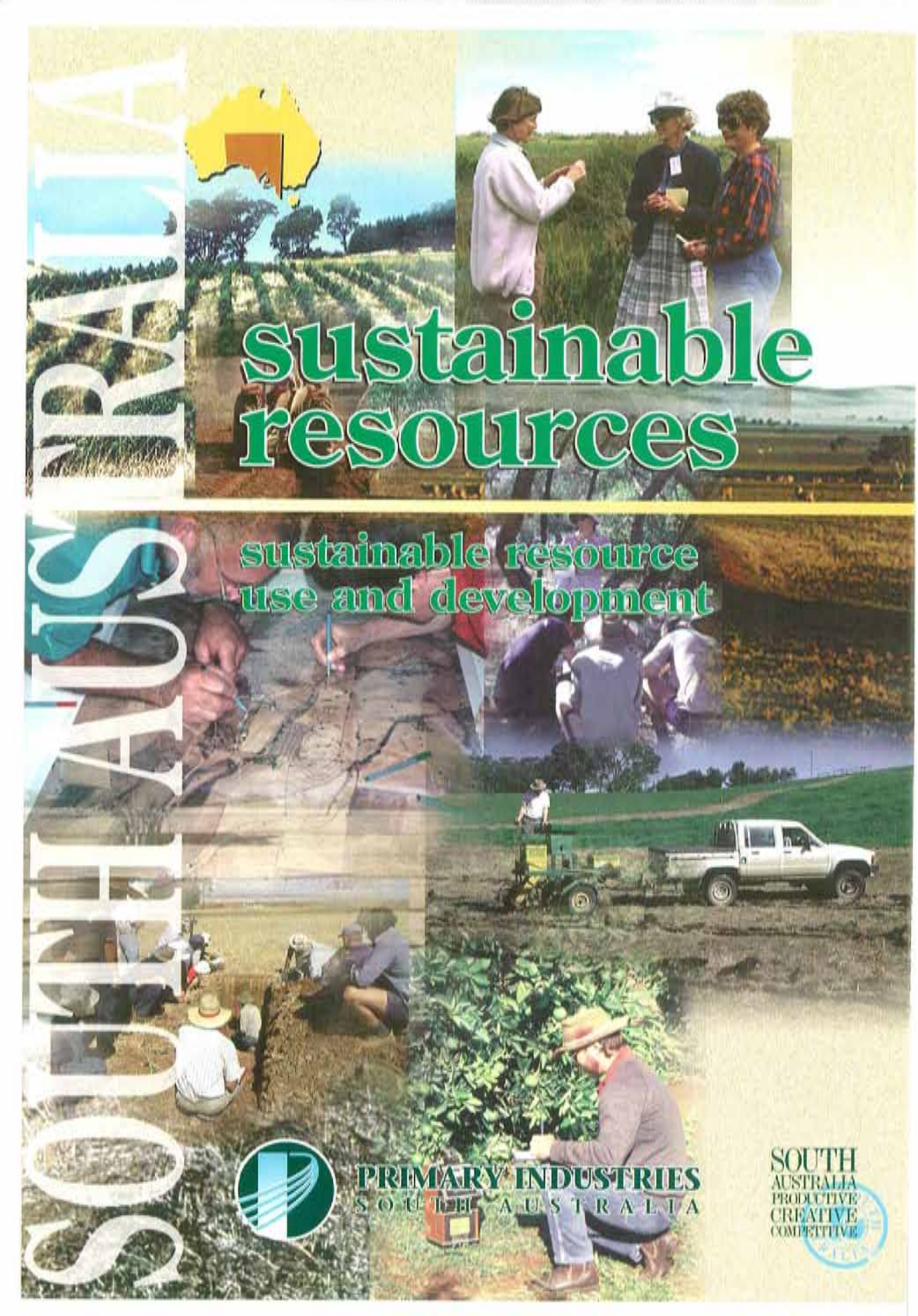
Signs of Change

NATIONAL LANDCARE PROGRAM

PRIMARY INDUSTRIES SOUTH AUSTRALIA

Landcare at work in SA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SIGNS OF CHANGE - A MESSAGE FROM ROB KERIN

Landcare in SA has been well accepted by the community, particularly those in the rural sector.

It is pleasing to see that land managers have adopted the landcare ethic and made changes to farming practice that result in increased production and better management of the resource base.

The improved land cover, through conservation farming and the better understanding of the catchments they are living and working in, has reduced the risks of land degradation.

Landcare has come a long way in SA since its inception in 1989. There are now over 300 landcare groups in SA and the number is increasing.

Activities undertaken by these groups range from demonstrating sustainable farming systems such as minimum tillage and crop monitoring to tree planting and native vegetation protection.

Programs such as Property Management Planning are demonstrating that landcare can enhance production capacity and reduce risks, at the same time as improving the environment.

I am pleased to support the ongoing development of landcare in SA.

The SA Government has recently made a further significant commitment to funding and supporting landcare initiatives in partnership with the Commonwealth Government and the community. This major investment will accelerate on ground action through a range of programs that will provide major benefits in sustaining our land, vegetation, water, and related biodiversity.

This book aims to showcase Landcare at work in SA, to demonstrate the various achievements since the start of the Decade of Landcare.

- Minister for Primary Industries Rob Kerin

I am pleased to support this publication, with the knowledge that it will encourage landholders from all over SA and the rest of Australia to match the achievements described in this book.

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THE EVOLUTION OF LANDCARE IN SA

The culture of landcare is well established in South Australia.

There are in excess of 300 landcare groups (including dunecare and coastcare groups) tackling a vast range of land management issues at a local level, and a further 24 groups tackling catchment issues.

These groups operate mainly in the state's agricultural, horticultural, and pastoral lands, but now also in the city.

The list of SA landcare success stories is plentiful - and many are featured in this booklet.

SA's Focus Schools in Landcare program, Property Management Planning program, and soil conservation board system have been so successful, they are now being used as models elsewhere in Australia.

SA's approval and enthusiasm for landcare is perhaps best evidenced by the community ownership and organisation of the annual landcare conference. A band of a dozen or so enthusiastic community landcarers have been running the conferences since 1992, with great success.

SA has led the nation in its re-greening efforts. Last year SA planted more trees than were removed, for the first time since the state was settled.

Rebecca Lang, Andrew Curtis, and Bruce Munday helped Melanie Kitschke compile this two-page feature, which looks beyond the obvious successes to the more nebulous and intangible achievements of landcare.

Change in attitudes a real landcare success story

Landcare - and the groundswell of information and awareness the movement has generated - can take credit for the huge change in cultural attitudes it has prompted.

Landcare has heightened many landowners' understanding of the fragile nature of their land resource, and empowered them to change land management practices to ensure sustainability in the long term.

While in the past, concern certainly existed for land degradation problems, most landholders did not have the resources (financial, human, and time) to do anything about it on their own.

"Landcare has shown people that they can do something about it, and must, if they want to be here in the long term," PISA landcare officer Andrew Curtis said.

"Landcare is about sharing the information, whether it be through demonstrations, word of mouth, formation of groups, or simply a chat over a beer in the pub, and then being able to make a decision for your own situation.

"While not all landowners have got to the stage of implementing change, what is important is that people are thinking about the need to change."

In many cases, Landcare has empowered individuals to question and go against the status quo.

Prior to the Landcare group movement, some individuals were already practising landcare.

However, the Landcare movement has started to convince the broader landholder base that these sustainable land management practises are not extreme, but necessary.

People are talking about sustainabilty without fear of being labelled a "greenie". This change of culture has meant farmers are proud of their landcare activities.

Across the state, there's a multitude of sustainable management practices being adopted.

In broad acre agriculture, multiple soil structure-destroying cultivations are being replaced with minimum tillage and stubble retention methods by increasing numbers of land managers. Better management practices are improving soil structure and nutrition, and yields are increasing.

In the pastoral country, many landholders are reducing stocking rates and controlling feral animals - and finding this is just as profitable, if not more profitable than previous practices.

In the state's vineyards, mulching the vinerows with straw to enhance water use and reduce soil erosion is becoming an increasingly common practice. Grape yields and quality are increasing as a result.

Along the River Murray, irrigation practices have been fine-tuned to reduce inefficient water use, resulting in massive water savings to landholders.

Graziers in high rainfall country are managing pastures (and hence maintaining soil cover) by fencing to land class and soil type, monitoring soil fertility and pH levels and applying fertiliser and lime to address deficiencies.

Some land managers with creeks running through their properties are fencing off creeklines and using dams and troughs. With stock no longer watered in creek lines, water quality on their properties and downstream is improving, and ...

Potato farmers in the Adelaide Hills are protecting their steeply sloping country with grade furrows and grassed waterways, and by sowing pasture as the potato crop is dug.

Much of the activity has been prompted by a concern for long-term sustainability.

However, in most cases, there is also a short-term benefit.

While the change in mind-set is indeed an intangible success, it is this change in attitude which will underpin the entire sustainable land management process.

While much progress has been made, the adoption of improved land management practices by the community on a statewide basis still needs to be increased.

Communicating to both participating landowners and non-participating landowners has been recognised as a major concern for landcare, and is being addressed at the community level. Getting the un-converted to take an interest in landcare practices, and come to field days and workshops, is a key challenge.

THE EVOLUTION OF LANDCARE IN SA

There have always been farmer groups who have learned that working together, sharing ideas and communicating openly and honestly has helped them to tackle the problems they have faced.

One of the most significant achievements of the landcare movement has been the opening up of this opportunity to the wider rural community.

In raising the landcare ethos, an increasing number of people are thinking more about the land than simply what they produce from it, and are talking about the effect that their management has on the resource itself.

Sharing ideas and working together

So why work together with a group of people, when it's much easier and quicker to just get on and do it yourself?

Think of the hassles - listening to people that bore the pants off you, people you've got nothing in common with, that you may not particularly like, and that don't manage their farms the way you think they should.

Why would anybody put themselves through this?

The fact that people have, to create the plethora of community groups that now exist, has to be one of the great successes of the landcare movement.

"Landcare is breaking down the silence between landowners," Tungkillo landcarer Bruce Munday said. "We're working together towards the same end, and most of us are facing the same problems.

"So when we get onto a good thing we now share it with other people in the group."

"I guess farmers will always be competitive, but they also want to see their neighbours doing better too."

Landcare evaluator Rebecca Lang says the interaction between group members has in itself been invaluable in breaking down barriers.

"When you put in time and effort getting to know someone, you usually find some way of connecting with them," she said.

"This has led to people being more comfortable with each other, more open to other peoples' ideas, and having trust in other peoples' ability to pitch in and get on with the common goal.

"Landcare has said: you don't need to tackle this problem on your own."

"It's the cross-section of community members and their diverse opinions that has led to the broad range of activities being tackled. "There is an enormous pool of skills and knowledge in the community - Landcare has provided a vehicle for people to use their skills, whether it be at a practical level, in leadership, or as an administrator."

Rebecca says the hidden strength of landcare is the people, and it is extremely important that this resource is maintained.

The enthusiasm and commitment of community people who have devoted their energies to the landcare cause has been remarkable. However, many have been faced with a huge workload, and this is increasingly so.

Bruce says many group members are part of groups because they recognise natural resource management problems are bigger than the individual property level.

"Landcare has said: you don't need to tackle this problem on your own."

In the past few years, landcare has evolved even further, where groups recognise working on a whole-of-catchment basis will be most effective.

People are looking to the top of the catchment to solve problems at the bottom of the catchment.

In small catchments, catchment groups may function as a landcare group. In larger catchments, three or four landcare groups may come together to work on common issues.

"It is important that small landcare groups continue to address local issues - the further we move from the local level, the less tangible the benefits and the harder it is to maintain enthusiasm," Bruce says.

The challenges ahead

The future of landcare is about trying to get the balance right ...

- √ getting action on the ground with maximum efficiency and minimum red tape and with agreed cost sharing
- √ achieving a landcare culture wherein landholders instinctively accept the need to manage land sustainably and the nation eagerly supports them
- √ making the best use of available funds - do you get the biggest problems fixed in a small area or the smaller problems fixed over a larger area?
- √ do you work with motivated people whose problems aren't so great, or the less motivated people who may have the bigger problems?
- √ increasing adoption of sustainable practices through a variety of mechanisms, including information availability, funding, and incentives and penalties, without creating a hand-out mentality

Groups insured

All registered active landcare groups in SA can now be insured for public liability, professional indemnity and personal injury.

This support from PISA and DENR recognises the importance of volunteer groups' contributions to State Government programs.

For details, contact Grant Lomman (08) 83039512.

Trash is treasure

In paddock after paddock across rural SA rests voiceless evidence of a major 10-year revolution in broadacre farming.

Concern for the sustainability of farming systems has seen a reduction in stubble burning and the amount of tillage - resulting in protection from erosion, increased soil organic levels and improved soil structure.

The Right Rotations Landcare Report (based on information from 800 wheat paddocks sown in 1995) indicates that one third of all paddocks were direct drilled or received minimum tillage.

The same report indicated that 60 pc of paddocks had most or all of the previous residue retained.

A survey conducted on Eyre Pensinula has shown the area burnt prior to cropping has reduced from 40 pc to 12 pc, and the number of cultivations has dropped from an average of 2.3 to 1.2.

The groundswell of interest in conservation farming is perhaps best indicated by the abundance of conservation tillage and stubble handling equipment now being sold, the demand for information, and the level of participation at stubble handling and direct drilling field days.

Machinery manufacturers have been developing tillage equipment with higher trash flows and the higher breakout strains needed for direct drilling. There is also good availability of stubble handling equipment, including mulchers and slashers, choppers and straw spreaders for harvesters, and levelling devices such as prickle chains, rotary harrows and press wheels.

Tillage points have undergone design changes, with narrow tungsten-tipped knife-type points becoming popular.

PISA land management program manager Bill Davies says the adoption of stubble retention has substantially reduced the loss of soil through wind and water erosion.

Stubble protects the soil by cushioning the impact of rain drops. It prevents rain from breaking up soil particles and causing the surface pores to seal. The structure remains open, improving infiltration and reducing run-off (which takes soil and nutrients with it). Stubble protects the soil surface by reducing wind velocity and helping to trap windblown particles. It also prevents the movement and loss of soil, including the very fine particles which contain most of the nutrients.

Stubble retention is playing a major role in the substantial reduction of soil erosion throughout SA's agricultural districts.

"The key is to keep 1.5 to 2 tonne/ha dry matter on soils for as long as possible," Bill said. "Once cover drops below that threshold, it is at risk from erosion."

The mulching effect of stubbles prevents evaporation, which becomes extremely valuable in years of scarce rainfall.

The challenge remains for farmers - and researchers - to overcome the barriers preventing them from retaining significant levels of surface residue.

Other issues include management of snails and mice, and where use of some herbicides is inhibited.

Finance for the transition from conventional tillage machinery to conservation tillage machinery can also prevent adoption.

Many farmers with engineering skills have modified existing machinery.

Improved tax concessions would speed up the uptake of conservation farming.

Mr Davies said stubble retention, in combination with minimising tillage, had other benefits, particularly improving soil structure, and building up organic carbon levels.

Conservation farming also results in fuel savings, less wear on machinery, and it creates a favorable environment for young seedlings.

Importantly, it also allows better timeliness of sowing which leads to greater production.

"The driving force behind the widespread adoption of conservation farming techniques is a new awareness by farmers of better ways to care for their land," Mr Davies said.

"Most landholders are trying wherever they can to make sure resources are protected and preserved - for themselves and for the greater community.

"There has also been a significant increase in research and development of farming systems.

"Farmers now have more information than ever before in terms of soil management which sustains their income needs and the environment's needs."

Contour banking popular in SA

The use of contour banks throughout SA's broadacre agriculture districts has resulted in a remarkable reduction in water erosion.

That's the word from PISA soils officer Mary-Anne Young, who says some 325,000 ha of land has been surveyed for contouring in the past 50 years, with 135,000 ha of that surveyed from PISA's Jamestown office.

Contour banks control run off, and result in improved infiltration and less waterlogging at the bottom of the slope. They also enable landholders to re-claim gully eroded areas.

Measuring sustainability

'Sustainability' has certainly emerged as a popular buzz-word for agriculture in the 1990s, particularly as farmers have begun to question what impact the push for ever-higher levels of productivity is having on the land. But how is sustainability measured? And, indeed, what constitutes sustainability?

These are among the questions members of at least two South Australian farmer-groups have been asking, and it is essentially what has driven their extensive research and development projects since the early 1990s.

Both the Yeelanna Landcare Group, on Eyre Peninsula, and the Kapunda Land Management Group, in the Lower North, have looked in detail at varying land management strategies used by farmers in their districts.

Using comparisons of various management techniques, the groups have strived to identify which practices are sustainable and which are not.

For the Yeelanna Group, information-gathering has been a long and rigorous exercise, but the results have yielded some important rewards. The group has undertaken monitoring of some 17 strategically-placed, paired sites in the Yeelanna-Karkoo area since 1992. The work has involved extensive soil testing to gauge the impact of the different management and rotation practices implemented on each site.

> **"Already it has allowed farmers to make much better informed management decisions."**

As well as this, the group formed a close and highly beneficial relationship with the Cooperative Research Centre for Soil & Land Management. This has provided a flexible framework for technology transfer, particularly through the joint Focus Field project.

The project began in 1993 when two neighbouring parcels of land were pegged out for use in a trial.

Comparisons have since been made of standard farming practices used in the district (represented on one half of the trial site) to those advocated by scientists and agronomists (used on neighbouring land). The aim was to see which system offered the greatest sustainability. "Both sites have been carefully analysed to establish what changes have occurred within the soil itself," group chairman Max Wilksch said. "Now, almost five years later, we are starting to accumulate some evidence that suggests what we have been measuring in the past is probably not a good enough guide.

"However, we will need another five years' research to prove this. Even then, a decade of land management is really not a long time."

Information gleaned by the group through each year's trials is distributed to farmers at the groups popular annual field day, as well as through local media and the Agricultural Bureau network. Already it has allowed farmers to make much better-informed management decisions.

The Kapunda Land Management Group has taken a similar path to that of the Yeelanna Landcare Group in that members have sought to gain a better understanding of local farming practices and soil-related issues.

Robert Tilley, chairperson of the Kapunda group, said the group began by surveying some 67 land managers in the Kapunda area to identify basic production and management patterns as well as gauge farmers attitudes toward the quality of both their soils and farming practises.

Eyre Peninsula farmers at a cropping field day hosted by the Yeelanna Landcare Group.

Apart from stubble management emerging as a key problem for many farmers, the survey suggested farmers generally were underestimating the degree of soil erosion on their properties, and did not have a sound grasp of the problems of soil sodicity and increasing acidification.

While the survey was being undertaken, the group set up two each of replicaticated gypsum and lime application trial sites and a further 12 lime or gypsum demonstration sites across the district on red brown earths. This followed crop monitoring work undertaken by a number of group members from 1988 to 1993.

