

Webinar | A common language on soil health to accelerate the environmental transition



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GENESIS

Only facts matter.



09/2023

What if | Real, on-the-ground data on the impact of land use to enable enlightened decisions and actions, and preserve your reputation.



NB: GENESIS is measuring more than 100 soil characteristics, providing 12 normalized indicators and 4 indices.

One solution | Get proof of the environmental impact of your land use, thanks to ground-truth data.



GENESIS
Proof provider

Assessing, measuring and verifying
your environmental impact on land
with real measurements



Only facts matter.

- Proving **hectares regenerated** directly on your **value chain**
- Informing your **sourcing decisions** to **mitigate corresponding risks**
- Assessing your **impact investment portfolio** with reportable KPIs

VERITASTM

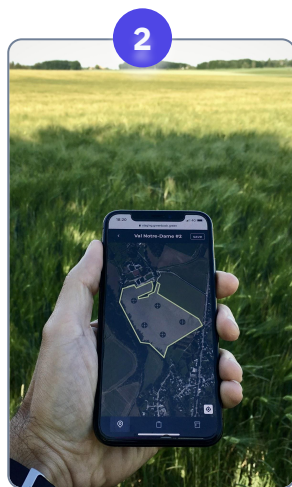
Certification ongoing

Only facts matter | Soil sampling and analysis, the indispensable steps in measuring a real impact on land.

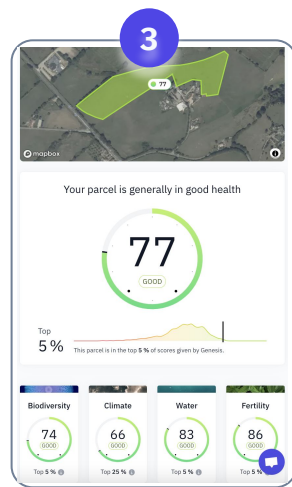
4 steps to deliver proofs.



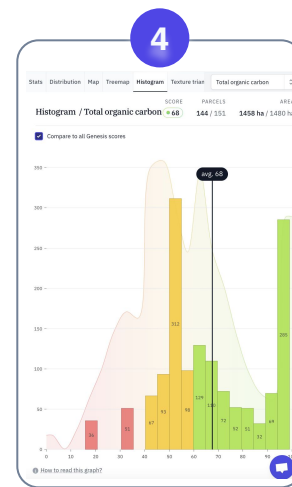
Plot identification & practice collection



Soil sampling & analysis



Genesis scoring & ranking

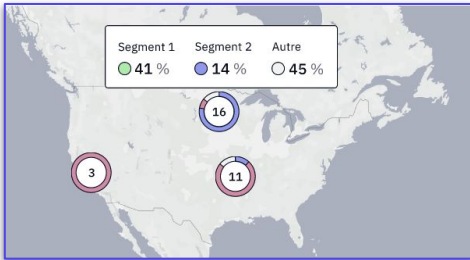


Correlation & Benchmark

Meet your needs | High reliability and scalability at the best price to decide, report and act.

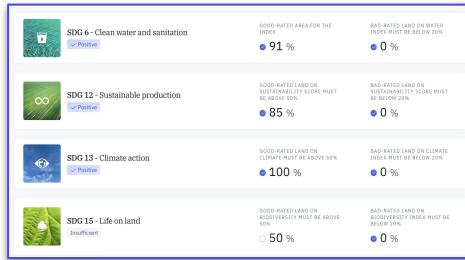
1. | Source

Make enlightened decisions by measuring and comparing cultivation systems and origins impacts to identify the best possible sourcing.



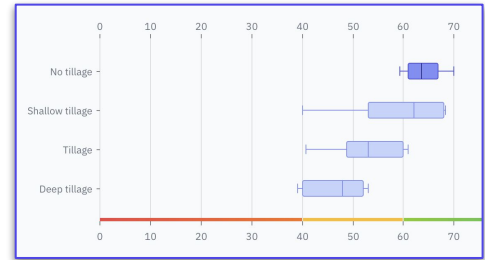
2. | Report

Report on the impact of your land footprint in compliance with existing standards. Monitor and measure your progress

