



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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@ **SPANISH EXPERIENCE: RISK AND INSURANCE**

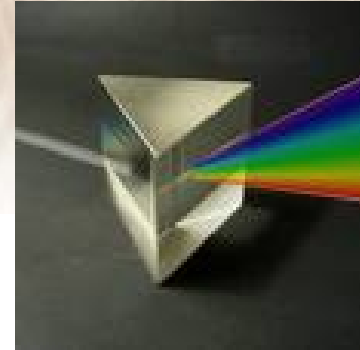
@ **CONCLUSIONS**



CONCEPT OF DROUGHT

DROUGHT: Multiple types

- ✓ Meteorological drought
- ✓ Agricultural drought
- ✓ Hydrological drought



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

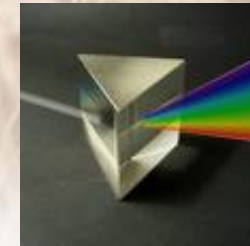


DROUGHT: AN INSURABLE RISK?





CONCEPT OF DROUGHT



DROUGHT: Multiple types

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

Meteorological drought

Agricultural drought

Hydrological drought

CONCEPT OF INSURABILITY

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"



SPANISH EXPERIENCE

DROUGHT

AN INSURABLE RISK

- ✓ 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

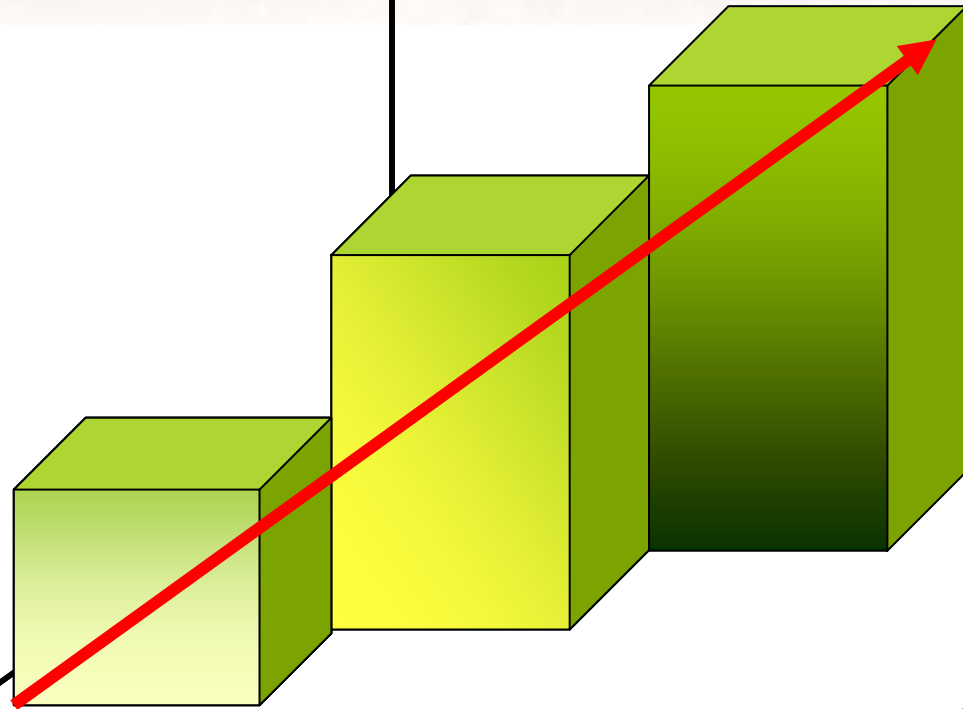




SPANISH EXPERIENCE

DEVELOPMENT OF KNOW-HOW

LEVEL OF GUARANTEES



KNOW-HOW



AVAILABLE INFORMATION





SPANISH EXPERIENCE

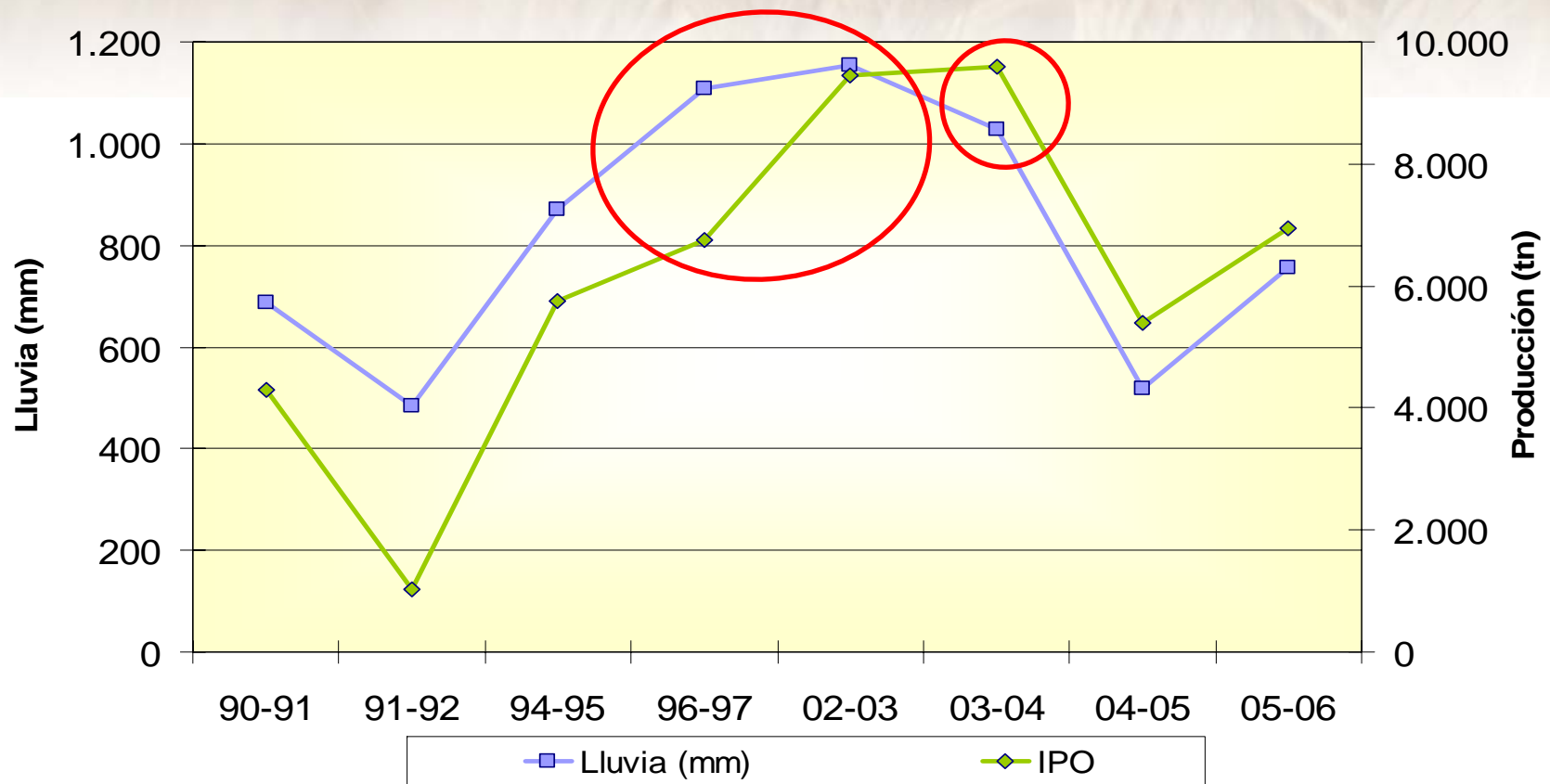
HOW DROUGHT RISK SHOULD BE ANALYSED?





