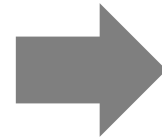
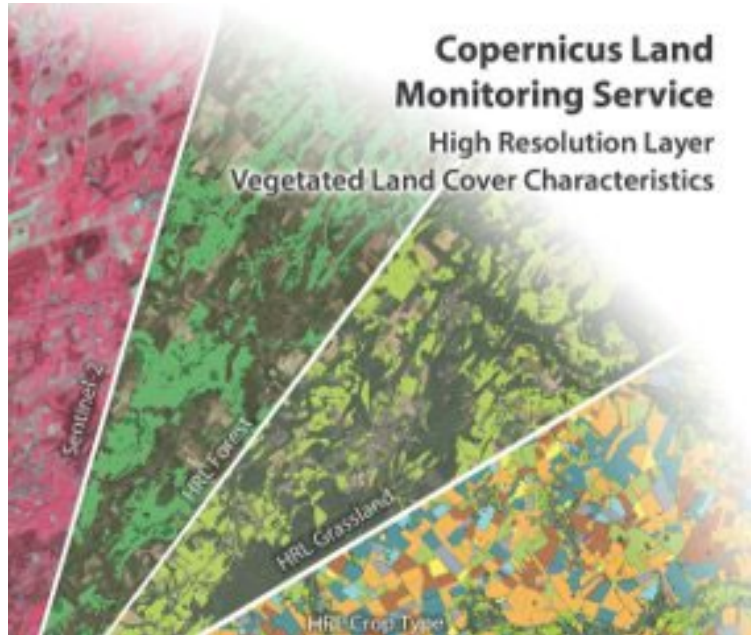


From space to policy: exploiting Copernicus data to evaluate agricultural policies

Urraca R, Claverie M, Iordanov M, Marcatonio M,
Martinez-Sanchez L, van der Velde M

JRC D.5

Copernicus HRL-VLCC



HRL CROPLANDS

Crop map (CTY)	19 crop classes
Main season	Duration Emergence Harvest
Secondary season	Duration Emergence
Bare soil	Duration before main crop Duration after main crop
Fallow land	Fallow year [True/False] Duration (5-year period)

