

Soil organic C, ... and the IHSS initiative

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Board Member
International Humic Substances Society (IHSS)

Chair, Division 4 “The Role of Soils in Sustaining
Society and the Environment”,
International Union of Soil Sciences (IUSS)



The event is organised by CIC in the
framework of the FER-PLAY project

A EUROPEAN MARKET FOR CIRCULAR FERTILISERS

Waste Management Europe
FIERA DI BERGAMO – Room Colleoni
Via Lunga – 24125 Bergamo (IT)



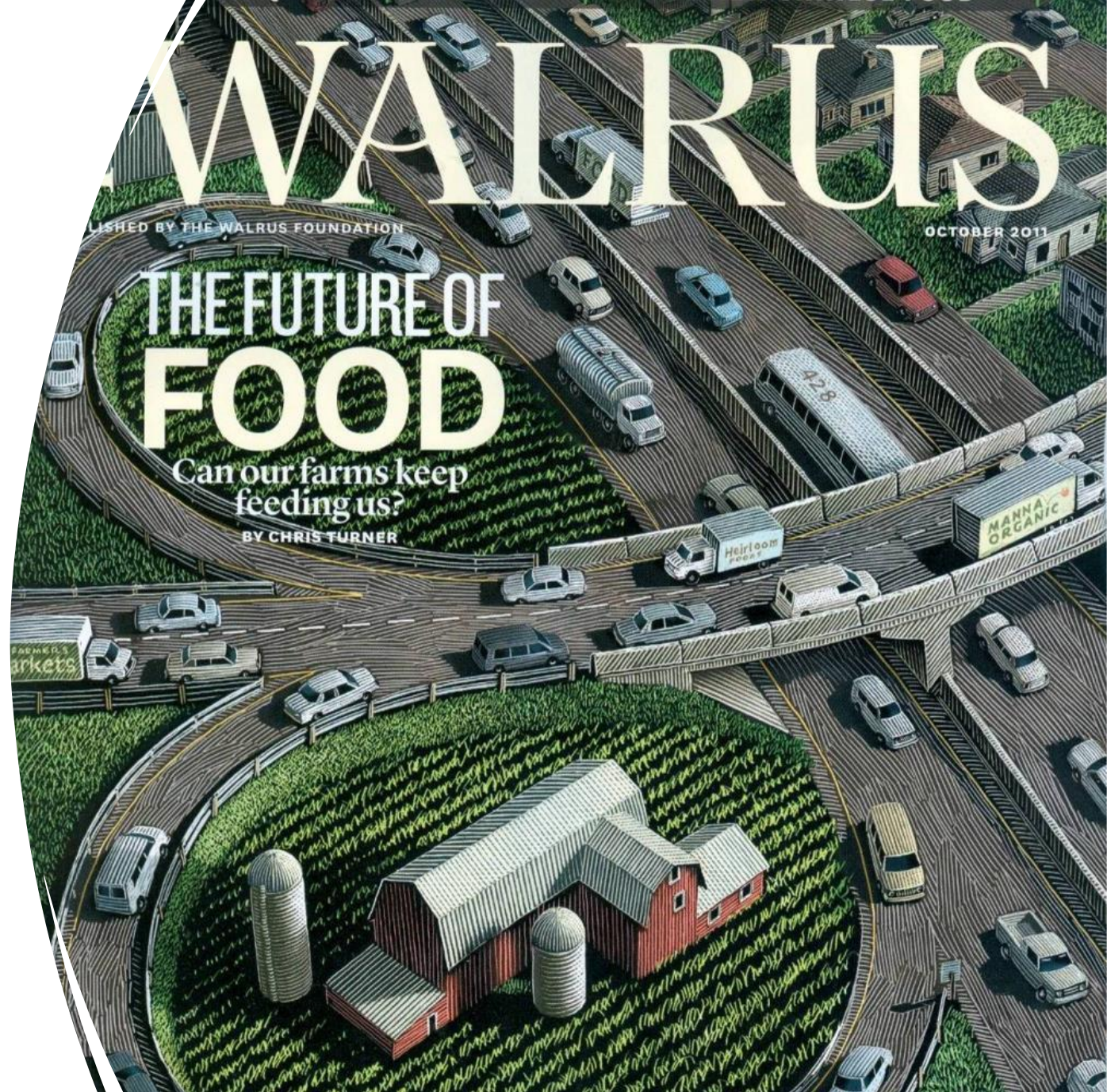
April, 10th 2024

10 AM – 1 PM





Globally agricultural land area is approximately five billion hectares, or 40% of the global land surface (World Agriculture: Toward 2015-2030. FAO, Rome, 2020)...



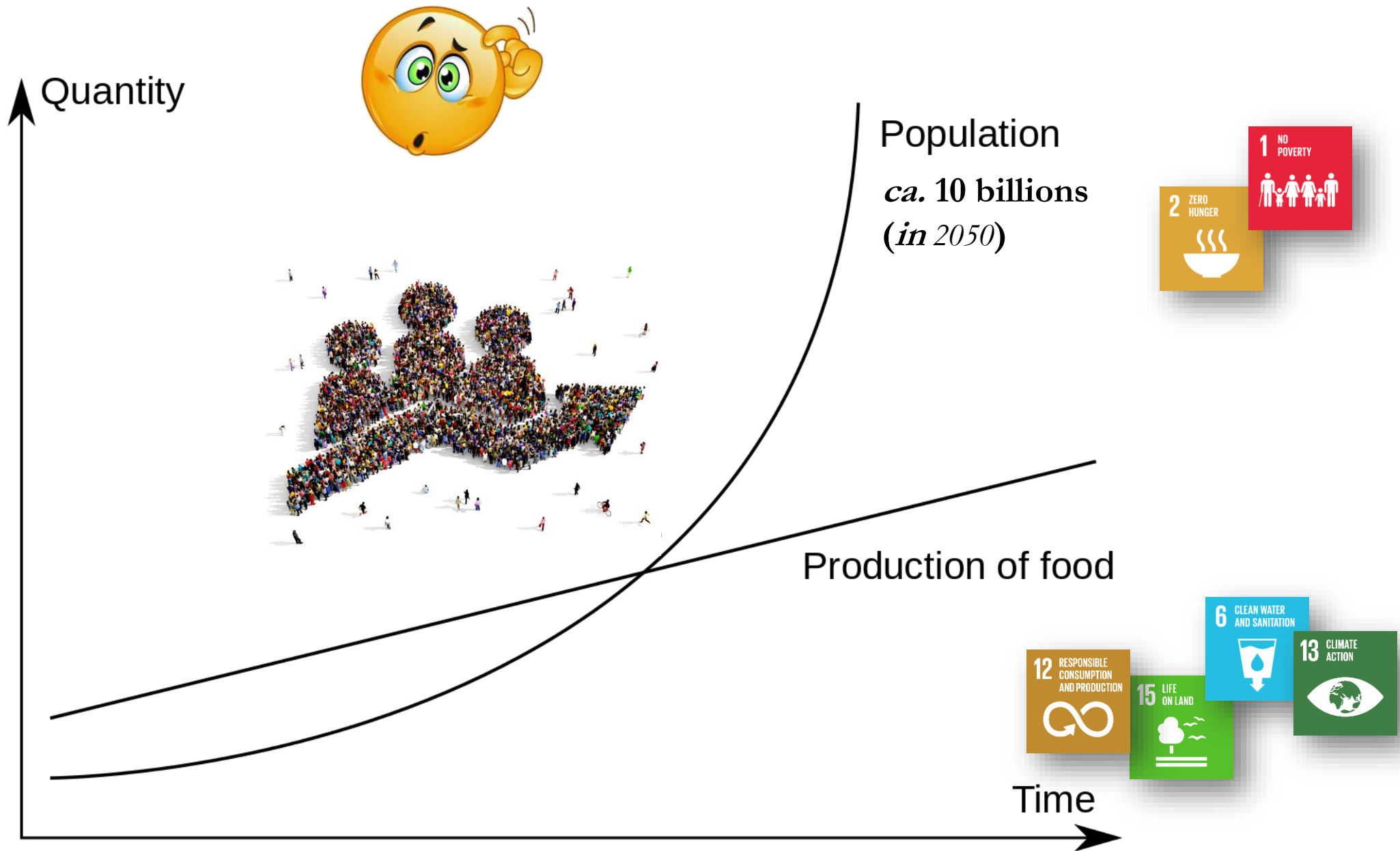


... with topsoils providing
95% of global food
production...

