

Agriculture and Regional NRM

Australia has 56 regional NRM organisations that cover all of Australia¹. While they are established through a variety of means (non-government organisations with company or incorporated structures, statutory authorities under state legislation) they have in common:

- A shared objective of ensuring a sustainable future for Australia's natural resources so that current and future generations can continue to benefit from those resources - **our natural resources underpin the profitability and productivity of farming businesses;**
- They are recognised by the Australian Government as key stakeholders in the delivery of their natural resource management programs;
- A commitment to representing the views of the local communities in the design and implementation of government investments in natural resource management. This is achieved through the preparation of regional NRM plans that align the efforts of the different levels of government with the values of local communities;
- **An understanding that profitable farming enterprises are essential** – profit generated from farming creates opportunities for farmers to invest in sustainability and restoration efforts. Without farming profit this investment is not possible and there is an increased risk of natural resources being used beyond their capacity.

Engaging the farming community is central to our approach. Engagement means we recognise the need to:

¹ OceanWatch and Peel Harvey commenced in 2014

Regional NRM Achievements 2011/12

- Across 56 regions, 231,129 people have been engaged in practice change.
- 359 Indigenous groups have been engaged in regional natural resource management and protecting enhancing cultural heritage.
- 70,060 school children have been involved in hands on learning about our natural resources and how to manage them for future generations
- 17,687 of waterways and coastlines have been improved for water quality, riparian habitat and biodiversity by regional communities across Australia
- 19,833,838 hectares of land is under improved management for healthier food and fibre production

- Promote awareness of profitability challenges and the linkages between natural resource management and productivity;
- Value the input of farmers and their local knowledge into the solutions to meet those challenges;
- Communicate effectively to achieve real ownership and buy-in to solutions;
- Work collaboratively with farmers to support their efforts in improving the condition of their natural resources.

Regional NRM organisations not only develop regional plans but they work in partnership with local communities and other organisations to deliver natural resource management services;

- The delivery role varies between regions and between jurisdictions and reflects regional needs and sectoral arrangements. Across Australia these services include: river health, landcare

Agriculture and Regional NRM

coordination, native vegetation management, sustainable agriculture and soils extension, habitat protection and management, biosecurity, pest plant and animal management, natural disaster emergency management and recovery.

- Funds for these services come mainly from the Australian and State/Territory governments, but in some cases from regional levies or the private sector with in kind and cash contributions from landowners and land managers.

Our briefing note aims to illustrate how regional NRM bodies are delivering outcomes for agriculture through a brief description of a selection of the effort from around Australia.

Reef Rescue

Queensland Regional NRM Groups

The objective of the Reef Rescue Program is to improve water quality in the Great Barrier Reef lagoon by increasing the adoption of land management practices that reduce the run-off of nutrients, pesticides and sediments from agricultural land. The programme uptake has exceeded expectations. High levels of involvement have seen a total of 946 landholders working on 1,286 projects to adopt more sustainable agricultural management practices. This includes 718 cane farmers, 204 graziers and 20 horticulturalists.

Benchmark on-ground improvements as a result of projects implemented include:

- Reduction of 4480 tonnes per annum in sediment loss from farms
- Reduction of over 600 tonnes per annum of nitrogen loss from farms
- Reduction of just over 1000 kilograms per annum of herbicide loss from farms

These achievements have input cost reduction benefits and environmental outcomes.

Enhancing irrigation efficiency on farm

Goulburn Broken CMA

The Goulburn Broken Catchment Management Authority is leading a consortium on behalf of the region's irrigators to achieve farm water savings through improved farm irrigation systems. This results in both a healthy catchment and irrigation businesses that are able to produce more with less water through improved irrigation efficiency.

