Agroecological Transition of Food Systems in Africa

Agroecology transition and adoption: Transforming agri-food systems

Rik van den Bosch, ISRIC

6 May 2025 I Natural History Museum I Brussels

Funded by the European Union

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Agroecology transition and adoption:
Transforming agri-food systems

SOIL INFORMATION SYSTEM FOR AFRICA

SOILS 4 AFRICA
Supported by the Horizon 2020 programme of the EU

COLLABORATIVE IDEA OF THE EU AND AU FOR FOOD SECURITY

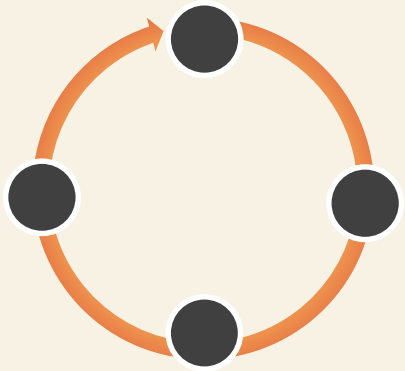
ISRIC World Soil Information · WAGENINGEN UNIVERSITY & RESEARCH · FARA · MATE Hungarian University of Agriculture and Life Sciences · ARC • LNR · IITA · CGIAR · IBEC Interbalkan Environment Center · Universiteit Stellenbosch University

Regional Centre for Mapping of Resources for Development · CIFOR · World Agroforestry · Biosols · KALRO · SGS · JRC European Commission · META

WHY A Soil Information System?

Food security

Informed decisions on management and interventions



Sustainable intensification Agricultural production

Up-to-date Soil Information System

AIM OF THE PROJECT

TO DEVELOP AN AFRICAN SOIL INFORMATION SYSTEM

SET OF KEY INDICATORS

OPEN & FAIR DATA

SOIL MONITORING METHODOLOGY

FNSSA KNOWLEDGE & INFORMATION PLATFORM

HOSTED AFRICAN INSTITUTION

EWA-BELT

Healthy FoodAfrica

SOILS 4 AFRICA

Sustain Sahel

SustIn AFRICA

UPSCALE

FAIR L'agroécologie pour une agriculture plus résiliente au Sahel

SysCom

CROPS 4HD

FiBL

Objectives

- an open-access **soil information system** with
- a set of **key indicators** and underpinning data
- a **methodology** for repeated soil monitoring across Africa.

Data should give a **baseline assessment** of the **state of soil** of **Africa's agricultural land**.

Methods data collection & analyses

- Field sampling, data collection and laboratory analysis with **consistent methods** supported by manuals and video instructions.
- Samples collected using a **sampling design** that supports future (statistical) monitoring of soil status
- **46 soil chemical and physical properties**, including a suite of heavy metals
- At each sampling location **43 field characteristics** are described (terrain, land cover, erosion, land use & management)
- Assessment of >**150 pesticide compounds** at 250 locations

Progress data collection & analyses

- ~**13,700** locations sampled in agricultural land (target: 15,000)
- in **32 countries**
- **1,084** samples with wet chemistry analytics (799 locations)
- **9,396** samples spectrally modelled (5,214 locations)

Outputs | Outcomes

Soil Data of Africa

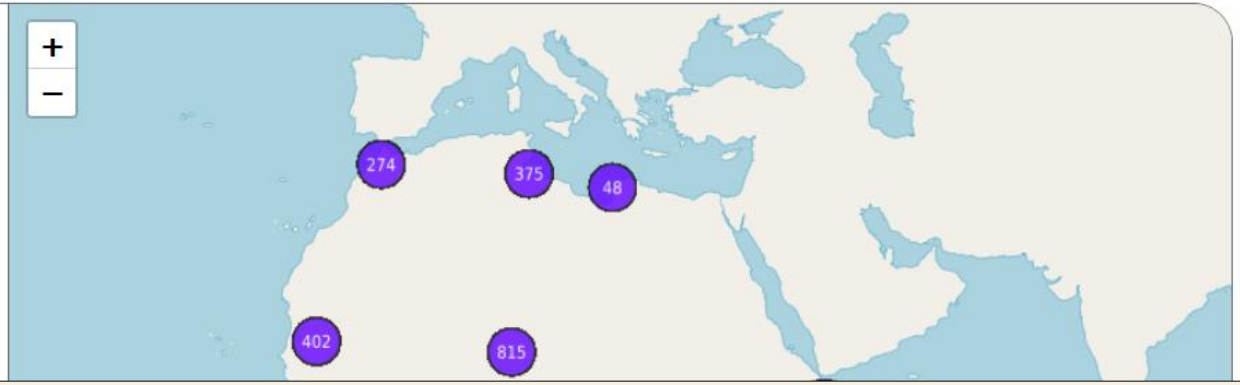
Continent-wide soil data and soil information relevant for sustainable intensification of agriculture in Africa.