The
Economist

The 9 billion-people question

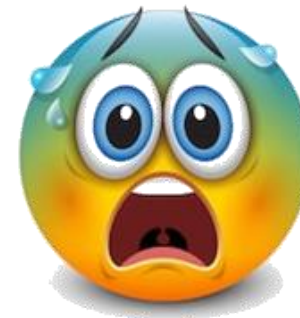
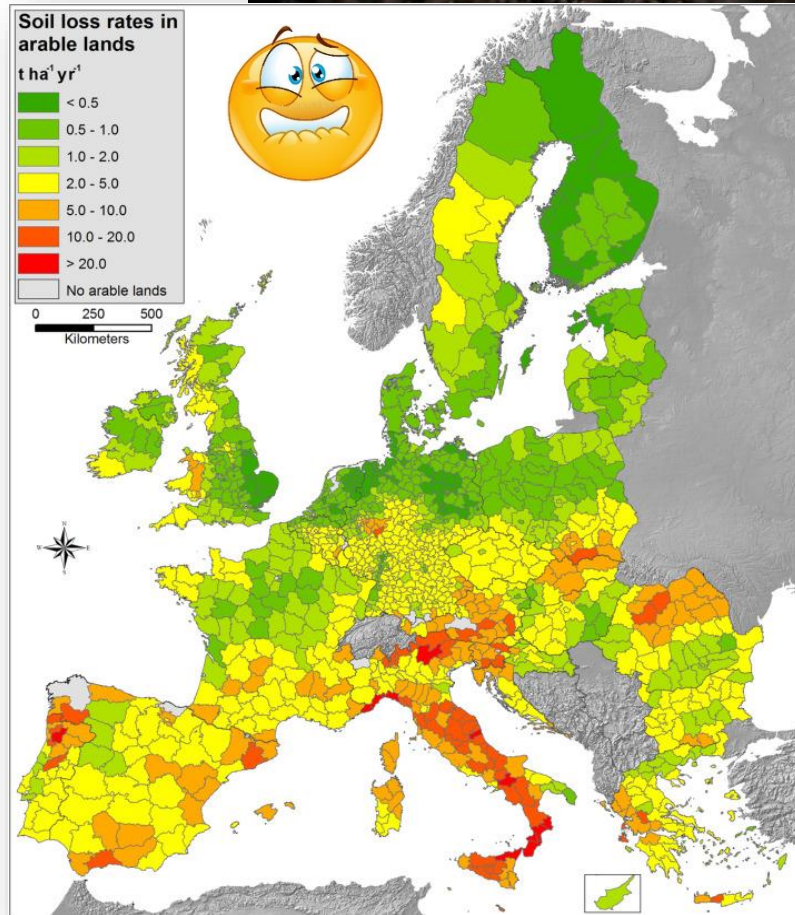
A special report on feeding the world | February 26th 2011

