## **Carbon Stocks in Soils from Complex Agroforestry Systems in the Amazon. (S02rondon172046-Oral)**

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## Abstract:

We show the contribution of soil charcoal (SCh) to total soil-C and present data on C storage in soils under 10 year old agroforestry systems (AFS), secondary vegetation (SV) and primary forest in Central Amazonia. Coarse (G) and medium (M) size charcoal was manually removed from the soil. The fine fraction was quantified as the residual charcoal after oxidizing the SOM by treatment with acids and oxidants (Kulbush, 1995). Charcoal in M and G sizes is abundant (up to 15% of total-C) in the top layers and decays with depth. Spatial variability in SCh is high in the M and G fractions, but the fine fraction is more homogeneous at 3-5% of total-C. To observe the effect of changes on land use on soil-C stocks, the noise signal of SCh need to be previously removed. Forest soils store 121 Mg C/ha, followed by a fruit based AFS with 116MgC/ha. Soils under SV and degraded pastures presented the lowest stock (106MgC/ha). Our results indicate that AFS allow a moderate recovery of soil C stock relative to the SV. As a result of intense soil degradation and nutrient depletion at the time of establishment of AFS, comparatively low rates of net C accrual were found at1.8 MgC/ha/y.

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