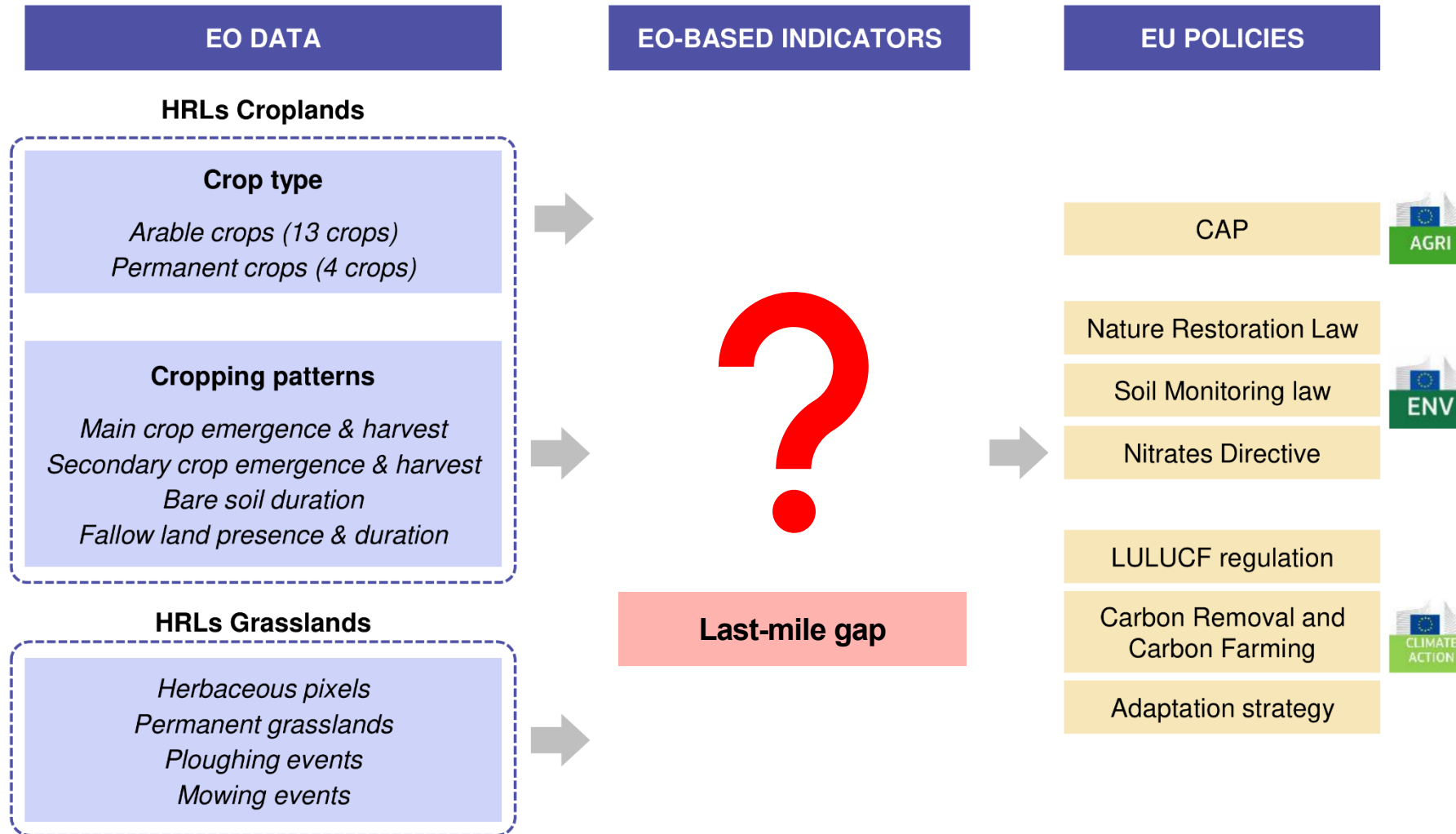
HRL GRASSLANDS

HER	All grasslands
GRA	Permanent grasslands (> 5 years)
Mowing	Number of mowing events Mowing dates

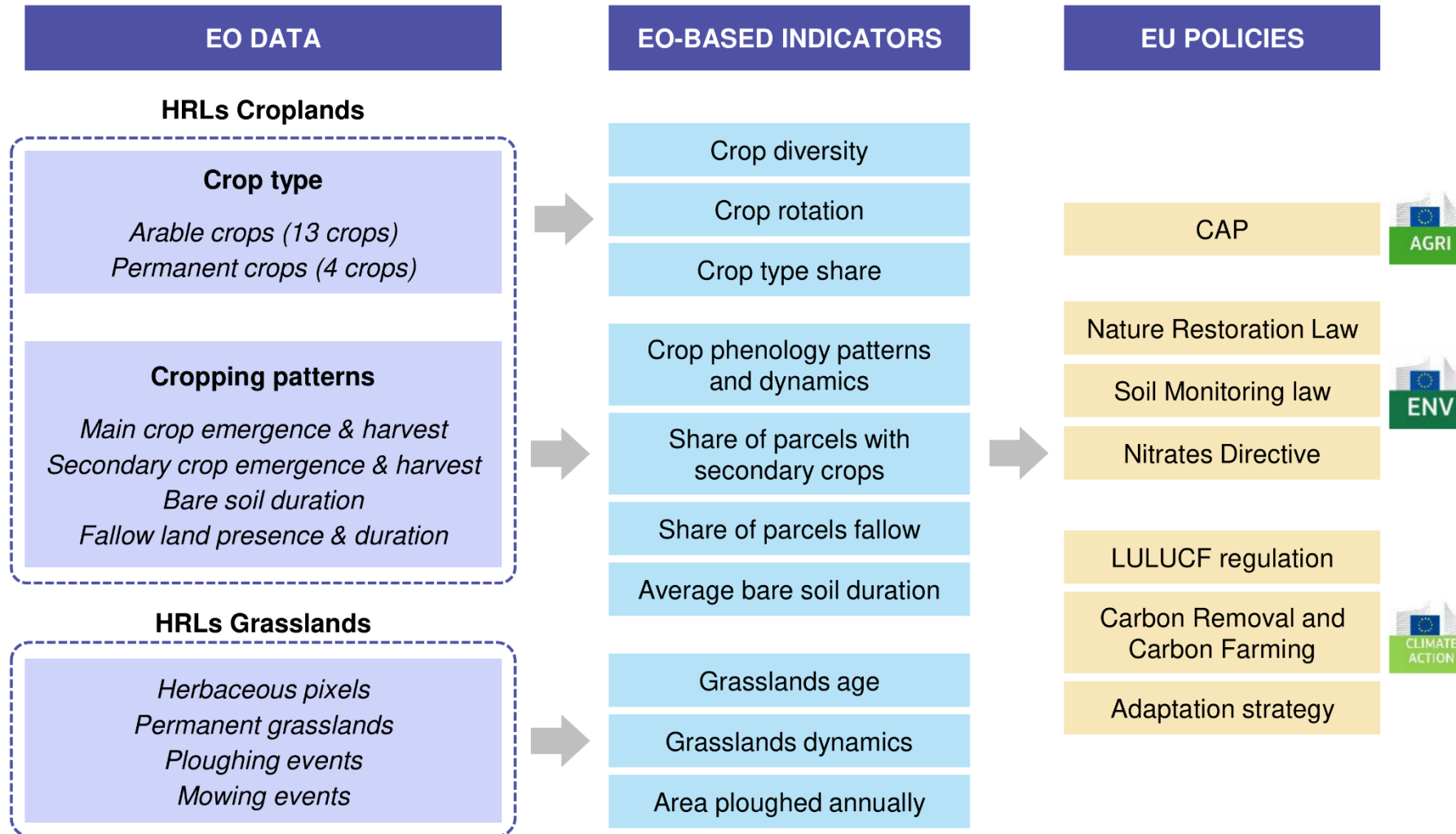
DATA SPECS

Spatial resolution	10 x 10 m
Spatial coverage	EEA-38
Temporal resolution	Annual
Temporal coverage	2017-23 (2024 by April)
Timeliness	2 year lag (target = 1 year)

