



Mineral and microbial controls of soil organic matter stabilization in agroecosystems

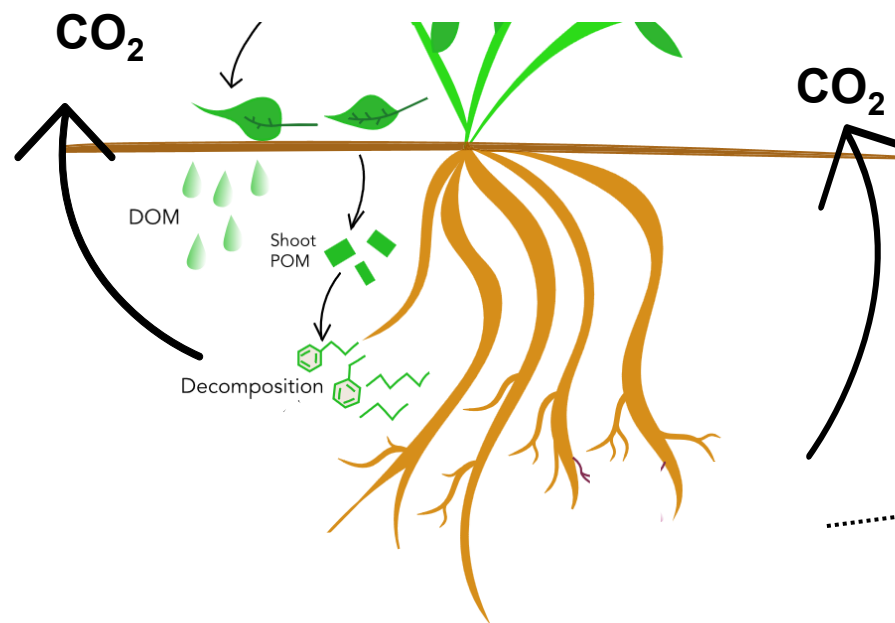
Pierre Verjans - CANETE



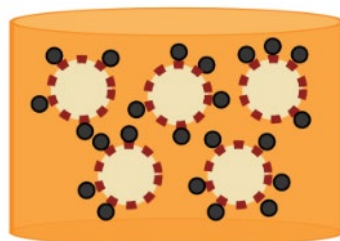


Soil organic matter (SOM) stability

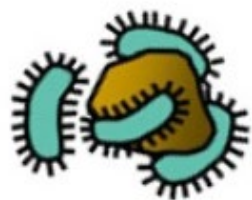
Multiple controls for a complex cycle



Mineral controls



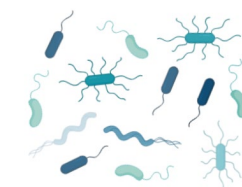
Chemical adsorption (MAOM)



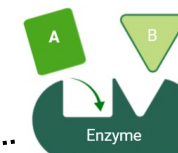
Physical barrier (aggregate)



Microbial controls



Diversity and abundance



Enzymatic activity



Physiological traits

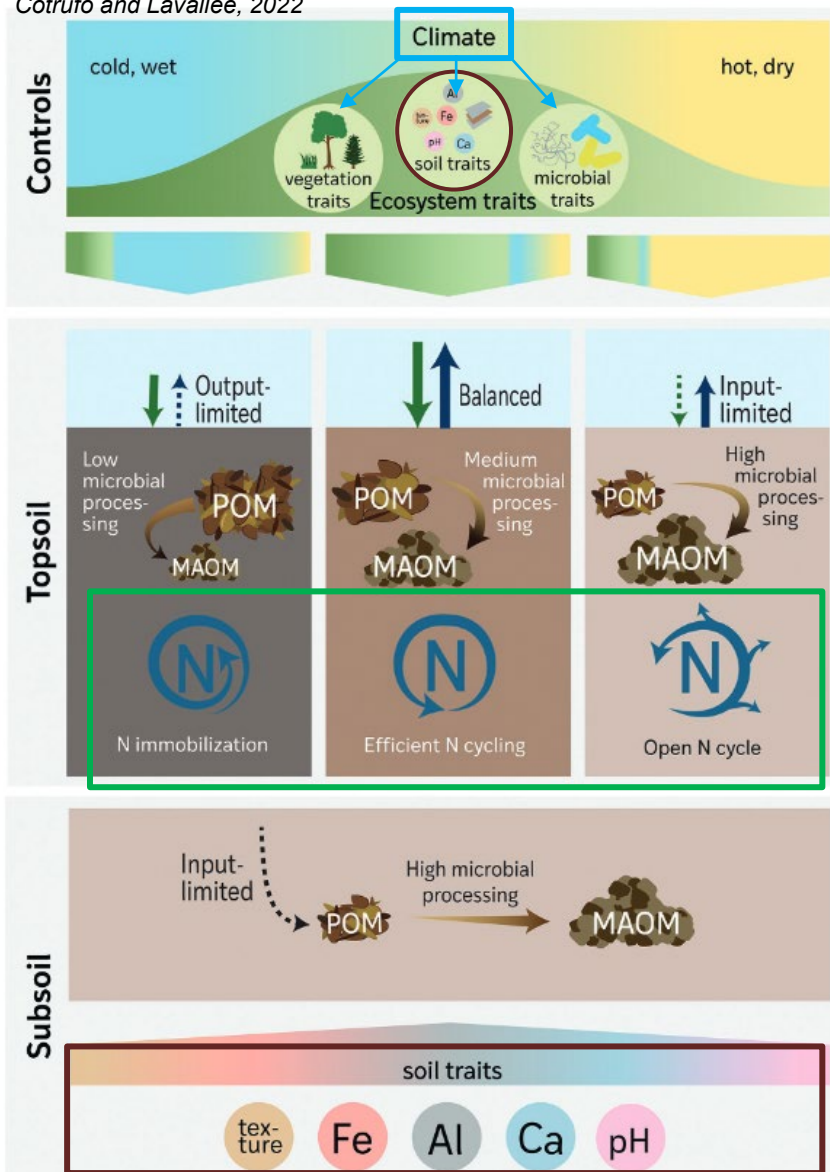
Sokol et al., 2022 ; Bramble et al., 2024 ; Wasner et al., 2024



Soil organic matter (SOM) stability

External factors

Cotrufo and Lavelle, 2022



Pedological factors :

- Quantity and quality of soil minerals
- Soil properties (texture, acidity, ...)

