Pearson correlations were used to assess relationships among microbial biomass and soil enzymatic activities, as well as to evaluate any relationships between GHG fluxes, soil moisture, temperature and redox potential.

Table S1 Correlation coefficient analysis between microbial variables, gas fluxes and physicochemical properties of soil for the LFS and SFS. The correlation uses values measured on the same date as sampling for microbial analysis was undertaken.

Site	Microbial properties	Gas fluxes and biophysicochemical properties									
		CO_2	N_2O	Temperature	SWC	Redox potential	MBC	MBN	MBC:MBN	PRO	BG
LFS	MBC	-0.40**	ns	-0.41**	ns	ns		ns	ns	ns	ns
	MBN	ns	ns	ns	ns	0.71***	0.47**		ns	ns	ns
	MBC:MBC	ns	ns	ns	0.43**	-0.83***	ns	-0.73***		ns	ns
	PRO	0.74***	ns	0.38*	ns	ns	ns	ns	ns		ns
	BG	0.46***	ns	ns	ns	ns	ns	-0.51*	0.53***	ns	
	FDA	ns	ns	0.39*	ns	0.42*	ns	ns	ns	0.51**	ns
	NR	ns	ns	ns	ns	ns	-0.54***	-0.59***	-0.45**	ns	-0.35*
LFS	MBC	ns	ns	ns	ns	ns		ns	ns	ns	ns
	MBN	ns	-0.34*	ns	ns	ns	ns		ns	ns	ns
	MBC:MBC	ns	ns	ns	ns	ns	ns	-0.82***		ns	ns
	PRO	ns	ns	ns	ns	ns	ns	ns	ns		ns
	BG	ns	ns	ns	ns	ns	ns	ns	ns	ns	
	FDA	0.51*	ns	0.67***	-0.58***	ns	ns	0.36*	ns	ns	ns
	NR	ns	ns	ns	ns	-0.51**	ns	-0.46**	0.61***	ns	0.43**

*, ** and *** indicate significant effect at P<0.10, 0.05 and 0.01, respectively and ns: not significant.