He said field days convened by group members had been invaluable in disseminating helpful information. This has played a role in the marked uptake of conservation farming practices, such as minimum tillage and stubble retention in the district.

Robert hopes this will be further enhanced by the release of an information kit for farmers later this year.

Compiled by the Kapunda Land Management Group, the kit will contain commentary on the survey, as well as basic management and soil structure information, and a wall chart to record information over the next decade from specific monitoring points, including pH, organic carbon levels, dispersiveness etc, as indicators of soil structure.

- by Jason Gale

LANDCARE IN BROADACRE AGRICULTURE

To be attractive to land managers, landcare must be about combining sustainability and profitability.

That's the driving force behind the Lowbank Agricultural Bureau land management group, which has, since its inception in 1989, sought to overcome productivity decline on its sandy loam soils, once recognised for their yielding ability.

The group has identified long-term fallowing as one of the causes, and is now seeking to change land management practices through the use of rotation planning to reverse this trend.

War against yield decline

Farmers in the Northern Mallee of SA are on the war path.

They're fighting against declining yields on their sandy loam country - a problem which has occurred gradually over the past century but now costs them big bucks.

At the forefront of the attack is the Lowbank Agricultural Bureau land managament group - a group of 25 or so farmers united by their unproductive sands and seeking desperately for solutions.

In 1989, the bureau group set about trying to work out why the sandy country was becoming less productive and how to reverse the trend.

"We're not talking about something obvious like denuded sand hills, but rather a very gradual process of declining yields," says group chairman Allen Buckley.

With landcare funding, the group set up a four-year rotation trial, with treatments ranging from the traditional volunteer grassy pastures and fallow rotation through to medic pasture (with grasses controlled) and crop rotation, and continuous cropping rotations. Plots were checked for soil fertility and root disease bio-assays, revealing very poor phosphorus (12 ppm) and OC levels (0.3 pc) and high CCN .

"From the trials, it became obvious that fertility and root disease were the key issues that we needed to address to improve yields on sandy rises," Allen said.

The project has shown the value of rotation planning in reducing disease levels and the need for long-term fallow, therefore making the farming system in the Northern Mallee more sustainable.

The focus is now to improve soil phosphorus and organic carbon levels - a much longer term task and one which the group believes may depend on the adoption of reduced tillage or direct drilling.

"Paddock size trials, which compare direct drilling with conventional tillage, were established in late 1994, and these are being closely monitored by many farmers in the district," Allen said.

New look for Wokurna

Ten years ago, when northerly winds swept through the undulating sandhills of Northern Yorke Peninsula's Wokurna district, tonnes of sand and loam would be swept into the air.

Today, thanks to some seven years of landcare and changed farming practices in the district, the loss of top soil by wind erosion is significantly less of a problem.

Farming practices have altered significantly on many properties in the district - nearly all farmers retain stubbles, many minimise tillage and some direct drill.

A couple of farmers have sown their most highly susceptible sandhills to a shelterbelt of trees and shrubs. Many are now managing their land according to its capability - treating the sandhills and loamy flats as separate entities.

> **"... the landcare trials have enabled farmers to try new farm management techniques without having to fork out large amounts of money..."**

The changes, according to Wokurna Landcare Group publicity officer Phil Harris, have occurred gradually over the past decade in the district, and much has been in response to the activities of the landcare group.

"The landcare trials have enabled farmers to try new farm management techniques without having to fork out large amounts of money," Phil said.

All farmers in the group have been actively involved in the trials we have done and many others have watched "over the fence" or attended field days.

Phil said in the early 1990s, many farmers in the district were sceptical about direct drilling sandy loams. However, paddock size trials and thorough record keeping have proven it does work.

The group trials of prickle chaining have led the district's farmers to recognise the prickle chain as a tool which can help them retain stubbles and minimise tillage. Some farmers have since purchased their own prickle chains, while others use the Landcare-owned machine, on a hire basis.

Phil said the group's participation in the Property Management Planning program was invaluable.

It revealed opportunities to boost profits and reduce erosion by farming sandhills separately.

"Many farmers are now sowing their sandhills to crops which cover the ground quicker (preventing erosion).

Grazing of legume stubbles has been another key issue. A trial comparing the wind erosion on ungrazed and grazed legumes stubble proved the value of leaving legume stubble ungrazed.

However, very little in farming is without compromise. In the mice plague of 1993, farmers were quick to notice the huge build up of mice in ungrazed paddocks.

Phil says the group planted some 5000 trees and shrubs in shelterbelts on two sandhills in the early stages of the project. Some farmers in the district have gone out and planted shelterbelts on their own trouble spots.

Clay-spreading gives non-wetting sands a new lease of life

SA's vast acreages of non-wetting sandy soils - infamous for their poor crop yields, weedy pastures, poor stocking capacity, and susceptibility to wind and water erosion - are being given a new lease of life.

More than 12,000 ha of non-wetting sands in SA's South-East and Eyre Peninsula have been spread with clay, in a process coined 'clay spreading'.

Clay spreading offers immediate and long-lasting improvements in crop and pasture production.

This, in many cases, has overriden any concerns many farmers may have had about the cost of the treatment (around $150/ha, plus incorporation), and the fact the technique is far from perfected in terms of determining the most economic and efficient rate and method of spreading.

On-ground activity by farmers affected by the frustrating soil type has been backed up by many clay spreading field days and a number of scientific trials, and the emergence of many clay spreading contractors who are booked for months in advance.

PISA clay spreading expert Melissa Cann says water repellence is a major problem in SA, affecting more than 1.2 million ha of sandy soils in the South-East and on Eyre Peninsula.

... clay spreading offers immediate and long lasting improvements in crop and pasture production

"Although water-repellent soils will almost always wet up at some stage of the season, the uneven infiltration of water leaves large areas of dry soil," she says.

"This leads to poor crop and pasture establishment, staggered germination of weeds (hence poor weed control), delayed sowing of crops and pastures, reduced soil moisture for crop growth, and in some cases, wind erosion."

Naturally occuring waxes which form a coating on sand particles are the main cause of non-wetting sands.

Dispersible sodic clay (clay which, when left in a glass of rain water, breaks up and turns the solution cloudy) incorporated into the sand, once wet, sticks to the grains of sand.

This immediately enables the sand to retain moisture and nutrients.

This not only combats the water repellency, but also improves water storage capacity, pasture and crop production, and the nutrient availability and retention in the soil.

The interest in clay spreading is enormous, as highlighted by the attendance of farmers at a recent clay spreading field day on Eyre Peninsula.

Side benefits include the creation of dams and watercourses.

Melissa says one farmer who started experimenting with the process nearly 30 years ago in the South-East has still seen no sign of land returning to its previous state. In the South-East, trial sites managed by the Bangham/Western Flat Agricultural Bureau, with National Landcare Program funding support are aiming to determine the most economic and efficient rate and method of clay spreading.

The highly-detailed and methodical approach to the study will continue to the year 2000 during which time they will document the yields of wheat and lupins in rotation and also pasture (clover and lucerne).

Controlled rates of clay application, ranging from 60 tonne/ha to 240 tonne/ha either by spinner or by scraper are being fully evaluated against the growth and yield of the crops and pasture sown. Soil tests clearly document an increase in the pH (from 6.6 for nil clay to 8.0 for 240 tonne/ha clay).

In 1995 the trials showed an almost doubling of yield when clay was spread at 240 tonne/ha.Even at the more economical rate of 100 t/ha, there was a 22 pc increase in yield, making the cost of spreading clay a financially attractive proposition.

Bangham/Western Flat Agricultural Bureau member Colin Kubenk said while the cost of clay spreading was reasonably high, unlike superphosphate, clay would stay in the ground.

"When you put out clay it is better than putting out super - the effects may continue for 100 years. But, because the soil starts to retain nutrients it then makes it worthwhile to put out the super, too."

Trials have also been undertaken on Eyre Peninsula.

Karkoo farmers Neville and Debbie Will have ploughed more than 100,000 tonnes of clay into sections of non-wetting sand on their property over the past five years and have purchased their own specialist clay spreader.

The Wills, who are spreading their clay (sourced on-farm) at a rate of 250 tonne/ha, say they wish they had started clay spreading 10 years ago.

Neville says while the increased production and reduction in wind erosion are benefits that are seen immediately, he expects to see other benefits - in terms of improved organic matter and nutrients in the soil - in the longer term.

- Melanie Kitschke

Making every pasture a winner

Pastures are often taken for granted. Frequently given a low priority, they are sometimes simply seen as 'fillers' in cropping rotations or as sheep fodder once stubbles have been grazed.

But, as two South Australian farmer-groups have found, pastures play an important role in grazing and cropping operations, not least all which is their ability to enhance productivity and arrest soil degradation.

Both the Appila Pasture Group and Gilbert Sheep Management Group have spent the past five years concentrating on improving their pasture management. Their work, undertaken with the help of Landcare funding and other industry bodies, follows a recognition of the decline in the use of pastures in wheat-sheep districts.

Spokesman for the Gilbert Sheep Management Group and Salter Springs farmer, Richard Smyth, said his group was concerned at the high level of pressure that soils were increasingly coming under as a result of more intensive cropping practices.

It was the consequences of this - a decline in soil structure and signs of soil erosion - that prompted the group to take a closer look at the sustainablity of their traditional farming practices back in 1992 and to participate in such programs as Property Management Planning and Pasture Check.

"Our aim was to minimise the risk of land degradation from grazing enterprises while maintaining productivity by investigating and promoting the best pasture and grazing management techniques for different topographic and soil conditions," Richard said. Both groups sought to attain a sound knowledge of soils and pastures to provide a solid foundation for continued learning.

"We did a lot of work measuring pasture dry matter, legume density and pasture composition as well as identifying legume and grass cultivars, seed reserves, potential l egume emergence and potential stock carrying capacity," Richard said.

"We also looked at pasture manipulation with regard to grazing and spraying and did comparative analyses of other group members' pastures."

One of the first groups in SA to participate in PastureCheck, the eight-member Gilbert Sheep Management Group also began detailed pasture monitoring and conducted eight pasture trials on various Lower North properties.

"The trial aims to answer questions regarding pasture establishment, seeding and renovation," he said.

"Various group members also took an active role in spreading the results of the project to the wider community and through speaking at seminars and Agricultural Bureau meetings, supplying material and testimonials to papers and journals, speaking on radio and inviting interested people to attend the group's pasture walks."

The final stage of the Gilbert Sheep Management Group's project was the publication of the 32-page booklet, *Pasture in the Cereal-Sheep Zone of the Lower North.*

The booklet is a collaboration of all group members' efforts and presents the findings of their monitoring and trial work.

Richard said that, although there is no data to quantify definitively the productivity gains that have flowed on from their pasture research, group members have generally increased their stock carrying capacities through better pasture management.

Members of the Appila Pasture Group share a similar experience, and their catchcry is "If we are going to grow pasture's we'll grow good ones".

"Already it's obvious the nine members are growing better pastures, they know how to use pastures in crop rotations, and their grazing management has also improved," group member and Soil Conservation Board chairman Barry Harvie said.

"In particular, the project has made group members much more aware of the importance of good legume content and high levels of dry matter production and the impact of a good pasture on the following year's crop."

"While improving pastures is not a typical 'greenie' issue, it's one way of making farms more productive, making more time and money available for more obvious environmental issues.

The Appila group has also entered the world of publishing. Their booklet, Pasture Pic, outlines the basics of pasture monitoring, measuring dry matter production, estimating legume content of pastures and monitoring seed reserves.

by Jason Gale and Kate Hoffmann

Pasture monitoring is a tool of trade for a growing number of farmers in SA.

"While improving pastures is not a typical greenie issue it's one way of making farms more productive - making more time and money available for more obvious environmental issues."

Reedy Creek irrigation

Despite a long history of irrigation in the South-East of SA, it took an enterprising group of farmers to conduct the very first research into its effects on the environment.

The Reedy Creek Agricultural Bureau, from near Kingston, was able to undertake its three-year irrigation monitoring and water scheduling project through a National Landcare Program grant of $32,500 and $5000 from the Meat Research Corporation.

The result is cutting-edge research into the effects of irrigation on soil, pasture and the acquifer in the Lower South-East.

Through extensive monitoring of their inputs, the 12 farming families involved were about to identify optimum water and fertiliser rates for pastures and crops and improve production.

The three-year project now held up as a model for further farmer-initiated research, invoved 16 different research sites.

It was steered to success by former TAFE farm management lecturer Ken Solly, had technical input from former PISA landcare officer Jennifer Trott, and Pivot Fertilisers and agricultural consultant Robert Mugford.

Findings of the pioneering project are likely to significantly increase farm sustainabilty for participants, most of whom are prime lamb producers.

Wayne Hancock, of Kingston, the group's secretary/treasurer, said only part of the success of the project for the 16 sites lay in the lift in production (which averaged 15 pc, with the best having an 83 pc increase).

"The project made us realise our inefficiencies and took the guesswork out of our farming," Mr Hancock said.

"Until we embarked on the research, none of us knew how much water or fertiliser we were using, what our water quality was, what our soil moisture was or about the compaction of our soil. One irrigator discovered he was wasting the water resource, so he stopped irrigating, reformed his channels and put in an extra bore and pump to more responsibly use the resource."

Steve Holden downloads soil moisture readings from the Dataflow and explains the process to Jennifer Trott and Reedy Crek Irrigation Group members Tony Charlick and Bob Laird.

Through the measuring of soil moisture content most irrigators in the group discovered they needed to water more frequently.

"We were letting the soil dry out too much and then we required more water to wet it up again than if we had watered earlier," Mr Hancock said.

"Our watering frequency went from 15 to 25 days initially, back to about a 10-day watering regime."

On the strength of its irrigation project and ability to work co-operatively, the group last year was awarded, a further Landcare grant of $37,000.

Its second research project has arisen directly out of findings that small and frequent fertiliser applications were more beneficial on irrigated pasture and crops than one large application.

Called the Nutrient Management Project, it focuses specifically on soil and water testing to determine how levels of fertiliser application affects soils and whether fertiliser leaches into the acquifer.

"We all want to make a lot of money today, but we also want to be here in 50 years doing it," Mr Hancock said.

"We hope the lift in production we achieved through our first research project is sustainable and that we are not lifting production by jeopardising the environment."

by Angela Goode

Bulk lime deals organised by Tungkillo group

The Tungkillo Landcare Group, in the Northern Adelaide Hills, has gone one step further than most groups to encourage landholders to improve their soils.

In a bid to help locals ameliorate acid soils, the group has demonstrated through soil tests and pasture trials the need to correct low pH, and also organised bulk deals on lime, cartage, and spreading.

Tungkillo member Bruce Munday says the group has organised for thousands of tonnes of lime to be spread throughout the district in the past few years, and the results are significant.

"Paddocks which have been treated stand out a mile - there is a very significant improvement in pasture."

Bruce said five years ago, awareness about the district's acid soils was very low. Landholders are now well aware of the extent of the acid soils problem, and of the production increases that result from applying lime.

"Many land holders are now liming as part of their annual routine."

Bruce says bulk lime, cartage, and spreading saved members $5/tonne.

"Many people who know about this project say that's what landcare groups should be doing - making land management more afforable for landholders," Bruce says.

Salinity still a big threat

Dryland salinity - an insidious white malady - is killing SA's productive farm lands.

An estimated 400,000 ha of land is already affected by rising saline groundwater tables, and a further 175,000 ha is at risk.

The loss of agricultural productivity from affected land is at least $50 million with additional losses in land value, environmental degradation and infrastructure costs such as road repairs.

However, progress has been made in understanding the process of dryland salinity and developing management strategies.

The key strategy to reduce the spread and impact of dryland salinity is two-fold.

Firstly, water use across the whole catchment must be increased to reduce recharge (a long-term option, but the only way salinity can be controlled).

And secondly, adequate plant cover on salt-affected areas needs to be established to reduce the rate of salt accumulation in discharge areas.

High water use strategies use more of the rainfall where it falls within catchments. These include improved agronomic practices for growing crops and pastures, planting of forage shrubs and perennial pastures, agroforestry and revegetation with indigenous species.

With improved technology, and information resources, farmers are adopting these strategies at a faster rate than seen previously.

About 5 million saltbush seedlings were planted in SA over about 4000 ha in 1996. The majority were planted in recharge areas, but some were planted on saline land.

Salt land agronomy strategies include the establishment and management of salt-tolerant shrubs and pasture, drainage, and agroforestry with salt-tolerant species. The major aim is to reduce evaporation and manage watertables below the critical depth to reduce salt accumulation at the soil surface.

Considerable acreages of saline country in SA have been sown to salt-tolerant grasses, particularly in the South-East.

In an ironic turnaround, some of this saline land sown to puccinellia (which is being harvested and marketed overseas) is now producing the highest gross returns of their properties.

In addition to agroforestry and other tree plantings, about 50 tonne of puccinellia seed was harvested in SA last summer - sufficient seed to establish 5000 to 10,000 ha of puccinellia.

Overall the future control of dryland salinity relies heavily on the ability of landholders and the community to implement management strategies.

Catchment plans are being prepared in a number of areas by the community, providing a framework to target areas that will have a significant impact on salinity.

Continued partnership between the community, government agencies and agribusiness is vital for this to occur.

by Tim Hermmann, PISA senior soils officer

Out-witting salinity in the Coorong

The food coloring product Betacarotene, bittens used for road stabilisation, bream, whiting, snapper and mulloway, distilled water, and concentrated high-grade salt.

That's the unusual concoction of end products which will result from an innovative attempt to help tackle the South-East's dryland salinity problem.

The Bedford Saline Groundwater Interceptor Trial was initiated by the Coorong and District Council last year and is seen as an opportunity to evaluate various novel techniques to accelerate evaporation and recover valuable end products.

Unlike other schemes which recover saline water at great expense and render large tracts of land unusuable, this project will add value to all end products to re-coup pumping costs.

Already three poly-tunnels (similar to the igloos used by nurseries), have been installed adjacent to the Bedford cemetery site at Cooke Plains, which is next to a saline depression.

Salt water - which is similar in quality to sea water without the pollutants associated with effluent and industrial waste - is being pumped out of the depression from a depth of 2 metres into the tunnels.

As water evaporates in the tunnels, distilled water runs down the side of the tunnels and collects in a channel.

It can then be piped to tanks for other uses (such as freshwater fish farming).

Betacarotene - an algae - grows in the remaining salty water, and as the water evaporates the salt content becomes higher and encourages the algal growth process.

Up to $800 is paid for each kilogram of betacarotene (which is, amongst other things, used to color Cheesels and Twisties).

A last end-product removed while the salt slurry is in liquid form is bittens, (a product high in magnesium which is used for dirt road stabilisation).

Once the salt water has been reduced to purely concentrated salt, this is removed and used for industrial purposes, and for preserving skins and hides, and for stock blocks.

The process then begins again with another pumping from the depression.

The opportunity also exists for a wide variety of tropical fish to be farmed, due to the availability of both freshwater and saltwater, and temperature control within the tunnels.

by Melanie Kitschke

Community awareness of the extent and impact of dryland salinity has increased dramatically over the past few years.

