Water security – make every drop count

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Key messages

- Start with reliable information about your property’s water supply. Any assumptions need to be clarified. Know where the water is, how much is available and if it is fit for purpose.
- Carefully consider your current and future water needs. A little extra investment (planning and/or financial) to establish the most efficient and cost-effective design for your property will reduce operating costs and maximise performance in future.
- Don’t skim on monitoring. Establish a robust water quality monitoring regime that reduces risks from leakage or low flow rates, pollution and contaminates.

Water security on Eyre Peninsula is an essential requirement for running a farm business and can have a significant impact upon the livestock and cropping enterprise in relation to stock welfare, farm productivity and business profitability.

What is the issue?

Farmers have identified a number of key issues they consider either a threat to their water security or their business enterprise including:

- Price of mains water limiting sustainability or expansion of their livestock enterprise
- Unreliable flow rates, particularly for farmers at the end of supply lines
- High calcium levels causing scale in pipes
- Aging infrastructure (in the wrong place, subject to leakages and low flow rates)
- Limited options for new or expansion of dams, springs and bores due to lack of suitable surface or underground catchments, poor water quality and quantity and high evaporation rates.

Why is it an issue?

In periods of low rainfall or in low rainfall areas, water shortages can be a significant limitation to productivity. Poorly managed and monitored point source water supplies from springs and dams can result in silting, salinity and poor water quality.

A lack of water for livestock can mean having to cart water in or destock. Poor water quality can restrict the type of stock run or inhibit their productivity. Leakages or blockages in a system can also lead to livestock fatalities especially in extreme heat situations, if systems cannot be maintained and monitored effectively.

The quality of water used to mix with agricultural chemicals can reduce the effectiveness of the chemical applications. Poor quality water can:

- Reduce activity of agricultural chemicals
- Block spray lines or nozzles, reducing chemical application uniformity
- Increase wear of nozzles can also causing reduced chemical application uniformity
- Increase wear on spray rigs.

[Source: NSW Dept of Primary Industries. Water quality for chemical spraying, Sandra McDougall]
Water budgets – knowing how much you use and where it goes

The starting point in developing a sustainable farm water plan is undertaking an audit of the current water usage.

A water audit should:
• Identify water requirements (uses of water) on-farm
• Consider available water supplies on-farm including reliable off-farm water sources or other alternatives
• Check that the water quality meets livestock and/or cropping requirements
• Determine if water supply/storage will meet maximum requirements, with enough storage and correct flow rates into troughs
• Consider current and future storage requirements
• Calculate current and potential losses through evaporation, leakages and wastage
• Include current and future costs, such as your time to monitor and repair or replace the water systems.

Information provided by the water budget along with an understanding of water distribution, quality and seasonal weather patterns can help guide decision-making on farm.

Current water infrastructure – knowing what you have and its condition

It is essential before developing a new water plan for the property to have an understanding of your current system:
• What does your current system look like?
• Are the pipes and water points in the right location?
• What is the current condition of the pipelines and water points? (e.g. corrosion, leaks, age of pipes, erosion etc.)
• Identifying the strengths, weaknesses, opportunities and threats to your infrastructure.

Planning for the future - ensure that the final design meets current and future needs

Don’t let the familiarity of your current system cloud your thinking when looking at improving your farm water system. It is an ideal opportunity when evaluating your water system to revisit your farm plan and business model looking forward for the next 10-20 years.

The farm plan should intergrate:
• The economic, family and environmental goals of a farming business
• Physical capacity of the land and water resources
• Management, equipment and infrastructure requirements.

There are many advances in technologies and equipment that allow systems to be built which would have been impossible 30 years ago. Farmers are installing sheeted catchments, leak detection devices, tank monitoring telemetry, installing larger pipes and fittings for better flow rates.

The three steps in developing a new water system plan are:
1. Map your existing property layout and add all existing pipelines, dams, tanks and troughs,
2. Identify infrastructure which is a high priority to replace and
3. Draw in future water system infrastructure.

Checklist – have you thought of all the options?
• Ensure the final design of the system meets all the current and future requirements while being the most cost efficient and cost effective alternative.
• Cost comparisons should firstly consider sustainability followed by reliability, performance and operating costs.
• Potential interest on the capital outlay, depreciation, maintenance, labour and alternative energy sources (e.g. wind, solar or diesel) only become evident under sound investigations, planning and design.
• A little extra spent on set-up costs is far outweighed by benefits in performance and reduced operational costs.
• Sound planning also allows for the water system to be implemented in stages to suit annual budgeting and development programs.
• Never be afraid to ask for advice.

Further information

SheepConnect SA website www.sheepconnectsa.com.au

Acknowledgements

Water Use On Farm workshops are supported and funded by the Australian National Landcare Program and the Eyre Peninsula Natural Resources Management Board. Thank you to Linden Masters, Geraldine Turner, Corey Yeates, and Luke Nettle for their support for this project. Thank you to all the presenters who supported the day, sharing their knowledge and expertise.
Farmers leading the way with emissions reduction

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Key messages

• Farmer involvement is critical to reducing global greenhouse gas emissions.
• Whilst opportunities are currently limited for broad acre farm involvement, new methods for entering the Emissions Reduction Fund are being developed.
• Consider closely the costs and benefits of entering into a carbon trading scheme and use professional advice.
• The Carbon Farming Knowledge project provides local expertise to understand the opportunities in carbon farming.

