

Can the presence of plantain (*Plantago lanceolata* L.) improve nitrogen cycling of dairy grassland systems on peat soils?

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Introduction

Drained peat grasslands are prone to N₂O emissions.



Hypothesis

Plantain produces root exudates with *biological nitrification inhibition* capacity → decreased N₂O emissions

Material and methods

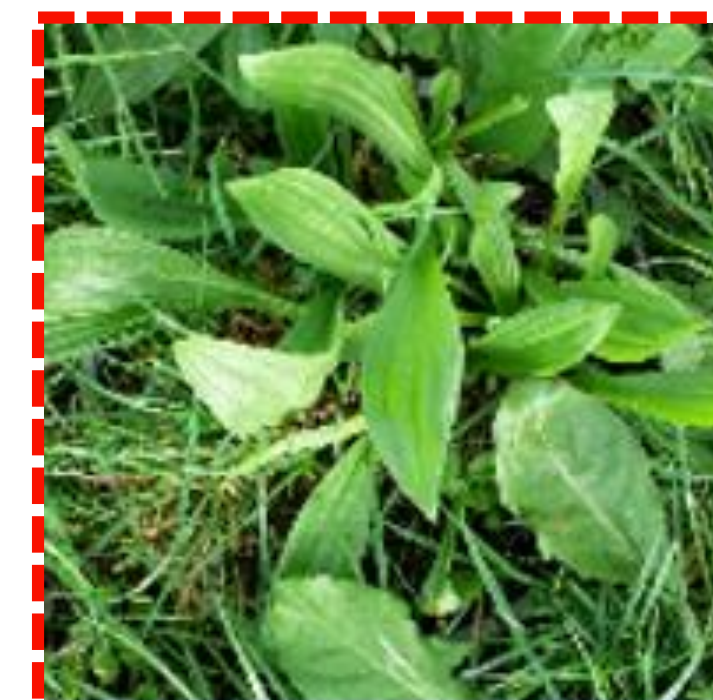
Field experiment, four treatments differing in ribwort plantain (RP) and *Lolium perenne* (LP) content



0% RP
100% LP



33% RP
67% LP



67% RP
33% LP

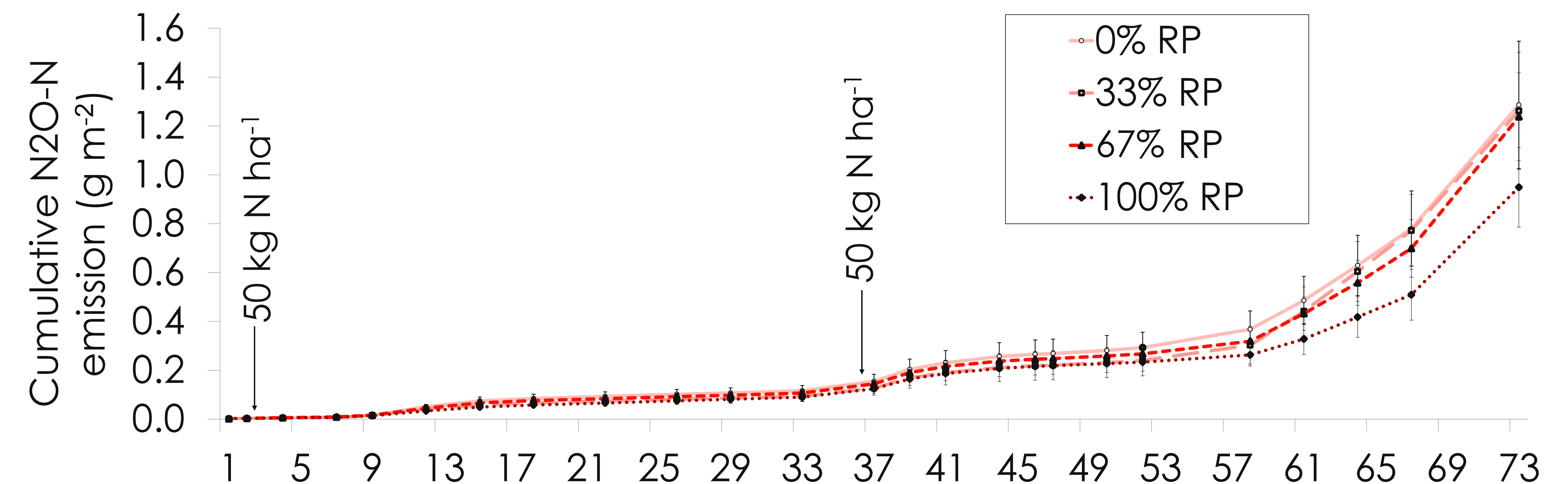


100% RP
0% LP

N₂O fluxes measured during 73 days; start 5 Aug 2019.
 Day 2 and 37; mineral N application of 50 kg ha⁻¹.
 Plantain herbage share estimated every two weeks.

Results

Cumulative N₂O flux negatively correlated with plantain share ($p = 0.023$), and up to 26% lower between treatments ($p = 0.038$). Observed plantain shares per treatment were 0±0, 22±17, 42±11 and 68±10%, respectively.



Conclusion

N₂O emissions decreased in the presence of plantain at a dairy grassland on peat soil.

