COOPERATIVE RESEARCH CENTRE FOR
SUSTAINABLE RICE PRODUCTION

ANNUAL REPORT
2003/2004

An unincorporated joint venture between:

Charles Sturt University
The University of Sydney
SunRice
CSIRO
(Plant Industry, Land and Water and Entomology)

NSW Department of Primary Industries
(formerly called “NSW Agriculture”)

NSW Department of Infrastructure, Planning & Natural Resources
Rural Industries Research and Development Corporation

Established and supported under the
Australian Government’s Cooperative Research Centres Program
CENTRE OBJECTIVES

MISSION

The Cooperative Research Centre for Sustainable Rice Production will increase the economic, environmental and social sustainability of the Australian rice industry and enhance its international competitiveness through both strategic and tactical research and implementation of practical, cost-effective programs.

OBJECTIVES

This CRC aims to increase the contribution the rice industry makes to the national economy and to the welfare of all Australians by:

- generating knowledge to improve the sustainability of the natural resources and the systems used to produce rice;
- developing germplasm which will be the basis of a sustainable increase in rice yields and quality;
- developing a more strategic base for rice research in Australia; and
- formally linking key agencies involved in rice research, education and extension and focusing their effort on a common purpose.

ISSN 1444-643X
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EXECUTIVE SUMMARY

Chairman's Report

Mr John Herbert, Chairman, Rice CRC

The Rice industry consists of remarkably resourceful and resilient people and organisations. Unfortunately even this level of resourcefulness has been taxed to its limit by the low water allocations of the last two years. Much of the Centre’s research effort has continued, however the adoption of the research by farmers and others has been slowed by low water allocations and reduced crop size.

Following the unsuccessful bid for continued CRC funding in 2002, considerable effort was put into keeping the Rice CRC operating, albeit at a lower level of activity, so that the excellent work of our scientists could be converted into on-farm and industry practice. The RIRDC R&D Advisory Committee and SunRice allocated $500,000, and $200,000 respectively while most partners continued with significant in-kind contributions. The CRC Secretariat permitted the carryover of funds resulting from programs delayed by adverse seasonal conditions and DEST allocated a further $700,000. This provided us with a much reduced but still significant program for 2004-2005. I would like to acknowledge the significant help of industry organisations and individuals in making this possible. I know the industry joins me in thanking Mrs Kay Hull, MLA for Riverina for her energetic advocacy of our case in Canberra.

Significant effort has gone into preparing a bid for the 2004 round of applications. The 2004 bid has been a major effort by the bid Steering Committee, with all industry bodies playing an active role under Russell Barratt’s ongoing guidance. Our Chief Executive, Dr Laurie Lewin, has contributed significantly to bringing the proposed science program together. The Stage 1 bid was successful and the Stage 2 bid has been lodged. At the time of writing we are hopeful that the bid team will be invited to present its case at an interview later in the year.

In August 2003 Program 1 (Sustainability of Natural Resources) held a symposium at Yanco so researchers could share the results of their work. This symposium was a great success as it not only created a snapshot of progress throughout this important program but also brought several other related areas of research from other programs into the context of sustaining our natural resources. Dr Liz Humphreys did a great job in bringing this seminar together and keeping discussion focussed throughout.

The Rice Field Day at Yanco in early March 2004 provided another opportunity to demonstrate Rice CRC work. The combination of field displays, static demonstrations, poster presentations and an excellent Lebanese themed luncheon built around the target market for
the new variety release Reiziq, demonstrated the depth of targeted research conducted by our Centre.

The Australian opening of the International Year of Rice in Canberra provided a great opportunity to showcase the rice industry to a Canberra audience. It was pleasing to note the number of times technologies based on Rice CRC research were referred to in the various presentations.

One of the highlights of the year for me was to be invited to respond to Dr Laurie Lewin’s oration at the awarding of his Farrer Award. The large number of people who attended the award ceremony and the dinner afterwards is testimony to the respect and affection Laurie has earned through his work for and ongoing contribution to the Australian Rice Industry. I know that my pleasure in hearing of Laurie’s recognition in this way is shared throughout the rice industry.

The quality of Rice CRC research continues to impress. An example of this is Sandra Oliver’s selection to present her paper on ‘Why stressed out plants abort their sex life’ at the CRC Association Conference in Adelaide in June 2004. Sandra was one of only four researchers invited to make a ten-minute presentation to the conference. I am sure that everyone joins me in congratulating Sandra on the quality of her work that earned this invitation.