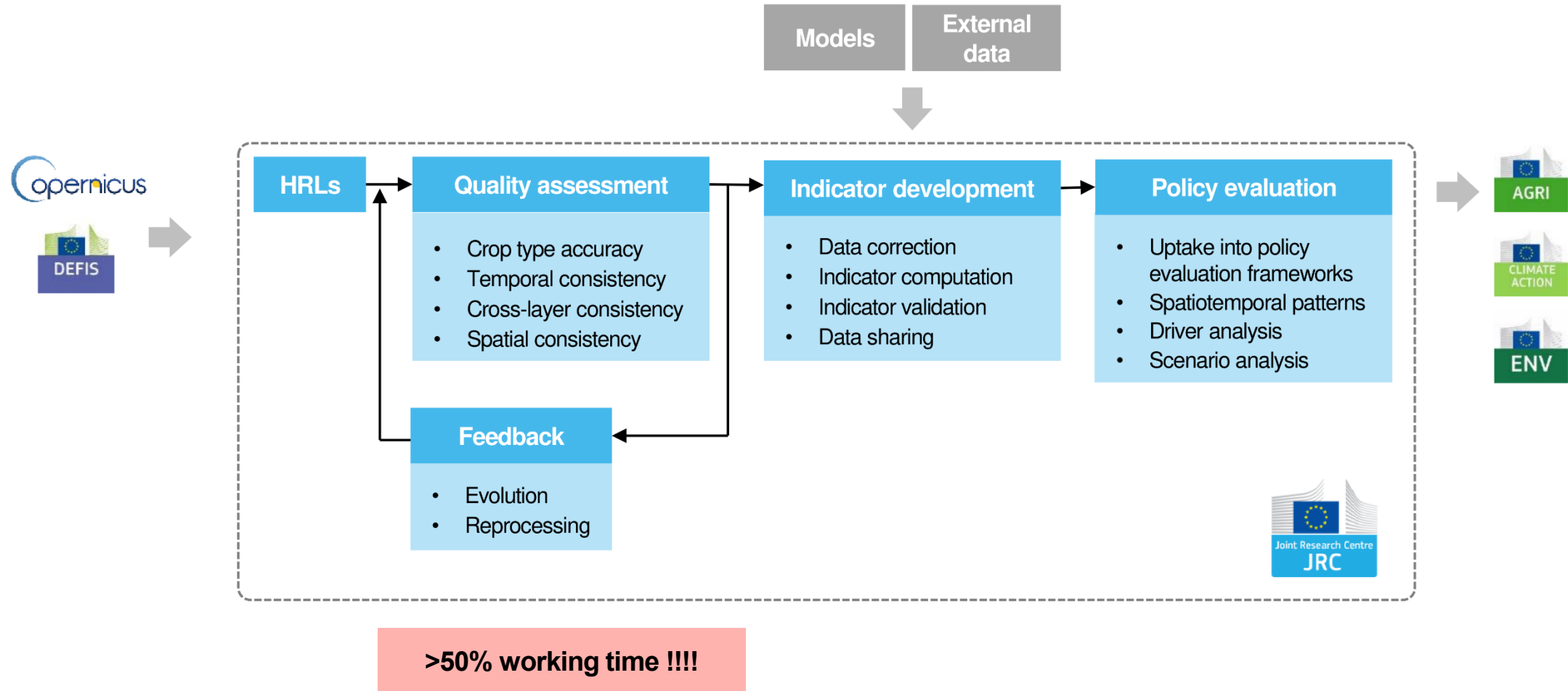
EO-based indicators for policy evaluation