Between 2010 and 2014:

- \$103 million has been invested by Australian and State Governments;
- 22,600 hectares of irrigation farms have been modified;
- Which has achieved savings of 38.6 Gigalitres of water, these savings were shared between the irrigators and;
- 21.4 Gigalitres was returned to the Environment ;
- 4.5 Gigalitres to the regional water authority

Controlling feral pests to protect our biodiversity and livestock

Upper Hunter (Hunter-Central Rivers CMA)

The LHPA were engaged by the CMA to capture and remove wild dogs endangering native fauna in 100 hectares of land in the World Heritage listed Wollemi National Park and livestock on surrounding farmland in

Agriculture and Regional NRM

Widden and Baerami Valley. Dogs were attracted with food at sites fitted with motion-activated infrared cameras to identify individual dogs and species, to rule out the presence of dingoes. Monitoring was conducted after control works to ensure all wild dogs had been removed. In total 39 dogs were removed,

This approach was also extremely cost effective. The average cost for removing a wild dog is usually \$5000, more if the dog is actively killing stock. The average cost per dog through this program was just over \$1000.

Rabbits were also targeted through the project, with poisoning and warren ripping carried out on selected properties.

Following cessation of control works there were only 2 dogs sighted, indicating a greater than 90% reduction in the local dog population. A large scale ground baiting program was undertaken a month after the completion of the project to control and mop up any other dogs.

Improved Grazing Management to Build Soil Carbon on Upper Manning Grazing Lands

Upper Manning Catchment (Hunter-Central Rivers CMA)

*Sandy Higgins, who recently shared his experience with Upper Hunter farmers on a tour of his beef cattle enterprise, realised a 1% increase in soil carbon over the three years he was involved in the project. **Strategic grazing delivered a remarkable 250% increase in the volume of beef produced per hectare compared to his control site.***

The aim was to implement strategic grazing management activities across 10 properties located in the areas of Gloucester Tops, Giro,

Wherrol Flat, Rawdon Vale, Moppy and Curricabark, covering a total of 22,000 ha in the Upper Manning catchment in NSW.

Strategic grazing is the key to minimising erosion and improving soil carbon levels by maintaining groundcover and plant litter, which in turn boosts soil biota activity. The landscape benefits from improved rainfall infiltration, soil water holding capacity and overall fertility. From there nutritionally dense pasture delivers healthier and more productive stock and the landscape becomes more resilient to drought.

Strategic grazing is delivered through planning processes, provision of planned internal fencing, strategically placed stock water supplies and stock shade, application of compost teas and use of perennial pasture species.

The 10 landholders were supported in adopting the sustainable agriculture practices and monitoring outcomes. A further 70 farmers were engaged through educational events, such as farm tours, to share knowledge and improve the capacity for adopting strategic grazing practices.

In the first year, participants in the project planted an annual pasture, controlled weedy low production grasses, and increased soil fertility in preparation for the perennial pasture, which was planted in the second year.

Sub-divisional fencing was installed to enable stock to be rotated strategically for improved production efficiency. Pastures were left with 4 to 6 cm height to enable more rapid recovery from grazing. This management approach supports more resilient pastures, increases pasture root depth, and builds carbon production, which supports nutrient retention in the soil profile.

Agriculture and Regional NRM

The pastures established in the planting phases were of much greater quality than the control pastures. The pasture planting, strategic grazing and improved fertility had a positive effect on levels of soil carbon.

Soil testing was conducted on each property prior to the project and at its conclusion.

Farming for Sustainable Soils

North Central Catchment Management Authority – Victoria

Farmers and farming communities need knowledge, information and resources to explore sustainable soil management practices consistent with local conditions and enterprises.

Soils in the North Central CMA region are some of the most productive and yet challenging country in Australia. The gross value of agricultural production is approximately \$1.5 billion p.a. from some 2.8 million hectares. The project focuses on dryland soils that are predominantly used for cropping and grazing. 70% is inherently sodic and prone to dispersion, poor soil structure, and consequential wind and water erosion.

The limitations to plant growth, imposed by problems with soil structure, are manifested through poor water entry and root penetration of the uppermost subsoil horizons. The condition is widespread, particularly across the northern plains and foothills of the catchment, limiting the performance of crops and pastures. Poor soil structure also alters the hydrology and causes increased runoff and water erosion. Measurements of actual soil loss are scant, but most contemporary assessments suggest loss rates ranging between one to seven tonnes per hectare per year.