The Rice Research and Development Committee and RIRDC continue to provide excellent advice to the Centre. Following several low production seasons the RIRDC funding is perilously tight. I wish the Committee well in prioritising research budgets over the next few years and look forward to a time when the size of the rice crop makes their job much easier.

Our dedicated administration team continue to provide the reporting and administrative functions that are so important in complex organisations such as Cooperative Research Centres. I know that many Rice CRC people share my appreciation of their willing and helpful approach to their job.

The next year will be an important time in the history of the Rice CRC. It will allow the finalisation of a number of projects that have been delayed by difficult seasonal conditions. Provided seasonal conditions improve and we see reasonable water allocations, I am confident that 2004–2005 will lay a sound foundation for widespread uptake of much of the work the Rice CRC has completed during the last seven years.
Director's Report

Dr Laurie Lewin, Director, Rice CRC

This seventh year of the CRC for Sustainable Rice Production coincides with the declaration by the United Nations of 2004 as the International Year of Rice. In its declaration, the UN noted that rice is the staple food for more than half the world’s population. The International Year has been so designated to raise awareness of the importance of rice as a food and as an integral component of the culture of important communities. The year is also seen as an opportunity to promote the role of rice in:

- improving food security and nutrition
- enhancing the productivity of rice-based systems
- managing water resources
- environmental protection
- traditional rice-based systems as part of world heritage
- the institutional context
- the challenge and opportunity for synergy


These concepts are almost identical to the challenges we set ourselves at the start of the CRC to guarantee the future of the Australian rice industry.

The seven years of the CRC for Sustainable Rice Production have coincided with many challenges for the Australian rice industry. Record production in 2001 was followed by extreme water shortages in 2003 and 2004 and low rice production. Record high yields in 2003 of over 10 tonnes per hectare were followed by significant cold damage and relatively low yields in 2004. Along with the productivity and yield variations have been the debates on irrigation water availability and water management.

These challenges have highlighted the importance of the Rice CRC program and its success in assisting the industry to manage for change. Environmental and water management, stress tolerance, new products and a skilled human resource are some of the aspects of the CRC program that will continue to drive a successful and vibrant industry.

Drought, with its associated low winter rainfall and reduced irrigation, has eased pressure on groundwater levels in the rice producing areas. CRC research on recharge management, improved rice soil suitability assessment and catchment management, will help manage groundwater levels once rainfall and water allocations return to more normal levels.
Crops following rice were initially researched as a mechanism for controlling recharge. The strategy has been successful for maintaining rice system profitability and maximising water use in the recent dry period.

Growers and the rice industry are now acutely aware of the importance of accurately forecasting allocations. Applications of climate forecasting and better computer programs are very important initiatives that are being eagerly followed by growers.

Many of the system management projects such as irrigation management for rice, research on bed production systems and on chemical management, are now at an advanced stage. They will provide a springboard for better management of rice production systems in the future. Various initiatives on remote sensing are now consolidating to indicate future options for monitoring and management of irrigation cropping systems including rice. Measurement of crop areas, monitoring of growth, estimation of soil properties and yield monitoring can be linked to provide better management. The take-up of remote imaging to assist management on-farm has been dramatic.

Research on cold damage in rice at the reproductive stage has targeted both improved tolerance and an understanding of the mechanisms of damage. Tolerant lines have now been categorised and tolerance should be available in an adapted background within five years. At the same time, the genetic and cellular basis of susceptibility is converging and this is likely to lead to genetic and cellular markers for tolerance.

Other Program 2 initiatives, such as identification and management of disease and the potential for enhancing the nutritive value of rice through management, are also significant.

Aspects of the genetic improvement program, including bloodworm tolerance, microspore culture and understanding the starch structure, are all producing exciting results.

Industry programs that have been stimulated through CRC research have underpinned a more responsible, quality assured and exciting industry sector. This has included the incorporation of quality assurance systems, better measurement of rice quality at receival, improved pest control practices and improved drying technology. Of particular importance, however, has been the development of improved value-added products including improved rice cakes and retort rice. These products will be important in improving return for rice and raising water productivity.

It is also pleasing to see the postgraduate and honours students gaining the reward for their efforts and moving into employment opportunities. Some have stayed with the rice industry while others have moved into related fields. I am particularly pleased that the CRC has been able to assist with the education of so many talented individuals. Particular congratulations are due to Ben Dal Broi who was awarded the UNE University Medal for his honours degree and to Sandra Oliver for her selection as a postgraduate presenter at the CRC Association Conference.

