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# Adoption of New Land Management Practices through Conservation Insurance

EconSearch & DWLBC

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# Overview

- International experience with conservation insurance
- Detail on the pilot project
- Reasons why the lower Murray region was chosen for the pilot
- The potential applications of conservation insurance

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# Background to Conservation

## Insurance

- A 1995 survey of landholders in the US undertaken to determine why new land management practices not adopted
- In particular, attention focused on landholders who:
  - Believed the practices would be profitable
  - Understood the nature of the new management practices
- One of the principal reasons for not adopting the practices was their perception of *risk*
- For landholders the risk of adopting new land management practices is loss of production and therefore income

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# Agricultural Conservation Innovation Centre (ACIC)

- Has been a major developer and proponent of conservation and farming practice insurance
- In particular, insurance designed to address the risk faced by farmers when undertaking new land management practices
- The experience of ACIC will be heavily drawn upon in this project
- Brian Brandt, Director of Risk Management Programs, is keen to provide input as an advisor to the project

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# Agricultural Conservation Innovation Centre

- ACIC has identified three kinds of risk when landholders are considering the adoption of new practices:
  - ***Innovation Risk*** - the barrier to the use of a new practice that uses a system that has not been tested in a wide variety of commercial farming conditions and therefore not trusted
  - ***Test-trust Risk*** - the barrier to acceptance of a procedure or test, no matter how well established or proven that test may be
  - ***Operating Risk*** - the barrier to adoption of conservation farming practices, despite scientific and trial evidence of the potential success of these practices

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# Examples of “Conservation Insurance”

## – reduce nitrogen application

- **Manure Crediting Nutrient Management.**
  - Insurance available to corn farmers in Iowa who factor in their use of manure and legumes in determining how much additional nitrogen to apply
  - Based on 75 plots in different clusters in Iowa with manure application or on fields with first year corn after alfalfa
  - By following recommended practices farmers made, on average, \$7.25 per acre crediting alfalfa and \$5.57 crediting manure
  - However, a few farmers made losses up to \$39 & \$62/acre
  - Indemnity paid where yields more than 5% below check or comparison strip

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# Examples of “Conservation Insurance”

## – reduce insecticide sprays

- **Corn Rootworm IPM**

- Enables farmers to rely on the advice of an expert who uses an approved system of crop monitoring and IPM treatment thresholds
- If the farmer decides to follow the expert’s “don’t treat” recommendations but doesn’t fully trust the counting procedure, he can purchase an insurance policy
- Requires a check or comparison strip in the participating paddock which are treated with soil insecticide
- Policy costs around \$5/acre compared to a \$12-\$15 per acre cost of insecticide treatment
- Pilot underway in Wisconsin and Illinois

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# Examples of “Conservation Insurance”

## – reduce fungicide sprays

- Potato Late Blight

- This policy permits potato farmers to follow “wait until potato late blight conditions exist” announcements in some states (Maine, Wisconsin, New York)
- By spraying after this recommendation is made the farmer can possibly avoid one to three fungicide sprays per season
- Grower purchases the insurance and waits until the recommendation is made by the local forecasting system
- Indemnity is paid if late blight is detected before or within 10 days of recommendation to spray
- Indemnity covers value of lost crop, cost of destroying infected plants & the recovery treatment

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# Examples of “Conservation Insurance”

## – reduce fertiliser applications

- Nutrient Best Management Practice (BMP)
  - Requires a certified crop consultant to recommend BMP for the crop
  - Requires a check or comparison strip adjacent to the crop
  - If the difference in yield is greater than the deductible (5%), the grower is paid an indemnity
  - Endorsement on existing policies – MPCCI or CRC
  - Available in Iowa, Minnesota, Pennsylvania and Wisconsin
  - Endorsement premiums ranged \$7.65 – \$9.35/acre

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# American Farmland Trust

- American Farmland Trust is a private, non-profit organization founded in 1980 to protect farmland in the US. AFT works to stop the loss of productive farmland and to promote farming practices that lead to a healthy environment
- AFT supports development of innovative programs to facilitate the adoption of conservation practices on agricultural land by reducing the risk associated with implementing new practices

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# American Farmland Trust – Support for Conservation Insurance

- Risk aversion has proved to be one of the key reasons for the slow adoption of conservation practices such as "integrated pest management" and "best management practices," even though they improve agriculture's environmental and economic performance.
- AFT believes that the agriculture community and the U.S. Department of Agriculture should develop and deliver new insurance policies that will cover the risk assumed by a farmer when adopting conservation practices.

