



Food and Agriculture  
Organization of the  
United Nations

# 3<sup>rd</sup> Workshop of the International Network of Black Soils



## Chapter 1 Chapter introduction

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# *Updated progress of the report*

- Chapter 1
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- A frame version of the chapter has been developed.

# 1. The role of Black Soils

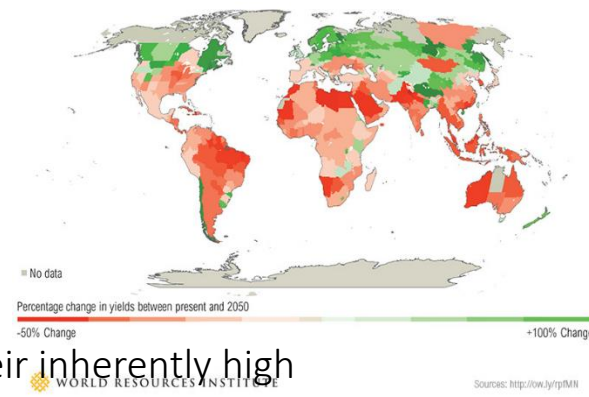
## Ecosystem services of black soils



***Ecosystem services***


- **Maintenance of SOC**
- **Maintenance of soil fertility**
- **Abundance of soil biodiversity**
- **Prevention soil compaction**
- **Prevention soil waterlogging**

- Black Soils include those with abundant nutrients for crops' growth and organic carbon as well as good physical properties.
- Characteristics such as appropriate pH, adequate available nitrogen, potassium, and suitable levels of most micro-nutrients, allow black soils to maintain or improve soil nutrient balance and cycling, when practices of sustainable management are used.
- Black soils have good soil physical properties in terms of soil bulk density, soil aggregation, wet-aggregate stability, and water infiltration rate. Those characteristics allow these soils to be remarkable for regulating water supply in the field in terms of mitigate floods and droughts, and securing water quality.
- As carbon-rich soils they are a reserve of components such as sugar, amino acids and carboxylic acids, which are natural resources for growth of soil microbial community. Nutrients in Black Soils, such as nitrogen and phosphorus, also contribute to abundant soil biodiversity.



# 1. The role of Black Soils

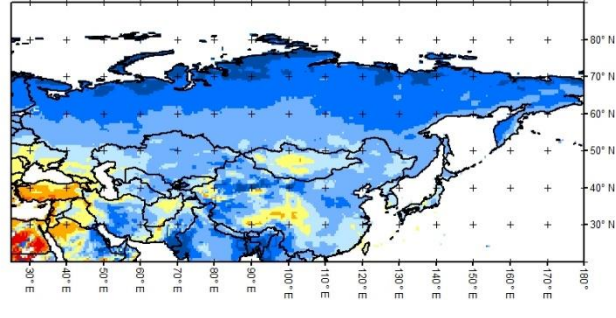
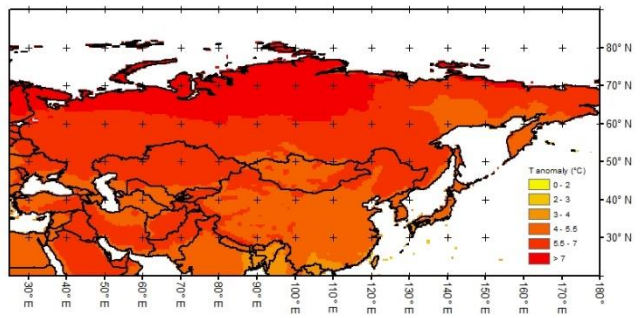
## Climate change mitigation and adaptation



**Climate change mitigation and adaptation**

- Increase resilience to droughts and floods
- GHS's balance
- Contribute to reduce global warming

- Black soils have a high potential to mitigate climate change due to their inherently high SOC content.
- According to the results of GSOCmap, average SOC stock of black soils is 66.4 t/ha in top 30 cm, which is higher than the average of SOC stock in all soil types as 57.34 t/ha (FAO and ITPS, 2019).
- Most importantly, black soils are extensively and intensively farmed (cereal, pasture, range and forage system) resulting in significant losses of organic carbon.
- According to various estimates, black soils lost 20 to 50% of SOC in 50 to 100 years after conversion from natural system to intensive farming system.



