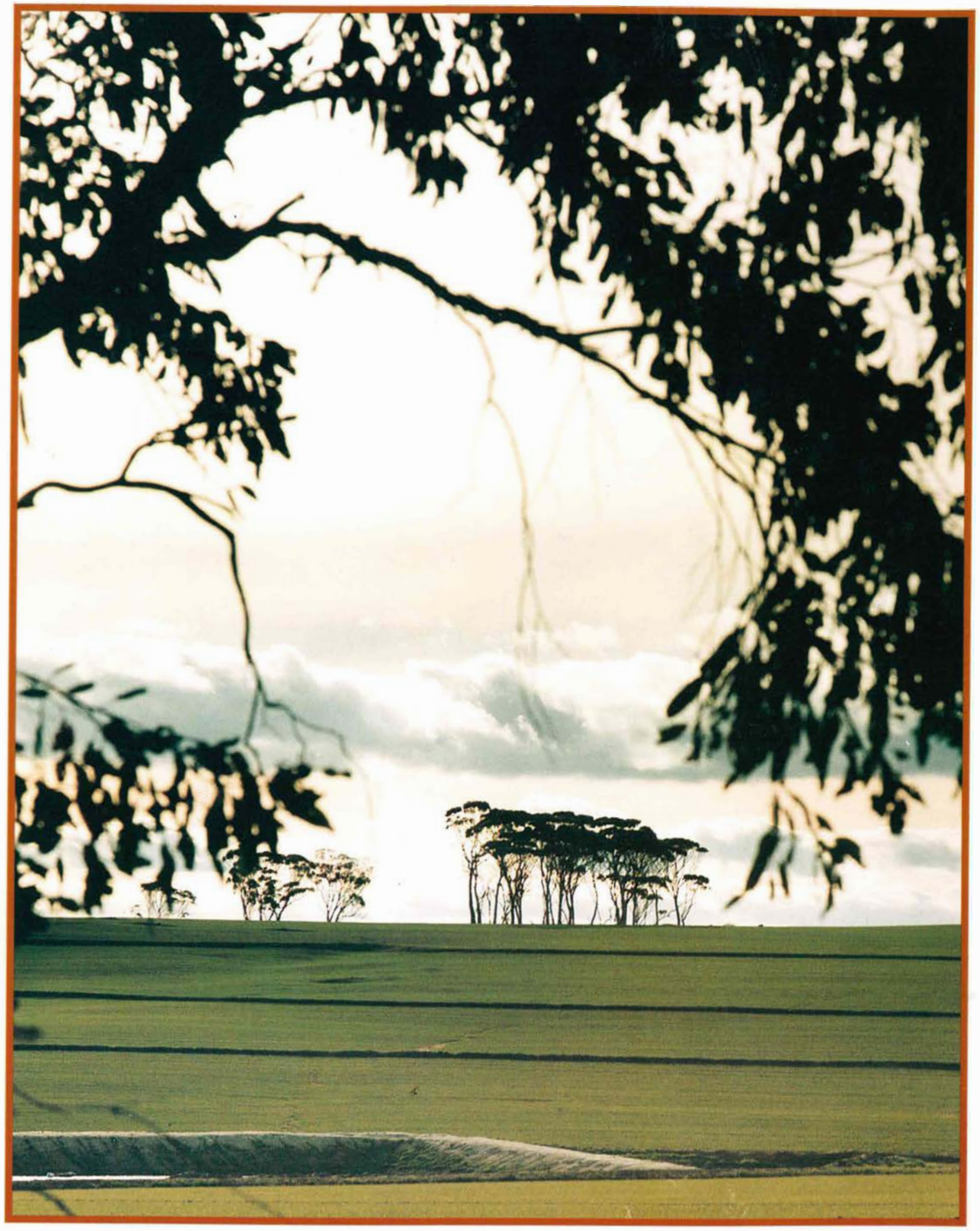


ALCOA AUSTRALIA

DEPARTMENT OF AGRICULTURE
WESTERN AUSTRALIA

NATIONAL LANDCARE PROGRAM

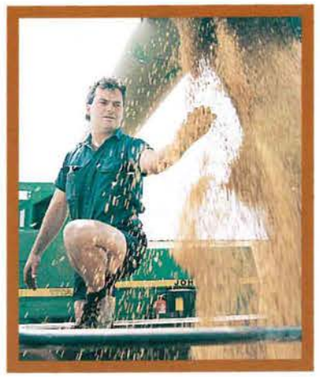
Soil and Land Conservation Council
Western Australia