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

CIUDAD REAL

TOTAL SERIE

	<u>Años</u>	<u>Frec. (%)</u>	<u>Retorno</u> <u>(Años)</u>
Años Totales:	33		
Años 1=Muy malos:	1	3%	33,0
Años 2=Malos:	1	3%	33,0
Años 3=Medios:	21	64%	1,6
Años 4=Buenos:	5	15%	6,6
Años 5=Muy Buenos:	5	15%	6,6

BURGOS

TOTAL SERIE

	<u>Años</u>	<u>Frec. (%)</u>	<u>Retorno</u> <u>(Años)</u>
Años Totales:	33		
Años 1=Muy malos:	0	0%	
Años 2=Malos:	0	0%	
Años 3=Medios:	28	85%	1,2
Años 4=Buenos:	5	15%	6,6
Años 5=Muy Buenos:	0	0%	



**IDENTIFICATION OF EXTREME
EVENTS**



SPANISH EXPERIENCE

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



SPANISH EXPERIENCE

**NEW TECHNOLOGIES
APPLIED TO INSURANCE
PRODUCTS**





PASTURES INSURANCE DEFINITION

It is an index insurance

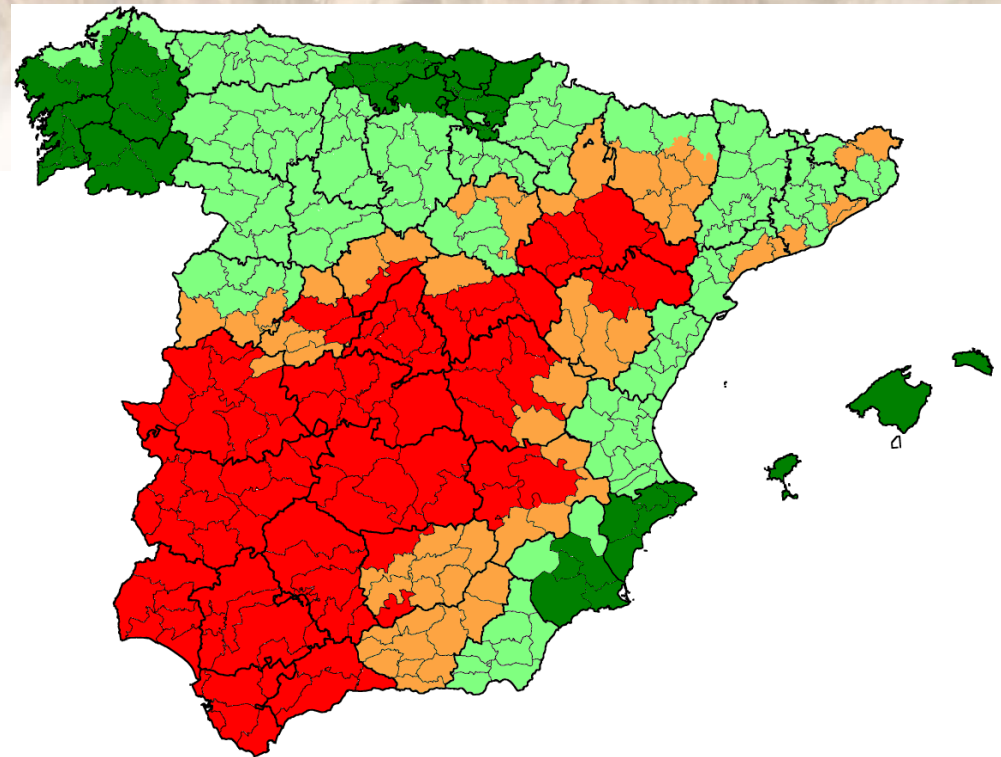
Covers the lack of pastures due to climatic events (mainly drought) based on remote sensing