Background

The farming sector is critical to the achievement of emission reduction targets being set by nations across the world. This presents farmers with a range of opportunities to become involved in emissions reduction and carbon sequestration. Whilst these opportunities may currently be small for most broad acre farming businesses, this will increase as research unveils more opportunities for farmers to increase their operational efficiencies and to store carbon on their properties. The Carbon Farming Knowledge project, which involves five private farm advisers on the Eyre Peninsula, continues to drive the understanding and practical responses to reducing greenhouse gas emissions through improved crop and livestock management and carbon sequestration.

Carbon trading in practice

Carbon trading is designed to direct investment to the most cost-effective emissions reduction activity. New activities that reduce the levels of greenhouse gases being emitted into the atmosphere may create Australian Carbon Credit Units (ACCUs).

An ACCU is issued based on a farmer’s ability to prove a reduction in greenhouse gas emissions or carbon sequestration over time associated with a parcel of land. It comes down to ‘what would emissions have been like if the current on-farm practice continued’ versus ‘how have emissions been reduced as a result of making a change to on-farm practices’.

There are many sources of possible reductions, such as fertiliser and manure management, reduction of enteric (intestinal) fermentation, avoided deforestation, crop residue management, rice emissions management, legacy landfill emissions, waste management and savannah burning management.

Farmers are storing carbon in the landscape in a number of ways, such as native vegetation plantings, agroforestry, improving forest management and soil carbon sequestration through plant residue management and changing crop land to perennial pastures. For any farmer to earn carbon credits they must undertake their activity using an approved Emissions Reduction Fund method.

Factors to consider

Farmers deciding whether to pursue opportunities in the carbon trading market should consider the following:

Get professional advice

Independent legal advice is recommended or the use of a recognized expert in the carbon trading market. A professional adviser will assess how difficult and costly the project is to implement, do some preliminary calculations to assess viability and consider the project timeframe. Farmers must consider how difficult the project will be to implement, and the risks and returns.

Consider the benefits

Setting up a carbon farming project to trade credits is not cheap. For example, estimates are that undertaking a reforestation project can cost $200,000 because of the monitoring, reporting, verification and onsite visits. The 30% of gross income is the industry rule for what carbon managers are paid with an average 70% of the sale price going to landholders. However, farmers who have taken up projects believe the value in participation is not only in the sale of ACCUs but also in improving farm efficiency, profitability and productivity.

References

Ben Keogh, Australian Carbon Traders.

Moving from the Carbon Farming Initiative to the Emissions Reduction Fund

At the end of 2014, the Carbon Farming Initiative (CFI) was incorporated into the Emissions Reduction Fund (ERF), expanding the scope of the program beyond the land sector. The Australian Government purchases ACCUs from eligible projects through reverse auctions. To be eligible to participate in a reverse auction, projects must use an approved method to reduce greenhouse gas emissions or store carbon. Methods explain the way in which projects that aim to product carbon credits are to run to ensure these projects are scientifically valid.
Emissions Reduction Fund
Methods
There are twenty two approved ERF methods, covering agriculture, vegetation management, energy efficiency, mining, transport, waste and wastewater.

Approved methods are limited to initiatives that can be proven to reduce emissions or store a known amount of carbon e.g. research by the Cotton Research and Development Corporation has enabled a method to be approved for improving nitrogen fertiliser efficiency in cotton. However, in the grains industry, the effects of fertiliser efficiency are more difficult to quantify and so no method is currently approved.

Methods are under development for soil carbon using default values and beef cattle herd management. In the future it is expected that methods will be developed for nitrogen fertiliser use efficiency in other industries and for sheep flock management.

References:
Greenhouse in Agriculture - www.greenhouse.unimelb.edu.au
Primary Industries Climate Challenge Centre – www.piccc.org.au

Emissions Reduction Fund Auctions
In the first round of auctions held in April 2015, 258 projects were registered, with 144 successful in selling ACCUs (Figure 1). The successful bids ranged from 12,000 tonnes to 3.5 million tonnes of CO$_2$-e (carbon dioxide equivalents), with 73 percent relating to the CFI categories of agriculture, landfill and vegetation management.

The second auction was held on November 4-5, 2015. $557 million was spent for 45 million tonnes of carbon abatement at an average of $12.25 per tonne with land use projects again dominating, contracting 80% of the funding.

Reference

Attitudes to Carbon Farming
The Carbon Farming Knowledge project continues to drive the understanding and practical responses to reducing carbon emissions through improved crop and livestock management and engaging in carbon reduction markets. The 'model' used to build adviser knowledge and confidence has been highly successful.

Advisors now have greater confidence in identifying and discussing possible greenhouse gas reducing practices with their farmer clients. A lack of benefits to a client’s business is now the primary barrier identified by advisers to adoption of greenhouse reducing practices, not financial implications or resources (that were identified at the start of the project).

Carbon Farming Knowledge project contacts
The Eyre Peninsula has five advisers involved in the project. If you want to learn more about carbon farming give one of them a call:
• Ed Hunt, Wharminda
• Brian Ashton, Port Lincoln
• Andy Bates, Streaky Bay
• Josh Hollitt, Port Lincoln
• Mark Stanley, Port Lincoln

For up to date technical and policy information on carbon farming and the opportunities it presents follow the Carbon farming Knowledge project web site on www.carbonfarmingknowledge.com.au and subscribe to news blogs and newsletters on the site.

Acknowledgements
This project is supported by funding from the Australian Government.