

Mesure des flux de N_2O sur plusieurs rotations culturales à EFELE (2013-2026)

Vers un bilan net des GES ?

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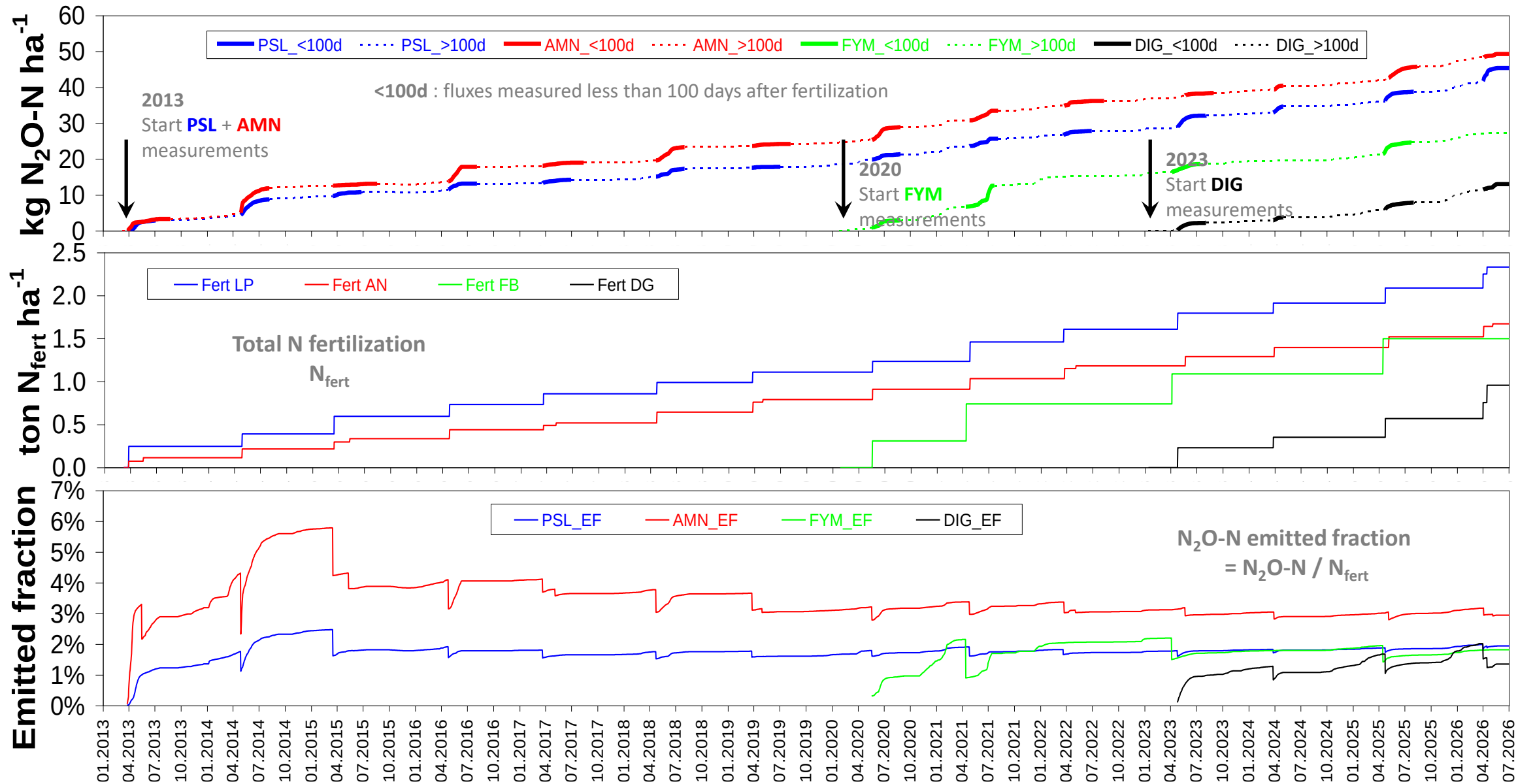