# 1. The role of Black Soils

## Production and food security



**Production and food security**

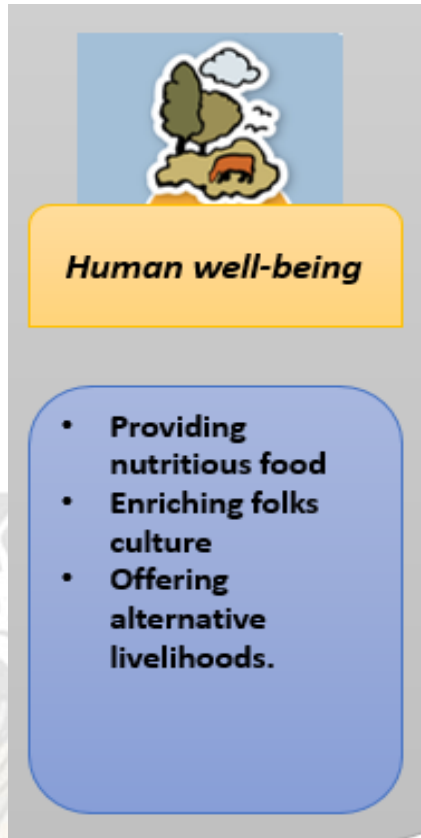
- **High soil organic matter content**
- **Good soil fertility**
- **Good Soil physical structure**
- **Enhance farmer income**

- Black soils are considered the food basket in many regions of the world
- Their high soil organic matter content, good soil fertility and physical structure make them the most fertile and productive soils in natural conditions, and they are therefore intensively and extensively cultivated.
- Global analysis showed that out of the total land dedicated to growing crops, 19% of the farmland is currently comprised of black soils, and out of the total area covered by black soils, 62% is used as croplands



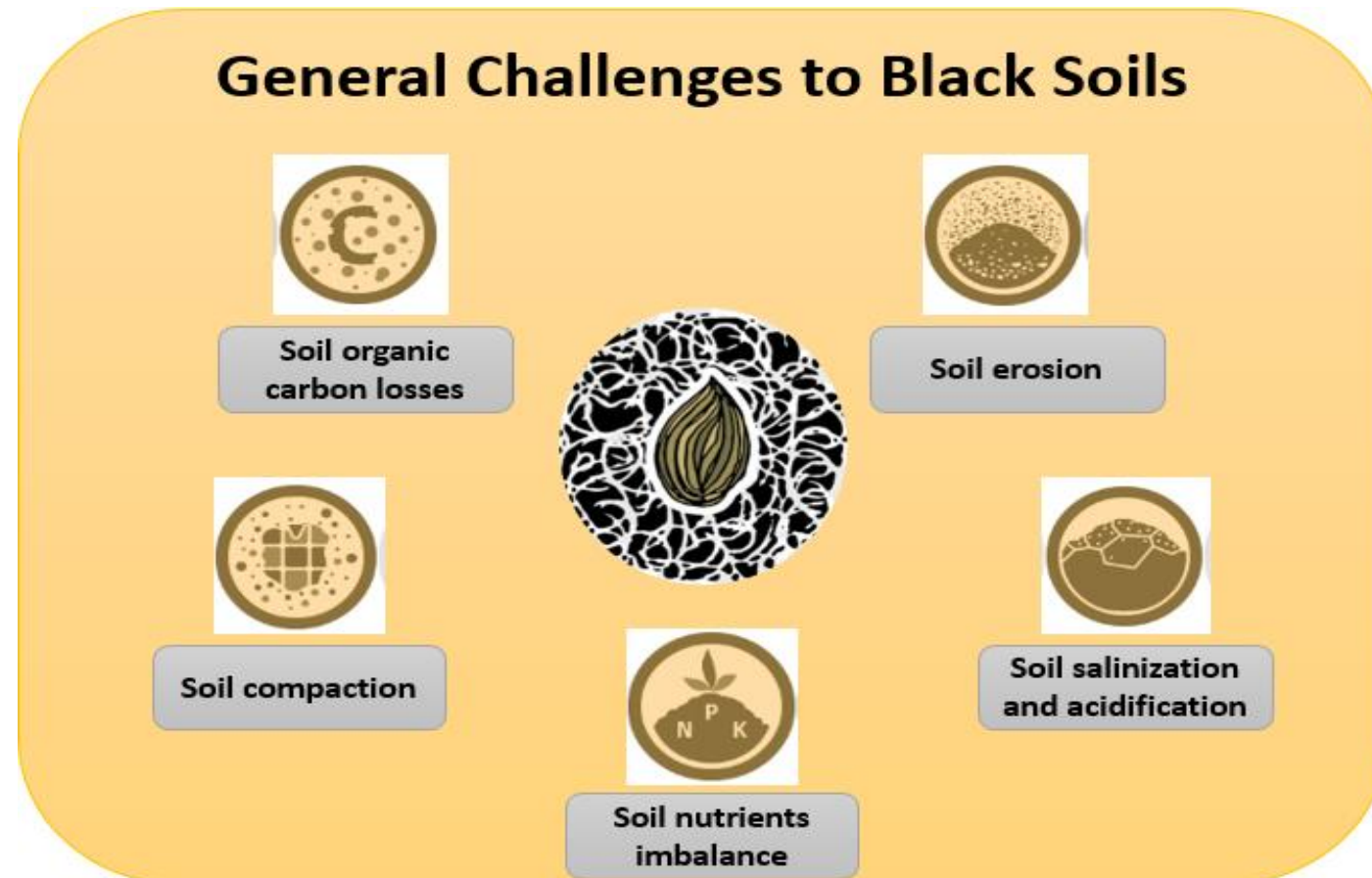
# 1. The role of Black Soils

## For human well-being



- Multiple nutritious foods are produced in black soils region globally including cereals, beans, meats, etc.
- After hundreds of years framing in black soils, local cultures with the symbol of black soils has formed. People associate the Black Soils to a symbol of healthy and positive characters to enhance the value of their personality, products and culture.
- The aesthetic and recreation values of Black Soils also offer opportunities for increasing income of farmers.