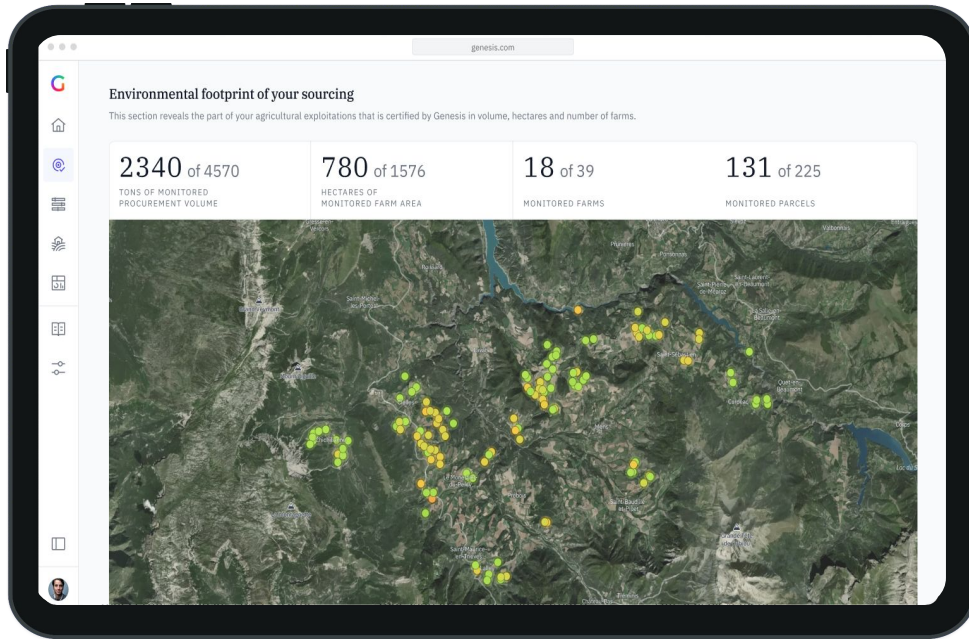


3. | Regenerate

Act by identifying and deploying **proven best practices** in the field to create the best land use solution.



Your tool | All your data, goals and progress in one intuitive SaaS platform.

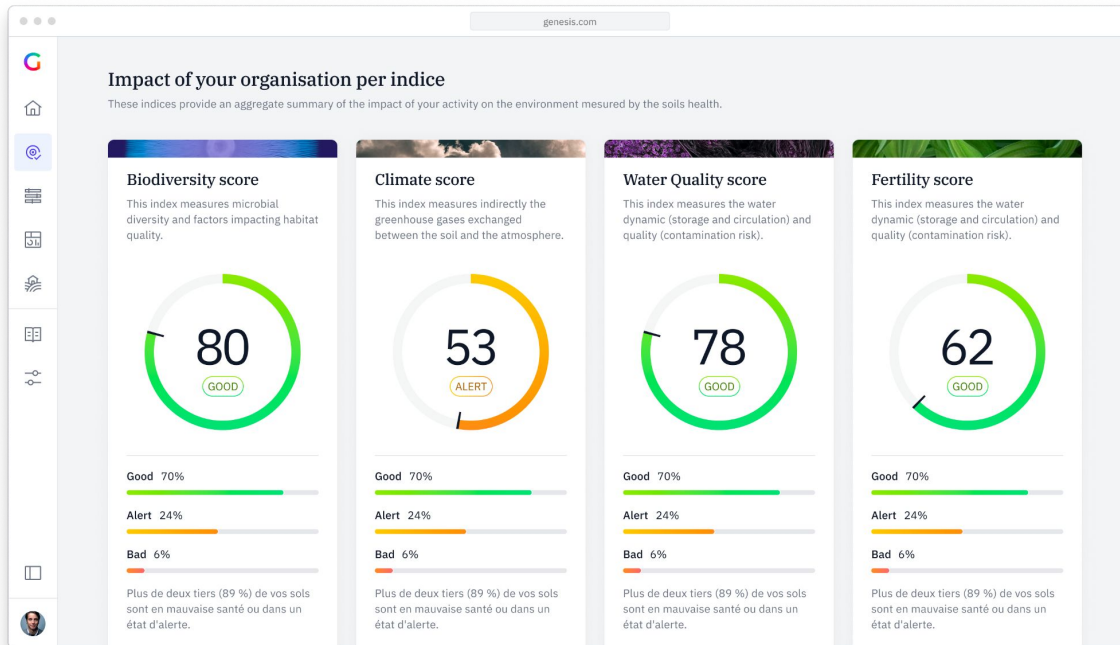


From ground-truth data to proofs. Genesis has developed a simple way to measure the impact on land, and act on it.

4 indices to monitor land regeneration across global projects

Biodiversity, Climate, Water, Fertility

- Genesis assess regeneration through **in-situ measurements**.
- Genesis provides **soil health measures** as well as **external biodiversity indicators**.



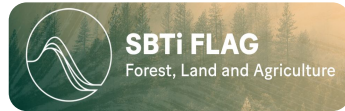
Universal | Versatile, proven data to meet your market and regulatory obligations