Séminaire EFELE – SOERE PRO

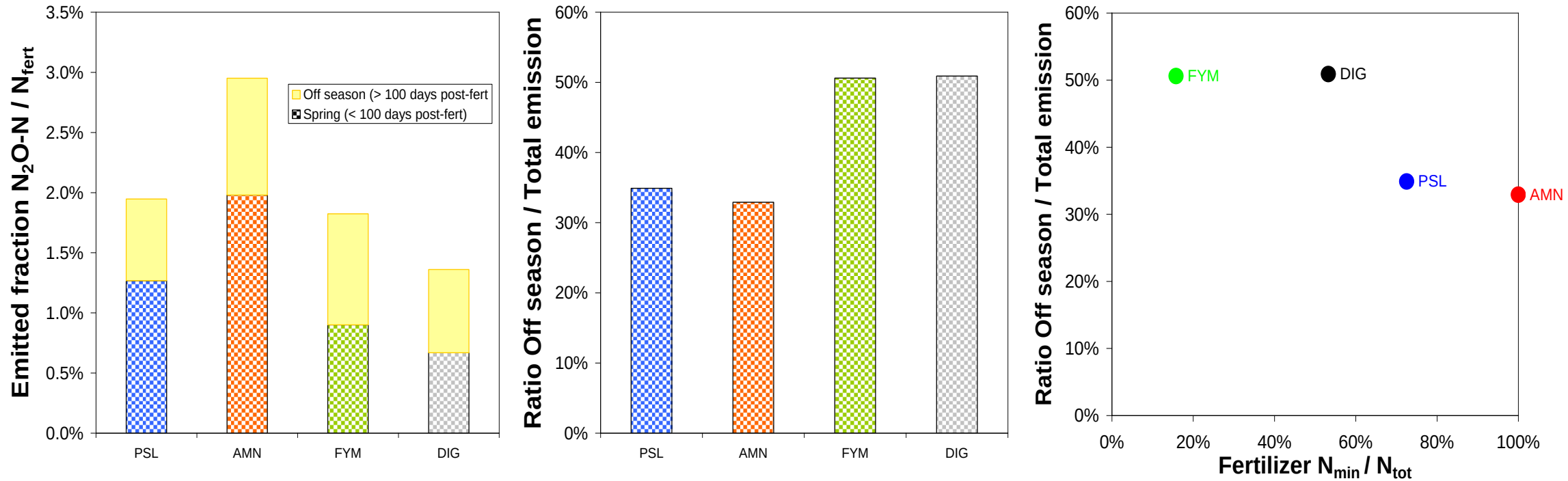
UMR SAS, Rennes, 01.07.2026

EFELE: Cumulative fluxes since N₂O measurements began

PSL: pig slurry; AMN: ammonium nitrate; FYM: cattle farmyard manure; DIG: pig slurry digestate



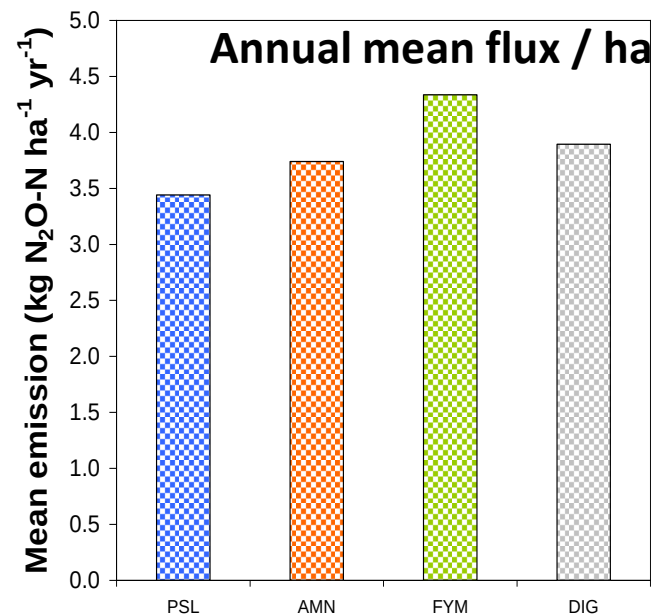
Seasonality of N₂O-N emitted fraction (N₂O-N / N_{fert})



