

Supplementary materials

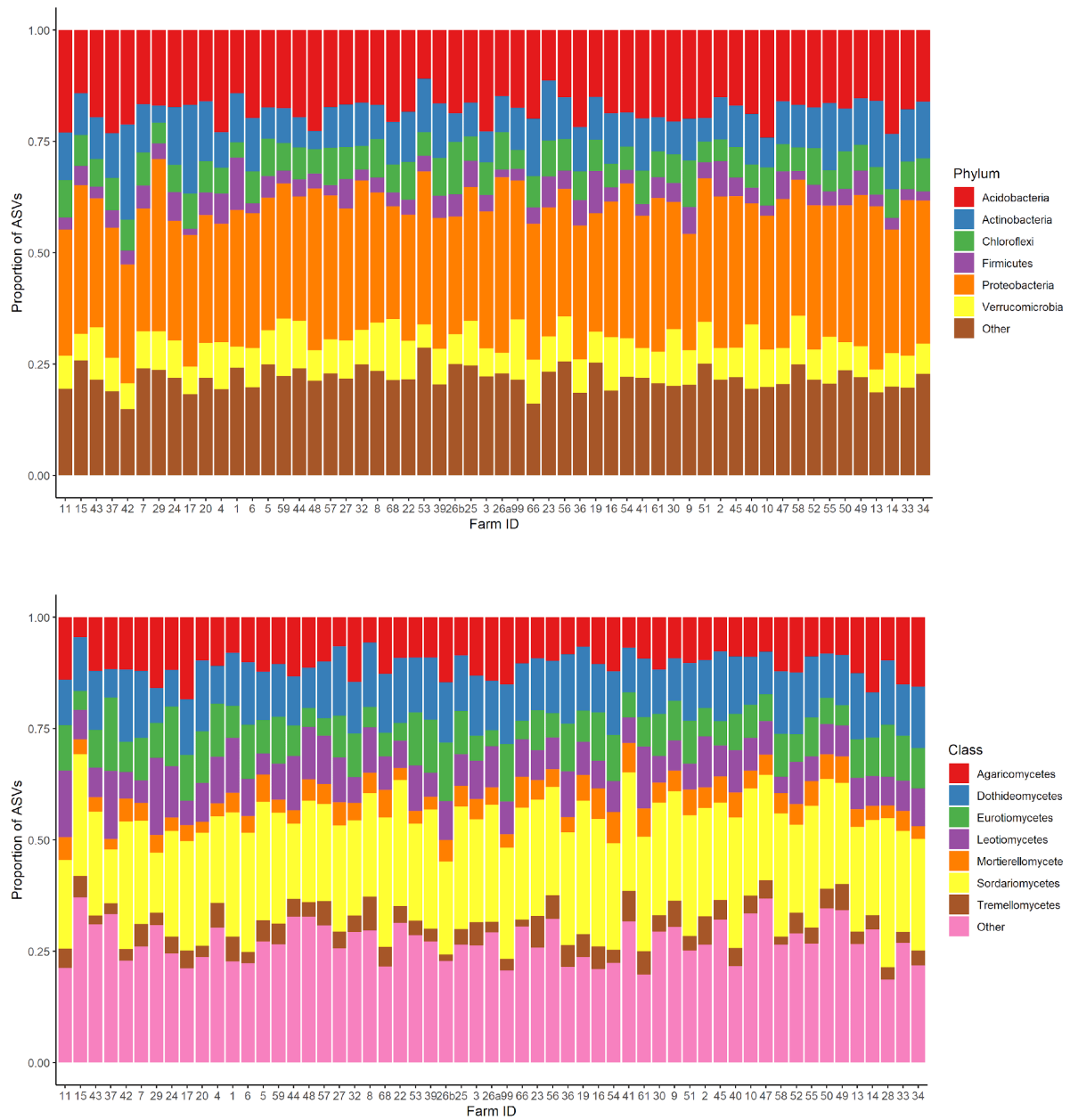


Figure 1: Bacterial phyla (top) and fungal class distributions across the farms, with farms ordered along the x axis from high to low plant community species richness/other quality indicators

