

REINFORCING THE COMMON AGRICULTURE POLICY

Automated satellite-based Earth Observation services support the monitoring of farmers' compliance to Common Agriculture Policy (CAP) obligations.

The challenge

Paying Agencies (PA), responsible for the implementation of the Common Agriculture Policy (CAP), need to monitor farmers' compliance to certain standards concerning the environment. Monitoring is performed by in-situ visits and through remote sensing. Due to the high complexity and diversity of the obligations that need to be monitored, both methods have limitations, being evidently complex processes of poor transparency and entail a high cost for public administrations.

Space technology and use of Copernicus data offer better monitoring in agriculture, also supporting the implementation of the CAP. Through its service platform, the RECAP H2020 project responds to the CAP monitoring challenges providing advanced manual and fully automatic hybrid Earth Observation (EO) techniques, contributing to cost-efficient, transparent and reliable remote CAP monitoring.

The space based solution

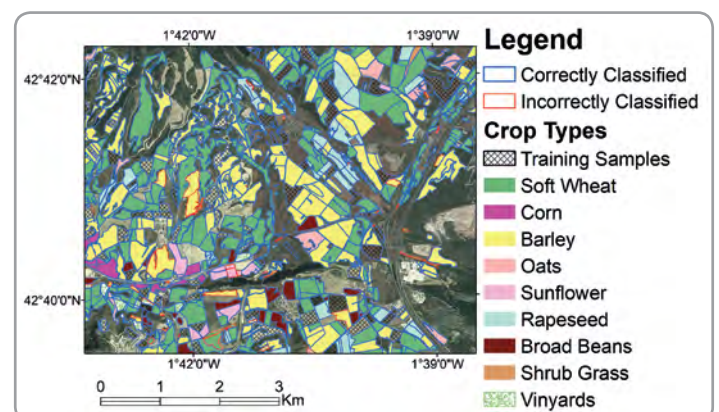
The introduction of the Sentinel mission enables optical and radar satellite data to be freely and systematically received on a global scale. With Sentinel-2's high temporal resolution of 5-day revisit time, consistent and timely monitoring of the agricultural land becomes feasible. Additionally, Sentinel-2's 10/20-m high spatial resolution enables the systematic provision of crop-specific biophysical parameters and accurate thematic information at parcel level. Here, we have developed and applied automated EO processing workflows, to assist the regional paying agency inspections with respect to farmers' compliance to their CAP obligations; predictably at operational level. The methodology is founded on accurate crop type classification via machine learning application on a time-series of combined Sentinel-2 imagery and vegetation indices. Effective exploitation of crop phenology enables

the discrimination amongst 9 crop types, which explains 90% of the regional agricultural zone. To further assist the paying agency inspectors, the described system delivers on demand Sentinel-2 true colour composites and pertinent vegetation indices; for all cloud free acquisitions within the year of inspection. Methods have been designed and developed alongside the end-users and stakeholders, under a co-creation/co-production scheme, to offer a mutually valued outcome.

Benefits to Citizens

The satellite-based RECAP solutions providing a remote compliance control system for specific rules of Cross Compliance and Greening, contribute to the reduction of the overall cost for performing the monitoring of the CAP implementation. Increased transparency and efficiency of the policy implementation is ensured alongside a simplified, personalised system of e-public services contributing to better use of public resources.

Competent authorities and service providers profit from the RECAP solution which allows them better allocation and saving of resources, enabling them to provide added value services to local farmers. Farmers profit from a system that guides and



Crop type classification using time-series of Sentinel-2 imagery, Navarra, Spain 2017

Thematic Area



AGRICULTURE,
FOOD, FORESTRY
AND FISHERIES

Region of Application



NAVARRRE

Sentinel mission used



S2

Copernicus Service used



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Usage Maturity Level

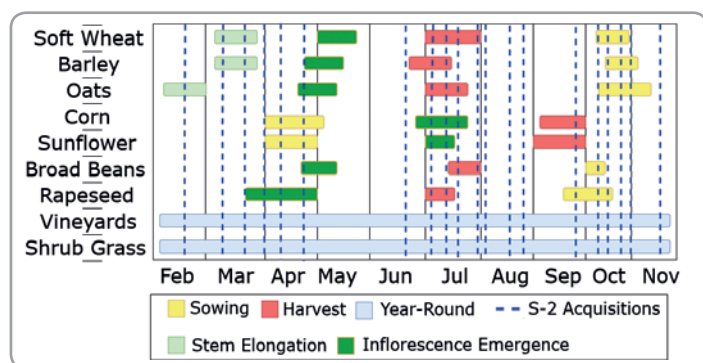


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notifies them of their obligations ensuring their compliance to the rules, whilst reducing their administrative burden. Such a proactive participation of the farmers in the monitoring procedure makes them an active part of the data collection chain enhancing communication, exchange of information and cooperation with the public administration, enabling the provision of more transparent public e-services.

Outlook to the future

The system has been applied and validated in the Navarra region, currently transitioning to an early adoption level. It has also been applied in two diverse pilot sites in Greece and Lithuania (involving the respective PA); where, for the first time, there is evident agricultural land fragmentation, whilst for the latter, Sentinel-2 cloud-free imagery is scarce. The results, however, are comparable in accuracy; attributed to the unique spatial and temporal characteristics of the Sentinel-2 data. Since the methods were designed to be fully transferable, by merely utilising open access EO data, the scalability to country or even European scales is top priority. In that respect, the Copernicus Data & Information Access Services (DIAS) can act as an enabler for the operational and large-scale application of the scheme, in terms of both data and processing requirements.



Chronogram of key crop phenological stages and all cloud free Sentinel-2 acquisitions in 2017.

“Space-based services enable paying agencies to improve transparency, reduce administrative burden and efficiently monitor farmers’ compliance to CAP obligations.”

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ABOUT COPERNICUS4REGIONS

This Copernicus User Story is extracted from the publication “**The Ever Growing use of Copernicus across Europe’s Regions: a selection of 99 user stories by local and regional authorities**”, 2018, Edited by NEREUS, the European Space Agency and the European Commission.

The model cases focus on local and regional authorities who successfully applied Copernicus data in 8 major public policy domains. The views expressed in the Copernicus User Stories are those of the Authors and can in no way be taken to reflect the official opinion of the European Space Agency or of the European Commission.

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