COPING WITH CLIMATE VARIABILITY IN CENTRAL ARGENTINA: ANALYSIS OF FARMERS´ ATTITUDES TOWARD RISK

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Study area
OBJECTIVES

- To understand how agricultural producers cope with climate variability and change and which are the adaptation strategies that they have developed to face the possible negative impacts of the climate hazards.

- To know how farmers incorporate climate information in their decision-making process to improve decisions at the farm level.

Materials and Methods

- Four places were selected for the study, each one representing a particular case study: Oncativo, Laboulaye, Río Cuarto and Marcos Juárez.

- Locations correspond with different Homogeneous Ecological Zones, defined by specific edapho-climatic criteria. The availability of long series of meteorological data was also considered.

- In each place, a random sample of farmers was chosen for individual interviews. The size of the sample was determined considering the total number of farms of each productive system (grain – livestock mix, pure agriculture and pure livestock).

- A formal semi-structured field survey, with open and close questions, was answered by the selected farmers. 240 surveys were done.
Materials and Methods
Survey

- Socio-economic characteristics of each household/farm (farm size, farm type, tenure, technology applied, access to capital, off-farm income, education, etc.)
- Importance and sources of weather information; users' knowledge of regional climate; users' attitudes to climate and weather forecast; users' perception of the value of climate information (credibility, ability to respond, etc.); users' preferences about timing, format and content of a climate information.
- Surveys' compilation and data analysis were done using an statistical package (SPSS).

Materials and Methods
Survey

- Survey information was used to build specific indicators to understand farmers' adaptation capacity. The selected indicators followed three conceptual attributes that were adapted from the project MESMIS (Masera and Lopez-Ridaura, 2000):
  - Flexibility: the capacity of a system to return to an equilibrium state after being affected.
  - Stability: the system's property of being able to sustain itself.
  - Access to Resources: availability and access to specific resources (technological, social programs, etc.) and services
**Adaptation Capacity Attributes and Indicators**

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<th>Attribute</th>
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<td>Flexibility</td>
<td>Types of seeds (hybrids, cultivar)</td>
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<td>Number of planted crops</td>
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<td>Types of livestocks systems</td>
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<td>Land Tenure, Size, Geographical Localization.</td>
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<td>Stability</td>
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<td>Availability of Agro-meteorological Information</td>
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**Climatic phenomena that affected the agricultural production**

[Bar chart showing percentages of different climatic phenomena affecting agricultural production in Oncativo and Laboulaye]
Flexibility

- **Types of seeds**: All the farmers diversified their seedings, planting different hybrids and crop varieties with different growing cycles.
- **Number of planted crops**: 30-50% of the farmers modified their crop mix, incorporating others crops to improve their income and sustainability.
- **Type of Livestock production system**: 25% of the ranchers and 40% of the agriculture-livestock mix producers have changed their management systems to improve their income or to cope with the climatic events (i.e. floods).
- **Geographical dispersion of the productive units**: 60 to 65% of the farmer’s productive units are not one site location. Geographic dispersion is a possible strategy to decrease climatic risks.

Flexibility and Stability: Off-Farm Incomes and Financial Resources

![Bar chart showing off-farm incomes and financial savings](image)
Stability Attribute: Land Purchases/Sellings

Access to Resources: Technological Resources applied in Agriculture
Access to Resources: Type of climate information received by Farmers

Meteorological Information Related to Farm Size
Climatic and Meteorological Information required by farmers

![Bar Chart]

**Conclusions**

- Farmers changed their productive strategies to cope with negative climatic conditions or to adapt to changing economical/institutional situations.
- They face different climatic risks which are mainly related to the location of their farms. Geographical dispersion of the productive units seems to be an efficient strategy to alleviate the impact of climate hazards.
- Most of the farmers used a complete agro-technological package allowing them not only to maintain their production levels but also to sustain the productive capacity of their farms (Sustainability).
- The increased tendency for the use of insurance is an adaptive strategy to face climatic impacts and to give stability to their enterprises.
- Farmers consider climatic information as an important factor to take into account in their decision-making process.