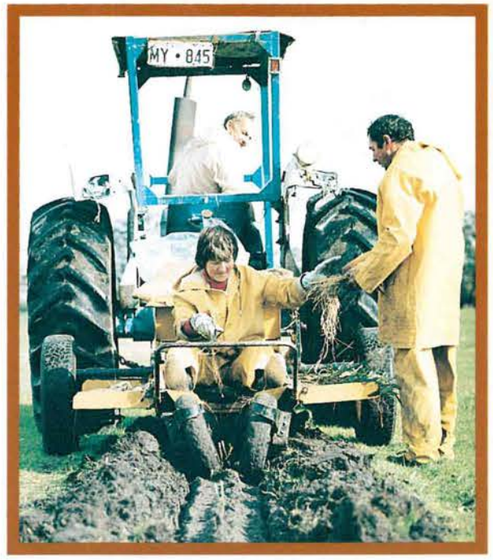
Photos courtesy of Alcoa of Australia Limited

DEPARTMENT OF AGRICULTURE
WESTERN AUSTRALIA

THE AVON CATCHMENT PROJECT
A BLUEPRINT TO A HEALTHY FUTURE

AGRICULTURE WITH ATTITUDE





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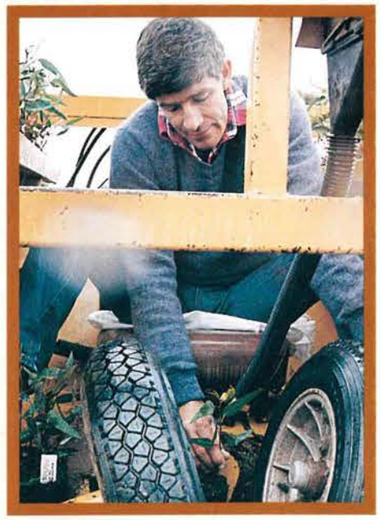
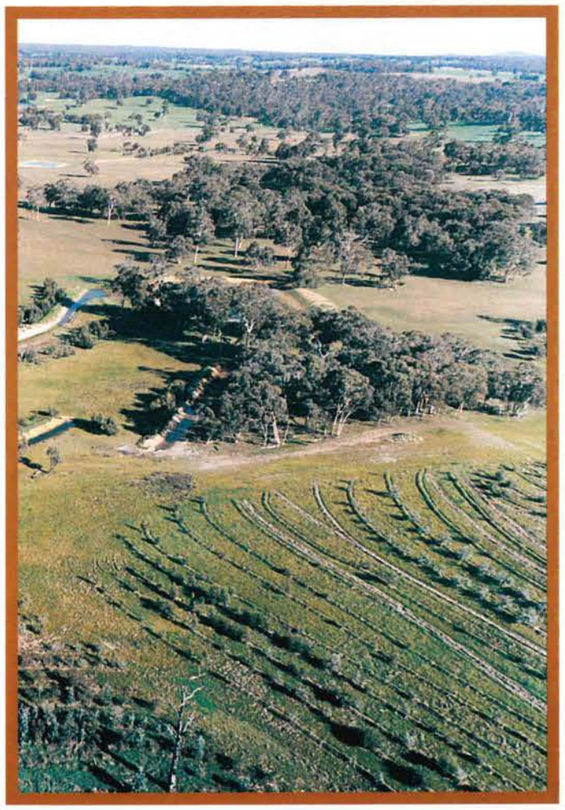