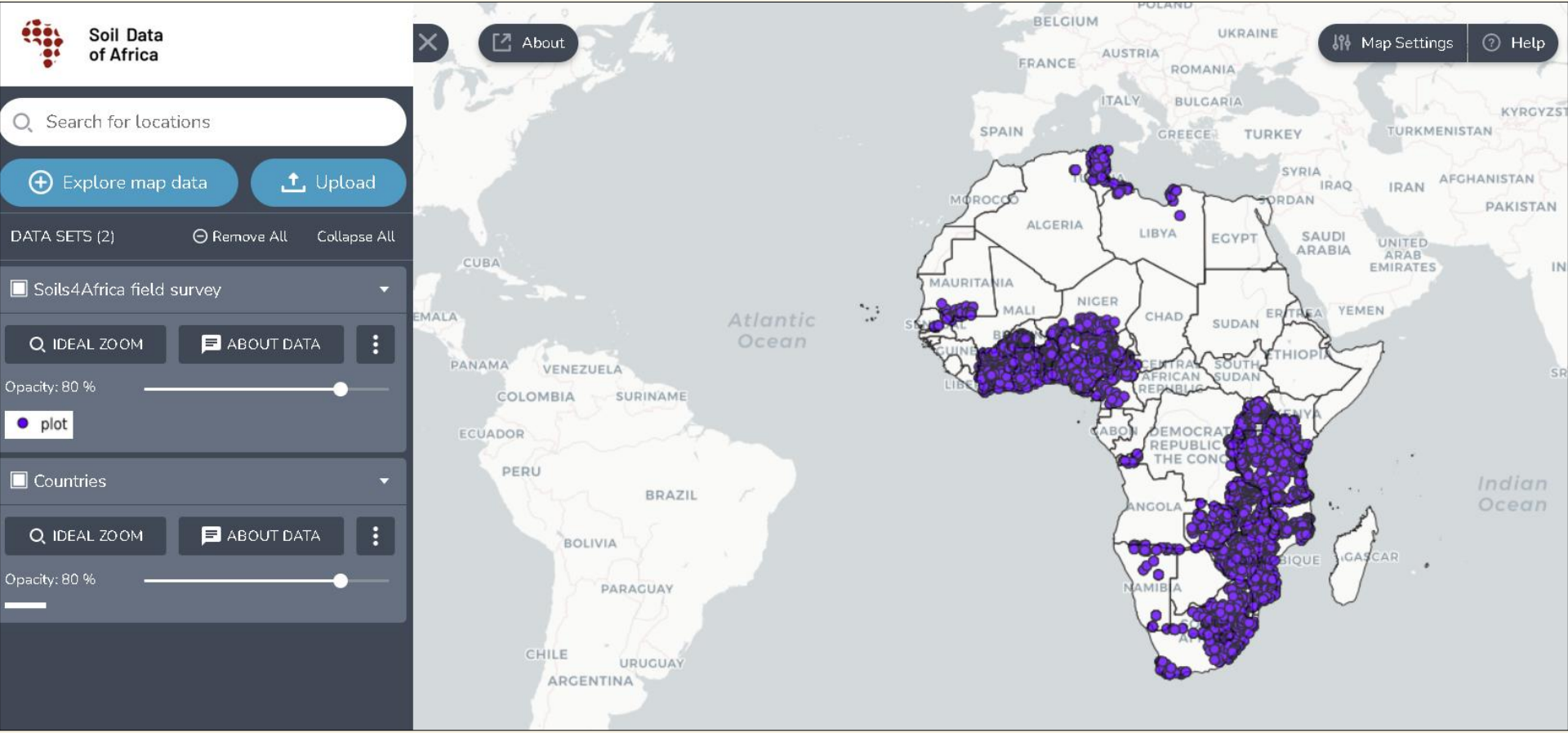
Read more

Map Viewer

Explore map data

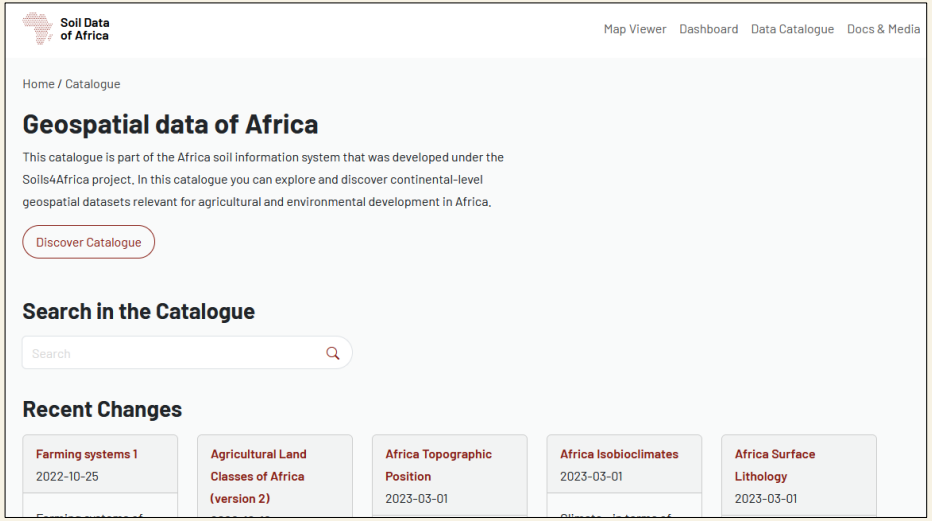
Download data

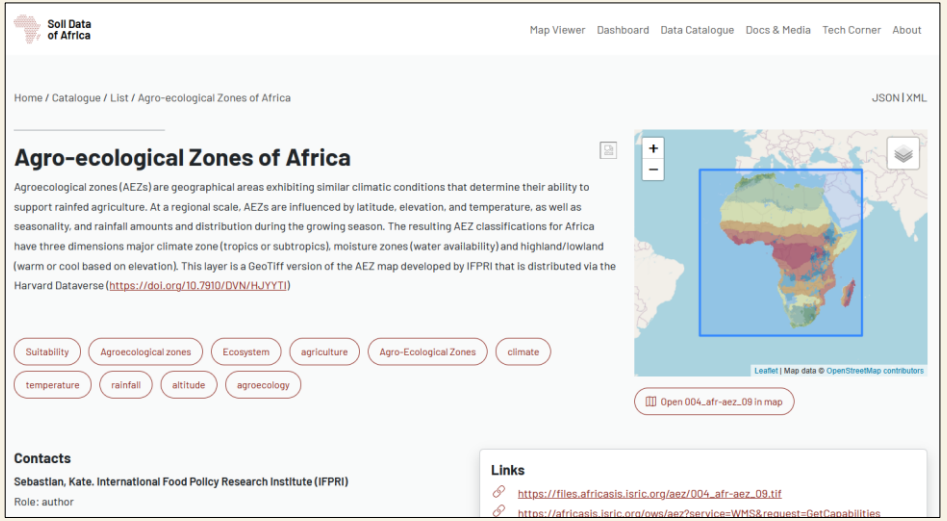




EWA-BELT · Healthy FoodAfrica · SOILS 4 AFRICA · Sustain Sahel · SustIn AFRICA · UPSCALE · FAIR L'agroécologie pour une agriculture plus résiliente au Sahel · SysCom · CROPS 4HD · FiBL

