

Antibiotic addition affected the microbial activity (Fig. 4). This result might be due to the negative effect on the populations susceptible to SMX. However, despite the decrease in the antibiotic concentration in soil, the dehydrogenase activity was constant over the experimental time.

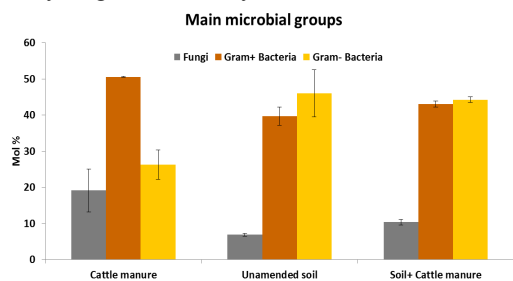


Figure 5 Soil microbial community structure evaluated by ELFA analysis. The vertical bars represent the standard errors.

The microbial group identified by ELFAs were Fungi, gram-positive and gram-negative bacteria (Fig. 5). Bacteria were more than Fungi in all conditions. In the cattle manure gram+ bacteria predominated over gram- bacteria.

References:

- 1 Sneeringer S, Mac Donald J, Key N et al. (2015). USDA Economic Research Service-Restrictions on Antibiotic Use for Production Purposes in US Livestock Industries Likely To Have Small Effects on Prices and Quantities.
- 2 Cheng W, Chen H, Su C et al. (2013). Abundance and persistence of antibiotic resistance genes in livestock farms: a comprehensive investigation in eastern China. *Environ int.* 61, 1-7.
- 3 Ma J, Zhai G. (2014). Antibiotic contamination: a global environment issue. *J Bioremediat Biodegrad.* 51(5).
- 4 Neu HC. (1992). The crisis in antibiotic resistance. *Science*, 257(5073), 1064-1073.
- 5 Berendonk TU, Manaia CM, Merlin C, et al. (2015). Tackling antibiotic resistance: the environmental framework. *Nat Rev Microbiol.* 13.
- 6 De Voogt P, Janex-Habibi M, Sacher F, et al. (2009). Development of a common priority list of pharmaceuticals relevant for the water cycle. *Water Sci Technol.* 59(1), 39-46.
- 7 Gillings MR, Gaze WH, Pruden A, et al. (2015). Using the class 1 integron-integrase gene as a proxy for anthropogenic pollution. *ISME J.* 9(6), 1269.
- 8 Göbel A, Thomsen A, Mc Ardell CS, et al. (2005). Extraction and determination of sulfonamides, macrolides, and trimethoprim in sewage sludge. *J Chromatogr.* 1085(2), 179-189.
- 9 Barra Caracciolo A, Grenni P, Cupo C, et al. (2005). In situ analysis of native microbial communities in complex samples with high particulate loads. *FEMS Microbiol. Lett.* 253 (1), 55-58.
- 10 Grenni P, Rodríguez-Cruz MS, Herrero-Hernández E, et al. (2012). Effects of wood amendments on the degradation of terbutylazine and on soil microbial community activity in a clay loam soil. *Water Air Soil Poll.* 223(8), 5401-5412.
- 11 Hinojosa MB, Parra A, Laudicina VA et al. (2014). Experimental drought induces short-term changes in soil functionality and microbial community structure after fire in a Mediterranean shrubland. *Biogeosciences Discuss.* (10), 15251-15287.