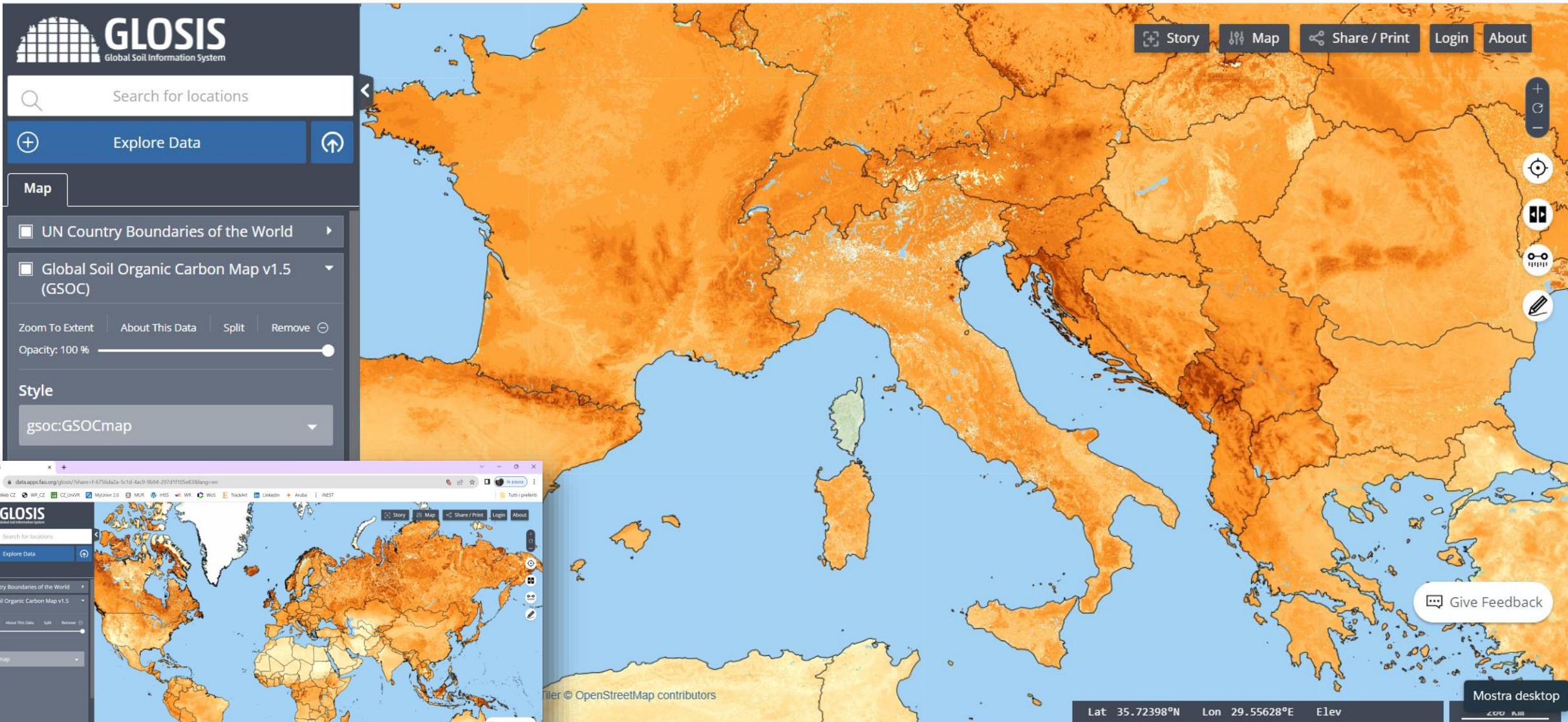




Key figures on soil erosion

- It can take up to 1 000 years to produce just 2-3 cm of soil.
- 33% of the Earth's soils are already degraded and over 90% could become degraded by 2050 (FAO and ITPS, 2015; IPBES, 2018).
- The equivalent of one soccer pitch of soil is eroded every five seconds. (FAO and ITPS, 2015).
- Estimated rates of accelerated soil erosion on arable or intensively grazed lands are 100-1 000 times higher than natural erosion rates.
- Soil erosion can lead up to 50% loss in crop yields.
- The economic cost of soil degradation for the European Union is estimated to be in the order of tens of billions of euros annually.





<https://data.apps.fao.org/glosis/?share=f-6756da2a-5c1d-4ac9-9b94-297d1f105e83&lang=en>

Why are your crops not growing well?