Outputs | Outcomes





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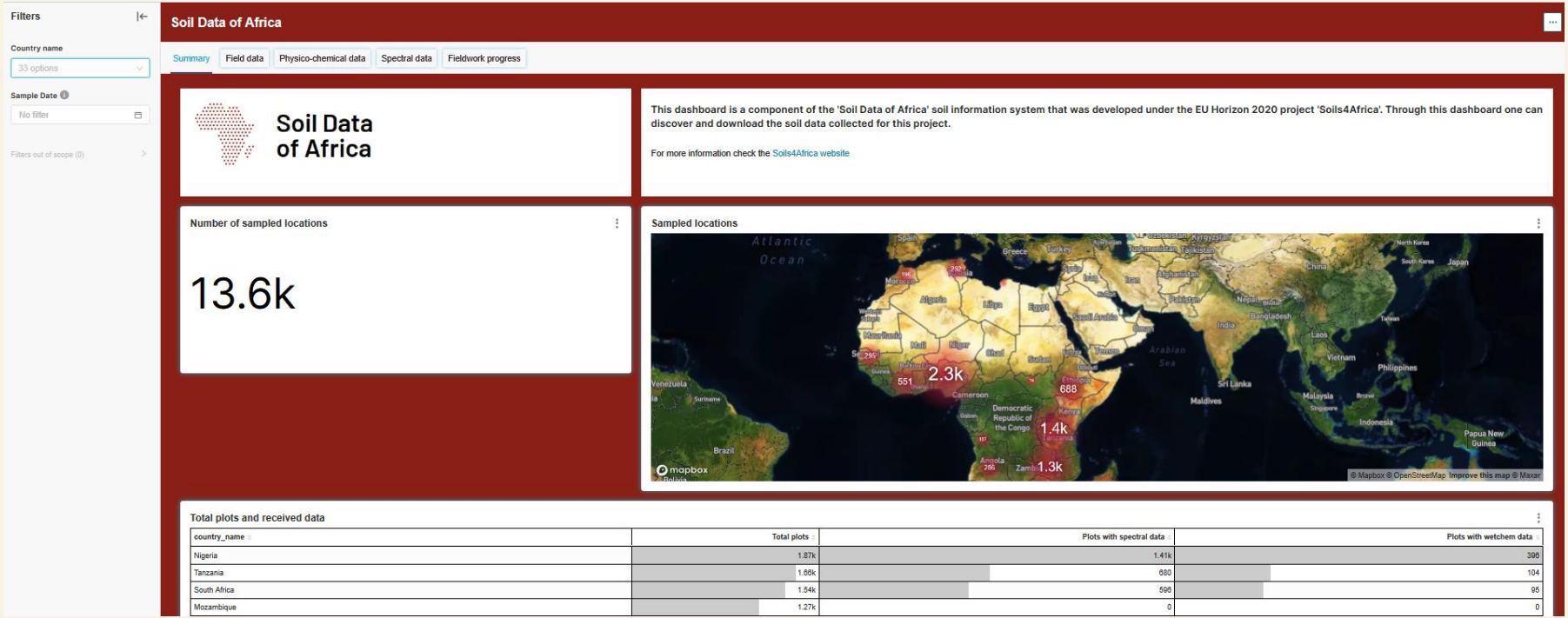
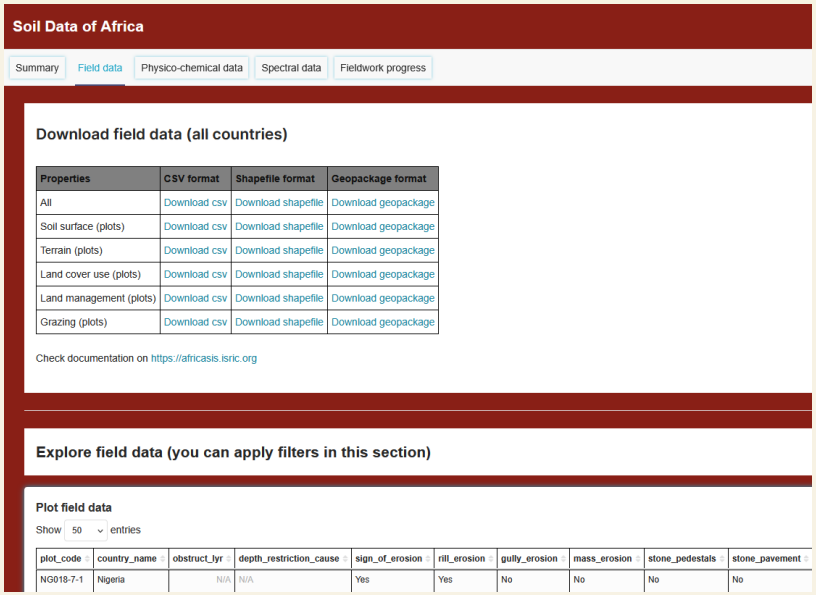
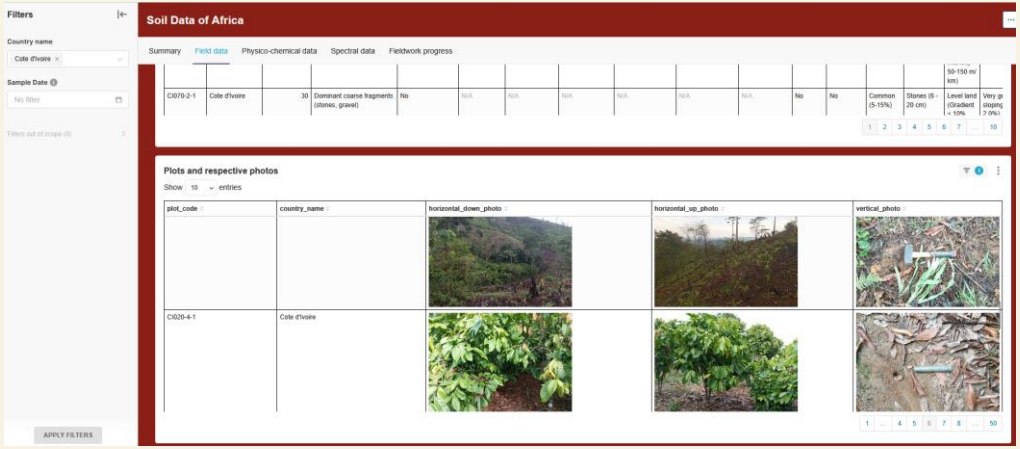
Outputs | Outcomes



Outputs | Outcomes





Outputs | Outcomes

Soil Data of Africa

Map Viewer Dashboard Data Catalogue

Documents Procedures Videos

Procedures and Protocols

This page list the standard operating procedures, guidelines and protocols developed and used by Soils4Africa project for continental soil monitoring and assessment, as well as several other relevant resources for continental-level soil survey in Africa

- Guidance for Fieldwork
- Guidance for Laboratory Analysis
- Protocol for Field Survey

Soil Data of Africa

Map Viewer Dashboard Data Catalogue Docs & Media

Documents Procedures Videos

Videos

The Soils for Africa project produced a series of videos, published on YouTube, on various topics including guides and protocols for field survey and field survey management in different languages. A selection of these videos can be accessed from this page. For an overview of all videos, visit the Soils4Africa YouTube channel.

