

Agrobiodiversity and agroecology: state of the art and opportunities in EU policy

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Agrobiodiversity and agroecology in EU policy

Enhancement and conservation of biodiversity, including agrobiodiversity, has been the target of EU policies already for some decades.

Agroecology, on the other hand, is not yet explicitly part of EU legislation (i.e. part of funding schemes under the current CAP), but starts to be recognised as viable way to improve farming environmental performance.

Agrobiodiversity and agroecology in EU policy and international initiatives

- **Nature policy**
- **Common Agricultural Policy**
- **Climate policy**
- **Research policy**
- **International Cooperation and Development**

- **2030 Agenda for Sustainable Development**
- **Sustainable Development Goals**
- **European Consensus on Development**

Some milestones - 1

EU Biodiversity Strategy to 2020

- **Target 1: 100% more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status; 50% more species assessments under the Birds Directive show a secure or improved status.**
- **Target 2: By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.**
- **Target 3: By 2020, maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement(*) in the conservation status of species and habitats that depend on or are affected by agriculture and in the provision of ecosystem services as compared to the EU2010 Baseline, thus contributing to enhance sustainable management.**

Some milestones - 2

Public consultation "Modernising and Simplifying the Common Agricultural Policy"

- **The public consultation highlights the fair standard of living for farmers, the pressures on the environment and climate change (both mitigation and adaptation) as the three most pressing challenges that EU agriculture and rural areas have to face.**
- **As regards the specific environmental challenges, clear priority is given by respondents (both farmers and non-farmers) to the protection of biodiversity, reduction of soil degradation and a more sustainable use of pesticides and fertilisers.**

Some milestones - 3

CAP post2020

- **The Commission Communication on "The Future of Food and Farming" identifies "nature-based solutions" among innovations that "can serve the multifunctionality of EU agricultural and food systems".**
- **Nature based solutions: there is growing recognition and awareness that nature can help provide viable solutions that use and deploy the properties of natural ecosystems and the services that they provide in a smart, 'engineered' way. Working with nature, rather than against it, can further pave the way towards a more resource efficient, competitive and greener economy.**

Some milestones - 4

CLIMATE

In the draft LULUCF regulation (12/2017), the EU refers for the first time to agro-ecology and agro-forestry that "can enhance the role of the LULUCF sector in relation to climate mitigation and adaptation, as well as strengthen the productivity and resilience of the sector".

In addition, sustainable agriculture and improved agricultural nutrient, livestock and soil management are mentioned in various agreements on climate change to counteract the effects of global warming.

Some milestones - 5

RESEARCH AND INNOVATION

- **The Horizon 2020 Specific Programme clearly identifies the provision of ecosystem services and public goods for a sustainable agriculture and forestry in the Societal Challenge 2. Agroecology is explicitly mentioned in a few calls. Other calls focus on diversity, resilience, efficiency, recycling and circular economy, which are characteristic of the agroecological approach.**
- **The EIP-AGRI (European Innovation Partnership) was designed as a key initiative for co-creation and sharing knowledge and turning salient features of ecological approaches into innovation actions**
- **One of the five priorities in the “Strategic Approach to EU agricultural research & innovation” is the promotion of “integrated ecological approaches from farm to landscape level”.**

Some milestones - 6

International Cooperation and Development

- **Tackling climate change and environmental degradation is embedded in DG DEVCO's broader approach to sustainable agriculture, which binds together environmental, economic and social aspects of food production. Profitability and healthy ecosystems should not be regarded as opposed; addressing climate change and environmental degradation is key to achieve resilience.**

Sustainable Development Goals

Agroecology is related to the following SDGs:

- **the eradication of poverty (1) and hunger (2),**
- **ensuring quality education (4),**
- **achieving gender equality (5),**
- **increasing water-use efficiency (6),**
- **promoting decent jobs (8),**
- **ensuring sustainable production and consumption (12),**
- **building climate resilience (13)**
- **halting the loss of biodiversity (15)**

European Consensus on Development

The new European Consensus on Development

'Our world, our dignity, our future'

The EU and its Member States will support agroecological practices and actions to reduce post-harvest losses and food waste, as well as to protect soils, conserve water resources, halt, prevent and reverse deforestation, and maintain biodiversity and healthy ecosystems.