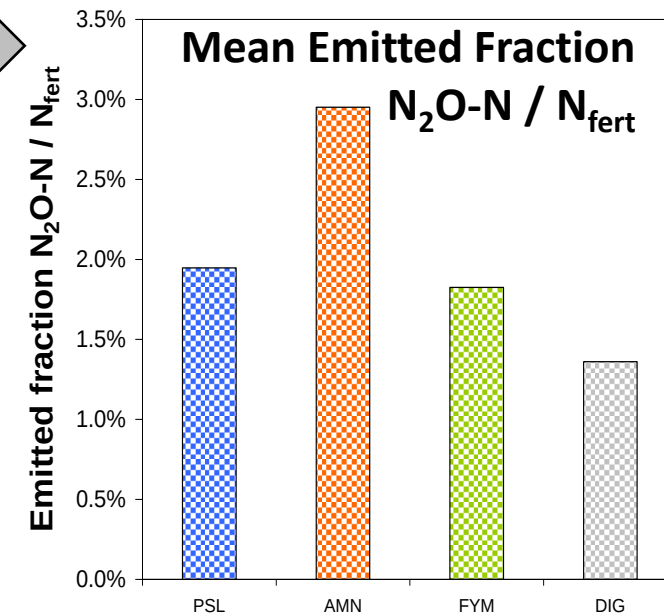
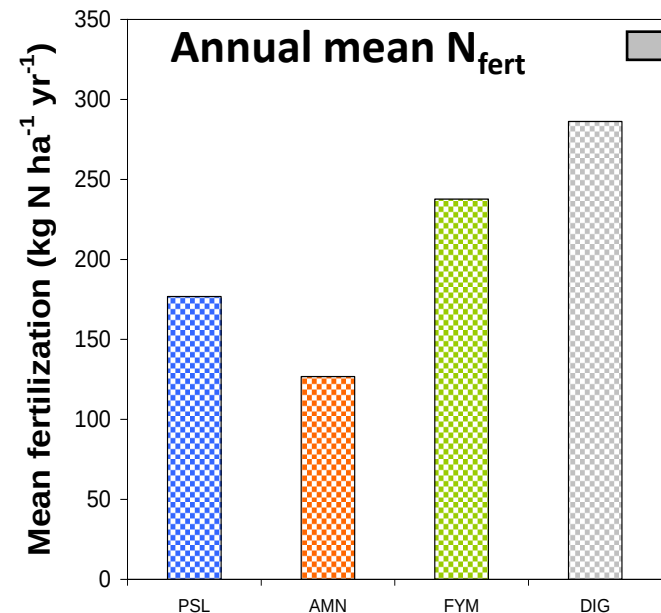
- ❑ Faster N₂O emissions for highly inorganic N fertilizers
- ❑ Organic fertilizers induce longer term / off season N₂O emissions due to progressive mineralization

Which metrics to compare fertilization treatments for N₂O ?

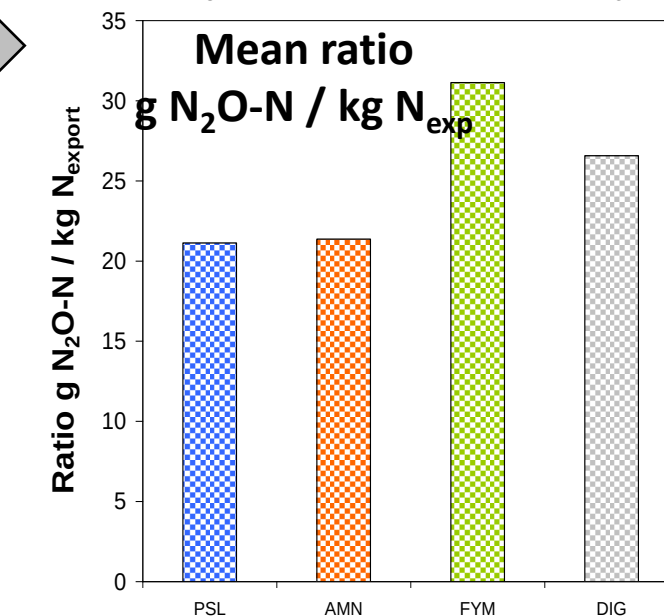
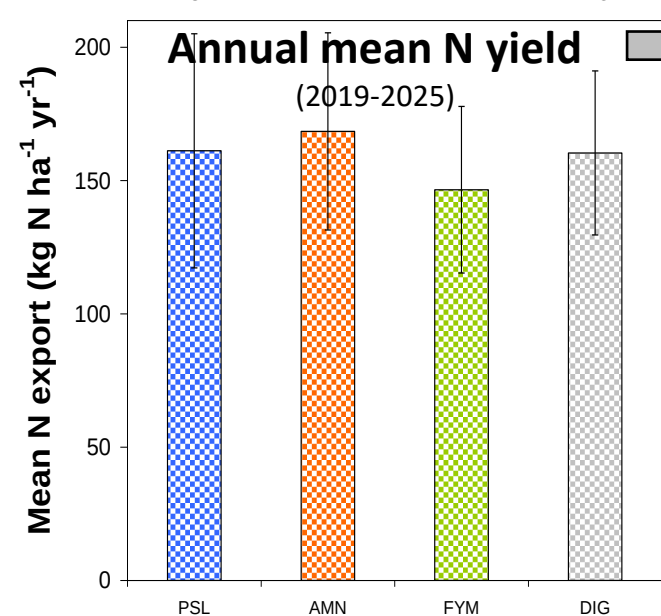
Absolute values