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



INSURANCE CHARACTERISTICS



	NDVI-A > AVERAGE
	AVERAGE > NDVI-A > A
	A > NDVI-A > B
	B > NDVI-A

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





CONCLUSIONS

DROUGHT

@ **COMPLEX RISK**

@ **BASIC REQUIREMENTS: FINANCIAL CAPACITY AND ENOUGH AND CONSOLIDATED CRITICAL MASS**

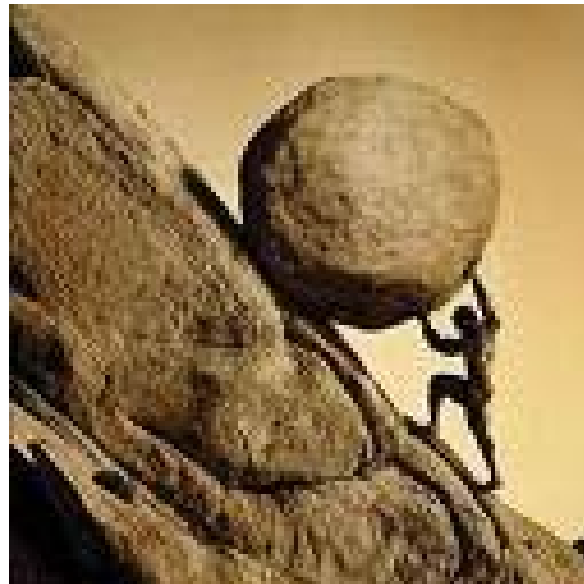
@ **INSURANCE TECHNIQUE AND THE USE OF NEW TECHNOLOGIES ALLOW TO DESIGN DYNAMIC AND EFFECTIVE INSURANCE MODELS**



CONCLUSIONS



**THE SPANISH EXPERIENCE PROVES THAT
DROUGHT IS AN INSURABLE RISK**



YES, HE COULDWE CAN



THANKS FOR YOUR ATTENTION

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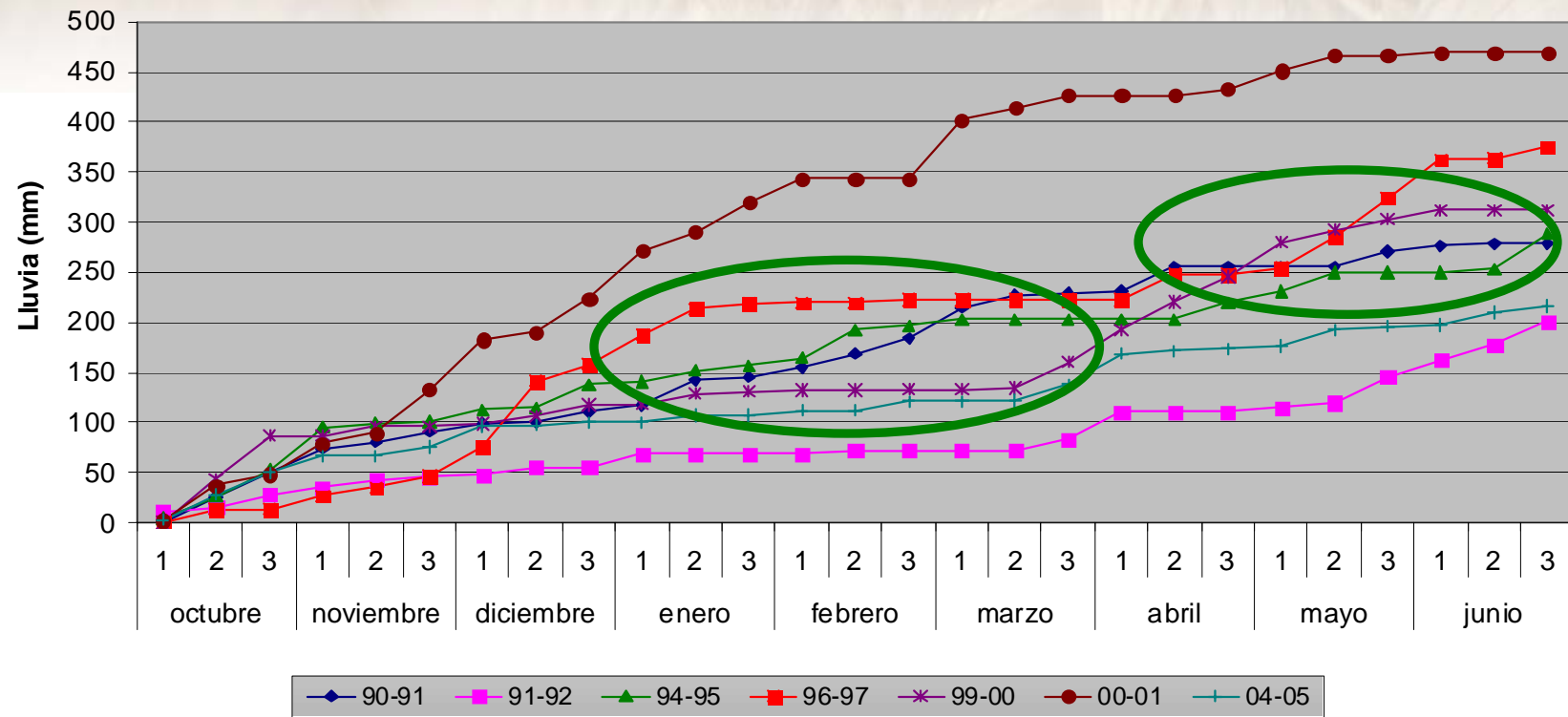
E-mail: consult@agroseguro.es





EXPERIENCIA ESPAÑOLA

Caracterización del evento: Precipitaciones vs rendimientos



Precipitaciones decenales campañas 1990 a 2005 Castilla León. Fuente: Agroseguro.