Many of SA's landcare groups have identified dryland salinity and water quality as a major issue and are working with PISA, DENR and CSIRO to gain a greater understanding of why salinity affects their area and how it can be managed.

Melanie Kitschke speaks to two landcare groups whose members have recognised the need for dryland salinity to be tackled on a catchment basis. The need for co-operation from all landholders in the catchment is vital and this is the challenge.

Focus on recharge at Kimba

South of Kimba on SA's Eyre Peninsula, dryland salinity has gradually increased over the past two decades, with low-lying farming land and creeks turning saline.

The cause - high recharge from their sandy country, primarily due to the removal of bushland and destruction of lucerne by aphids in the 1970s.

In 1994, a band of concerned farmers who recognised salinity could not be tackled on an individual property basis, joined forces.

Their aim - to determine why the spread of salinity was occuring, and to determine how to reverse the problem.

Decreasing the recharge has been identified as a high priority for the group, according to chairman of the group Tim Keynes.

To this end, group members have sown considerable acreages of aphid resistant lucerne (using a combine purchased by the group and modified to enable direct drilling).

Considerable acreages of salt bush have also been sown on recharge areas.

Several Save the Bush grants have been obtained for fencing off creeklines and remnant vegetation.

The most recent focus has been spreading clay on non-wetting sands (which will boost crop yields, hence use more water and reduce recharge).

At this stage, about 17 of the catchment's 25 landholders are part of the group. The challenge, Tim says is to ensure all landholders become involved in the bid to reduce recharge.

At present, the group is preparing a catchment plan - using aerial photographs to identify recharge areas of highest priority for on-ground works.

Hands-on approach vital

While the North Rhine Landcare Group realises ameliorating soil salinisation will be a slow process, group members have made rapid gains in learning how to improve water quality and land management.

The North Rhine Creek catchment area is located 11 km east of Angaston at Keyneton on the western boundary of the Murray-Darling basin. With a 500mm average annual rainfall, the area supports a wide range of enterprises, including viticulture, dairying, cropping, and grazing.

In recent years farmers have noticed rising levels of dryland salinity. Their concern prompted land-holders to form a Landcare group in 1992, and seek landcare funding to tackle the issue on a whole-district basis.

Group chairman Graham Keynes said the key focus of the group is improving water use efficiency and water quality across the catchment. "Salinity is a result of not utilising water effectively. If we can improve the pastures within the catchment area, we can hopefully utilise our water better," he said.

He said Property Management Planning and the Prograze program had helped landholders build a greater understanding of their area.

A series of paddock monitoring sites across the catchment area is being used to collect data, and will enable landholders to compare levels of dry matter, seed reserves and weeds within the paddocks against optimum levels.

"Last year we focused somewhat on broadleaf weed control to improve the persistence of clover-dominant pasture, which drives the nitrogen-fixing system," he said.

"We also looked at perennial pastures, which can play a major role in utilising water before it seeps through into the underground water system."

Group members take regular pasture walks through other landowners' properties to collectively discuss key issues for that property.

"I think the best way to learn is to get into the paddock and simply have a look at what's going on. "Producers involved in the project are learning an incredible amount. "We've gone from having a bit of a feel for pastures to actually knowing what pasture species we've got and how to better utilise the available water for optimum production.

"This is helping us improve water quality."

The group's hands-on approach has meant knowledge and skills learned can be directly applied to each landholders' situation which has ensured a high level of participation in the group's activities by landholders throughout the district.

North Rhine landcare group member Graham Keynes in a salt scald near Keyneton.

LANDCARE IN SA'S PASTORAL ZONE

Vegetation is the lifeblood of SA's pastoral industry.

In sheep country, south of the dog fence, perennial vegetation is the main food source, while north of the dog fence, in cattle country, pastoralists rely on ephemeral grasslands (which lie dormant until it rains).

Preservation of the vegetation resource is essential for sustainable pastoralism. This relies on management of total grazing pressure from domestic stock and ferals.

Kate Hoffmann takes a look at what landcare is doing in SA's pastoral zone to overcome the feral animal component.

Integrated approach to feral control in SA

A huge reduction in feral animal numbers has occured in SA's pastoral zone in recent years, thanks to the region's co-ordinated feral control programs.

Land managers, soil conservation boards, the Pastoral Board, National Parks and Wildlife, and the Animal and Plant Control Commission have - so far - been responsible for a reduction of 260,000 goats over the past six years to reach a low of 190,000.

There has also been a massive reduction in donkey, brumby and camel numbers, and they expect to reduce the current population by a further 70 pc to 80 pc over the next three to four years.

According to Merri Tothill from Pt Augusta's PISA, pastoral soil conservation boards have assisted land managers in eradication efforts through raising awareness of the impact of feral animals, providing support, motivating land managers to "get out and do something about it", and in liaising with government departments.

Within the rangelands, the North Flinders, Gawler Ranges, North East, and Marree Soil Conservation Boards have been particularly active in goat control, while the Marla/ Oodnadatta Soil Board has focused on the eradication of camels, brumbies, and donkeys.

Merri said many of the eradication efforts have been producer driven, and have resulted from an increased awareness of land managers about the capability of their land and the issues affecting it.

"While pastoralists lease their land, rather than own it, their long-term profits depend on the health of the land, no less than in agricultural areas," Merri said.

She added that there had recently been a renewed enthusiasm among land managers towards control of feral animals.

Andrew Smart from the Gawler Ranges Soil Conservation Board said high goat prices (around $18/head) had helped boost eradication efforts.

Mustering has been carried out with vigour by many pastoralists and contractors south of the dog fence.

However, he said for long term control to be viable, it was important that pastoralists begin to see goats for the damage they cause rather than as a source of income.

"Most pastoralists see eradication as a viable option if they are able to make money out of it. We have been lucky in that goat prices have held up and in some instances increased, but this will not always be the case," he said.

"Pastoralists have to be shown that long term productivity can be increased without the grazing pressures of feral goats."

Donkeys, brumbies and camels have come under fire from land managers in the Marla/ Oodnadatta Soil Conservation Board district.

Soil board member Douglas Lillecrapp says these ferals have a devastating effect on native vegetation.

"Because they have teeth on both their upper and lower jaws, they are able to pull out whole plants," he said. "The bladder saltbush is one of the more commonly attacked plants and this takes about 50 years to regenerate."

Loading goats destined for the abattoirs are Andrew Smart, Wilkatana Station, and John Taylor, Pt Pirie Abattoirs.

"While eradication efforts are fairly successful, averaging a kill of 2500 ferals in a two week period, continued efforts may be thwarted by the high cost of hiring helicopters and shooters.

According to Merri, almost all of the pastoral soil conservation boards have been active in sponsoring trials and setting up field days which examine the effectiveness of feral control throughout the vast region.

"We are dealing with very different types of country - from the mountain terrain's of the Flinders Ranges through to the sandy dunes of the Simpson. Land managers need to learn the best and most cost effective way to deal with the problem in their territory," she said.

The destruction to both native seedlings and mature vegetation by feral animals is highlighted by more than 20 enclosures which have been built throughout SA's pastoral lands.

Six of these enclosures were set up within the Gammon Ranges National Park in the north Flinders Ranges by Robert Henzell from the Animal and Plant Control Commission (APCC).

"We divided the enclosures into three separate sections - the first allowing animals to graze freely within it, the second only allowing rabbits in, and the third one is kept free of all herbivores - and we placed them in common vegetation types," he said.

continued ...

Balancing production and conservation at Todmorden

"Cattle production in the arid rangelends relies totally on the natural environment - and consequently, it needs to be managed as an ongoing and renewable resource."

That's the philosophy of Douglas, Mary-Anne, Gordon and Mary Lillecrapp, who are striking a successful balance between commercially-viable pastoral production and conservation of their resource on their 7167 square km Far Northern SA pastoral property, Todmorden.

The family, who were awarded the 1997 State Commonwealth DevBank Ibis Award, say grazing management - made possible by extensive infrastructure developments at Todmorden - has been the key to this success.

When the property was purchased in 1962, it had only one small internal paddock, no drafting or trucking yards, seven working wells and bores, no dams or banks, limited internal road network, much of the boundary was unfenced, and communication was limited to the Flying Doctor radio network.

Today, the property has 22 working bores, 17 pipelines and tanks to convey water from bores to utilise outlying country, 8 dams, 35 banks, 16 trucking yards, boundary fencing, 26 internal paddocks, 21 holding yards, 24 mustering/holding paddocks, an extensive road network and airstrips. The property also has UHF radio communication over the whole property as well as phone, fax, and e-mail.

The efficiencies created by these infrastructure developments are enormous, Douglas says.

He says much of the infrastructure was developed between 1974 and 1982, partly due to the Brucellosis and TB Eradication Campaign which emphasised the need for manageable paddock sizes and trucking yards.

The ideal paddock size at Todmorden, Douglas says, is 300 to 400 square km.

"You have to have control over your stock. Manageable size paddocks is part of this, and using a plane in conjunction with motorbikes to muster is also a big asset," he says.

At Todmorden, grazing management of their Poll Hereford herd has been fine-tuned over the past three decades as the Lillecrapp's understanding of the different land systems found on the station has grown.

The Lillecrapps run a self-replacing herd of 3000 to 4000 Poll Hereford breeding cows, with the aim of turning off the natural increase each year through the sale of cast for age cows, weaner steers and cull heifers.

Paddocks and permanent waters are spelled periodically to allow for plant rejuvenation and to provide a mechanism to avoid the effects of drought.

"As well as being kinder to the country, it gives you a better chance of riding out dry times. If you are overstocked, you can get into all sorts of trouble when it comes in dry.

With vigilant, on-going feral animal control at Todmorden a priority, there are virtually no feral donkeys, brumbies, and camels on the property.

Douglas Lillecrapp at Todmorden. Photo: Rosey Boehm

Today the years of careful stock management and feral animal control is paying dividends.

After rains, Todmorden springs colourfully to life with Mitchell grass, Neverfail, Woollyoat, not to mention the abundance of Sturt Desert Pea.

The Lillecrapps are also actively involved in monitoring of their land resource, through the use of photopoints and stock/feral enclosures.

Integrated approach to feral control in SA

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Robert said the young mulga (Acacia anuera) has provided the most conclusive results from almost 20 years of monitoring.

"We found that if rabbits are able to get at the mulga seedlings, they virtually wipe them out," he said. "In the area where free grazing is allowed, only about half-a-dozen have survived over the past 20 years."

Robert said that it appears the rabbits have the most detrimental effect on seedlings and regeneration of native vegetation, whereas goats and bigger feral animals tend to have a greater impact on more mature vegetation.

"We are most worried about the regeneration. As the mature mulga's grow old and die, there are no young seedlings to replace the dead ones," he said.

"Whereas the bigger animals like goats, kangaroos, and camels graze at a higher level and give plants a chance to bounce back, the rabbits tend to graze on new plants and seedlings which have less chance of survival if attacked."

He said while rabbit calicivirus had killed around 90 pc of rabbits in the pastoral zone, it was very important to continue other control methods such as ripping.

"The good summer rains will not only give native plants a chance to regenerate, but will encourage rabbits, goats, brumbies, camels and horses to come out in force again.

Mustering and - to a lesser degree - shooting are the main strategies to reduce numbers of the larger species.

LANDCARE AND VITICULTURE

Landcare is now well and truly established in three of SA's key viticulture regions and considerable headway is being made in terms of protecting their precious soil and water resource.

Melanie Kitschke reports on the landcare movement in viticulture, which in short, is ensuring we can continue to enjoy Australia's fine wines for many years to come.

Straw mulching vineyards proves a winner

Barossa Valley Viticulture Landcare Group members Tony Gerlach, Geoff Knights and Wayne Stewart during a visit of trial sites.

Whilst it has long been a common sight to see truckloads of grapes being carted out of vineyards in the Barossa and Clare Valley, it's a rather new, but increasingly common sight to see truckloads of straw being carted in.

The increased use of straw - which incidentally, is laid under the vines to conserve water and prevent erosion - is a result of the efforts of landcare groups in two of SA's vine valleys.

The Barossa Valley Viticultural Landcare Group and the Clare Valley Viticultural Landcare Group were established in the early 1990s.

Both groups had similar aims - to conserve their very limited water resources and to resurrect soils which have been degraded through years of intensive cultivation between rows.

The two groups established five trial sites throughout their region to demonstrate the benefits of reduced tillage, surface cover, moisture retention, and improved soil structure.

Trial sites, sown across a variety of soil types, featured the use of straw mulch across the whole vineyard and under the vine, compared to the normal practice of cultivation, plus sowing of a cover crop (which is mowed and sprayed, rather than cultivated).

After four years of trials, straw mulching has emerged as a win-win situation in both regions.

Yields are enhanced by use of straw, and at the same time, water is conserved.

The key limitation of straw mulching is its cost (at $15 to $17 per bale, plus spreading). However, Barossa Viticultural Landcare Group chairman Wayne Stewart says the initial cost of mulching should be off-set by yield increases.

He also said the cost of maintaining a fully cultivated vineyard was underestimated, with the cost of rotary hoeing during the growing season often not included in the budget equation.

Producers also need to be wary of exacerbating a frost problem, and need to avoid areas prone to water logging and give due consideration to fire risk.

Clare Valley Viticultural Group chairman Leon Schramm says while not all vignerons in the district have adopted straw mulching, there had been a significant change in other vineyard management practices within the vineyard as a result of the group's activities.

"There has been a significant decrease in the use of excessive cultivation," he says. "There is more attention being paid to cover cropping, more mowing and spraying off of weeds and cover crops, and more use of control droplet applicators."

Clare group project manager Kerry Ward says vignerons who have spare land should consider growing their own mulch. Much higher yields can be obtained (up to 10 t/ha of dry matter) compared with growing inter-row cover crops, more efficient broadacre machinery can be used, and weeds can be controlled and avoided.

Saving the precious water resource at Coonawarra

SA's Coonawarra wine-grape region is at the forefront of sustainable water management.

Thanks to the efforts of the Coonawarra Grape Growers Association landcare committee, considerable headway is being made in the search for the most effective and efficient water management regime.

"Water is our most valuable resource and we must learn how to use it wisely," chairman of the association, Brian Lynn says.

"We want to determine how we should irrigate the grapes - when and how much to maximise grape quality and minimise use of the precious water resource."

The landcare committee instigated a trial two years ago, using 25-year-old Shiraz grapes under drip irrigation.

Three basic comparisons are made.

The control plot receives no water. The second plot features standard reduction/deficit irrigation (replacing only a portion of what the vine uses).

The third method is a new irrigation concept developed by PISA irrigation scientist Mike McCarthy, which stresses plants early in the season and supplies more water later.

Grapes from each of the plots are sampled for ripening, berry maturity, weight and composition, color, and yield. Harvested fruit from each of the trial plots has been kept separate during the wine-making process for quality testing.

While it is too early to conclude any results, Brian says the site has attracted much interest from both within and outside the region.

The project is supported by the CRC for Viticulture, PISA, the Department of Mines and Energy, with additional support from Metafin Irrigation and Lawrences Water Systems.

Landcare part and parcel of Henschke's vineyard

Eden Valley couple Stephen and Prue Henschke are making quiet inroads into the very separate, but increasingly inter-related worlds of wine-making and land management.

While wine-maker Stephen's 'Hill of Grace' and 'Mt Edelstone' wines are making it big time at international wine shows, Prue - the viticulturalist at Henschke wines - is enthusiastically steering the family's viticultural and agricultural land toward sustainability.

The unassuming mother-of-three has an inquiring mind, excellent research skills, and no fear of stepping into the unknown.

As such, she has been one of the first Eden Valley grape growers to use stubble mulching on a big scale, has started a program of fencing off creeks to prevent stream bank erosion, has combated potentially serious erosion problems at their Lenswood vineyard, and preserved 50 ha of remnant bushland.

Stubble mulching is now a routine management practice at the Henschke's vineyards at Keyneton, Eden Valley and Nuriootpa, with some 700 tonnes of straw spread annually under vines in a three-year rotation to keep up with breakdown of the straw.

Prue says vine rows at their steeply sloping Lenswood property now feature a permanent sod cover, which has stabilised the previously erosion-prone soils.

A range of early-maturing ryes and cocksfoots and this year Wallaby grass, is sown across their other properties.

At Keyneton, a program of fencing off and revegetating three tributaries of the North Rhine which run through the property has begun - in a bid to help prevent stream bank erosion and combat creeping salinity.

Eden Valley viticulturalist Prue Henschke: 'no fear of stepping into the unknown'

Prue, an ardent botanist, says her approach to farm management was born while studying viticulture at Geisenheim university and working in German vineyards.

"German grapegrowers have a lot of respect for their soils - they believe in a living soil," she says. "This is a concept not totally accepted in Australia.

"Landcare is a philosophy that our generation is only just starting to understand, and the next generation must understand."

Prue says one of her favorite landcare ventures has been buying 133 acres of remnant bushland bordering Upper Saunders Creek.

The land, featuring a significant diversity of native grasses, was purchased primarily to stop moss rock collectors.

Prue - a member of the North Rhine Landcare Group, Spring Valley Group and Eden Valley and the Barossa Catchment Group - says the biggest benefit of landcare is the increased availability of resources, information, and ideas.

LANDCARE IN HORTICULTURE

The consumer demand for "clean and green" is being heard loud and clear by SA's horticulturalists. From potato growers in Adelaide Hills, to almond growers at Willunga and fruit growers at Virginia, its been a key motivation for landcare efforts to maximise water efficiency, minimise damage to soils, and maximise production.

Clean and green fruit, veg and nuts

Willunga Almond Growers

When members of the Willunga Basin Almond Growers Landcare Group started their innovative plan to improve water efficiency two and a half years ago, they had no idea it would help raise their gross margins by up to $6500/ha.

Nor did they expect their work, involving some of the country's leading soil scientists, to be awarded the State Landcare Award in 1995, or to receive considerable interest across Australia.

Such has been the outcome of their ground-breaking work, which focused initially on developing a clearer picture of soil types in the Southern Vales area, south of Adelaide.

There are 46 soil types - from deep sand to heavy clay - in the basin.

Identification of these soil types has enabled group members to estimate the water-holding capacity of their soils and to plan irrigation strategies.

A neutron probe is used to calibrate tensiometres (soil moisture measuring devices) which are used by most group members to accurately gauge moisture availability in various soil-type areas of their properties.

This information allows them to calculate the amount of water that needs to be applied in order to closely meet the moisture requirements of their fruit and nut trees and grape vines.

Fine-tuning irrigation has been the group's main priority, as members have begun to realise the importance of efficient water use ahead of a new water allocation scheme due to be implemented in the area this year.

"We've proved that you can irrigate very efficiently - supplying within 1 mm of the plant's irrigation requirement per irrigation," says Willunga Basin Almond Producers chairman Leath Hunt.

"And we've proved that, without stressing the plants through water logging or under-watering, you can increase production and quality both in almonds and grapes."

