INSURING DROUGHT RISK: SPANISH EXPERIENCE

Developing and Implementing Mitigation and Preparedness Water Scarcity and Drought (WS&D)

May 9th 2014   MADRID
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DROUGHT RISK

SPANISH EXPERIENCE: RISK AND INSURANCE

CONCLUSIONS
CONCEPT OF DROUGHT

DROUGHT: Multiple types

- Meteorological drought
- Agricultural drought
- Hydrological drought

“When soil moisture is insufficient to allow the normal development of crops”
DROUGHT: AN INSURABLE RISK?
CONCEPT OF DROUGHT

DROUGHT: Multiple types

“When soil moisture is insufficient to allow the normal development of crops”

- Meteorological drought
- Agricultural drought
- Hydrological drought

Climatic adversity: "Adverse weather conditions, normally non-controllable by the farmer, that causes generalized damages to the crops in that area, and that can be evaluated on the field"
DROUGHT

Definition of the event

Analysis of information

Application of actuarial methods for premium calculation

Design of an insurance contract

Creation of a business model: TARGET

SPANISH EXPERIENCE

AN INSURABLE RISK

Opportunity

Vulnerability

Service
KNOW-HOW

DEVELOPMENT OF KNOW-HOW

LEVEL OF GUARANTEES

AVAILABLE INFORMATION

SPANISH EXPERIENCE

agroseguro
HOW DROUGHT RISK SHOULD BE ANALYSED?
SPANISH EXPERIENCE

RAINFALL VS. YIELDS

DROUGHT: COMPLEX AND DYNAMIC PHENOMENON

Rain & Cereals Final Production. Valladolid.  Source: Agroseguro
## SPANISH EXPERIENCE

### IDENTIFICATION OF DROUGHT PHENOMENON:
**INTENSITY AND FREQUENCY**

<table>
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<th>CIUDAD REAL</th>
<th>TOTAL SERIE</th>
<th>BURGOS</th>
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<td><strong>Años Totales:</strong></td>
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<td>Años 5=Muy Buenos:</td>
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### IDENTIFICATION OF EXTREME EVENTS
CONCEPT OF DROUGHT

- Definition of the event to ensure
- Analysis of information: climatic, agronomic and soil
- Application of actuarial methods
  - Frequency and probability
  - Return period
  - Estimation of extreme values and its probability of occurrence
  - Elaboration of homogeneous areas maps
  - Level of compensation with other risks
- Application of new technologies: New Models

DROUGHT COVER
NEW TECHNOLOGIES APPLIED TO INSURANCE PRODUCTS
PASTURES INSURANCE DEFINITION

It is an index insurance

Covers the lack of pastures due to climatic events (mainly drought) based on remote sensing

Indemnity: Compensation value to cover the additional expense due to the need of food supplement for animals

There is a claim when the observed vegetation index falls below the guaranteed vegetation index
The vegetation index is below the average and indicates a severe loss.

The vegetation index is below the average and indicates a loss.

The current vegetation index is above the average. There is no drought situation.

The vegetation index is below the average, but it does not indicate a loss.
CONCLUSIONS

DROUGHT

COMPLEX RISK

BASIC REQUIREMENTS: FINANCIAL CAPACITY AND ENOUGH AND CONSOLIDATED CRITICAL MASS

INSURANCE TECHNIQUE AND THE USE OF NEW TECHNOLOGIES ALLOW TO DESIGN DYNAMIC AND EFFECTIVE INSURANCE MODELS
CONCLUSIONS

THE SPANISH EXPERIENCE PROVES THAT DROUGHT IS AN INSURABLE RISK

YES, HE COULD ….WE CAN
Caracterización del evento: Precipitaciones vs rendimientos

EXPERIENCIA ESPAÑOLA


EFECTOS MUY VARIABLES SOBRE LOS RENDIMIENTOS
ANALYSIS OF HISTORICAL INFORMATION: AVERAGE YIELDS

Rtos. Secano (Trigo+Cebada)

Rendimientos Secano (Trigo y cebada) para Ciudad Real y Burgos. Fuente: Agroseguro
EXPERIENCIA ESPAÑOLA

MAPA DE RIESGO DE SEQUÍA EN CEREALES

Fuente: Agroseguro
Histograma - Riesgo de sequía

**IDENTIFICATION OF DROUGHT PHENOMENON:**
**INTENSITY AND FREQUENCY**

Histograma del riesgo de sequía para una serie de 30 años
Fuente: Agroseguro
Rendimientos provinciales de cereales campaña 2000
Fuente: Agroseguro
DISTRIBUCIÓN DE LOS VALORES ASEGURADOS EN LÍNEAS AGRÍCOLAS

Millones de €


Capital Agrícola  Capital Sequía  Polinómica (Capital Agrícola)  Polinómica (Capital Sequía)

SPANISH EXPERIENCE
IMPORTANCIA DEL RIESGO DE SEQUÍA EN LA CARTERA

Fuente: Agroseguro
IMPORTANCIA DEL RIESGO DE SEQUÍA EN LA CARTERA

Fuente: Agroseguro
RIESGO DE SEQUÍA ASEGURADO EN NUESTRO MODELO (II)

✔ TARIFAS ESPECÍFICAS PARA CADA CULTIVO Y ZONA

✔ NORMAS DE PERITACIÓN ESPECÍFICAS POR CULTIVO
Guaranteed Stratum:

- **Average**: Historical average 1987-2006
- **Stratum A**: Curve below the average that establishes the first loss threshold
- **Stratum B**: Curve below stratum A that establishes the second loss threshold
- **2008 Plan**: Vegetation index throughout the cover period

**Insurance Characteristics**

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<td>B &gt; NDVI- A</td>
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<tr>
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