Climatic factors :

- Shape soil vegetation and soil properties
- Soil temperature and moisture

Management factors :

- Shape vegetation and soil properties
- N availability for microorganisms

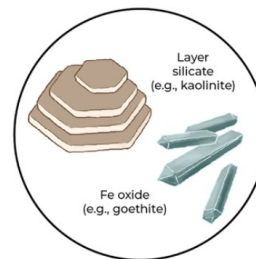
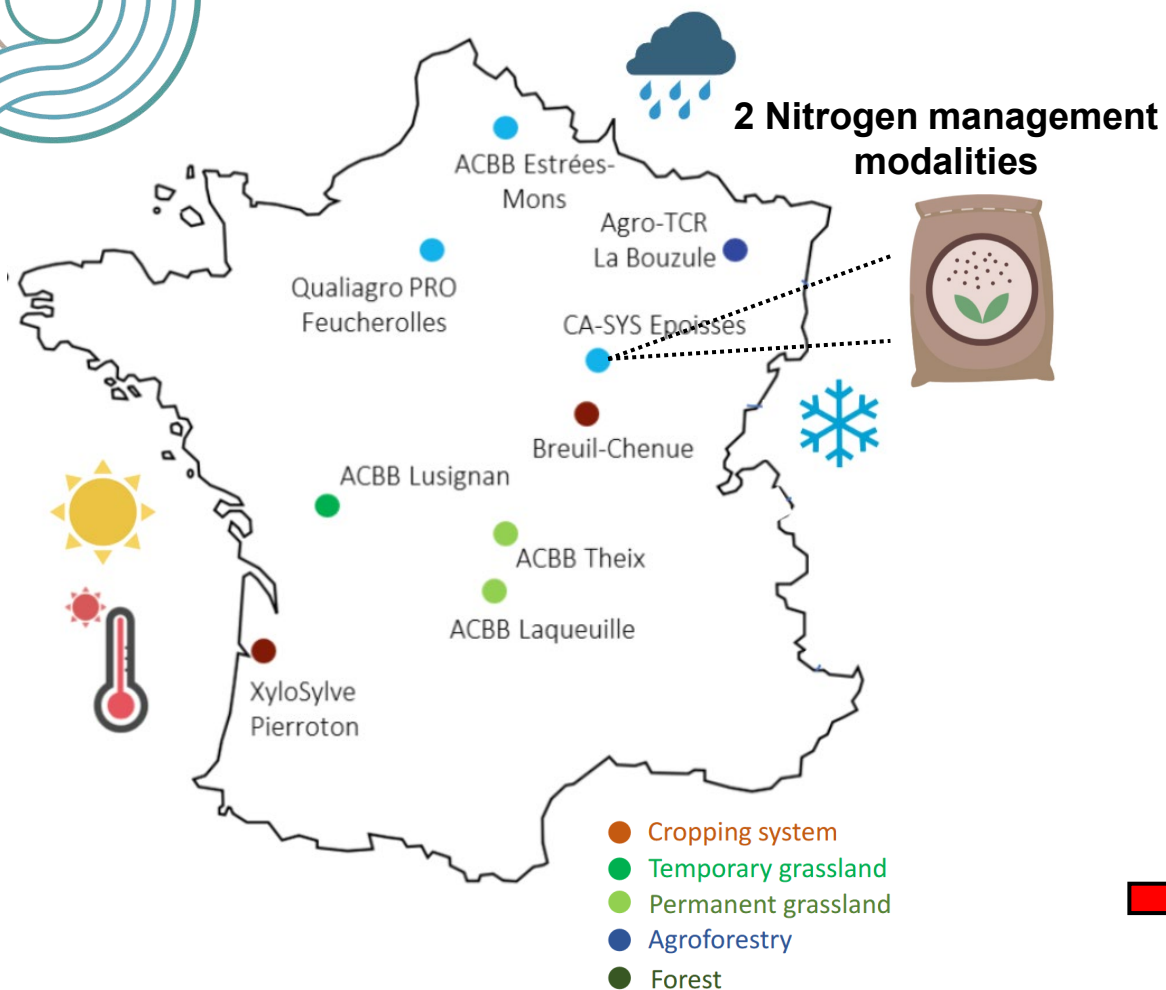
We need to study stabilization controls in contrasting pedoclimates and soil managements !



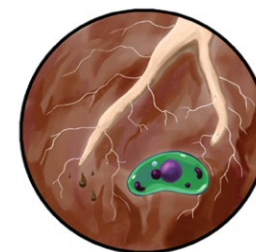


Methodological approach

Studying SOM stabilization under contrasting pedoclimates and soil managements



How does soil mineralogy impact SOM stabilization ?



How does microbial traits impact SOM stabilization ?



How are these controls modulated by pedoclimatic and soil management factors ?

Jilling et al., 2025



Let's discuss this further during the poster session ?

