



Food and Agriculture
Organization of the
United Nations

GLOBAL
SYMPOSIUM on
SOILS and **WATER**

02-05 October, 2023

Soil and water:
a source of life

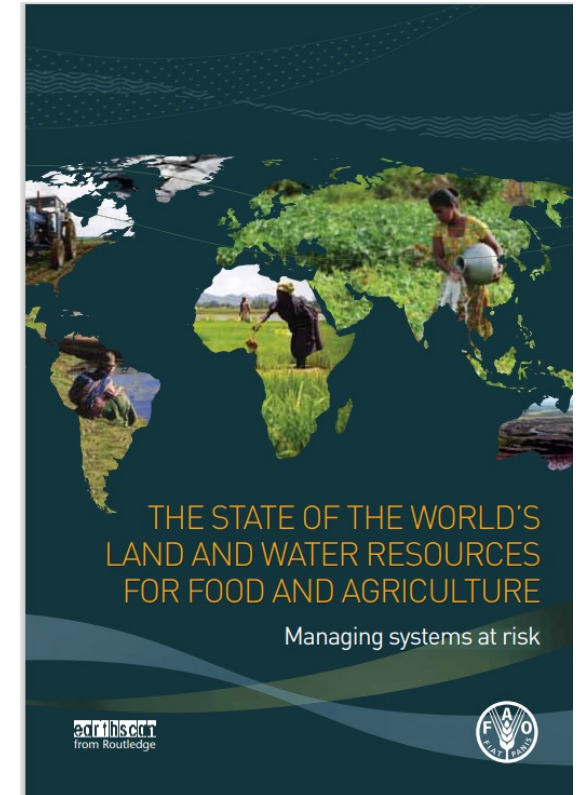
Caring about Soil & Water:
urgent needs

Rosa Poch - Chair of the Intergovernmental Technical
Panel on Soils (ITPS)



Status of land and water resources : key messages on soil and water

- Soil erosion carries away 20–37 billion tonnes of topsoil annually, reducing crop yields and the soil's ability to store and cycle carbon, nutrients and water
- Human-induced land degradation, soil erosion, salinization and groundwater pollution are not perceived as urgent risk
- Taking care of land, water and particularly the long-term health of soils is key in accessing food in an ever-demanding food chain



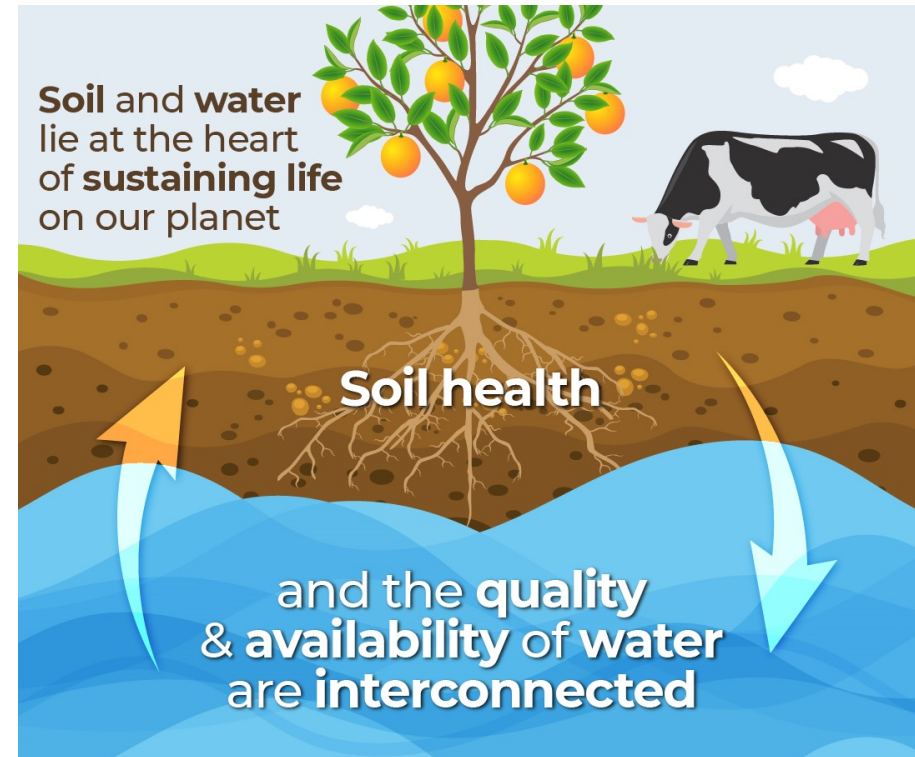
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Soil and water are interconnected resources that need integrated management