LET ME INTRODUCE YOU TO SOME CAUSES OF CROP FAILURE DUE TO UNSUSTAINABLE SOIL MANAGEMENT



EROSION



COMPACTION



NUTRIENT IMBALANCE



ORGANIC MATTER LOSS

SOIL ORGANIC MATTER HELPS KEEP WATER IN THE SOIL AND CONTRIBUTES TO IMPROVING SOIL STRUCTURE



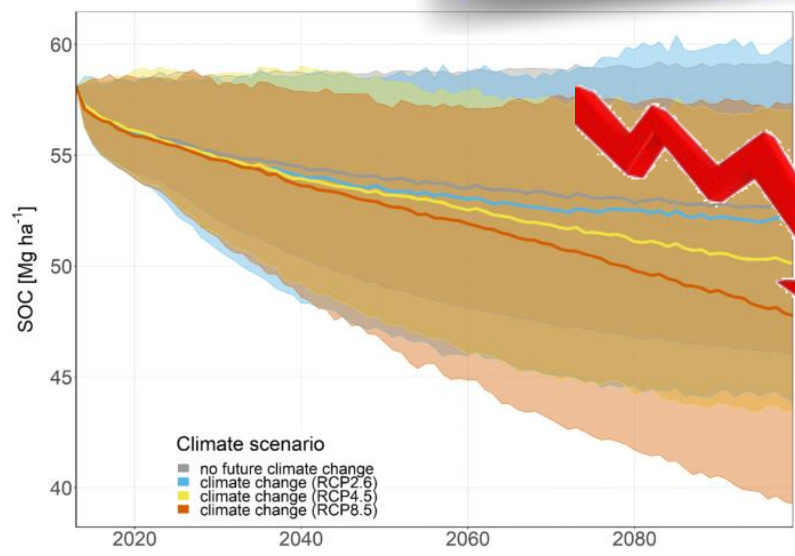
SALINIZATION



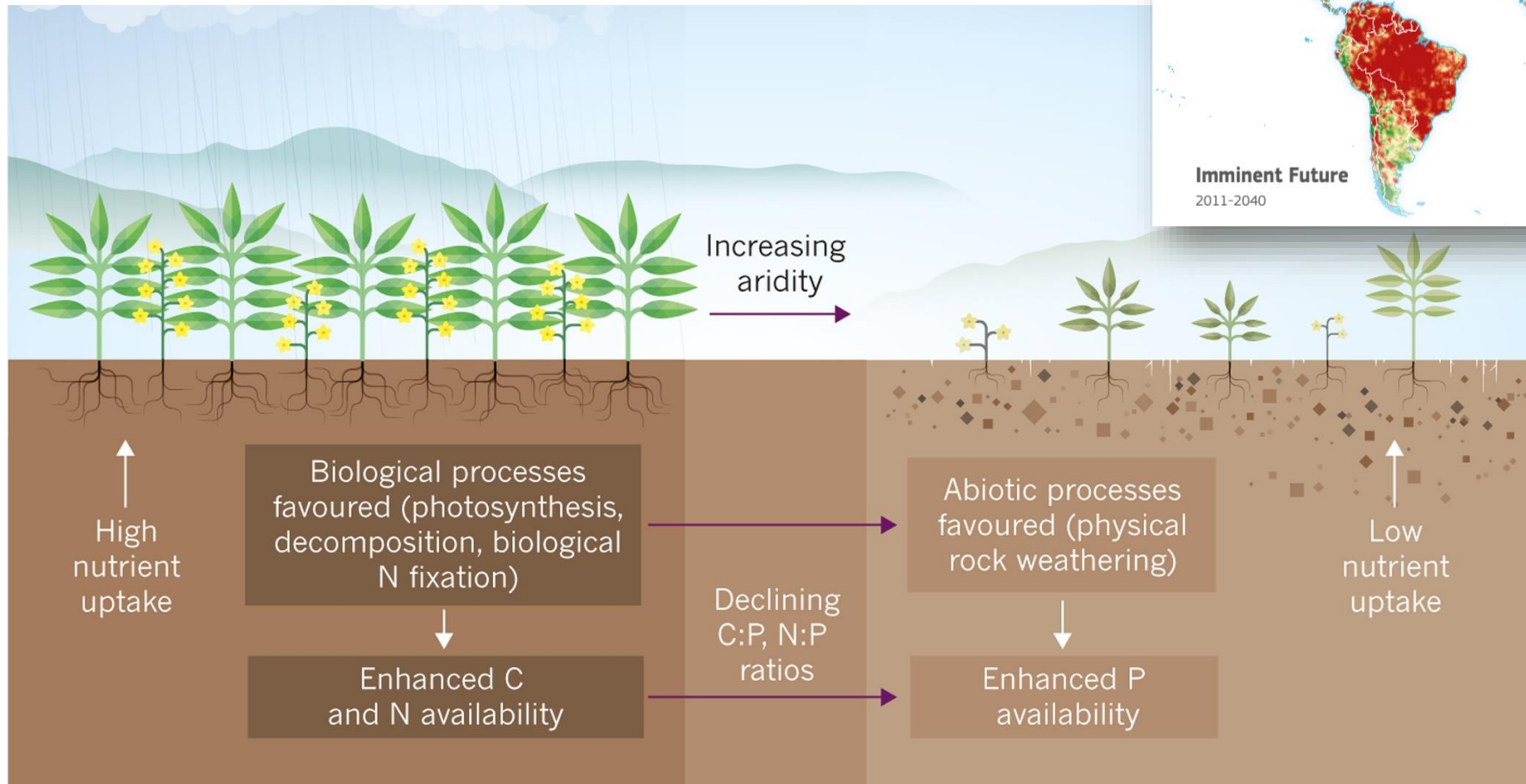
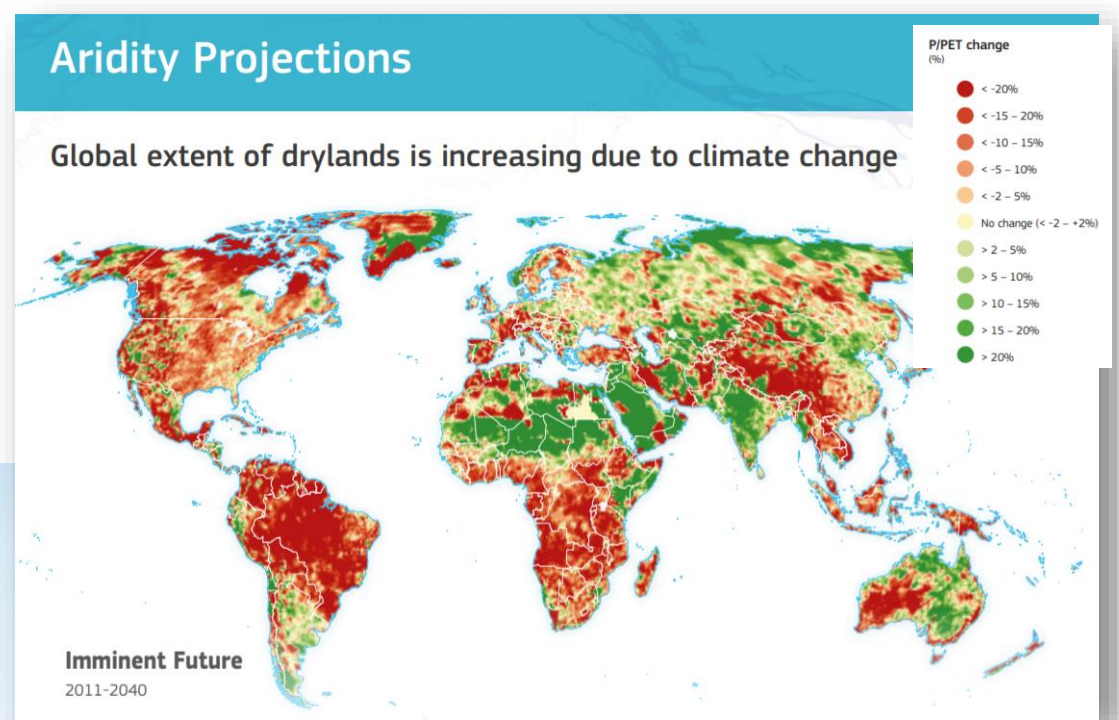
SOIL COMPACTION



