

Appendix S5: Results of MCOA performed on plant functional traits, microbial properties, abiotic soil parameters and ecosystem properties. Loadings of the first two axes of the common structure in unfertilized mesocosms and fertilized mesocosms for United Kingdom. The length of arrows is proportional to the contribution of a given variable to the common structure. Abbreviations: Ecosystem properties are represented by red arrows (aboveground biomass (ABM), root biomass (RM), plant digestibility (Digest), soil microbial biomass N (MBN), potential of leached nitrate (leachN), potential nitrogen mineralization (PNM), soil organic matter content (SOM)). Plant, microbial and soil variables are represented by black arrows (soil porosity (Poro), total soil nitrogen (soil N), total soil carbon (soil C), total soil nitrogen to carbon ratio (soil C:N), soil ammonium to nitrate ratio ($\text{NH}_4^+ : \text{NO}_3^-$ ratio), soil nitrate content (Soil NO_3^-), soil ammonium content (NH_4^+), in situ nitrate absorbed in resin (NO_3^- sorption), leaf dry matter content (LDMC), leaf C content (LCC), root dry matter content (RDMC), root C content (RCC), root diameter (Root Diameter), Specific Root Length (SRL), gene abundance of ammonium mono-oxygenase gene *amoA* for archaea (AOA) and bacteria (AOB), gene abundance of nitrite oxidizers *Nitrospira* (NIP) and *Nitrobacter* (NIB), kinetic parameters of potential denitrification (Km), gene abundance of nitrite reductase *nirK* (*nirK*), potential denitrification enzyme activity (DEA), intensity of mycorrhization (Mycor) and fungi to bacteria ratio (F.B ratio).

