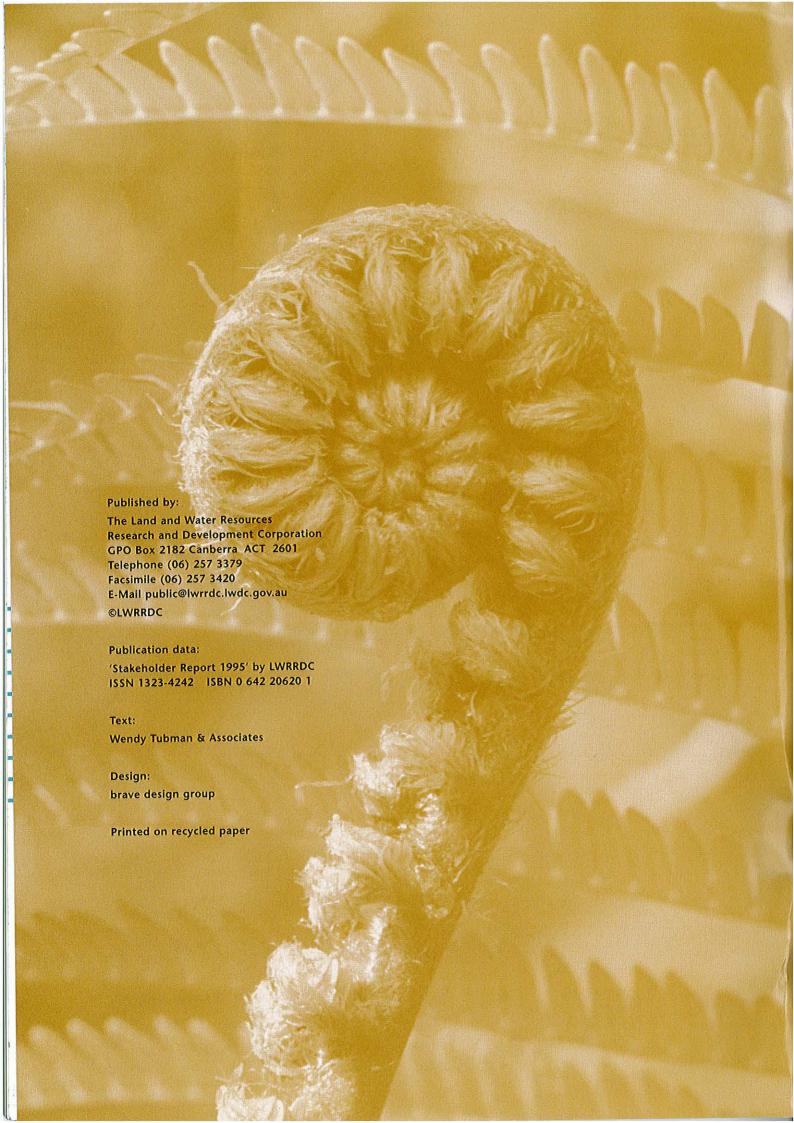


report

1995





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Abbreviations used in this report

ACF Australian Conservation Foundation

ANCA Australian Nature Conservation Agency

CRDC Cotton Research and Development Corporation

CSIRO Commonwealth Scientific and Industrial Research Organisation

DEST Department of the Environment, Sport and Territories

DPIE Department of Primary Industries and Energy

EPA Environmental Protection Agency

ESD Ecologically Sustainable Development

FWPRDC Forest and Wood Products Research and Development Corporation

GRDC Grains Research and Development Corporation

IDA Investment Decision Analysis

IWS International Wool Secretariat

LWRRDC Land and Water Resources Research and Development Corporation

MDBC Murray-Darling Basin Commission

MRC Meat Research Corporation

NFF National Farmers' Federation

NLP National Landcare Program

RIRDC Rural Industries Research and Development Corporation

UWRAA Urban Water Research Association of Australia

From LWRRDC Chairperson and Executive Director

Australia's grazing, dryland cropping and irrigation industries jointly earn around \$27 billion each year. This national wealth can only be maintained and expanded in the long term through sustainable management of our land, water and vegetation resources.

The sustainable use of these resources is of concern not only to those people directly associated with rural industries. We all have a vital stake in the capacity, use, management and conservation of Australia's land, water and vegetation - for they influence greatly our economic welfare, our enjoyment of the environment, and our quality of life, now and in the future.

This Land and Water Resources Research and Development Corporation (LWRRDC) Stakeholder Report is thus for everybody. It explains how LWRRDC plays a key role in improving the way we use and manage our land and water and the vegetation they support.

Throughout this report you will notice a number of quotes. These have been taken verbatim from an independent survey of our stakeholders, carried out in November 1995. The survey results, while giving us cause for satisfaction, also provide information about the opportunities and challenges we face. We encourage readers of this Stakeholder Report to give us additional feedback, so that we can continue to improve our performance.

Graeme Robertson

Chairperson

Phil Price

Executive Director

Mis Reces

Introducing the LWRRDC Directors

LWRRDC has nine directors. They develop policies, review research programs, evaluate the Corporation's performance and create committees and working groups to work on specific activities, such as finance, communication and commissioned R&D programs.

The directors meet formally four times a year, and more often as members of working groups, in different locations around Australia. In 1995, the Board meet in Canberra, Armidale in NSW, Adelaide and Hobart. The directors use Board meetings to review LWRRDC-funded research and to stay in touch with developments in natural resource research and management. They also interact with resource managers, users and researchers in the field.

The selection of new LWRRDC Board directors, for a term of three years, will take effect from 1 July 1996. The present directors are:



Graeme Robertson

Chairperson

Dr Robertson is the Chief Executive Officer of Agriculture – Western Australia. He has extensive experience in agriculture, landcare and resource management issues and has provided expertise to a number of advisory bodies.



Don Blackmore

Deputy Chairperson

Mr Blackmore is the Chief Executive Officer of the Murray-Darling Basin Commission. He is closely involved with natural resource management issues.



Lyn Allen

Ms Allen is Business Manager with the Menzies School of Health Research in Darwin. She is trained as an environmental scientist, with considerable involvement in the environmental movement and other community-based landcare activities.



Snow Barlow

Professor Barlow is Dean of Agriculture and Horticulture at the University of Western Sydney. He has considerable experience as a plant biologist and soil scientist in agriculture, forestry and horticulture.



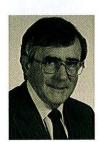
Tony Byrne
Government Director

Mr Byrne is Assistant Secretary of the Landcare Policy Branch, within the Federal Department of Primary Industries and Energy.



Peter Chudleigh

Dr Chudleigh is Director of Agtrans Research, an agricultural consultancy business based in Brisbane. He has considerable experience in both economic and practical aspects of resource management and research.



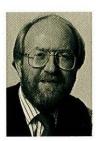
Don Dyer

Mr Dyer is director of a number of businesses and is experienced in research and development issues, including the implementation of technology transfer projects.



Christine Forster

Ms Forster is a director of the Natural Resource Institute Pty Ltd and the Australian Fisheries Management Authority, and a member of the Victorian Catchment and Land Protection Council. She has extensive experience working in land and water management with farmers and community landcare groups.



Phil Price

Executive Director

Dr Price is based full-time at the Corporation's office in Canberra. Having trained as a microbiologist, he has also worked in science policy and research management with the Australian Science and Technology Council, the Commonwealth Government and Charles Sturt University.