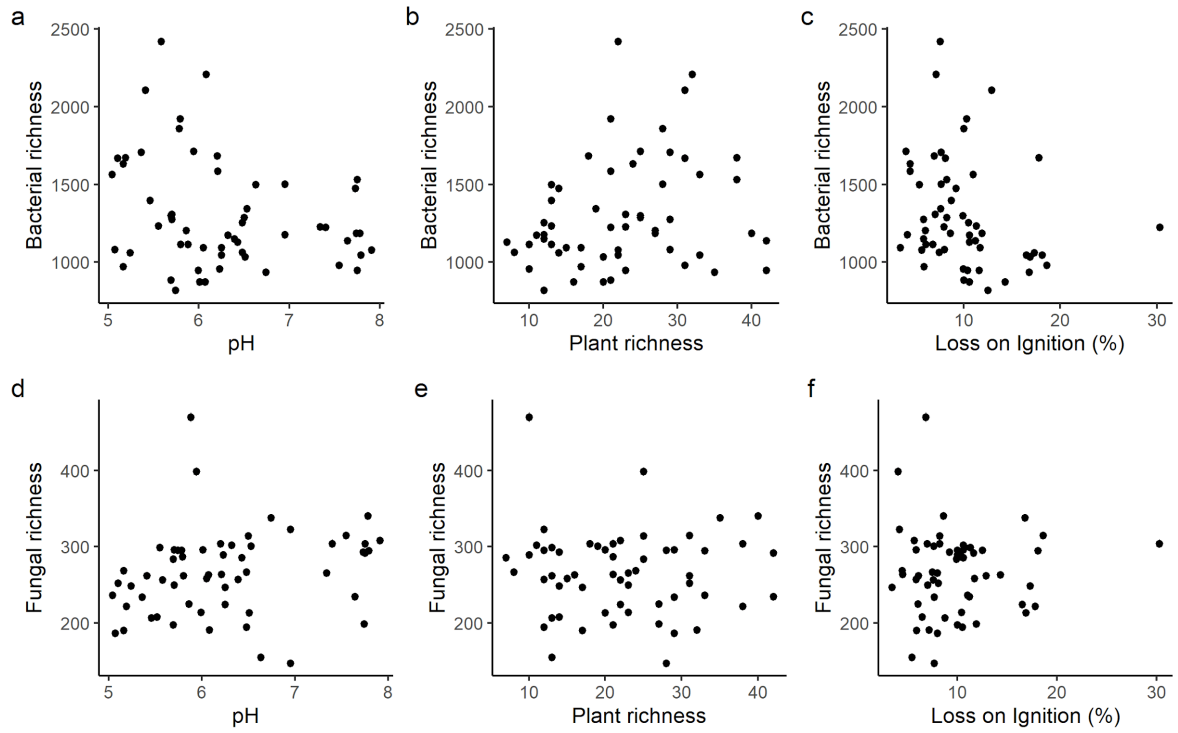


Figure 2: Bacterial and fungal richness against soil pH (a,d), plant richness (b,e) and organic matter (c,f). Spearman rank correlations were -0.25, 0.35, -0.32, 0.37, -0.07 and 0.03 for a to f respectively.

