Research to practice in rice farming systems
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by Myles Parker and Rachael Whitworth

with contributions from Mary-Anne Lattimore, former District Agronomist, Yanco

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Foreword

This publication reports on the one year extension project Research to Practice in Rice Farming Systems (PRJ-007736), which was formerly titled Rice Yield and Water Productivity.

The rice farming system is the major irrigated farming system in southern NSW, with about 1300 farm businesses growing rice in the Murrumbidgee and Murray Valleys. The rice industry has the capacity to produce more than 1 million tonnes of rice each year, from around 100,000 to 130,000 ha. The farm gate value of the industry is $300 million, with the total value including export earnings exceeding $1 billion.

This project is important to the rice industry as it provides technical support to NSW DPI’s rice extension/research team. This enables the promotion of best management practices in rice farming systems which in turn maximises productivity of rice growers and ensures irrigation farming stays viable, with the rice industry also having important flow-on benefits to regional communities.

The support provided by RIRDC was used to fund a Technical Assistant which allowed rice growers and advisors to benefit from NSW DPI’s rice extension program. This included pre-season meetings, in-crop discussion groups and major field days. These activities are designed to ensure research results, development programs and farmer driven knowledge are communicated to rice growers with the expectation of increased adoption of improved practices and profitability.

There has been close consultation between this project’s activities and industry through the RIRDC Rice R&D Committee, the Rice Research Extension meeting, Rice pre-season meetings and Rice field days and on farm demonstrations.

This project was funded from industry revenue to RIRDC which is matched by funds provided by the Australian Government.

This report is an addition to RIRDC’s diverse range of over 2000 research publications and it forms part of our Rice R&D program, which aims to improve the profitability and sustainability of the Australian rice industry through the organisation, funding and management of a research, development and extension program that is both market and stakeholder driven.

Most of RIRDC’s publications are available for viewing, free downloading or purchasing online at www.rirdc.gov.au. Purchases can also be made by phoning 1300 634 313.

Craig Burns
Managing Director
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About the Author

Myles Parker is currently the Manager of the Broadacre Cropping Unit with NSW DPI. He took over the lead on this project from former NSW DPI District Agronomist, Kieran O’Keeffe.

Rachael Whitworth is currently NSW DPI District Agronomist, Griffith.

Acknowledgments

Thanks to the RIRDC Rice Research and Development Advisory Committee for their support for this project and assistance from agribusinesses, RGA, SunRice, Murrumbidgee Irrigation, Coleambally Irrigation Cooperative Ltd and Murray Irrigation Limited.

The investigators would like to thank the NSW DPI extension team for their contribution to the project:

Rachael Whitworth, Extension Agronomist, Griffith
John Fowler, District Agronomist, Deniliquin
Mary-Anne Lattimore, District Agronomist, Yanco
Tegan Muirhead, formerly Technical Assistant, Griffith
John Smith, formerly District Agronomist, Barham
Kieran O’Keeffe, formerly District Agronomist, Coleambally

and the NSW DPI research team collaborators:
Geoff Beecher - Research Agronomist
Brian Dunn - Research Agronomist
Peter Snell - Research Agronomist
Mark Stevens - Research Entomologist
Rachelle Ward - Cereal Chemist

and private company researcher:
Malcolm Taylor, Agropraisals.
Abbreviations

CIA - Coleambally Irrigation Area
DA - District Agronomist
DPI - Department of Primary Industries
DPW - delayed permanent water
EMV - East Murray Valley
MIA - Murrumbidgee Irrigation Area
N - nitrogen
NIR - near infrared
PI - panicle initiation
RGA - Rice Growers’ Association
RRAPL - Rice Research Australia Pty Ltd
RCPG - Rice crop protection guide
WMV - West Murray Valley
WP – water productivity
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Executive Summary

What the report is about

This report is about the achievements of the Technical Assistant (Rice) in assisting the main NSW DPI rice extension program aimed at improving productivity, profitability and sustainability of the rice industry. Extension programs are important to ensure research results, development programs and farmer driven knowledge are communicated to rice farmers with the increased adoption of improved practices.

Due to recent changes within NSW DPI, from January 2013 work became focussed on a key publication, a Rice Field Identification Guide, where the technical assistant catalogued existing file data from a number of existing rice publications in a spreadsheet for future reference and for further work on the publication to be carried out.

