Farmers applying seasonal climate forecasting for profitable and sustainable resource use

July 2004 – July 2007

Location: Central west New South Wales

Principal investigator

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The need

Seasonal climate forecasts (SCFs) are being promoted as a technology to reduce uncertainty and aid rural industries to better respond to opportunities and risks in relation to production and natural resource management. While there have been recent advances in understanding and predicting climatic variations, much uncertainty remains about the usefulness of forecasting technologies in the management of typical broadacre farming systems in Australia.

This project will draw on advances in forecast accuracy and in the economic theory of valuing information, to evaluate the role SCFs may have in improving farm profitability and sustainable resource use. The significance of any such benefits will be evaluated in the context of broadacre farming systems in Central West NSW.

How this project fits with MCV objectives

Providing better information on the economic value of SCFs will contribute to improved use of SCF by industries and resource managers and assist the development of improved seasonal climate forecasts by highlighting the attributes of an SCF of most significant value.

Project objectives

The objective of the research is to evaluate the effects of perfect and currently available SCFs on farm profitability, the type and intensity of agricultural land use, and land degradation (soil erosion and deep drainage).

Subsidiary objectives are to assess how the values of perfect and currently available SCFs are influenced by attitudes towards risk, the level of state variables (soil moisture at planting and product prices) and unit prices attached to land degradation effects.

Methods

- Review literature on the economic value of seasonal climate forecasts and economic decision making under uncertainty
- Describe farming systems in the selected case study region
- Develop modelling framework for the valuation of climate forecasts
- Apply modelling framework to the evaluation of climate forecasting systems

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Desired outcomes

- Provide information on the contribution that SCFs can make to the profitable and sustainable use of resources in broadacre agriculture in NSW
- Identify opportunities where farmers can profitably incorporate SCFs into their farming systems and evaluate the contribution of SCFs to reduced land degradation

Achievements to date

- Reviewed relevant SCF studies and alternative theories of decision making under uncertainty
- Collected preliminary data on the case study region
- Described the distinguishing attributes of SCF as an agricultural innovation
- Completed a case study of the value of seasonal climate forecasts in an opportunity cropping context; this highlighted the variability in forecast value and its sensitivity to attributes of both the forecast and the decision making context
- Developed linkages with other research projects with an interest in SCFs:
  - ACIAR Project: 'Bridging the gap between seasonal climate forecasts and agricultural decision makers in Australia and the Philippines'
  - GRDC DAN 460 Project: 'Delivering climate variability information through a farming systems context in Northern NSW'

What is left to do?

- Describe how climate variability is currently managed in the case study region and document attitudes of farmers towards the use of SCFs
- Further develop the modelling framework to capture crop and pasture outputs and land degradation effects provided by biophysical models
- Evaluate the value of SCFs focussing on attributes of both the forecast and the decision maker's environment (representative farm characteristics, policy settings etc)
- Consider the consequences of climate change for climate variability, on-farm decision making and possible implications for the value of SCFs

MCV is a collaborative program between the Grains, Rural Industries and Sugar Research and Development Corporations; the Australian Government Natural Heritage Trust and Department of Agriculture, Fisheries and Forestry; Dairy Australia; Meat & Livestock Australia; and Land & Water Australia. The National Farmers Federation and Australian Wool Innovation Limited are associate partners.

For more information on MCV, visit http://www.managingclimate.gov.au
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