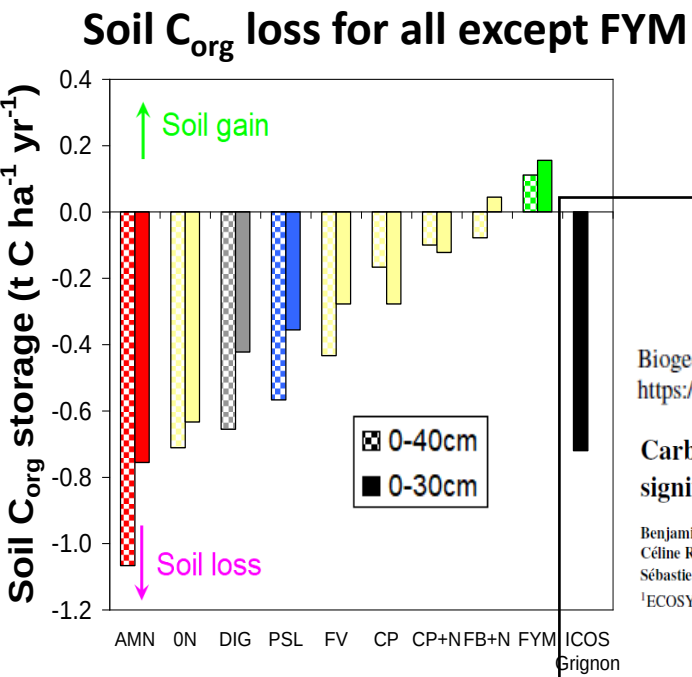
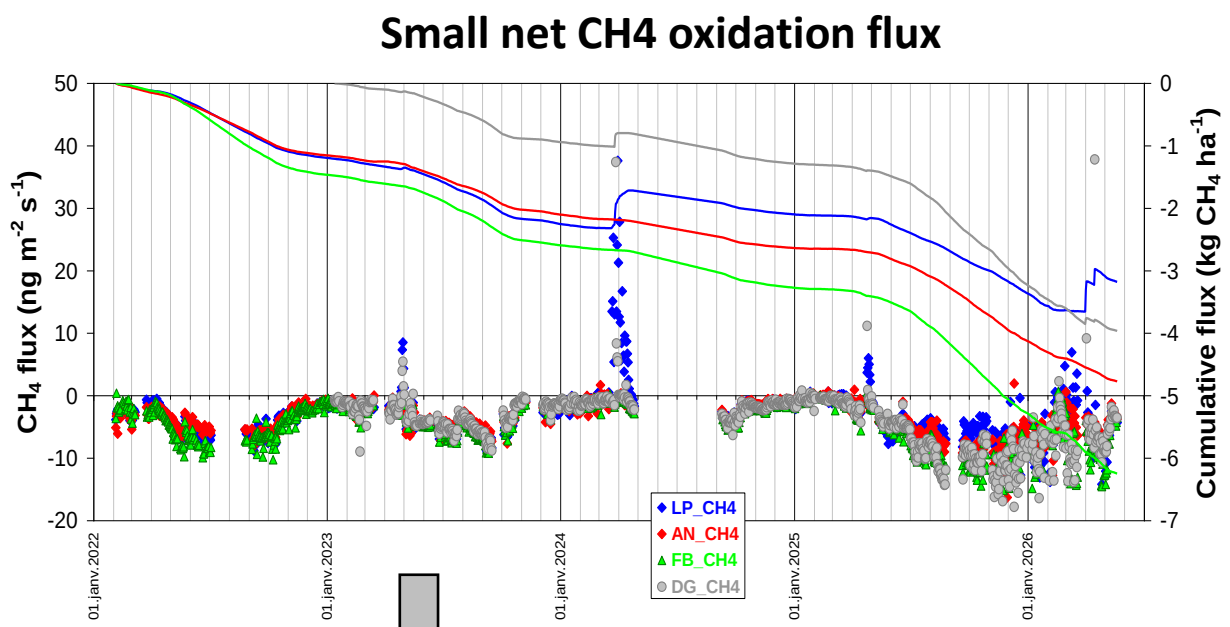
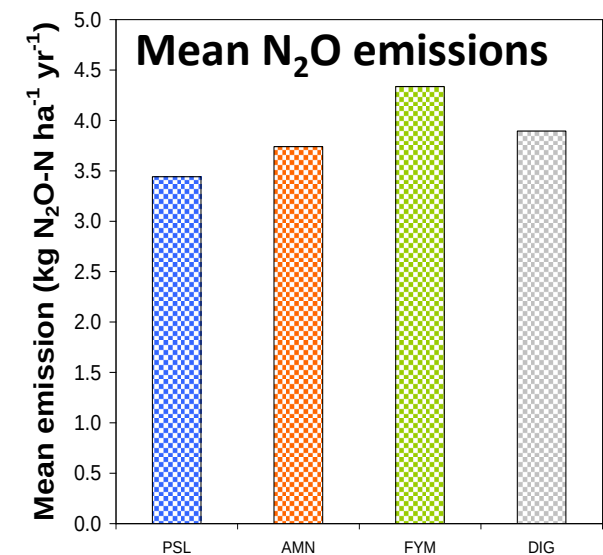
Normalize to
N dose