At the conclusion of phase one of the program (June 2013), eight Farming for Sustainable Soils (FSS) groups were active across the region. Each group covered an area of at least 400 square kilometres forming a semi-contiguous community-based land management regime or group. The area stretched across the middle and lower reaches of the four main river basins of north central Victoria. A total of 651 farmers were actively involved as FSS members who were responsible for the management of about 260,000 hectares of land. Collectively, the eight FSS groups organised and undertook more than 600 baseline soil assessments, 250 trials of sustainable practices, and 100 training and knowledge development activities.

Core 4 – Dryland Nutrient reduction Program

West Gippsland Catchment Management Authority - Victoria

CORE 4 is part of the Gippsland Lakes Enhancement Program (GLEP) which aimed to reduce nutrient loads flowing into the Gippsland Lakes. Grants were made available through Core 4 to maximize nutrient retention on dryland dairy farms in target sub catchments (identified as areas contributing high nutrient loads) within the Latrobe River catchment.

CORE 4 used a tender style approach to allocate funding to landholders. To support this industry personnel worked with dairy farmers to assess the nutrient loss risks on farm, and develop and cost action plans to ameliorate this risk. Action plans were assessed using a decision support tool to measure the potential retention of phosphorus on farm per year. Each submission was ranked based on value for money, with the most cost effective

Agriculture and Regional NRM

environmental gain funded first, and so on until funds were expended.

Two separate and independent evaluations of the CORE4 project were undertaken.

One focussed on the achievement of targets, the delivery approach and its effectiveness in achieving outcomes and value for money. The results are summarised below:

- Number of farmers participating 42 (15% of those targeted)
- Upgraded effluent systems 32 sites
- Manage waterway (wetland, gully, rivers) 10 sites
- Manage run-off from yards, and laneways 9 sites
- P retained (kg) 12,310
- On-ground expenditure \$834,000
- On-ground expenditure /kg of Phosphorus retained (\$/kg) \$68

The Core 4 model has been very successful and could again be reliably implemented in the dairy sector or confidently applied to other agricultural sectors.

The program has successfully attracted interest from a broad spectrum of dairy enterprises, but the number of younger farmers and those with large herds who are in an expansion phase has been notable and encouraging.

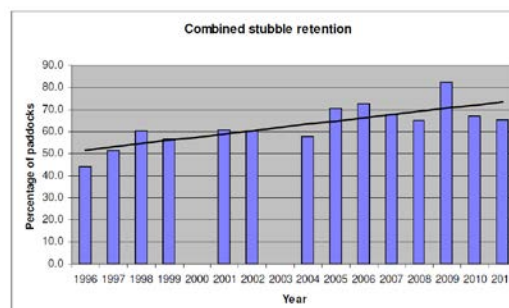
The importance of retaining nutrients was already known to many participating farmers, but tight operating margins have meant the cost of change can be prohibitive. Financial support is therefore the key to encouraging change however does not necessarily need to cover the entire cost of infrastructure change as it is evident that many people are prepared to contribute something, even if this is merely in kind.

Improving Land Management Practices (ILMP)

Wimmera Catchment Management Authority - Victoria

Increased knowledge of no-till and stubble retention practices has reduced soil disturbance and erosion in the Wimmera. The annual Wimmera Cropland Management Transect reflects the large increase in no-till practices, and the Vic No-Till Farmers Association has a strong membership base in the Wimmera region. Intensive consultation with community groups, agencies and partners through the development of the Wimmera Regional Catchment Strategy (RCS) highlighted there is now a common understanding that maintaining ground cover is the single most important thing a landholder can do to protect their soil from erosion. Stubble retention also incorporates greater organic matter in the soil, leading to greater nutrient recycling and water holding capacity of soils.

The ILMP project integrated saltbush landholder incentives, group-driven sustainable farming trials, native pasture trials and perennial pasture trials and awareness-raising activities to improve practices and landholder capacity and intent to reduce the risk of soil erosion on poorly performing paddocks in key local salinity-prone areas.



