

Innovative weather and climate risk management using derivative trading

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Location: Toowoomba, Queensland

Principal investigator

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The need

Compared with various insurance options, payout associated with climate/weather derivatives may be able to supplement farm income in non-catastrophic years. Many studies have shown that farm and shire crop yield and quality are strongly associated with the SOI, especially for years with low starting soil moisture. The SOI may also indicate international productivity and pricing. Thus, SOI forecasts may also be able to aid derivative pricing and portfolio management.

This project aims to improve our understanding of the potential value of SOI-based and other similar weather/climate derivatives to the Australian wheat industry. The project will seek to ascertain the value of hedging tools that can capitalise on our improved understanding of climate variability and weather/climate derivatives for the wheat industry.

The project will significantly improve our understanding of the potential value of derivatives to the wheat industry, thereby potentially increasing profitability and long-term sustainability of that industry.

How this project fits with MCV objectives

This project is aligned with the MCV objective of providing farmers with tools and services that help them to manage climate risk.

Project objectives

1. Survey the needs of the buyers and sellers of weather derivatives for the Australian wheat industry
2. Provide an overview of the use of weather derivatives in the world-wide agricultural industry, particularly where there are strong similarities with the Australian context
3. Summarise the relationships between SOI and farm/shire productivity for wheat in Australia and between SOI and the key meteorological factors for crop and farm management
4. Demonstrate how SOI-based derivatives can be used in a practical way to manage climate variability on a number of representative wheat farms
5. Identify and measure the relative merit of derivatives based either on climate indicators or site-specific weather parameters as against existing weather insurance options
6. Quantify via simulations the times/conditions when indicator-derivatives are particularly useful
7. Outline the advantages of SOI-linked weather derivatives to stakeholders in the wheat industry (such as farmers, suppliers, marketing agencies)
8. Suggest alternative approaches to the construction, pricing and evaluation of indicator-related derivative products



Methods

- › Desk-top studies that will ascertain relationships between SOI and wheat yield as well as rainfall yield relationships.
- › Formal interview processes with growers and insurance agencies and potential providers of derivative products.

Desired outcomes

1. Ready evaluation by grain and wheat farmers in Queensland and Australia of the use of SOI-linked weather/climate derivatives.
2. Improved systematic documentation of the utility of weather derivatives in Australian agriculture.
3. Improved assessment of which areas can best utilise SOI-based or similar derivatives and what risks to what farmers are mitigated.
4. Improved discrimination between derivative and insurance-based approaches to weather/climate risk management in the wheat industry.
5. Improved links between Australian researchers in weather derivatives and with international users of climate indicators for weather and climate risk management.
6. Improved understanding on the value of climate information for the grains and wheat industry if linked to insurance or derivative-based systems.

Achievements to date

- › We have developed a survey for use as part of an interview process with growers in wheat growing regions.
- › We have identified growers who are customers of existing insurance-based systems and/or key growers in the industry (although it need not be restricted to that group).
- › We have interviewed one insurance manager and are currently arranging interviews with other insurance company executives.
- › We have produced SOI and rainfall vs wheat yield information for demonstration to insurance and grower groups.

What is left to do?

Roger Stone is about to embark on travel though the Liverpool Plains and Darling Downs districts to interview 'leading' growers in the first instance.

Outcomes from interview processes and overviews of use of weather/climate derivatives will be produced.

Note: The project was due to commence in 2004 but, due to legal negotiations regarding specifics of the contract, it commenced in January 2006. Therefore, the project is still at an early stage and initial milestone reports have yet to be produced.

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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