Who is the report targeted at?

The report is targeted at rice farmers and agribusiness servicing the rice industry.

Where are the relevant industries located in Australia?

The rice industry is based in the Irrigated South-West Region of NSW. Rice production is concentrated in the Murrumbidgee and Murray valleys, with rice grown for the first time for a number of years in the Lachlan Valley during the 2011/2012 season.

The rice farming system is the major irrigated farming system in southern NSW, with about 1300 farm businesses growing rice in the Murrumbidgee and Murray Valleys, all of which would directly benefit from this project. The rice industry has the capacity to produce more than 1 million tonnes of rice each year, from around 100,000 to 130,000 ha. The farm gate value of the industry is $300 million with the total value including export earnings exceeding $1 billion.

Background

NSW DPI provides the main research and extension programs for the rice industry and rice farming systems funded by RIRDC. Research and extension branches are linked in the one organisation which enables good cooperation and teamwork. This allows effective communication of research, extension and farmer results and adoption of new practices by farmers. Without extension, results would not be effectively communicated to farmers and adoption of technology would not be as successful.

Although extension delivery in NSW DPI is changing, up until December 2012 the Technical Assistant (Rice) played a major role in the NSW DPI rice extension program. From January 2013 work became focussed on a key publication, a Rice Field Identification Guide. This valuable tool in will assist growers and agribusiness to identify potential problems with their rice crops and therefore increase returns from rice production.

Aims/objectives

The project aims to assist the rice extension and research team in delivering the latest information and research findings to the rice growing community (industry, growers and advisors) through a variety of methods including written publications, discussion groups, field days and demonstrations. These extension activities increase the adoption of best management practices suited to the range of learning needs of farmers and stakeholders.
These programs are aimed at improving yield and water productivity, profitability and sustainability of rice production.

**Methods used**

The NSW DPI extension team of district agronomists in each region relies on close interaction with local growers to facilitate change of practice within the industry. This project funds a technical assistant to assist the team’s many local extension activities. The organisation and coordination of these activities are described in the results section.

**Results/key findings**

Many educational activities were conducted with farmers and industry stakeholders during the 2012/2013 rice season. These include the NSW DPI Rice Pre-season meetings, Rice Research and Extension meetings, Rice for Profit Course, Rice Agribusiness Pilots’ meeting and Rice Crop Protection Group meetings. District Agronomist discussion groups were also conducted in Leeton, Griffith, Coleambally, Deniliquin and Barham, with NIR tissue testing demonstrations held in four districts prior to PI.

The key publications “Ricecheck Recommendations” and “Rice Crop Protection Guide (RCPG)” were revised. In 2012/2013 these publications were mailed to all growers and agribusiness service providers. The publications were also available electronically on the NSW DPI website. In addition, factsheets were produced and distributed to farmers and industry stakeholders on “Identifying Panicle Initiation (PI) in Rice” and “Rice Water Depth Management at Microspore”.

Ricecheck benchmarking continued with 114 crops from the Murrumbidgee Valley and 113 crops from the Murray Valley analysed. Grower reports were prepared for each valley and sent to growers who participated in the benchmarking. Key results for each valley were presented to all industry stakeholders at pre-season meetings.

This project has had significant changes due to the NSW DPI restructure including the loss of several team members. In light of this, the context of this project changed in 2013 to focus on using the available expertise to provide farmers with a practical tool that can be used in the field to assist with diagnosing problems in rice crops such as weeds, insects and nutritional disorders.

**Implications for relevant stakeholders**

This project has implications for all rice industry stakeholders including growers, advisors, researchers and other organisations involved directly or indirectly with the industry. All these stakeholders will benefit from the outcomes of this project.

As this project aims to maximise productivity and sustainability of rice growers it will ensure that irrigation farming systems and regional communities stay viable.

**Recommendations**

The results of this project should be communicated to the RIRDC Rice R&D committee.
Introduction

This one year project follows similar projects reported in the final report July 2008–June 2012.

With the exception of 2012, these projects focussed on increasing yields by 2 percent per year and water productivity by 2 percent per year. Although this project does contribute to work towards these benchmarks through the promotion and adoption of best management practices, many external seasonal factors such as evapo-transpiration and rainfall have larger impacts on yield and water productivity.