Cooperative arrangements in the CRC have continued to strengthen. This has been a particularly pleasing aspect of the CRC and has led to some very important cooperative efforts in research, technology transfer and education. Continuing collaboration is assured.
I particularly acknowledge the work of the Management Committee in guiding the program of the CRC. They continue to support the CRC and drive the projects and cooperative arrangements with little personal reward. Congratulations are due to Prof Graeme Batten, leader of Program 2, for his 2004 Thomas Hirschfield Award. This is a particularly appropriate award for a scientist who has driven the development of NIR technology in agriculture.

I also acknowledge the input of the Board in maintaining a strong strategic focus for the CRC. Their encouragement and support has done much to ensure the success of this CRC. John Herbert, in particular, as Chairman of the CRC has been patient, understanding and a fantastic supporter of the CRC. His work to ensure Year 8 funding was both untiring and well conceived.

Professor Don Marshall is a relatively new appointment as Visitor to the CRC. He has brought enthusiasm, knowledge and real skill to the task and we thank him for that.

I also acknowledge the ‘above the call of duty’ work of the executive staff of the CRC including Gordon Hart (Executive Officer), Julie Symes (Executive Secretary) and others in the office including Robyn Troldahl, Jan Hubatka and, for a time, Grant Webster.

It is the collective participants in the CRC that have made my task so much easier. I believe we can look back over the seven years with the knowledge that we have made a difference – and there will be more achievements to follow.
The Cooperative Research Centre for Sustainable Rice Production is an unincorporated joint venture established in 1997 by an Agreement between the Centre parties:-

Charles Sturt University
The University of Sydney
CSIRO
NSW Department of Primary Industries (formerly “NSW Agriculture”)
NSW Department of Infrastructure, Planning & Natural Resources
Rural Industries Research and Development Corporation
Ricegrowers’ Co-operative Limited t/as SunRice

and an Agreement with the Commonwealth of Australia.

The organisational structure of the Centre is outlined below. The management structure consists of the Board and the Director. The Board and Director are advised by Committees and supported by an administration office dealing with administrative and financial activities. The Board is responsible for the strategic direction of the Centre and for ensuring Centre management. The Director is responsible for day-to-day operations of the Rice CRC. He is assisted by a Management Committee, which includes key staff, and Program Leaders. The Rice Research and Development Committee of RIRDC is an advisory committee to the Rice CRC. The Centre Agent is NSW Department of Primary Industries (NSW DPI) and it provides financial and research program/project service and support for the Centre. The Centre’s administrative office is located at the Yanco Agricultural Institute (NSW DPI).
THE BOARD

The Centre is governed by a Board of Directors comprised of an independent chairperson, a high level nominee of each of the participating core partners and two persons to represent the interests of the Centre Associates and the Riverina community.

The Board meets a minimum of four times a year, usually two weeks after a Committee meeting so any issues requiring consent of the Board can be dealt with promptly.

The Board has the following functions and powers.

1. To establish policies for the Centre which cover research, education, training, intellectual property, commercialisation, planning, staffing, finance, accounting, reporting and such other matters as the Board considers necessary for the conduct of the business of the Centre, and its accountability to the Commonwealth and the participants pursuant to the Commonwealth and Centre Agreements.

2. To approve the activities of the Centre annually and the subsequent Annual Budget as described in Schedules 1 and 4 of the Commonwealth Agreement.

3. To monitor, measure and approve the performance indicators for the Centre.

4. To appoint, oversee and review the performance of the Director.

5. To take account of the relevant policies of each of the parties when considering any matter.

6. To authorise others to act on behalf of the Board and of the Centre.

7. To review the parties' contributions and seek to amend the Schedules of the Commonwealth Agreement provided that affected parties shall have agreed to any change in or any change to their intellectual property arrangements. Such changes will require the approval of the Commonwealth.