Changes to irrigation scheduling have led to a 14 pc yield increase in wine grapes, which Leath says for Chardonnay growers, is worth an extra $3000/ha. And productivity gains of up to 60 pc in almonds have boosted growers' gross margins by up to $6500.

"Our work has shown that, in the past we have been watering too deeply. The water has been penetrating the soil well beyond the root zone of the feeder roots," Leath says.

"It is understood that the deep roots will only use about 10 pc of the available water, so most of the water that goes past the root zone of the feeder roots is basically wasted."

As well as wasting water, over-irrigation can cause salinisation and soil degradation, as well as causing unwarranted pumping costs," he says.

"With the high salinity of our water and the sodicity and low porosity of our soils, we have recognised the need to irrigate efficiently, and to fertilise with gypsum at the correct times."

Adelaide Hills potato growers

Despite pretty tough economic times in the potato growing industry, growers in the Adelaide Hills have been making huge changes in their land management practices.

Soils in the ranges are fragile and shallow and management practices in the past had lead to considerable soil erosion.

Thanks to the efforts of a potato-based landcare group, the change in land management in the Adelaide Hills has been phenomenal.

Soil erosion control structures such as diversion banks and waterways are common place, most growers practice reduced tillage and sow suitable cover crops and pastures.

Willunga Basin Almond Growers Landcare Group chairman Leath Hunt

The result - considerably less soil erosion, improved soil structure, greater fertility and higher productivity.

During the course of the four-year project erosion control and soil improvement trials were implemented, field days organised, surveys on landcare attitudes and practices were conducted and booklets and other information on soil protection were produced.

Adelaide Plains

In the Virginia-Angle Vale area of Adelaide, practical solutions to common problems in the district are being showcased in demonstration plots.

The plots are part of an educational program to help counter almost toxic soils (from years of over-fertilisation) and poor irrigation techniques which were leading to major crop losses and disease problems.

A lack of grower education is now being turned around, with programs that include translation of manuals into Vietnamese (the largest group of local growers are from Vietnam) and the teaching of soil and leaf analysis interpretation.

Farm Chemical Users' Course are also being run to counter misuse of chemicals which was once rampant.

A more organic approach is being encouraged, with trials of composted green waste recently started.

Irrigation is, and always has, been the life-source of the horticultural industry in SA's Riverland.

However, it also poses the region's biggest threat - salinity.

We look at a multi-million dollar National Landcare Program project which is, through extensive on-ground works, ensuring the Riverland can continue to be SA's horticultural centre into the 21st century.

Highlands Irrigation Project

The massive upgrade of irrigation channels in the Riverland is one of SA's best examples of landcare getting on-ground works happening.

Open channels in the Moorook, Cobdogla, Mypolonga and Cadell highland districts are being replaced with pressurised pipelined irrigation distribution systems.

This $35 million dollar upgrade, plus the introduction of a water-on-order arrangement whereby irrigators are able to match water with soil and plant needs, is resulting in the uptake of advanced irrigation techniques by many growers in the Riverland.

Growers are able to leave behind the inefficient furrow irrigation system in favor of economical undertree or overhead sprinklers and drip irrigation.

This will result in water savings in excess of 30 pc and significantly reduce discharge to evaporation basins. The aim is for less than 10 pc of the irrigation water to pass the root zone. Previously, with poor furrow irrigation, up to 50 pc of water was lost to drainage.

The pipelined system will also see the end of the maintenance difficulties associated with river weeds, wind borne debris, silt and fouling of pumps.

The project also features a restructuring component, which focuses on utilisation of land most suitable for sustained irrigation practices in lieu of unproductive or poor soils.

Properties will be reviewed for their suitiability to sustainable irrigation and some land will be retired.

The project also includes grower training to provide for improvement of on-farm irrigation practices, including greater use of irrigation technology to achieve more efficient water use and an increase in quality and value of production.

Construction work which began in February 1993, should be completed in 1999, well ahead of schedule.

PROPERTY MANAGEMENT PLANNING

The Property Management Planning process of farm business planning is one of SA's landcare success stories.

Already, the concept - which has been run by Primary Industries SA, private consultants and TAFE - has had a profound impact on farm management throughout the state.

PISA has been the key provider, with some 1600 SA farming families - from broadacre, horticultural, viticultural, and pastoral enterprises - completing its workshops since 1992. And this year, PISA has introduced update workshops, to help past participants maintain the planning momentum.

PISA's challenge is to have 3000 farming families, or 30 pc of SA's farming population, complete the workshop program before the year 2000.

Kate Hoffmann reports.

Farming - a business, not a lifestyle

To improve productivity and increase profitability, primary producers must begin to view their farms as a business - not just a lifestyle.

That's the underlying message behind Property Management Planning.

"PMP is all about getting farming families to take control of their business and ensure they are prepared for the constantly changing environment of farming," PISA's PMP program manager John Squires says.

The program takes groups of between eight and 10 farming families through the process of developing a property plan designed for their individual situation.

Farmers are encouraged to evaluate and plan on a whole farm basis - looking at the land, vegetation and water, enterprises, people, and the business.

"The program gives participants an opportunity to step back from the day to day technical issues of running the farm, to focus on the longer term strategic issues and farm management skills required to address these issues," John said.

From providing farming businesses with direction and highlighting business opportunities and threats, through to improving communication skills and increasing an awareness of market and seasonal risks, John said people are involved in a very important learning process.

"Basically, the aim of the workshops is to get group members to examine where they are now, explore where they want to be, and work out the best way to get there," he said.

"A Property Management Plan blueprints the future of your farm and the people involved with it."

The process of developing the plan is just as important as the plan itself.

John said that the timing and logistics of workshops was tailored to meet the needs of each group, particularly with consideration to farming activities. Workshops are held in local halls, homes, and other less formal environments. No formal assessment of participants is made.

> **"A Property Management Plan blueprints the future of your farm and the people involved with it."**

John says the dedication and competency of the 15 PMP facilitators had been a key to the success of the program. Continued emphasis would be placed in staff training to ensure the quality of facilitation continued.

SA's PMP program best in nation

It's no secret South Australia's Property Management Planning program is the best in the nation.

National PMP co-ordinators David Heinjus and Simon Read, who have just completed a nation-wide review of PMP operations, say the success of PMP in SA has much to do with the farmer involvement in creating the program.

Introduced to SA at a time of slumping wool, grain and meat prices, the program met with immediate appeal from farmers.

"Many farmers were looking for a vehicle for change - PMP offered them a means of analysing their business and working out what they really wanted to achieve."

From the early days of the program, all family members were encouraged to attend.

"Those businesses which involved partners, including women and children in the program - have gained far more out of the program than those who don't," David said.

"If partners are involved in the workshops, participants are more likely to discuss and reconsider the information at home. This is an important consideration if actions on the ground are to be achieved."

Reaping the benefits of farming land to its capability

Wokurna farmers Colin, Brad and Fiona Simpson are advocates of Property Management Planning

Many farmers who have completed the Property Management Planning program are reaping the benefits of farming their land to its soil type.

Wokurna farmers Brad, Colin and Fiona Simpson completed the PMP course in 1995, and as a result are trialling some new management techniques.

Prior to the course, the Simpsons had started working land to its capability - sowing barley on sandhills and wheat on their flats. However, in the legume phase, peas were sown across the whole paddock.

The gross margin workshop held as part of the PMP course revealed an opportunity to boost their profits by sowing lupins on sandhills and peas on the flats in the legume phase.

In time, Brad would like to fence certain sandhills off from the flats - fencing in line with sandhills rather than across them.

"We will be able to fence to land capabilities without making the paddock unworkable in terms of seeding, spraying and harvesting," he said.

"The use of a topographical map with overlays made it easy to assess fencing and water-point arrangements, and to identify heavy traffic areas.

"We have worked out where we can improve the system and where existing arrangements are adequate."

Brad says in time, they would like to set aside special heavy traffic areas in certain paddocks to minimise compaction and erosion.

Brad says one of their medium-long term goals is to plant a lot more trees on their farm - particularly across hilltops to provide a windbreak for crops on the slopes and flats.

Opening up communication lines at Birdsville

Property Management Planning opened up lines of communication for Birdsville graziers David and Nell Brook and their children.

"We all met in Adelaide, and one of our first tasks was to individually write down our goals and visions for the property and business," David said.

"We then swapped notes. This was very worthwhile, it was obvious everyone looked at the property from a different angle and had different skills and ideas to contribute."

David said PMP was giving his family an opportunity to look at each of the issues that impacted on property management and to produce practical solutions.

"PMP is a useful means of gathering together information that already exists as well as identifying gaps in our knowledge that could do with further investigation," David said.

Survey highlights value of vegetation

Trees, shrubs and other perennial vegetation are valuable assets on farms in the northern agricultural districts.

That was the message from a recent survey of 23 farming families from PMP groups in SA's mid, lower, and upper north.

The survey - conducted in March/April this year by PMP revegetation officer Jean Turner - revealed remnant native vegetation and revegetation provide a range of on-farm benefits.

The most common reasons for planting were stock shelter, reclamation or prevention of erosion and salinity, aesthetics, and shade.

All respondents had at least some remnant native vegetation on their properties, with areas ranging from 0.5 ha up to 120 ha.

Revegetation was a common element of farm work programs.

Extensive revegetation work has already been done on many properties, but all planned to do some tree planting over the next few years.

Interest in commercial tree products is also growing with seven families already having woodlots or tree crop plantations, and another eight were interested in commercial tree crops.

Major constraints to revegetation efforts were the time taken to plant, the cost of fencing and shortage of farm labour.

Site preparation required and the fact revegetation efforts often clashed with farming activities was another key reason why the number or area of plants was restricted.

One of the aims of the survey was to identify gaps in information on revegetation.

During the coming year, Jean will be producing a range of technical notes to help fill these gaps.

LANDCARE IN THE CITY AND SUBURBS

Landcare is often regarded as a rural movement for rural people, but many residents of the city and suburbs of Adelaide have embraced the landcare ethic wholeheartedly and have made caring for the environment part of their lives.

Anne Lucas takes a drive from Willunga in the south, through the inner city parklands, and north to the Salisbury wetland development, and reports on the vast range of issues and the enthusiasm with which they are being tackled.

Attending to the hillsface

On a Friday night in the main street of Willunga you can get a hot cup of coffee and have a chat with people who love where they live and who are working towards making it cleaner, greener, more diverse and more sustainable.

Willunga Hillsface Landcare Group has established a community landcare centre and made its home in a 147-year-old former blacksmith's residence.

With 10 environmental groups involved, 180 landcare members, and a supporting membership of 900 people, president of the group John Campbell says the centre is vital for fostering goodwill, community spirit and environmental endeavour.

The group formed about five years ago when it started using a geographical information system (GIS) computer software designed to process and collate a range of information and give a visual image of the landscape.

"We were looking for a place where the community could access this valuable resource," John says.

"In the backs of our minds we also thought it was important to bring community groups together and form a unit so we could tackle issues on a business-like front."

"... through the landcare centre we've been able to work more powerfully. People realise we've got a lot of support, knowledge and skills ..."

John says the centre has been important for improving co-operation and opening up communication channels between various community groups and to allow big projects to take place.

And it seems no project is too big.

The group is currently in the planning and demonstration stage of a massive project called Regreen the Range.

"We're talking about a project that covers something like 15,000 ha of hillsface stretching from Sellicks to Marion and we're looking at regreening the bare hills and forming a mosaic or landscape of not only trees, but pasture, horticulture activities, corridors of flora and fauna and networking the whole hillsface.

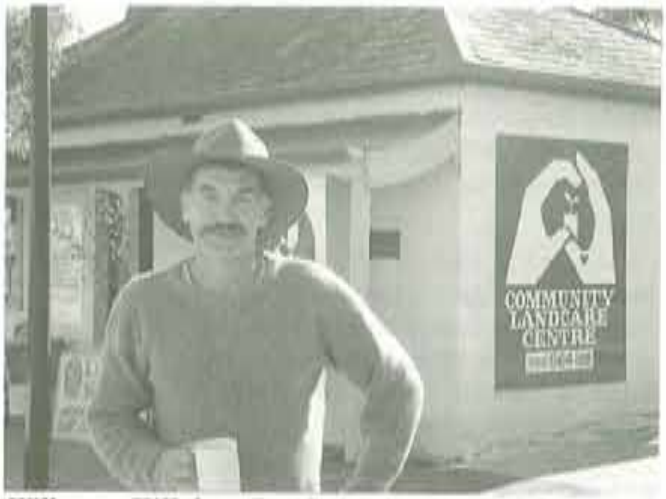
"This plan, which looked three years ago to be a visionary, mythical project which would never get off the ground, now looks to be coming to reality."

John said the Regreen the Range project evolved from the realisation that the most important thing that effects people on the plains and in the hills is high rainfall run-off.

This rainfall tends to flood the plains, damages horticulture crops on the hillsface, causes erosion and makes life pretty difficult for everybody.

The Willunga Hillsface Landcare Group approached geography departments within universities, spoke to people at the CSIRO and other research centres and formulated an idea out of those discussions to address the problem through revegetation - modifying the soils and the hillsface and reducing the run-off from 80 pc to between 5 and 20 pc.

Setting up sites called Healthy Hillsface Catchment Projects to demonstrate what can be done on the entire hillsface is how John sees his landcare group's role in this major undertaking.



Willunga Hillsface Landcare Group chairman John Campbell at the Willunga community landcare centre.

"It's a slow process working with government agencies, but through the landcare centre we've been able to work more powerfully. People realise we've got a lot of support, that we have got a lot of knowledge and skills and this has accelerated the process and its development.

"Governments, councils and private industry see us as a business in our own right and respect us as such."

He said landcare was reconnecting people with the environment and their livelihoods.

In a region with high unemployment levels, the project has the potential to create many job opportunities within the horticulture, tourism and forestry industries as well as the on-site re-greening work. It appears Willunga Hillsface Landcare Group is seeking more than to achieve environmental goals - it is a vehicle for revitalising the whole community.

"Landcare is a catalyst for social change, and when we realise that, we become that," John said.

continued next page ....

Landcare in the heart of the city and wetlands at Salisbury

South Park Lands

While the Willunga hillsface is in obvious need of attention, the situation in the city is not so stark.

But with wide green belts bordering the central business district there is definitely a place for Landcare groups in the heart of Adelaide.

The South Park Lands have been earmarked by the Adelaide City Council and Patawalonga Catchment Water Management Board for a chain of wetlands.

And while the proposal is still in its embryonic stage, it has prompted enough interest by local stakeholders in the park to form their own landcare group and work in co-operation with the council and board.

Sue Secomb is the secretary of the group and a laboratory technician at Pulteney Grammar School on South Terrace which overlooks the parklands.

The school provides support and facilities for the group which includes residents of the city and surrounding suburbs.

She says many of the local people are concerned about the amenity of the parklands.

"They want it to be an open space for the community and wouldn't be happy if development lead to the area being fenced off, we are keen to have an input into any plans to establish wetlands," she said.

The Adelaide City Council and Patawalonga Catchment Water Management Board have recently completed a feasibility study and are keen to keep all parties with a vested interest in the parklands informed of their plans and have done so by holding meetings and a workshop.

Apart from being involved in the wetlands proposal, Sue's group hopes to raise people awareness of the resource in the South Park Lands and improve the quality of its habitats by revegetating with indigenous species, protecting remnant vegetation and increasing biodiversity.

The 25-member group has had information sessions to build up its knowledge of the parklands and engaged in tree planting, seed collection, planting ground cover and established native grasses along a bike track.

It is also planning to establish a seed bank and herbarium in conjunction with the Adelaide City Council's plant survey as well as conduct a survey of the local bird and bat populations.

"Hopefully it will help people understand that smooth lawns and concrete paths are not the only way to enjoy parks," Sue said.

Greenfields now boasts more than 150 species of birds, five species of fish, four species of frogs, yabbies, and long-necked tortoise as well as an abundance of aquatic invertebrates.

Greenfields wetlands

Travel north to the City of Salisbury and you enter a region which has been a leader in stormwater management and wetland development in the metropolitan area.

The City of Salisbury has created more than 20 wetlands sites, totalling some 250 ha, which are now used as models across the nation.

Barrie Ormsby, former principle landscape architect with the City of Salisbury, said in the early 70s, the council started looking at the creation of ponds in the development of some of its landscapes (particularly a community sports and recreation complex called The Paddocks), not knowing the benefits it would have for stormwater quality.

"Back then there was no concern or even real knowledge about the polluted condition of urban stormwater," Barrie said.

"We weren't really aware of it ourselves although we knew the water was fairly dirty when it ran off the streets.

"But we did observe that as soon as it had been in our ponds for a relatively short period of time it did improve in appearance and was quite suitable for aquatic life such as yabbies and fish."

In 1984, monitoring of The Paddocks confirmed a dramatic improvement in stormwater quality, and the council approved a plan to develop Greenfield's 42 ha of low-lying saline land into a stormwater detention basin and wetland habitat.

Greenfields, on the corner of Pt Wakefield Rd and the Salisbury Highway, was designed and developed by council staff. The area now boasts over 150 species of birds, five species of fish, four species of frogs, yabbies, and long-necked tortoise as well as an abundance of aquatic invertebrates.

Barrie says the vision for Adelaide must be to treat as much urban stormwater with wetlands as possible to reduce the impact of pollution on the coastal areas.

"The other very considerable benefit from treating stormwater in this way is the opportunity to reuse it - one possibility is for irrigation."

The council has a project which will replace mains water usage on 40 acres of playing fields with stormwater and is also supplying industry with clean cheap water which will increase their viability.

The wetlands have also become a tourist attraction and drawcard for those involved in environmental education.

Vandalism a challenge for Campbelltown Group

Empty chip packets and drink cans are littered about the car park adjacent to the Black Hill Native Flora Park. Nearby, the Campbelltown Landcare Group's sign has been defaced by grafitti.

Landcaring in the Adelaide metropolitan area clearly has its own set of hurdles to overcome, but, as usual, human neglect and "vandalism" still remain the root cause of environmental problems.

For the Adelaide foothills-based Campbelltown Landcare Group, these problems are manifest in a dwindling population of native flora and fauna in their nearby Black Hill Native Flora Park.

The 300 ha park is a veritable native haven amid the urban sprawl - a piece of the Australian bush literally a stone's throw away from suburbia.

Most of the residents bordering three sides of the park see it simply as a nice place to walk their dog.

However, for environmentalists and birdwatchers, the park is home to a range of native animal and plant species, including the endangered Black-chinned Honeyeater bird and Two-horned orchid.

The protection of such species is one of the main aims of the Campbelltown Landcare Group, which was formed in December 1994.

Since then, the group's 20 active members have embarked on a wide-scale tree-planting, seed-collecting, weeding and monitoring project.

Group secretary Verity Addams says the park's plight has drawn a small but strong base of supporters.

"Attracting members to the Landcare group has not been easy," Verity said.