EFFECTOS MUY VARIABLES SOBRE LOS RENDIMIENTOS

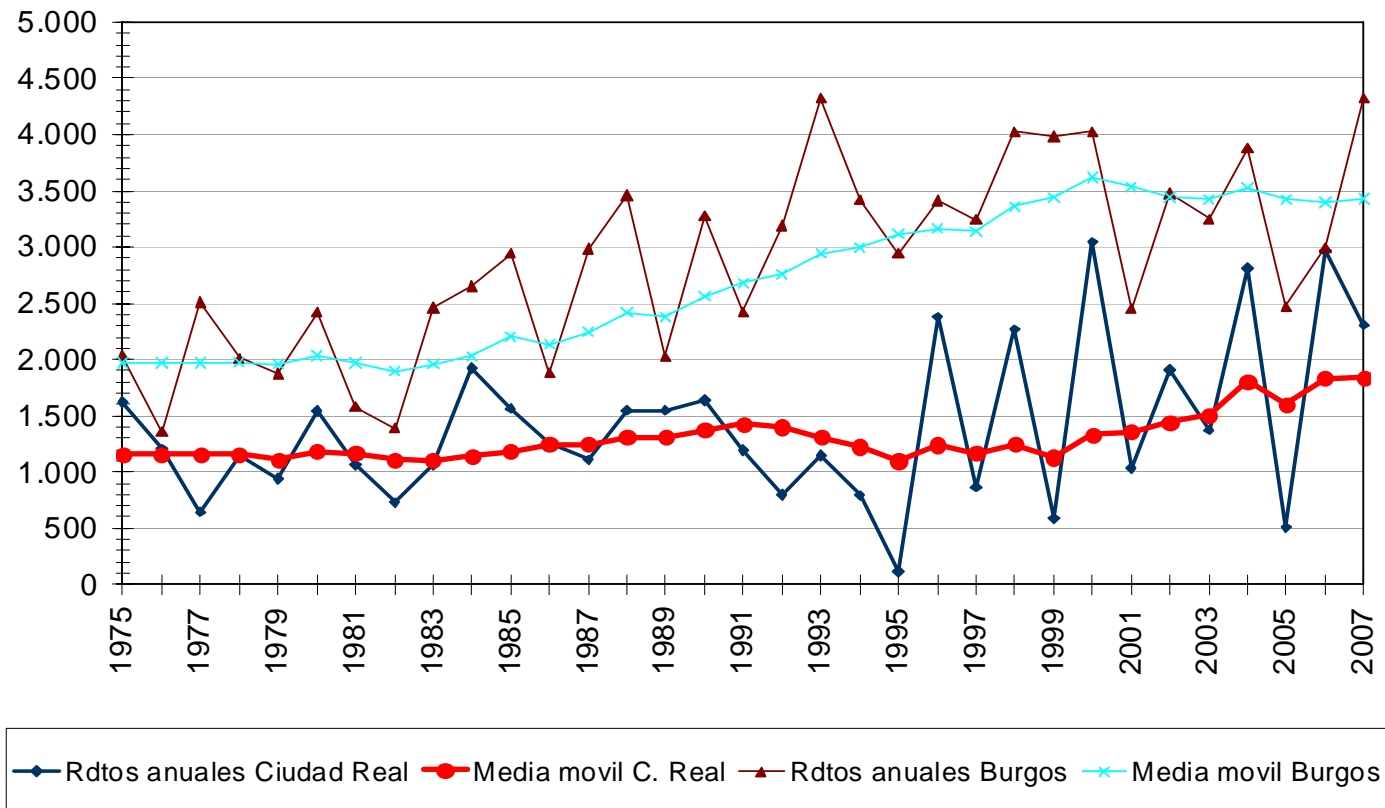




SPANISH EXPERIENCE

ANALYSIS OF HISTORICAL INFORMATION: AVERAGE YIELDS

Rtos. Secano (Trigo+Cebada)



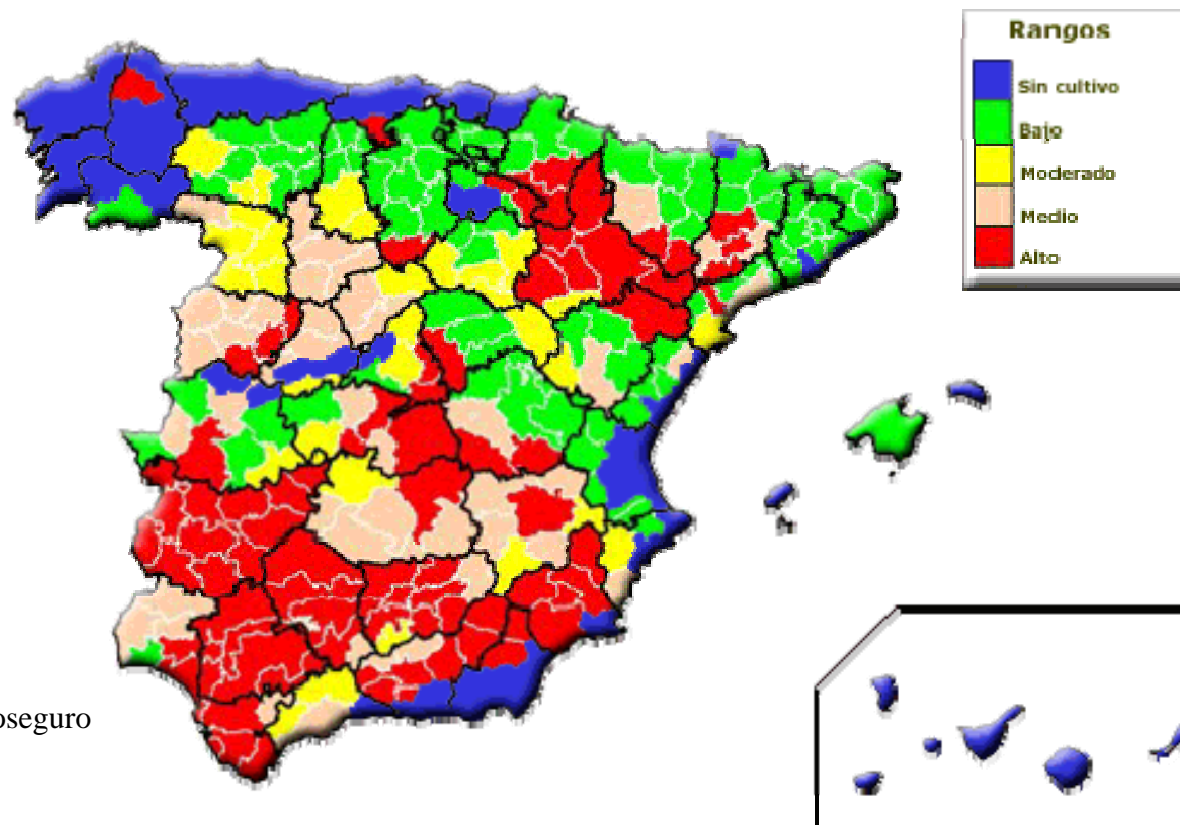
Rendimientos Secano (Trigo y cebada) para Ciudad Real y Burgos. Fuente: Agroseguro





