

GREENHOUSE GAS FLUXES FROM A SHALLOW-DRAINED AND REWETTED GRASSLAND ON PEAT

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Natural peatlands function as a carbon sink and long term carbon store, however drainage for agriculture is widespread, with grasslands established on peat soils representing a significant greenhouse gas source. This study measured CO₂ and CH₄ fluxes from a shallow-drained and rewetted grassland on peat in Wales. The shallow-drained grassland was a net CO₂ source (34 gC m⁻²a⁻¹), whilst the rewetted sites were a net CO₂ sink (-366 gC m⁻²a⁻¹), with differences in net ecosystem exchange arising from large nocturnal CO₂ emissions from the shallow-drained grassland. Terrestrial CH₄ emissions from the rewetted grasslands were high (24.5 gC m⁻²a⁻¹), whereas those from the shallow-drained were negligible. Reliable flux data from drained and rewetted grasslands is scarce in the UK yet is essential for producing emission factors under IPCC reporting guidelines. Furthermore, the reduction in carbon emissions with rewetting in this study highlights the potential for carbon emission mitigation during peatland restoration.