8. To consider and, if appropriate, approve new projects recommended by the Management Committee. Such new projects will also require approval by the Commonwealth and appropriate changes to the Schedules of the Commonwealth Agreement.
Board membership for 2003/2004

Mr John Herbert Chair
Dr Laurie Lewin Director, Rice CRC

Prof Jim Pratley Charles Sturt University
  Alternative: Prof Paul Burnett Charles Sturt University

Prof Beryl Hesketh The University of Sydney
  Alternative: vacant

Prof Kath Bowmer CSIRO Land and Water
  Alternative: Dr Colin Chartres CSIRO Plant Industry

Ms Helen Scott-Orr NSW Department of Primary Industries (formerly “NSW Agriculture”)
  Alternative: vacant

Mr Warwick Ford NSW Department of Infrastructure, Planning & Natural Resources
  Alternative: Dr John Searson NSW Department of Infrastructure, Planning & Natural Resources

Dr Keith Hutton Ricegrowers’ Co-operative Ltd (t/as SunRice)
  Alternative: Mr Russell Barratt Ricegrowers’ Co-operative Ltd (t/as SunRice)

Mr Jim Kennedy Independent [to September 2003]

Mrs Helen Cameron Rural Industries Research and Development Corporation (RIRDC)
  Alternative: Mr Steve Marshall Rural Industries Research and Development Corporation

Mr Peter Draper Rice Research and Development Committee (RRDC)

Ms Sulari Goonetilleke Independent (representing the broader community interest)
The Management Committee is made up of the Director, the Program Leaders, the Executive Officer and representatives of the parties, not otherwise represented.

The Management Committee assists the Director in attaining the objectives of the Centre through the implementation of the policies of the Board in relation to research, education and training, technology transfer, publication of research outcomes, finance and staffing.

The Committee coordinates the Centre’s activities and prepares new programs and policies for consideration by the Board.

The Committee meets a minimum of four times a year, usually two weeks before the next Board meeting so that any issues requiring consent of the Board can be dealt with promptly.
**Management Committee membership for 2003/2004:**

Dr Laurie Lewin  
Chairman

Mr Gordon Hart  
Executive Officer, Rice CRC

Dr Liz Humphreys  
CSIRO Land and Water [Program 1 Leader]

Dr Liz Dennis  
CSIRO Plant Industry [Program 3 Leader]

Mr David Welch  
Ricegrowers’ Co-operative Limited t/as SunRice [Program 4 Leader]

Dr Philip Eberbach  
Charles Sturt University [Program 5 Leader]

Assoc Prof Bruce Sutton  
The University of Sydney

Mr Phillip Green  
NSW Department Infrastructure, Planning & Natural Resources

Dr Jeff Davis  
Rural Industries Research and Development Corporation

Prof Graeme Batten  
Charles Sturt University [Program 2 Leader]

Dr Alison Bowman  
(to May 2004)  
NSW Department of Primary Industries

Mr John Lacy  
(from May 2004)  
NSW Department of Primary Industries

Mr John Herbert  
Chairman, Rice CRC Board

**ADVISORY COMMITTEE**

The advisory committee is the Rice Research and Development Committee (RRDC) of the Rural Industries Research and Development Corporation (RIRDC).

As the advisory committee to the Centre, the RIRDC Rice Research and Development Committee assists in providing broader input to the policies, planning and Programs of the Centre and to ensure coordination of research projects and functions.

Interaction between RRDC and the Rice CRC has been facilitated by cross-representation on the Board, Management Committee and the Rice Research and Development Committee. Details of Rice CRC Programs are conveyed to RRDC members through the annual Rice CRC Symposium and regular newsletters. This was not found to be sufficient, however, and members of RRDC have been allocated to liaise with the five Rice CRC Programs (as shown below). These are all rice grower members of RRDC.
Program 1 - Sustainability of Natural Resources  
Mr Peter O’Connor, Mr Leigh Vial

Program 2 - Sustainability of Production Systems  
Mr Peter Sheppard, Mr Russell Ford

Program 3 - Genetic Improvement for Sustainable Production  
Mr Randall Williams, Mr Ian Mason

Program 4 - Product and Process Development  
Mr Daryl Gibbs, Mr John Hemley

Program 5 - Education, Skills Development and Technology Transfer  
Mr Noel Graham, Mr Leigh Vial

CENTRE VISITOR

Prof Don Marshall is the CRC’s Visitor and has actively attended CRC Board meetings and participated in CRC activities. Prof Marshall has been an invaluable mentor and we appreciate his ongoing guidance and support.

The CRC Visitor is appointed by the CRC Secretariat to liaise with and assist in monitoring the CRCs he or she has been allocated. The CRC Visitor acts as an independent adviser and helps establish constructive links between the Secretariat and the CRCs.

CENTRE PROGRAMS

The research Programs are broken into five main areas, these are :-

1. Sustainability of Natural Resources in Rice-Based Cropping Systems.
2. Sustainable Production Systems.
3. Genetic Improvement for Sustainable Production.
5. Education, Skills Development and Technology Transfer.