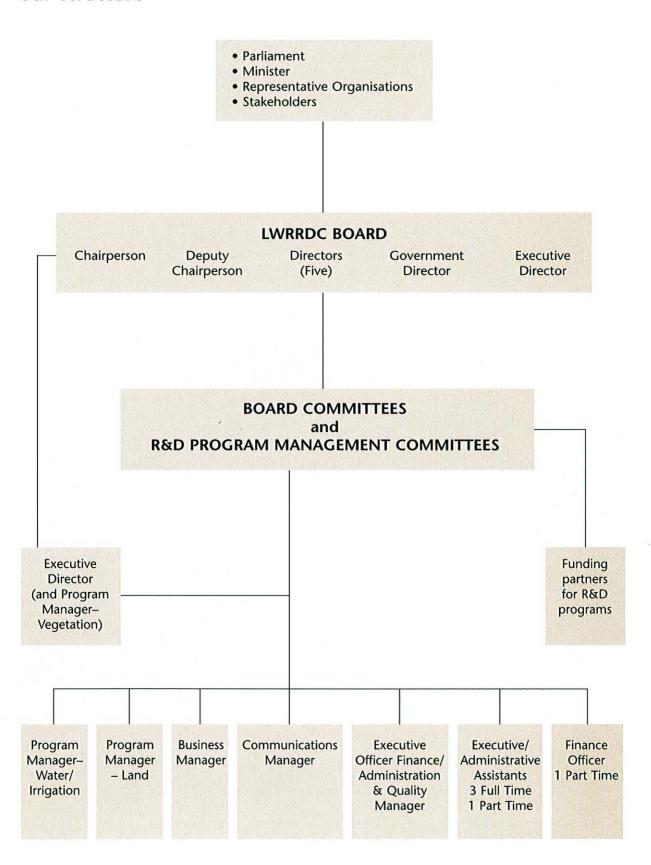
Our executive staff

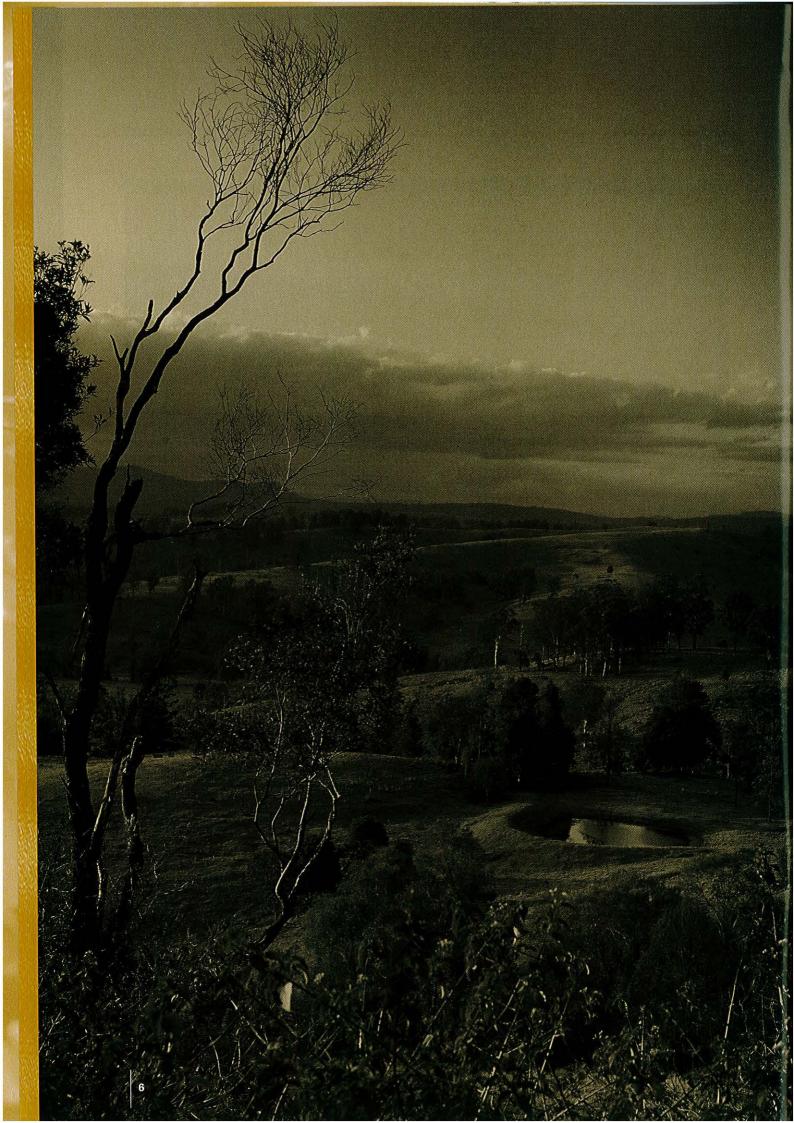


'They have a small staff that is very hard working and they achieve a lot'

- from an independent survey of our stakeholders, November 1995.

Our structure





Who we are

LWRRDC, a statutory body, is one of 15 R&D corporations within the Commonwealth Primary Industries & Energy portfolio. It was created on 3 July 1990 under the Primary Industries & Energy Research & Development (PIERD) Act 1989.

In 1994–95 LWRRDC had an annual budget of \$11.8 million and attracted an additional \$4.8 million of collaborative research funds (in accrual terms) from third parties and \$1.3 million of other income. The total expenditure on R&D was \$15.09 million.

The Corporation is controlled by a Board of Directors, appointed by the Minister, and operates with a staff of nine full-time and two part-time officers. Eight part-time R&D Program Coordinators provide specialist technical knowledge and day-to-day support for large R&D programs.

LWRRDC is accountable to the Minister for Primary Industries and Energy and to two representative organisations – the Australian Conservation Foundation and the National Farmers' Federation.

Why we exist

The basic challenge

After 200 years of increasingly intensive use, Australia's natural resources are showing signs of degradation and depletion. The nation must reverse this destructive trend if we are to maintain competitive and profitable rural industries, and Australia's unique and valuable environment.

To help do this on a national basis, LWRRDC is establishing and managing focused R&D programs that result in practical outcomes. LWRRDC also acts to improve collaboration between the diverse range of natural resource stakeholders by working to overcome geographic, administrative and scientific disciplinary barriers.

Australia's welfare depends greatly on the output from its soil, water and vegetation resources. Our grazing, dryland cropping and irrigation industries together earn us around \$27 billion annually. Yet land degradation costs our country over \$1 billion each year*.

Our Mission...

"To improve the long-term productive capacity, sustainable use, management and conservation of Australia's land, water and vegetation resources through a directed, integrated and focused research and development effort."

... and our objectives

In order to achieve our mission we work to:

- Develop R&D activities which will enhance the sustainable use, productivity and conservation of Australia's land, water and related vegetation resources.
- Increase the level of awareness and adoption of land, water and related vegetation R&D.
- Improve the efficiency, effectiveness and balance of land, water and related vegetation R&D expenditure.

The Board has agreed to update the LWRRDC mission and objectives for the 1996–2001 R&D Plan, to reflect the progress achieved over the past five years, and the new R&D opportunities and challenges ahead.

How we operate

Operating principles

We operate on the principle that the greatest benefit from the use of our public funds arises when researchers and resource managers work cooperatively to address practical problems of natural resource use and management. Benefits are also gained when information is shared between regions and organisations.

We manage our activities not as expenditure of public funds, but as investments in R&D and innovation. Tangible improvements in how land, water and vegetation resources are managed is the required return on these investments.

^{*} CSIRO (1990) Australia's Environment and its Natural Resources, CSIRO, Canberra.

Identifying the issues

The most pressing problems and the outcomes needed for effective management are identified in collaboration with resource users and managers, researchers and other stakeholders, and in accordance with our mission. Priorities so identified form the basis for targeted programs of R&D.

Establishing and ranking priorities

In 1994-95, we developed procedures to formalise a scoring process as part of the Board's annual allocation of R&D funds between identified issues. As part of this process, resource data sheets were prepared on each major R&D issue to be addressed by the Board.

The LWRRDC Occasional Paper 06/95 'Data Sheets on Natural Resource Issues' documents the key issues and priorities relating to major resource management problems facing Australia. In 1995-96, the Corporation distributed these data sheets widely to stakeholders for further comment, as a means of improving the annual allocation of R&D funds.

The LWRRDC Board agrees to invest funds in a specific program area where it is clearly demonstrated that the Corporation's investment will make a significant contribution to the management of Australia's land, water and vegetation resources.

Commissioned R&D programs

A Commissioned Program is defined as a series of interlinked R&D projects which involve commitment and financial support from one or more organisations including LWRRDC, and which are working together to develop practical outcomes to assist sustainable use and management of natural resources.

The Corporation commissions programs by bringing resource managers and researchers together to identify R&D topics for a particular issue, deciding what research is to be done, making sure the resource users are fully involved, and then implementing the research program. We make frequent use of people external to the Corporation, who have specialist technical knowledge or skills, to assist in design and management of these programs.

Seeking research projects

We are increasingly moving to commission specific R&D projects in line with identified priorities. Calls for applications under commissioned programs occur throughout the year and are sent directly to research providers as well as being advertised in the national media.

