

## **Population density of edaphic microbiota in three livestock production systems in Valle del Patia – Colombia.**

Víctor Felipe Orozco<sup>1</sup>, Jesús Gerardo Galindez<sup>1</sup>, Sandra Rivas<sup>1</sup>, Sandra Morales<sup>1</sup>, Nelson José Vivas<sup>1</sup>, Jhon Freddy Gutierrez<sup>2</sup>, Noé Alban<sup>1</sup>, Belisario Hincapié<sup>2</sup>, Michael Peters<sup>2</sup>.

Microorganisms (bacteria, fungi and actinomycetes) are responsible for the physical and chemical transformations and important indicators of soil quality due to fixation of atmospheric nitrogen, removal of pathogens, processing of organic waste and degradation of pollutants, among others. In addition, the maintenance of high biodiversity can confer resistance and resilience promoting the sustainability of ecosystems that may be affected by the combination of anthropogenic and climatic processes.

According to this, the influence of soil use management on the soil microbiota in Valle del Patía, for which soil samples from three systems (Naturalized, improved and silvopastoril) with six repetitions of each were taken. 5 biochemical tests were performed using selective cultives for the identification and quantification of population density of biological nitrogen-fixing bacteria BNFB, phosphorus solubilizing bacteria SRS, actinomycetes, bacteria and fungi, with the technique of the most probable number MPN and the use of the probabilistic table of Woormer 1994.

Low density was found for the SRS in the 3 systems, which are important for solubilize and mineralize organic and inorganic phosphorus through mechanisms such as the release of organic acids and hydrolytic enzymes that increase the mobilization and availability of this element for the nutrition, plus this group is able to produce plant hormones plant growth promoters.

Compared to other functional groups in the improved system, fungi and actinomycetes are present in greater quantity than in the other two systems; in the naturalized the BNFB and bacteria in general stood up, in the silvopastoral functional groups are present almost evenly, showing that a greater diversity of plants, there is a stable population of soil microbiota that perform vital functions in nutrient recycling and expressing the potential of ecosystem services livestock systems of Valle del Patía.

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<sup>1</sup> Grupo de Investigación Nutrición Agropecuaria – Universidad del Cauca

<sup>2</sup> Centro Internacional de Agricultura Tropical - CIAT