Soils4Africa Field Protocol

This playlist contains ten videos documenting the field protocols for soil sampling and observations, which guided the fieldwork in the Soils4Africa project. Videos are available in English, French and Arabic.

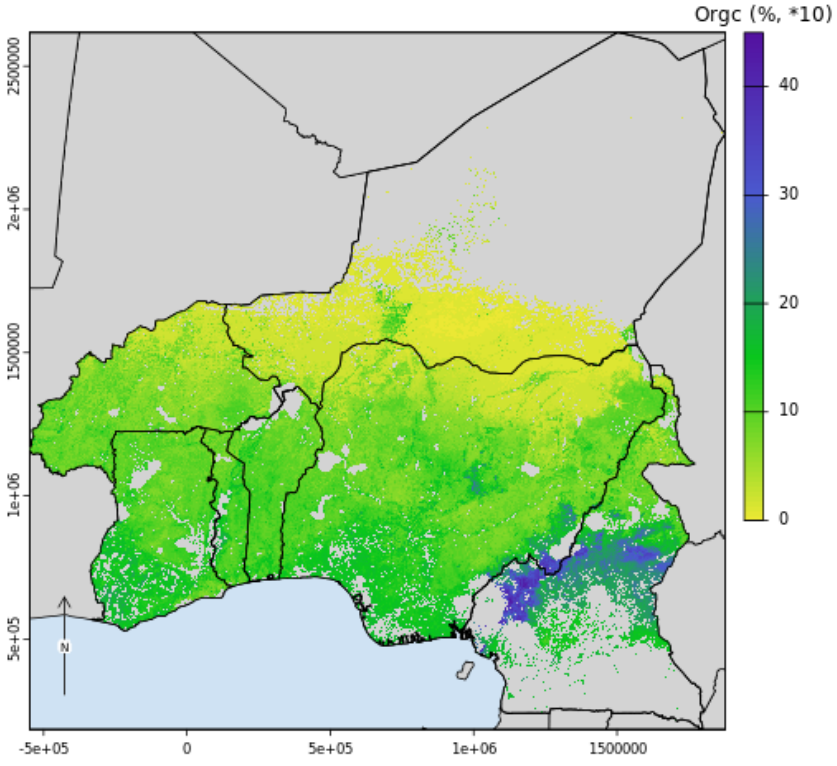
Field protocol (English)

Field protocol (French)

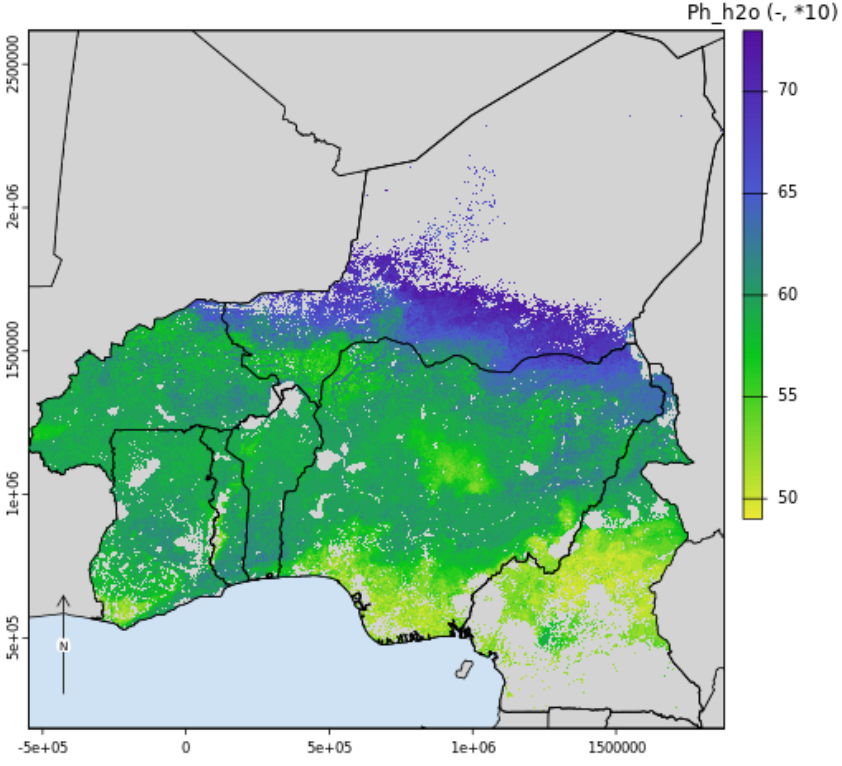
Field protocol (Arabic)

Outputs | Outcomes

Soil organic carbon (0-20 cm)