We also operate a 'general call' for innovative R&D applications. At least four postgraduate scholarships are offered each year. The annual calls for general R&D projects and scholarships are also sent to research organisations and advertised in the national media.

General call and postgraduate scholarship

funding cale	ndar
June	LWRRDC call for preliminary R&D applications (new projects).
July	Closing date for LWRRDC preliminary applications.
September	Decisions made on preliminary bids and detailed applications sought. LWRRDC call for postgraduate scholarship applications.
October	Closing date for postgraduate scholarship applications.
November	Closing date for detailed applications.
December	LWRRDC advises successful scholarship applicants.
March	LWRRDC advises successful R&D applicants.

Life-of-project evaluations

Following an initial study in 1993-94 to assess the returns being achieved on our investments in R&D, LWRRDC has commissioned an update of its life-of-project evaluations. This independent study will further measure the impact and returns from one R&D program (pesticides) and seven R&D projects.

Initial results suggest benefit-cost ratios up to 15:1. A further eight R&D projects will be assessed to give the Corporation an estimate of the returns being achieved across its whole portfolio of R&D.

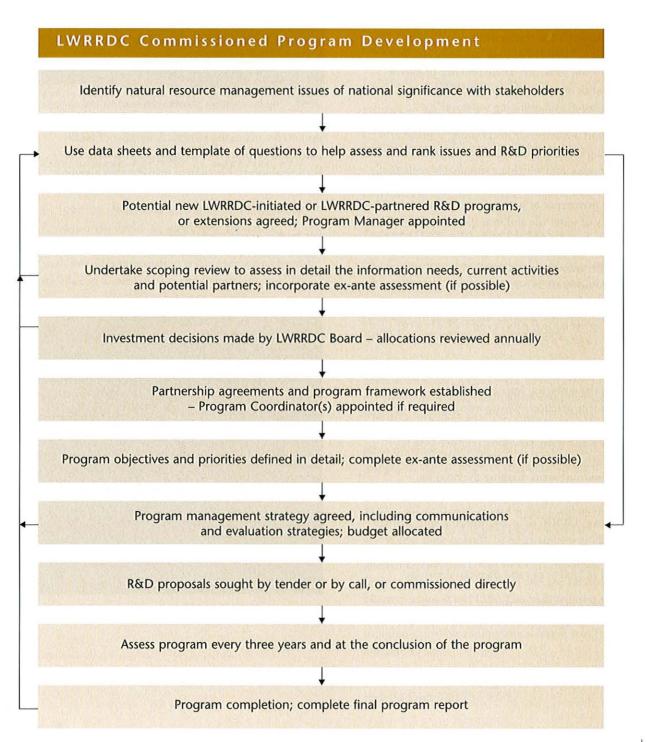
LWRRDC has published the results on the first lifeof-project evaluation in the Occasional Paper 08/94 'Assessing the impact of research projects related to Australia's natural resources' which sells for \$28.00 from the DPIE Shopfront on freecall (008) 020157. Results from the second study will be published when completed.

Communicating the R&D outcomes

Our approach to communication starts with involving research users (the resources managers) in the identification of priorities and the design of R&D programs. In this way, research is targeted to their needs. In several programs, the users are actively involved in the R&D. This process helps to ensure rapid exchange of information and uptake of research results. We also use a range of publications, videos, workshops and conferences to publicise R&D results for widespread use.

Accounting for our actions

We account to stakeholders through our Annual Report to Parliament, our Annual Operational Plan (which provides a detailed account of specific developments and activities planned for the coming year), and our five year R&D Plan (which provides an overview of how we intend to approach R&D priorities, and our planning process). Performance indicators are included in each Annual Operating Plan, and reported against in that year's Annual Report.



What we do

R&D under our commissioned programs falls into the three broad categories of land, water and irrigation, and vegetation.

Research and Development – Land Programs

Prevention and reversal of soil degradation

The use of European farming systems on the fragile soils of Australia has accelerated rates of soil degradation – through erosion, acidification, and decline in soil structure. These on-farm problems often lead to impacts off-farm, such as salinity, eutrophication and declining water quality.

We support a number of R&D projects aimed at developing farming practices more suited to Australia's circumstances, and which are sustainable ecologically and socio-economically. Such projects include research into the persistence of native pastures, into the efficiency of water use and into the control of soil compaction and acidification.

For further information contact Richard Price (06) 257 3379.

Development of practical indicators for sustainable production systems

In order to improve farming systems, it is necessary to assess the ecological impact of different management practices. We are working with industry groups to develop indicators which monitor the health of systems and show how their resource base is improving or deteriorating. These indicators act as early warning signs, flagging the need for appropriate responses.

In this area, LWRRDC is also working with CSIRO and banking organisations to develop tools which enable the condition of natural resources to be reflected in land prices and financial decisions.

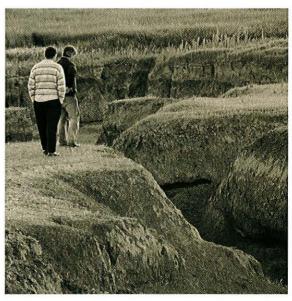
For further information contact Richard Price (06) 257 3379.

Prediction, prevention and reversal of dryland salinity

Dryland salinity costs Australia more than \$200 million every year in lost agricultural production. An estimated 2.45 million hectares are now affected and this may increase to 3.75 million hectares by 2010. Recognising the serious and widespread nature of the problem of dryland salinity, we, as lead agency, have collaborated with the MDBC (funding partner); NLP (funding partner); CSIRO; and the State Governments of New South Wales, Queensland, Victoria, Western Australia and South Australia to develop a national response to salinity, involving the sustainable use of natural resources.

Within this program, 12 large-scale collaborative projects have commenced. These range from developing better tools to assess areas at risk of dryland salinity, to developing improved policy options for managing salinity. A number of locally-based and community-managed projects have also been established. Catchment management planning processes for many of the program's focus catchments have been either established or improved.

For further information contact Adrian Webb (07) 3374 2686.



Soil erosion at Yakka, South Australia, is being controlled by improved land management by landholders.

Our part-time program coordinators

Back row: David Wesney, Peter Davies, Barry White, Graeme Alison Front row: Adrian Webb, Richard Davis, Mike Askey-Doran, Bill Porter

Overcoming barriers to adoption of sustainable management practices

In 1994–95 a wealth of data on the different ways farmers make decisions about the adoption of sustainable resource practices was gathered and analysed. This information is currently being brought together in a manual of recommendations and suggested actions for researchers, government extension agencies and private sector farm advisers.

Much of this work will help in the design, management and use of decision-support tools and in improving research and communication methods. Also emerging is information which raises questions about the value of many current, and even developing, extension techniques.

As lead agency, we have collaborated on this project with the financial support of GRDC and RIRDC.

For further information contact Art Shulman (07) 3365 6748.

Managing with climate variability

And now we cross to the weather. Partly as a result of this R&D program, the climate forecasting ability of the Bureau of Meteorology has been greatly enhanced. Flowing from this, support systems, which will provide farmers and graziers with better climate data and risk management principles on which to base decisions, are close to being completed.

In late 1994, the program was assessed by a number of government and rural industry agencies as having been highly successful. As a result, the then Federal Government committed funds for a further three years to establish Phase II of the program. R&D priorities for this second phase, and results from the first phase, were discussed at a national conference organised by LWRRDC in November 1995.

LWRRDC and RIRDC are co-lead agencies of this program; while GRDC, MRC, DRDC, SRDC, FWPRDC and IWS are funding partners.

For further information contact Barry White (07) 3371 5878.

Integration and adoption

The Corporation has committed itself, in partnership with catchment committees, research agencies, state governments and rural industry groups, to a new collaborative program 'Integration and Adoption of R&D Results at the Catchment Scale'.

The I&A program involves a process of exploration to develop tools and methods which will assist catchment management groups, landholders and other natural resources managers to understand the context within which sustainable resource management practices, often developed through R&D, can be utilised. From this point, the adoption of these management practices can then be facilitated.

The program's first proposed activity will be the application of the Adaptive Environmental Assessment and Monitoring (AEAM) process in selected catchments across Australia including the Loddon-Campaspe in Victoria and the Liverpool Plains catchment in NSW. The trials will test the efficacy of the AEAM process and other relevant techniques as tools to integrate research results across different issues.