EO-based indicators for policy evaluation



A framework to produce EO-based indicators



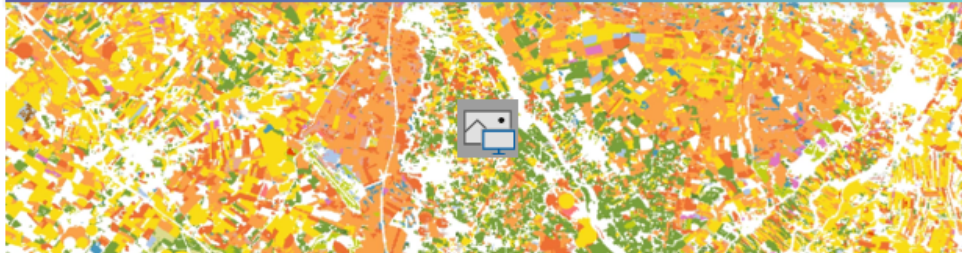
JRC outputs

SCIENCE FOR POLICY BRIEF



Joint Research Centre

SCIENCE FOR POLICY BRIEF



Evaluating agricultural policies from space

2026

HIGHLIGHTS

- ▶ The Copernicus High Resolution Layers on Vegetated Land Cover Characteristics (HRL-VLCC) for Croplands and Grasslands offer new opportunities to evaluate agriculture and nature policies and practices. The Joint Research Centre (JRC) is assessing their quality for policy evaluation and developing indicators on crop diversity, crop rotation, secondary crops, crop phenology, and grassland age.
- ▶ Despite overall high quality, JRC assessments have identified some issues such as impossible land cover sequences, or temporal overlaps between cropping seasons. The JRC is developing corrected layers to support more reliable policy evaluation and giving feedback to the Copernicus Land Monitoring Service to further enhance the HRL-VLCC.
- ▶ Systematic reprocessing of EO data is essential to ensure the effective uptake of the data in policy evaluation. It requires the development of temporal stability in policy evaluation with

SCIENTIFIC PUBLICATION

1) Current data sources in CAP PMEF indicators

2) List of potential HRL indicators

3) Mapping HRL indicators to CAPM PMEF indicators

- Direct support: EO data
- Indirect support: EO data + models
- New indicators: cover crops, soil cover, crop phenology, grasslands

4) Opportunities

- Reporting burden reduction: EO indicators replacing administrative data or surveys
- Policy harmonization potential: EO indicators supporting CAP and other policies from ENV and CLIMA
- Information gain: monitoring new agricultural practices

5) Challenges

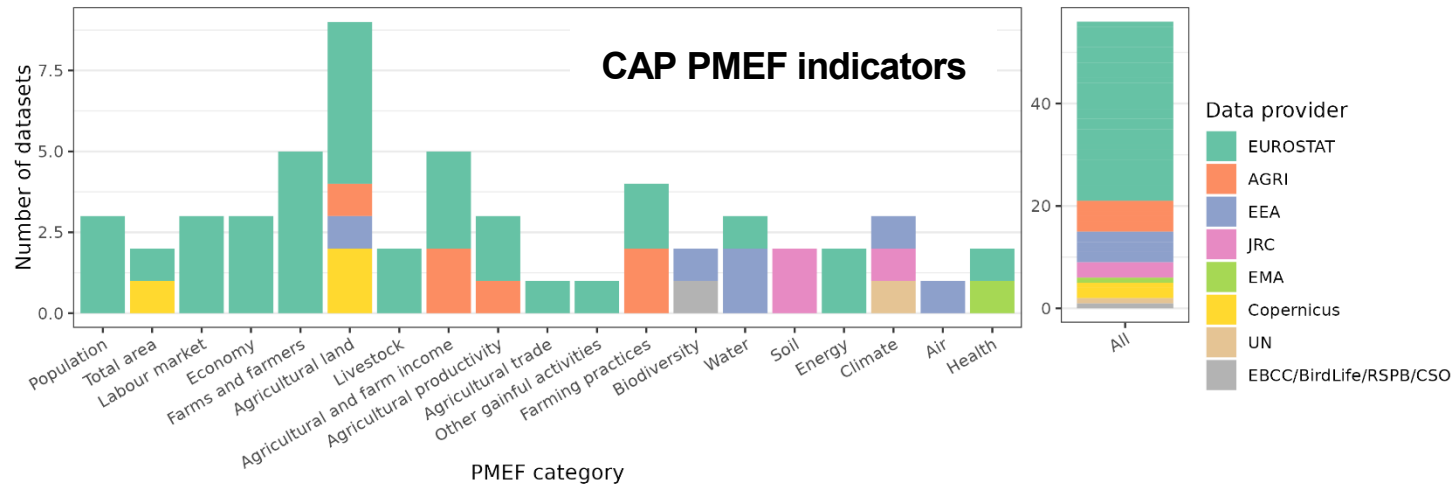
Key challenges

CHALLENGES	RECOMMENDATIONS
Data quality	Need for flexible mechanisms to correct quality issues without long delays, including reprocessing historical data to ensure temporal stability for ex-post evaluation
Last-mile gap	Need for a clear governance framework defining which entity is responsible for the operational production of these indicators (Copernicus services?)
Policy acceptance EO data characteristics differ from traditional data sources used for policy evaluation	Collaboration with policy DGs and Member States Comparison and integration of EO indicators with traditional data sources
Indicator redundancy Some indicators can be produced with EO, admin data and statistics	Some admin or statistics data could be suppressed, reducing reporting burden of MS and farmers Traditional data sources will be always needed for calibration and validation, but EO could be used as an independent data source