Regulatory frameworks



EU Soil Health Law

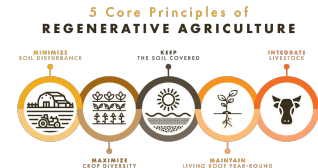
Reporting frameworks



Global goals & principles



Corporate commitments



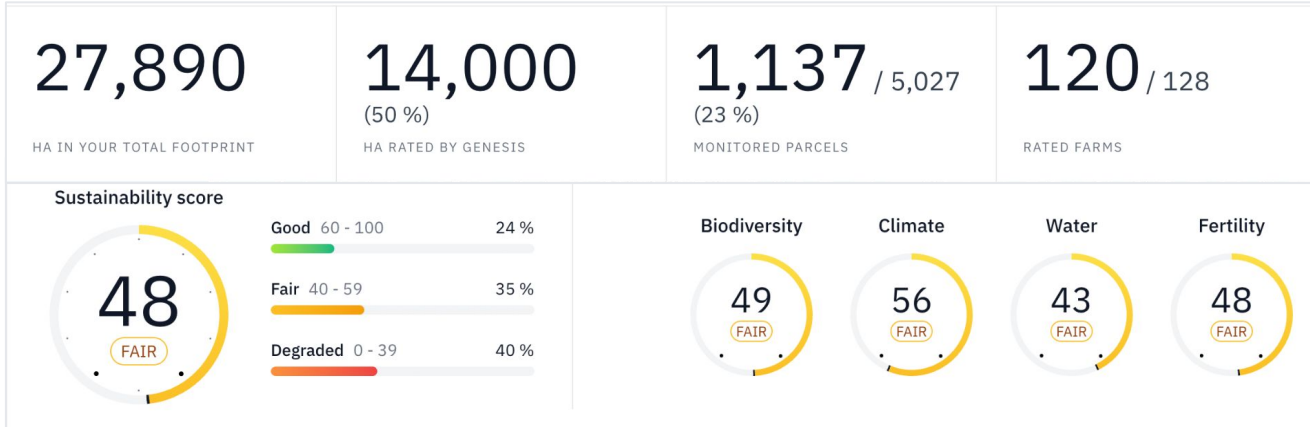
Case study | How you'll use Genesis



Project : Cooperative
Country : France
Area : 50 000 ha
Subscription : 5 years

Clients benefits:

- **Create premium sourcing:** increased price per ton of cereals rated by Genesis
- **CSR reporting on its land footprint:** # of ha regenerated, tons of carbon sequestered
- **Compare farms and parcels** on a global scale



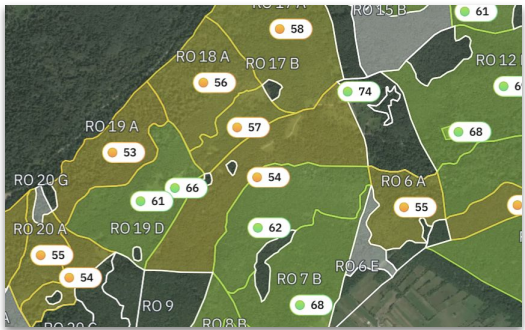
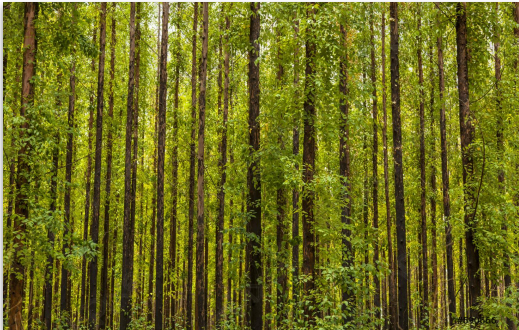
Case study | How you'll use Genesis

 Asset management KPIs

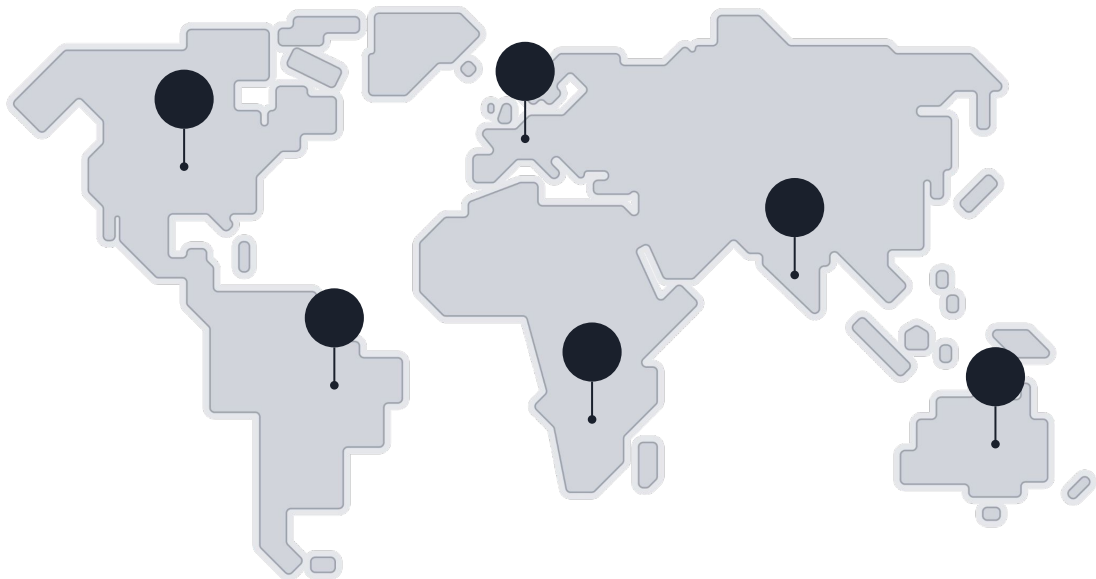
Project: Reforestation
Zones: Brazil, Romania
Area: 9 000 ha
Subscription: 10 years

Clients benefits:

- **Strengthened reporting to financial institutions** through robust impact measures
- **Management of the land asset portfolio** via comparable indicators
- Proof of the **impact of innovative practices (eg. biochar)**



Global field | Our proofs can be produced on any land, in 120 days for any regions and cultures



20+

Cultures addressed

- **Permanent crops:** vines, fruit trees, ...
- **Arable lands:** cereal crops, vegetable crops, ...
- **Trees:** forest, plantations

