



Market forces get the nod...new Program Coordinator for the Managing Climate Variability Program Dr Rohan Nelson says farm incomes could play an increased role in future drought assistance decisions by governments.

Photo: Tim Lester; digital enhancement: ZOO.

IN THIS ISSUE

- Income forecasts – turning the table on drought assistance 1
- Dairy project builds on farmer experience 2
- Farming profitably in a changing climate 2
- World spotlight on Australian climate expertise 2
- Southern Australia closing the gap on seasonal forecast use 3
- US Academy of Sciences publishes report on seasonal climate forecasts 3
- Climate Forum 4
- New Managing Climate Variability program Coordinator 4
- Decision on a rebid for the Climate CRC 4

Income forecasts – turning the table on drought assistance

A new approach to forecasting climate variability impact on farm incomes could lead to more timely and better targeted drought assistance for farmers, a new report has found.

Research by the recently-appointed Program Coordinator for the Managing Climate Variability Program Rohan Nelson enables farm incomes, rather than rainfall, to be used to assess whether climate conditions in the season ahead are likely to have a severe impact on farm businesses and rural communities.

“Traditionally, advice for drought assistance decisions have been dominated by rainfall and production data, when it is the impact on farm incomes and family welfare which are of most concern to rural communities,” says Dr Nelson, who released key findings from his report *Forecasting the regional impact of climate variability on Australian crop farm incomes* at Outlook 2005.

According to Dr Nelson it is important to separate the short-term effects of severe drought from market and other factors that are best managed by farmers.

Dr Nelson’s research, undertaken by the Australian Bureau of Agricultural and Resource Economics (ABARE), shows how existing scientific and economic approaches can be combined to provide more timely and relevant information on the effects of climate variability.

“It’s about giving policy makers the information they need so, in turn, they can provide earlier and better targeted support for farmers to self-manage climate risk.”

The report compared cropping regions across Australia to estimate the extent to which climate causes farm incomes to vary. One important finding was that farmers in climate-sensitive regions tend to have fewer livelihood options, making them particularly vulnerable to variations in farm income.

“So policies that increase livelihood options are likely to be an effective means of reducing vulnerability to drought,” says Dr Nelson.

The experimental system shows it is possible to forecast farm incomes at the start of a financial year whereas previously they were not available until after October.

The crop and pasture models used to develop this income forecasting capability were developed with support from the Managing Climate Variability Program and partners such as the Grains Research and Development Corporation (GRDC) over the last decade.

A new Managing Climate Variability Project *Enhancing forecasting of farm financial performance* is currently using the income forecasting model to explore improvements in the use of farm management deposits to manage climate risk.

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MANAGING
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‘...it is important to separate the short-term effects of severe drought from market and other factors that are best managed by farmers...’



Dairy project builds on farmer experience

Dairy farmers in northern New South Wales and Queensland are challenging researchers to study weather and climate in the same manner that farmers are already using this information – across time scales and regions.

As part of a new project funded by Dairy Australia through the Managing Climate Variability Program, sub-tropical dairy farmers are preparing to rethink how they can plan their feedbase using available climate risk management tools.

With their new emphasis on maintaining a predictable, year-round feed supply, dairy farmers with a keen eye for the weather now also see great potential for a more comprehensive climate risk management approach in planning their feedbase and cropping options.

Ocean temperatures are being integrated into decision-making as a guide to the season ahead. Keeping a further eye on the temperature trends that make climate change already a reality has also been added to the challenge.

The major drought of 2002 and its sudden impact on dairy farmers' purchased feed prices had a major impact. In those northern NSW and Queensland catchments supporting dairy production, restricted availability of irrigation water from Water Sharing Plans is also starting to hit home. The possible impacts of increased global temperatures on milk production is also of concern.

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Farming profitably in a changing climate

To help Australia's agricultural industries meet the challenge of a changing climate, the Bureau of Rural Sciences, Department of Agriculture, Fisheries and Forestry, the Australian Greenhouse Office and the Managing Climate Variability Program held a workshop in December last year to identify risks associated with a changing climate and examine the industry's adaptive capacity to minimise these risks.

More than 50 representatives from agricultural production, government and research communities attended the workshop. The major outcomes of the workshop were as follows:

Sensitivity to climate

The workshop concluded that most industries can handle gradual change in climate, even if it involves shifts in the incidence of extreme events. However, a critical question for the climate sciences is whether climate change will be gradual, allowing agricultural industries to, in most cases, adapt; or if it will unfold as a series of abrupt changes that will make it difficult for industries to cope.