Interaction between EO and official statistics

1: Integrate and/or replace traditional statistics by EO

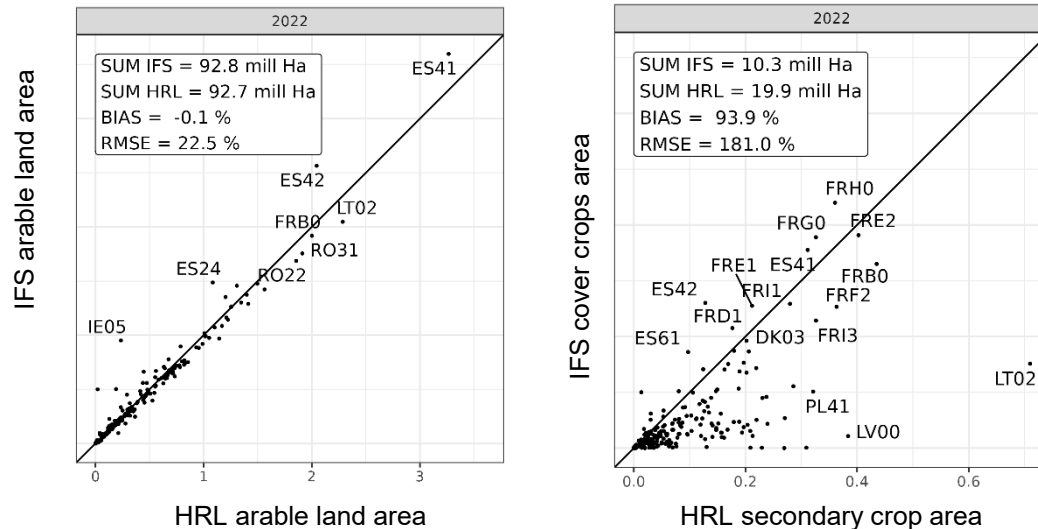


EUROSTAT provides 35 out of 49 CAP PMEFA context/impact indicators

The uptake of EO-based indicators will

- Reduce the reporting burden of MS
- Offer an independent data source at European scale