15+

Countries already covered

- Europe
- North America
- LATAM

More to come

We are working on many public research programs with worldwide partners

→ **France Relance**

Carbon stock dynamic in relation to the soil health assessment

ANR - CNRS - ENS - GENESIS -

From Nov 2021 to Nov 2023



→ **EJP Soil (European Joint Program for soils) - first external call**

FREACS (FRactionating soil organic carbon to quantify, map and undErstAnd its persistenCe and Storage)

CNRS, ENS, INRAe, Helsinki University, Landcare Research (NZ), Sorbonne University, Thünen Institute of Climate Smart Agriculture, GENESIS, Finnish Meteorological Institute

From April 2022 to April 2025



→ **EU SOIL MISSION**

BENCHMARK (Building a European Network for the Characterisation and Harmonisation of Monitoring Approaches for Research and Knowledge on Soil)

A 29 consortium partners - Submitting



Our R&D is also supported by public funds

→ **PIA3 - BPI**

Build a european soil health referential

GENESIS with the support of the JRC (Joint Research center of the EU) and Rothamsted Research
From 2019 to 2023



→ **INov- France 2030**

Programme d'accompagnement aux start up stratégiques pour l'économie française

Innovative Model Predicting Agricultural soils Condition for agroecological Transition

From 2022 to 2024



We are members of the AFNOR commission for soil health standardisation

→ **ISO - delivery August 2025**

European group for soil health standardisation

Amazing partners | Renowned scientists and partnerships to build these proofs from the ground

1

Recognized ecosystem and thought-leader partners



2

Strong R&D collaborations with globally recognized partners



3

Robust and innovative operational partnerships



Genesis is part of research programs funded by the EU (carbon & soil health)

How does it work ?

Starting from real measures to improve knowledge and scale soil health scoring



Best indicators selection

Genesis has curated the most relevant indicators to best calculate its 5 indices

We interviewed

300+

scientists, farmers,
technical institutes,
companies,
international
organizations



We scrutinised

200+

scientific papers



We analysed

50+

projects



We selected

175+

indicators and
evaluated them
in a first pilot
study



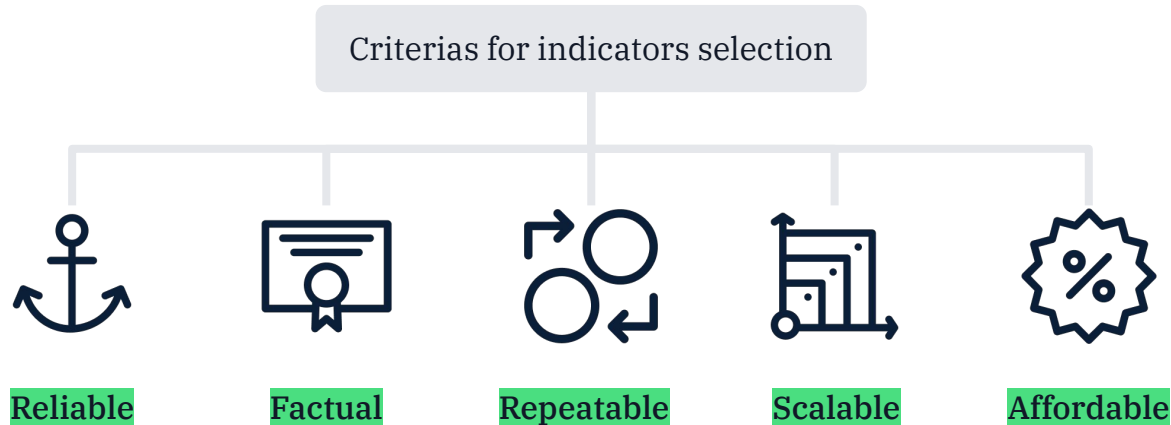
We chose the

35+

indicators that best
met our criteria

Best indicators selection

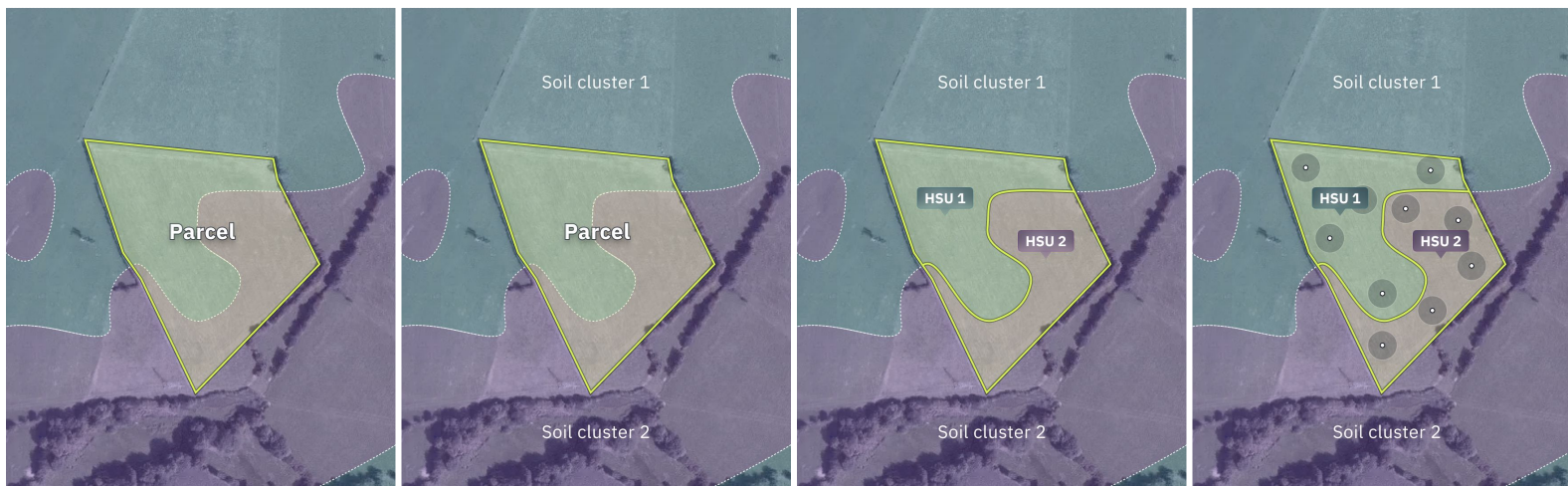
Genesis is a trusted third-party able to deploy consistent large-scale international soils rating solutions for its clients



