Practice Abstract 3: Tracking Soil Health – A New Metric to Assess the Impact of Farming Practices

COUNTRY AND CLIMATIC ZONE

Pan-European

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3 BENEFITS OF THE PRACTICE

- Introduces a new metric – the edaphic footprint – for integrating soil health into sustainability assessments.
- Provides a scientifically robust, multi-indicator methodology for evaluating long-term soil impacts.
- Complements existing carbon, nitrogen, and water footprints with a soil-specific dimension.

PRODUCTION SYSTEM

N/A

KEYWORDS

Funded by the European Union

Soil health, edaphic footprint, sustainable agriculture, soil impact assessment

SUMMARY FOR PRACTITIONERS ON THE MAIN FINDING(S)/INNOVATIVE SOLUTION(S) – IN ENGLISH

HarvRESt introduces the edaphic footprint – a new indicator grounded in the CWA 17898:2022 standard – to measure how agricultural practices affect soil health. This approach helps farmers and stakeholders track soil degradation risks like erosion or nutrient loss, and promote sustainable, long-term soil management.

LONGER DESCRIPTION – IN ENGLISH

Soil is a critical yet often overlooked factor in sustainability metrics. While carbon, nitrogen, and water footprints are widely used to track environmental performance, they do not capture the direct and indirect impacts of agriculture on soil health.

The HarvRESt project addresses this gap by introducing the edaphic footprint, a novel methodology grounded in the CWA 17898:2022 standard. This method quantifies how farming practices affect physical, chemical, and biological soil properties across medium- and long-term timeframes.

Key components include:

- Soil Impact Factor: This aggregates indicators for erosion, nutrient depletion, organic matter loss, salinity, and acidification.
- Compatibility with existing footprints: Indicators will be aligned with carbon, nitrogen, and water footprints, integrating soil impact into broader sustainability frameworks.
- Soil biodiversity assessment: Emphasis is placed on microbial and faunal communities, which influence nutrient cycling, structure, and overall fertility.
- Organic matter dynamics: A modelling approach will be used to track stabilisation and carbon sequestration potential using site-specific and literature data.
- Water retention indicators: A new metric is proposed to assess soil's resilience to drought, linked to farm management practices.

All these dimensions will be integrated into a comprehensive soil sustainability model, providing stakeholders with a holistic view of soil health. The methodology will be validated using HarvRESt Use Case data and additional datasets, ensuring it is robust, replicable, and scalable across diverse agricultural systems in Europe.

ADDITIONAL DISSEMINATION AND COMMUNICATION MATERIAL(S)

Title/Description: HarvRESt Edaphic Footprint Methodology (based on CWA 17898:2022)

URL: TBD

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