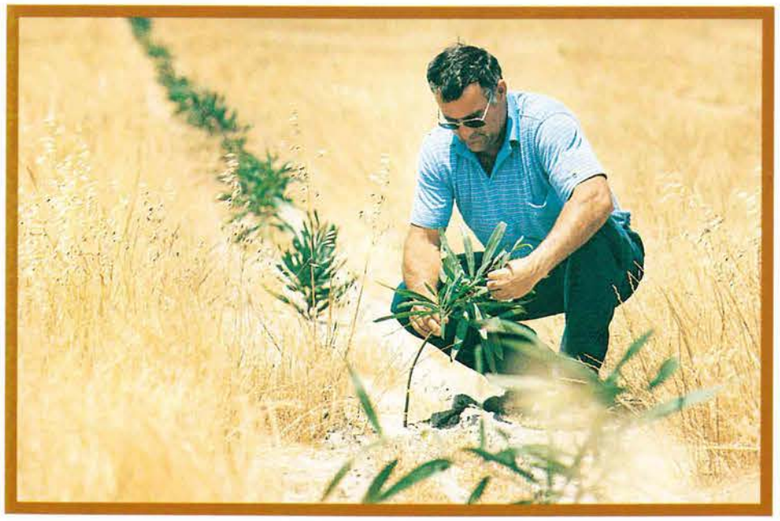


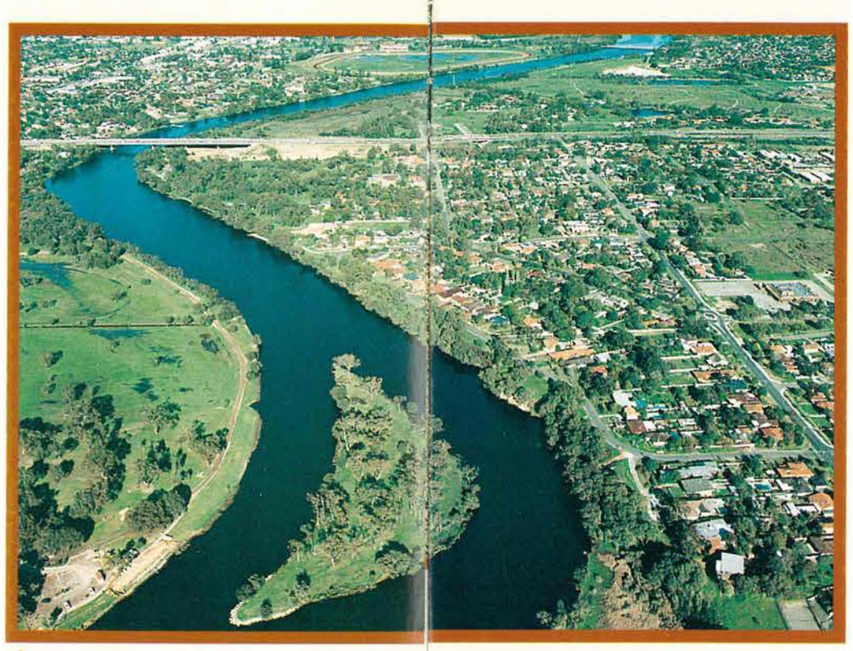
OVERVIEW

Farmers in the water catchment area for the Avon River grow about half Western Australia's wheat, and more than one fifth the State's barley crop. Combined with meat and wool produced in the Avon, these crops add on average $0.7 Billion to the State's annual income.

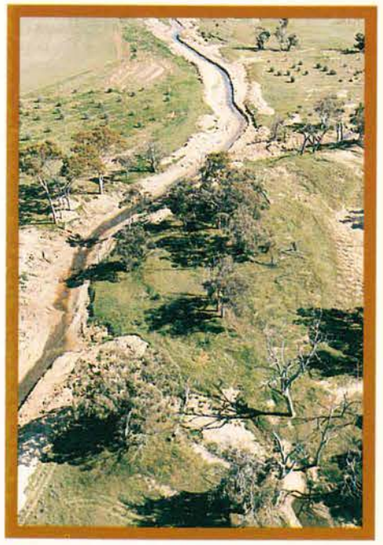
This vital region, like so many other parts of rural Australia, is showing serious signs of land degradation. Salinity, soil erosion, loss of soil structure and fertility, water quality and native vegetation decline are all taking their toll. While at first glance these problems may appear to impact only on the rural community, the reality is far more complex. In the future, these elements will become increasingly important, affecting the economic and environmental well being of rural and city people alike.

Through the Avon Catchment Project supported by the Department of Agriculture Western Australia, and Alcoa of Australia Limited, rural communities throughout the district are seizing the initiative. By forming catchment groups and implementing their strategies, they are steering their own environmental destiny. But they can't 'go it alone'. They need support from the wider community to reach the balance needed to produce from the land, keep it healthy for the future, and provide habitats for the plants and animals that belong there.

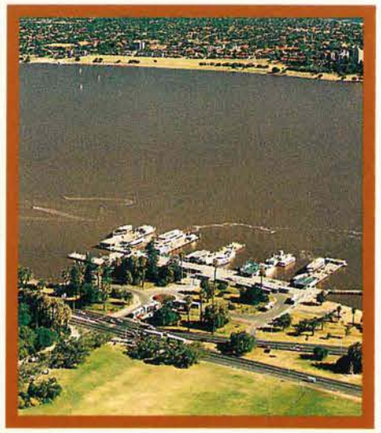




The Swan / Avon River System.