"Most residents were oblivious to the amount of degradation occurring within the park.

"And those that weren't were often too apathetic to do anything about it.

"People think that because there are still trees visible then everything must be all right".

"People think that because there are still trees visible then everything must be all right."

The group is targeting young people, particularly the local Athelstone Scouts, for spreading the Landcare message.

The scouts have helped with seed collecting in working toward their landcare badge. "Since they live in the area, it's important that they start to understand how necessary it is to look after the area," she said.

"Also, getting them involved may help them identify with the park and to give them a sense of ownership of the park's improvements."

Verity Addams and Max Zielasko of the Campbelltown Landcare Group.

"Being a Landcare group based in the Metropolitan area has other problems too," Verity said.

Not properly recognised as a legitimate Landcare group, requests to fund a promotion flyer had been declined in the past.

She said, in that way, the group's urban location was stymieing its progress.

The group will this year link up with, and work alongside, the Basket Range Landcare Group, in the Adelaide Hills.

Verity said the association would give both groups' members a better appreciation of the problems particular to areas up and down stream of the River Torrens catchment area, and would help them to tackle the problems in a more informed way.

- by Jason Gale

No lazy days in the sun for beach-carers

So much of Australia's landscape can no longer look after itself as a result of the impact of white settlement and the clearing and development which followed.

To a large extent, we have destroyed the very things we enjoy - like the beach.

Going to the beach is part of Australia's culture - long, lazy summer days spent relaxing on the sand and cooling off in the surf, yet we have inflicted significant and often irreversible damage to our coastal environments.

Historical records show that along Adelaide's metropolitan coast, the first white settlers discovered coastal dunes that were on average 10 metres high and 200 metres wide.

An 1869 report shows that Grange Road did not extend right to the beach, because of a large sandhill which provided an almost impassible barrier.

But by 1880 there was evidence of sand drifting onto Military Road as development began along the fore dunes.

In 1928, records reveal that 36 men using 24 scoops and more than 100 horses worked for months levelling the sandhills at West Beach in preparation for the area's subdivision.

After severe storms in 1953, foreshore construction began and in the early 1970s the Henley and Grange council embarked on programs to rehabilitate the beach and foreshore areas.

> **"...We have progressed to understanding whereabouts in the dune system particular plants ought to grow. ..."**

The Henley, Grange, West Beach Dunecare Group formed four years ago with the Support of the City of Henley and Grange (now City of Charles Sturt) and Coastcare and is part of a network of more than 100 community groups dedicated to coastal management in SA.

Alison Harvey secretary for the Henley and Grange Dunecare Group, says some exciting projects are happening along SA's coast and the information groups have gained over the years is now starting to be shared with others which will increase the pace of positive change.

Alison said the group has been on quite an educational journey over the past four years.

At the foreshore that has been revegetated by the Henley, Grange, and West Beach Dunecare Group is group secretary Alison Harvey.

"Initially we started doing a resource survey of the area which gave us a chance to start to get to know some of the plants and how a dune system actually operates," Alison said.

"We have progressed to propagating our own species and planting those out and understanding whereabouts in the dune system particular plants ought to grow. "We also got to the point of developing a plan for our coastal region."

Alison says being a member of the Dunecare group has made her feel like an integral part of her community.

"It has given me an opportunity to meet a lot of people in the area that I wouldn't have otherwise met," Alison says.

" There are so many spinoffs from being involved in a group like this."

In fact, as a result of Alison's involvement in Dunecare she has undertaken study in environmental management and is now the acting regional facilitator for Coastcare.

The work is rewarding, but Alison has found there are no quick fixes.

The group is just starting to see the results of its plantings from three years ago.

"It's not immediately visible, which I guess puts some people off, and we don't suggest that people go into the dunes to see the result of the plantings because we don't want to disturb the plants that are already in there."

One of the group's future aims is to establish a seed bank for the Henley, Grange and West Beach dune system.

The group will propagate plants that were originally in the dunes.

"Our story is a bit unique in that the dunes we have at Henley South, West Beach and Grange to a certain extent are only 25 to 30 years old and the diversity is extremely low, so there's a lot of work to be done to increase the diversity to a level where we could say that they are reasonably stable or less vulnerable.

"We've got Tennyson dunes which are remnant dunes quite close so we do have some idea of the kind of vegetation that would have been at Henley and Grange. From an education point of view, the group is looking to develop a plant identification or coastal carers kit to be used by other community groups interested in protecting the sand dunes.

- by Anne Lucas

UPPER SOUTH-EAST DRYLAND SALINITY PLAN

Drain construction to begin this September, 1997

After more than 10 years in the planning, construction of the first 52 km of 450 km of open drains to be dug in the Upper South-East of SA over the next five years will begin this September.

That's the word from Roger Ebsary, project manager for the Upper South-East Dryland Salinity and Flood Management Plan.

He says most landholders are very eager for the drain construction to begin.

The drain will feature 18 km of varying depth drainage, in a bid to establish the most appropriate depth of drainage for other areas in the region.

Mr Ebsary says the quantity and quality of ground water generated and its impact on the water table will be measured to assess the impact and effectiveness of the drains.

The drain is a key component in a multi-pronged approach to ensuring the future viabilty of the 680,000 ha region, which features some 250,000 ha saline land and has a further 175,000 ha at risk from salinity.

An investigation into the region was initiated by the Upper South-East community in the late 1980s, and was supported with a million dollar State Government detailed investigation which was completed in 1993.

The cost of the drainage schemes - some $24 million - will be met by $9 million of State Government funding, $9 million National Landcare Program funding, and $6 million from the local community (which will be collected through a levy on all landholders).

Mr Ebsary said landholders are also being encouraged to adopt improved salt-land agronomy.

An agronomist had been employed in the region for three years to demonstrate and trial various salt land management techniques.

Mr Ebsary said while a considerable acreage of salt-tolerant pastures had been sown, many landholders were waiting for the drains to be built to ensure their investment was protected from flooding.

The importance of an integrated and co-ordinated natural resource management effort on a regional basis has been highlighted by the Natural Heritage Trust.
While SA has been divided into nine regions for this purpose, it's certainly early days for the state in terms of the operation at this level.
At this stage, only the Mt Lofty Ranges - with its Mt Lofty Ranges Catchment Program - and the Murray Darling region - with the CARE program - have a well-established regional approach to planning and action.
NHT wants each region to have a regional strategy and action plan - to bring together existing information and identify gaps in knowledge.
Local Action Planning - the prioritising of regional issues and setting a course of action - is part and parcel of the regional strategy.
Local action plans will need to be developed for all regions of the state, because this will be the mechanism by which community groups can obtain support for natural resouce management projects.
Landcare at Work in SA takes a look at the Mt Lofty Ranges Catchment Program, Community Action for the Rural Environment and Local Action Planning in the following reports.

Of rare ferns and water course health

Conserving rare plants, protecting wetland habitat and improving land management practices are all in a days work for the Mt Lofty Ranges Catchment Program.

"The aim of the program is to ensure the sustainable management and development of the Mt Lofty Ranges," program co-ordinator Paul Harvey said.

"This is being done through a partnership between State and Local governments and the community."

"Action is needed right now."

The ranges are being affected by the greatest pressures for change in any region of our state, with people seeking lifestyle blocks and urban subdivision occurring.

"The next few years will be critical if we as a community are to protect the region's agricultural lands, water supply catchments and bushland areas."

The Mt Lofty Ranges Catchment Program provides funding (through the National Landcare Program/National Heritage Trust) and technical assistance to community groups, local and state government bodies to enable them to work together on issues such as erosion control, management of native vegetation revegetation, water course management and maintenance of water quality.

"The emphasis of the program is working together to achieve common goals," Mr Harvey said. "The range of projects the program is currently in is most exciting.

"In the area of land management, they include erosion control in the Grand Canyon, as the severely eroded Kanmantoo-Callington Gully is known, the rehabilitation of the Wheal Ellen Mine site near Strathalbyn, and major broadscale revegetation projects.

"The assessment of watercourse health and the development of rehabilitation plans based on community priorities is recognised as a national first." Conservation of significant areas of natural habitat also forms part of the program.

Threatened Plant Action Group member Yvonne Steed with the now rare King Fern (Todda barbara). Photo: Mt Lofty Ranges Catchment Program.

"Areas in the ranges are being identified in association with the Threatened Plant Action Group (a SA community driven group which is looking at conservation of rare or endangered plant species).

Wetlands are important in improving the quality of run off and support a range of now uncommon plants and animals, including a number of endangered fern species. The project aims to fence wetlands to exclude livestock, maintain a natural water flow and quality, and to control weeds and feral animals.

"Engangered bird species such as the tiny Southern Emu-wren will not survive unless these wetland areas are protected and appropriately managed," Paul said.

Applications for funding support from the Catchment Program continue to grow each year and cover a diverse range of projects. "The program aims to support as many community group projects as we can, as in the end, we all benefit from the work that is being done."

The current round of funding ends in December, however in recognition of the variety of issues to be addressed a further complementary project application has been submitted to the NHT Board for consideration.

by Geoffrey Bishop

Action planning to revive River Murray

Reviving the ailing River Murray and its surrounding regions may seem a daunting task - with many along its course often feeling somewhat helpless about what can be done.

But one SA project is doing it's bit to ensure those most affected are at the forefront of changes to the Murray.

Local Action Planning (LAP) began two years ago in a move to empower those who previously may have felt left out of decision making processes affecting the river.

LAP is a Murray Darling Basin initiative which enables communities and governments to tackle the big natural resource management issues of particular regions.

Those involved work through a process which includes identifying priority issues and developing a regional plan to address those issues.

It also provides a focus for locals to seek funding for their projects while identifying costs and benefits of the solutions.

According to Goolwa to Wellington LAP spokesman Jim Natt one of the biggest features of the LAP scheme is that it enables locals to make critical decisions at a "grass roots" level.

He says a LAP group acts as a catalyst to spur locals into tackling what could otherwise seem like impossible tasks.

"Some of the problems we face are so big that an individual would just throw up their hands and give up before they got started," he says. "Through LAP it becomes less daunting.

"It's also a way we can prioritise to make sure the most critical issues are the ones that have something done about them.

"It's a common sense approach - having those most critically affected make the decisions rather then someone in Canberra."

There are now 11 LAP groups in the SA section of the Murray-Darling Basin region.

This includes urban water users who are developing an LAP for metropolitan Adelaide and other regions dependent on the Murray for water.

Brian Caddy has taken a once waterlogged, salt-poisoned patch of land and turned it into this - a healthy, productive vineyard.

The LAP scheme is run in conjunction with Community Action for the Rural Environment (CARE) which acts as an overseer of the LAP schemes.

CARE helps assess the various projects proposed by LAP groups to ensure a coordinated approach is maintained.

"Act local, think global" has become something of a catchcry for many people involved in environmental management.

...one of the biggest features of the LAP scheme is that it enables locals to make critical decisions at a 'grass roots' level. ...

In the case of the Riverland's Brian Caddy it's a phrase he has taken very much to heart.

Mr Caddy has been heavily involved in the promotion of LAP since it was introduced to the region two years ago.

He has also supported the concept of individuals controlling their own environmental destiny by a major overhaul of his own 6 ha Barmera grape-growing property.

Included in this has been the reclamation of a 1.6 ha area which before he began was a "total write-off" of waterlogged, salt-poisoned land.

His reclamation, dubbed locally as "Caddy's Folly" included:

- Breaking up limestone below the slush using a D9 bulldozer,
- Installing a network of drainage pipes to alleviate the waterlogging
- The application of 600 tonnes of grape marc along with 50 tonnes of gypsum to help rejuvenate the wasted soil, and
- Growing jumbo sorghum and cover crops such as rye grass and clover to help put structure back in the soil.

Added to this was a thorough overhaul of his irrigation and fertiliser regime. Out went the days of watering for 12 hours regardless of the conditions - a practise he now realises was wasting water and fertiliser, as well as polluting the underground water system.

In came a rigorously monitored system using neutron probes, a computer controlled irrigation system and advice from consultants.

The end result has been the creation of an integrated management plan for his property, which ensures just enough water is applied to ensure the health of his crops.

The locals who dubbed his venture "Caddy's Folly" are now starting to take note that Landcare can translate into profits, with his reclaimed patch of vineyard now as healthy and productive as any vineyard in the region.

- by Tim Jeames

Dryland salinity is of great concern to the Coorong and Districts community, south of Adelaide.

More than 10,000 ha of land is already salinised and if current trends continue, a further 35,000 ha will become affected within the next 50 years.

Research into the dryland salinity problem in recent years has been extensive and has resulted in a good understanding of its causes and effects.

The land use change from native vegetation to mainly annual crops and pastures across much of the district has had a major impact on the water cycle. Inefficient water use has resulted in excess soil moisture draining to the groundwater causing it in turn to rise (the process known as recharge).

The rise in water table (measured by the Department of Mines and Energy) over virtually all of the district is at a rate of about 5 to 10 cm per year in years of average annual rainfall.

Computer modelling of ground water flows by CSIR0 has shown that recharge reduction across the entire area of at least 50 pc is required - and when this target is achieved, significant water table declines could be expected within 5 to 10 years.

Action is required across the entire district to arrest the rising groundwater problem - and the areas of shallowest water tables require action most urgently.

The re-introduction of perennials into farming systems offers the best opportunity for increasing water use and controlling recharge.

We investigate how Local Action Planning, through the CARE program, is helping the Coorong and Districts begin working on this enormous challenge.

Action speaks louder than words for Coorong

Landholders in the Coorong district are quickly realising how Local Action Planning is going to help them overcome their region's most threatening land management problem, dryland salinity.

More than 2300 ha of deep rooted perennial plants, including fodder shrubs, dryland lucerne, primrose, saltbush, and puccinella, have been established on more than 50 properties in the district in 1997.

The perennial pasture plantings represent a pilot works project implementing the Coorong and Districts Local Action Plan, which was developed by community members.

The LAP was initiated by the Coorong and Districts Soil Conservation Board in 1995, following the release of the district plan.

Primary Industries SA land management officer Peter Butler says a key feature of the Coorong and Districts LAP is the fast-tracking of on-ground works in terms of recharge control, while undertaking planning of other issues.

"LAP has bridged the gap from planning to action. The plan is dynamic, it will continue to evolve, but where we can, the emphasis is on action."

Five-year targets have now been set for the broadacre establishment of high water-use farming systems.

LAP project officer Graham Gates says the treatments for salinity are well understood by the farming community, thanks to excellent trials conducted by CSIRO and the host of landcare groups in the region.

While projects such as planting perennial pastures continues, the LAP committee will continue to investigate, plan and implement measures which include: fine-tuning irrigation management, assessing and rectifying the problem of leaking bore casings, restoring wetlands, protecting remnant vegetation, improving the water use efficiency of annual cropping, and stabilising and rehabilitating degraded land.

Graham said the steering commitee is not attempting the entire process alone, but working with other complimentary programs such as the Coorong and Lower Lakes RAMSAR Management Plan to ensure the best result is achieved.

The on-ground works are jointly funded by State and Commonwealth government and landholders, in a cost-sharing arrangement established by the LAP after consultation with the various stakeholders.

LAP steering commitee chairperson Steve Murray says the commitee has determined the cost of implementing on-ground works and the cost of not doing so.

A study in April this year revealed benefits outweigh the costs, with an overall cost-benefit ratio of 1.27 for the current works program.

This will be recalculated as the plan evolves.

Steve said the LAP also determines who benefits from the works (the landholder, the local community or the wider community) which forms the basis for the cost-sharing split.

In the Coorong and Districts, the split is 87 pc on-farm, 2 pc local community and 11 pc wider community.

"We are coming to grips with the concept of cost-sharing," Steve said.

"LAP offers a very structured planning process, and provides an accountable way of attending to land management problems.

"LAP asks very specific questions - what needs to be done, where, who is responsible, who should pay - all questions that lead to on-ground works."

It is supported by the Coorong Council, Coorong and District Soil Conservation Board, State Government and the Murray Darling Basin Commission.

SOIL CONSERVATION BOARDS

South Australia has led the nation in terms of its community-driven approach to tackling land management problems.

In the late 1930s, SA introduced an Act of Parliament ensuring errant land management practices were addressed, or penalities be handed out.

It was soon recognised that demonstration of good land management practices to community members - rather than the threat of penalty - was going to be the most effective approach.

The Soil Conservation and Land Care Act 1989 has evolved through time and now features a network of 27 Soil Conservation Boards, made up of landholders, whose role is to:

- develop community awareness and understanding of land management issues
- develop and support conservation and rehabilitation programs
- enforce soil conservation orders after endeavouring first to seek co-operation
- to identify and prioritise issues through preparation of a district plan.

Boards are not on about doing on-ground works, or conserving and rehabilitating the land for the people.

Rather, their role is to provide local leadership in land conservation, influence the community, influence policy direction, and provide a local voice for land management issues.

The existence of the well-organised board network and the priorities set by boards for land management action has put SA in a good position to benefit from the NHT approach.

Primary Industries SA policy consultant Greg Cock reports on the progress that has been made and the challenges that lie ahead.

In 1989, each Soil Conservation Board in SA set out to produce a document identifying land management issues affecting their district and to recommend appropriate management practices to deal with these problems.

Twenty four Soil Conservation Boards have completed this massive process known as district planning - and the benefits of their efforts are now coming to the fore. The remainder of boards are currently developing their district plans.

Several of the first boards to complete their plans are now at the stage of reviewing them and will update them if necessary.

District plans a good starting point

The foresight of SA's Soil Conservation Boards to identify and prioritise issues in each district of the state has put SA in a good position to capture funding.

The district plans feature an invaluable inventory of the district resources, and prioritise land management problems and solutions to tackle these problems.

With the advent of the Natural Heritage Trust, which pushes the implementation of priority issues, district plans are proving to be a valuable resource and will enable SA to proceed with major on-ground action.

"District plans will provide a blueprint for landcare activities," Primary Industries SA soil conservator Roger Wickes said.

The regional direction of NHT is encouraging the adoption of Local Action Planning.

District plans make a great starting point for that process.

The task of identifying and prioritising land management issues and suggesting solutions seemed a daunting challenge for many boards.

However, the process enabled formalised discussion and debate amongst landholders to compare and contrast land management standards and to write down and commit to a vision for the district.

This in itself, most board members will quickly tell you, has been very worthwhile.

Influencing, initiating, negotiating, networking

One of the board's important functions is to provide local leadership in land conservation.

In many areas, boards have adopted a leadership role to community landcare groups

Boards have direct links to groups and indeed many board members are actively involved in community landcare groups.

Influence

Boards, through their partnership with Primary Industries SA, influence extension projects, such as property management planning, native vegetation management, water resource issues and animal and plant control.

Initiate

They have also been partners in initiating many programs now actively tackling landcare issues in the state, including CARE program in the Murraylands, the EP Strategy, and the Mt Lofty Ranges Catchment Program.

Negotiate

While few soil conservation orders have been issued, countless individual property problems have been resolved through negotiation, advice and assistance through the board system.