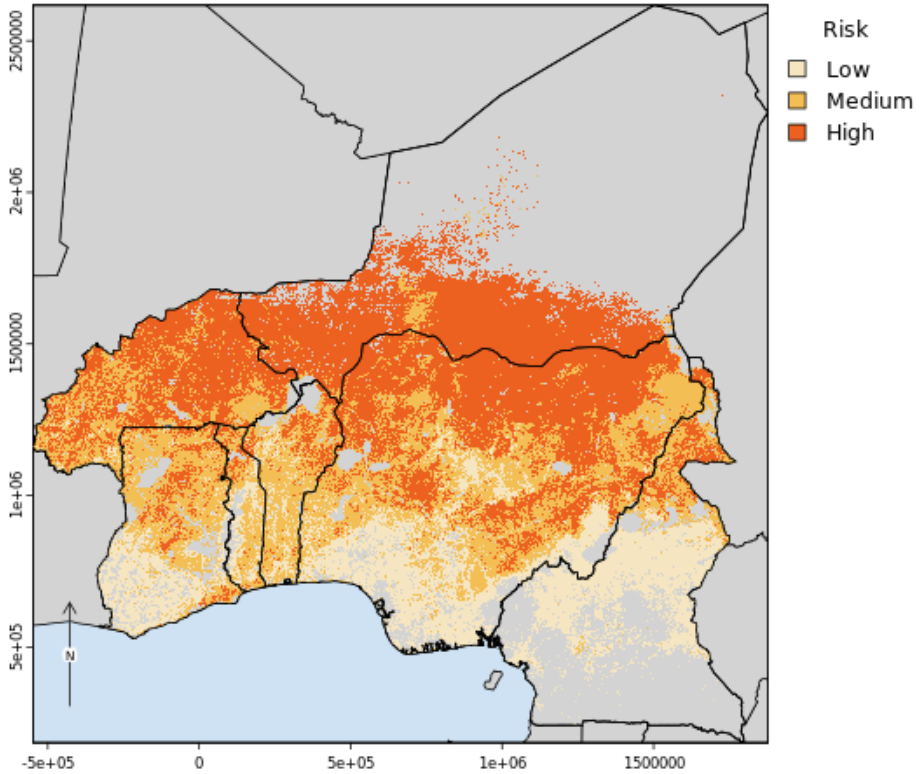


pH (0-20 cm)