EXPERIENCIA ESPAÑOLA

MAPA DE RIESGO DE SEQUÍA EN CEREALES



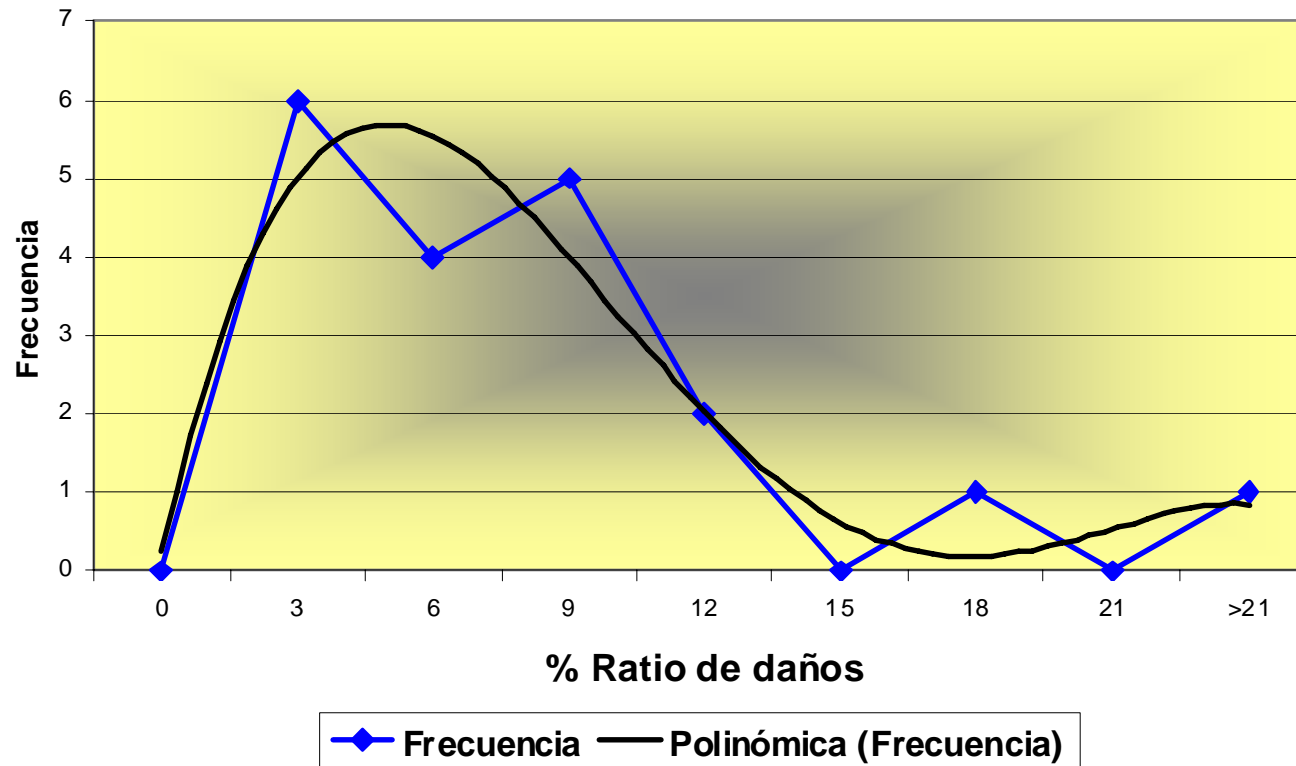
Fuente: Agroseguro



SPANISH EXPERIENCE

IDENTIFICATION OF DROUGHT PHENOMENON : INTENSITY AND FRECUENCY

Histograma - Riesgo de sequia

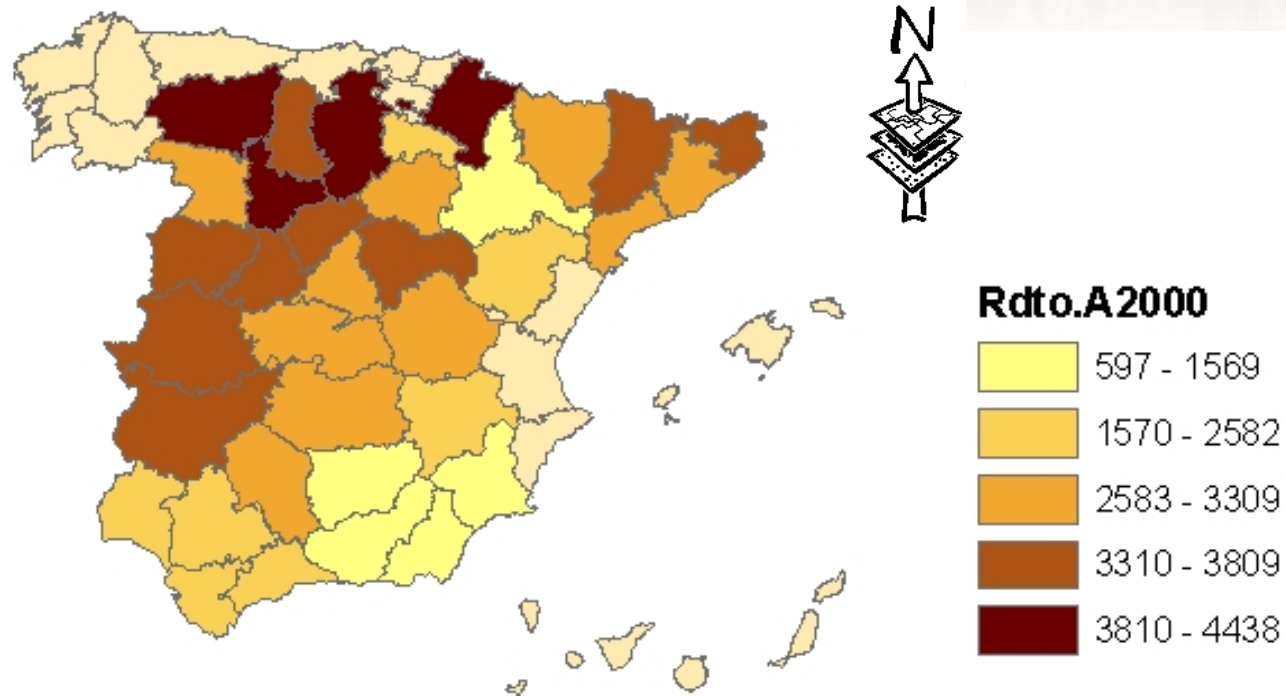


Histograma del riesgo de sequía para una serie de 30 años
