Evaluation of the microbial community on the forest / pasture conversion on the Amazon forest, with emphasis on the methane cycle.

The intense global population growth and consequent demand for food products and energy sources have been compromising untapped habitats. Thereby, the Amazon rainforest has been being widely converted to agricultural areas, especially pasture crops, impacting directly on water cycles, global temperature variations, and biogeochemical cycles. For this, the land use change impacts on the resident microbial community, affecting the relationships between species, as well as the abundance of their community. Then, the methane microbial community of soil has been suffering with these anthropogenic disturbances. Considering the methane as an essential gas for the energy metabolism of some specific organisms and a high greenhouse potential gas, the anthropic activities could be changing the community dynamic on the soil, transforming them on a source or a sink of methane to the atmosphere. Therefore, this work aimed to evaluate the changes in the total and methane communities associated to methanogenesis and methanotrophy of the Amazonia forest conversion to pastures of Santarém, PA and Ariquemeres, RO locations. The soils were sampled in three different environments, primary forest, secondary forest and pasture in Santarem, and primary forest and pasture in Rondonia. The study comprised soil chemical analysis, total quantification of communities from the 16S rRNA ribosomal gene, quantification of the pmoA expressive gene for methanotrophy and sequencing of the V4-V5 region of the *16S rRNA* ribosome gene. The results allowed inferring that the total soil microbiome was sensitive to soil changes, as well as the community relative abundance, with *Acidobacteria* being more abundant in forest soils compared to pasture and the *Actinobacteria* and *Firmicutes* phyla on pastures. The methanogenesis and methanotrophic communities did not present statistical difference between the samples, even though it was observed a community relative abundance difference tendency with the deforestation, showing higher biotic richness on the pastures samples. Then, the results of this project contribute to the understanding of the total community dynamics on the soil conversion environments.