Agriculture and Regional NRM

Environmental Management Action Planning (EMAP)

Mallee Catchment Management Authority - Victoria

Environmental Management Action Planning (EMAP) is a skills, knowledge and planning program tailored to Mallee farmers. Based on local environmental and agricultural issues, the program helps farmers to plan and carry out works to increase the sustainability, productivity and profitability of their farm.

The program is built around a series of workshops on local natural resource management issues which are further supported by one-on-one case management and follow up farm visits. The workshops and farm visits equip farmers with the skills, knowledge and confidence to plan and carry out actions that improve the environmental condition of their property. These actions include targeted on-ground works and broader changes in management practices that aim to improve the farm's natural values, the health of its soils and the running of the farm business.

After landholders complete EMAP they can enter the graduate program where they receive on-going support, including links to technical advice and available funding, to help them complete their planned actions. The graduate program also involves follow up training through workshops and field days.

EMAP graduates then have the chance to review their plans every three to four years, to ensure their plans remain relevant and up to date.

In eight years EMAP has achieved:

- million hectares of land covered by plans - 46 per cent of agricultural land in the Mallee
- 497 farming families have taken part in the program
- Over 2,000 maps produced
- More than 110 workshops held
- Delivered across seven target areas
- Landholders have mapped over 7,900 works
- Proposed works cover over 200,000 hectares, 2,890 kilometres and 860 sites on private land

A little guidance goes a long way

Condamine Alliance, Queensland

"Savings on Peter's 350 acres for example could be in the order of \$10 000 per year, a substantial saving," Belinda said.

Simple, cost-effective visual guidance systems help take the guesswork out of fertiliser application on dairy farms by reducing overlap which saves time, money and contributes to improving soil health. Through the project, two dairy farmers have shown to be applying inputs on their cropping lands inefficiently in some cases by 40 per cent.

Both farmers are involved in the Darling Downs Young Dairy Network and became involved in the project through their work with network coordinator and Sustainable Agriculture delivery partner Belinda Haddow. "There are difficulties now that industry and services have changed," Belinda said, "Dairy farmers have to start looking outside of what they're use to."

- cost effective for small operations – perfect for dairy farmers
- accuracy for pass-to-pass operations suitable for a small farm

Agriculture and Regional NRM

- easy to install – no wiring in or costly installs – takes about a minute!
- easy to use - simple guidance functions, some coverage mapping ability so you know where you have worked/sprayed
- Flexibility - can be used across a number of machines. It simply suctions to the window and magnetic GPS mount and connects via Bluetooth.

“Previously, application was based on guesswork; the GPS gives the advantage of being able to save the time and the fertiliser.”

Improving management practices for groundcover and soil carbon

Condamine Alliance, Queensland

According to some landholders you could be workshopped to death if you tried to go to everything that was available. For some, the issue is having the time to take out of a busy schedule of on and off-farm commitments to get to events, not to mention the risk of attending a ‘useless’ event.

With this in mind, Condamine Alliance’s Sustainable Agriculture program, with project partners Toowoomba Landcare Group (TLG), recognised that trying to engage its stakeholders must go beyond just hosting a workshop and hoping for people to turn up.

In order to be able to establish strong connections with people and link them to information on improving management practices for groundcover and soil carbon the program sought to better understand its stakeholders to help effectively deliver the program’s objectives and better meet their needs.

This project took advantage of existing Landcare networks to help disseminate

information from our program, such as the Carbon Rules of Thumb, as well as gather feedback from stakeholders. The resultant data that was collected has proved to be a mine of information providing a solid foundation for planning of future engagement activities in the area.

Survey results summary

- Weeds and pests were an issue for almost all – 39 out of 43
- Majority have livestock of some kind, mostly cattle – 25 people
- About half still use ‘conventional’ practices – for tillage and grazing
- Majority of properties are small - 22 under 100ha, 7 between 1-200ha, 10 between 200-1000ha and only 2 >1000ha
- About half (21) are members or have some involvement with Landcare or similar organisations or initiatives.

Future events and activities will build on the landholder engagement and collection of feedback undertaken by TLG. The information will also be a useful engagement tool for use with landholders. It provides a snapshot of their local area, where project officers can go through the results and the issues that emerged and provide them with relevant resources and contacts program.

