



Food and Agriculture
Organization of the
United Nations

7th Meeting of the International Network of Soil Information Institutions (INSII)

09-10-11
November
2021

Online
meeting

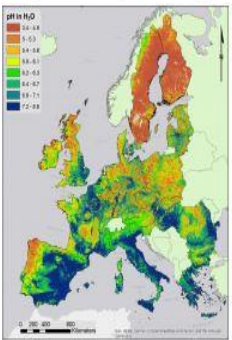
Soil Nutrient Maps

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Maps of Soil Chemical properties at European scale based on LUCAS 2009/2012 topsoil data

This group of datasets contains 8 chemical properties: pH, pH (CaCl₂), Cation Exchange Capacity (CEC), Calcium carbonates (CaCO₃), C:N ratio, Nitrogen (N), Phosphorus (P) and Potassium (K) using soil point data from the LUCAS 2009/2012 soil surveys (around 22,000 points) for EU-26 (not included Cyprus and Croatia). The chemical properties maps for the European Union were produced using Gaussian process regression (GPR) models. Resolution: 500m. Format: TIFF; projection information: ETRS89 / LAEA Europe



Resource Type: Datasets
European Soil Database & soil properties

Publisher: European Commission, Joint Research Centre (JRC)

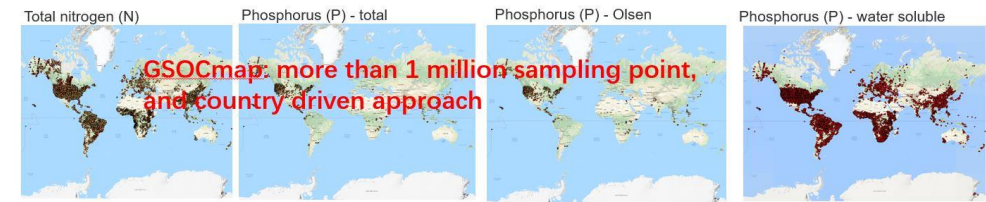
Year: 2019

Registration is requested: Yes

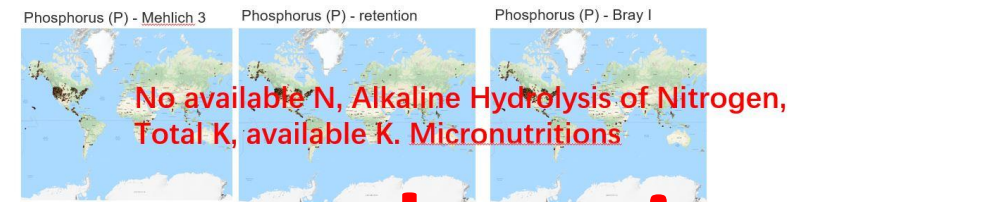
Language: en

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- pH in Water (H₂O)
- pH in CaCl₂ solution
- C:N ratio
- Cation Exchange Capacity
- Calcium carbonates
- Nitrogen
- Phosphorus
- Potassium