No other body or person undertakes these sometimes awkward and difficult tasks.

Network

There's also the difficult-to-estimate but invaluable process of networking and informal communication promoted by the boards.

SOIL CONSERVATION BOARDS

Behind the scenes, but making for change

One of the key roles of Soil Conservation Boards is to raise awareness and understanding of land conservation issues in the community.
This has probably been one of the boards' most successful undertakings.

SA hosts a plethora of field days, seminars and courses encouraging sustainable land management.

Many of these events are initiated and organised by soil conservation boards and have been so successful they are now locked into the farming calendar.

The Hummocks Soil Conservation Board's annual "Getting the Crop In" seminar at Clare attracts more than 300 people and some 800 to 1000 people visit its Hart Field Day.

The Lower North Soil Conservation Board hosts a machinery day each year, focusing on key issues such as stubble handling, and minimising tillage, and they can now count on a crowd of around 500.

In the Upper South-East, there's a field day on salt land agronomy, on the Eyre Peninsula direct drilling and clay spreading have been in the spotlight.

All three Adelaide Hills Soil Conservation Boards hold up to six field days a year on issues including vineyard management, owning horse properties, and intensive horticulture.

Organised by board members, with support from Primary Industries SA, the field days are well supported by local landholders.

In each case the events are relevant to issues faced by the district's landholders.

Across SA, the myriad of events are accompanied by an abundance of thoroughly researched and produced publications hitting home the landcare message.

Many boards have also run semi-formal short courses for landholders on aspects of land management, such as contour banking and design and surveying and management of small farms.

Getting the message through about soil conservation issues is the aim of the board, and demonstrations have proven to be a successful approach.

"While the threat of penalties for erosion are important, demonstrations of good farming techniques which farmers can apply to their own properties are more effective," former Soil Conservation Council chairperson Neil Smith said. "Boards want to ensure that change occurs at a pace and in a way that can be absorbed by the communities."

Today, soil boards are joined by a myriad of other groups holding field days, seminars and demonstrations.

Landcare hits small farms in phenomenal way

There's been a phenomenal change in land management practices on small properties in the Adelaide Hills, thanks to a number of landcare courses run by Soil Conservation Boards.

The aim of the courses is to give those people - many from urban backgrounds - who take on small holdings an understanding of the delicate nature of the rural resource.

Run primarily by local community members, the courses provide a strong focus on the day-to-day running of properties, looking at pasture/livestock management, soil, water and revegetation.

Courses specially designed for horse owners, many of whom have been reluctant to undertake education in the past, have also been well received.

The overall education process has been so successful that past participants of the course are now hosting field days for the current course. And invariably, the field days attract not only course participants, but also their friends, which results in a wider knowledge of land management.

Geoff Page, from Central Hills Soil Conservation Board, who helped instigate the educational program in 1993, says the Central Hills board is now running 15 landcare courses each year.

Where properties are larger, in the Northern Hills and Southern Hills region, the boards are running about eight courses a year, according to former Northern Hills board chairperson Bruce Munday.

"Progress is certainly being made - there's been a lot of fencing off of water courses, and pasture improvement. There's better recognition of weeds, and the need to construct adequate spillways on dams." The course also provides access to expertise and equipment.

Teaching our future custodians to care

Some of our future custodians learning about the value of wetlands at Urrbrae High School. Photo by Rosey Boehm

Today's children are the custodians of tomorrow's environment.

That's precisely the philosophy behind South Australia's all-out effort over the past eight years to ensure school children are conscious of the need to care for their environment.

"Between the ages of three and nine, most children develop a set of values that they will take on board for the rest of their lives," Primary Industries SA's Sustainable Resources planning and strategic development manager, Andrew Johnson said.

"While their detailed understanding of issues changes, the basic principles do not. Recognising this, we are aiming to instill in as many children as possible a desire to love and care for the land and an understanding of the powerful role they can play in its conservation."

SA's environmental education program began in 1990, with the launch of the Kids for Landcare program.

The program was based around the use of a project kit which guided teachers (usually the agricultural science or science teacher) through a variety of landcare activities - whether it be propagating or planting trees, establishing a school garden, or making compost heaps.

> *"The Landcare Focus Schools Program is now recognised nationally as one of Australia's leading education programs."*

And while this approach got the environmental education ball rolling in SA, its limitations - particularly in terms of only one teacher per school using the resources - were recognised during a review of the program in 1994.

A concept used in Canada - that of using practical workshops to train teachers in environmental education - was modified and adopted.

"We recognised the need for teachers to be confident in what they were teaching, so the workshop idea was great," Andrew said

"But it had to be broader than that - we wanted schools to adopt landcare across their whole curriculum."

The resulting Landcare in the Classroom (now Focus Schools Program) is now recognised nationally as one of Australia's leading environmental education programs.

Each year since 1995, eight schools throughout the state have been selected as "Focus Schools in Landcare."

Teachers from the eight schools meet for four training sessions to look at issues related to soils, catchments, vegetation and marine areas.

They are then shown how they can incorporate these into their school curriculum.

Presentations by people with natural resource management expertise provide teachers with a good understanding of the major issues related to our environment and what can be done to ensure the sustainability of our resources.

Lectures are backed up with field excursions that highlight land management issues and solutions to problems. The teachers also visit schools with established environmental education programs.

Teachers are then given time and resources to develop landcare education programs relevant to their school and community. The teaching resources from 1996 are being compiled into a curriculum resource and will be made available to all schools.

According to education officer Rob Wallace, the 27 schools throughout the state who have been involved have adopted an enthusiastic approach to the program. Active participation by the students in school and community landcare projects has always been a fundamental part of the program.

By making the learning process more enjoyable, Mr Wallace said children were more likely to be willing participants in the challenge to save the land and associated natural resources. He said the program's success had also relied on children passing on the positive messages about landcare to their parents and wider community.

New approach in 1998

A fresh approach to the Focus School program will be adopted in 1998, to enable more schools to be involved in environmental education.

"We are looking to set up a networking strategy that will link Landcare Focus Schools with other schools so environmental education can have a stronger focus in schools and communities throughout the state," Rob said.

The Focus Schools in Landcare program is a joint initiative of the National Landcare Program (NLP), the Sustainable Resources Group of Primary Industries South Australia, and the Department for Education and Children's Services.

The program has backing from the Australian Association for Environmental Education. Primary funding support is provided by the NLP with additional funds from the Murray Urban Users Program, the Department of Environment and Natural Resources (DENR), and Fishcare.

Fun way to learn about the environment

Making learning fun is a big part of the environmental education program in South Australia.

Kate Hoffmann reports on some of the activities of three Focus Schools in Landcare who are showing that involving students in hands-on activities teaches them about their natural surroundings and makes learning fun.

Elliston Area School

A walk along the beach, collecting specimens of coastal plants, shells, and seaplants, observing whales, sea birds and fish - what better way to learn about the coastal environment?

Well, at Elliston Area School on Eyre Peninsula, the beach classroom is a reality.

And according to the school's environmental education teacher Jeff Hunter, it's an enjoyable and effective way of increasing student's awareness of and appreciation for the coastal environment.

"Students enjoy getting outside the classroom, and by having a clear objective for each field trip, positive learning outcomes result," he said.

Students work through a series of worksheets, giving them a broad understanding of landcare issues not only along the coast, but also in surrounding farm land.

Students work closely with the local landcare group, have a recycling and composting program, and have a profit-raising propagation program which offsets the cost of an annual school camp

Urrbrae High School

A paddock set up to demonstrate environmentally sustainable practices is the backbone of Urrbrae Agricultural High School's landcare activities.

School environment co-ordinator, Di Coady says the paddock, made possible by a $60,000 NLP grant, enables students to actively learn about composting, organic farming, solar fencing, and farming techniques such as alley farming and permaculture.

Established in 1994, the 2 ha sustainable agriculture paddock won a SA Landcare Award in 1995.

One of the main features of the paddock is the school's compost system, which won a Down to Earth Environmental Award in 1996.

According to Di, the six compost bays, each 9 square metres, are made up of manure, leaves, chipped branches, lawn clippings, and straw.

The compost heap is turned three times in the first week and then weekly as it progresses down through the chain of bays. The end product - ready after five weeks - is applied to the paddock at a depth of 50mm.

Di said the compost bays not only teach students the value of recycling, but also showed them the advantages of providing soils with nutrients in a natural way rather than through chemical use.

Water monitoring is one of the fun activities students are involved in.

"The children have seen how chemical fertilisers - if not used appropriately - can pollute the waterways, and realise that a compost system is quite an easy alternative," she said.

"Composts are not difficult to manage - all you need is a bit of space in your backyard."

Di said the school also hosts a wetlands project, where through research, the students have come to realise the damage deciduous trees can have on our waterways.

"It is much better to sweep up the leaves from the streets and to catch them in trash racks and incorporate them into our compost system."

Kalangadoo Primary

Sampling ground water through the WaterWatch program is one of the most popular activities at Kalangadoo Primary School.

The school's environment teacher, Diana Wiseman, said the children attend a field tour four times a year and take water samples from sites belonging to the children's families.

"Ground water is vital to the farming industry's throughout this area," Diana said. "This project highlights the importance of water in our area and makes children aware of its uses."

The students test nitrate levels, salinity, water temperature, and pH levels of the ground water, and also monitor the rise and fall of bore water, swamp, and rainwater.

They then take the results back to the classroom where they can graph any changes in water, and monitor how long the water takes to get into the underground system.

"The environmental tasks carried out not only assist children in their ecological awareness, but all subjects from Maths and Science through to English benefit," Diana said.

"Results so far have shown that although nitrate and salinity levels go up and down over time, the changes have all occurred within safe limits."

Since 1993, the students have also been involved in the rehabilitation of about two acres of old unused swamp on the school grounds.

Building a propagation shed, collecting local native seed making a path of barkchips between the two swamplands, mulching and weeding have been just some of their achievements.

Kalangadoo Primary has also set up its own school landcare newsletter, The Gum-Leaf Gazette.

Kids' Congress for Catchment Care in Adelaide this October

Up to 400 primary school children from South Australia and interstate will converge on Adelaide University next month for a week-long environmental forum.

The National Kids' Congress for Catchment Care, an initiative of Ardtornish Primary School, will be held during National Water Week (October 20 to 24), and is expected to attract 10 to 12 year olds.

Congress co-ordinator Jan Fitzgerald says the national event would be an extension of two very successful catchment congresses held in SA in the past two years.

Water monitoring, revegetation and litter control are among the water-care issues that will be in the spotlight.

"The focus is providing students with appropriate awareness, knowledge, and understanding to empower them to make decisions about their environmental future," Jan says.

The national congress will include environmental workshops presented by University of Adelaide lecturers and other experts, as well as field trips, theatre performances and craft activities based on catchment themes.

"The students will generally be having a pretty good time learning about environmental issues and developing the know how to carry messages into the community," Jan says.

Past Kids' Congresses for Catchment Care in SA have involved about 80 students - four representatives from 20 schools in the Dry Creek Catchment.

Outstanding results have been achieved, with students more aware and confident about environmental issues, with most successfully initiating and supporting environmental projects in their own schools and communities.

Some of these projects include initiating environmental clubs, environmental newsletters, displays, and workshops.

Learning to care for the world we share at Ardtornish

Jan Fitzgerald, or "Mrs Fitz" as she is known by her students at Ardtornish Primary School, is passionate about her work.

The former country gal-cum-landcare teacher loves the environment, but not nearly as much as she loves imparting her fascination and appreciation of our natural flora and fauna to her students.

Jan's work is considered quite unique within South Australia - her sole teaching responsibility is full-time environment and landcare education.

And her landcare teaching ethic "Learning to care for the world we share" has been adopted by the school wholeheartedly.

For the past seven years, the 600-student school has undertaken many landcare activities, from revegetating part of a council owned reserve and wetlands development to monitoring waterways and frogs and visiting country schools.

The students' activities have been well recognised, winning a swag of landcare awards and being named a 1995 Focus School in Landcare.

Such achievements are an encouraging sign for Jan, who firmly believes in the need for children to be taught about the environment from a young age.

"I guess I like to see that ethic of caring for the world and our surroundings," she said.

"And with the current environmental thrust, I think this is on the increase."

As an example of her devotion to environmental education, two years ago Jan took two students to an international conference on the environment in England.

"Mrs Fitz" with Ardtornish Primary School students Rachel Dunlop and John Blakeney.

"There were 800 kids brought in from all around the world and it was interesting to learn about their different experiences," she said. "It was good to see also that we were well up with what's going on."

Jan herself grew up with a strong interest in the environment, fostered by her nature-loving parents who spent a lot of time in the bush near their home at Yorketown, on Yorke Peninsula.

She believes children have a natural curiosity for their surroundings.

"Every day there is a student that comes and shows me something they have discovered or are curious about - from the kid who walks in with a yabby in a bowl to one who wants me to look at the way a leaf has been chewed," Jan says.

"It's feeding that curiousity that I find exciting and enthralling. I can get wrapped up in the patterns on a shell.

"Einstein said it beautifully. 'The supreme art of the teacher is to awaken the joy in creative expression and knowledge.'

"I would like to think that I have got them excited about learning."

Wealth of landcare education at Outdoor Classroom

There's a wealth of environmental learning to be done at the Kids for Landcare Outdoor Classroom.

Situated on 3 ha at Golden Grove, the classroom is an innovative educational park where school students and teachers can learn about caring for soil, water and vegetation.

Massive earthworks have transformed the park into a series of environmental features including a sand dune, wetlands, water way system, a stock dam, a mallee area, a saltpan, and a bird habitat. Students can also see contour-banking, a soil profile, and demonstrations of tree planting and fencing.

These features provide an opportunity to see the environment first- hand and gain an insight into the diverse range of issues affecting the sustainability of natural resources.

Students and teacher workbooks are provided, with a large emphasis on investigation and discovery.

Excursions (half-day or full-day) are encouraged and cost $1 per student.

Students are encouraged to test water quality, look for macro-invertebrates and frogs, and study plant species and test soils.

An operating windmill and old homestead are on the block, and visitors are given an insight into how Golden Grove changed over the past 100 years, from a farming district into suburbia.

The classroom, which is a local reserve and is open to the public has been established by the Landcare unit of PISA, and the SA Landcare Commitee, in co-operation with Golden Grove Development and the City of Tea Tree Gully and DECS.

It is now operated by Golden Grove Primary School. For details, contact Neil Thelning (08) 82893137.

Inspiring our children to care

Yacka mother-of-three, Marian Wicks, is convinced children are the key to the future well being of our environment.

Yacka landcarer Marian Wicks with Koolunga students in the school shade house.

Over the past 17 years, Marian has devoted thousands of hours and bundles of energy instilling landcare principles into school children at the local Yacka Primary.

Long before landcare education became part of school curriculum, Marian began teaching the youngsters - on a volunteer basis - about plants, animals, birds, and the soil.

Marian set up gardens at the school where children could propagate plants, discover worms and basically "get their hands dirty."

In more recent years, Marian has had children propagating plants for sale to local farmers, collecting seed, and monitoring groundwater salinity through the Salt Watch and Water Watch programs.

"Of course, primary school students absorb only a certain amount of information, but the aim is to give them a basic understanding of and desire to care for the environment.

> *"If we can instill the importance of caring for the land into these kids now, by the time they are managing their parents properties it will be second nature to them."*

"Children are our best hope for change in the future. They constantly question what is going on.

"If we can instill the importance of caring for the land into these kids now, by the time they are managing their parents properties it will be second nature to them."

For Marian, speaking about the role an individual can play in reversing degradation comes easy.

Marian and her husband Steve have devoted much of the past 20 years in the Yacka district to improving the condition of their property Bengarry, which they purchased in a very degraded state - a legacy of over-clearing and excess tilling. After searching out people who had the knowledge and ideas to help them tackle their problems, the Wicks set about reforming their property.

The strategy - retaining stubbles, minimum tillage (and in more recent years, sowing with narrow points and pr ess wheels), extensive tree planting, fencing off creeklines, protecting remnant bush-land, and improving existing contour banks.

The property, which won the state1996 Commonwealth DevBank Ibis Award, now features endless stands of vegetation, swarms of wildlife, as well as a productive cereal-sheep growing enterprise.

"Our aim," Marian says, "Is to pass land onto the next generation in a much healthier state".

"As such, we have to concentrate on being sustainable in the long term, not just look at profit in the short term."

LANDCARE ON KANGAROO ISLAND

Situated 16 km off Adelaide's coast is a little island with a big belief in the value of landcare.

Kangaroo Island has 13 landcare groups - all actively pursuing the challenge that landcare offers.

The range of issues being tackled by the groups is as diverse as the island itself - from preserving the pristine natural scrub and targeting soil salinisation, to trying to reverse the massive decline of sea grass in Nepean Bay, and saving the endangered Glossy Black Cockatoo, and eradicating feral pigs.

Melanie Kitschke takes a walk down SA's isle of landcare and discovers action and enthusiasm aplenty.

Action aplently on SA's isle of landcare

Kangaroo Island has set a remarkable example for SA in terms of its commitment to Landcare.

Within three years of the launch of the Decade of Landcare, the island had established nine landcare groups and today 13 groups, covering some 80 pc of the island are actively tackling the landcare challenge.

The National Landcare Program has injected nearly half a million dollars into the island.

Some 7500 ha of pristine remnant vegetation has been fenced off and is regenerating, a 7 km drain built southwest of Kingscote has resurrected some ugly salt problems, and 500 km of direct seeding has been completed.

The island also produces its own bimonthly newsletter, and groups and individuals can place orders for locally-collected indigenous plant species at the KI seed bank.

Recognising the enormous uptake of landcare on the island, government funding now ensures employment of a landcare officer, project officer and a part-time Property Management Planning officer.

KI's Primary Industries SA soils officer Lyn Dohle, who must be given credit for her part in enthusing locals to form and maintain active landcare groups, says there are many reasons why the island adopted the landcare approach wholeheartedly.

Lyn said Landcare offered a positive focus at a time when KI's farmers were struggling from unprofitable wool and grain prices and a run of poor seasons.

"While there was a lot of pessimism on the farming scene, for many of the islands farmers, landcare and its pool of grant money, was a breath of fresh air - an opportunity to do something constructive for their properties without having to fork out money they could not afford."

The islanders were quick to accept issues such as salinity didn't stop at their boundary fence and were quick to accept the need to work together as groups.

Chairman of the Chain of Lagoons Landcare Group, Martin Hodder, discusses landcare activities with project officer Helen Richards.

"Kangaroo Island is a very close-knit community - most of the farmers have been working pretty closely with their neighbors for years," Lyn said.

Protecting remnant vegetation and salinity were two common concerns for most of the groups formed.

The funding provided to protect vast areas of pristine scrub was particularly rewarding, with scrub showing signs of regenerating within 12 months.

Salinity is a concern for many of the island's farmers, with about 5 pc of the island already affected by saline seepage and almost one quarter threatened to worsen (particularly toward the eastern end of the island.)