This report focuses on the achievements of the project in the 2012–2013 season in assisting the NSW DPI rice extension/research staff in providing good information flow to growers and service providers.

The 2012/2013 rice season overview

The 2012/2013 rice season got off to a mild start. Temperatures were generally below average for the first half of October, but improved towards the end of the month which assisted crop establishment. Besides the cooler early October temperatures, other factors which impacted on establishment included wind, slime and ducks. A number of paddocks were also re-sown due to snail damage.

Whilst conditions were variable throughout November, the end of the month was favourable with relatively hot temperatures improving crops dramatically. The average PI date from the NIR tissue testing service in 2013 was 5th January, which was 3 days later than the previous season. This put the critical cold sensitive microspore stage at around 19th January. Temperatures for January were well above average, with only a few cooler nights towards the end of the month.

Whilst the majority of crops reached the critical microspore stage before 25th January, the period from the 30th January to 5th February had quite low temperatures, particularly the minimums. Although there were other periods of low night time temperatures, they were all generally offset by relatively high day temperatures. Attaining deep water on crops was a challenge this season due to the very hot conditions and high crop water demands, as well as some supply restrictions.

High temperatures late in the season made draining decisions difficult for growers and some crops had to be rewatered. Ideal temperatures through February resulted in very good panicle filling with a low percentage of flat heads. At the time of writing, harvest of the Riverina rice crop continues uninterrupted in warm weather, with early indications for an average yield in excess of 10 t/ha.

Water productivity figures are difficult to obtain for the whole industry. In the past MIA water use targets for rice have been used to calculate water productivity (t/ML). The final Rice Water Use (RWU) target for this season from October 1st 2012 to February 28th 2013 for the MIA at CSIRO Hanwood is 17.0 ML/ha. The average yield (all varieties and regions as at 1st May) is 10.7 t/ha. This gives a water productivity figure of 0.63t/ML. Given the seasonal condition 2012/2013 was a high water use season which had an affect on water use efficiency (WUE) for rice.
Objectives

The project aims to increase adoption of best management practice in rice farming systems through the DPI rice extension/research team, and hence:

- To increase rice yields and water productivity by 2% in C2013.
- To improve rice profitability and sustainability by supporting programs linked to improving yield and water productivity and to increase adoption of best practice methods. e.g increased accuracy of tissue test sampling, best practice in drill sown rice, and variable rate application of base fertiliser to reduce spatial variability.
- Increase exposure of best management through a wider range of extension activities and mediums to suit the learning needs of a wider range of farmers and stakeholders e.g. media articles, pre-season meetings, discussion groups, rice for profit course, ute guide both hard copy and electronic version and DPI rice website development.

Methodology

The NSW DPI extension team of district agronomists in each region relies on close interaction with local growers to facilitate change of practice within the industry. This project funds a technical assistant on a casual basis to assist the team’s many local extension activities.

The organisation and coordination of these activities are described in the results section.

The Technical Assistant was supervised by the District Agronomists at Coleambally and Griffith. Input into the Technical Assistant’s roles and responsibilities for this project were sought from the rice extension and research team.

Chapters

As this was an extension project there was no scientific methodology required and no statistical analysis carried out.
Results

The Technical Assistant assisted the research/extension team to increase exposure and adoption of best practice in rice farming systems from July through to March 2013.

Activities included preparing seasonal temperature (maximum & minimum temperatures, solar radiation, evapo-transpiration & rainfall) data and graphs for district agronomists in the Murrumbidgee and Murray Valleys for use at discussion groups, and updating the PI predictor for 2012/2013 season in December.

Since the commencement of this project, a restructure within NSW DPI has led to significant changes in the way extension is carried out. These changes started impacting on the project towards the end of 2012, with most of the 6 district agronomists involved in this project leaving NSW DPI.

From January 2013 the work of the Technical Assistant and remaining extension team focussed on a key publication, a Rice Field Identification Guide, a valuable tool to assist growers and agribusiness identify potential problems with their rice crops and therefore increase returns from rice production.

In meeting the objectives of this project many educational activities were conducted for farmers and industry stakeholders to help improve their understanding, knowledge and adoption of new technology and best practice.