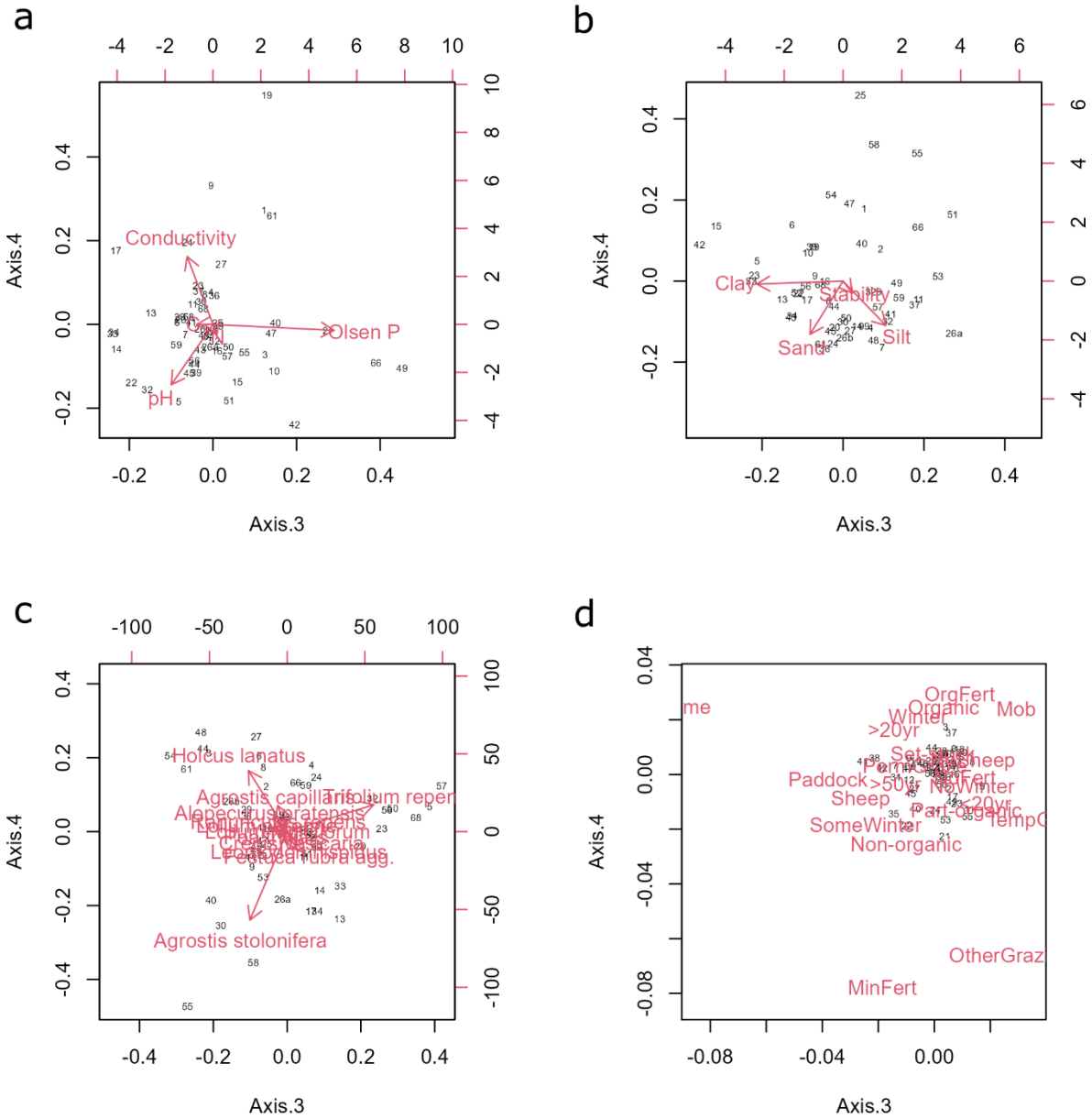


Figure 3: The third and fourth axes of the soil chemical PCA (a), soil structural (b), plant PCoA (c), and farm management MCA (d). Farms are represented by numbers, variable effects are represented by red arrows for a, b and c and centroids in d.