For further information contact Richard Price (06) 257 3379.

Research and Development – Water and Irrigation Programs

National River Health Program

The goals of this program are based on the then Prime Minister's 1992 Statement on the Environment. The first of two principal priorities is 'Monitoring River Health' through integrated physico-chemical and biological monitoring. This is being achieved by adapting to Australian conditions, the River Invertebrate Prediction And Classification System (RIVPACS), which was developed in the United Kingdom.

The second principal priority is 'Environmental Flows'. Research has been commissioned to support planning and decision-making on this issue. A manual of techniques is being prepared.

As lead agency we are collaborating with DEST, incorporating the EPA (funding partner), and UWRAA (associate) in this program.

For further information contact Peter Davies (002) 254 660.

For information on the urban component contact Jean Jackson (002) 237 133.

Data to calibrate and test the RIVPACS approach to monitor river health are being collected at over 1,400 sites in all States and Territories.

National Eutrophication Management Program

Nothing demonstrates the complexity of plant growth as does the periodic emergence of algal blooms in Australia's waterways. As lead agency we are working with the MDBC (funding partner) to unravel the complex relationships between rainfall intensity, runoff, storm flows, land use, nutrient concentrations, bottom sediments and algal blooms under Australian conditions.

The work aims to develop simple, user-friendly tools for catchment and river managers so that they can identify and understand algal problems, establish and monitor cost-effective management strategies within a Total Catchment Management (TCM) framework and reduce the frequency and intensity of such blooms.

For further information contact Richard Davis (06) 246 5706.

'They are on the right track with their research and development'

from an independent survey of our stakeholders, November 1995.

National Groundwater R&D Program

This is a new program, and so far two priority topics are being addressed. The first of these, 'Diffuse source contamination of groundwater', aims to discover cost-effective ways of identifying aquifers at risk of contamination, define acceptable changes in the level of contamination and establish a framework for assessing management systems which have a potentially adverse impact on groundwater quality.

Under the second topic, 'The role of groundwater in sustaining ecosystems', the types of ecosystems in which groundwater plays an important role will be identified and strategies to determine optimal consumption of groundwater will be developed.

R&D projects are being selected following a call for applications against these program priorities.

For further information contact Graeme Allison (08) 388 2378.

Minimising the impact of pesticides on the riverine environment

This program aims to develop practical, cost-effective methods to minimise the impact of pesticides on rivers and to provide a sound scientific basis for the development of management guidelines and regulations. Focused initially on the cotton industry, which is a large user of pesticides, attention is now moving to other rural industries where there are opportunities to improve the efficient use of pesticides.

The principal activities within the cotton-related aspects of the program relate to pesticide movement, its fate from the point of application on crops to potential discharge into rivers, and its impact on aquatic fauna. Several potential solutions have been identified for further investigation, and a study is being undertaken to deliver R&D outcomes with the industry, based on best management practice guidelines.

Collaborators are LWRRDC (lead agency), CRDC and MDBC (funding partners).

For further information contact Nick Schofield (06) 257 3379.

'They are not isolated in their approach – which is good'

> from an independent survey of our stakeholders, November 1995.

Rehabilitation and management of wetlands

Over the last decade, significant gains have been made in the understanding and management of much of Australia's wetlands. We have funded a nation-wide review of wetland management issues and R&D needs. The review aimed to identify the social, economic and policy impediments to resolving the major problems and to propose R&D or other



Peter Davies, NRHP Program Coordinator, demonstrating macroinvertebrate sampling techniques in the King River, Tasmania.

projects that might assist in overcoming them. It involved key stakeholders associated with the policy, management and research of wetlands. The foreshadowed new wetlands R&D program will complement, wherever possible, the activities of the Wetlands Policy of the Australian Government and the Murray-Darling Basin Commission Wetlands Management Strategy.

For further information contact Nick Schofield (06) 257 3379.

National Irrigation R&D Program

In the world's driest inhabited continent, irrigation is not so much a luxury as a necessity. But how to irrigate in an optimal and sustainable fashion is a major challenge.

This wide-ranging program is addressing four key issues facing irrigated agriculture in Australia: improving sustainability and productivity; managing potential pollutants; efficient use and management of water; and, technology transfer and education.

We support this significant program with additional funding from the Queensland Department of Primary Industries, the NSW Department of Land and Water Conservation, Goulburn-Murray Water, Southern Rural Water, Sunraysia Rural Water, Wimmera Mallee Rural Water and irrigators.

For further information contact Nick Schofield (06) 257 3379.

Research and Development - Vegetation Programs

Rehabilitation and management of riparian lands

The land next to rivers and streams, where terrestrial and aquatic ecosystems meet, has special management needs which have not, until recently, been recognised. Degradation of riparian lands has led to bank erosion and loss of paddocks, excessive sediment and nutrient loads in our rivers, and loss of unique river plants and animals. This research program aims to find practical, economic ways of restoring riparian land to good condition.

Experimental work at three sites around Australia is identifying how different types and band widths of riparian vegetation trap nutrients and sediments and help to stabilise riverbanks and adjacent land.

'Their research is

very relevant'

from an independent survey of our
stakeholders, November 1995.

Ecological studies are examining how the shade created by riparian vegetation controls water weeds and algae, how the nature of waterways affects riparian vegetation, and how riparian food sources influence the diet of stream vertebrates.

On-farm studies are designed to demonstrate riparian restoration within salinised catchments; evaluate the economic impact on farms of fencing and planting riparian lands; refine practical methods of controlling stock access to rivers and streambanks; and develop different methods to promote regeneration of native riparian plant species. In addition, preparation of an initial set of guidelines on managing riparian lands for different purposes has begun.

Collaborating agencies in this program are LWRRDC (co-lead agency); the Cooperative Research Centre for Catchment Hydrology (co-lead agency); the Centre for Catchment and In-Stream Research – Griffith University (co-lead agency); and the Queensland Department of Primary Industries (research partner).

For further information contact Mike Askey-Doran (002) 336 168.

Maintenance of condition, productive capacity and environmental values of rangelands

LWRRDC believes that much past rangeland research, although of high quality, has had little practical impact because it was not linked effectively to decision-making processes. A major aim of this new R&D program is to link research with regional planning – for example, through Regional Economic Development Organisations. Another central aim is to examine, and quantify as far as possible, the relationship between livestock production and the long-term sustainability of rangeland resources (including the conservation of biodiversity). R&D projects have commenced in Western Australia and Queensland, and further work is planned in western New South Wales.

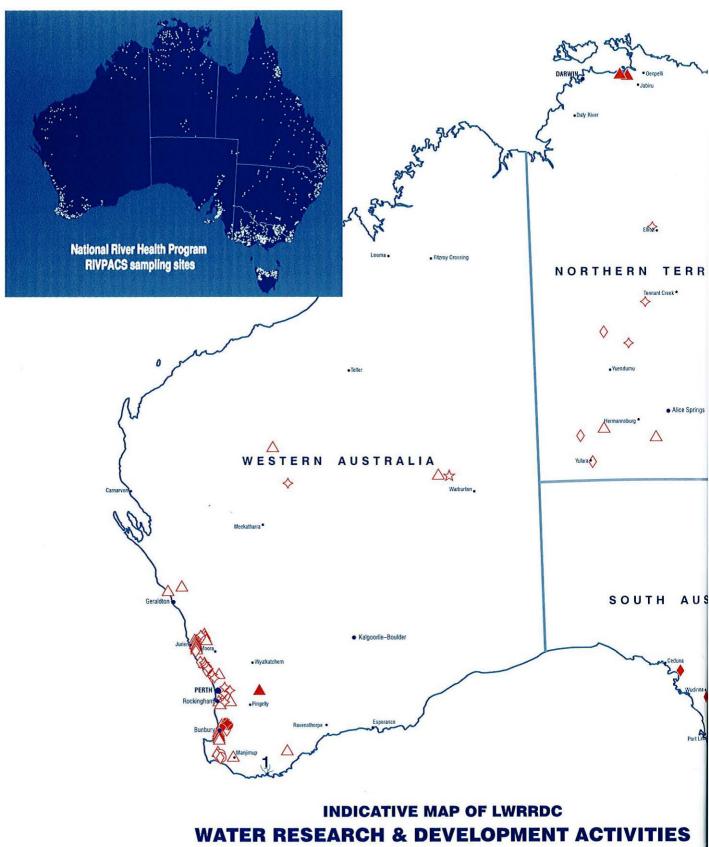
The research will be designed to assess the economic and ecological results and impacts of different types of landuse, in such a way that options and trade-offs can be assessed and optimal decisions made at regional, landscape, property and paddock levels.