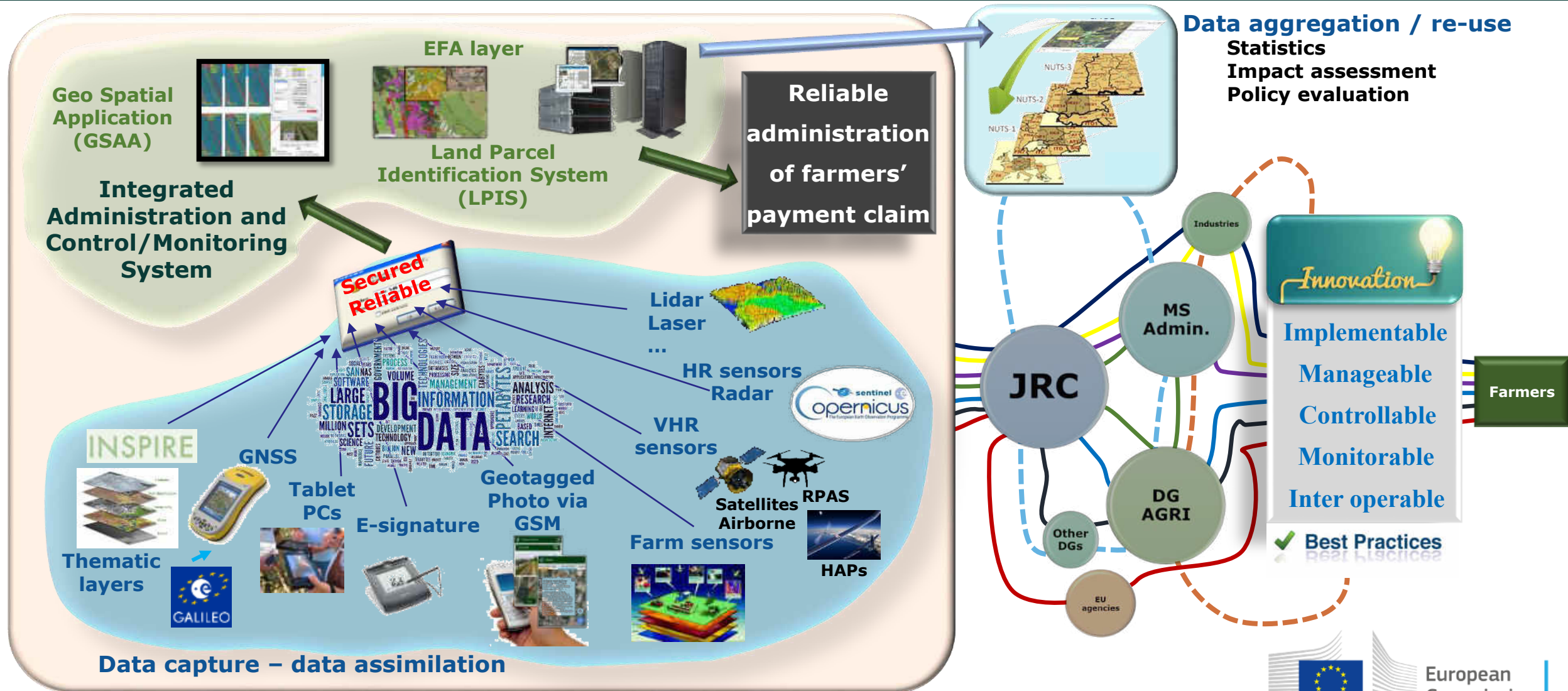
But... what is agroecology?

Different actors and initiatives seek for solutions that can be fostered by agroecology.

Agroecology is a science, and is an approach to design nature-based solutions and manage agroecosystems that mimic natural processes, applying ecological concepts and principles. Such design addresses the whole agroecosystem in all its aspects, jointly: soil, water, trophic chains of plants, pests and their predators, biogeochemical cycles, etc.

The joint application of the agroecological principles provides the simultaneous supply of food and other biomass, and maximization of the supply of regulating and cultural ecosystem services. These principles, applied in ways adapted to local specific contexts, inform approaches of organic farming systems, agroforestry, permaculture, and others.