Beyond SoilCare

Goulburn Broken Catchment Management Authority Victoria

“In the pre- and post-participation surveys the top three most commonly cited reasons for wanting to learn about soil health were efficiency of production, profitability and sustainable production. The next most common were environmental/soil health and custodianship of the land,”

Agriculture and Regional NRM

Farmers who attended Beyond SoilCare events had a greater understanding of soil management practices, increased confidence to implement change and were more likely to discuss soil matters with neighbours or friends, according to a recent participant survey.

Beyond SoilCare, aims to improve landholders' knowledge and skills in soil management, as well as promote the importance of healthy soils and the work farmers do to the wider community.

More than 600 landholders, managing an estimated 77,700 acres, had participated in the Beyond SoilCare project, completing 896 soil tests, and attending one or more of 16 workshops, three farm tours, seven field days and a forum.

"Farmers taking part in the program learnt about the capability of their soils by understanding more about soil types and characteristics,"

Overall, 84 per cent of respondents had made a change in at least one soil management practice, with changed fertiliser regimes and changed pasture the most common, and deep ripping and gypsum the least.

Enhancing Soil Health in the South East of South Australia

Natural Resources South East

Six demonstration sites and incentives delivered through 'Soil Tender' are key to increasing the skills and knowledge of landholders to address soil degradation issues and improving soil health in the South East of South Australia.

The six demonstration farms have 581.41 ha under a range of trials including sub-soil

manuring, clay spreading, delving, spading, liming, trace element mix trials, water softening magnets and green manuring.

'Soil Tender' added 609.4 ha bringing the total farmed area under concentrated soil remediation and changed management practice to 916.4 ha.

'Soil Tender' operates in identified high risk areas of soil acidification and erosion. A customised soils management plan for each participating land manager is developed by a soil scientist. The project officer also provides technical support and continuing education sessions in nrmFARM, a free, web based farm planning and mapping tool hosted by the SE NRM Board on their website (651 land managers have registered to use this service since its inception in 2010). Project learning's will be communicated by farm walks and field days open to the public and by factsheets and other materials on the project website.

Planning for multiple use landscapes on farms

Eyre Peninsula South Australia

"We knew some areas were a problem on our farm but we were not really sure what to do."
"We are now planning towards addressing these problem areas. We now have the momentum to move forward."

Farmers recognising and planning for future opportunities in the context of climate change is the aim of this project. Tools and processes have been developed to identify and plan multi use landscapes to deliver integrated climate change adaptation options.

Experts from a range of organisations worked with 10 farmers on the Eyre Peninsula to develop practical plans to take advantage of opportunities and manage risks associated

Agriculture and Regional NRM

with initiatives around carbon products, biodiversity values and food production.

The farmers developed integrated landscape plans for individual properties, including a process for aggregating carbon and biodiversity products and property case studies that can be utilised for informing others on approaches to integrated landscape planning in a changing climate.

Results 10 farm businesses representing 21,800 hectares of land on Eyre Peninsula were engaged in this project and were brought together into a single group over four workshops during the two year period.

These next generation farm plans and property plans were developed by all farm businesses and were based on a risk analysis of these properties, where each farmer identified key areas for improved productivity and improvement in their native vegetation management.

A farm carbon story benchmark was completed with each of the farm business. The benchmarking highlighted the significant carbon stores that the farmers are custodians of with an average of nearly 190,000 t CO₂ equiv. On average only 360 t CO₂equiv are emitted annually. All but two properties come

out on the positive side of tonnes per Co₂e, sequestering more than they omitted. This carbon story tool enabled the landholders to calculate and test future management scenarios.