**Objective 1:**
To increase rice yields and water productivity by 2% in C2013.

Although only preliminary estimates are available, the average industry rice yield across all regions and all varieties is 10.7 t/ha (as at 1st May). This is much higher than last season’s average industry yield of 9.3 t/ha. The final Rice Water Use (RWU) targets for this season from October 1st 2012 to February 28th 2013 for the MIA, taken from CSIRO Hanwood is 17.0 ML/ha due to the extremely hot summer.

Using the average yield (all varieties and regions as at 1st May) of 10.7 t/ha and water use of 17 ML/ha the water productivity (WP) for the 2012/2013 season for the MIA is 0.63t/ML, which is below the previous 10 year’s average of 0.67t/ML.

This can be attributed to the seasonal condition of 2012/2013, which was a high water use season having an affect on the water use efficiency (WUE) of rice.

The main activities carried out by the Technical Assistant to address the yield and water targets of this objective included:

- **Updating PI predictor for 2012/2013:**
  - The PI Predictor is a useful tool to help farmers and advisors assess how the season is going and to prepare them for the critical topdressing stage of rice. The Predictor alerts growers to start checking their crops to see if they have reached PI, a critical stage to undertake tissue testing in order to assess topdressing fertiliser requirements. This information is crucial for the sustainability and profitability of rice.
- The technical assistant prepared data for the District Agronomists on average temperatures from 15th October to 31st December for Murrumbidgee and Murray Valleys. This data was used to develop a PI prediction date for the 2012/2013 rice season.

An example of the PI predictor developed for the Murrumbidgee Valley for 2012/2013 is shown in Table 1.

**Table 1: Murrumbidgee Valley PI prediction for the 2012/2013 season**

<table>
<thead>
<tr>
<th>Sowing Date</th>
<th>Reiziq</th>
<th>Langi</th>
<th>Sherpa</th>
</tr>
</thead>
<tbody>
<tr>
<td>27th Sept</td>
<td>21st Dec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Oct</td>
<td>23rd Dec</td>
<td>24th Dec</td>
<td></td>
</tr>
<tr>
<td>5th Oct</td>
<td>25th Dec</td>
<td>26th Dec</td>
<td></td>
</tr>
<tr>
<td>9th Oct</td>
<td>27th Dec</td>
<td>28th Dec</td>
<td></td>
</tr>
<tr>
<td>13th Oct</td>
<td>29th Dec</td>
<td>30th Dec</td>
<td>26th Dec</td>
</tr>
<tr>
<td>17th Oct</td>
<td>31st Dec</td>
<td>31st Dec</td>
<td></td>
</tr>
<tr>
<td>21st Oct</td>
<td>2nd Jan</td>
<td>1st Jan</td>
<td>28th Dec</td>
</tr>
<tr>
<td>25th Oct</td>
<td>4th Jan</td>
<td>3rd Jan</td>
<td>30th Dec</td>
</tr>
<tr>
<td>29th Oct</td>
<td>6th Jan</td>
<td>5th Jan</td>
<td>1st Jan</td>
</tr>
<tr>
<td>2nd Nov</td>
<td>8th Jan</td>
<td>7th Jan</td>
<td>3rd Jan</td>
</tr>
<tr>
<td>6th Nov</td>
<td>10th Jan</td>
<td>9th Jan</td>
<td>5th Jan</td>
</tr>
<tr>
<td>10th Nov</td>
<td>12th Jan</td>
<td></td>
<td>7th Jan</td>
</tr>
<tr>
<td>14th Nov</td>
<td></td>
<td></td>
<td>9th Jan</td>
</tr>
<tr>
<td>18th Nov</td>
<td></td>
<td></td>
<td>11th Jan</td>
</tr>
</tbody>
</table>

For example: Using the PI predictor above using 21°C as the average temperature from 15th October to 31st December 2013, a Reiziq crop sown on the 17th October was predicted to reach PI around the 31st December.

- **Ricecheck database and benchmarking**

  - The Ricecheck database has been underutilised now for a number of years due to a range of factors including the drought and the program format. Last season (2011/2012) the team attempted to revitalise the program to identify any trends in factors that affected the final yield. This would allow fine tuning of the agronomics of varieties and allow the agronomists to pass on relevant information to either the breeding or agronomy research teams for further investigation. It would also allow us to identify factors influencing yield and water productivity.

