Long-term crop residue management effects on the greenhouse gas fluxes - an Austrian case study

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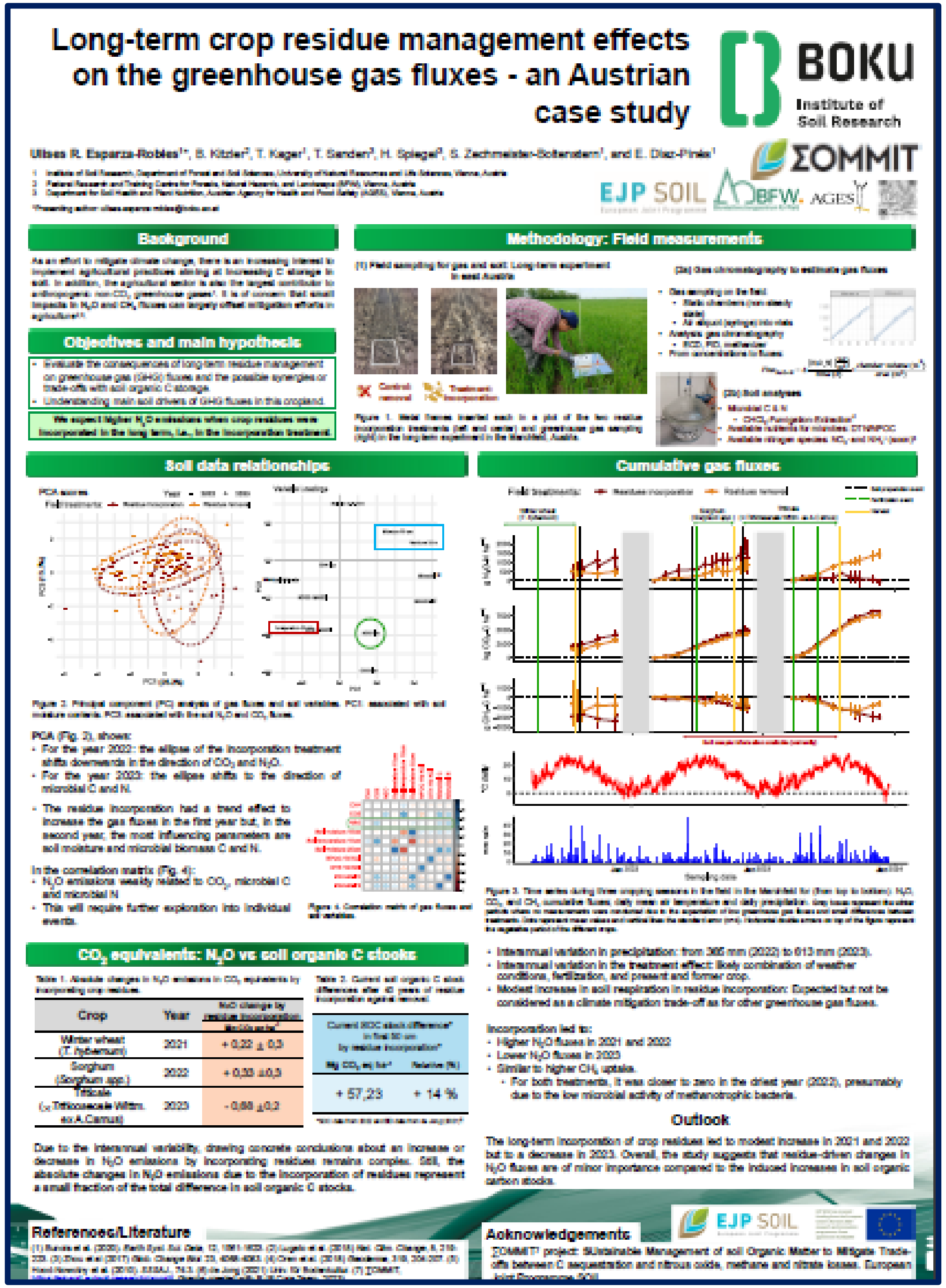
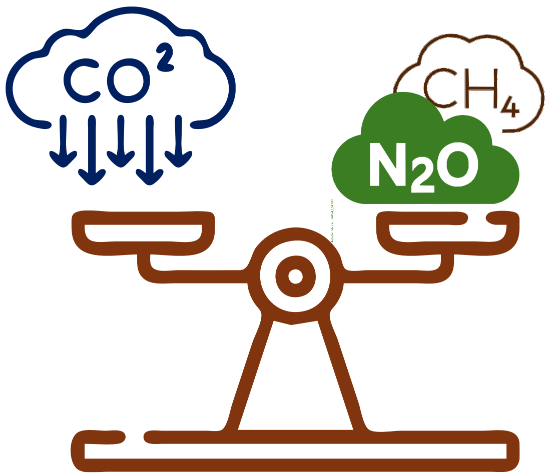


Objectives

- To **quantify** the impact of **residue management** on current GHG* fluxes after long-term management
- To **compare** the GHG fluxes with **SOC stocks**



Hypothesis

- We expect **higher GHG emissions** from the long-term **crop residue incorporation**