Each Program has a leader to direct and monitor the research activities. The Programs are further divided into Sub-Programs, which also have a nominated leader. Beneath each Sub-Program are the research projects which all have a Project Leader who is the principal researcher.

CENTRE COMMITMENT

The Rice CRC is a distributed organisation with participants located with partner organisations throughout NSW, ACT and Queensland. It is always essential, therefore, to address the commitment of participants to the Centre.
The CRC strongly encourages networking between its partners and projects and encourages opportunities for staff to meet face to face and maintain its existing team spirit. Initiatives such as the Rice CiRCle (newsletter) and smaller group workshops have all contributed to the development of a Rice CRC ethos. The Rice CRC will be holding an international cold workshop in Canberra in July this year to which all CRC staff are invited, not just those working on the CRC cold program. The CRC will also be holding its final Symposium in early 2005 which is always strongly supported by all its participants.
COMMERCIALISATION/TECHNOLOGY TRANSFER/UTILISATION

The Rice CRC is committed to ensuring that its research is developed in conjunction with users and is accepted and implemented throughout the industry.

The Rice CRC program is broad and ranges from management of natural resources through to development of new rice products. Users therefore vary from the general community, irrigation companies, government groups and producers, through to the processing sector.

In 2003/2004, rice was produced by approx. 708 growers in the Murrumbidgee Valley (NSW) and 672 in the Murray Valley (NSW/Victoria). The numbers of growers and crops produced was again severely reduced due to the impact of the drought and water restrictions. The rice industry normally involves over 2,000 producers in NSW and 18 in Victoria. These are generally small production units that are linked by the need for objective research that addresses issues that impact on their future.

A number of organisations are involved in provision and application of this information. It is important that the Rice CRC works with these in order to ensure that the information is credible and is applied where needed.

These links are illustrated in the following table.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Information</th>
<th>Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice producers (2,130 farms in NSW)</td>
<td>Production Sustainability (watertables, salinity, drainage water quality, pest control)</td>
<td>Extension Involvement as advisors at project, program and Board levels Cooperation</td>
</tr>
<tr>
<td>Rice organisations -Ricegrowers’ Association of Australia -Rice Research &amp; Development Committee</td>
<td>Production Processing Sustainability Policy Research programs</td>
<td>Advice Coordination Coordination</td>
</tr>
<tr>
<td>Processors (eg SunRice)</td>
<td>Processing Sustainability (pests) Quality Assurance New producers</td>
<td>Involvement in research</td>
</tr>
<tr>
<td>Irrigation corporations - Murrumbidgee Irrigation Limited - Coleambally Irrigation Cooperative Limited - Murray Irrigation Limited</td>
<td>Sustainability (watertables, salinity, drainage water quality)</td>
<td>Involvement as advisors Cooperation Rice CRC project participants and collaborators</td>
</tr>
<tr>
<td>Agribusiness Companies (chemical and fertiliser distributors)</td>
<td>Sustainability (pest control) Productivity (eg, fertilisers)</td>
<td>Extension Education Involvement in research</td>
</tr>
<tr>
<td>Land and Water Management Plan groups</td>
<td>Sustainability (watertables, salinity, drainage water quality) Productivity</td>
<td>Liaison Land and Water Management Plan project committees Education programs</td>
</tr>
<tr>
<td>Community</td>
<td>Sustainability Education</td>
<td>Implementation and education Policy involvement</td>
</tr>
</tbody>
</table>
Transfer of information to users

* **Field Days**

- Frog Field Day at Fivebough Swamp, December 2003, Leeton
- Murrumbidgee Farm Fair, May 2004, Yanco
- 2004 Rice Field Day, March 2004, Yanco
- Organic Rice Field Day, March 2004, Yanco

* **Interaction with users**

In Project 1102 (Better prediction of groundwater recharge from rice growing), the incorporation of sodicity assessment into the rice land approval process has been agreed to by REPAG (Rice Environmental Policy Advisory Group) and is being actively adopted by Murray Irrigation Limited.

Project 1207 (Develop a GIS-based tool for net recharge management in rice-based farming systems) has enabled the provision of SWAGMAN Farm CD’s to Dr Asitha Katupityia (CSU), Dr John Angus (CSIRO Plant Industry), Murray Irrigation environmental staff, Coleambally Irrigation, Dr Bruce Sutton (University of Sydney), Mr Ary van der Lely (consultant) and farmers from the Murray Irrigation Limited operations area. SWAGMAN Farm is being used by CSU for teaching undergraduate agriculture science courses. Mid project workshops were held with hands on sessions for wider audiences including Murrumbidgee Irrigation, Murray Irrigation Limited and NSW Department of Primary Industries (formerly “NSW Agriculture”).

