The Agricultural Sector and Adaptation to Climate Change

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Twelve Years of Research into Agricultural Adaptation and Climate Change in Quebec

- The research teams have involved:

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  Serge Des Roches

  **Graduate (current) Student Researchers:**
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Twelve Years of Research into Agricultural Adaptation and Climate Change in Quebec

- Climate change modelling
- The human agency factor & capacity for adaptation
- Understanding farmers’ perceptions of CC & CV
- Role of CC & CV in farmers’ decision making
- The implications for policy
The Information Base

**Early 1990s**
- Climate scenarios & historical climate data
- Farmer interviews
- Workshops with:
  - Farmers
  - Other professionals

**Late 1990s & 2000+**
- All of the above plus insurance claims data & farm level modelling
Farmer Perceptions of CC & CV

- Little awareness in early 1990s
- But interested in how they would fare compared to others
- Now more aware, but until 2003 at least tend to see CC & CV as secondary (to other concerns)
- But some signs of change
- Our current research is now moving into the field again – time to check again!
Farmers’ Risk Management Strategies (RMS)

- The existing tool-bag to deal with extremes in climatic conditions and other concerns:
  - Water management, crop choice, diversification
  - Crop insurance
  - Income stabilisation
Why Do CC & CV Appear to Be of Secondary Concern?

- Decision-making environment is multifaceted
- Other sources of stress more pressing
- Decisions often taken in shorter term perspective
- Crop insurance as an intervening variable
Current Research

• **Research team:** U de M, McGill; & Steering Committee involves OURANOS, La Financière, MAPAQ, UPA, Agriculture Canada

• **Direct financing:** CCIAD; Ouranos
Current Research cntd.

Focus:

• Farmers’ RMS & CV (over the past 30 years)

• How adapting or not adapting to variability (CV) may affect yields

• Integration of data on returns, costs, losses, agro-climatic indicators and farm-level modelling

• Moving from aggregate, to regional, to locality scale

• And FARMERS
Current Research cntd.

Tasks

Task 1: Setting up Advisory Committee

Task 2: For Quebec, temporal analysis of climatic and crop loss information

Selection of crops and regions

Task 3: For target regions, intraregional analysis of climate conditions and claims. Identify ‘hot spots’ for more detailed farm-level analysis

Task 4: Focus groups (professionals and farmers) to assess strategies adopted in relation to specific climatic events

Analysis of farm models with or without adaptation

Task 5: Assessment of vulnerability at farm, sector and region levels
The Reality of CV & Costs to Farming

Évolution des cotisations des clients et des indemnités versées (1993-2001)

Source: La Financière agricole du Québec

Saisons froides avec fréquence élevée de précipitations (FADQ)

Premiums & Claims paid out
The Reality of CV & Costs to Farming

Frequencies of Mentions of Causes (Causes / Regions) 1982-2003

Source: La Financière agricole (2005)
The Reality of CV & Costs to Farming

Indice des pertes dans les régions Sud-Ouest de Montréal, Trois-Rivières et Abitibi-Témiscamingue

Loss index: $ claims paid out / $ value insured

Source: Financière agricole
Évolution de la part des cotisations et des indemnités totales versées au producteurs de maïs-grain (régimes collectif et individuel)

Source: La Financière agricole du Québec
The Reality of CV & Costs to Farming

Evolution of Grain Corn Yield (1987-2001)

Grain corn yields from claims

Source: La Financière agricole (2004)
The Reality of CV & Costs to Farming

Causes of Claims for Grain Corn 1982-2003 - Individual Protection (proportion calculated on values of claims paid)

Source: La Financière agricole du Québec
The Reality of CV & Costs to Farming

Loss Index Grain Corn 2000
Some Final Considerations

- Note the non-neutral nature of crop loss data
- Importance of vulnerability
- CC & CV becoming recognized as a significant source of stress
- Capacity to adapt as a focus of policy
Conclusions

The reality of substantial spatial variations in interregional and intra regional patterns due to climatic extremes

Substantial variation in temporal patterns

What is the link between crop insurance & either adaptation or mal adaptation?

In Quebec, mal adaptation is probably discouraged because of:
‘good practices’ counselling (indirectly)
interventions in farmers’ strategies to reduce anticipated losses
the limits to coverage