2: Use statistics to validate EO models



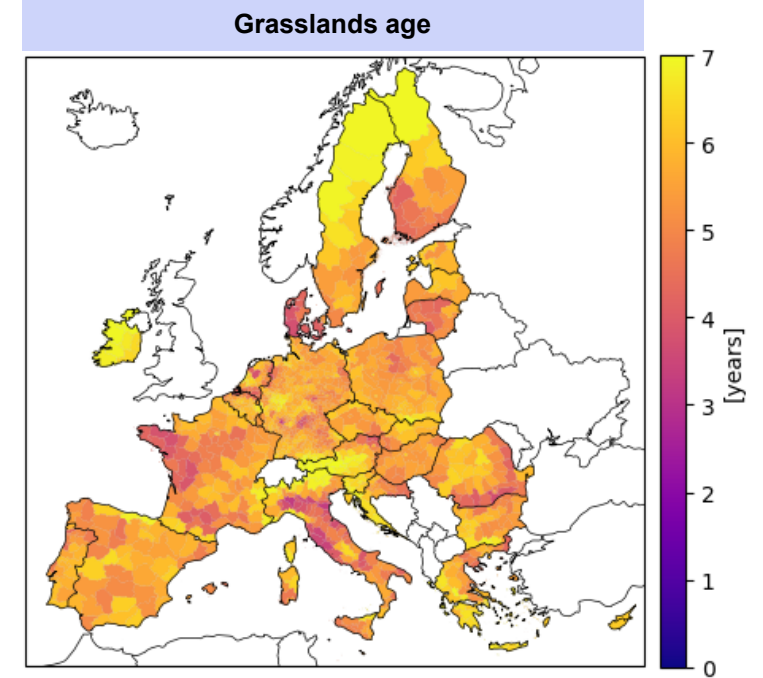
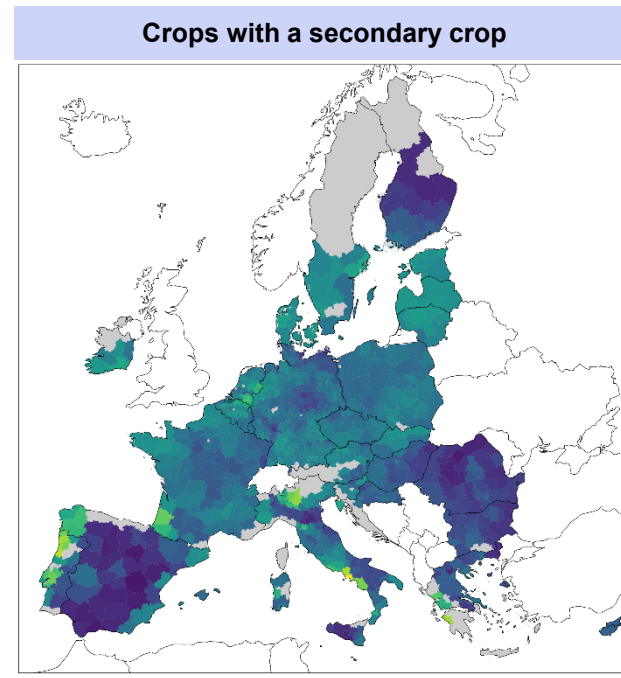
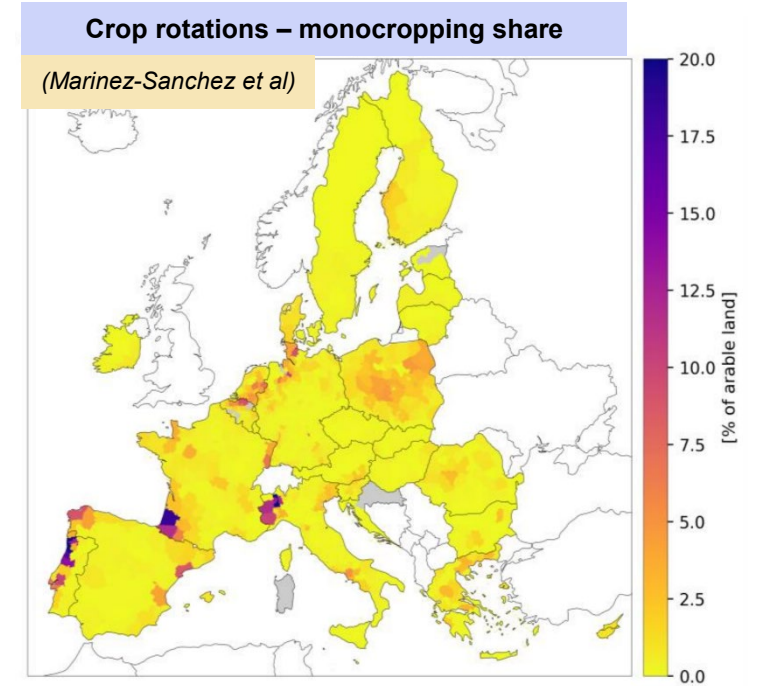
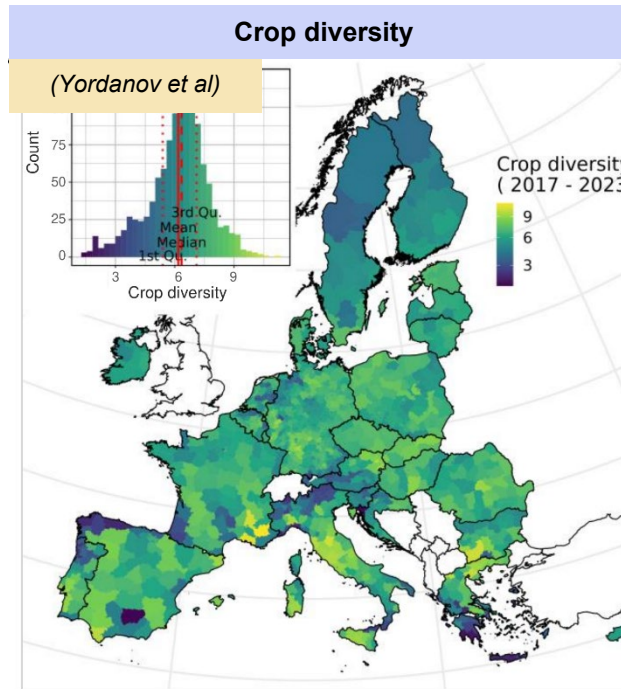
... but EO datasets will always require reference data for calibration and validation



