EO-based NDVI agricultural insurance product for the Spanish market by Agroseguro

Context

The *Agrupación Española de Entidades Aseguradoras de los Seguros Agrarios Combinados S.A.* (**AGROSEGURO**) is in charge of managing the agricultural insurance on the Spanish market on behalf of the shareholding insurance companies, insuring productions such as crops, livestock, aquaculture and forestry.

Previously the animal breeder was not covered against damage caused by the lack of pastures. **Insurance against lack of pastures was developed** in 2001, based on the **NDVI (Normalized Difference Vegetation Index)**. This index measures the quantity and lushness of vegetation. The indemnity is calculated based on the extra cost for feeding animals when there is not enough pastures due to a climatic event (usually drought).

Project

A **map of land uses for pastures was established and divided into homogeneous areas, based on CORINE Land Cove.** During 2001-2009, **NOAA satellite** images were used to set the index, and since 2010 images changed to **Terra & Aqua satellites**, as they had accumulated a sufficient historical record and could provide a better pixel resolution. Currently, the satellites make a **daily pass through the Iberian Peninsula**, and **each pixel has a size of 6.25 hectares (250 m x 250 m).** The vegetation index is calculated **every ten-days period** by the Remote Sensing Laboratory of the University of Valladolid. A pay out occurs when the vegetation index is lower than the guaranteed vegetation index during **at least 3 ten-days periods**.

10 days	***250 m***
Index update	Pixel size

Results

The number of insurance policies jumped from 63 in 2001 up to between 4,000 and 5,000 each year since 2004, and totalling around EUR 11.5 million of premiums in 2015. This product as led to a **reduction of the insured producers input costs (mainly due to drought).** In 2005 more that EUR 65 million were paid to producers and in 2012 indemnities to producers amounted to more than EUR 40 million. Over the 2001-2015 period, the total indemnities paid amounted to EUR 167.22 million with more than 60,000 claims declared by producers**.**

Index insurance for pastures has also **social and environmental impact**, as it allows producers to maintain their farm's viability contributing to the rural economy.

4200	***EUR 167 M***	***60,000***
insured	Pay-outs	claims

Copernicus enabled revenues

Based on Spanish market size and the share of meadows and pastures in Spain with regards to Europe, a **broad estimate of the potential market value for livestock index insurance in Europe can be evaluated around EUR 516 million**.

Copernicus can provide the NDVI index through Sentinel 2A (spectral bands 4 and 8), but there remains uncertainty on the final market penetration of the Sentinels. On the assumption of a share of Sentinels of about 1/3 of the total by 2025, the Copernicus enabled revenues for the European index products market can be estimated around EUR **172 million**.

EUR 172 M
Projected enabled revenues by Copernicus