Degradation in the Avon Catchment.



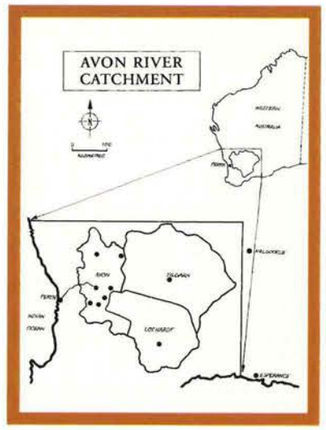
The Swan, a river under pressure.

THE SWAN/AVON RIVER SYSTEM AN UNMISTAKABLE LINK BETWEEN COUNTRY AND CITY

Anyone who has enjoyed a balmy summer's afternoon relaxing on the banks of the Swan River will appreciate how blessed Perth is to have such a national treasure. Right on the city's doorstep is a magnificent water course.

In winter, the Avon River feeds the Swan to turn it into a turbulent current which supports a feast of excitement and the longest white water event in the world. As the spring rains subside, the action passes and the Swan River slows down. It continues however to present an abundance of leisure opportunities such as fishing, boating, or even just sightseeing.

When soaking up the ambience of the Swan, you could be excused for feeling as if you are a million miles away from the challenges that face the rural community. And yet, there is no stronger connection between city and country people.



On the outskirts of Perth, the Swan River undergoes a name change to become the Avon River. Cascading its way down the Darling escarpment, water in the Avon can be traced right back to the Goldfields.

The river comes from an ancient drainage system of about 100,000 square kilometres. To put that size into perspective, the Swan /Avon water catchment is bigger than Tasmania. And throughout the catchment are some of the oldest and most fragile soils in the world.

About two thirds of this huge area is owned and managed by farmers. The rest is made up of bushland, the Swan Valley - with it's intensive horticultural use, and the metropolitan area. There is a connection between Swan River water quality, and all these land uses and any factor which degrades the catchment's landscape, can ultimately change the quality of life in and around the Swan River.

This interwoven connection becomes even more important when it is realised that farmers in the Avon Catchment are facing some of the toughest environmental and economic challenges they have ever had to endure.

Quite clearly, if Western Australia is to continue to enjoy the many pleasures of a clean Swan River and healthy catchment area, the future will rest heavily on strategic rural planning and sound land management.

THE NATURE OF THE CHALLENGE

Since the very first European settlement, Western Australia has been progressively cleared. Native bushland has gradually made way for crops and pastures. In the Avon Catchment, more than 90 per cent of farmland has already been cleared.

The act of clearing has in itself created problems for farmers and the Avon River system alike.

Over the years, deep rooted water efficient native plants have been replaced by shallow rooted annual crops and pastures. Water utilisation within the catchment has changed and there is now an imbalance that needs to be corrected.

Since the early 1900's, problems associated with this water imbalance have been emerging on the landscape. Some of the environmental challenges that confront today's farmer's include:

- soil acidification;
- development of soils with non wetting properties;
- soil structure decline;
- excessive water run-off causing erosion in paddocks and water courses;
- siltation of water courses;
- waterlogging in poorly drained areas;
- wind erosion;
- declining water quality in streams;
- continuing decline of native vegetation;

and badly salt affected areas appearing in the bottom of valleys and on valley slopes;

Salt encroachment has already afflicted some 440,000 hectares of cleared land in Western Australia. The Department of Agriculture estimates this is increasing by 11,000 hectares each year. The four most salt affected Shires in the Avon Catchment share at least 50,000 hectares of induced salinity.

If left unchecked, excessive water run-off will continue to erode sediment rich with nutrients such as nitrogen and phosphorus, together with the emerging salt, and flush them straight into the river system. Stream erosion has already filled most of the Avon River's permanent river pools and could impede the river's natural flow in the future.

A saline seepage

AFTER; Land repair and salinity control through strategic planting.

WORKING TOGETHER TO FIND SOLUTIONS

The Avon Catchment has a compelling need for improved water use efficiency. Better water utilisation within the catchment will lift production, reduce land degradation and sustain the viability of farming in the area.

Solutions to the emerging problems are as diverse and complex as the soil types and topography of the catchment itself. The western and central parts have the highest rainfall and consequently waterlogging, flooding and soil loss events are frequent and significant. In contrast, the eastern part with its flat terrain and lower rainfall has a completely different set of challenges.