More than 750 ha of land has been sown to salt-tolerant grasses and saltbush.

Two landcare groups - the Bugga Bugga and Timber Creek Groups - have been concentrating on ameliorating soil salinisation in their own salty and flood-prone catchments for the past four years.

And this year, the groups have joined forces to develop a catchment plan covering both areas.

Lyn says while salinity and remnant vegetation protection are still important issues on the island, the issues tackled by groups today are as diverse as the island itself, including soil acidity, waterlogging, gully erosion, soil fertility decline, feral pig control, and coastal management.

Lyn says the island is just starting to tackle bridal creeper - a weed which has begun to invade many sections of fenced-off remnant vegetation.

The bulk of the island's landcare groups have combined with the Native Vegetation Council and, with National Landcare Program support, are implementing a broadscale control program.

Contractors are being employed to do broadscale spraying, while farmers are "mopping up" small areas of concern.

LANDCARE ON KANGAROO ISLAND

Fresh water flows at Chain of Lagoons

Land holders in the Chain of Lagoons region of Kangaroo Island, south-west of Kingscote are reaping the rewards of a massive project undertaken by the local landcare group in 1990.

The Chain of Lagoons Landcare Group used local council equipment to construct a 7 km drain through the series of lagoons (which are created when the Cygnet River floods).

The aim - to reduce salinisation of one of the key lagoons and to reduce salinisation plus flooding of some 300 acres of productive farmland.

The drain starts near the top of the catchment, links into an existing drainage system, and finally exits into the sea via a salt creek.

Prior to works commencing, water in Tagells Lagoon (the saltiest lagoon) was saltier than the sea (4000 grains of salt per gallon). Today, the water quality is adequate for stock use (300 g.p.g) and flooding of the farm land no longer occurs.

An area at the top of the catchment, which once featured an ugly saline scald, now hosts an abundance of puccinellia, saltbush and a few naturally regenerating clovers.

The scald has been revegetated by the group with the help of Kingscote Area School students, using tubestock and direct seeding.

Chain of Lagoons group chairman Martin Hodder said the students go out to different properties every year to monitor vegetation growth and soil health.

He said that as a result of the vegetation and the drainage system there had been a dramatic improvement in the soils with many areas experiencing an abundance of regeneration and minimum run-off.

The group continues to work together on other issues including acidity, gully erosion along creek lines and protection of remnant native vegetation.

Saving the island's precious inhabitants

Kangaroo Island landcarers have played an integral role in ensuring the future survival of two of the island's special inhabitants - the fairy penguin and the Glossy Black Cockatoo.

Restoring natural habitat for the now endangered Glossy Black Cockatoo has been the major focus of the huge community - driven effort.

Some 320 ha of remnant native Drooping She-oak scrub has been protected by fencing and another 44 ha specifically planted to benefit remaining Glossy Black flocks.

The effort to save the precious red-tailed birds has captured the hearts and purse-strings of many - fund-raising activites for the venture have raised some $25,000 and has been backed up with $33,000 NLP money.

Along the coastal areas of Penneshaw and Emu Bay, it's the tourist-drawcard - the fairy penguin - that's been in the spotlight.

Landcare groups in both regions are striving to clean up their foreshores. Noxious weeds, such as boxthorn and bridal creeper are being removed and replaced with native species including juniper, wattle, and saltbush.

In the past, the fairy penguins have taken refuge among the boxthorns and the removal of the weed has left the penguins at risk from attacks by stray dogs and cats.

Protective boxes for the penguins, built by the groups and local school children, have been erected along the foreshore to provide an alternative home for the penguins while native plants establish.

Kangaroo Island's soils officer Lyn Dohle is a humble bundle of enthusiasm and energy with an enormous passion for landcare.

The petite 30-year-old has played an integral role in the success of landcare on the island.

While Lyn came to the island in 1989 as a soils officer, not a landcare officer, she saw an opportunity for the island to benefit from the community approach and pool of money that landcare offered.

By 1992, she'd helped establish nine landcare groups, tackling some of the diverse range of issues which affect the island she now calls "home".

Her inspiring efforts have won her enormous respect from the island's farmers and a Young Achiever Award.

But Lyn is quick to point out the biggest reward of being part of landcare on the island is the satisfaction she gets from helping others.

"It's very exciting to be part of the process of change, to be in a position to influence attitudes about land management, and to be able to have some impact on our future," she says. For Lyn, who grew up on a farming property in the Western Districts of Victoria, her view on conservation is simple:

"Landcare and conservation must go hand in hand. It is not about total conservation or total production - you have to have production to pay for conservation and conservation to be productive," she says.

Women have been an invaluable part of the landcare movement in SA since its inception - both in terms of their active participation and their extensive role as administrators.

What attracts women to landcare? Why are they so passionately involved? How do they juggle landcare with their role as mothers and other community commitments.

Kate Hoffmann and Melanie Kitschke speak to some of SA's active landcaring women who have devoted thousands of hours - mostly voluntary - to the landcare cause.

Working together towards a common goal

Landcare groups have achieved a level of participation amongst women unseen in other farm related organisations.

Unlike other rural forums which have traditionally been male-dominated, landcare has offered women and men an opportunity to learn and work together on the important issue of conserving our future.

Many women have pursued their landcare activities with a passion, expressing a strong affinity with the principles, concepts and practices of landcare.

And in many cases, women's involvement in landcare activities has given them confidence to take up a more active role in the physical and managerial responsibilities of farming and business.

It's no secret women have played an integral role in many groups in terms of administration.

"Women have demonstrated skills in negotiation, time management, communication and networking," Primary Industries SA researcher Jill Kerby says.

"In many cases, these skills had been largely unrecognised until they became involved in landcare."

Women have also shown they can help resolve environmental issues by their ability to view the whole issue in context, by seeing problems from a different angle.

They have also played an important role educating the younger generation, with many women voluntarily working with children at local schools.

PISA Jamestown-based soils officer Mary-Anne Young says landcare, and the Property Management Planning process, had been two invaluable processes in improving the way rural women and men communicate and work together.

"These people have found that it's not a case of trying to do one another's job, but realising that they have a lot of skills between them that can be put to good use."

She believes men and women have a common interest in their future and working together to form landcare groups is the basis for continued involvement by women.

"Right from the start, landcare has been jointly owned."

She also noted the strong revegetation focus of many groups provided an encouraging environment for being involved.

"Women know they can collect seed, propagate plants and plant trees as easily as anybody else," she says.

Pastoral landcarer Sharon Bell says landcare has been a great vehicle for breaking down barriers.

"People are starting to realise that women have a lot to offer, particularly in terms of their different perspective and different experiences," she says.

"They now realise that women - many who have been quietly observing for years - just need to be asked to contribute and they will.

"Communication is vital, but it must be a two way thing. If people don't understand what you're saying or don't get the right message then it's not worth saying it."

That's the view of Beryl Belford, an active landcarer in the Highland Valley region of Adelaide Hills.

Beryl's landcare efforts have been directed primarily into ensuring farmers are given the correct information and providing them with a network of people to turn to for further help.

Beryl says when dealing with landholders - who generally have very limited time to read - what you say has to be important and put across in a way which is clear, simple and to the point.

Beryl says her involvement in landcare at three different levels - secretary of the local Rodwell Creek Catchment group, secretary and treasurer of the Southern Hills Soil Conservation Board, and the soil board's representative on the Bremar Barker Catchment Group committee - has enabled her to see the bigger picture and explain to landholders why things happen the way they do.

"I can see that there needs to be a link between the different levels, and through networking I feel I am doing something to contribute to the landcare movement."

WOMEN IN LANDCARE

Picture says a thousand words for ardent landcarer

Mary Crawford bubbles with energy, enthusiasm and dedication for landcare.

From revegetating the Yankalilla property she farms with husband Richard, to assessing applications for landcare funding and organising landcare photo competitions, Mary is a driving force.

It's Mary's foresight to record a visual history of Australia's landcare achievements that has driven her to instigate and organise photographic landcare competitions in SA for the past two years and the 1997 inaugural National Landcare Photographic Competition.

"So much has been achieved in natural resource management, but not everyone wants to wade through pages and pages of a booklet to read about it.

"A picture can say a thousand words - it's a visual way of showing future generations that this is the decade we turned our philosophies around toward better resource management."

For Mary, organising the competition is just part of doing her bit toward a movement she so ardently believes in.

The mother of three has been actively involved in landcare since the mid 1980s, when a 2 ha land slip occurred on the southern slopes of their property. Mary and Richard's first plan of attack was to fence off and revegetate the land slip area. However, after several years they realised they were providing only a band-aid treatment and decided to be more pro-active.

Since then, each year some 3000 trees - including wide spaced olive plantations and fodder crops - have been planted throughout the property particularly across recharge areas.

"If we don't look after the soil we won't have anything for the future - neither for us or for future generations," Mary says. "Soils are our greatest asset - if we look after our soils, we will have not only better soils, but better water quality, and a better marine environment.

Mary has also been actively involved in the local landcare group, the local soil board, and the Mt Lofty Ranges Catchment Program.

She's also been on the regional assessment panel and state assessment panel for landcare funding submissions and taken hundreds of school and university students and scouts on tours of the property with the aim of teaching them some important landcare ethics.

"I wouldn't do it if I didn't think I could make a difference," Mary says. "Landcare is a way of life and I don't think there should be a closing chapter of landcare. "We have covered some distance with Landcare, but there is still a long way to go. Issues affecting our land such as erosion took over 200 years to create, and unfortunately we can't expect the effects to be reversed in 10 or 20 years."

Caring for the rangelands

From actively lobbying against sand mining in the 1970s, to providing support for pastoralists throughout SA's rangelands in the 90s, one thing which remains constant for Marree Soil Board member Sharon Bell is her passion for the environment.

"Perhaps the most important thing I've learnt over time is that there are many sides to every story," Sharon said.

"I believe we must protect the environment because we are so dependent on it, but to do this, we need to explore a whole range of information and options."

Sharon said that before she moved to Dulkannina station near Marree, she had a narrow view on what the arid zone was like, but after living in the area and meeting some of the people she soon realised how wrong her pre-conceived ideas had been.

"This lack of understanding of the arid zone by many people has contributed to uninformed judgements about the condition of the land and who was responsible for it," she said.

"It was obvious the people of the rangelands needed to share their experience and knowledge and importantly, have it recognised and valued.

"Initially, the landholders weren't comfortable in sharing what they knew with others, but they now realise the more they share their own experiences, the easier it becomes for everyone to better understand the environment as a whole," she said.

She added that through sharing information it becomes obvious the issues outside of the local area can have an impact on what we do.

"Sometimes I think how pleasant it would be to only have to deal with our own little patch - but in reality, it's not possible to work in isolation."

Another priority for Sharon, as part of the soil board team, has been to raise the awareness of problems within the rangelends.

"Providing the local community with information, options, and support, enables people to be more thorough and make the best choices," she said.

"Together we must recognise and then implement sustainable systems of use and management which will maintain the stability and productive potential of the rangeland."

Motivated by the big picture

Ardent landcarer Liz Connell at work

For co-ordinator of the National Landcare Conference, Liz Connell, 1997 has been a very hectic year.

Three days each week, Liz Connell is up at the crack of dawn to get two children ready for school before travelling the one and a half hour trip from Riverton to Adelaide to begin her day organising the conference.

The other two days a week she works on the conference from her Lower North home - a 40 acre property she owns with husband Jim.

But for Liz, it's a labour of love, the reward being the opportunity to see the big picture of landcare in Australia - the efforts being put into landcare throughout the nation.

"There are so many people working on landcare projects throughout the nation," Liz says.

"While each person probably considers their role a small one, the combined efforts of our landcarers is remarkable, and gives me a lot of motivation.

"Being part of this movement is fantastic and I particularly enjoy being involved at a level where I am able to meet active landcarers who inspire me.

"I guess their enthusiasm rubs off onto me, and I nope that I can help motivate them as well, by helping them come together to talk about what they are doing and why they are doing it ."

Liz has been actively involved in the community-driven organisation of SA's past four state landcare conferences, and she's also thrown considerable effort into addressing local landcare issues.

She helped instigate the Gilbert Valley Landcare Group to address issues affecting the Gilbert River (primarily revegetation and preservation of native vegetation along the river).She was a member of the Lower North Soil Conservation Board from 1990 until earlier this year, and has taught environmental education voluntarily at the local school.

Many Riverton folk are quick to sing the praise of this quiet achiever.

They respect her enormous dedication to the landcare cause, and her all-encompassing view of what landcare can achieve. They've also learned to make use of Liz's uncanny ability to track down the right information or person to speak to on almost any issue.

LANDCARE FOR ALL

With 15 different languages spoken at the local primary school, the market gardening region in and around Virginia is a vibrant cosmopolitan area.

A large percentage of the community is made up of Vietnamese migrants - a group who were keen to embrace Australia's use of artificial fertilisers when they settled in the district. But their enthusiasm for such techniques eventually led to huge problems in the soils that initially sustained them.

As Tim Jeames reports, the Northern Adelaide Plains Land Management group is playing a big part in reversing the trend.

Landcare an "economic Godsend"

"In some cases the nutrient levels in the soil were so high you could almost bag it and sell it as fertiliser. We had growers with properties that were complete basket cases."

With these words Virginia horticulturalist Dominic Cavallaro sums up one of the massive environmental challenges that faces growers involved in the formation of a truly unique Landcare group.

Mr Cavallaro and other local growers formed the Northern Adelaide Plains Land Mangement group three years ago in a response to failing crops from properties with soil that was verging on being toxic to plants.

The group is a good example of how Landcare does not have to be restricted to issues such as revegetation - with the whole process being purely economically driven.

It's also a good example of how cultural problems can have a direct impact on the environment, with the Virginia region's multicultural community posing special problems.

Here you'll find 15 different languages spoken at the local primary school, with many parents speaking only very limited English.

'Cai Tao Dat' - the Vietnamese equivalent of 'Landcare' is now commonly used in conversations by members of the local Vietnamese Growers Association.

The largest single group - about 400 growers - is made up of Vietnamese migrants who produce tomatoes, cucumbers, capsicums and Asian vegetables.

Coming from communities with volcanic soils and using largely organic farming techniques, many were quickly seduced by the "quick-fix" of artificial fertilisers that dominated local growing regimes.

"They found it worked once so they figured if they added a bit extra next time it would work even better," Dominic says. "There was no thought to a scientific approach - it was a matter of just throwing it on. "In the end some growers would just burn out their soil and move their glasshouses to a new location. But eventually you"ll run out of space.

"There was a total lack of understanding about what was going on when the problems finally hit."

A similar problem came with a "slap-happy" approach to irrigation, with growers ignorant of the need to match irrigation levels to soil requirements.

Initially formed as a self-funded, self-help body, the management group set about reversing the land degradation trend. With a small amount of Landcare funding it has since played a pivotal role in helping bring back to life both the region's soils and profitability.

A key to this has been the work of PISA extension officer Michael Nguyen who has translated into Vietnamese many horticultural manuals, on issues such as fertilisers and pest management.

"Before, someone would adopt a practice that was totally wrong but through word of mouth you'd find everyone was doing it," he says.

"Now they've got references they can understand and apply."

Vietnamese Growers Association president Hoa Tan Do, Dominic Cavallaro, Michael Nguyen and Nick Mecozzi at one of the group's trial sites. Best practice sites such as this are helping revitalise once degraded soils around Virginia.

Thanks to the group, the expression "Cai Tao Dat" (the Vietnamese equivalent of "Landcare") is now commonly used in conversations by members of the local Vietnamese Growers Association. Five years ago it was virtually unheard of at such meetings.

Similarly, soil and leaf testing - previously restricted to a few growers - is now becoming standard practice for many growers who are educated on taking a scientific approach to crop management.

The group's focus has not been restricted to Vietnamese, with Greek and Italian growers also involved.

For growers such as chairman Nick Mecozzi, the achievements have translated into an economic godsend.

A "best practice" trial patch on his property has seen his parsnip yields leap from around 15 bins per acre to about 30 bins per acre.

With a pipeline from the Bolivar treatment works set to double production in the region, Landcare issues will become even more important in the years to come.

LANDCARE FOR ALL

It's no secret landcare has not successfully fostered the widespread involvement of Aboriginal communities - not anywhere in Australia, let alone in SA.

In the past landcare funding submissions have not been geared toward Aboriginal involvement, and as a result, very little money has been injected into the sustainable management of Aboriginal lands.

In SA, the tide is slowly turning. In the past three years, land management co-ordiantors have been appointed to start the landcare ball rolling in the Anangu-Pitjantjatjara Lands, and Aboriginal Lands Trust properties at Nantawarana, Raukkan and Pt Pearce.

This year SA has introduced an Aboriginal regional assessment panel for NHT funding, in a bid to increase direct Aboriginal involvement in landcare.

Discussions have also commenced about the formation of a Soil Conservation Board district in Aboriginal lands.

However, this is just a start and the challenge is enormous - it's not just a case of bringing people together to work on a common issue.

The vast area of the Aboriginal lands raises serious management issues in itself. Moreover, the impact of European colonisation has modified the ways in which Aboriginal people relate to, and manage the land.

For Aboriginal people, land management practice was embedded in culture and was about maintaining spiritual, social and physical relationships to an area.

The general move into communities and the abandonment of traditional lifestyles has led to a reduction in the extent and effect of traditional land management practices. These issues and more must be overcome if the sustainability of these precious lands is to be regained.

Melanie Kitschke reports.

Birds singing again at Nepabunna

Birds are starting to sing again at Nepabunna, an Aboriginal community 70 km east of Leigh Creek, bordering the western edge of the Gammon Ranges.

Magpies and finches can be heard in the hundreds of trees established around the community in the past four years, as part of a major landcare effort by the Aboriginal Lands Trust, with NLP funding support.

In the Aboriginal community's surrounding sacred lands - 560 square km known as Nantawarrina Station - things are also starting to change.

De-stocking of the property and the start of feral animal control programs have led to considerable regeneration of plants. A12 km section of fence bordering Nantawarrina and the Balcanoona National Park has been upgraded and an extensive feral animal control program has begun.

In conjunction with DENR and the Nepabunna Community, the Lands Trust has killed 500 donkeys, and shipped out some 2500 goats.

Rabbit numbers have also been dramatically reduced since the escape of rabbit calicivirus and explosion of warrens has been demonstrated.

The works have been constructive, and have led to considerable regeneration of grasses in summer rains, however, they are not enough, says community chairman Roger Johnson.

"The project needs more funding to maintain momentum," he said.

"There are still thousands of goats and hundreds of donkeys in Nantawarrina that are continuing to destroy the lands. "We need a massive on-going project to get feral animals down to levels we can control on our own."

"We are not getting our fair share of landcare money - non-Aboriginals are taking a big slice of the funding cake.

"Even though our land is not for production, our land is most important because of the sacred sites, burial grounds, painted rocks and carvings.

"Our people are very concerned about the condition it is in."