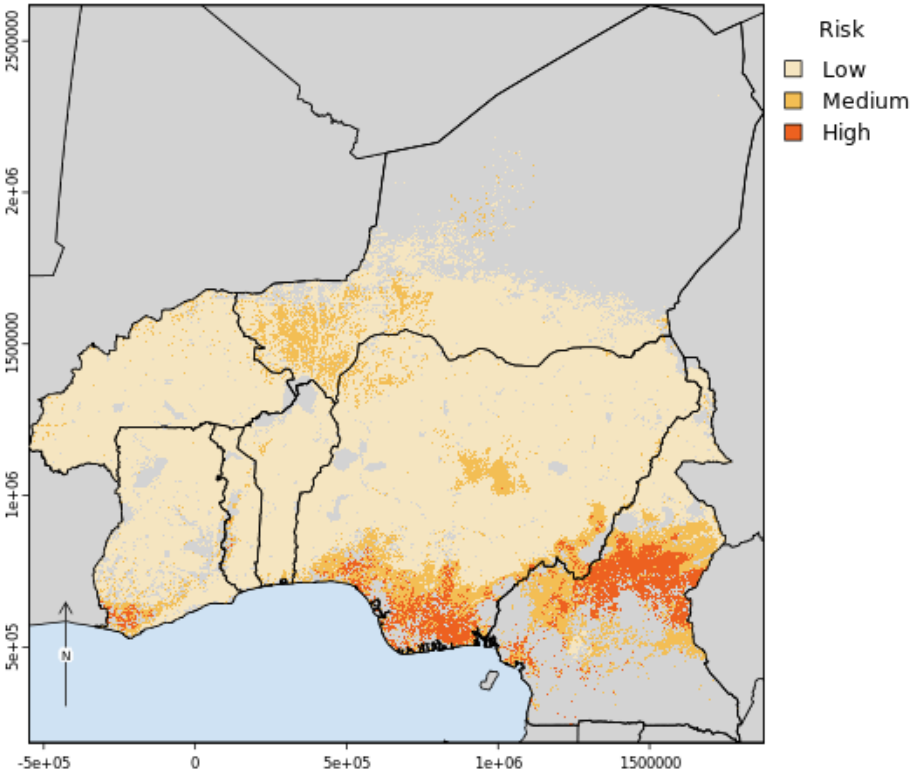


Outputs | Outcomes

Risk of soil organic carbon < 1%

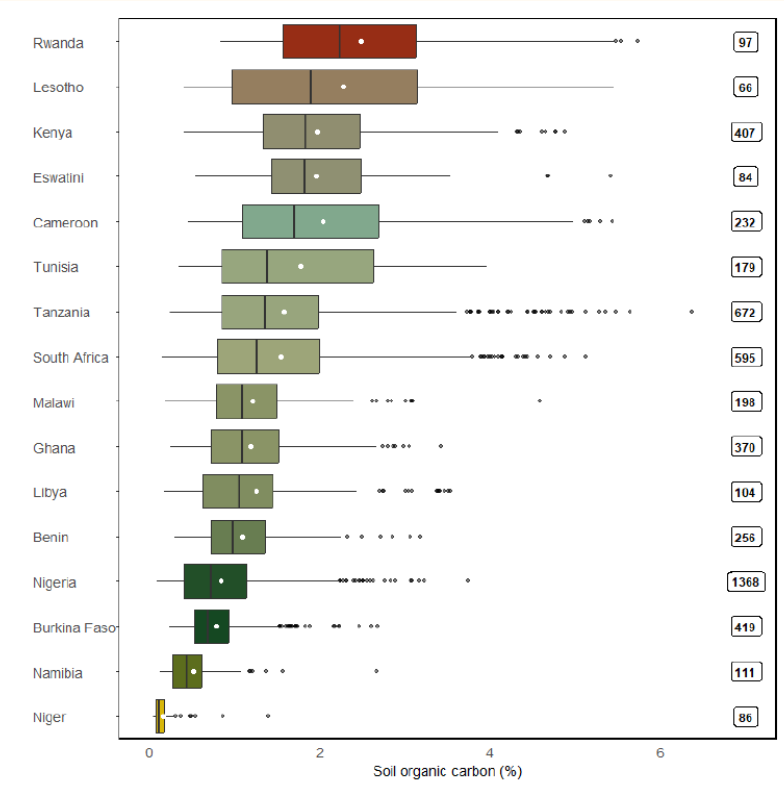


Risk of pH < 5.5

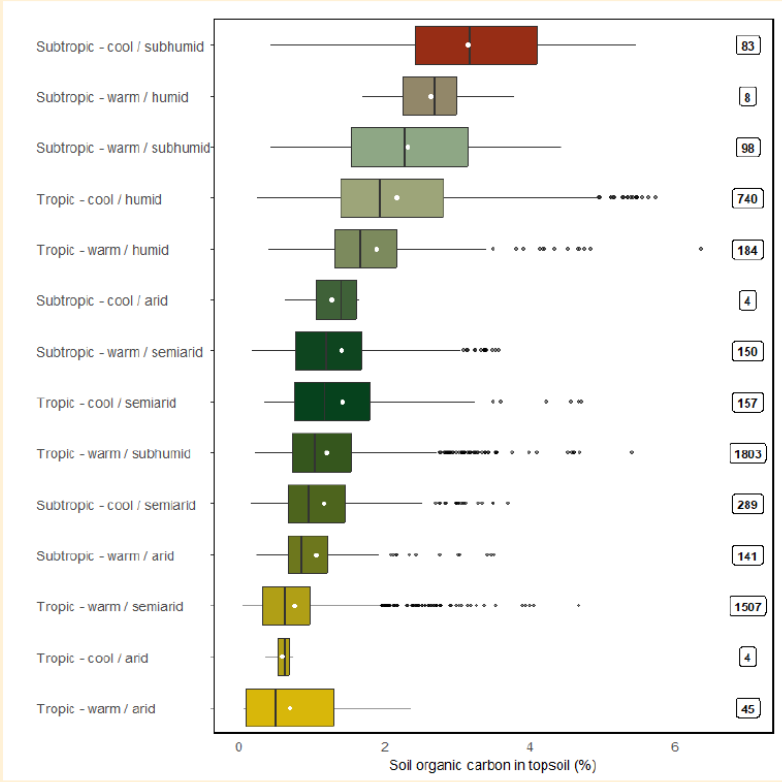


Outputs | Outcomes

SOIL ORGANIC CARBON

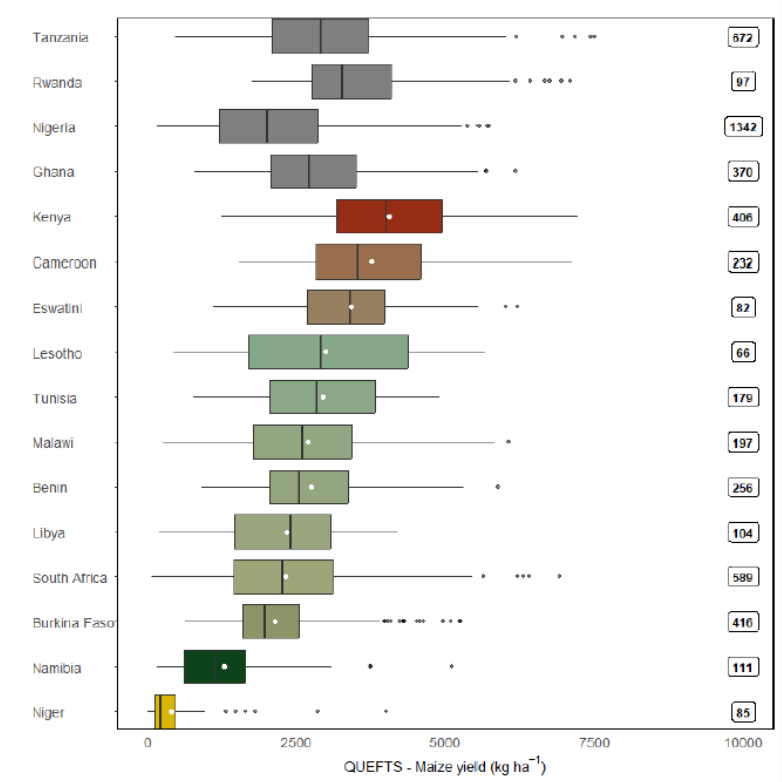


SOIL ORGANIC CARBON

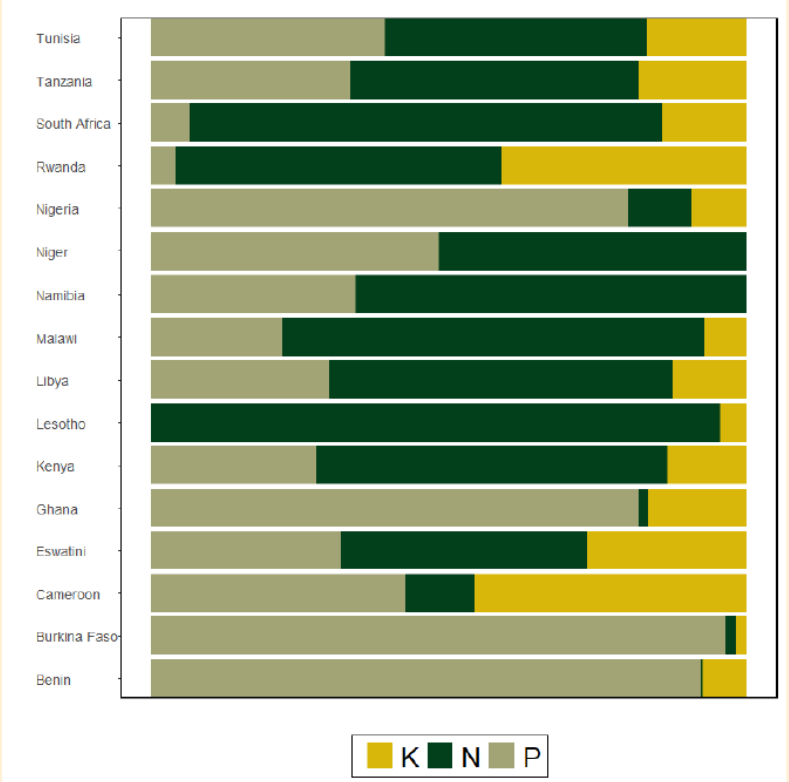


MACRONUTRIENTS: INTERPRETATION WITH QUEFTS (MAIZE)