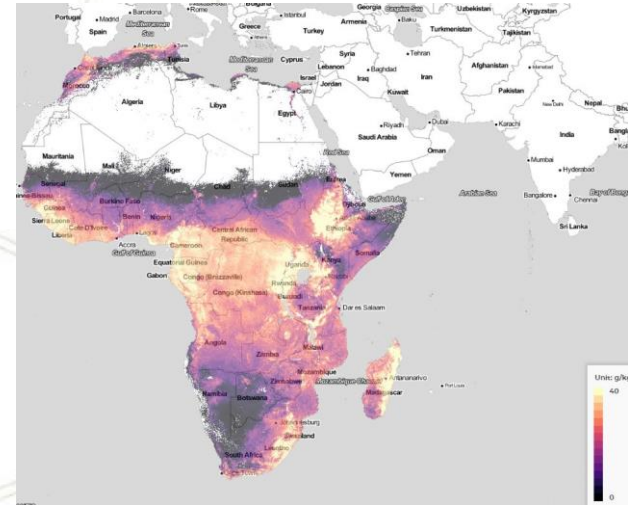
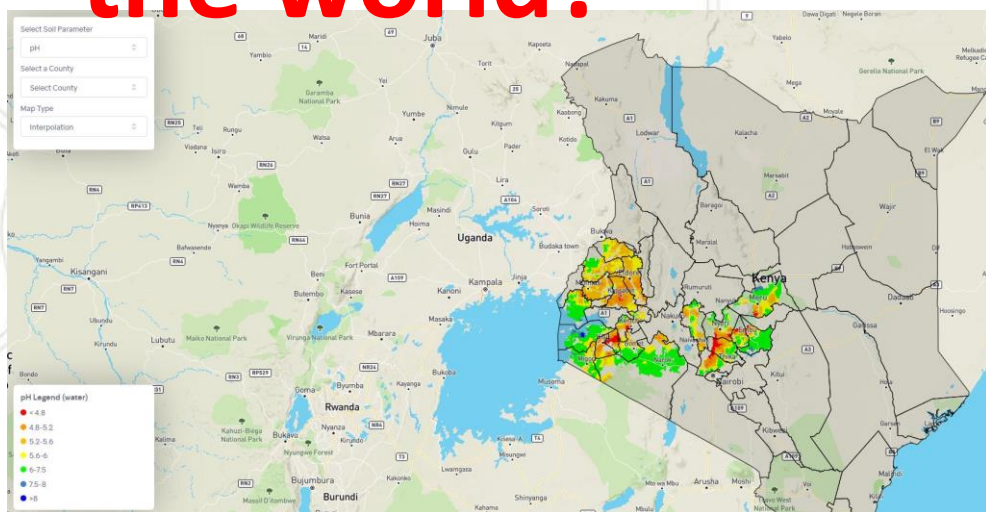


So far some 400,000 profiles; some 150,000 standardised.



No available N, Alkaline Hydrolysis of Nitrogen, Total K, available K. Micronutrients

What kind of Soil Nutrient Maps are there in the world?



- ▼ Soil nutrients
- Carbon, organic
 - Calcium, extractable
 - Iron, extractable
 - Magnesium, extractable
 - Phosphorus, extractable
 - Potassium, extractable
 - Sulphur, extractable
 - Zinc, extractable

P, K, Ca, Mg, S, Mn, Zn, Cu, B

Technology development for digital agronomic advisory systems

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INDICATORS

Dynamic (updated every X years)

Nitrogen (TN & AN)



Potassium (TK & AK)



Phosphorus (TP & AP)



GSOCmap



T: Total A: Available

non-Dynamic

Texture (S-C-S)



CEC



pH



XX



Integrated Capacity Development



2-week regional trainings
I. Texture, CEC, pH ...
II. NPK ... + GSF_i



Tools, Scripts



Guidelines and Technical
Manual(s)



Technical Support



GSF_i - Global Soil fertility Index



Dynamic GSFmap - Global Soil Fertility Map

Main Outputs

- **GSF_i** - Global Soil Fertility Index
- **Soil Nutrient Maps:** Nitrogen, Potassium, Phosphorus ...
- **Global Soil Grids** of Texture, CEC, pH ...
- **Updated national SOC Maps**
- **GSFmap** - Dynamic Global Soil Fertility Map

How to link the soil nutrient maps to other global hotspots?

Example Nitrogen:



- Capture occurs at much slower rates
- Mitigation strategies cannot be based on a corrective approach, they must be preventive.

Nitrogen

Fertility

Climate change

Contamination

➤ **Experiences and lessons from the soil nutrient maps development.**

Global and national maps

➤ **What methodologies are used for developing those maps? Their advantages and disadvantages?**

Country driven.

➤ **What can be the added value of soil nutrient maps?**

Mineral and organic fertilization, sustainable soil management recommendations (cover crops, erosion control, etc), greenhouse gas emissions potential for mitigation, water and soil pollution potential, soil micronutrients availability

➤ **What methodologies we should use to develop those maps? Do the methodologies feasible?**

Soil nutrient maps and added value maps

*Call for participation in a working group to develop the
soil nutrient maps*



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