Evaluating non-homogeneous parcels

Using geologic and topographic data with dedicated algorithms, Genesis checks the homogeneity of the selected parcel. If the parcel is not homogeneous, Genesis's algorithms divide it into HSUs (Homogeneous Soil Units).

Production types and crop rotation are taken into account when determining HSUs at the farm level.



Traceability from the field to the lab

Genesis requests samples from sampling partners trained according to our protocols. We develop advanced sampling tools that improve samplers efficiency while ensuring perfect traceability of each sample.

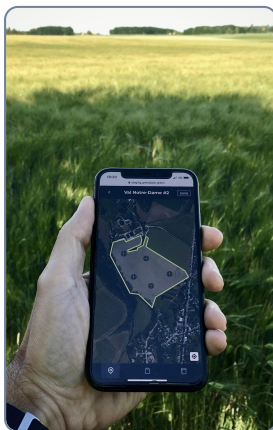
Online Protocols



Automated HSUs & sampling points



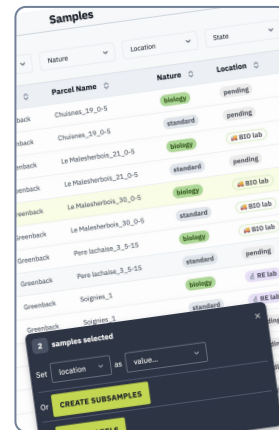
Real time sampling monitoring



Samples scanning



Samples tracking



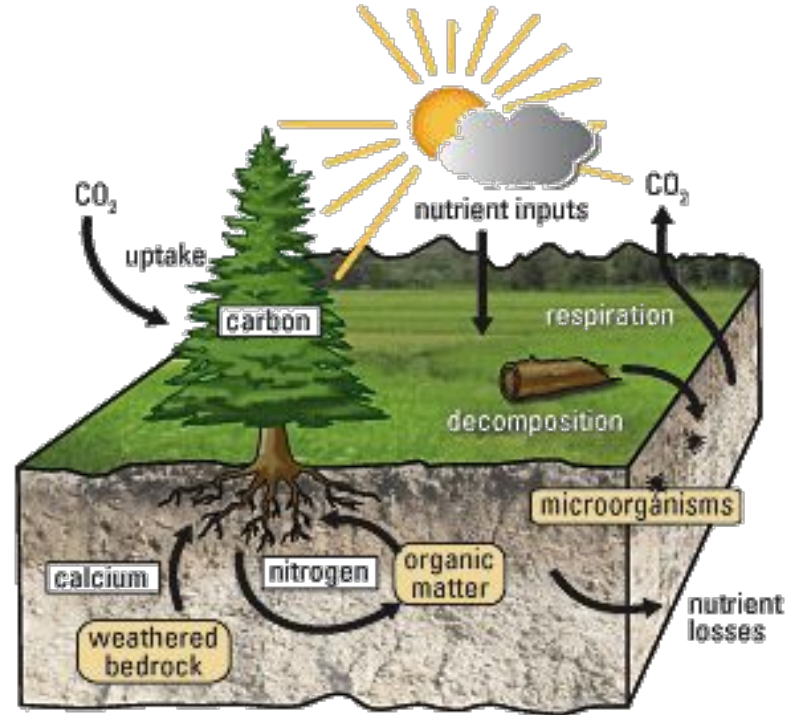
What is Genesis' Rating made of?



Soil Biodiversity: a functional approach

Soil DNA approach targeting soil functions as well as soil microbial organisms:

- Oxygen availability: information on the structural aspects of soil
- Nitrogen cycle: looking at the nitrification potential and nitrate ammonification
- Nitrate loss: denitrification potential
- Bacterial diversity: diversity of bacterial species

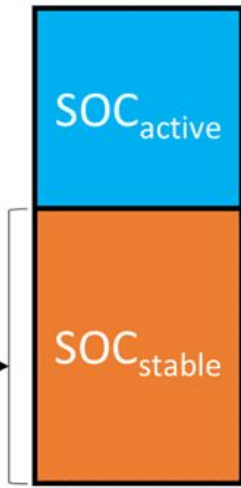
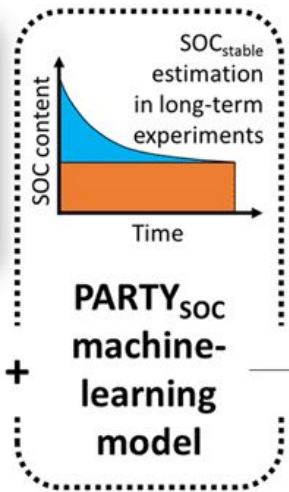


