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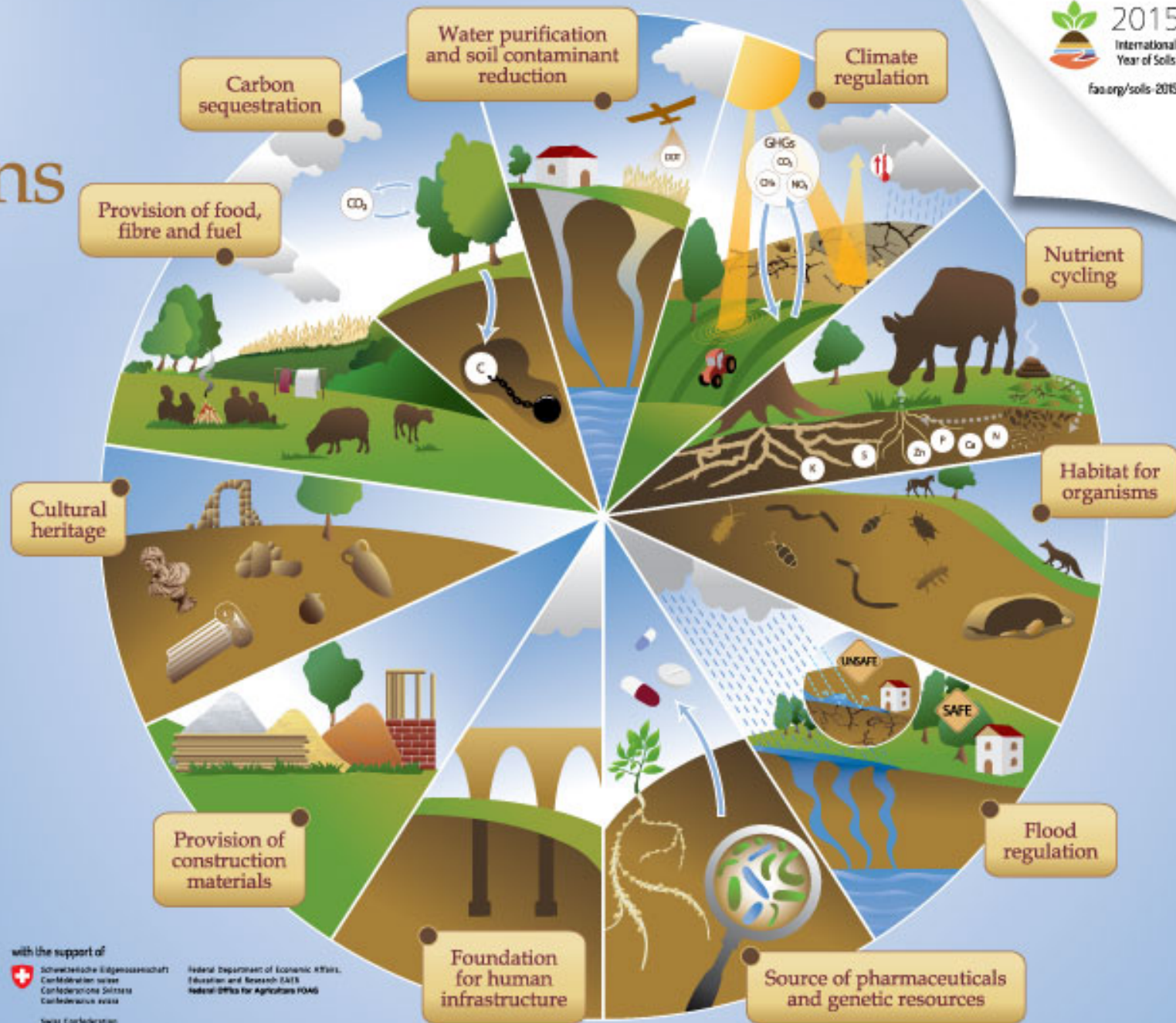
Soil functions: what do they offer? Prof. Pandi Zdruli – EIP-AGRI Service Point



13-14 April 2021
EIP-AGRI Seminar 'Healthy soils for Europe:
sustainable management through knowledge and practice'

Soil functions

Soils deliver ecosystem services that enable life on Earth



2015
International
Year of Soils
fas.org/soils-2015

Many of them have been identified previously by the EU Soil Thematic Strategy (COM 2006) 232