Control: removal

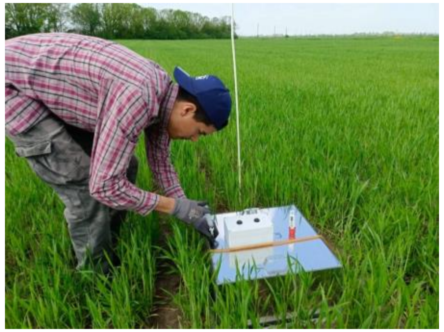
Treatment: incorporation

*GHG: Greenhouse gas

Cumulative emissons

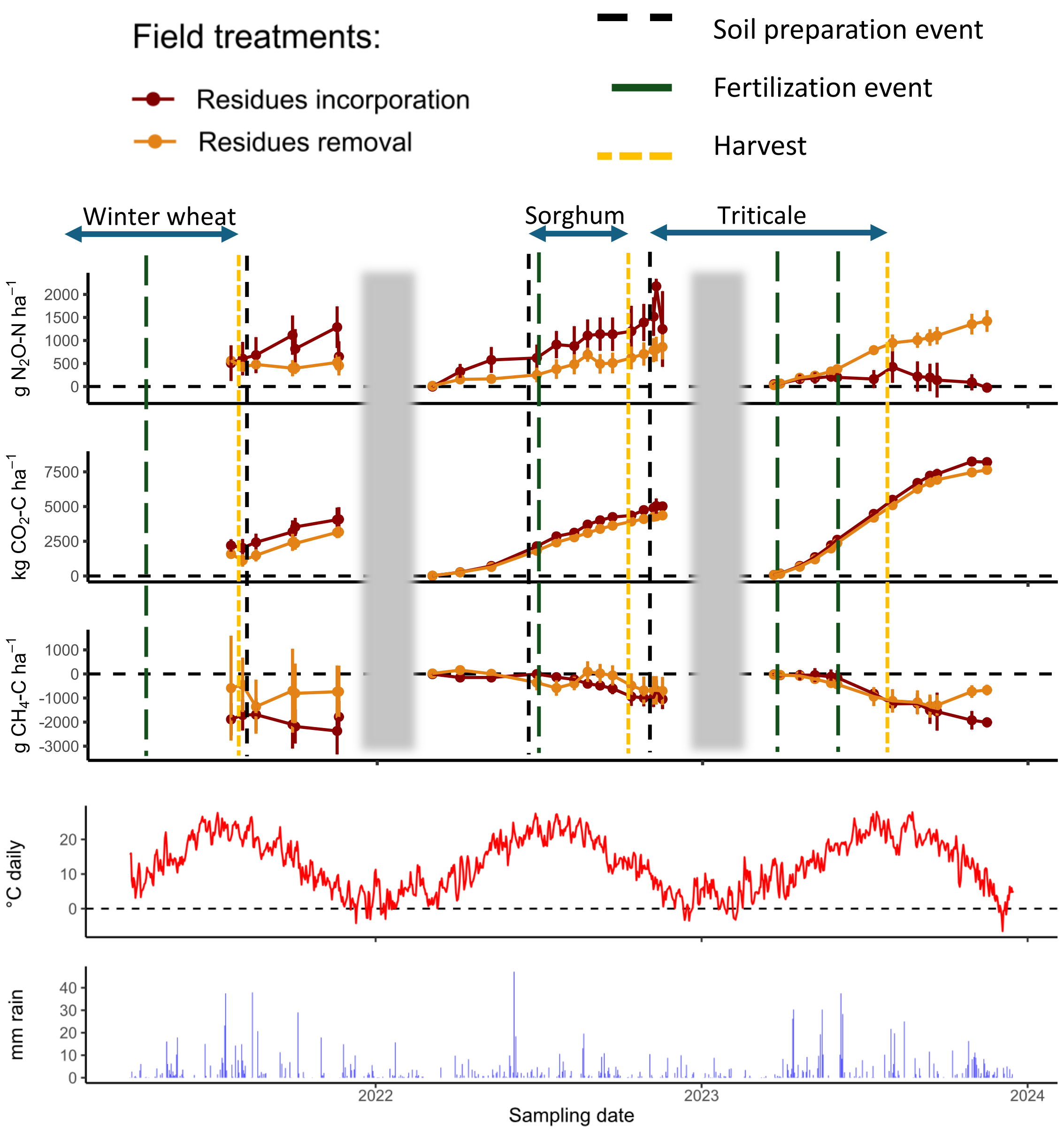
Gas sampling in 39 events

- Gas chromatography
- Static chambers



Soil sampling

- soil moisture, temperature,
- extractable C (NPOC) and N (DTN)
- microbial C and N



N_2O vs SOC stocks

Table 1. Absolute differences in N_2O emissions in CO_2 equivalents **by incorporating crop residues**.

Crop	**Year**	**N_2O change by residue incorporation**
		Mg CO_2 eq ha^{-1}
Winter wheat (*T. hybernum*)	2021	?
Sorghum (*Sorghum spp.*)	2022	?
Triticale (×*Triticosecale* Wittm. ex A.Camus)	2023	?

Table 2. Current soil organic C stock differences **after 40 years of residue incorporation** against removal.

Current SOC stock difference in first 50 cm by residue incorporation	
Mg CO_2 eq ha^{-1}	Relative (%)
?	?

Thanks for your attention and…

See you at the poster session!

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