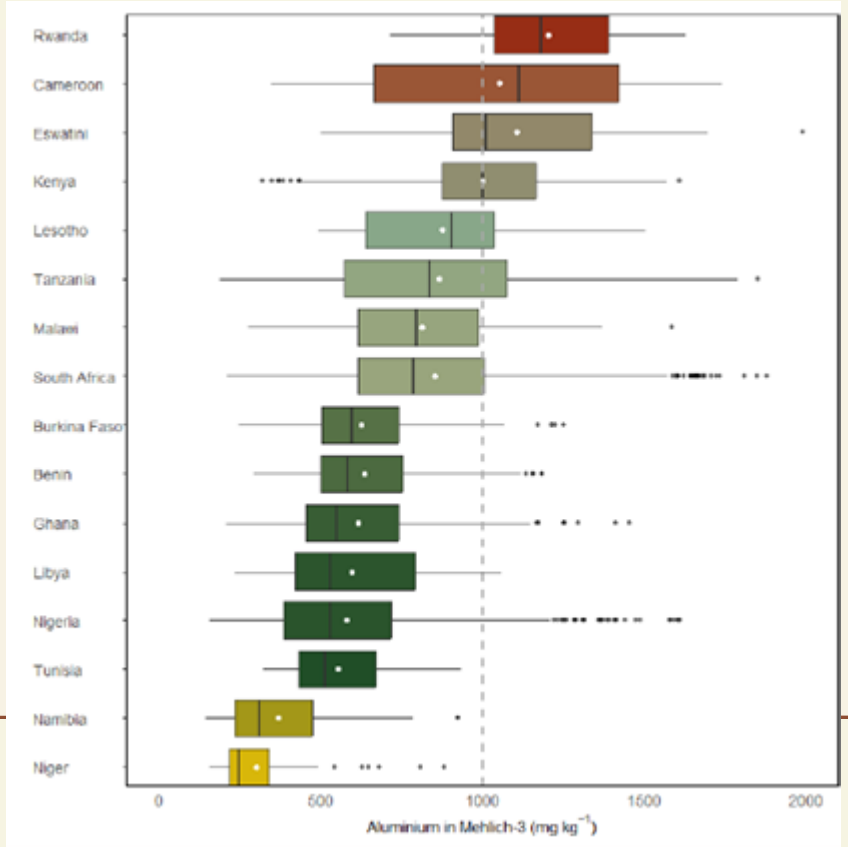
YIELD



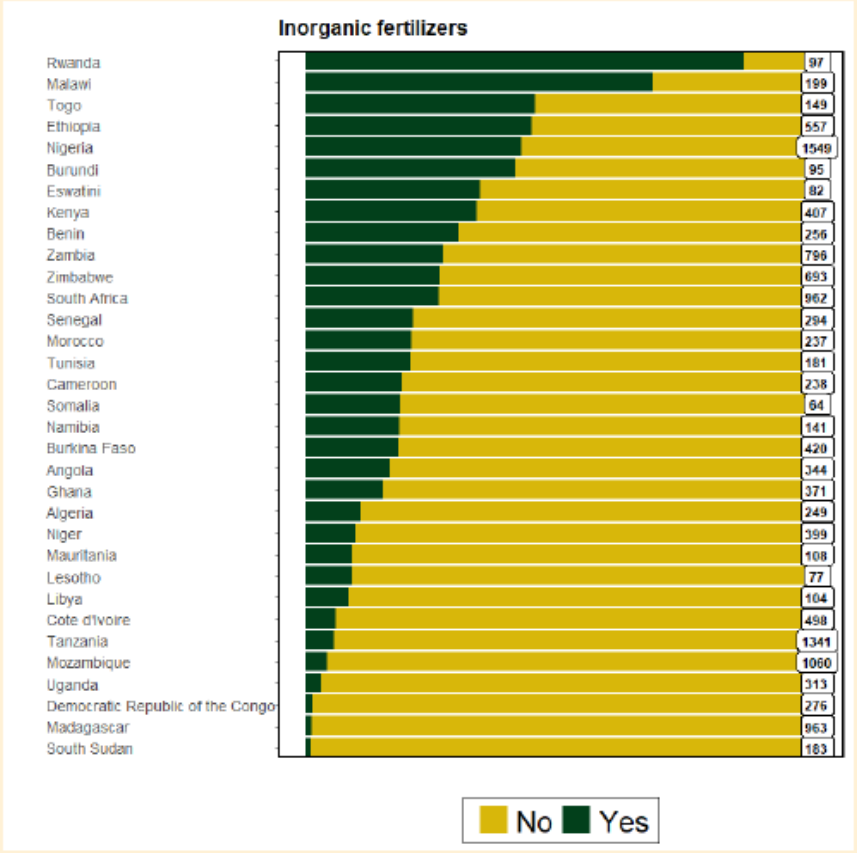
MOST LIMITING NUTRIENT

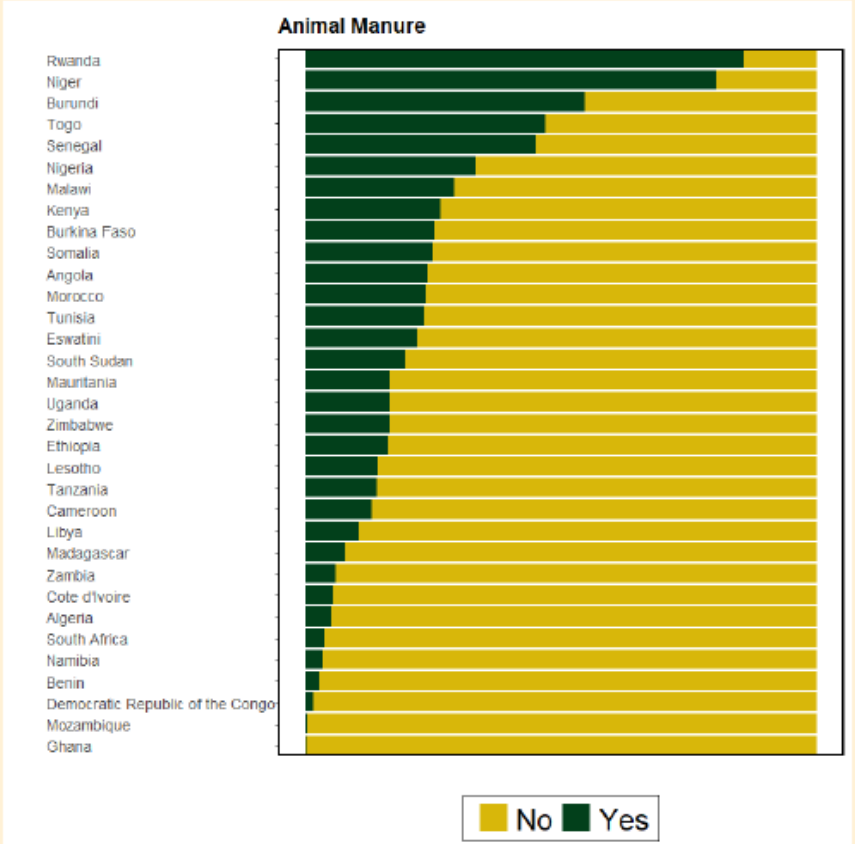


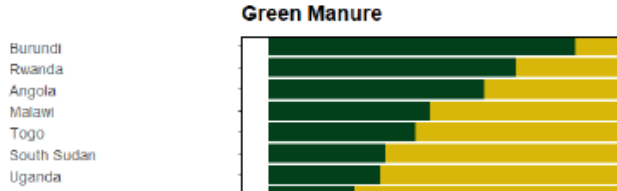
AGRICULTURAL CONSTRAINTS



INPUTS

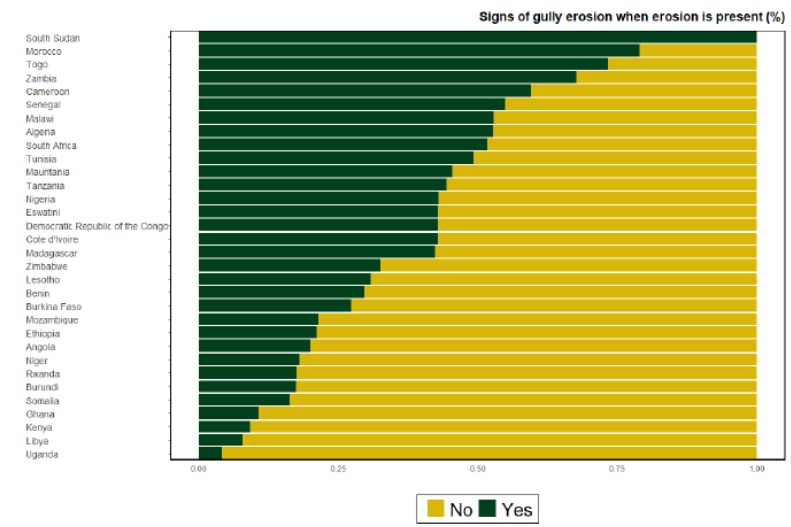

Inorganic fertilizers
Rwanda 97
Malawi 199
Togo 149
Ethiopia 557
Nigeria 1549
Burundi 95
Eswatini 82
Kenya 407
Benin 256
Zambia 796
Zimbabwe 693
South Africa 962
Senegal 294
Morocco 237
Tunisia 181
Cameroon 238
Somalia 64
Namibia 141
Burkina Faso 420
Angola 344
Ghana 371
Algeria 249
Niger 399
Mauritania 108
Lesotho 77
Libya 104
Cote d'Ivoire 498
Tanzania 1341
Mozambique 1060
Uganda 313
Democratic Republic of the Congo 276
Madagascar 963
South Sudan 183
No
Yes

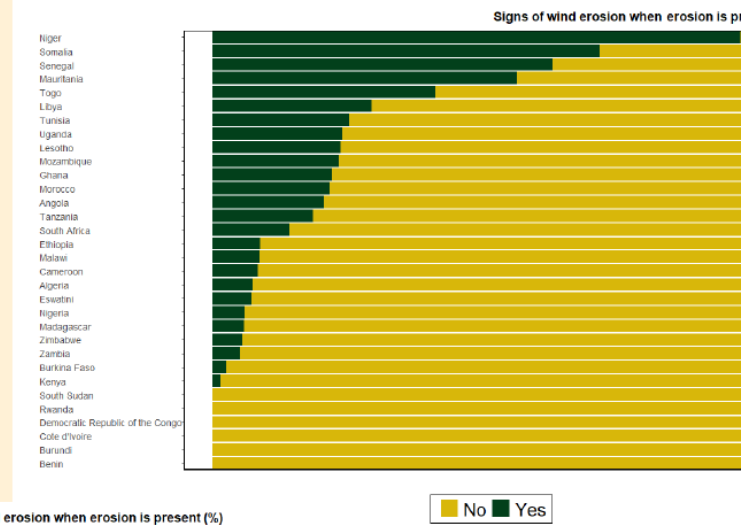

Animal Manure
Rwanda
Niger
Burundi
Togo
Senegal
Nigeria
Malawi
Kenya
Burkina Faso
Somalia
Angola
Morocco
Tunisia