Aboriginal Lands Trust land management officer John Chester said the start of landcare activities in the region has re-ignited the Aboriginal community's pride in their lands.

"The land has always been their lifeblood and it's dear to their hearts, but they had no resources to manage the feral goats, donkeys, and rabbits, let alone to do any revegetation work.

"Since the trust (with support from NLP and with help from Primary Industries SA at Pt Augusta, Save the Bush and Environment Australia) has been actively involved in helping restore the lands, community spirit has lifted.

Tree planting at Nepabunna, 1997

"This was seen during the most recent tree planting when children, adults, elders and administrative staff all participated."

Mr Chester said the Trust, Nepabunna community and Greening Australia were currently negotiating future revegetation activities.

"Rehabilitation of degraded land is a mammoth task and therefore we welcome any assistance from all agencies who can help with our land management activities."

He said the most enthusiastic community members had formed their own Nepabunna Landcare Group and were hoping to put the community on the map in terms of its landcare achievements.

Breaking new ground at Anangu-Pitjantjatjara

The extinction of bilbies, numbats and bettong in the Anangu-Pitjantjatjara Lands is proving an invaluable factor in establishing a landcare ethic amongst the Aboriginal owners of this vast acreage of country in SA's far north-west.

In the past, many Aboriginal people believed white fellas took the now-extinct mammals down south when western civilisation turned their native world upside down.

However, a landcare funded project in the past four years is helping Aboriginals recognise it is the whitefellas' feral animals, not the whitefellas themselves, which are causing extinctions of these precious mammals.

AP land management co-ordinator Peter Yates says the challenge of establishing a landcare ethic amongst Aboriginal land managers is enormous. "What ever we do, it must be culturally appropriate," he said.

"Social and spiritual rationale were the prime motivation for these people's actions, and harvesting of the land was purely for subsistence.

"These are people who believe that if the spirit of the land is taken care of through ceremony, then the land will take care of itself.

"The efficacy of such a management view is undisputable within traditional constraints, however, with the arrival of cats, foxes, and rabbits and the general depopulation of the country, land degradation and species extinctions became a serious problem. The Aboriginal world view has in fact tended to obscure recognition and understanding of these problems. The loss of species was noted and keenly felt, but spiritual, rather than physical causes were implicated."

"The challenge for landcare is to weave together both old and new understandings of the world in creating an ethic which will deal with contemporary problems through a traditional framework.

"Considering this, the progress we have made is no small achievement." Peter says much of the progress can be attributed to a biological survey (of vegetation and animals) which has been conducted twice a year for the past six years in the lands by DENR, in conjunction with the SA Museum and the Aboriginal people.

It has been during this process, that discussion has been raised about why the variety of vegetation and mammals has decreased.

Demonstrations of the value of removing feral animals, such as building rabbit exclosures and strategic baiting of foxes around rock wallaby colonies has since occurred.

Peter says patch burning (controlled burning of areas of land ranging in size from smaller than a football field to a few square kilometres) is another land management practice the Aboriginal lands needs to see returned in order to increase the biodiversity of flora and fauna.

Until Aboriginal people were brought together in communities, patch burning was integrated into their hunting lifestyle.

When Aboriginal people moved in to communities and had no need to hunt, the burning regime stopped and a huge fuel load has developed, which has led to highly destructive summer fires.

Management of rock holes (which have strong Aboriginal dreaming association) is an important part of the program, particularly in terms of getting the community into the bush to do other land management activities.

Another landcare task is the collection of bush tucker, recognising if the country isn't harvested, it will lose its productivity.

A big investment by landcare into the AP Lands has been in strategic planning, which Peter says must focus at the on-ground level that Aboriginal people can identify with.

Progress at Raukkan

Landcare is slowly being accepted by the Raukkan Aboriginal community, south of Murray Bridge.

The community's lands cover some 4500 ha and include arable farming country, salt flats, a precious stand of remnant vegetation, as well as Lake Alexandrina lakefront.

The area features a gamut of land management issues, including noxious weeds, feral animals, and shifting sand dunes.

Aboriginal Lands Trust officer Jason Downs says momentum for landcare by the Raukkan people began after the lake front was renovated by the trust, with co-operation from the community's farmers, the council, and school.

Boxthorns, which had overtaken the lake front, were removed and replaced with native plant species.

The visible nature of this project has spurred a lot of belief in what landcare is all about, Jason says.

Another successful project is the stabilisation of a sand dune known as Big Hill, which was contoured and stabilised with a ryecorn mixture plus 500 tubestock.

The Aboriginal Lands Trust also trialed the use of a woodchip mulch over the seed and jute matting (a coconut fibre carpet). Lessons learned from stabilisation of Big Hill will be applied to the trust's next task - stabilisation of a burial site north of the community.

He said a 400 acre remnant patch of vegetation, featuring a diverse mixture of flora, from orchids to mallee scrub with an abundance of birdlife and wildlife, has also been the focus of landcare activities. Repairs to fencing of the remnant has been completed, and removal of bridal creeper has begun.

Farm manager Derek Walker says sustainability is a key focus of the community's farming operation, which includes 900 head beef cattle, 250 head dairy cattle, and two centre pivot irrigators for corn, potatoes, maize, sorghum, and lucerne production.

RE-GREENING SA

SA, like other States, has not escaped the ravages of land clearance during the past century. Some 85 pc of the original bush has been removed from areas with a rainfall over 250 mm.

In response to this overclearance, controls on vegetation clearance were introduced in 1985 and were followed by a Heritage Agreement Scheme for conservation of habitat (which had by 1995 protected 600,000 ha of native bushland). While these legislative measures have been valuable, the challenge has been to revegetate - and protect the land from salinity, erosion, landslip and many other problems overclearance has caused.

A strategy outlining the guiding principles for revegetation efforts - identifying priority areas, timelines and responsibilities has been produced for SA. The State Revegetation Strategy - prepared by the State Revegetation Committee in 1996 - is used by all agencies, soil conservation boards, catchment groups and community groups involved in large scale revegetation. It is Australia's first revegetation strategy and is now being modelled elsewhere in the nation.

SA winning the re-vegetation challenge

In many ways, SA has led the nation in terms of its re-greening efforts and this was highlighted last year, when SA became the first state to plant more trees than were removed.

SA has the best laws for native vegetation protection, and a plethora of organisations, community groups and private contractors dedicated to re-greening the state.

Trees for Life supply 1.5 million seedlings per year to landholders through their free tree scheme. It's Bushcare program gives volunteers an opportunity to help protect remnant vegetation.

The Australian Trust for Conservation Volunteers provide a pool of labour for revegetation and bush land management projects.

And more than half of SA's landcare groups are undertaking revegetation projects.

Vegetation issues are an integral part of many land management programs, ranging from soil conservation, groundwater salinity control and land productivity to the conservation of biodiversity.

The success of SA's revegetation activities must be attributed to the enthusiasm and ingenuity of the many individuals involved in the re-greening drive. Motivation for the massive re-greening effort has also come from peoples' recognition of the dire need to start repairing some of the damage done in years gone by.

There has also been excellent co-operation between re-greening organisations, with Greening Australia, Trees for Life, and PISA's revegetation program under one roof at the State Tree Centre. Their co-operation has had significant benefits in terms of the resources they have been able to attract.

The reversal of vegetation decline has been largely due to the State's ready adoption of direct seeding for broadacre revegetation and, in more recent years, the recognition of the need to prioritise management/protection of remnant vegetation and to try to understand tree decline.

"Until the 1990s, tubestock was the main component in establishing trees in SA. However, statistics were showing that for all that effort, trees planted were not even replacing those being lost through old age, salinity, erosion, and vegetation clearance," Greening Australia SA's Neville Bonney says."

In the early 1990s, Greening Australia and PISA's revegetation team established sites in a wide range of environmental conditions to demonstrate and improve direct seeding technology.

Since then, there has been widespread acceptance of the technique by individuals, landcare groups, commercial revegetators, and governments.

One of SA's innovative revegetators has been Tumby Bay farmer Barry Stirling, who as well as direct seeding many kilometres on his own property, has developed a very versatile direct seeding machine - copies of which have been bought by at least a dozen landcare groups across the state.

Neville Bonney warned that while revegetation techniques had greatly improved, this should in no way be construed as a trigger to allow more land clearance approvals.

The transformation of Magpie Creek

Left: Kevin Jaeschke , at Magpie Creek with the then Governor General Bill Hayden at the launch of the Decade of Landcare, and above, with some of the 5.5 km of revegetated Magpie Creek.

Where two trees once stood, over 35,000 native trees and shrubs now grow - some standing 20 to 30 foot high.

Blue gums, red gums, mallee trees, acacia's, native saltbush and native pine are just a few of the 83 different species of native bush and shrubs which run along 2 km of creek bed.

The location is Magpie Creek and the 5.5 km of creek bank is well on the way to being totally revegetated.

Hart farmer, Kevin Jaeschke began the project in 1986 with the aim of stopping soil erosion, stabilising the banks, and beautifying the creekline.

He said all the trees were planted using tubestock as direct seeding was unsuited to the steep creek banks, and the creek (which has 54 bends) had to be fenced off.

The whole venture was neither short nor cheap.

Before any trees could be planted, hundreds of artichokes had to be cleared, the area had to be completely fenced off, and contour banks had to be put in to reduce run-off.

"We constructed a contour bank which flowed in a natural direction into a flood-control-dam," he said.

"In places where the soil had completely washed away, we laid stones/car bodies/anything we could lay our hands on, covered the area with straw and have planted clover."

Kevin says the project highlighted the fact that revegetating land did not have to take up huge areas of arable soil.

"Land which is not suitable for sustainable agriculture can still be brought into production in some way or another - whether it be for beautification, reducing salt or to lightly graze," he said.

by Kate Hoffmann

On a mission to change the landscape

Mig and Josie: direct seeding their way to a changed landscape

South-East tree planters and direct-seeders, Josie Jackson and Mig Brookman are on a mission to change the landscape.

Through their S-E Direct Seeding Service, formed five years ago, they plant out hundreds of thousands of trees each year, mostly on farm land.

They also propagate annually 60,000 trees from locally collected seed.

Before turning professional, they had both been for years the respected, amateur advisors for many neighbors.

These days with utes and trailers loaded with their self-designed direct seeders and four-wheel motor bikes, they split their territory in two.

Mig heads into the sand country between Keith, Meningie, Lameroo and Karoonda while Josie goes south from Willalooka into the heavier, more water-logged country as far south as Penola.

"Driving around in the South-East, looking over those treeless plains, I think that before I get to 70 I would like to see them half filled with trees again," Josie says.

Their passion is fired by success on their home blocks.

Josie, who returned to her family farm, after a Roseworthy farm management diploma, travel and marriage to husband Jamie, saw with new eyes how the wind whistled across the plains and how the lambing ewes cringed.

She started planting 2000 trees a year by hand. About 100 ha of their 600 ha property has now been revegetated, with no reduction in stock numbers.

"We had birds nesting in our trees within two years and our lambing percentage has gradually increased as the trees have grown and provided shelter," Josie said.

Meanwhile, Mig Brookman, a former school dentist, world traveller and from a NZ farming family, was planting out between 5000 and 6000 trees a year on the property she farms with husband Peter. "We realised there had to be an easier way," Mig said.

In 1987, with adapted bait layers, advice about seed collecting and propagating and support from Greening Australia the duo embarked on the direct seeding path.

As great supporters of tagasaste for sandy country, they use a Speedling planter to plant 2000 small trees an hour for $90 to $120/ha.

Direct seeding costs about $20/ha.

Direct seeding of native species is $100/km, with a minimum charge of $200 plus travel.

by Angela Goode

Growing interest in native grasses

Native grass enthusiast Bob Myers. Photo courtesy Mount Barker Courier.

Native grasses are opening up a whole new world to a lot of people involved in revegetation.

This is the view of landcarer Bob Myers of Birdwood in the Adelaide Hills.

"Just a few years ago, only enthusiasts were serious about native grasses, either from a conservation point of view, or to use them in revegetation or for low input grazing," Bob said.

"Native grassland communities are very poorly conserved across the whole of temperate Australia, and SA is no exception. All grassland remnants are threatened by some form of disturbance, Grazing, weed invasion, changed fire patterns, and smallness of remnants are all matters of concern."

Bob is actively involved with the Native Grass Resource Group which is looking at the potential use of grasses in agriculture and revegetation and assisting in conservation of grasslands.

"This is an exciting program to be involved in . It's like being a pioneer in an area on a voyage of discovery," Bob said. "Some people have done a lot of work on grasses, but most landowners still know very little about native grasses on their property.

"The showier grasses, such as kangaroo grass, wallaby grass, windmill grass, and spear grass are becoming better known, but there is a host of others which most farmers would not recognise."

There are now about 18 seed suppliers in SA. The industry is growing but not necessarily in any orderly way.

"We need a code of practice for suppliers and we need a lot more information about seed production and the performance of grass species for different purposes," Bob said.

"Until we know a lot more about our native grasses, we shouldn't be using seed from outside an area and even within a district there are site specific species and ecotypes."

Genetic variation will be an important area for future research.

The Native Grass Resources Group is keen to recruit new members to help promote and expand the program.

"Very few people are doing a lot of work," Bob said. "The group needs new, enthusiastic people."

The program is starting to gain momentum at a good time. There is growing interest in restoring understory to degraded bushland and in low input grazing on farmland.

"We need more trial sites to gather data on the grazing pressure that the different species will stand and how stock graze native pastures," Bob said.

"We should be capitalising on the potential for natural resource student projects to help gather some of this information. There needs to be stronger links forged between the universities and landcare and catchment groups.

by Geoffrey Bishop

Bushcare - caring for the seed source

In any discussion about environmental objectives in SA comes the issue of remnant vegetation and the importance of protecting it for genetic diversity, habitat, social value and as a seed source.

Three years ago, to do just that, Andrew Allanson initiated a program called Bushcare, run by SA's major community-based revegetation group Trees for Life.

But as co-ordinator of a group with a specific focus, he says it has not been an easy task.

"I think it would be fair to say that it has been much more difficult getting people involved in Bushcare as opposed to Trees for Life's Free Tree Scheme," he said.

Trees for Life is something people can contribute to without leaving home. "I don't know whether people here, in particular in Adelaide, understand the concept of what bushland really is and I think that is evidenced by the difficulty we have had attracting people to Bushcare."

Andrew is positive about the work his group does, but has no illusions about the state of SA's remnant vegetation.

"While SA has the best laws for protecting native vegetation, and we can get people involved in saving some roadside vegetation, we are still, despite all the moves and legislative type changes in the past 10 to 15 years, losing vegetation - that's the message that is hard to get across to people.

"People have the impression that everything is OK. Trees for Life planted 1.5 million trees last year and Greening Australia did several million, likewise State Flora as well as private contractors, but the real story is that seed comes from remnant vegetation and the very thing that we get seed from is the thing that is deteriorating."

Andrew says the situation with SA's native vegetation is far from ideal, but gradually Bushcare is making gains in areas closer to Adelaide.

We've got 300 people aware of what's involved in managing vegetation and we're trying to get those people involved in turning that around in a specific location.

"But we need to have more like 33,000 people involved in this work before I felt SA's native vegetation had a more positive future.

by Anne Lucas

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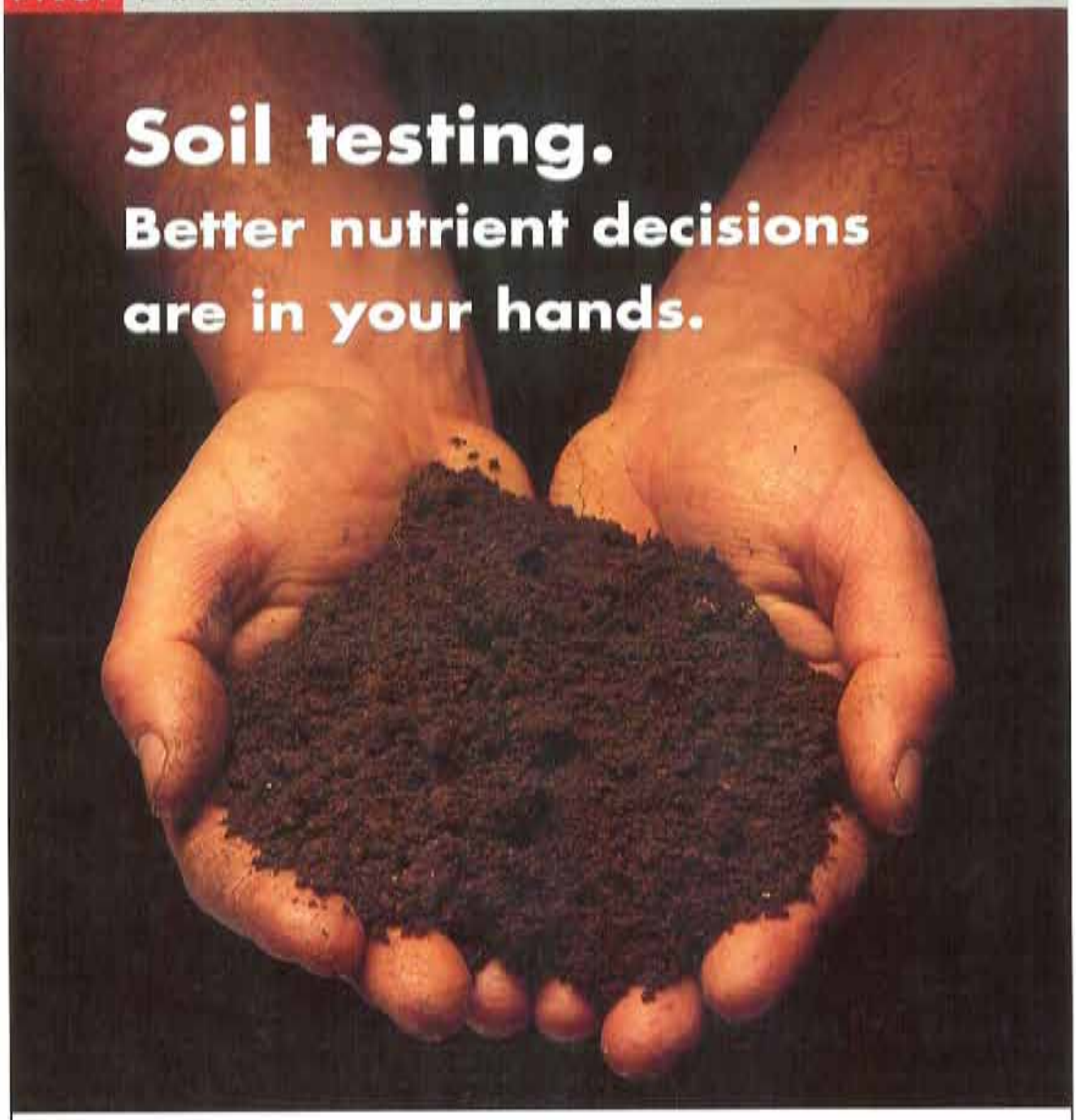

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