95% of our **food** comes from **soils** thanks to the **power of water**



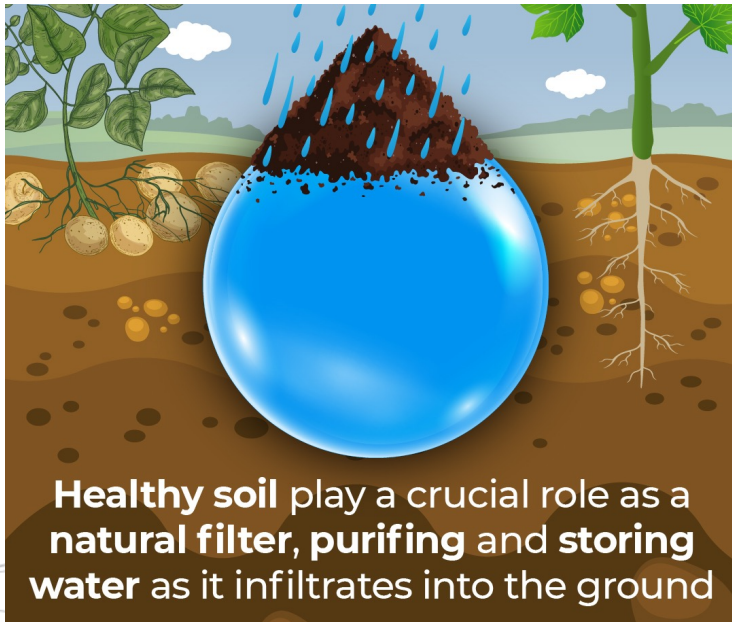
Soil and water lie at the heart of **sustaining life** on our planet

Soil health

and the quality & availability of water are **interconnected**

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Healthy soils are crucial for water conservation



Healthy soils act as a **carbon sink**, helping to **adapt** to **climate** change and **mitigate** its effects.

Improved **soil and water management** improves the land's capacity to **withstand extreme climate events** such as **droughts, floods, and fires**.

Healthy soil **purify, drain** and **store** water, making it an indispensable **foundation for life** on Earth

One cubic meter of healthy soil can retain over **250 liters** of water

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Soil threats affect both soil and water



Soil erosion and soil compaction

can result in a **reduction** of more than **40%** in soil's **capacity to retain water**

and increase the **risk** of **landslides, flooding** and **sand/dust storms**

Poor irrigation and drainage practices are some of the main drivers of soil salinization

Accumulated salts

Use or reuse of saline water

Waterlogging and compaction

SALINE SOILS

SODIC SOILS

Sodium adsorbed on soil particles destroys soil structure

Nutrient imbalance

Less biodiversity

Soils affected by salinity and sodicity reduce agricultural productivity

Pollution jeopardizes valuable soil ecosystem services

CLIMATE REGULATION

FOOD PRODUCTION

FOOD QUALITY

WATER PURIFICATION

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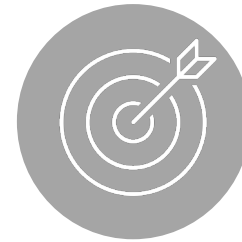


Use of soil and water resources in rainfed or irrigated agriculture



- Rainfed agriculture produces the world's largest food portion. However, better soil water conservation practices need to be taken into consideration to make it more efficient.
- As irrigated agriculture is the largest water user, there is a need to adopt soil and water conservation practices such as water harvesting and soil moisture monitoring.

Symposium expectations



Aims to:

Review the relationship between soil and water in achieving sustainable and resilient agrifood systems.

It is expected to:



identify knowledge gaps and solutions for integrated management of soil and water resources in a changing environment.

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Themes of the Symposium



Theme 1 | **Soil and water management in rainfed agriculture**

This theme focuses on innovations for increasing the water-holding capacity of soils and improve green water use efficiency. It will also analyze the suitability of using soil organic carbon (SOC) as an indicator for land degradation neutrality and water scarcity, and interactions/trade-offs in soil management practices for water availability and soil recarbonization in rainfed agriculture.