Eswatini
South Sudan
Mauritania
Uganda
Zimbabwe
Ethiopia
Lesotho
Tanzania
Cameroon
Libya
Madagascar
Zambia
Cote d'Ivoire
Algeria
South Africa
Namibia
Benin
Democratic Republic of the Congo
Mozambique
Ghana
No
Yes

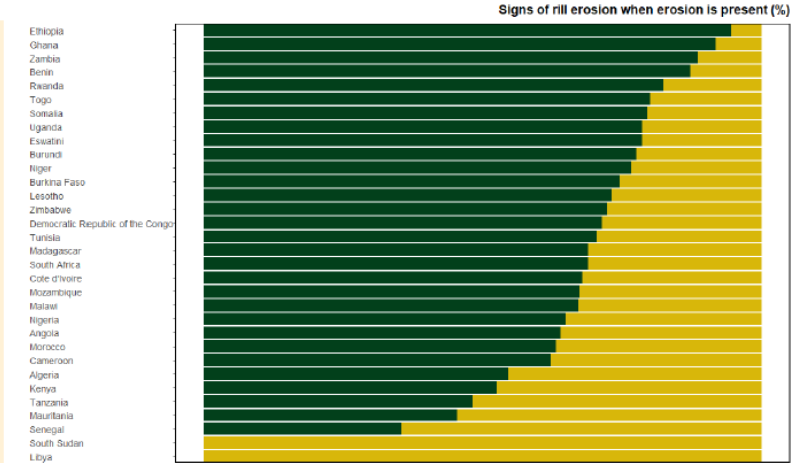

Green Manure
Burundi
Rwanda
Angola
Malawi
Togo
South Sudan
Uganda

EROSION

If erosion is present → what is the dominant type of erosion







Policy relevance

- In order to scale agro-ecology **soil conditions need to be taken into account**
- **A soil information system is instrumental** for informed decision making
- Soils4Africa SIS is a continental SIS **for continental and regional** analysis and policy development
- For (sub-)national analysis, policy advice and local advisory, **more detailed SISs need to be developed**
- S4A **methodologies can be used** for this purpose

- Follow-up project: **Africa Union Soil Observatory**