For further information contact Phil Price (06) 257 3379.

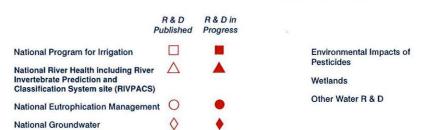
Rehabilitation, management and conservation of remnant vegetation

Over time and in many regions, Australia's natural vegetation has been heavily cleared for agriculture. As a result, some vegetation types are poorly represented in reserves and show signs of extensive and continuing degradation. This program will help understand the processes leading to loss of species and develop practical solutions to prevent and reverse this loss.

Nine R&D projects have now been funded under this program. Eight deal primarily with ecological aspects of managing remnant vegetation. Five of these relate to practical methods for regeneration and rehabilitation of woodlands.



March 1996



Key to addition Eutrophication Projects in Focus R&D R & D in Published **Progress**

Wilson Inlet

Goulburn/B

3 Upper Nam Fitzroy Rive

The concentration of symbols around capital cities reflects the location of researchers when the regional location of research is not shown or when the research is generally applicable.



INDICATIVE MAP OF LWRRDC VEGETATION RESEARCH & DEVELOPMENT ACTIVITIES March 1996

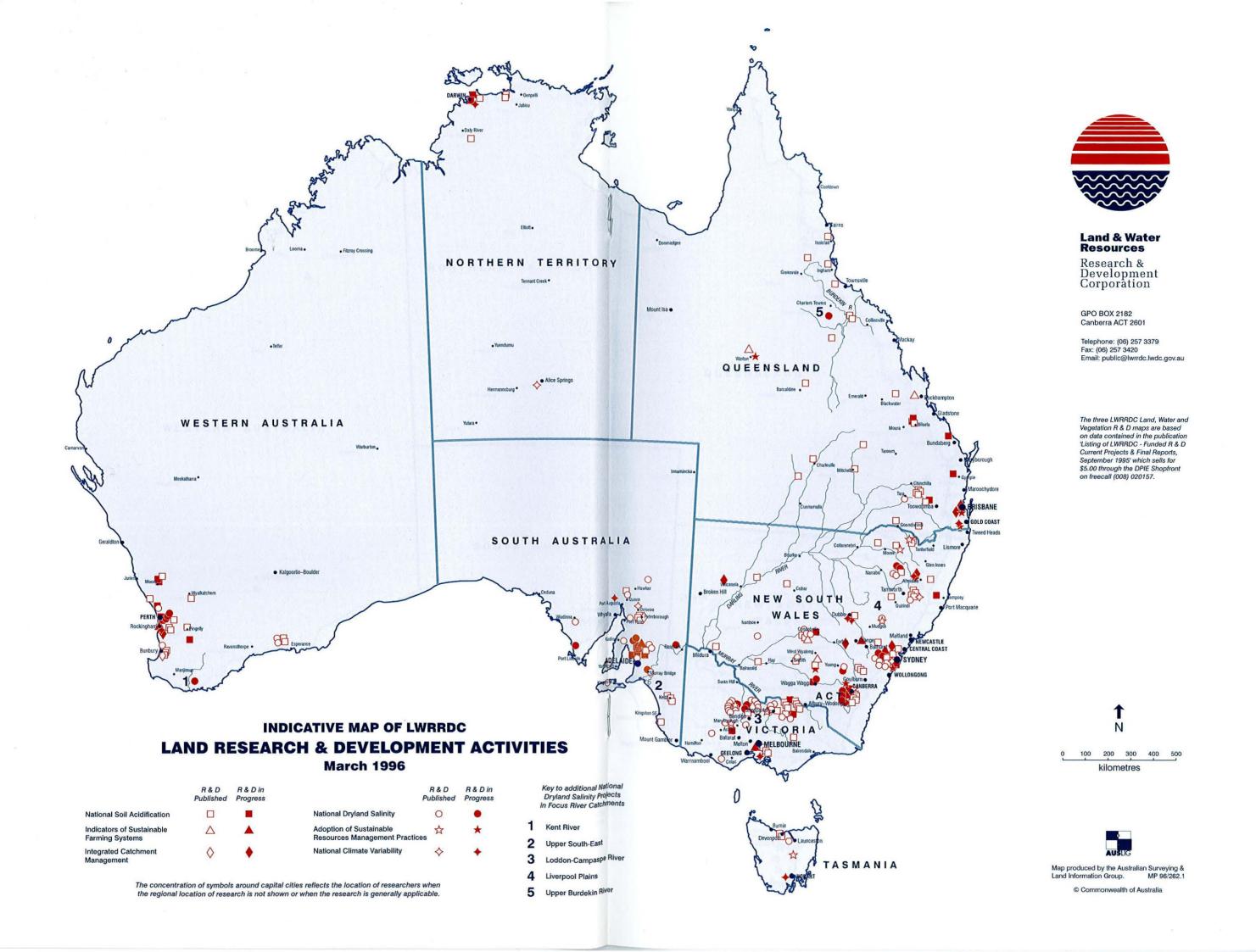
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Kalgan River

Johnstone Rive

R & D | R & D in Published Progress Remnant Vegetation Rangelands Agroforestry

The concentration of symbols around capital cities reflects the location of researchers when the regional location of research is not shown or when the research is generally applicable.







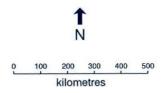
Land & Water Resources

Research & Development Corporation

GPO BOX 2182 Canberra ACT 2601

Telephone: (06) 257 3379 Fax: (06) 257 3420 Email: public@lwrrdc.lwdc.gov.au

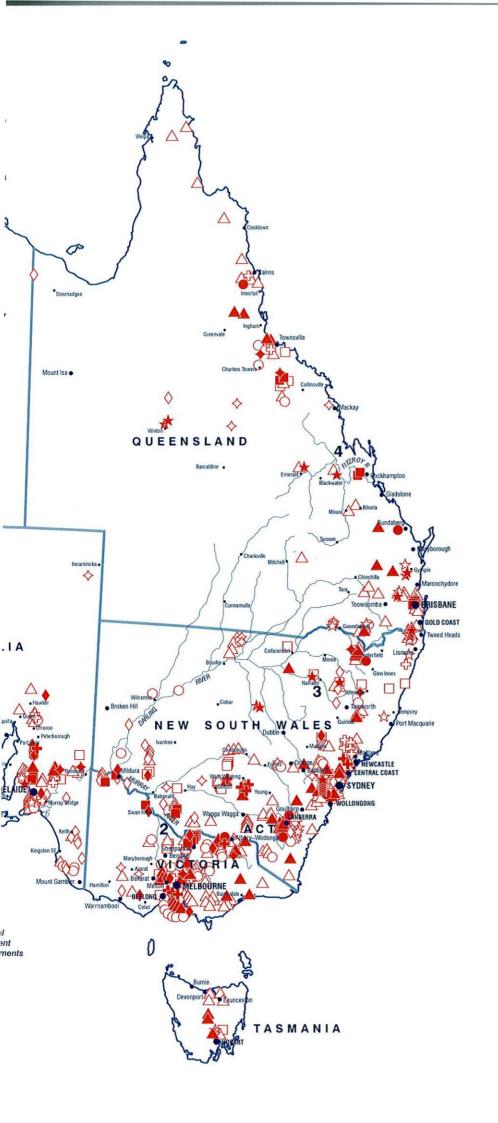
The three LWRRDC Land, Water and Vegetation R & D maps are based on data contained in the publication 'Listing of LWRRDC - Funded R & D Current Projects & Final Reports, September 1995' which sells for \$5.00 through the DPIE Shopfront on freecall (008) 020157.





Map produced by the Australian Surveying & Land Information Group. MP 96/262.1

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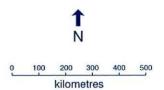
Land & Water Resources

Research & Development Corporation

GPO BOX 2182 Canberra ACT 2601

Telephone: (06) 257 3379 Fax: (06) 257 3420 Email: public@lwrrdc.lwdc.gov.au

The three LWRRDC Land, Water and Vegetation R & D maps are based on data contained in the publication 'Listing of LWRRDC - Funded R & D Current Projects & Final Reports, September 1995' which sells for \$5.00 through the DPIE Shopfront on freecall (008) 020157.