Source: [U.S. Geological Survey](https://www.usgs.gov/)

Active & Stable Carbon



SOC thermal fractionation using Rock-Eval®



<https://doi.org/10.5194/gmd-14-3879-2021>

The Genesis Soil Reference, a must-have tool for comparable ratings

Genesis delivers Genesis Indices and Score for the HSU by a comparison between the data to expected values for such a type of soil based on the GSR clusterization

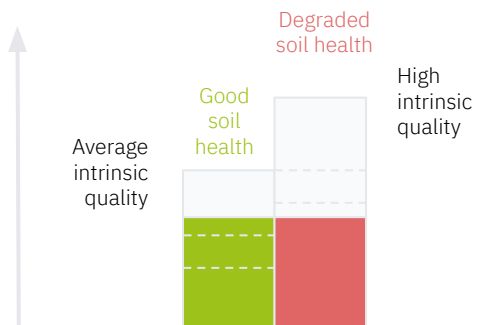
The GSR is a database of:

- Measured indicators associated with their contextual data
- Clusters of pedo-climatic contexts, land uses and land covers
- Context-dependant reference values

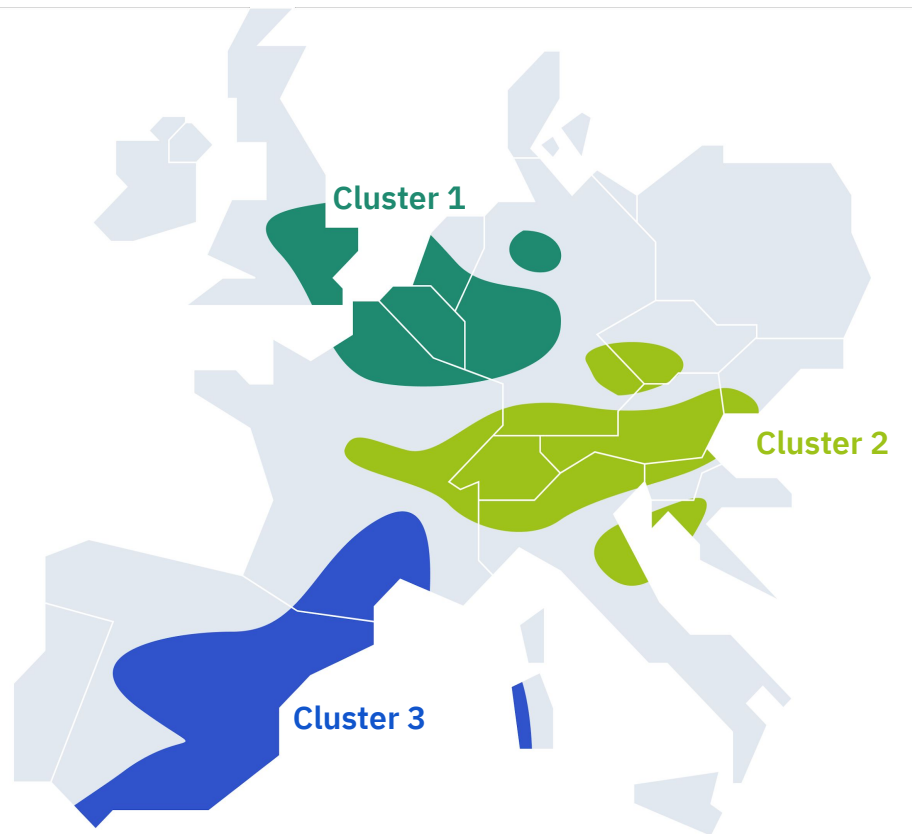


Contextualisation

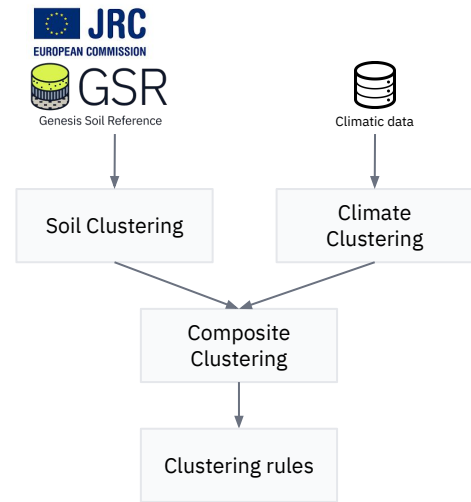
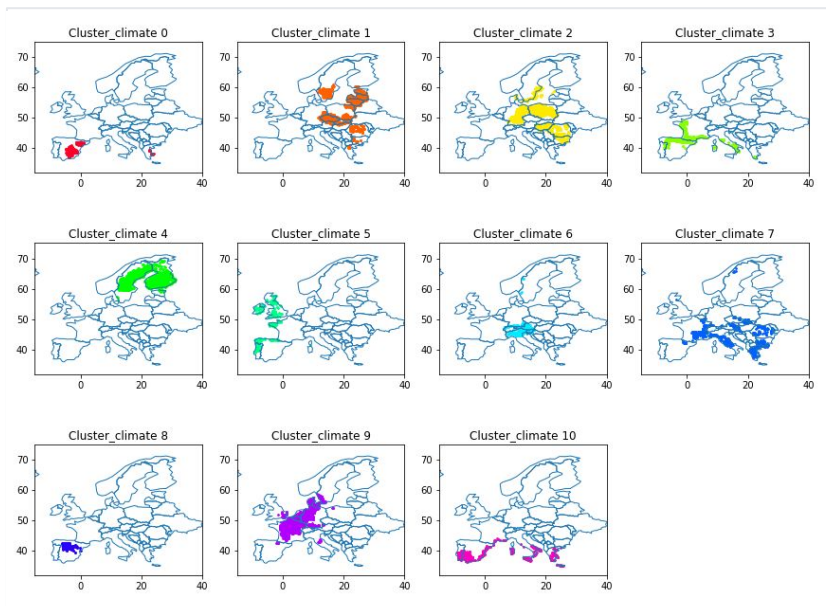
Intrinsic quality depends on *soil* and *climate* conditions