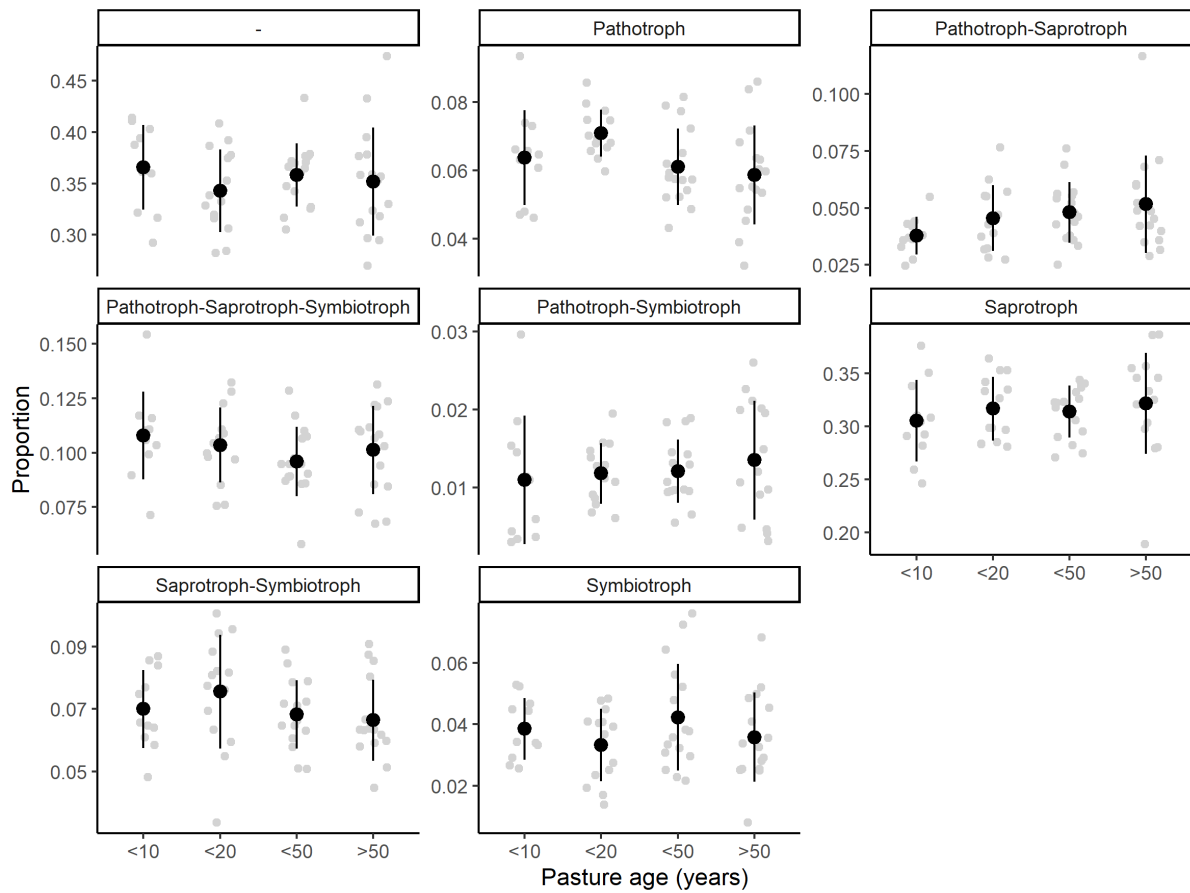


Figure 4: Fungal trophic mode proportion by pasture age. The mean and standard deviation are shown by black dots and vertical lines, with each field being represented by a grey dot randomly jittered on the x axis behind.

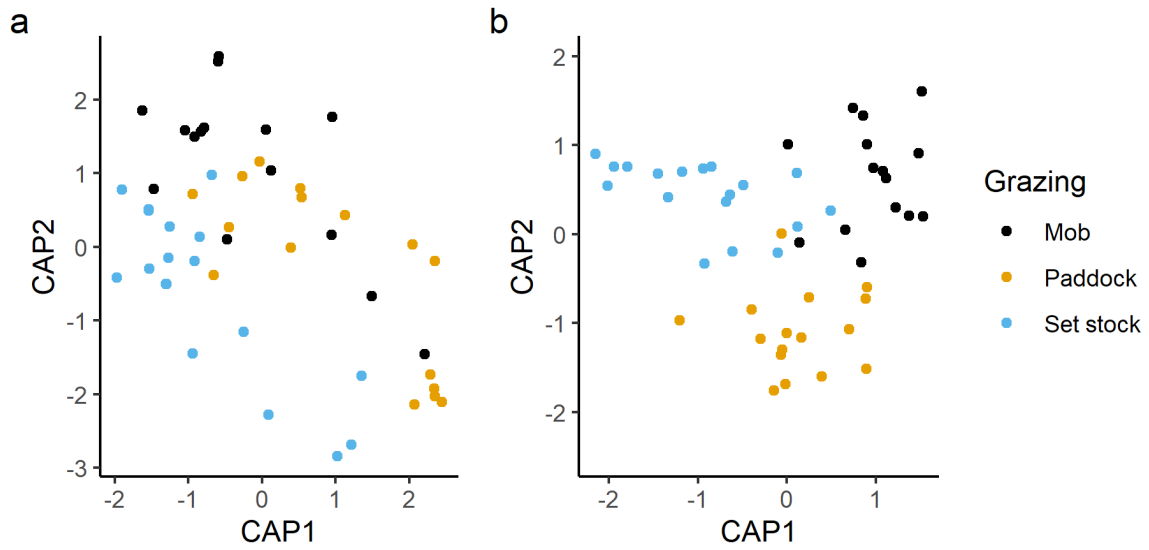


Figure 5: The first two axes of the dbRDA of the bacterial (a) and fungal (b) communities regressed against grazing regime. Results were non-significant with $F_{2,46} = 0.990$ and $p = 0.427$ and $F_{2,46} = 1.105$ and $p = 0.166$ for fungi.