Map produced by the Australian Surveying & Land Information Group. MP 96/262.1

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Other funded projects are examining how corridors of retained vegetation conserve biodiversity; how the concept of ecosystem resilience applies to the restoration of damaged plant communities; and how smoke can be used to stimulate germination and thus restore bushland. One project involves the development of a socio-ecology extension program, as an alternative to traditional extension programs, to help improve the management of remnant vegetation.

A workshop held in June 1995 identified priorities for socio-economic research, and further work on this subject will be funded in 1996.

Organisations collaborating in this program are LWRRDC (lead agency) and ANCA (funding partner).

For further information contact Phil Price (06) 257 3379.

'They are valuable
because they do try and
deal with the major
issues'

-from an independent survey of our
stakeholders, November 1995.

Use of agroforestry to sustain natural resources

For many years the prevailing wisdom was that the more trees cleared the higher the profitability. Slowly, this view is changing. This R&D program is designed to develop practical systems for agroforestry on farms and elsewhere, so that commercial timber and tree products, increased agricultural productivity, and sustainable management of natural resources can be simultaneously achieved.

An information kit on our strategic framework for commercial farm forestry in Australia was launched in February 1996. The results of this group of projects are available for public comment and will be useful to peak national bodies in implementing a national strategy to expand agroforestry within Australia.

The collaborating organisations in the joint venture Agroforestry program are RIRDC (lead agency); LWRRDC (funding partner); and FWPRDC (funding partner).

For further information contact Roslyn Prinsley (06) 272 4033.

The National Windbreaks R&D Program is proving most successful, with preliminary results indicating substantial increases in crop and pasture growth through reduced wind stress following the planting of trees.

Other R&D initiatives

In addition to our commissioned programs of research, we annually call for innovative proposals to address the R&D priorities which have not yet been developed into commissioned programs, or to build up our portfolio in specific topics. This general call focuses on new ideas developed by researchers.

In June 1995, we sought proposals addressing the policy, economic and social impediments to sustainable land management practices. The Board agreed to support five R&D projects in 1996–97 to address this issue.

We also offer at least four postgraduate scholarships each year, with the aim of encouraging high quality students into R&D on the management of natural resources. Additional scholarships have been offered within commissioned programs where there is a need to enhance the research capacity in specific areas. A further 30 students are supported within R&D projects.

LWRRDC scholarships awarded in 1995 under the General Call will enable students to research:

- river response to catchment clearance;
- · wastewater purification using water ribbon weed;
- environmental regionalisation for land management; and
- soil acidification and sustainability.

Government priorities

The previous Government identified several national priorities for rural R&D. Like other R&D corporations, we are addressing the following priorities.

Enhancing industry competitiveness and resilience

Sustainability and productivity are two sides of the same coin. Many inappropriate practices cause loss to both. The inefficient use of nutrients by farmers, for example, is both a cost to their enterprise and a potential cost to the environment.

But, driven by increasing international demands for clean food and fibre products, pressure from domestic environmental protection agencies, and the increasingly obvious impact on farm income of declining soil structure or nitrogen content, for example, most rural industries are becoming more aware of and willing to address sustainability issues. The majority of our programs have been developed in collaboration with commodity R&D corporations. This ensures that productivity and sustainability issues are considered together.

Sustainable use of natural resources also assists industries and communities to ride out tougher times resulting from economic or climatic changes, or other factors. For instance, the National Climate Variability R&D Program (supported by LWRRDC, RIRDC, MRC, GRDC and the IWS) assists farmers to understand and manage the risk of variable rainfall inherent in many agricultural enterprises.

Developing a significant processing capacity

While the Corporation does not have a mandate to support R&D into the processing of rural products directly, we do support research into aspects of processing industries which impact on natural resources.

In conjunction with others, we are supporting projects which examine the options for re-use and safe management of effluents from rural industries and from processing industries such as cheese or milk manufacture, abattoirs and wineries.

The aim is to provide an understanding of how effluent can be managed either for productive re-use or to avoid contamination or other damage to natural



Measuring gas production from wetlands at Ryan's Billabong, near Albury NSW. One of the up to 300 research projects supported by LWRDC each year.

resources, especially water resources. This work, which extends, for example, to effluent from sewage treatment plants being used to irrigate agroforestry plantations, is beginning to pay substantial dividends in the development of practical planning tools to help managers identify the most appropriate options for their particular circumstances.

'They are approachable and innovative...'

 from an independent survey of our stakeholders, November 1995.

Developing a marketplace orientation

Succeeding in the global village is undoubtedly getting tougher. In response, some countries are tempted to consider a range of non-tariff barriers to trade. Within this context, environmental trade issues will become of special significance. If Australia is to maintain its level of rural exports, it will need to be able to demonstrate that its production and processing meet high environmental standards. Australia's agricultural industries will need to deal quickly with environmental issues from a position of authoritative information.

Much of our work provides information to support this need. For example, within the R&D program examining the impact of pesticides on the riverine environment, LWRRDC was able to quickly incorporate work on the chemical Helix, in response to concerns about its concentration in parts of the cotton plant and its appearance in meat from animals fed on those plants.

Managing the natural resource base

The welfare of both present and future generations depends on Ecologically Sustainable Development (ESD). The principles of ESD are central to the multi-disciplinary and multi-industry approach of LWRRDC.

More and more people are arguing that delivery on sustainability issues by government bodies reinforces the view that ESD is largely a government responsibility, and bears little or no relationship to producers. LWRRDC believes that, while governments have key roles in promoting ESD principles, they should limit their direct responsibility for delivery of those programs. Instead, agricultural industries should be encouraged to take responsibility for sustainability issues, by combining them with productivity issues and thereby delivering the integrated approach that landholders seek. LWRRDC is working to this end.

Another important issue is the further development of methods and tools to assist community groups and individual landholders to manage natural resources along ESD principles. There is a need to interpret R&D and related results in the context of particular localities or individual landholders. In collaboration with others, we are developing a new Integration and Adoption Program specifically to tackle this topic. This will improve the delivery and uptake of the results of research we have funded, while also providing general assistance to natural resource managers.

'They have been forward in sponsoring workshops to get the information out to researchers, interested lay people and farmers'

 from an independent survey of our stakeholders, November 1995.

Developing an integrated approach to regional issues

The decisions and actions of local communities, while orientated to specific local goals, may sometimes impinge on neighbouring communities. Solutions to one issue may cause problems elsewhere. With such interactions, it is often more efficient and effective to focus community action on broad issues.

Accordingly, we work to integrate research across geographic areas, from a regional or catchment perspective, as well as across topics, programs and disciplines. Several of our programs (such as the dryland salinity and riparian programs) have a regional catchment focus.

The two major R&D projects funded under our rangelands program are both linked to Regional Economic Development Organisations.

With such integration, opportunities can be found to bring together in a single, planning context the range of information needed by regional communities to evaluate options for productive and sustainable use of natural resources.