Climate and decision-making

The type of climate information required to support agricultural decision-making depends on whether decisions are being made within the growing season (tactical) or on a multi-year or decadal basis (strategic). For most Australian agricultural industries the important climate feature affecting profitability is within-season variability. As a result, the ways in which underlying, long-term trends in climate influence within-season variability is an important consideration for rural industries.

Managing for a changing climate: avoiding the risks and seizing the opportunities

A risk management approach is an effective way for rural industries to respond to climate change. Where climate change is approached holistically (considering changes in temperature, rainfall, humidity, winds, storms, etc.), risk management provides a sound framework for identifying, analysing, evaluating and managing challenges and opportunities associated with climate change.

Maintaining and increasing profitability

Producers already have a good understanding about how to maintain profitability in a variable climate, which will be useful in managing longer-term change in climate. The key to managing profitably under a changing climate is flexibility and adaptability, with industry driving the process.

Government policy and scientific research strategy

The workshop felt strongly that a 'whole-of-Australia' approach is needed to deal effectively with climate change. This will require the integration of effort and resources across the producer/industry, government and research sectors, and integration of adaptation and mitigation approaches, while maintaining individual climate adaptation strategies for particular industries.

The next step in the process is a comprehensive assessment of the current understanding of the adaptability of Australia's agricultural industries to changing climate risks.

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World spotlight on Australian climate expertise

Australia's expertise in climate research was on show last month when international experts from Europe, the United States, China, South Africa, Asia and Australasia came together for a World Meteorological Organization (WMO) meeting at the Queensland Department of Primary Industries and Fisheries in Brisbane.

The team assessed how climate research worldwide can assist developing and developed nations. A report and recommendations for further research is being prepared for the United Nations.

Southern Australia closing the gap on seasonal forecast use

Up to 40 per cent of farmers in southern Australia now take seasonal forecasts into account in farm decisions, a new survey of 2500 farmers has shown.

The survey, commissioned by the Department of Agriculture, Fisheries and Forestry found the proportion of farmers using such climate risk tools had increased by 10 per cent between 2000 and 2002.

Managing Climate Variability Program Chair Dale Baker said the survey data confirmed the benefit of the increased research effort across southern and western Australia in recent years.

As one example, Mr Baker said the Grains Research and Development Corporation (GRDC) had funded a number of projects to meet the increased demand for information to improve climate risk management. The 2002 survey was also at a time of extreme drought conditions developing for many farmers. GRDC is currently funding additional projects in climate risk management through the Managing Climate Variability Program.

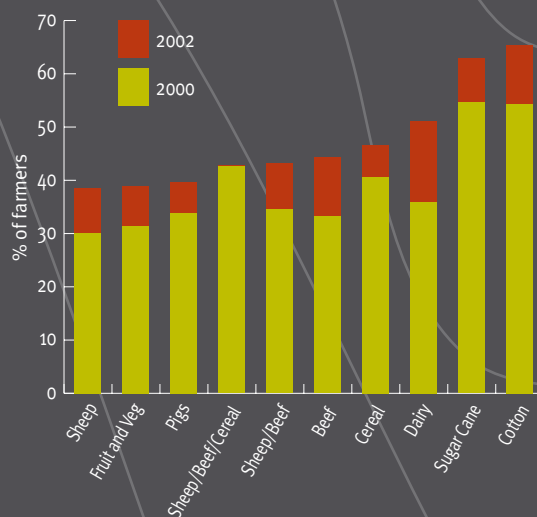
An analysis of the 2000 data with the 2002 survey reveals some major differences between states and industries. Mr Baker said while the differences do partly reflect the value that farmers place on seasonal forecasts and the extent to which they have insulated their farms from seasonal climate risk, the differences also reflect the research and extension effort that has gone into demonstrating the value of such decision-support tools.

The telephone survey asked farmers to respond to the question: 'A number of seasonal climate forecasts are available that predict the chance of rain over the next few months. Are you aware of any of these forecasts?'

The big differences on a State level were between eastern (New South Wales/ Queensland) and the southern/western states (Victoria, South Australia, Western Australia). For the eastern States (NSW/Queensland), use of seasonal climate forecasts lifted to just under 50 per cent of farmers surveyed. This was up from 44 per cent in 2000. For the southern/western States, the proportion jumped to 40 per cent, up from 30 per cent in 2000.