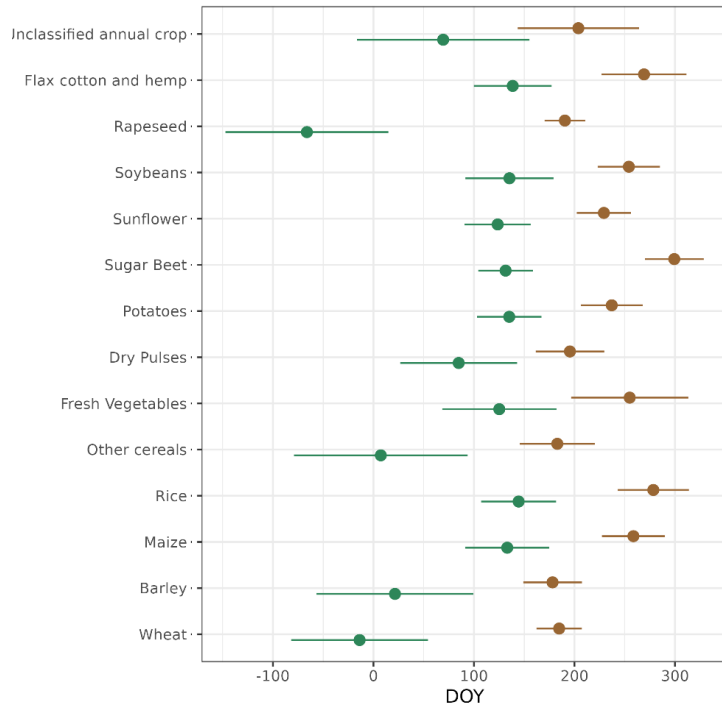
Specific indicators



Indicators

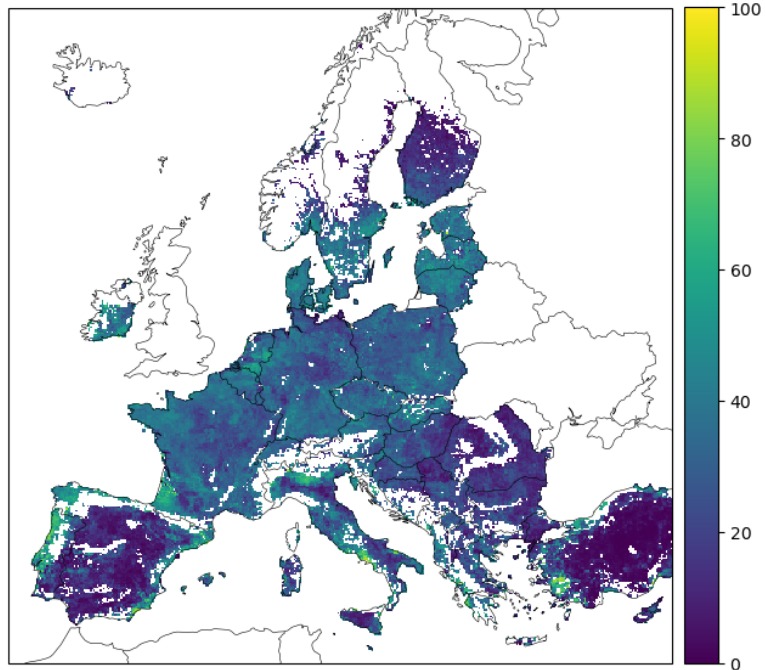


Crop calendar

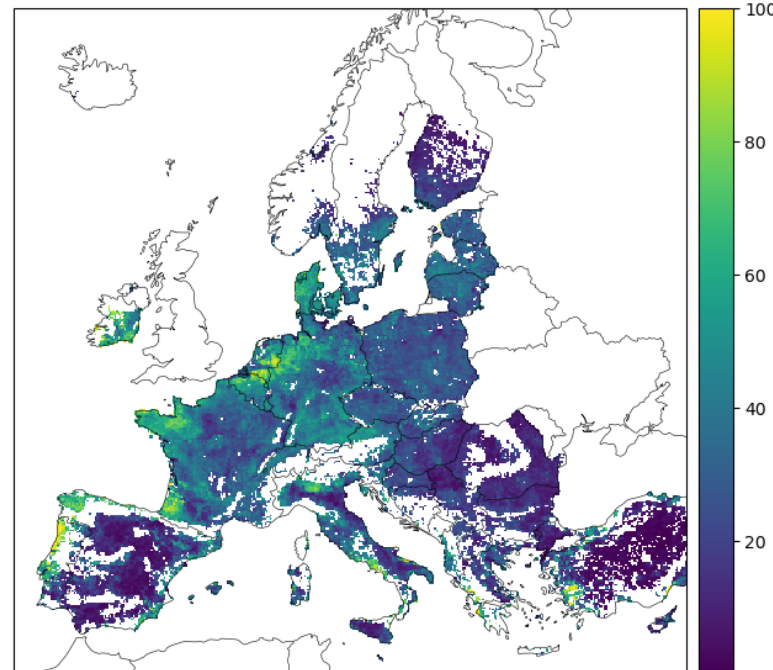


Secondary crops: potential sub-indicators

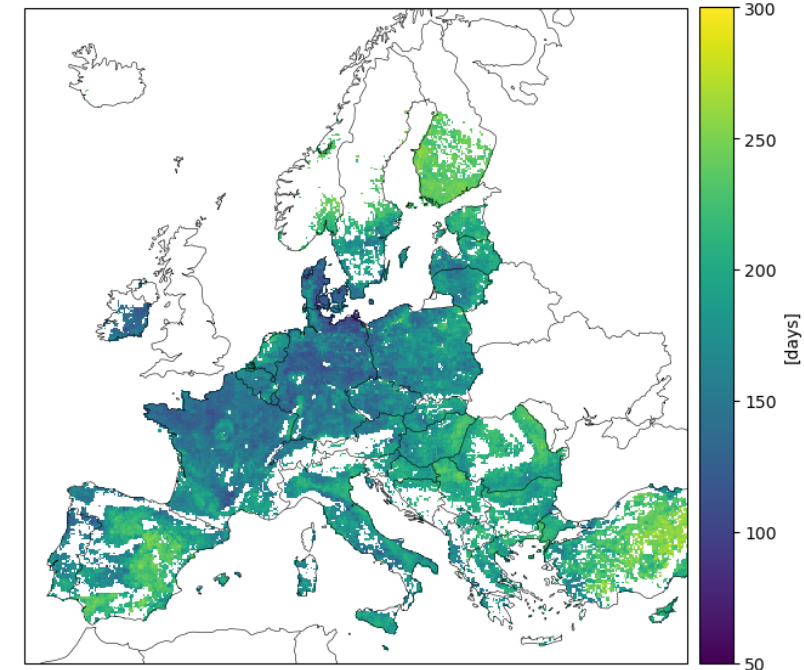
Main crops with a secondary crop
[%]