  - Ricecheck forms were mailed out to growers and information for the 2011/2012 rice season was collated for both the Murrumbidgee (Griffith, Leeton & Coleambally) and Murray Valleys (Deniliquin and Barham) in June 2012.

  - The Technical Assistant collated individual Ricecheck grower reports for 114 crops from Murrumbidgee Valley rice growers, (Coleambally, Griffith and Leeton) and 114 crops from the Murray Valley (Deniliquin and Barham). The more records collected, the more meaningful the data.

An example of a grower report is shown below in Figure 1. It shows the main factors impacting on yield in the Murrumbidgee Valley in the 2011/2012 rice season.
Many factors reduced yield last season. The two main factors identified by growers in the survey (see chart above) are cold damage/sterility and ducks. Thirty percent of respondents indicated that cold damage, either at microspore or flowering, had an impact on yield, with damage ranging from 2% to over 30%. Ducks were a problem for 22% of respondents, some growers indicating that they had up to a 60% reduction in yield.

- **Surveys from discussion groups**

Discussion groups identified that the NSW DPI surveys often duplicated the surveys conducted by the rice industry. As a result it was intended to work with industry, use its information, and design new surveys to fill in the gaps. This did not eventuate due to the changes in NSW DPI.

**Objective 2:**

To improve rice profitability and sustainability by supporting programs linked to improving yield and water productivity and to increase adoption of best practice methods e.g increased accuracy of tissue test sampling, best practice in drill sown rice and variable rate application of base fertiliser to reduce spatial variability.

Research and extension branches of NSW DPI are linked, which enables good cooperation and teamwork. This allows effective communication of research, extension and farmer results and adoption of new practices and best management practices by farmers. Without extension, R&D results would not be effectively communicated to farmers and transfer of technology would not be so successful.

The main activities carried out in meeting this objective included:
• **Rice NIR Tissue Testing Demonstrations at PI with Brian Dunn:**

  - Correctly identifying PI in rice is important. It indicates the sampling time for the rice NIR Tissue Test, the opening of the “topdressing window”, provides an indication of the relative maturity of the crop and indicates when water depths should be increased before microspore to avoid cold damage.

  - Correct sampling procedure for the tissue test is important so that accurate topdressing recommendations can be made. This can impact on the profitability and sustainability of the crop.

  - Four “Identifying PI and NIR Tissue Test” demonstration days were held prior to PI in December 2012 at Leeton, Griffith, Coleambally and Deniliquin, with over 80 growers and advisors attending (Figure 2).

  - The technical assistant attended the Griffith and Coleambally District demonstrations and helped prepare the handouts for these days, including the PI predictor, NSW DPI Factsheets on Identifying PI and water management at microspore, as well as the temperature graphs.

  ![Figure 2: NIR Demonstration Day at Griffith and Leeton 2012 with Brian Dunn](image)

• **Demonstration and trials:**

  - The Technical assistant helped District Agronomists with winter crop trial preparation, data collection, analysis and harvest as part of the rice-based farming system.

  - For Griffith and Barham, this included durum agronomy nutrition trials where work carried out included: weighing the fertiliser and seed for the trial, pegging out the sites, carrying out establishment and tiller counts, topdressing the trial at various stages, assisting with the organising of winter crop field day, harvesting the trial and carrying out grain quality analysis.

  - Due to the changes within NSW DPI during this project, other proposed trials such as variable rate application of base fertiliser to reduce spatial variability, water vs air temperatures at microspore and plant establishment were not carried out.
**Objective 3:**

Increased exposure to best management through a wider range of extension activities and mediums to suit the learning needs of a wider range of farmers and stakeholders e.g., media articles, pre season meetings, discussion groups, rice for profit course, ute guide both hard copy and electronic version and DPI rice website development.

- **Discussion groups:**
  - Regular Rice discussion groups were held in the districts of Griffith, Coleambally, Leeton, Deniliquin and Wakool up until December 2012. These included pre-season, establishment and PI meetings.
  - Below is one of the many discussion groups that were held in the Griffith district in 2012/2013.

**Figure 3: PI Discussion group meeting at Griffith**

- The Technical Assistant prepared information for the DA’s for these meetings including weather data (temperatures, rainfall, ET and solar radiation); PI Predictor temperatures; and any other information required, such as trial results and publications. She also provided regular electronic updates of the weather data to district agronomists.