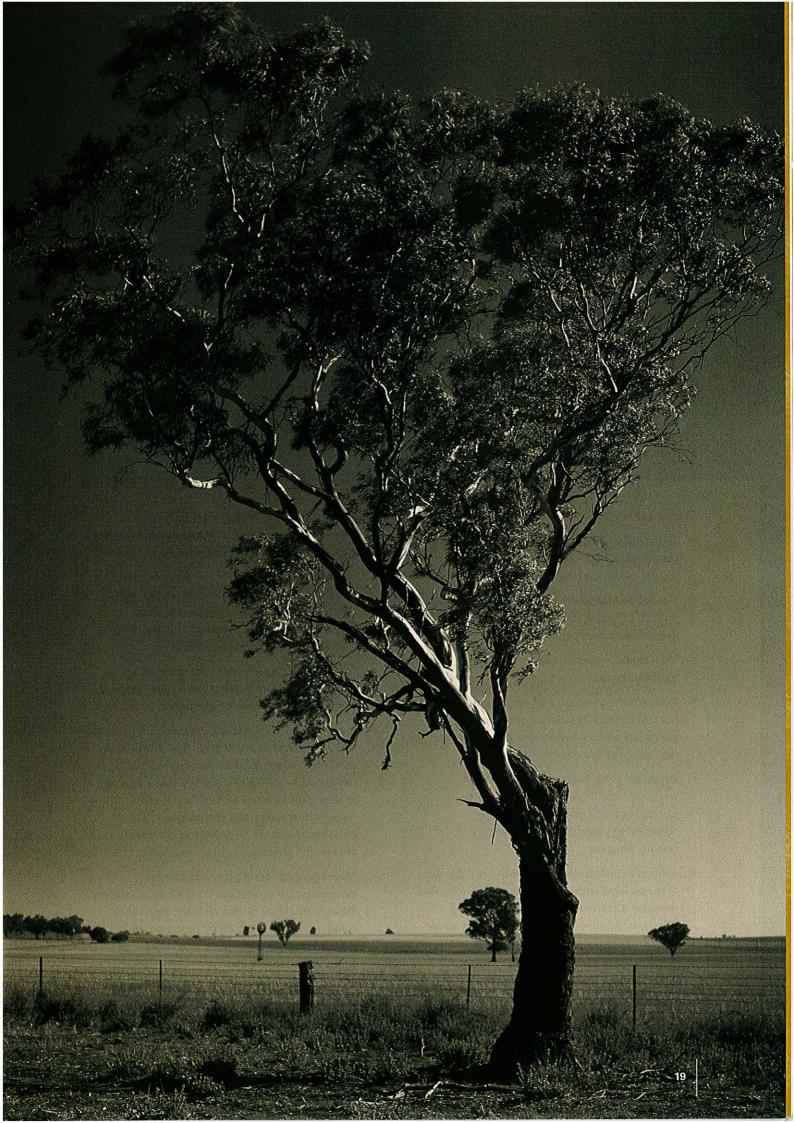
For further information on LWRRDC's response to government priorities contact Phil Price (06) 257 3379.



Dryland salinity is the focus of a national R&D program managed by LWRRDC.

'The primary areas of (LWRRDC) research and development are very pertinent to environmental problems that exist today'

- from an independent survey of our stakeholders, November 1995.



How well we perform



During 1994-95, we:

- Supported and managed 13 major national commissioned R&D programs into priority natural resource topics;
- Funded 263 R&D projects at a total cost of \$15.1 million, attracting an extra \$27.5 million (direct and indirect) from partnership contributions;
- Used annual workshop presentations for program reviews;
- Reviewed the progress of 37 corporation-funded research projects by on-site inspection and discussion, and monitored all our other projects through milestone reports;
- Supported seven national and State-based workshops and 29 consultancies aimed at identifying R&D priorities, developing collaborative programs and reviewing research progress;
- Assisted in maintaining the vitality and capability
 of the national research effort by contributing to
 the costs of research and to research training.
 This included support for 378 researchers across
 Australia (114 full-time researchers, 231 part-time,
 and 33 postgraduates);
- Received and assessed 188 applications as a result of calls for projects to be funded from 1 July 1995;

- Initiated (with the Murray-Darling Basin Commission) a program of R&D on Management of Nutrients and Eutrophication;
- Undertook a national review of groundwater issues and subjected them to an Investment Decision Analysis, in order to assist the corporation maximise returns on investment in a new national R&D program established in 1995–96;
- Commissioned and analysed the results of an independent survey of client satisfaction designed to assist us improve our performance;
- Increased our publications distribution list by 19% to 2,700, placed details of every final R&D report on the 33,500-entry Streamline database (supported by LWRRDC and UWRAA) relating to Australian literature on land, water and vegetation resources, and commissioned a consultancy into the further use of electronic information systems;
- Made communication plans a mandatory requirement of applications for funding; developed management plans for our remnant vegetation, salinity and climate variability programs; and prepared project management standards for all new projects funded; and
- Introduced a Total Quality Management system to ensure that our standards meet those we require of others.

Our performance

	Trend	1994-95	1993-94
Revenue (including interest received and other income)	†	\$17.97m	\$14.14
Expenditure	A	\$16.46m	\$12.40
Operating surplus	\	\$1.51m	\$1.74m
Third party cash contributions	A	\$5.15m	\$5.09m
Commonwealth contributions	A	\$11.82m	\$11.14m
R&D payments	A	\$15.09m	\$11.09m
Administrative costs as a % of total expenditure	\	5.9%	7.9%
Number of commissioned programs supported	A	13	12
Number of people on publication distribution list	A	2 700	2 187
R&D support attracted from			
- host organisations	^	\$15.2m	\$15.0m
- third parties	A	\$7.1m	\$5.1m
		Dy (CENTRO)	

Where we are going

The results of an independent survey of our stakeholders, undertaken in late 1995, indicate that we are doing a lot right. Accordingly, we plan to continue and, in line with our commitment to TQM, improve wherever possible approaches which are seen to be working. In addition, and reflecting our constant striving to meet the needs of our diverse range of stakeholders, we plan to exploit many of the opportunities identified in the survey of stakeholders and further enhance the service we provide by:

- examining how we can best link our natural resource management R&D activities with primary production systems;
- giving special attention to the field of resource economics;
- focusing increased attention on improving the understanding of socioeconomic factors, effective policy and organisational infrastructure to improve the use or management of natural resources;
- developing new joint programs of R&D with rural industry groups to encourage an approach which incorporates productivity and sustainability;
- strengthening relationships with rural industry groups, local government, catchment management groups and Regional Economic Development Organisations;
- focusing integration of R&D results from different programs at the regional, catchment and individual property levels, and applying up to 20% of our total funding for this purpose;
- considering the development of extended or new R&D programs relating to the National River Health Program, the National Irrigation R&D Program, pesticides, wetlands, sustainable temperate pasture systems, rangelands, agroforestry, integration and adoption of R&D results;
- funding about \$2.5 million of new R&D activities each year and keeping administration costs to less than 7% of total expenditure;
- endeavouring to ensure that each R&D project is assessed by a panel of reviewers at least once during its lifespan;
- enhancing our computerised Project Management System;

- further implementing a continuous program of Total Quality Management; and
- committing to providing an excellent service through application of the quality requirements of Australian Standard AS/NZS ISO 900 2:1994.

For further information on future directions, see LWRRDC R&D Plan 1996–2001.

How to find out more about our funded R&D – a step by step approach

For projects in progress:

- Access the Australian Rural Research in Progress (ARRIP) database.
 - The ARRIP database lists all current agricultural research supported by R&D Corporations, state agencies and CSIRO.
 - To arrange access to ARRIP via the OZLINE Network, telephone freecall 1800 026 155 or (06) 273 1531, facsimile (06) 273 1180 or E-Mail networks@nla.gov.au
- 2. Purchase a copy of the publication Listing of LWRRDC Funded R&D: Current Projects and Final Reports. Contact the researcher with a R&D project in progress directly.

For completed projects:

- Refer to the publication Listing of LWRRDC Funded R&D: Current Projects and Final Reports.
 Request a free photocopy of the Final Report required, quoting its reference number in the listing publication, from the DPIE Library on (06) 272 4548 or facsimile (06) 272 4709.
- Access the Australian Bibliography of Agriculture (ABOA) database, and the national natural resources information network – Streamline which is supported by LWRRDC and UWRAA.

Streamline contains references to both LWRRDC R&D projects and other published documents on sustainable development of land, water and vegetation resources, including irrigation. The database is available as an on-line service via the National Library of Australia's OZLINE Network; on CD–ROM; and in hard copy. The ABOA database contains bibliographic references to Australian agricultural research.