Normalize to
N yield



EFELE net greenhouse gas balance?

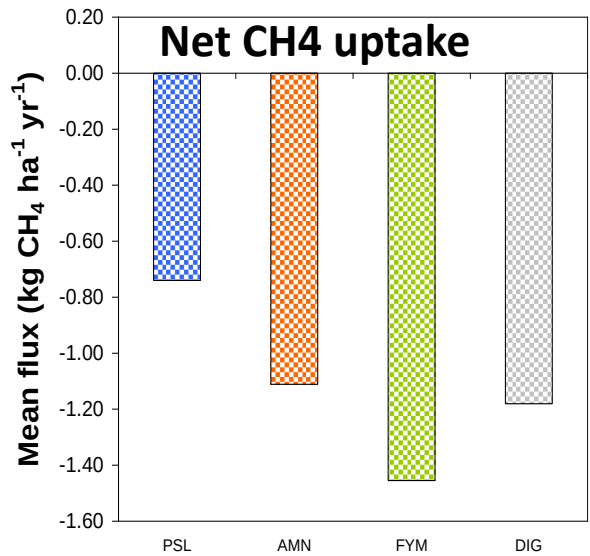


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<https://doi.org/10.5194/bg-23-2059-2026>

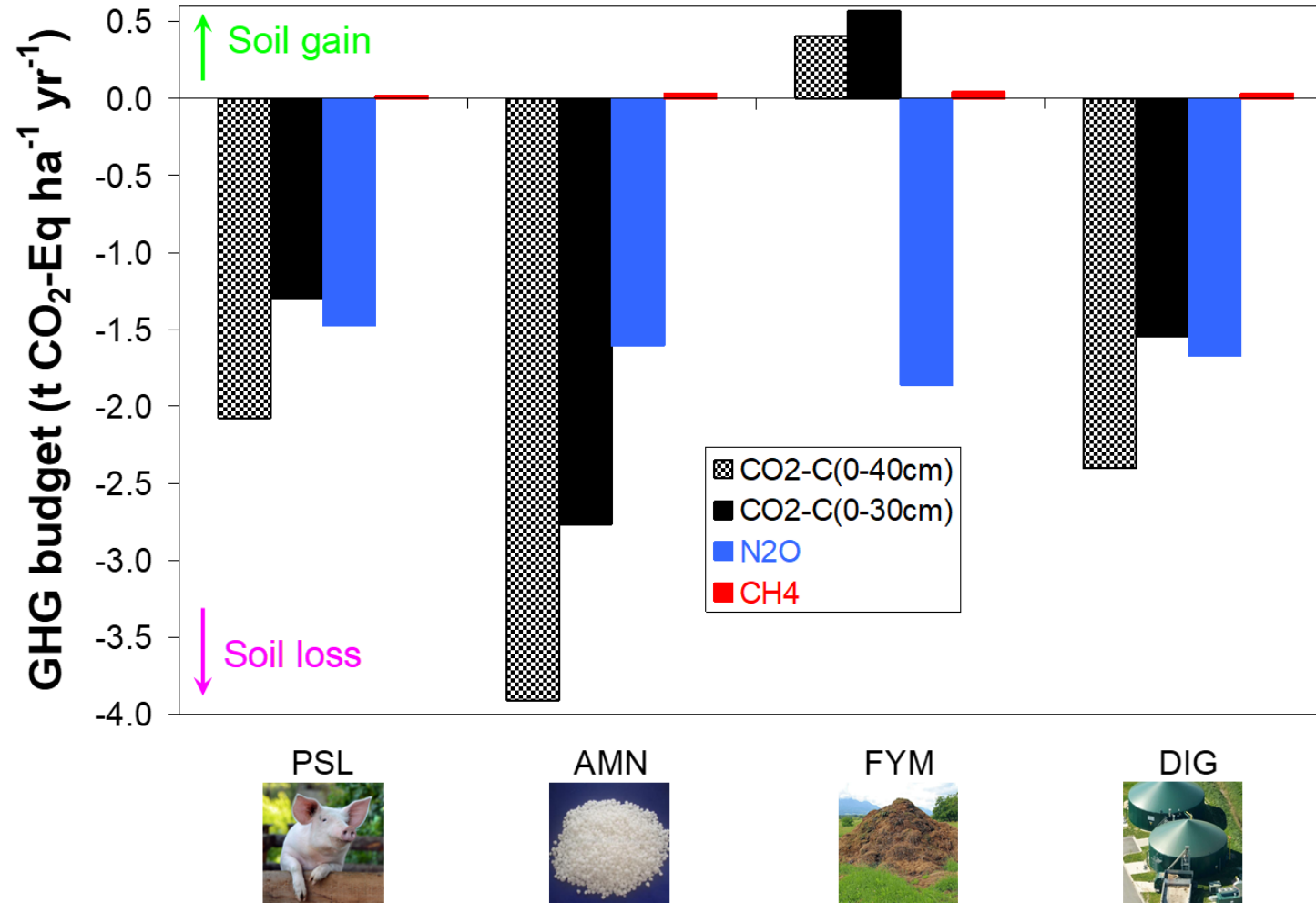
Carbon soil stock change in an intensive crop field near Paris reveals significant carbon losses over a decade

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Net greenhouse gas balance?



❑ All fertilization treatments are net GHG sources

❑ Even the FYM treatment which stores C, due to large N_2O emissions

Conclusions and outlook

☐ Summary

- 13 years of data; 4 fertilization treatments investigated
- Faster dynamics in N_2O emissions for inorganic compared to organic inputs
- All fertilization treatments are likely net GHG sources

☐ Outlook - Potential new research questions for EFELE site:

- Investigate GHG emissions from other organic waste products? Move chambers? Add new OWP ?
- Investigate drivers of the off-season emissions: different processes from those controlling fertilization emissions? Linkages to microbial communities?
- Investigate other emitted nitrogen compounds NH_3 , NO_x : need new type of dynamic soil chambers + new analyzers
- Projects related to air quality?