The problems are being corrected by groups of farmers assessing the main environmental threats to their land and taking positive action at the local level. To do that they need to fully understand the impact of their farming and how that affects others in the catchment area.

SETTING UP CATCHMENT GROUPS

Turning back the clock to the days when the countryside was in its natural condition is obviously impossible. Nevertheless, there is an increasingly powerful movement amongst the rural community towards the concept of sustainable farming systems.

Through the Avon Catchment Project (established in 1989), rural communities are being encouraged to take even more responsibility for the land. With the help of the Department of Agriculture, other government departments and private enterprise, dozens of Landcare Groups based on local creek catchment's are successfully forming. Within these groups farmers are contributing increasing amounts of time, ideas, and money to land conservation, even though the benefits may be decades away.

SMALL NEIGHBOURHOOD GROUPS IDEAL

The Avon Catchment is typically made up of creek-catchment areas of between 20,000 to 30,000 hectares owned by between 10 to 15 farmers. These creek-catchments provide an ideal opportunity for small groups of farmers to meet regularly, share their environmental challenges and help each other to find solutions.

The process of setting up Avon catchment groups has largely been initiated by farmers. Those who want to form a group contact the Department of Agriculture who provide the services of a Development Officer. They assist the group, particularly in the early stages, to identify and understand key local land management issues. Continuing to work closely with these farmers, Development Officers may be involved with up to six other groups at the same time, and provide an ideal channel for transferring vital information between them.

The Department's Development Officers assist groups to access and interpret information and facilitate group decision making. They inject enthusiasm when needed, offer advice and consultation, guide the group through the planning process, and provide an invaluable link to a wealth of outside technical expertise.

But time has shown that the real success of the groups has been a direct result of the cooperation of the farmer members and their willingness to become actively involved. The farmers organise their own groups process and choose their own leaders. It is this professional framework which enables the groups to function cohesively.

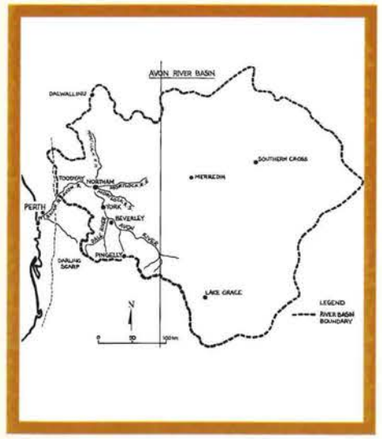
THE GROUP PROCESS

An organised tour of the catchment area is most often the first activity undertaken by a newly formed group. A first hand account of the catchment boundaries, topography, soil types, and the management techniques employed on neighbouring farms is invaluable experience for each member.

The tour provides each farmer with the range and depth of issues facing their catchment. A surprising discovery is that many farmers who have lived in the area for a long time may not have had the opportunity to closely view a neighbouring property, past the house and sheds.

Neighborhood groups working together

Planning for the future.



The Avon River Basin project boundary.

SETTING ACHIEVABLE GOALS

Ever apparent is the fact that land management can significantly influence the landscape far beyond the farm gate.

Without doubt, the benefits of farmers interacting so closely with each other in these catchment groups include:

- sharing ideas;
- learning from each other;
- developing a coordinated strategy for their own catchment;
- and helping build a stronger community spirit.

Following the introductory catchment tour, the group is better placed to identify the main issues they need to tackle. They can then start to set priorities, develop an action plan and determine a time frame within which their goals can be achieved.

IDENTIFYING AND MAPPING SOILS

For new groups, identifying and mapping the catchment's soil types is one of the most important initial planning processes. Only then can they start to better understand the economic and environmental hazards and capabilities of their whole catchment. Characteristics including soil structure, fertility, agricultural potential and limitations are then able to be discussed. Other information such as soil acidity, salinity, erosion, gypsum responsiveness and water repellent characteristics of the soil provide further guides.

PRIORITISING THE CHALLENGES

When a detailed description of the area is clearer, further field activities and meetings help identify specific problem areas within the catchment. Field visits to some of these sites with specialists may be necessary to further clarify the problems and potential solutions.

At this stage, economic information is discussed in the planning process to determine the most practical management options.

SUCCESS IS STARTING TO COME

The formation of small farmer catchment groups in the Avon has proved an overwhelming success. Through the Avon Catchment Project, almost 1000 farmers have become involved in more than 70 separate catchment groups. That is about 50% of all farmers in the area cooperating to develop more sustainable farming systems. Success has been driven by the extensive cooperation of the rural community combined with help and expertise from off the farm.