Harvesting innovation: New technologies for the CAP @ JRC



Harvesting innovation: CAP Implementation Support Activities @ JRC

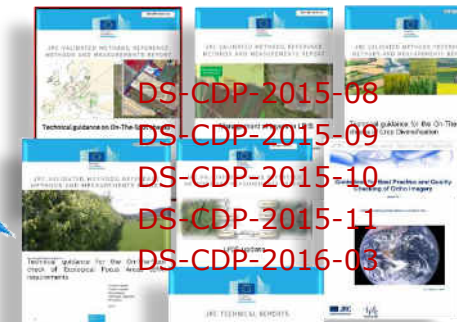
Image acquisition management



Area measurement device validation

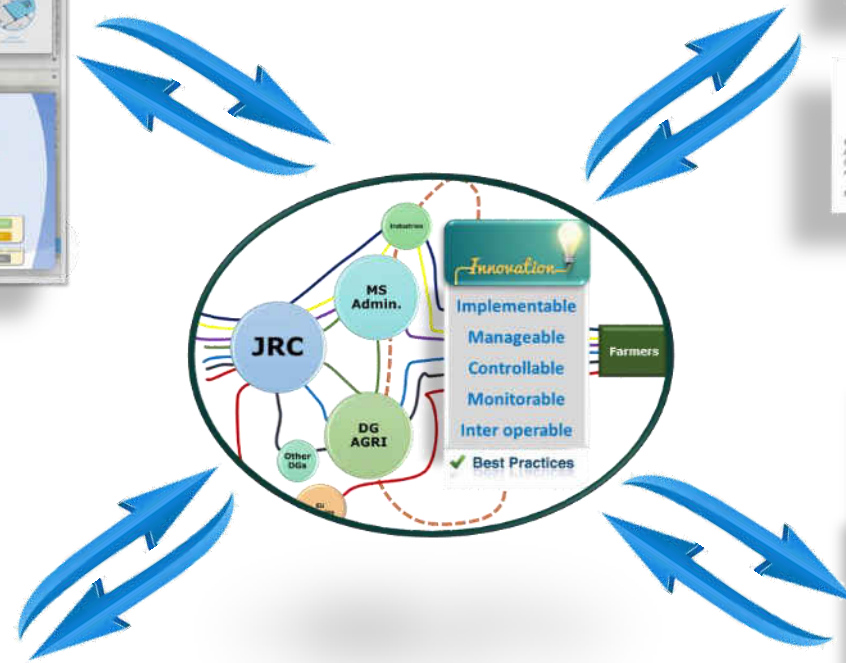


Technical guidance



DS-CDP-2015-08
 DS-CDP-2015-09
 DS-CDP-2015-10
 DS-CDP-2015-11
 DS-CDP-2016-03

Monitoring
 DS CDP 2017 03



WikiCAP Portals



Exploring novel ways to monitor rural landscape

- Copernicus Sentinels, smart-surveying, crowd-sourcing, street-level imagery, social media, citizen science...
- Data re-use (e.g. LPIS) and data integration

Digital farm management platforms



Street-level imagery



Crop recognition



d'Andrimont, R., Lemoine, G., & van der Velde, M. (2017). Harnessing big data for agriculture monitoring: combining remote sensing, open access data and crowdsourcing. In *Big data from space 2017*.

Flowering of rapeseed (example)

Social media campaign (ER YELLOW)



Farmers...



Photographers...



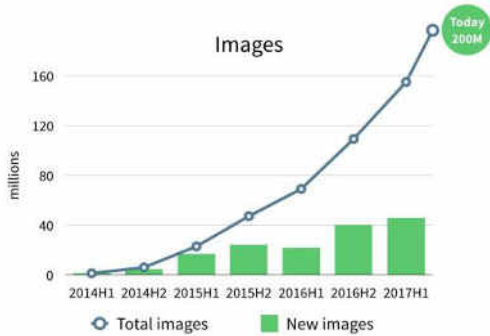
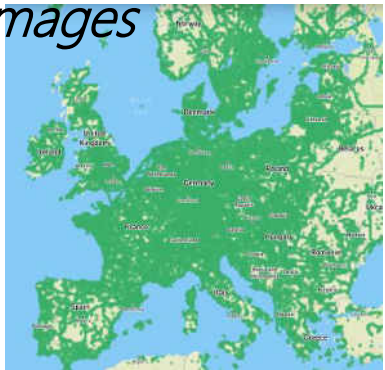
Scientists...



Flowering of rapeseed (example)

Mapillary crowd-sourced imagery

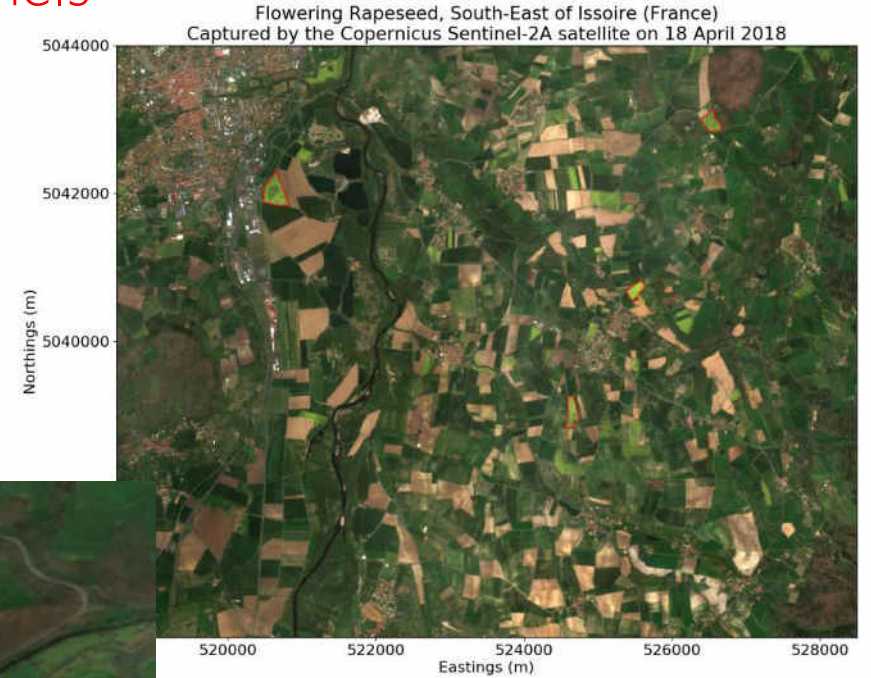
Coverage > 4 million km > 240 million images



13/4/2018

Copernicus Sentinels

S2A – 10 m resolution – every 5 days...



18/4/2018

Concluding remarks

Needs:

- **to have a common understanding of what agroecology is**
- **to have an improved knowledge of the state of agroecology in EU farming**
- **to acquire information and data to assess farm performance**
- **to reconcile technological innovation to innovation in the approach to farming**

- **→ all this is needed to foster transition to agroecology**