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# Pilot Project - Objectives

- Broadly, to develop knowledge about conservation and farming practice insurance that doesn't presently exist in Australia.
- Develop the principles and understand the conditions for successful application of conservation insurance in Australian agriculture

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# Pilot Project - Tasks

- Review the status of agricultural insurance within Australia – including reasons for the failure of MPCCI & others
- Contrast with the situation in other countries, in particular the USA
- Identify and define farming practices with potential for development into insurance product case study
- Explore the need and role for government involvement in conservation insurance in Australia

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# Problems in Offering Multi Peril Crop Insurance

- Systemic Risk
- Moral Hazard
- Adverse Selection
- Demand

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# Systemic Risk

- In a normal farming context, price and yield risks are systemic
- This means that multiple insureds can suffer losses at the same time
- Adverse market, weather, etc conditions can affect a high proportion of those insured at the same time
- Insurance companies have problems pooling such risks and adequate reinsurance not available (or very expensive) when the scale of systemic risk is large
- Additional problem in Australia with positive serial correlation of yields e.g. droughts that last 3-5 years do occur

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# Moral Hazard

- Occurs when an individual purchases an insurance policy and, as a result of having purchased that policy, alters his/her behaviour
- In a farming context, this will involve changes in production or management practices
- The purpose of the change in behaviour is to increase the magnitude of a loss and/or probability of a loss

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# Adverse selection

- Occurs when those who purchase insurance face a higher risk than those who do not
- Rates struck on aggregate data underestimate the cost of indemnities to the insurer
- This was the main reason for the failure of the Wesfarmers area yield guarantee scheme for Western Australian farmers in 1975
  - Farmers could also nominate cover for 75% of the shire average for a reduced premium
  - In shires that run east west there were farmers who had never made 75% of the shire average – very keen to take it up
  - Farmers who never fell below 75% of the average couldn't see the point of taking out cover

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# Demand for MPCCI

- Any commercial insurance product needs to be actuarially sound:
  - Cover its operating costs; and
  - Leave a profit margin for the insurer
- This means the expected value to a farmer of a perfectly rated product (no moral hazard, no adverse selection) must be negative if the insurer is to cover costs and turn a profit
- Without subsidies farmers unlikely to buy cover
  - Would need to be highly risk adverse
  - Have options for dealing with risk – on-farm & off-farm diversification, holding cash & credit reserves, contract selling, belt-tightening, deferring major expenditures, etc
  - Present EC and other arrangements will undermine demand for commercial MPCCI

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# Lessons from North America – crop & revenue insurance

- In the USA, subsidies are provided for:
  - Farmer paid premiums
  - For delivery and administration; and
  - For private sector reinsurance
- Farmers pay about 25% of the total cost
- In Canada, government is the sole provider of multi peril crop insurance
  - Subsidy level similar to the USA
  - Costs are slightly less in Canada as no use of private sector

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# Lessons from North America – crop & revenue insurance

- Argued that private providers in the USA are quicker to innovate and provide a better service than in Canada
- But there are issues about the incentives in USA programs:
  - Government subsidies are provided to insurance companies in a way that leads to rent seeking behaviour
  - Schemes not well designed with respect to adverse selection and moral hazard
  - Transactions costs are high (monitoring, admin, etc.)
  - Ad hoc disaster relief undermines whole insurance system

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# Mallee Sustainable Farming Project

- MSF Inc. is a community driven project servicing the < 350-mm rainfall Mallee cropping regions of NSW, Vic, SA.
- The project region covers an area of approx 3 million ha
- The group has no formal membership structure but works in partnership with state agricultural agency's, research organisations and universities to allocate RD&E resources in line with the pre-determined needs of the farming communities
- The project has a governing board comprising farmer reps and scientific and communication specialists
- The project employs an Extension Leader to support the effective delivery of information across the region and project officer to liaise with funding organisations and progress board recommendations

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# MSF Project - Mission

- MSF Inc formed in 1997 in response to the recognition that conservation farming practices had not been widely adopted across the region.
- MSF Inc. will enable Farmers, Researchers, Extension officers and Agribusiness to improve their knowledge and skill in farming. A systems approach will be used to integrate:
  - Agricultural production
  - Erosion and groundwater recharge risk management
  - Profitability and financial risk management
  - Family, business, community and other social aspirations



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# MSF Project – Research Issues

- Crop nutrition and targeted input options
- Deep soil nitrogen monitoring
- Identification of sub-soil characteristics and management options for Mallee soils
- Soil water management
- Declining productivity of medic pastures
- Profitable crop rotations
- Opportunity cropping

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# Areas of Market Failure that could warrant Government Intervention

- Differences between individuals' and the community's attitudes towards risk
- Imperfections in the financial system
- Inability of an insurance company to prevent imitation of a successful scheme 'public good' argument
- High set up cost of insurance
- Positive externalities

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# Role for Government

- Other countries heavily subsidise insurance to the agricultural sector
- This project will explore the need and role of government in conservation insurance
- Consider possible areas of market failure
- Examine public and private benefits resulting from change in farming practice

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# Commercial Service Agreement (CSA)

- A non-insurance product
- Subject to much less regulatory oversight and related expenses
- CSAs are contracts to provide a specific service
- Typically include a guarantee on the service provided
- Unlike insurance products, any company can offer CSAs directly to customers