An analysis of industries (Figure 1) shows the cotton industry was the highest utiliser of seasonal forecasts, with 65 per cent of farmers surveyed taking such forecasts into account, followed closely by the sugar industry at 63 per cent. Dairy was next at 51 per cent – a major increase on the 35 per cent recorded two years earlier.

Utilisation levels of seasonal forecasts by other industries included cereal (47 per cent), beef cattle (44.3 per cent), and mixed farms (43 per cent).



Fruit and vegetable growers, and sheep producers were the lowest users of seasonal forecasts, each at 38 per cent.

Importantly, fruit and vegetable growers had the highest proportion of farmers who were 'not aware' of seasonal forecasts (about 40 per cent). But there was still 40 per cent of farmers in this industry taking forecasts into account, a proportion not much less than most industries.

The seasonal climate forecasts survey was part of a large survey undertaken by Solutions Marketing and Research Pty Limited as part of AAA / AFFA Program Evaluation *Rural Producer Survey 2002*. The previous phase of the Managing Climate Variability Program – known as CVAP – was funded by the Agriculture Advancing Australia Program. A summary of the overall survey report can be downloaded from the 'Publications' section of the DAFF website.

<http://www.daff.gov.au/content/publications.cfm>

US Academy of Sciences publishes report on seasonal climate forecasts

As reported in the previous edition of CLIMAG (Issue 8, November 2004), an Australian delegation recently participated in a workshop in the United States on seasonal climate forecasts. The workshop, run by Harvard University researchers, brought together five groups from different countries to report on the ingredients for an effective approach.

A summary report from the workshop is now available from the US Academy of Sciences. The report, *Knowledge-Action Systems for Seasonal to Interannual Climate Forecasting*, highlights six recurring themes from the discussions.

In summary, it was determined that effective knowledge-action systems have the following core characteristics:

- Incorporate user-driven definition and framing of the problem to be addressed;

- Tend to be end-to-end systems;
- Are often anchored in 'boundary organisations';
- Are designed for learning rather than knowing;
- Use funding strategies tailored to the dual public/private character of such systems; and
- Require people who can work across disciplines, issue areas, and the knowledge-action interface.

The report can be downloaded on-line from the website: <http://books.nap.edu/catalog/11204.html>

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Climate Forum

The 16th Australia New Zealand Climate Forum at Lorne in Victoria, co-sponsored by the Managing Climate Variability Program, was host to a record attendance of more than 150 delegates. The new wave of interest reflected a centre stage role at the Forum for climate risk management with water resources management a dominant theme.

Hot topics included an ever broader mix of disciplines – from economists to oceanographers – but also the not unrelated rate at which monthly and seasonal temperature records are being broken. There were late night debates on how do you tell the

difference and how it matters between climate change due to natural variability and the other kind (arguably due to the air-conditioning in the auditorium being set too low?)

Topics attracting major discussion included trends in evaporation and rainfall – and not all downwards. Some rainfall trends are up, but in areas where the rain gauges are sparse. Furthermore, it is important to consider that the trends might depend on when you start and when you end.

More than 100 abstracts from the presentations are available to download from the website <http://www.bom.gov.au/events/anzcf2004/anzcf2004.pdf>

The 17th Australia New Zealand Climate Forum will be held for the first time in Canberra in July 2006. The Australian National University will be host, carrying on from the success of the Lorne Forum ably hosted by the Bureau of Meteorology.

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New Managing Climate Variability program coordinator

Dr Rohan Nelson has joined Land & Water Australia on secondment from ABARE to help coordinate the Managing Climate Variability program. Rohan will focus on the communication aspects of the program. His arrival provides long-serving research co-ordinator, Dr Barry White, with the much deserved opportunity for a sabbatical, although Barry will continue to guide the program's research direction.

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Decision on a rebid for the Climate CRC

The Managing Climate Variability Program and other members of the unsuccessful bid for the CRC for Climate Risk Technologies will soon be deciding whether they join in a further bid.

Competition was tight with only five new CRCs funded. Feedback on the interview process was that the bid had a good rating on the collaboration arrangements and on the potential return on investment.

Scope for improvement included achieving more shorter-term benefits in sectors other than agriculture and particularly through identifying paths to adoption more clearly in terms of end-users and products. The interviewers also felt that a greater level of cash support from industry was required.

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Further information about the program can be found at the website www.managingclimate.gov.au

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