Theme 2 | **Soil and water management in irrigated agriculture**

This theme highlights the importance of efficient irrigation systems for preventing soil degradation, circular economy approaches for sustainable water management in fertilization, the value of water quality control to minimize soil salinity in irrigated systems, and the development of innovative irrigation systems for improved nutrient use efficiency.



Theme 3 | **Soil and water management under the One Health framework**

This theme explores the link between soil health and water quality within the One Health approach. It examines thresholds associated with the use of contaminated water and soil in agriculture, their impact on soil biodiversity, food quality, and safety and presents technical innovations for real-time monitoring of green water and water quality.



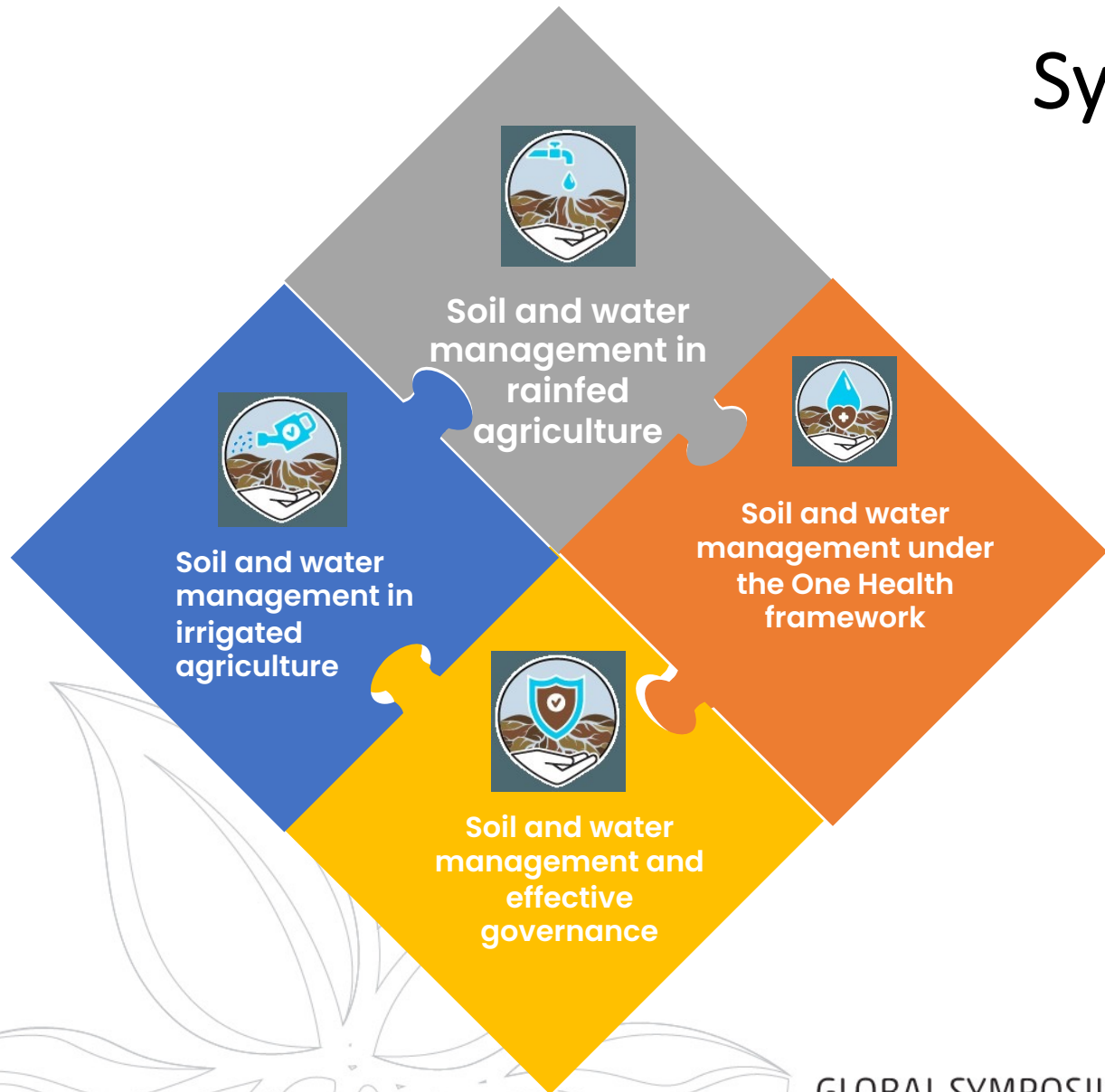
Theme 4 | **Integrated soil and water management and effective governance**

This theme focuses on policies and governance actions aimed at improving soil and water resources management, leveraging innovative technologies such as precision agriculture, remote sensing, and big data analytics, and considering gender aspects for effective Integrated soil and water management.