Fuente: Agroseguro



SPANISH EXPERIENCE

DISTRIBUCIÓN TERRITORIAL DE RENDIMIENTOS DE CEREALES

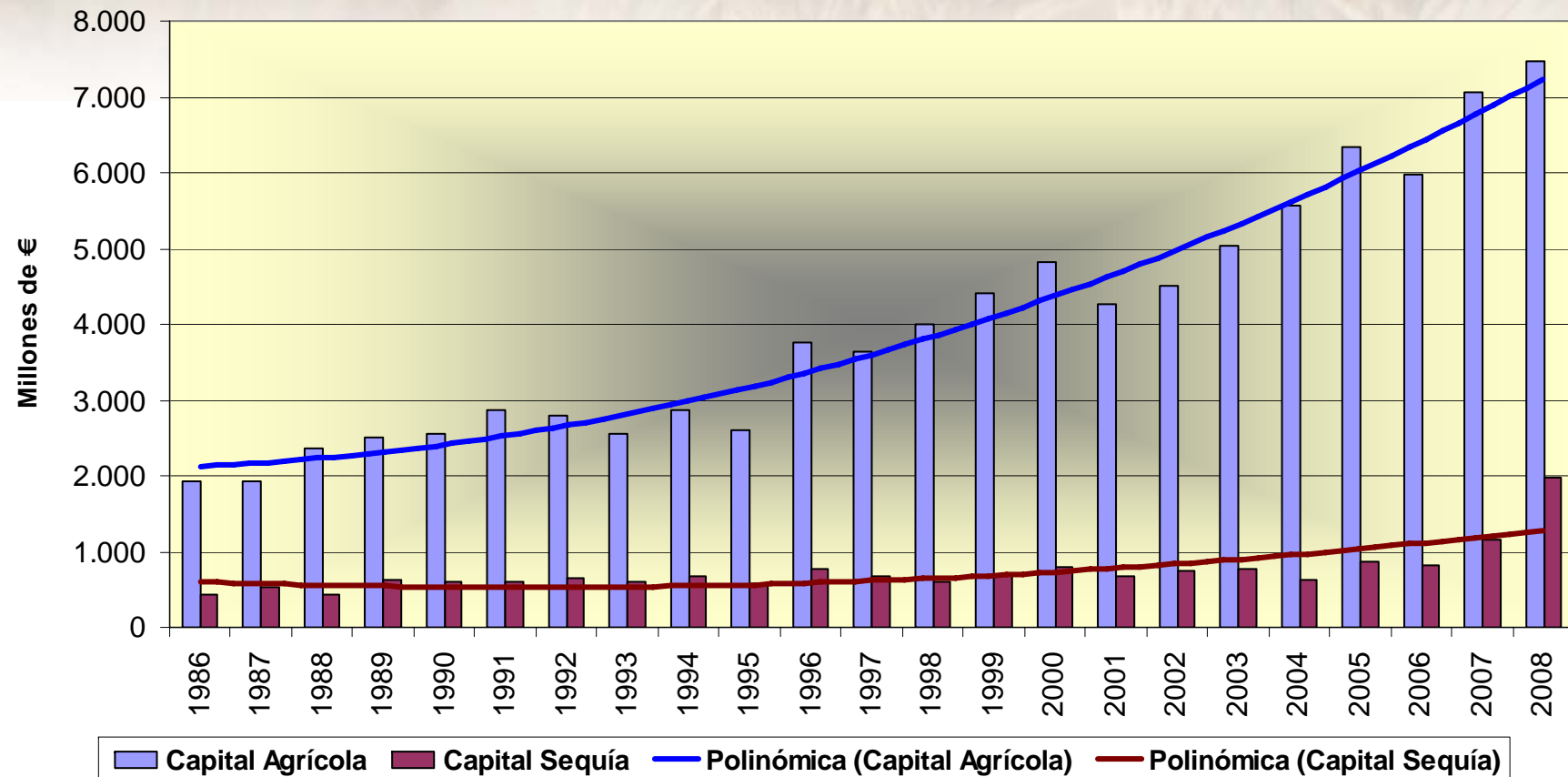


Rendimientos provinciales de cereales campaña 2000
Fuente: Agroseguro



SPANISH EXPERIENCE

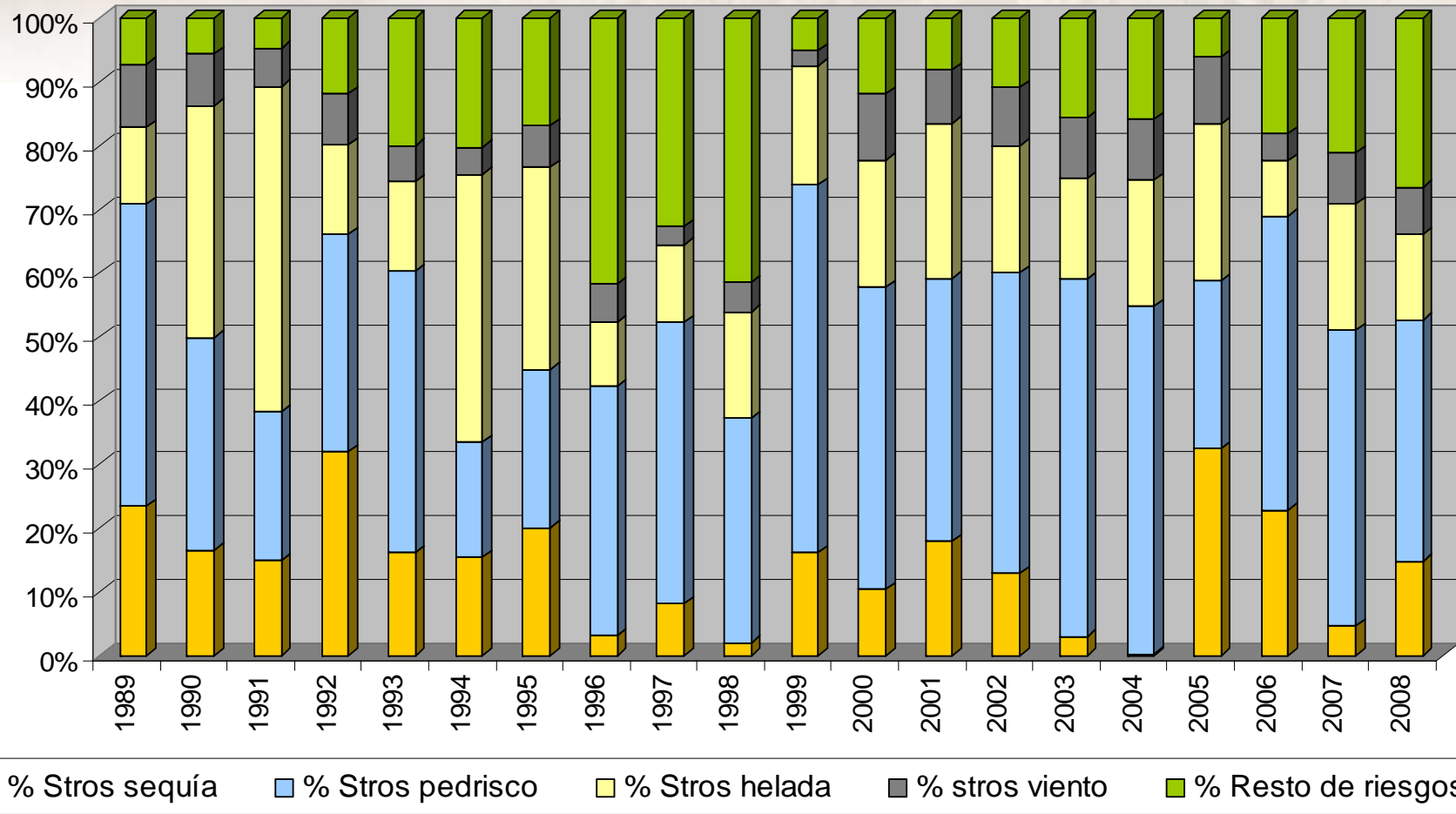
DISTRIBUCIÓN DE LOS VALORES ASEGURADOS EN LÍNEAS AGRÍCOLAS





SPANISH EXPERIENCE