The seasonal data were prepared and posters made for the Murrumbidgee Valley. See example in Figure 3.
The mean maximum and minimum temperatures for the rice season in the Murrumbidgee Valley indicates how warm the season was compared to the long term average.

- **Pre-season meetings:**
  - Across the southern NSW rice growing region in the Murrumbidgee and Murray Valleys around 200 growers and agribusiness attended NSW DPI’s six annual rice pre-season meetings held at the end of August/early September 2012. Attendance at some meetings was lower than expected due to the availability of off-allocation water and the timing of the meeting. The Yanco and Griffith meetings are shown in Figure 5.
  - The Technical Assistant collaborated with the DA’s in planning these meetings, including co-ordination of venues, catering and support material, as well as attending the meetings in the Murrumbidgee Valley.

Figure 5: 2012/2013 Rice Pre-season meetings at Yanco and Griffith
Turning Point technology was used at these meetings to assess how relevant the agenda and information was to the audience, through inter-active questions asked during the presentations. It also provided important information to the researchers about current practices.

Samples of the type of the Turning Point questions and feedback from those attending the pre-season meetings are shown below (Figure 6). Data collected from these meetings has shown that they are a valuable source of information for rice growers and are considered highly by growers, agribusiness and industry.

**Figure 6: Turning point being used at the start of the Griffith pre-season meeting in August.**

- Of the 200 people who attended the 2012 rice pre-season meetings, 79% were farmers, 9.5% were agronomists, 7% were industry stakeholders and 4.5% were other.

- **Overall were you satisfied with the topics?** 97% of attendees were either satisfied or very satisfied with the range of topics covered at the rice pre-season meetings.

- **Have any of the presentations given you information that will change your practices?**

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Yes The local Ricecheck information</td>
<td>8%</td>
</tr>
<tr>
<td>Yes N management information</td>
<td>17%</td>
</tr>
<tr>
<td>Yes Weed information</td>
<td>19%</td>
</tr>
<tr>
<td>Yes zone management (Zinc)</td>
<td>17%</td>
</tr>
<tr>
<td>Yes DPI variety management information</td>
<td>5%</td>
</tr>
<tr>
<td>All helpful in changing practices</td>
<td>29%</td>
</tr>
<tr>
<td>No nothing new</td>
<td>5%</td>
</tr>
</tbody>
</table>

*Note multiple responses were allowed*

- **How helpful was this meeting in planning for your rice season?** 88% of attendees found the meeting either useful or very useful in planning for this season’s rice crop.

- **On a scale of 1 to 10, how important to you is rice research and extension (1 being not important, 10 highly important)** 86% rated the importance of rice research and extension as being important to highly important.
- Which 3 sources of information do you value most for your rice enterprise?

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre season meeting</td>
<td>21%</td>
</tr>
<tr>
<td>DPI agronomist</td>
<td>11%</td>
</tr>
<tr>
<td>Field days</td>
<td>9%</td>
</tr>
<tr>
<td>Discussion groups</td>
<td>10%</td>
</tr>
<tr>
<td>Media (eg Radio, newspapers and newsletters)</td>
<td>1%</td>
</tr>
<tr>
<td>NSW DPI rice production guides</td>
<td>15%</td>
</tr>
<tr>
<td>Rural supply store agronomist</td>
<td>15%</td>
</tr>
<tr>
<td>Internet sites</td>
<td>1%</td>
</tr>
<tr>
<td>Neighbours</td>
<td>5%</td>
</tr>
<tr>
<td>Most of the above</td>
<td>13%</td>
</tr>
</tbody>
</table>

Note multiple responses were allowed

- The most valued source of information for rice growers is the NSW DPI annual pre-season meeting. While DPI agronomists only rated 11% individually, the agronomists and researchers are responsible for the pre-season meeting (21%), the rice production guides (14%), organising field days (9%), discussion groups (10%), providing various media reports as well as keeping local growers informed about important information and events. Rural supply store agronomists (15%) are a valuable source of one-on-one information for growers, with many of these agronomists attending and gaining their information from the various extension meetings and field days organised by NSW DPI.