Cluster:
homogeneous and characteristic soil
and climate context

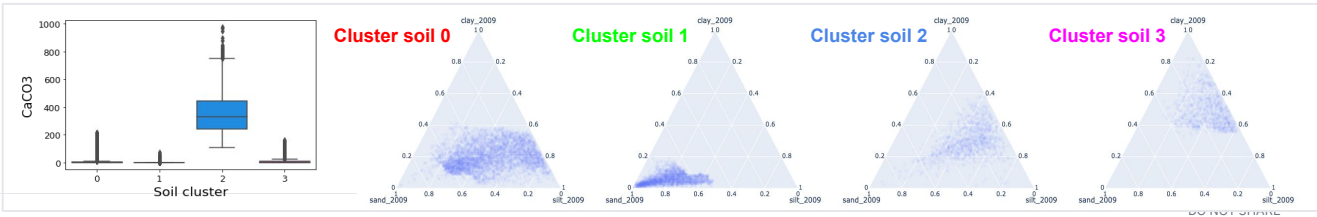


Contextualisation



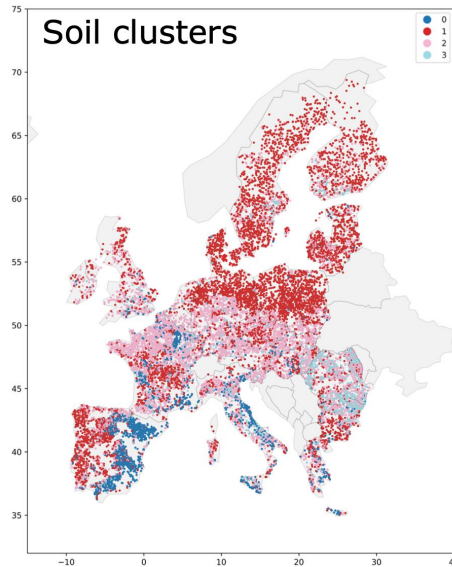
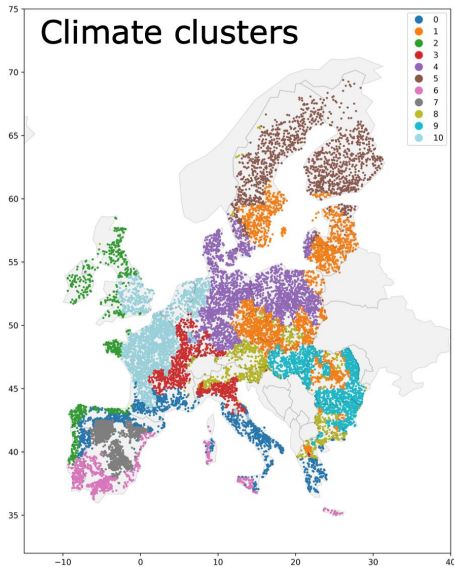
Geographic projection of Climate clusters

Soil clusters

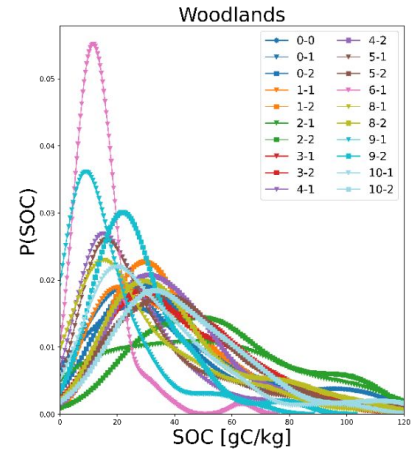
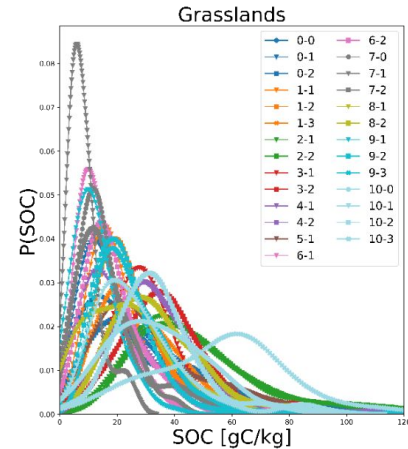


Focus on Soil Organic Carbon normalisation

1. Clustering algorithm to define pedoclimatic clusters based on pedoclimatic variables.
2. Define reference values from the median SOC of grasslands and woodlands that belong to the same cluster.