IMPORTANCIA DEL RIESGO DE SEQUÍA EN LA CARTERA



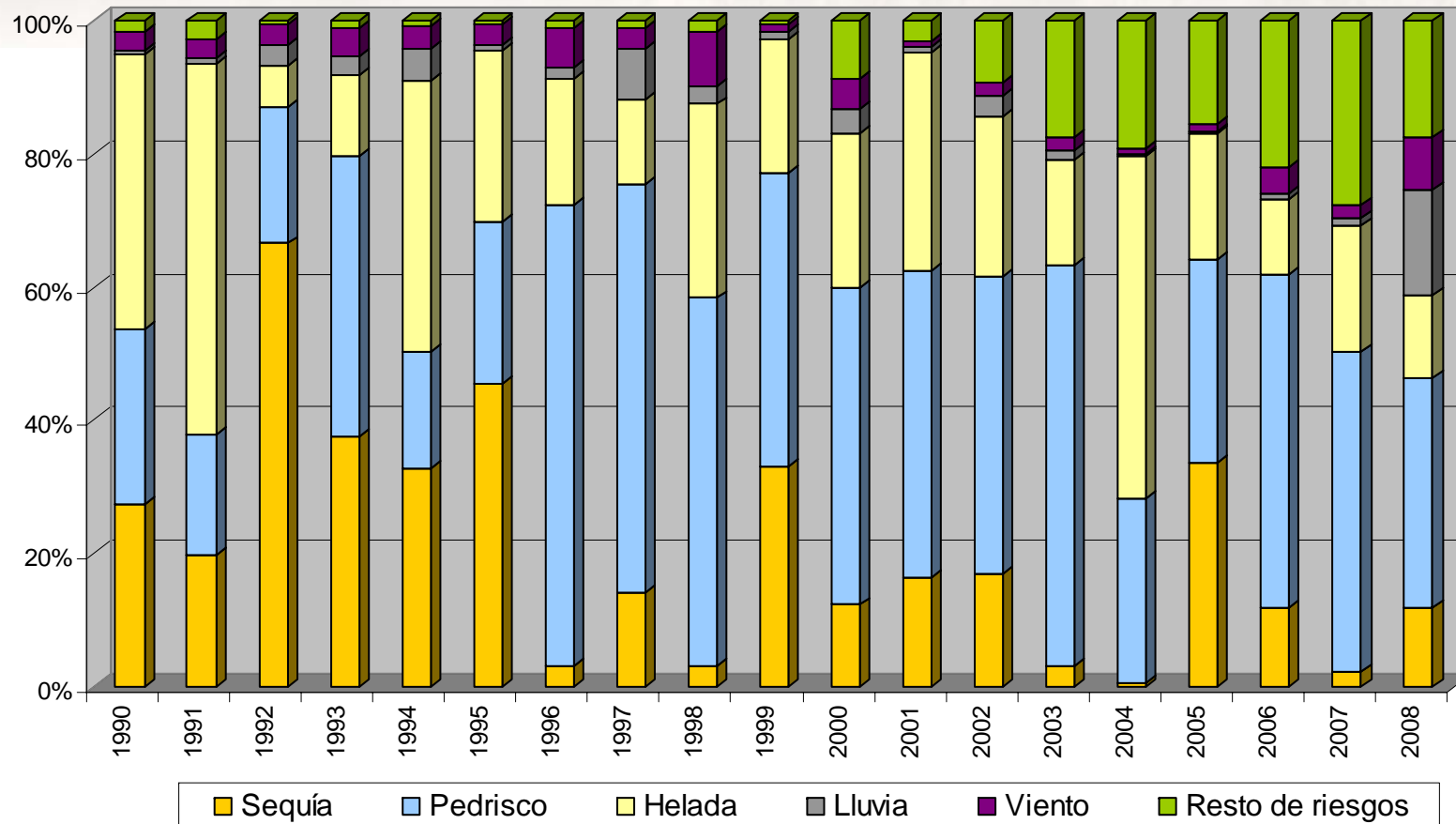
Fuente: Agroseguro





SPANISH EXPERIENCE

IMPORTANCIA DEL RIESGO DE SEQUÍA EN LA CARTERA



Fuente: Agroseguro



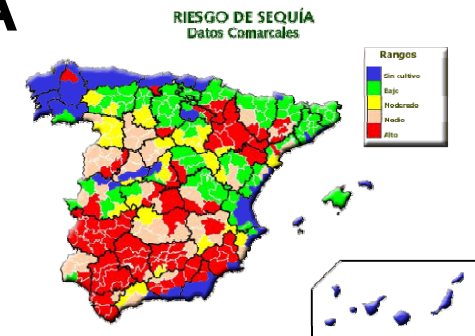


SPANISH EXPERIENCE

RIESGO DE SEQUÍA ASEGURADO EN NUESTRO MODELO (II)



TARIFAS ESPECÍFICAS PARA CADA CULTIVO Y ZONA

