel Schuppan, on (08) 8688 3010.

Other Articles





Stock Journal 31st July 2008



SIGNAL SOLUTION: Scott Herde, station hand, and Daniel Schuppan, PIRSA officer, install remote monitoring equipment at a station north of Port Augusta. Picture: STOCKMAN TELEMETRY SYSTEMS

CARA JENKIN **REGIONAL EDITOR**

PASTORALISTS are mustering sheep and providing water for cattle across thousands of hec-tares of land from their office using remote control. And a South Australian farmer

PORT AUGUSTA

using the technology but the pilot is the first time it is being used such a vast distance from the property. Signals are usually sent over a distance up to 30km. Mr McTagrart said he could

Future farm: properties on remote control

Technology is giving farmers time back with their In the middle of the introduction of a pilot program involving a remote monitoring system. In the middle of rural South Australia, a 12,140 hectare (00,000 acre) sheep station runs completely unmanned — 2,000 sheep, no onsite manager, no here numeer no hencetard.

bore runners, no homestead,

bore runners, no homestead. One-hundred-and-fifty kilometres south in Port Augusta, member of the North West Sheep Meat Production Group in SA and the owner of the sheep, Jamie McTaggart, monitors the property daily from his office computer. This pilot program is set to change the face of farming and has been developed jointly by Rural Solutions SA, a division of Primary Industries and Resources SA (PIRSA), and Stockman Telemetry Systems, Australian innovator, Observant Ptv Lid. Resources SA (FIRSA), and Stockman Telemetry Systems. Australian innovator, Observant Pty Lid, provided the integrated remote monitoring system used in the pilot program. By using the Observant Remote Management System, Jamie checks the water levels in the

System, same checks the water reveal in the troughs, watches the shoep walk into the yards via Observant's "Troughcan" for their daily drink, weights each one on the way in, records the data on its tag reader and he can even remotely muster the sheen into vards by closing key gates. All with the



Jamie McTaggart monitors his property daily from his computer.

Press Release

Observant Systems Feature Story: 18 August 2008.

Future farm: Properties on remote control

Huge labour and fuel savings, production and efficiency gains

In the middle of rural South Australia, a 12,140Ha (30,000-acre) sheep station runs completely unmanned – 2,000 sheep, no onsite manager, no bore runners, no homestead. One hundred and fifty kilometres south in Port Augusta, member of the North West Sheep Meat Production Group in SA and the owner of the sheep, Jamie McTaggart, monitors the property daily from his office computer.

This pilot program is set to change the face of farming and has been developed jointly by Rural Solutions SA, a division of Primary Industries and Resources SA (PIRSA) and Stockman Telemetry Systems. Australian innovators, Observant Pty Ltd, was the first choice for the integrated remote monitoring system used in the pilot program.

By using the Observant Remote Management System, Mr McTaggart checks the water levels in the troughs, watches the sheep walk into the yards via Observant's 'Troughcam'¹ for their daily drink, weighs each one on the way in, records the data on its tag reader and he can even remotely muster the sheep into yards by closing key gates. All with the click of a mouse.

It's not the first Observant Remote Management System installed for Australian cattle or graziers using integrated digital camera, walk-over-weighing systems and radio signals instead of expensive phone lines, but it's the first to be installed over such a great distance from the office to the property.

Typically, the maximum distance that UHF radio signals travel is 30 kilometres, but the addition of two repeater stations located strategically along the route means that dataintensive information such as photos and weight recordings can be relayed over 150 kilometres to the office base station in just a couple of minutes.

This innovative plug-and-play, low cost and easy to use hardware and software system has been designed and manufactured in Australia by Observant Pty Ltd. It's simple enough for customers to run themselves, and they can call on local support from Stockman Telemetry Systems whenever they need to. Already there are Observant Systems in place at properties throughout Australia from the Pilbara region in Western Australia, Alice Springs in Northern Territory, Mt Isa in Queensland and Bourke in New South Wales, and that number is set to increase as graziers look for new ways to cut the cost of farming.

"For graziers, the key advantage is the huge amount you can save on labour and fuel," says Daniel Schuppan from Rural Solutions SA, part of the project team trialling this first-of-a-kind pilot program.

"It cuts down on the number of bore runs you need to do by at least 50%, if not much more," says Daniel.

Saving thousands of dollars and buckets of time

With the price of fuel tipped to skyrocket soon, that's good news for overstretched graziers. With little control over farm gate prices, productivity gains must come from the cost side of the equation.

¹See: <u>http://www.observant.com.au/pirsa/pirsa.html</u>

Tim Stockman of Stockman Telemetry Systems, the local South Australian distributor and installer of Observant Systems, says that petrol prices are not the only production cost driving the demand for remote monitoring.

"Competing with the mining industry for staff is tough," says Tim. "Station Managers just can't even come close to matching those kinds of wages."

"The benefits of monitoring water and pumps remotely have always been there – that's the bread and butter stuff in terms of reducing labour costs. But now with the Observant System, we can do some higher level functions like walk-over weighing, tag reading, remote control gates and auto drafting."

Once the system is in place, operating costs are low – and the benefits on the day-to-day running of the property are enormous.

"So for example, when it's time to muster the paddock, rather than driving up there the day before with two blokes and two motorbikes and spending hours riding around trying to find the sheep, graziers like Mr McTaggart will be able to segregate the sheep when they come in for a drink and then drive up there himself and get the work done in a day," says Tim.

"And if there is a problem, graziers will know about it straight away and they can send someone to deal with it quickly and effectively," he added.

As well as the efficiency gains for graziers, the Observant System has numerous benefits for the environment. It gives natural resource managers the ability to monitor and manage feral animals and wetland pests in a controlled, humane manner, and of course reduces energy costs for graziers with lower fuel usage.

The South Australian North West Sheep Meat Production Group's pilot program has been funded through the SA Arid Lands NRM Board with a grant from the National Landcare Program. It has been running since February this year and is expected to wrap up by December 2008. The Observant System is available through Stockman Telemetry Systems.

Contact details for Stockman Telemetry Systems visit www.stockmantelemetrysystems.com.au or email, sales@stockmantelemetrysystems.com.au.

Observant is an Australian Company that locally designs and manufactures solutions for the remote monitoring and management of infrastructure equipment and is committed to innovation, reliability and simplicity. Fourteen staff are employed at its Melbourne head office with resellers in every state. Visit <u>www.observant.com.au</u> for more information or call 1300 224 688.

ENDS

For further information or to arrange interviews or photographs, please contact: **Amanda Elks, Sefton & Associates – 02 6766 5222**

Poster Displayed at Paskerville Field Day, Broken Hill Field Day and Cleve Field Day

NORTH WEST SHEEP MEAT PRODUCTION GROUP



ABOUT THE GROUP

- □ Established 2007
- 8 Pastoralists located North and West of Port Augusta
- Sheep and Lamb producers who run Dorpers, Damaras and other meat breeds





Remote management system technologies piloted sustainability and land condition

ABOUT THE PROJECT

- Walk over weighing system set up on a watering point
- > All stock individually tagged with electronic ear tags
- Individual weights recorded as sheep enter through the weighing system into a trap yard with spear gates

AIMS OF THE PROJECT

- Demonstrate the practical implementation of the tech
- > Identify cost benefits and the return on capital invest
- Improve grazing management practices
- Monitor individual animal performance
 - o Lamb growth rates
 - Ewe condition and reproductive performance
- Improve marketing decisions



TR

Remote weighing site

Electronic ear tags