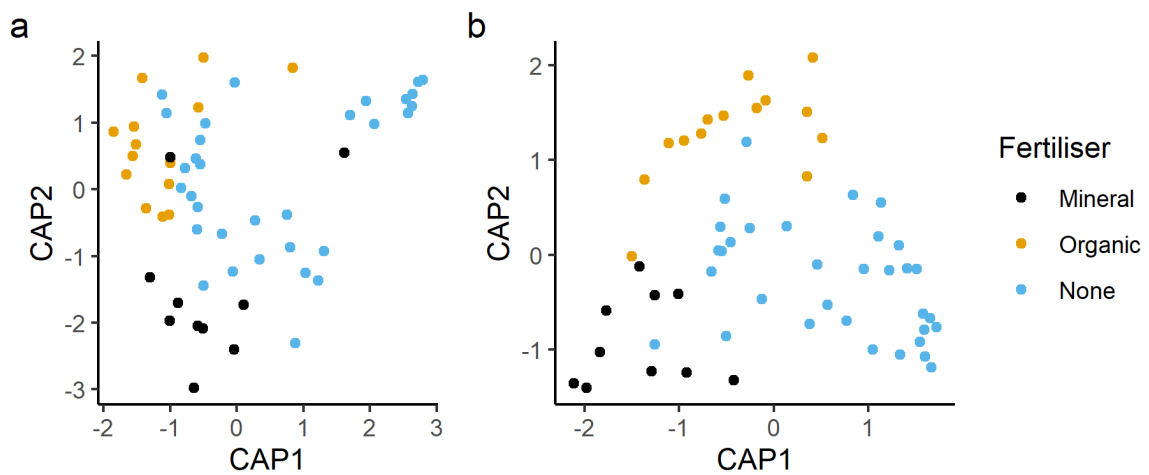


Figure 6: The first two axes of the dbRDA of the bacterial (a) and fungal (b) communities regressed against fertilisation regime. Results were non-significant for bacteria at $F_{2,46} = 1.290$ and $p = 0.102$ and significant for fungi at $F_{2,54} = 1.238$ and $p = 0.035$.

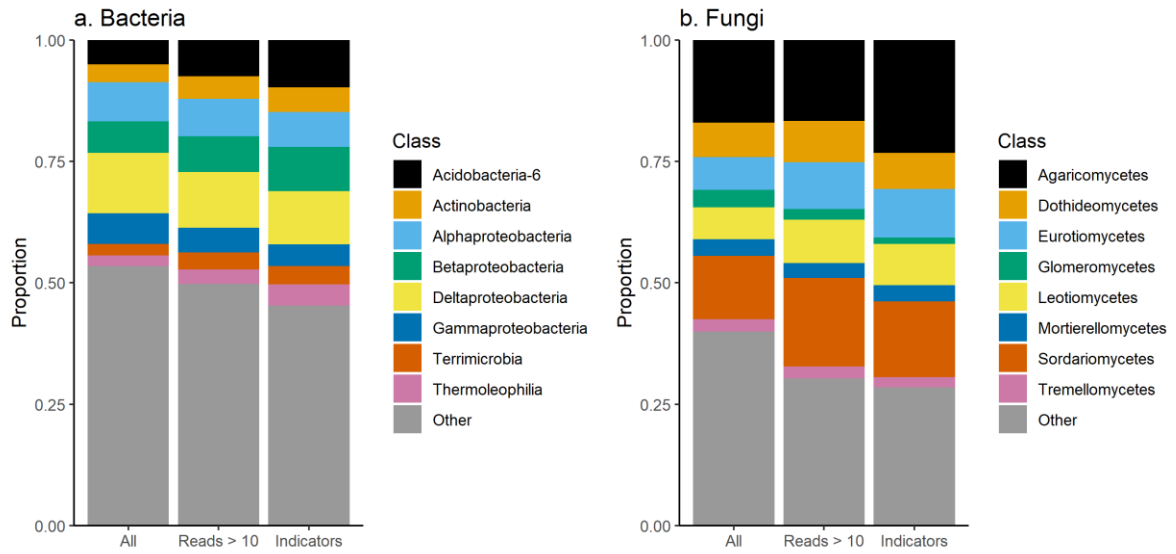


Figure 7: The taxonomic breakdown by class of bacterial (a) and fungal (b) indicators of farm management or soil quality compared to the wider class distribution. The bars represent all bacteria and fungi on the left, followed by all bacteria or fungi with more than 10 reads, and then followed by all bacterial and fungal indicators.

Table 1: Bacterial NMDS envfit results, arranged in descending order according to R² value.