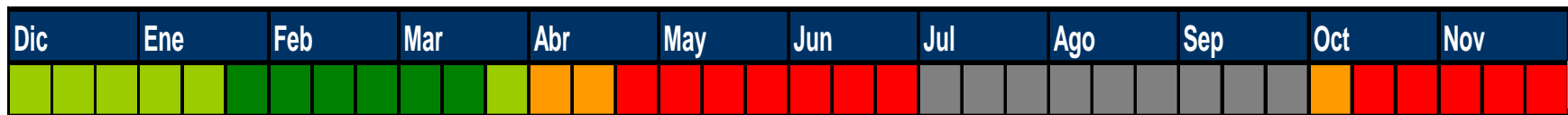
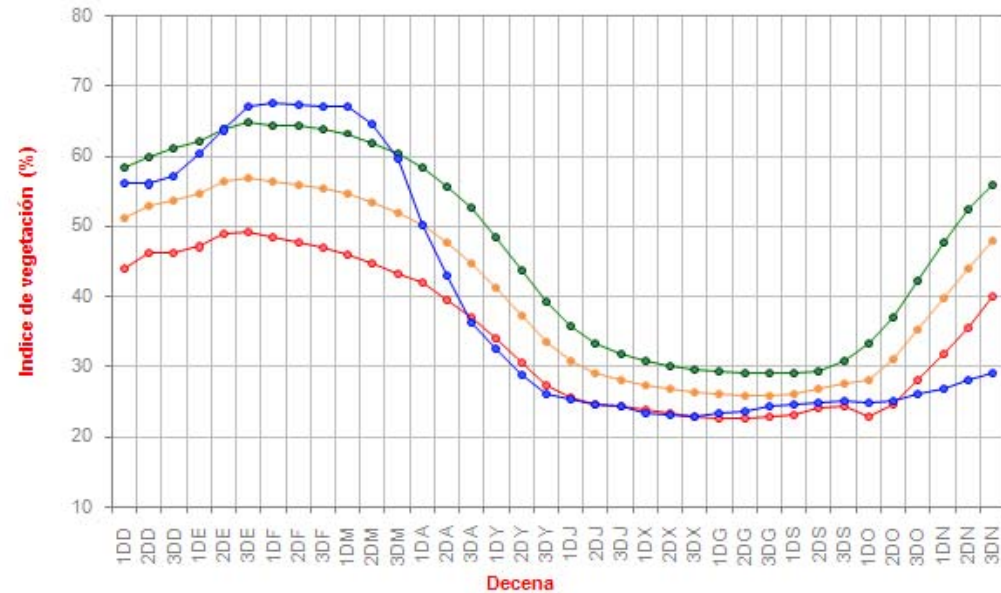


NORMAS DE PERITACIÓN ESPECÍFICAS POR CULTIVO



INSURANCE CHARACTERISTICS

- **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



Guaranteed stratum		Tens
NDVI-A > AVERAGE		3
AVERAGE > NDVI-A > A		12
A > NDVI-A > B	A	
B > NDVI-A	B	
No coverage		