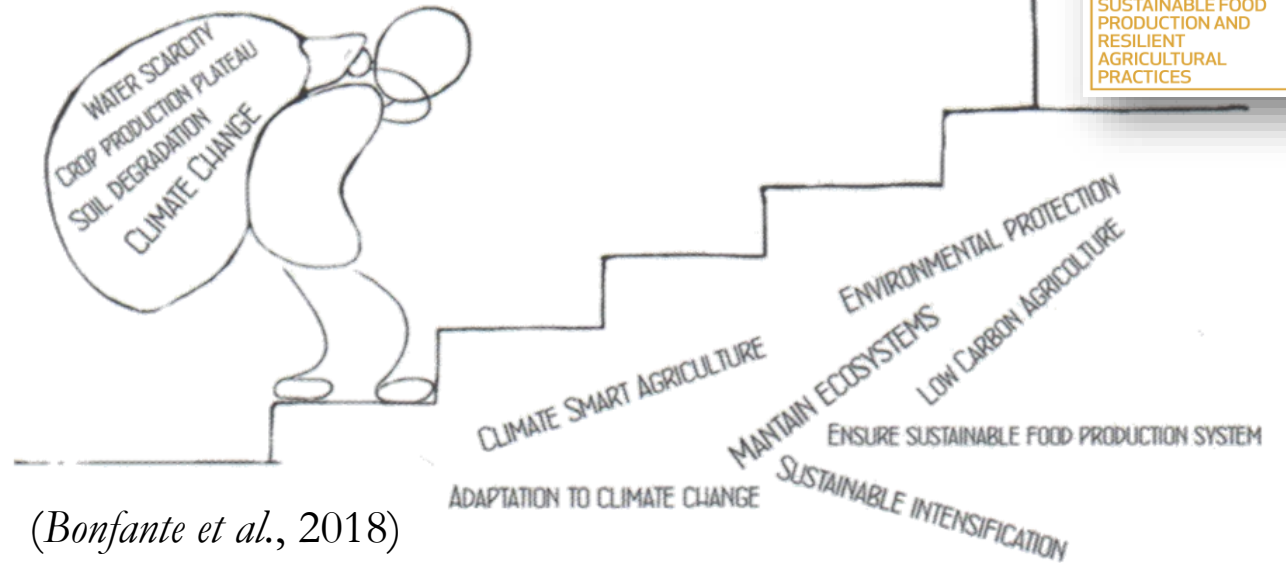
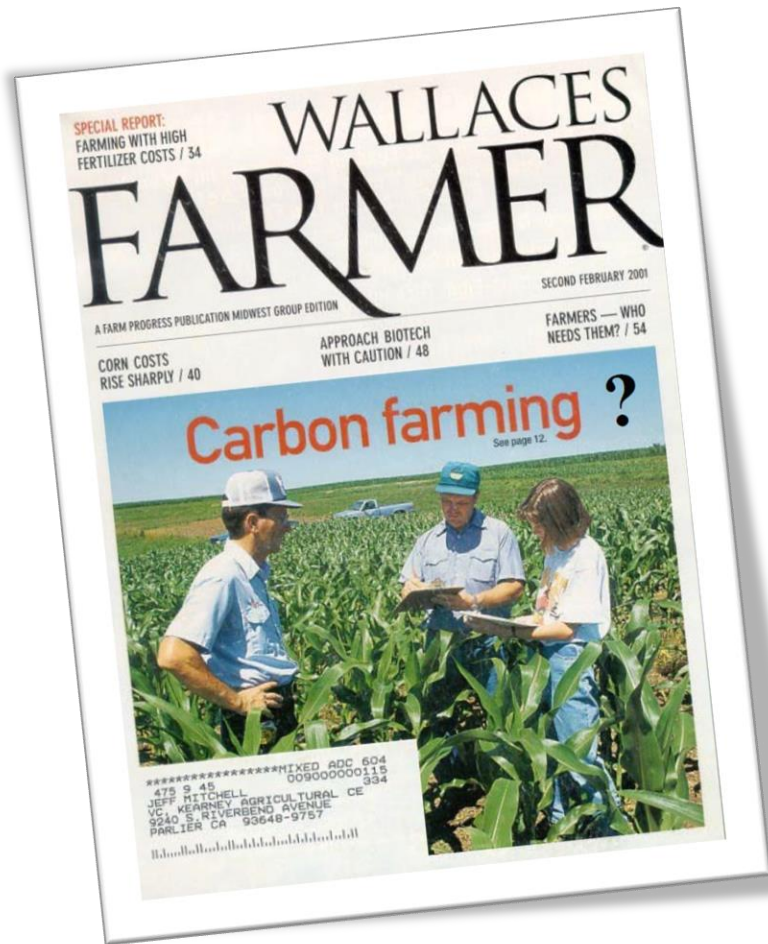
Organic C decline in Italy results in:
-3.3 billions €/yr as ecosystem services;
-156 millions €/yr as crop production