Variable	NMDS1	NMDS2	R ²	p
pH (CaCl ₂)	-0.96497	0.26238	0.8485	0.001
pH (DIW)	-0.95388	0.3002	0.8086	0.001
Ellenberg R	-0.67447	0.7383	0.4995	0.001
Soil EC	-0.84651	0.53238	0.3709	0.001
Total N	-0.26413	-0.96449	0.3636	0.001
SOM	-0.19527	-0.98075	0.3533	0.001
Ellenberg F	0.2211	-0.97525	0.2756	0.002
Total C	-0.34766	-0.93762	0.274	0.002
Bulk density	0.07565	0.99713	0.1939	0.009
Stability	0.32554	-0.94553	0.1521	0.016
Silt	0.06238	-0.99805	0.1518	0.019
Total P	-0.3447	-0.93871	0.1318	0.031
Plant PCoA axis 3	-0.62636	0.77953	0.1241	0.033
Ellenberg N	-0.72509	0.68866	0.1143	0.055
Plant PCoA axis 1	-0.50702	0.86193	0.111	0.055
Grass cover	0.13347	-0.99105	0.107	0.067
Ellenberg L	-0.21589	0.97642	0.104	0.062
Clay	-0.24788	-0.96879	0.0961	0.088
Plant PCoA axis 4	0.99688	0.07899	0.0921	0.088
Weed cover	-0.21617	0.97636	0.0805	0.105
Olsen P	-0.97163	0.23653	0.0741	0.177
Sand	-0.02838	0.9996	0.0699	0.172
Forb richness	-0.17178	0.98514	0.0634	0.21
Forb cover	-0.12679	0.99193	0.0575	0.248
Lolium perenne cover	-0.60321	0.79758	0.0471	0.311
Sheep	0.26192	-0.96509	0.0366	0.421
Plant richness	0.02657	0.99965	0.035	0.417
Cattle	0.42356	0.90587	0.0333	0.435
CSM species richness	0.73402	0.67912	0.0331	0.452
Legume richness	-0.1347	0.99089	0.0315	0.468
Legume cover	-0.20849	0.97802	0.0259	0.541
Plant PCoA axis 2	-0.23582	-0.9718	0.0158	0.668
Grass richness	0.05643	0.99841	0.0051	0.882
Bare ground cover	-0.9375	-0.34798	0.0028	0.936

Table 2: Fungal NMDS envfit results, arranged in descending order according to R² value.

Variable	NMDS1	NMDS2	R ²	p
pH (CaCl ₂)	-0.97865	0.20555	0.6514	0.001
pH (DIW)	-0.95508	0.29635	0.6427	0.001
Ellenberg R	-0.99466	-0.10318	0.4804	0.001
Soil EC	-0.98106	0.19373	0.315	0.001
Ellenberg N	-0.61825	0.78598	0.3009	0.001
Plant PCoA axis 1	-0.49935	0.8664	0.2669	0.001
Stability	0.31395	-0.94944	0.2283	0.003
Olsen P	-0.48701	0.8734	0.2055	0.008
Legume richness	0.04607	-0.99894	0.1978	0.006
Lolium perenne cover	-0.39181	0.92004	0.1967	0.006
Clay	-0.16572	-0.98617	0.1593	0.018
CSM species richness	0.61437	-0.78902	0.1413	0.028
Silt	0.22583	-0.97417	0.1293	0.043
Sand	-0.1286	0.9917	0.1186	0.046
Bare ground cover	-0.08528	0.99636	0.11	0.072
Ellenberg F	0.50429	0.86354	0.1023	0.065
Ellenberg L	-0.419	-0.90799	0.0825	0.126
Plant PCoA axis 4	0.99975	0.02238	0.0754	0.15
Grass richness	0.2109	-0.97751	0.0654	0.199
Total P	-0.99999	0.00523	0.0632	0.21
Weed cover	-0.3488	0.9372	0.0625	0.206
Plant richness	0.35284	-0.93568	0.0612	0.225
Total N	-0.8692	-0.49447	0.0591	0.237
Total C	-0.99944	-0.03346	0.0551	0.273
Plant PCoA axis 3	-0.99738	0.07234	0.0502	0.275
Forb cover	-0.13627	-0.99067	0.0487	0.288
Forb richness	0.0322	-0.99948	0.039	0.392
Plant PCoA axis 2	-0.44484	-0.89561	0.0356	0.448
Sheep	0.85609	-0.51682	0.031	0.476
Bulk density	-0.06753	0.99772	0.0255	0.531
Cattle	0.34364	-0.9391	0.0238	0.529
SOM	-0.82729	-0.56177	0.0219	0.588
Legume cover	-0.24543	-0.96941	0.0137	0.71
Grass cover	0.814	0.58087	0.011	0.742