Food and Agriculture
Organization of the
United Nations

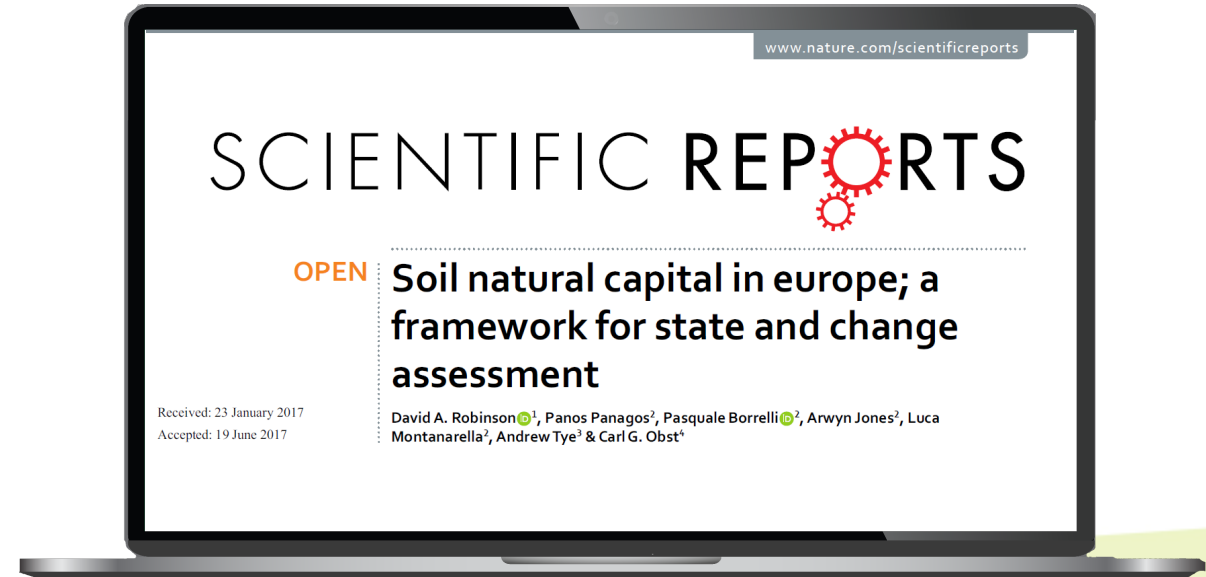
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Soil ecosystem services, functions and soil management

“**Soil management** is sustainable if the **supporting, provisioning, regulating,** and **cultural** services provided by soil are maintained or enhanced without significantly impairing either the soil functions that enable those services or biodiversity.”



Soil threats

Erosion

SOM decline

Contamination

Sealing

Compaction

Biodiversity loss

Salinization

Landslides & floods

Soil functions, i.e. (bundles of) soil processes

Habitat provision
(roots, soil organisms)

Element cycling

Decomposition

Soil structure maintenance

Biological population
regulation

Water cycling (infiltration,
retention, percolation)

Organic matter cycling
(humus formation,
C sequestration)

