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Evaluation of Earth Observation Products and Their Potential for Crop Damage and Crop Loss Assessment. The Case of Beacon Project.

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Agricultural Insurance (AgI) sector is expanding on a global scale and is projected to grow by €50 B, by 2020. This rapid growth is driven by a set of fundamental structural changes directly affecting the agricultural sector like more frequent and severe extreme weather events, growing global population and intensification of production systems. Insurance solutions are set to grow in importance for agricultural management, given that agriculture will continue to be increasingly dependent on risk financing support. However, the development and provision of insurance services/products in the agricultural sector is generally low as compared to other sectors of the economy, and in their majority, suffer from low market penetration.

In that frame, the BEACON toolbox was born, that aims to provide insurance companies with a robust and cost-efficient set of services that will allow them i) to alleviate the effect of weather uncertainty when estimating risk of AgI products; ii) to reduce the number of on-site visits for claim verification; iii) to reduce operational and administrative costs for monitoring of insured indices and contract handling; and iv) to design more accurate and personalized contracts. Specifically, BEACON scales-up on EO data and Weather Intelligence components, couples them with blockchain, to deliver the required functions for Weather Prediction and Assessment and Smart Contracts and offer the required services:

- Crop Monitoring, which provides contract profiling and crop monitoring data together with yield estimations.
- Damage Assessment Calculator, which supports AgI companies in better assess and calculate damage to proceed with indemnity pay-outs of claims.
- Anti-fraud Inspector, which allows AgI to automatically check the legitimacy of a claim submitted.
- Weather Risk Probability, which provides probabilities maps of extreme weather events that may occur in the upcoming season.
- Damage Prevention/ Prognosis – Early Warning System, which provides extreme weather alerts to AgI providers and their customers.

This work focuses on the Damage Assessment Calculator component. It provides an approach using different types of EO data, implemented in the operational workflow of BEACON that can be used by AgI companies to improve the prediction and crop loss assessment due to drought and hailstorms.

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