

# South Australia's Gamble with the 2002 Drought. Who won and who lost?

**Melissa Truscott**

*South Australia Research and Development Institute*

## Introduction

The 2002/03 drought was a 1 in 25 year event for most across South Australia. Its economical impacts were most devastating in regions where annual average rainfall is less than 350mm. At the end of 2002, SA cereal producers still managed to deliver 60% of the 5-year average of wheat to the grain silos. However 80% of this was delivered by 20% of the growers. Livestock managers in low-rainfall areas reduced their stock numbers to the lowest since 1927, due to lack of feed. High-rainfall livestock managers kept all available fodder in case they needed it for themselves.

Where land was not managed for a pending drought, in low rainfall cereal regions, substantial topsoil was swept away by strong winds. In livestock regions, some managers left de-stocking until their land became overgrazed, resulting in soil drift and a reduction in plant species biodiversity.

The SA Research and Development Institute (SARDI) Climate Risk Management Unit (CRMU) interpreted information from forecasters and provided property and regionally specific forecasts and workshops, before, during and after the 2002 growing season. The information provided integrated outputs from the Bureau of Meteorology (BoM), WA Department of Agriculture (WADA), SARDI, Queensland Department of Primary Industries (QDPI), and CSIRO.

The Premiers Task Force responded to the drought once it had hit by making \$5 million available for drought assistance measures. A network of the SARDI CRMU, Primary Industries and Resources SA (PIRSA), SA Farmers Federation, private consultants, Agricultural Bureaus, Regional Health Services and Industry Bodies responded by delivering

many workshops, media articles, fodder registers, books and web sites. Follow up assistance during 2003 continues with this network.

## Information Provided

SARDI conducted climate risk management decision support trials (forecasts) during 2002, as part of the Climate Risk Management Implementation in Southern Australia project. This completed the experimental period of providing seasonal climate risk decision support information to over 300 farmers since 1998. The aim of this work was to test the Climate Risk and Yield Information Service as a commercial operation in low, medium and high rainfall districts of South Australia, as specified as milestone 2 of the Grains Research and Development Corporation (GRDC) project DAS 332.

The 40 participants involved in the trial during 2002 were grain growers from across South Australia. Pre-sowing meetings were held with the participants during April 2002. Discussions during these meetings explained the tools that would be used in the trial, provided examples of the model outputs that would be received and explained how the outputs could be used to assist with making crop management decisions.

The information provided on a fortnightly basis included stored soil water, potential yield, optimum N rates at sowing, decile ranges, frost frequency, and flowering dates, from a range of models produced by Department of Agriculture Western Australia, SARDI and Primary Industries and Resources SA. The district-specific information included seasonal climate outlooks from the BoM and Long Paddock web sites, historical rainfall records, SST and SOI summaries, and correlations

between early season rainfall and growing season rainfall and wheat.

Other climate risk management information provided to primary industries before and during 2002, included the SARDI - climate risk management workshops. These are day length workshops. There are four modules designed to provide producers and extension officers with an understanding of the climate risks affecting them, what tools and services are available to forecast these risks, and how to better manage them.

The Premier's Task Force responded to the drought once it had hit by making \$5 million available for drought assistance measures. A network of the SARDI CRMU, PIRSA, SA Farmers Federation, private consultants, Agricultural Bureaus, Regional Health Services and Industry Bodies responded. Thirty-nine more workshops were delivered on drought to livestock managers and cereal producers, to a total of 615 producers. Forty-two media articles were published, 1300 copies of "feeding sheep" were sold, and business support grants, fodder registers, drought assistance web sites, community grants, farmbiz and exceptional circumstances cases were supported. Follow-up assistance during 2003 continues with this network.

## Discussion

During 2002, 2.1 million tonnes of wheat was delivered to the grain silos. This was produced on 2 million hectares. In 2001, 4.9 million tonnes of wheat was produced. The 5-year average is 3.4 million tonnes. Therefore SA cereal producers still managed to deliver 60 % of the 5-year average of wheat to the grain silos during 2002. However 80% of this was delivered by 20% of the growers.

At the end of 2002, the 40 farmers that participated in SARDI's trial forecasts were surveyed. In response to the information provided, some high rainfall producers conserved their stored soil moisture by keeping stubble cover and ceasing machinery passes. Those that employed this produced average to good yielding crops. In low rainfall regions, some growers did not sow some areas at all, saving money from otherwise failed crops. During the season cereal

producers cut back on costly input costs such as additional nitrogen.

The low rainfall farmers rated the information provided as more useful than the medium and high rainfall participants. Similarly, it was found that the low rainfall participants used the information more than the medium and high rainfall participants when making management decisions during the 2002 season. The only exception was the nitrogen information, where the medium rainfall participants rated the information as more useful than the low rainfall participants. Over all the survey results revealed that the information was most utilised by the participants in making management decisions about fertiliser rates followed by the crop types or varieties sown and the total area cropped.

Climate risk management workshops have been provided to over 600 growers and 100 extension officers. These workshops help participants better understand their climate risks. After attending the participants are aware of the tools and services available to help them better manage their risks. Primary producers are also shown how to access these tools and services. Producers are then made aware of their own trigger points to implement their management strategies to manage their climate risks.

Due to the information provided in SARDI's trial forecast service and the workshops before 2002, a low rainfall grain grower (<350mm annual average rainfall) cut back his cropping area by two thirds. His normal area is 3500 ha. His variable input costs are \$80/ha. During 2002 he saved \$186,000 on inputs because he only sowed one third of his land. If he had a forecast of 100% accuracy, he would have sown no land, saving a total of \$280,000.

A grain grower in a higher rainfall (>450mm annual average rainfall) area cut back on his fertiliser rates by 25%, saving \$40,000. If he knew with 100% certainty it was going to be a drought, he would have gone without one third of his land cropped, saving \$90,000.

Farmers' variable input costs range from \$50 per hectare to \$300 per hectare. This is dependent upon the intensity of cropping or the crop and pasture mix, which is also dependent upon the average rainfall for the region.

## Conclusions

The 20% of growers that produced 80% of the crop during 2002 made good profits in the drought. The other 80% of producers (also similar trends in livestock industries), did not produce good profits.

Some of these producers did have access to seasonal forecast information. Those that understood it responded well. For example, high rainfall producers managed to make a profit, while low rainfall producers cut their losses.

Some producers did not respond at all. These producers might lack long-term exposure to this sort of information and confidence in using it. These producers may have made a substantial loss both economically and biologically. Survey results from workshops and forecast services suggest that the longer farmers are exposed to climate information the more they will have confidence in responding.

## Recommendations

Integrated use of delivery techniques is essential. This includes workshops, individual forecasts, media and web sites. It is also important to tailor information to the end users and sufferers of drought and climate extremes. The information needs to be clearly written and presented in the end-user's language.

An integrated use of information is also essential, and we have found that looking at seasonal forecasts along with seasonal conditions on individual properties provides the best trigger points to responding with management techniques.

Links to networks are essential in getting information out to end users, such as agronomists and farming networks. Existing networks in SA responded well to drought in SA when utilising the Premier's Drought Assistance Package. SARDI CRMU provides a central base that interprets information from its own research, and other providers and delivers it to users. SARDI commercialised its forecast service in 2003. The SARDI CMRU is now tailoring forecasts for various enterprises.

Specific climate risk management champions that interpret climate information to the end user are another key to success. These champions should also be aware of the timing of delivery of this information.

When tailoring information, forecasters and information providers should keep in mind how flexible the end-user is in his management. How important is the forecast? Is it going to affect a major economical decision, or just a clothing decision?