## 2. Main challenges for sustainable black soils management





### 3. Short overview of the International Network of Black Soils

The International Network of Black Soils (INBS) aims to provide a platform for knowledge sharing for countries with black soils to discuss common issues related to the conservation and sustainable management of these soils and the need to foster technical exchange and cooperation.

### 4. Definition of black soils

“Black soils are mineral soils which have a black surface horizon, enriched with organic carbon that is at least 25 cm deep” (FAO, ITPS, 2019).





# Definition of Black Soil

In 2019, the definition of Black Soils was approved in 11<sup>th</sup> ITPS Working Session.

1st category Black Soils (the most vulnerable and endangered, needing the highest rate of protection at a global level)

2nd category Black soils (mostly endangered at the national level)



The presence of black or very dark surface horizons typically with a chroma of  $\leq 3$  moist, a value of  $\leq 3$  moist and  $\leq 5$  dry (by Munsell colours);

The total thickness of black surface horizons  $\geq 25$  cm;

Organic carbon content in the upper 25-cm of the black horizons of  $\geq 1.2\%$  (or  $\geq 0.6\%$  for tropical regions) and  $\leq 20\%$ ;

CEC in the black surface horizons  $\geq 25$  cmol/kg;

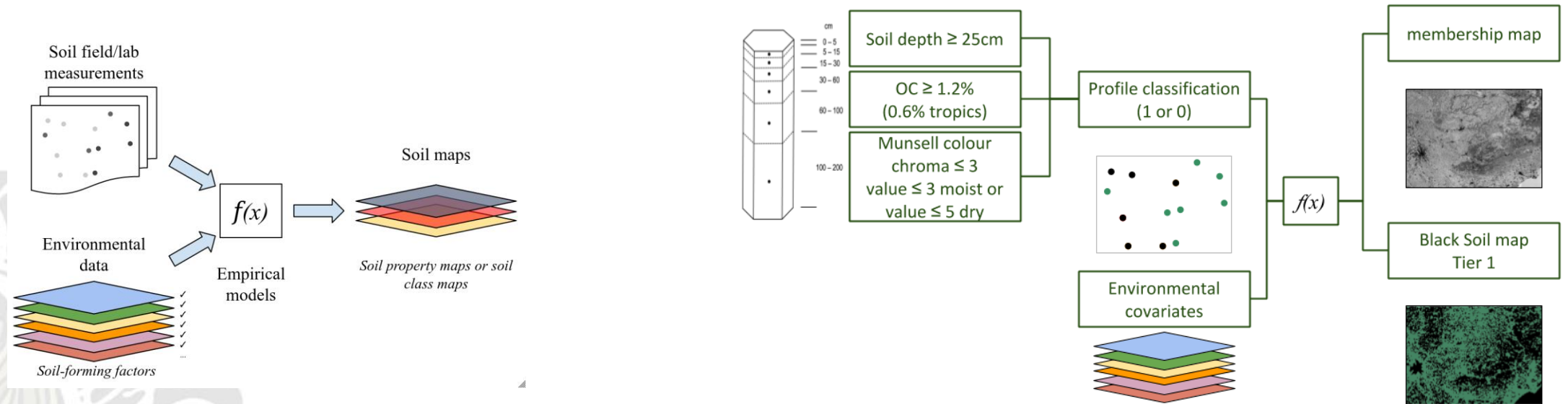
A base saturation in the black surface horizons  $\geq 50\%$

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# Global Black Soil Distribution

The approach of Global Black Soil Distribution Map has been developed by the data and mapping group of the GSP.





# Report of the Global Status of Black Soils

## Structure of the Black Soil Report

1. Introduction
2. Portrait of black soils
3. Regional status of black soils: status of land use, management, changing trend of soil properties
4. The challenges to black soils and the ways/practices to overcome them
5. Potential response (Policy recommendation)
6. The way forward

- 82 black soil experts from 26 black soil member countries have contributed to the development of the report.
- The report is planned to be launched next in FAO



Guillermo Pe, Argentina



## 5. Structure of the report :

- Portrait of black soils
- Regional status of Black soils
- The challenges to black soils and the ways/practices to overcome them
- Potential response

This report was prepared with the participation of experts from black soil member countries of the INBS. The report concludes with a series of actions that need to be taken by different stakeholders to achieve sustainable management of black soils.



*Thank you for your attention*

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