To arrange access to *Streamline* and ABOA via the OZLINE Network, telephone freecall 1800 026 155 or (06) 273 1531, facsimile (06) 273 1180 or E-Mail networks@nla.gov.au

To order *Streamline* on CD-ROM or in hard copy, contact Infoscan Pty Ltd, GPO Box 155, Canberra, ACT 2601. Telephone (06) 236 6267, Facsimile (06) 236 6440 or E-Mail infoscan@acslink.net.au

Publications list

Free publications

- Stakeholder Report
- The R&D Plan 1996-2001
- R&D Publications Catalogue 1995 (RIRDC/LWRRDC)

Fact Sheets - Project Management

- Managing R&D projects the LWRRDC framework
- Guidelines for preparing final reports
- Guidelines for milestone reporting
- Communication Planning Checklist
- Media Release Guide

Fact Sheets - Commissioned Programs

- Dryland salinity
- Adoption of sustainable resource management practices
- A national program for irrigation R&D
- Managing riparian lands
- Agroforestry
- Minimising the impact of pesticides on the riverine environment using the cotton industry as a model
- Management and conservation of remnant vegetation

- National River Health Program
- AEAM What is it and how can it help in environmental management?
- Managing with climate variability

Intersect, LWRRDC newsletter

Focus, newsletter of the National Dryland Salinity Program

propHile, newsletter of the National Soil Acidification Program

Rivers for the Future, newsletter of the National River Health Program

Pesticides and the Riverine Environment, newsletter of the Pesticides Program

RIPRAP, newsletter of the Riparian Land Management Program

Occasional Paper 06/95 'Data Sheets on Natural Resource Issues'.

To be placed on the mailing list for any of our free publications or for specific natural resource R&D information you require, please fill in the Communication Request Form at the back of this report and mail to LWRRDC.

Publications for which a charge applies

- Annual Report
- Occasional Papers
- Listing of LWRRDC-funded R&D: Current Projects and Final Reports

All saleable LWRRDC publications are available from the Department of Primary Industries and Energy Shopfront, GPO Box 858, Canberra, ACT, 2601. Freecall: 1800 020 157.

Program income and expenditure (\$000) 1994-95

CONTRIBUTIONS

EXPENDITURE

COMMISSIONED R&D PROGRAM	Unexpended Program Funds	Approved LWRRDC Budget	Third Party Contributions		
	1993 94	(1)	(2)	BUDGET	EXPEND
LAND RESOURCES					
Adoption of sust. mgmt. practices	16	280	130	426	384
Climate variability	330	1421	404	2155	1340
Dryland salinity	290	829	54	1173	1092
Indicators of sust. pasture systems (3)	37	155	0	192	152
Indicators of sust. cropping systems (3)	156	8	138	302	296
Sub-Total	829	2693	726	4248	3264
VEGETATION					
Agroforestry (3)	47	361	0	408	410
Rangelands	183	309	0	492	22
Remnant vegetation	. 62	337	250	649	251
Riparian vegetation	729	512	0	1241	887
Sub-Total	1021	1519	250	2790	1570
WATER RESOURCES AND IRRIGATION					10.000
National river health — R&D component	441	748	3451	4640	1596
National river health — State/Territory component	9	19	1268	1296	1312
National river health — Urban component	0	13	400	413	400
Nutrients & eutrophication management	192	309	0	501	100
Environmental impact of pesticides	113	619	759	1491	967
Irrigation	289	711	948	1948	815
Groundwater & prevention of pollution	2001.08	103	10	113	91
Sub-Total	1044	2522	6836	10402	5281
TOTAL — R&D PROGRAMS	2894	6734	7812	17440	10115

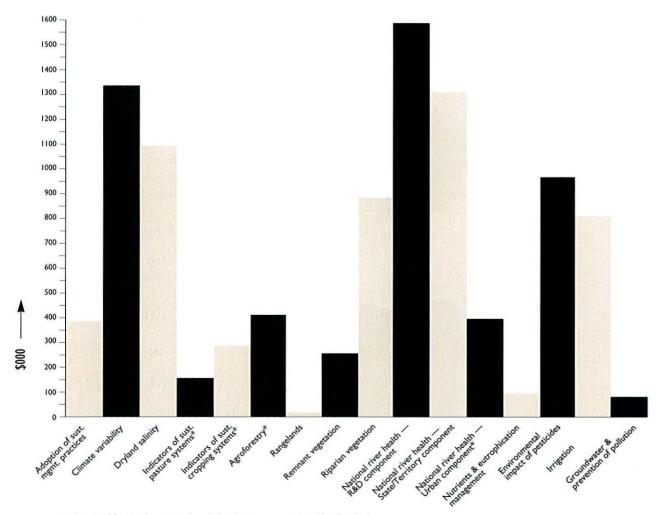
[·] This table details the contribution and expenditure for each commissioned R&D program. Any unexpended funds at year-end will be committed for future activities within each program.

Notes:

- 1. Includes additional 3% allocation of total LWRRDC approved budget for communication activities. Programs with external funds have interest credited to the program account.
- 2. Third party contributions include all cash contributions received by LWRRDC for each specific program.

 3. Managed by another research and development corporation.

Expenditure — R&D Programs 1994-95



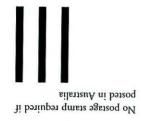
^{*} Managed by another research and development corporation/funding body



COMMUNICATIONS REQUEST 1996

We are updating our mailing list, and we ask that you complete the following form for our records. Please mail or fax your completed form to:	☐ Riparian Vegetation Program Newsletter — RIPRAP			
REPLY PAID 641 LWRRDC,	☐ Irrigation newsletter — WaterWheel			
GPO Box 2182,	Other Information			
CANBERRA, ACT 2601 Note: You will receive one copy of each item you indicate below. Further copies can be obtained from the Department of Primary Industries & Energy Shopfront on 1800 020 157 or 06 272 5550. Your request for publications	List details of other information you would be interested in receiving about the Corporation's activities. Please note that full details of our calls for funding applications are sent to the research administration officers at major research institutions prior to the general call in June. You should contact them directly.			
Please send me one copy of each of the following (tick relevant boxes):				
Annual publications & information				
☐ Annual Report				
☐ Stakeholder Report				
☐ Listing of LWRRDC – Funded R&D Current Projects & Final Reports	Your details			
Miscellaneous Publications	I wish to (please tick one box):			
☐ 1996–2001 R&D Strategic Plan (available from July 1996)	 □ Be removed from the Corporation's mailing list □ Be added to the Corporation's mailing list 			
☐ Media releases	 Remain on the Corporation's mailing list (my details are unchanged) 			
 □ Publications Catalogue − lists Occasional Papers and Fact Sheets 	☐ Remain on the Corporation's mailing list (my details are amended, below)			
☐ Information on <i>Streamline</i> database (bibliographic abstracts)	Please list the following details:			
R&D Newsletters	Your name			
No 2 Metallication	Your job title			
☐ LWRRDC general newsletter – Intersect	Your organisation			
☐ Dryland Salinity Program newsletter – Focus	Your postal address			
☐ Soil Acidification Program newsletter – propHile	Your telephone number			
☐ Rivers for the future newsletter	Your facsimile number			
☐ Pesticides and the Riverine Environment newsletter	Your F_Mail number			

REPLY PAID 641 Land and Water Resources R&D Corporation GPO Box 2182 Canberra ACT 2601







YOUR COMMENTS

Your comments about this "Stakeholder Report" 1995 would be appreciated and will help determine how LWRRDC reports its activities in future years.		4.	What did you like least about this report?
	ease complete this comments page, detach it and urn using Reply Paid Service overleaf to:		
REPLY PAID 641 LWRRDC, GPO BOX 2182,			
Ca	nberra, ACT 2601 or fax (06) 257 3420.		
1.	How useful was this report, in terms of providing information that is of value to you and/or your organisation?		
Ple	ease tick most applicable answer:		
	Not useful at all	5.	Do you have any suggestions for improvement (especially other information you would like to
	Not very useful		
	Of moderate use		the report):
	Useful		
	Very useful		
	Excellent use		
2.	How easy was the report to read, follow and understand?		
	Not easy at all		
	Not very easy		
	Moderately easy		
	Easy		
	Very easy	o_i	otional details
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3.	What did you like most about this report?		sition:
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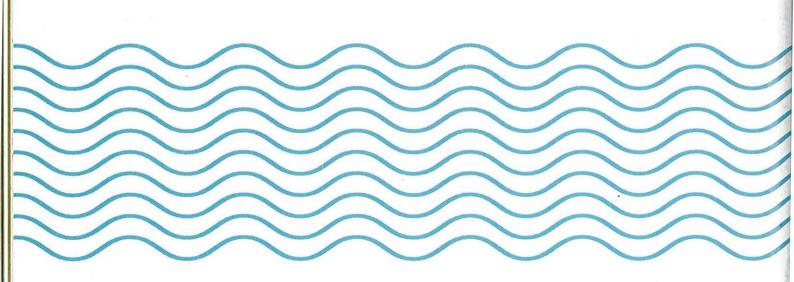
Land and Water Resources











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