Project 1304 (Enzymatic bioremediation of pesticide residues in irrigation drainage waters) has continued its strong interaction with its licencee, Orica Australia Pty Ltd, which has a large water care business. R&D on the project at Orica focuses on production, formulation and implementation issues. Good progress is being made in these areas and the thion OP enzyme has been tested successfully in the field.

Rice identification methods developed in Project 1105 (Remote sensing of irrigated crop types and its application to regional water balance estimation) have been used in irrigation management at the CIA over the past two years, demonstrating utilisation and application of our research. An in-depth user’s manual was also developed in Project 1105, showing a constructive link with users of the research. Our rice identification research is currently utilised by CICL in order to improve yearly rice administration. CICL’s previous method relied on expensive aerial photographs to be purchased every year (in the order of $20,000 for the base data), while the 2003/2004 rice crop was identified using inexpensive Landsat imagery ($650 for the base data). The technology transfer for Project 1105 has been performed to ensure CICL can continue this process into the future. Additionally, a digital version of the report will be supplied to CICL so they can update the file, hence the process of satellite-based identification at the CIA will evolve as both management (e.g., rice on beds) and measurement (e.g., needing to use Landsat-5, not Landsat-7 data) change in the future.
During 2003, as part of Project 1404 (Risk-based irrigation demand management under system constraints), a stakeholder workshop on climate variability, climate change and adaptation in the Murrumbidgee Basin was organised to scope research ideas on climate research for efficient irrigation management. Participants included a number of interested individuals from irrigation companies, NSW DPI, DIPNR, MDBC and the local community. There is a tremendous interest in water and climate issues due to recent drought. The farming community needs tools, which can link climate forecasts with smart agricultural water management using a risk based approach. The key barrier to the adoption of existing climate forecast tools is lack of their proven utility and risk averse attitude of water allocation agencies.

This year the focus of the agronomist team involved in Project 5101 (Sustainable rice production through farmer education and community awareness) has been on the education and training of farmers in use of technology from another CRC project “Targeting NIR test sampling using aerial imagery”. A report on this work is provided in the "Education" chapter, Project 5101, however it is pleasing to note that over the two years of this activity the number of its farmer participants has increased from 179 to 549, crop numbers from 450 to 834 and crop area from 14000ha to 29500ha. Overall the project has generated enormous farmer interest.

* Other technology transfer activities aimed at dissemination of information

Mr Reuben Robinson and Mr David Klienert from CICL have recently spent some time working with Mr Tom Van Niel (Project 1105) to adjust and document the operational system for accurately classifying rice fields using Landsat imagery. Reuben and David now know how to order remotely sensed data and how to implement the procedure. CICL have already applied this method for the 2002/2003 and 2003/2004 growing seasons.

During June/July 2003 Dr Shahbaz Khan (Project 1404) gave hands on training sessions on SWAGMAN models to assess climate variability impacts in irrigation areas to BRS staff working on exceptional circumstances assistance application for irrigated agriculture. A climate and water workshop titled “Will there be enough water tomorrow” was also organised in July 2003. This workshop explored regional and national issues and will provide insights into key research questions and researcher’s response to answer these key questions.

* Consultancies/contracts

DIPNR and MDBC commissioned contract research from Project 1405 (Continuous salinity imaging along canals and drains) using the floating array technology on the Murray River near Buronga and Mallee Cliffs salt interception schemes. Discussions are also underway with BRS Canberra and DIPNR on potential application to Border Rivers icon study of surface water – groundwater interaction.

* Newsletters and publications

Three editions of the Centre's external newsletter "Rice CRC Update" was distributed this financial year to over 2,100 rice growers throughout the Murrumbidgee and Murray valleys.

Four editions of the internal newsletter, "Rice CiRCle", was electronically delivered to approximately 250 Centre participants this financial year.
The Rice CRC also contributed to newsletters and website items produced by the Ricegrowers’ Association of Australia, which are made available to over 2,000 rice growers and also the general public through its website. The Rice CRC also places research reports and press releases on its own website for the information of interested persons.

The rice supplement to the Australian Grain Magazine has also continued to be an important vehicle for transfer of information on Rice CRC research to users. Articles featuring CRC projects have also appeared in IREC’s Large Area Farmers’ Newsletter which is distributed to growers and researchers.