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Symposium format



Thematic
panel
discussions

Participation and interaction
of multidisciplinary experts

Virtual
technical
sessions

The latest research and
findings on the GSOWA23
themes

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Key questions to be addressed



Theme 1 | **Soil and water management in rainfed agriculture**

- What are the strategies to attain green water use efficiency for rainfed agriculture?
- Which is the impact of carbon sequestration on soil water storage?
- What are the benefits of water smart agriculture?



Theme 2 | **Soil and water management in irrigated agriculture**

- What is the impact of irrigation and water management on soil degradation processes?
- How to improve soil health and crop production through irrigation?
- How can we sustainably use marginal water to improve soil health?

Key questions to be addressed



Theme 3 | **Soil and water management under the One Health framework**

- What are the links between soil and water quality in relation to soil biodiversity and agricultural practices?
- What is the role of soil in protecting groundwater and surface water quality?
- What is the status of water pollution and its effect on soil, environmental, and human health?



Theme 4 | **Integrated soil and water management and effective governance**

- What policies are relevant to improve soil and water management?
- How do soil and water management practices influence nutrient cycling?
- What gender-sensitive tools and methods exist in soil and water management?

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Symposium outcomes

Soil Organic Carbon (2017)

Soil Erosion (2019)

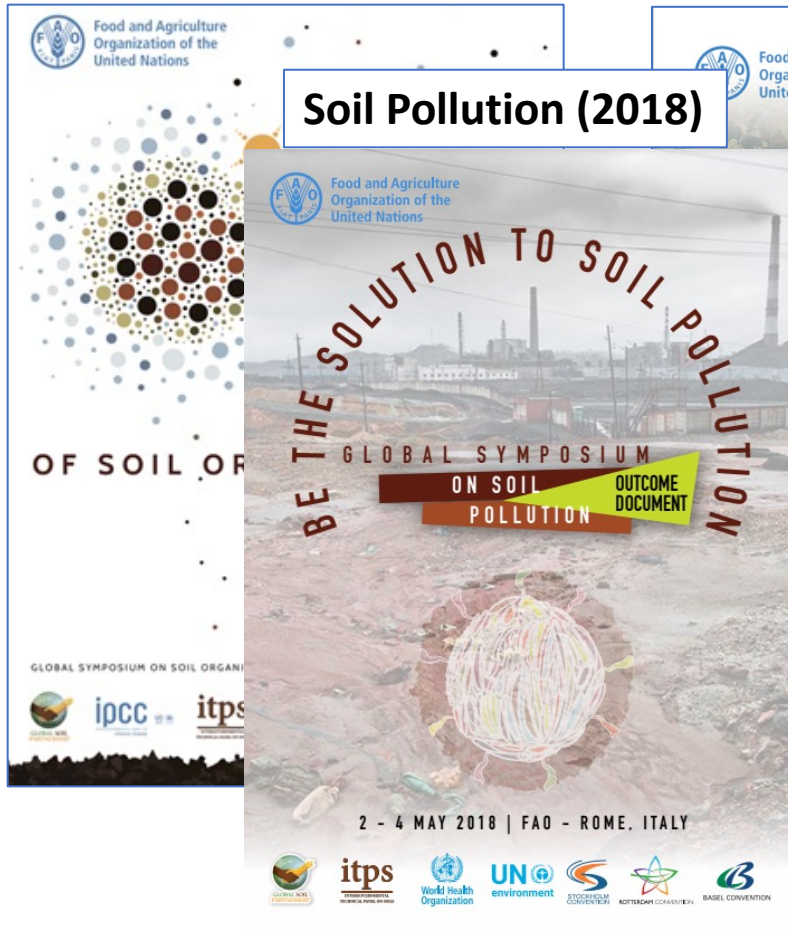
Soil Salinity (2021)

Soils for Nutrition (2022)

Soil Pollution (2018)

Soil Biodiversity (2021)

Soil and water (2023)





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Thank you