Through consultative process, the Department of Agriculture's Development Officers help the groups source the various support available. Valuable information and aid can be gained through tapping into the knowledge and expertise offered by other government departments such as the WA Water Authority, the Department of Conservation and Land Management, and the Waterways Commission.

The corporate sector has also shown it is keen to lend a hand. Alcoa of Australia Limited and Smorgon Cyclone Rural are examples of two companies helping groups to develop better land management techniques.

CORPORATE HELP

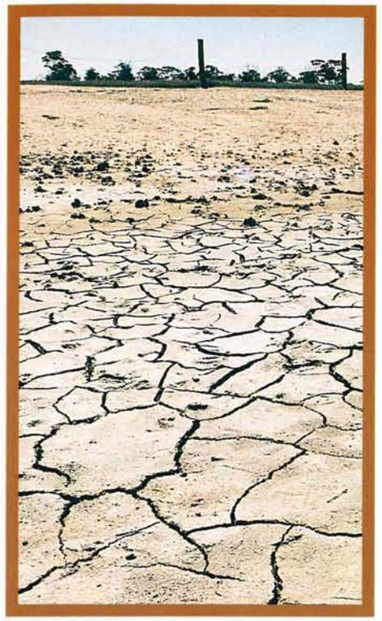
Over the past 30 years, Alcoa has developed sophisticated techniques for rehabilitating jarrah forests on previously mined sites. Their efforts at pulling together the basic functions of self supporting ecosystems have proved outstanding. In 1990 the company was recognised by the United Nations for the progress they have achieved in rehabilitation.

Alcoa has made a conscious effort to share these rehabilitation principles to the farming community and since 1982 has offered free advice and trees for farm planting. In 1990, when the Federal Government launched the Decade of Landcare, Alcoa pledged a massive $6 million over six years to help Western Australian farmers find solutions to their land degradation problems. Part of their sponsorship has gone towards establishing six demonstration sites within the Avon catchment area. These sites demonstrate how group planning can successfully result in land reclamation techniques that work. They are now being used as models for other catchment groups.

Demonstration sites throughout the Avon area have shown how rehabilitation areas need to be fenced off for full protection. There is also conservation value from the point of bio-diversity in linking up remnants of bushland with fenced-off wildlife corridors. These encourage the native fauna to return and enable them to move about more freely with bush protection.

Monitoring success.

Stabilising fragile soils.



BEFORE: Soil structure decline.

AFTER: A productive future.

The planning process also highlighted the need for farmers to think of re-fencing the land to soil type. Innovative research has expanded greatly the options available to today's farmer. Newer varieties and better management techniques for growing lupins, faba beans, peas, canola, tagasaste and other crops and pastures have added potential diversity to the farm program, particularly through focusing on soil types.

Each crop or pasture has its own likes and dislikes. Lupins for example like well drained lighter soils and will tolerate some acidity. They dislike heavy alkaline soils and the yield on these soil types probably wouldn't even pay for the fertiliser, seed and crop protection.

Being able to farm to soil type without the restrictions of antiquated barriers such as old fence lines, has tremendous potential to lift the profitability of farming. In the future farm profits will continue to be squeezed as costs rise faster than product prices. Farmers will need to continue to improve their efficiency, particularly if they are to be able to pay for the rehabilitation the landscape needs.

Allan Rogers

Compared to the length of time farmers have been planting crops and growing wool in Western Australia, the Avon Catchment Project is only in its very early days. While the rush to form new catchment groups has been spectacular, many of the results of their efforts will not be seen for a long time.

Chairperson of the South Tammin Catchment Group, Allan Rogers, shares a commonly held attitude amongst group members. After 45 years of farming, he is still enthusiastic about preserving the country for future generations.

He says, "after nearly five years of planning and cooperating within a manageable group of farmers in a catchment area, we believe more than ever that land degradation can be controlled.

"For too long nothing positive was done on a large scale to control the encroachment of salinity and other soil degradation problems in the WA wheatbelt. The transformation of productive farming land to unproductive waste land is hard to envisage as we look forward, but when we look back, even on a comparatively short period of only 10 years, the urgency of our action to control the problem is very obvious.

"Most solutions will need time to prove their degree of effectiveness and we must continue to learn as we strive to determine the best solutions for a great variety of situations. We are a long way short of having full control of all the problems in our 25,000 hectare catchment. But I believe it is not beyond our capacity to finance and implement effective control measures to save our productive lands."