- Growers source rice information from a variety of sources and NSW DPI rice research and extension staff have a leading role in providing direct advice, best practice and the latest advances for these information sources.

- **Publications:**
  - The Technical Assistant assisted with the distribution of the publications Ricecheck recommendations, Rice Crop Protection Guide and Choosing a rice variety in August 2012. These publications were also placed on the NSW DPI website.
  - In addition to this, several other Factsheets were produced and distributed to growers as part of this mail out as well as at pre-season meetings, discussion groups and field days.

These included:

- **Identifying Panicle Initiation in Rice** - Rachael Whitworth, District Agronomist, Griffith; Brian Dunn, Research Agronomist, Yanco and Tina Dunn, Technical Officer, Yanco

- **Rice Water Depth Management at Microspore** - Rachael Whitworth, District Agronomist, Griffith and Brian Dunn, Research Agronomist, Yanco

- **Turning Point Feedback – 2012 Rice Pre-season** - Kieran O’Keeffe, District Agronomist, Coleambally and Rachael Whitworth, District Agronomist, Griffith

- **Management of drill sown rice** - John Smith, District Agronomist, Barham; Brian Dunn, Research Agronomist, Yanco and Russell Ford, Manager, Rice Research Australia Pty Ltd, Jerilderie

- **Courses /training:**
  - The Rice for Profit course was successfully held in July 2012. The course was full with 24 participants including new and experienced rice growers and agronomists, chemical company representatives and technical assistants from research and extension programs.
- The Technical assistant employed in this project attended this course, as well as helping to promote and prepare materials (prepare folders, photocopying material/handouts) for the course (Figure 7).

Below is some participant feedback from the course:

“A great course for a new person coming into the industry, with good speakers from a wide cross section and relevant topics with good coverage”.

Rice growers said their sons and daughters got a lot from it and will be able to bring the latest research information back to their businesses.

The connections course participants made with DPI research and extension staff will enable them in future to raise production issues with the appropriate people.

**Figure 7: Participants at the 2012 Rice for Profit course**

- **Rice disorders and diagnostic guide (hard copy and electronic versions):**

From January 2013 work became focussed on a key publication, a Rice field identification Guide. The technical assistant catalogued file data from a number of existing rice publications in a spreadsheet for future reference and to allow further work to be carried out.

It is intended that this guide to rice disorders and problems such as weeds, and insects, will allow farmers to be more confident in diagnosing problems and improve communication channels between them and their advisors.

It is intended that the book will be available both as a hard copy and enhanced PDF electronic version, to all stakeholders (growers, agronomists, etc) and others interested in the industry (e.g. trainees, chemical manufacturers, students etc.). There is no other competing publication available in this format specifically for Australian rice farms.

Progress continues on the guide with all remaining members of the rice research and extension team at NSW DPI contributing through their area of expertise.
Implications

Work that has been completed in this project has had a major impact on the adoption of technology, benefiting all rice industry stakeholders including growers, advisors, researchers and other organisations involved directly or indirectly with the industry.

Changes that have occurred within NSW DPI changed our ability to deliver on some of the objectives. To make the best of the situation we used our expertise to provide a practical management and biosecurity tool that is able to be used in the field to assist with identifying and diagnosing problems in rice crops such as weeds, insects and nutritional disorders.
Recommendations

- **Ricecheck data base:**
  
The project ‘Modernising Data collection’ will allow Industry and NSW DPI to work together to get the most out of data collected from growers and avoid duplication of data collection from growers. This is one of the main limitations with the Ricecheck Data base.

- **Rice disorders and diagnostic guide (hard copy and electronic versions):**
  
  Make use of existing expertise to complete this important resource for growers, advisors and industry in the future.

- **Rice for profit course**
  
  Based on feedback from the past course, there is a need to revise this course and run it on a regular basis.
Research to practice in rice farming systems

By Myles Parker and Rachael Whitworth

Pub. No. 13/057

This publication reports on the one year extension project “Research to Practice in Rice Farming Systems”. The project provides technical support to the NSW Department of Primary Industry rice extension/research team. This enables the promotion of best management practices in rice farming systems which in turn maximises productivity of rice growers and ensures irrigation farming stays viable, with the rice industry also having important flow-on benefits to regional communities.

The report is targeted at rice farmers and agribusiness servicing the rice industry.

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