

SOIL ORGANIC CARBON IN THREE LIVESTOCK PRODUCTION SYSTEMS IN VALLE DEL PATÍA – COLOMBIA

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Soil Organic Carbon (SOC) measurements is a biophysical quality indicator and it is related to yield in agriculture systems, it can be found as organic residuals from vegetables, animals and microorganisms and in forms of composition close to the elemental carbon; relating to the mineralization processes of the edaphic micro biota, a fundamental element to calculate CO₂ emissions to the atmosphere. According to this, in order to establish strategies of management to contribute to the sustainability of livestock production in Valle del Patía, three systems were sampled (naturalized, improved, and silvopastoral) with 6 repetitions each one, analyzing the content of organic matter under recommendations of Walkley and Black method.

The results show higher values for the use of improved soil (COS 2.06%; MO 3.55g/kg), given by the conventional farming practices (plow, rake), fertilization and planting of improved forages such as grasses of the genre *Brachiaria sp.*, that contribute to the incorporation of nutrients, improvement of the pH and exudates that contribute to the mineralization of nutrients and the retention of carbon in soils. Followed by the naturalized (COS 1.84%; MO 3.18 g/kg) and finally the silvopastoral (COS 1.74%; MO 3.0 g/kg); explained by the interaction of the diverse radicular forms that allow better aerobe capacity in soils and then, a higher activity of the edaphic micro biotic, with a contribution to the mineralization and stocks of inorganic carbon.

Despite not having a complete carbon balance on each of the systems, the above shows that the inclusion of forages technologies alone, or in association with threes, generate a positive impact around the environmental services, in particular with the carbon (C) capture and the recovery of degraded soils, by the effect of the soil chemistry.

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