Effective secondary crop duration
[days]



Days available to extend secondary crops
[days]

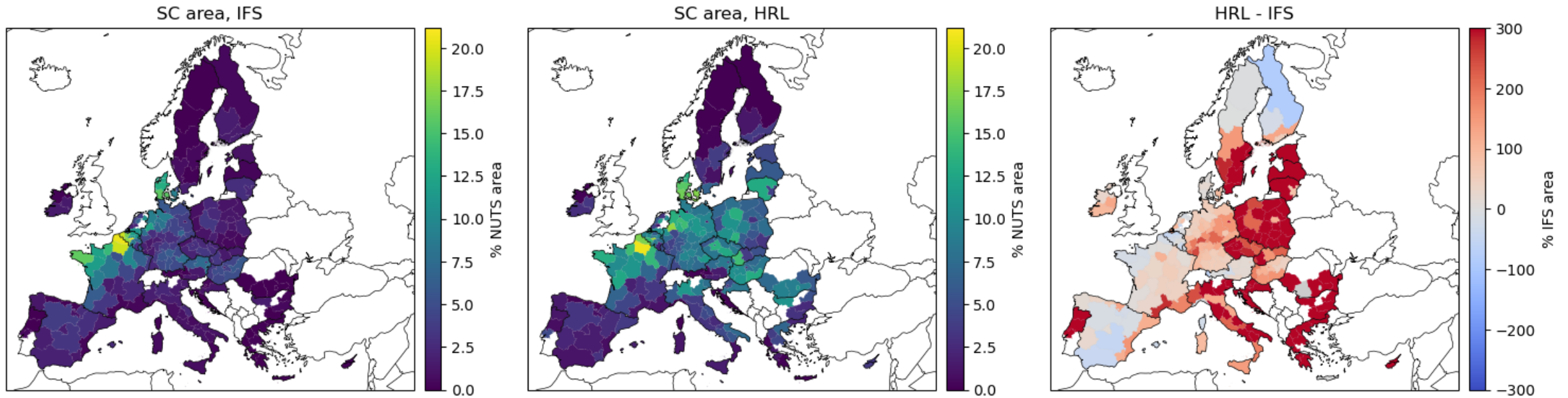


Evaluate the effectiveness of CAP eco-schemes and agrienvclim commitments on cover crops

Monitor biogas production – energy cover crops

Input for models on nitrogen balance, carbon emissions or soil erosion

Secondary crops: validation against statistics



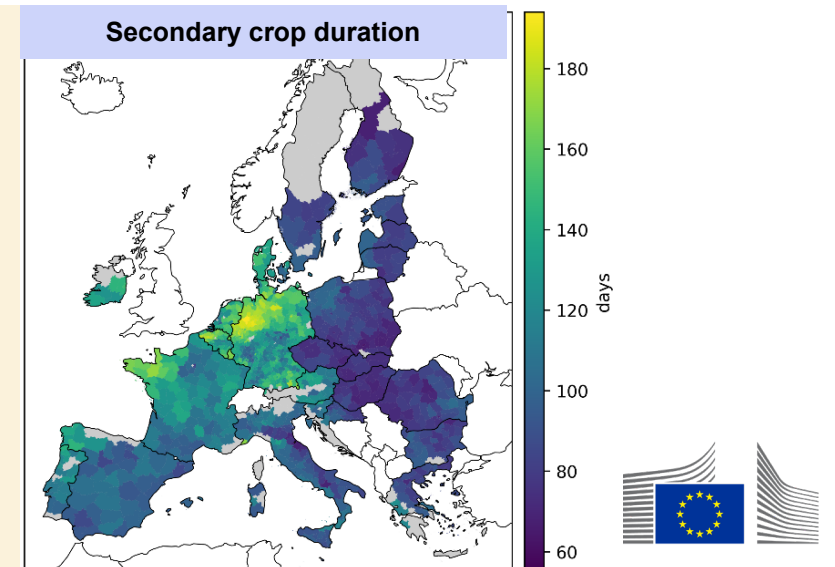
HRL secondary crops area = 2 x IFS cover crop area

HRLs include IFS cover crops (NW Europe: strong CAP commitments + biogas production)

HRLs show secondary crops in Eastern countries and Italy, where there are no cover crops according to IFS.

- HRL secondary crop = any FAPAR signal from Sep to Jan
- Secondary crops in Eastern countries last 40 days less because they are “harvested” 40 days earlier (end of November)

Hypothesis: SC layer may capture natural regrowth



Thank you

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