Moreover, climate change will directly and indirectly affect the physical and chemical properties of soils, and thus their **fertility**



Nature 502, 628–629, 2013



(Bonfante et al., 2018)



Preserving or increasing soil organic C is crucial to address **climate change mitigation** and **food security** issues.





**NATURAL
ORGANIC
MATTER
RESEARCH**

<https://humic-substances.org/>

The IHSS convenes biennial international conferences, which are convened by leading scientists in collaboration with the IHSS Board.

The **International Humic Substances Society (IHSS)** was founded in 1981 to bring together scientists in coal, soil, and water sciences with interests in humic substances and natural organic matter.

The motto of the IHSS is: *“To Advance the Knowledge and Research of Natural Organic Matter in Soil and Water”*.

The aims of the IHSS include the establishment and maintenance of a collection of standards of humic and fulvic acids from lignite, fresh water, a mineral soil, and a peat soil, and the assembling of characterization data. In addition, the IHSS has reference samples that are a source of humic materials.



22nd Meeting of the International Humic Substances Society

*The role of NOM and HS
in achieving Sustainable Development Goals*

Rimini, Italy • 25-30 August 2024

The IHSS 2024 Organizing Committee



Claudio **CIAVATTA**
University of Bologna (President)



Teodoro **MIANO**
University of Bari, CIHEAM Paris



Claudio **ZACCONE**
University of Verona

<https://ihss2024.azuleon.org/>

The scientific structure of the IHSS2024 Conference includes various fields of interest of our community, declined and oriented towards the SDGs of the Agenda 2030.

NOM and HS to fight climate change, land degradation and biodiversity loss

Functions and role of natural organic matter and humic substances in mitigating climate change and fighting land degradation and biodiversity loss.



NOM and HS for a sustainable and resilient agriculture

Natural organic matter (carbon) and humic substances in promoting sustainable and resilient agricultural practices: carbon sequestration and stabilization mechanisms, GHG emissions, water management, etc

NOM and HS for food security and safety

Food security and safety connections to natural organic matter and humic substances



NOM and HS in the aquatic systems

Properties and behaviour of natural organic matter in aquatic ecosystems

NOM and HS for environmental remediation

Impacts and remediation interactions between natural organic materials / humic substances and pollutants in different environmental compartments



NOM and HS, and waste biomass management in a circular economy scenario

Circular economy scenarios of waste biomass management and recycling of organic matter and humic substances

Frontiers in NOM and HS research

Isolation processes and utilization of natural organic matter and humic substances: technology, innovations and applications, including artificial humification...



Further, a large space will be devoted to the commercial aspects of natural organic matter and to the growing connections between scientists and private companies.

As a Scientific and Organizing Committee, it is a great pleasure to organize such an event on behalf of our international community and partnerships, and to host researchers, professionals, students coming from academy, research institutions and companies worldwide and to create a stimulating and exciting atmosphere for sharing the results of their scientific activities.



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See you in Rimini at IHSS2024