



COULD FARMS BECOME GIANT SPONGES?

In the Thames basin (UK), near Oxford, farmers are testing different agricultural practices to help soils store more water and strengthen resilience to both floods and droughts.





A HIDDEN WATER RESERVOIR

Healthy soils act like sponges: they absorb rain, reducing floods and storing water for dry periods.

But intensive farming and heavy machinery can compact them, reducing their ability to absorb water.



RESEARCHERS COMPARE DIFFERENT FARMING PRACTICES



Regenerative agriculture
(no-till, cover crops, fallow periods)

**Regenerative
grazing grassland**



Improved conventional farming
(strip tillage and organic
amendments like manure and
earthworms)

The goal? compare how different land-use
affects soil water retention.



SCIENCE IN ACTION

To understand the "sponge effect", researchers are monitoring:



Bulk density (soil compaction): lower bulk density often means better root penetration and water infiltration.



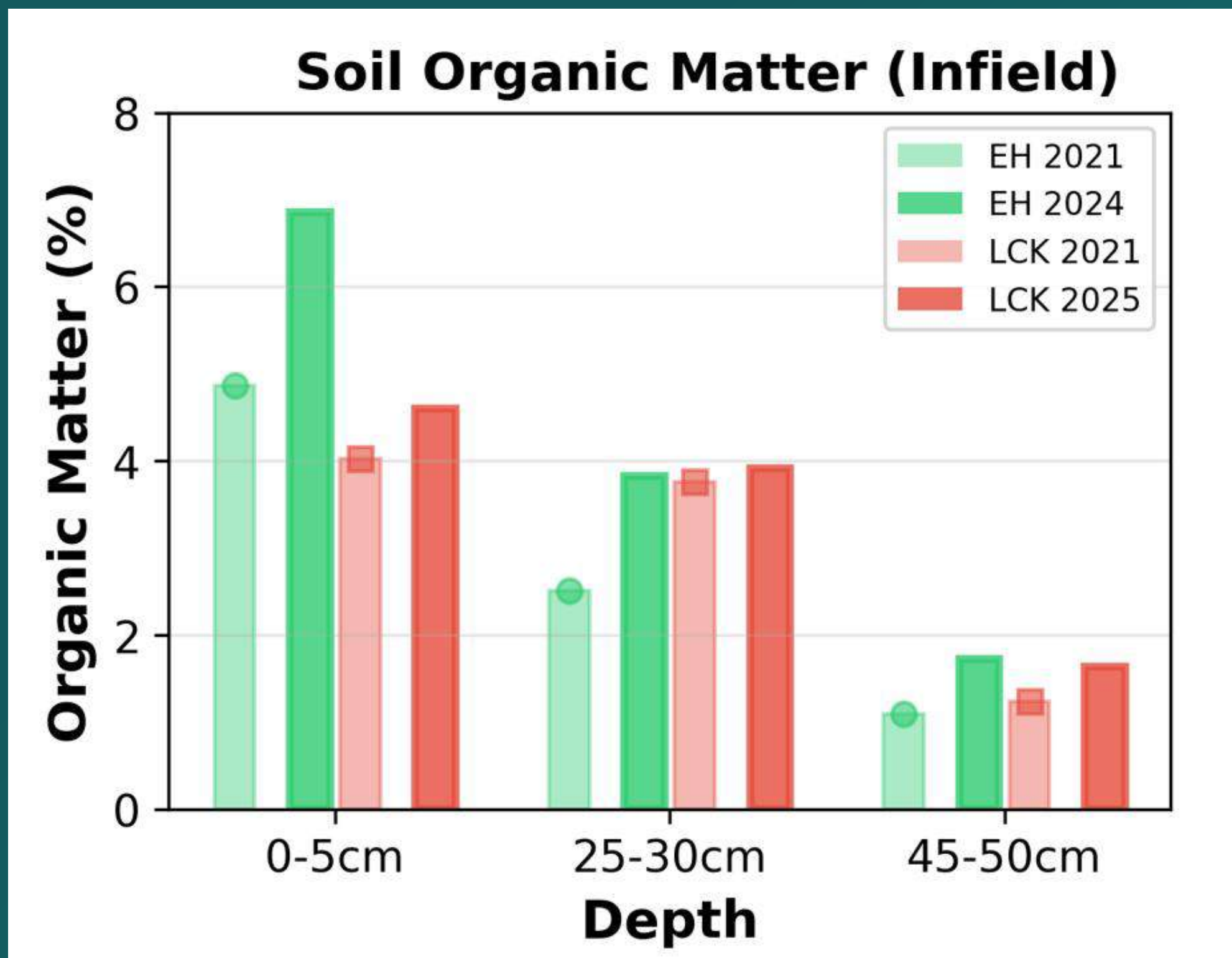
Soil organic matter: higher organic matter in the soil often means improved water retention.



Hydraulic conductivity: how easily water moves through soil under different moisture conditions.

Regular field sampling and long term data sets help track change over time

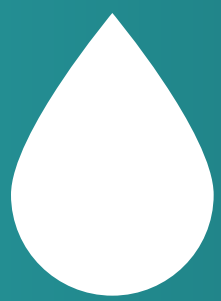
PROMISING RESULTS... WITH SOME SURPRISES



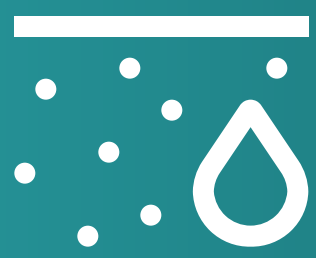
EH : Regenerative farming LCK : Improved conventional farming

- **Regenerative sites** show higher soil organic matter .
- **Bulk density** trends are more nuanced: compaction remains below critical thresholds, but has not decreased as much as expected on regenerative sites.
- **Regenerative grazing** shows the strongest impact: 26× increase in water infiltration

KEY TAKEAWAYS:



Soil is part of the solution to mitigate flood and drought.



Farming practices directly shape how soils absorb, retain and slowly release water.



Transitions take time and must work for farmers too