

# Soil health measurement in rural areas : gaps, needs, challenges and opportunities

In Wallonia, Belgium

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# The IQSW project

A tool to measure soil quality in Wallonia



## IQSW-citizen

Raising public awareness



Easy field  
tests



Simple  
scoring



Practical  
recommendations



## IQSW-pro

Land planning &  
soil management



Field and lab  
measurements



Scoring soil  
ecosystem  
services



Guidelines for land  
planning & soil  
management)

# The IQSW project

A multidisciplinary team to meet an ambitious goal...

## Scientific support

Charles Bielders    Quentin Ponette    Séverine  
Mathieu Javaux    Hugues Titeux    Delstanche

 UCLouvain



## Communication

**Frédérique Hupin**

Journalist

## Raising awareness

**Christophe Rousseau**



Jérôme Capart  
Camille Rasse



## Project leaders

**Yannick Agnan    Louis Vandebroek    Briec Hardy**

 UCLouvain





**Clélia Van de Castele**



**Arnaud Delfairière**



## Coordination

Bruno Huyghebaert



## Guides EIE

François Halbardier



## IT tool

Damien Maillard



## Geomatics

Caroline Chartin



# The IQSW project

## A participatory process...



First consultation of stakeholders at the kick-off event of the project, 11 april 2024, Louvain-la-Neuve

- **Kick-off event** (April 24) : survey on stakeholders needs and fears
- **Workshops** (June 24) : soil ES & indicators
  - Urban soils
  - Forest and natural soils
  - Agricultural soils
- **Site identification** for sampling and field tests
- **Feedback** on IQSW method and results for validation

## Specificity of soil management & threats



- **Agricultural lands occupy the least restrictive soils** in terms of slope, stone load, soil depth, water holding capacity... with few exceptions (ex. vineyards).
- **Soil management aims to bring the soil to an optimal state** for biomass production by inputs (fertilizers, amendments, pesticides) or mechanical interventions (drainage, tillage)
- **Agricultural soils face multiple threats** of degradation (soil loss, SOM loss, biodiversity loss, pollutions, excess of nutrients, compaction, ...)
- **Agricultural lands are particularly vulnerable to land take** (accessible, flat, free of perennial vegetation, ...) !

# Measuring soil health in woodland

## Specificity of soil management & threats



- In Wallonia, **most forest occupy soils having limiting factors** for agricultural production (steep slope, sandy soil, high stone load, wetlands, ...)
- **Three species grown is adapted to the terroir**, according to its water and nutrient requirements
- **Forest soils face specific threats** of degradation (soil compaction, soil acidification - unbalanced nutrient export)
- **Accordingly, specific needs exist :**
  - Intervention planning tool based on weather conditions and soil bearing capacity
  - Effective approach to assess compaction;
  - Effective rules for forest partitioning
  - Alternatives to conv. skidding: horse skidding, wiring

# Measuring soil health in rural areas

## Needs & opportunities



- **Taking into account soil ES that have no monetary value** (water regulation, biodiversity conservation, climate regulation) together with monetary ES (biomass production, physical support).
- **Protecting agricultural & forest soils against artificialization!** Objective measures of soil quality/soil health beyond pollution may help respecting the principle of prioritization of uses (natural and agricultural uses before artificial uses) !
- Currently, the Walloon Soil Decree (ruling soil pollutions) makes it more difficult to re-use artificialized areas than artificializing healthy soils. **A paradigm shift in soil management is needed to meet the objective of zero net land take.**

# Measuring soil health in rural areas

## Needs & opportunities



- **Improve the management of excavated soils**, beyond the pollution criteria.
- **Provide thresholds/target values of soil quality for neosols**
- **Improve soil knowledge for a better soil management against external pressures** (increasing occurrence of extreme climatic events, new pests, ... )
- Currently, analysis of soil chemical fertility and regulated pollutants is routinely available. **An access to quantitative soil physical and biological indicators is missing.**



# Thank you!

Contact

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