Soil-based ecosystem services

Biomass production

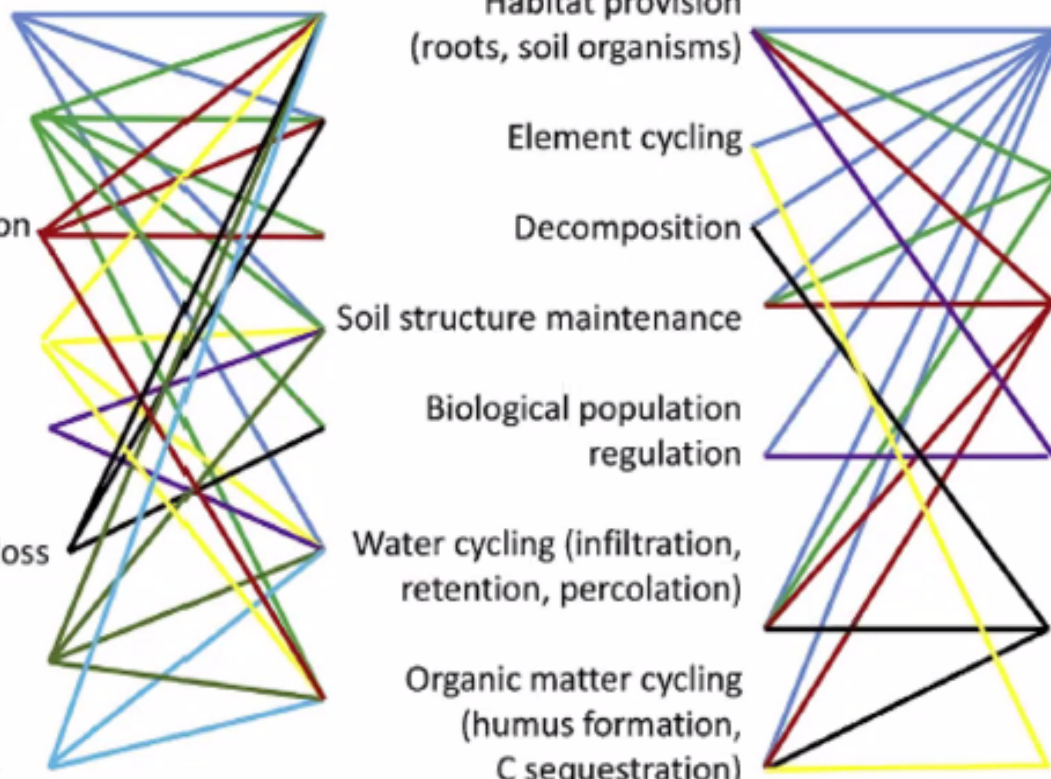
Biodiversity conservatio

Erosion control

Pest and disease contro

Water quality and :

Climate regulation




Bünemann et al., 2018

Soil properties and selected functions

Physical, chemical and biological soil properties are inter-linked and impact each other



- 
- Soil productivity
 - Soil biodiversity
 - Soil carbon sequestration
 - Nutrient cycling
 - Soil water storage and filtering

No till



Cover crops



Combined pasture of cereals and clover



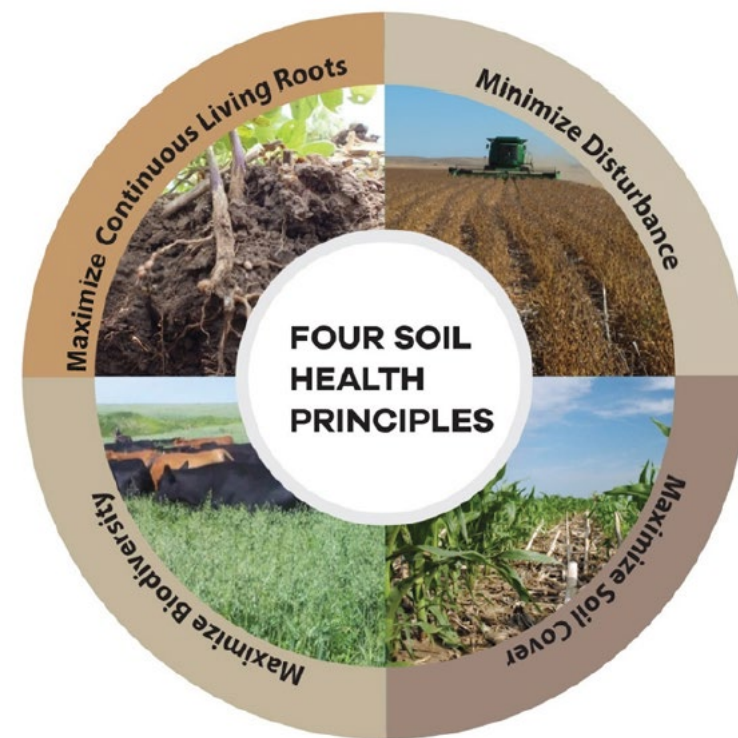
All soil functions are enhanced

Soil properties, functions and soil health

Soil health is defined as the capacity of the soil to function as a vital living ecosystem to sustain plants, animals, and humans.

Six key physical, chemical and biological processes must function well in a healthy soil:

1. Organic matter dynamics and carbon sequestration,
2. Soil structural stability,
3. General microbial activity,
4. C food source,
5. Bioavailable N, and
6. Microbial community diversity.



Credit: USDA, NRCS, 2021

Thank you
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EIP-AGRI seminar

Healthy soils for Europe: sustainable management through knowledge and practice

Online – 13-14 April 2021

All information of the seminar is available on
www.eip-agri.eu

On the event webpage
<https://ec.europa.eu/eip/agriculture/en/event/eip-agri-seminar-healthy-soils-europe-sustainable>



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