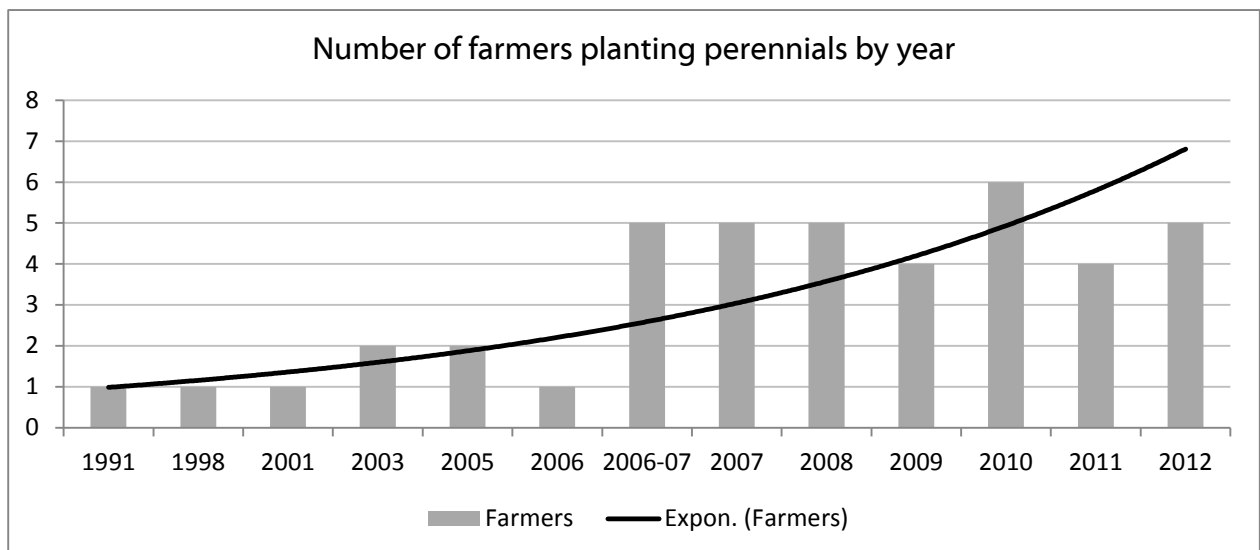
Sustainable farm practices – targets and achievements Improving knowledge and skills of land managers in NRM

Desert Channels Group, Queensland

This (funding) has allowed us to take on a project which we wouldn't have had the resources to do on our own. It has encouraged us to continue with a spelling program and to look for further opportunities to manage biodiversity and improve ground cover on our property.

2.6 million hectares of grazing land has been targeted through this project that delivered 14 groundcover management workshops and 2 sustainable grazing forums to 260 land managers.

It delivered 16 groundcover management events with a total of 468 attendees, of whom 342 were land managers. The area managed



Agriculture and Regional NRM

by these attendees is in excess of 7 million ha, more than 12% percent of the area of the Desert Channels Queensland region, and an area larger than Tasmania.

For an example of our field days, see the YouTube posting for gidgee-thinning workshops at:

http://www.youtube.com/watch?v=sueRTSeOM3I&list=PL9E4034EDA6FEA59F&index=1&feature=plpp_video

42 enterprises have completed groundcover management projects, with these enterprises representing 930,793 ha (1.8 percent) of the DCQ region.

Projects have included riparian protection, ecosystem fencing and enhancement, WONS weeds control for groundcover enhancement, construction of off-stream watering points to lessen grazing pressure, erosion control works, fencing to improve groundcover, and wet season spelling.

Adoption and spread of perennial pastures across the Northern Agricultural Region

Northern Agriculture Region, Western Australia

Perennial pastures provide productivity and landscape benefits. There is no definitive data on the spread of perennial pastures through the Northern Agricultural Region (NAR). NACC has figures on the numbers of hectares established through their incentive programs. This study is intended to add to that portrait by answering two questions: How extensive is the adoption of perennial pastures and how did NACC programs contribute to expansion of perennial grass pastures?

According to stakeholders, NACC's incentive program accelerated the uptake of perennials:

- Came at the right time, when the techniques had been worked out
- Reduced financial risk
- Was strategic, focusing first on an area where perennials offered economic and environmental benefits
- 'Sold' as a package: minimum size, fencing, technical assessment, establishment criteria
- Increased success due to access to expert advice, one-on-one and workshops
- Created loose partnerships with those who could spread the word about perennials: Evergreen, regional groups, contractors