<https://doi.org/10.1016/j.scitotenv.2023.165811>

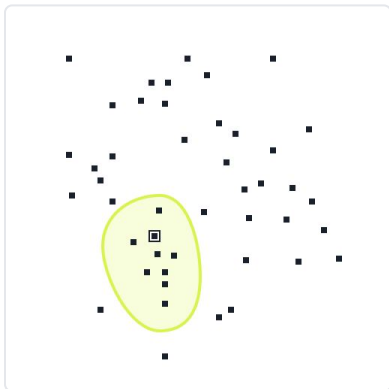


Genesis Soil Reference calibrates Genesis' scoring scale

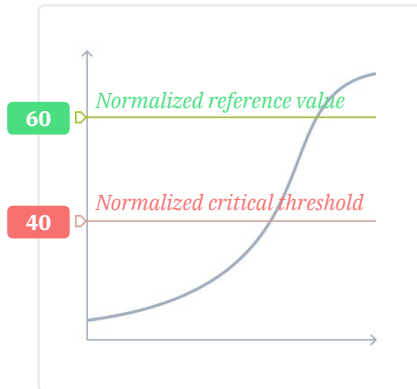
1. Normalised Indicator computation

The measured value is transformed into a unitless score thanks to scoring algorithms with context-dependant parameters defined by the GSR

Parcel is attributed to a cluster



Normalised Indicator's scoring function

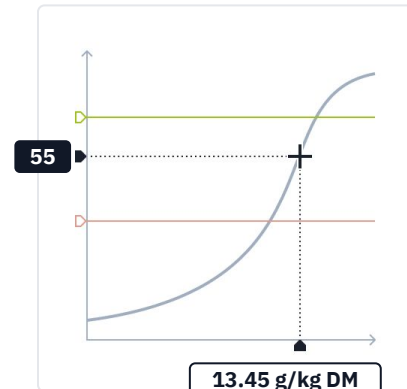


Measure from the sample

ex: Total organic carbon content



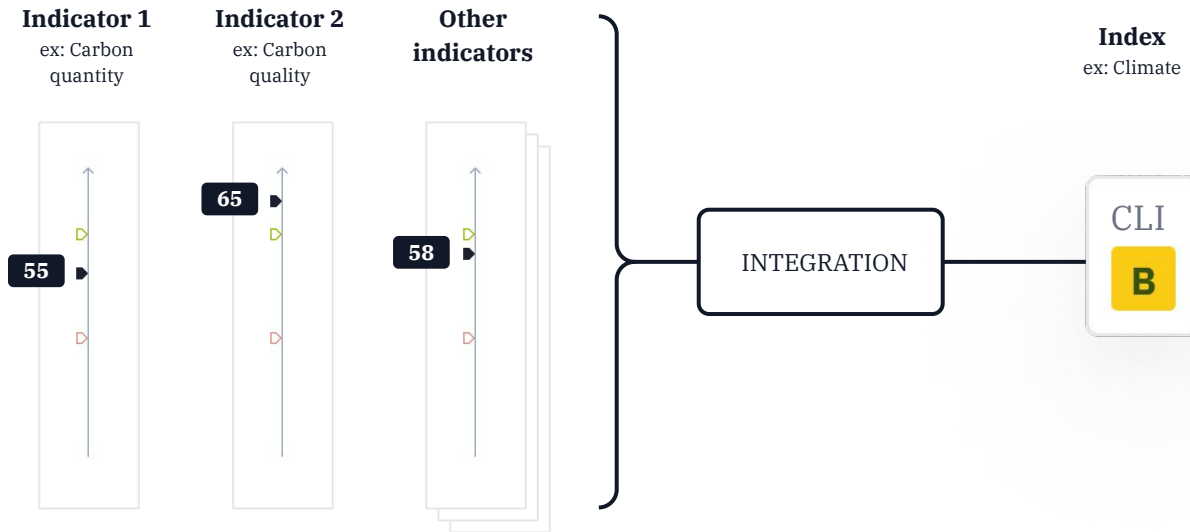
Score for the parcel



Genesis Soil Reference calibrates Genesis' scoring scale

2. Index computation

Indicators are integrated into index



Genesis Soil Reference calibrates Genesis' scoring scale

3. Genesis Rating computation

Indices are integrated into the Greenback score

Biology Index
10 indicators

Climate Index
3 indicators

Water Index
11 indicators

Fertility Index
9 indicators

BIO



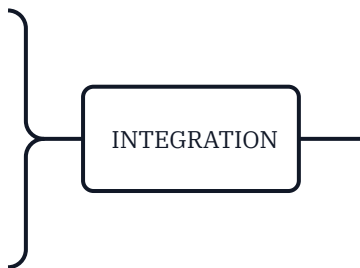
CLI



WAT



FER



Genesis score

Synthetic Impact Score ⓘ



● 0-39 ● 40-59 ● 60-100

For more information, contact us at
contact@genesis.live