samples from soil and analysed carbon content using the Walkley and Black, 1934 method, and determined root biomass. The main results show that pasture *Brachiaria humidicola* associated with leguminous crops has higher correlation coefficients between weight of roots and capture of carbon in degraded pastures. The values of the coefficients are 0.78 and 0.83, for flat topography and slope. The greatest root development of all studied grasses, which occurred with permanent grazing, was found in the first 10 cm of soil; it was 6.4 and 7.0 tonnes of MS ha-1 in sloping and flat ground respectively. These values contrast with those found for the depth of 10 20 cm; which, for the same topography, which was reduced to less than 1 ton of MS ha-1. There is a strong association between the weight of fine roots of pasture improvement and greater quantities of carbon sequestration.

Characterization and financial analysis of an agroforestry system in the western Amazon

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Preferred session   *E2. AF-based livelihood strategies for smallholders in the Amazon*

Abstract   One of the main problems of agriculture and livestock farming in the Amazon is the low capacity of maintaining productivity over the years, and consequently the increased areas covered by secondary forest. Agroforestry systems are important as a strategy for carbon sequestration, maintenance of diversity and income generation. The objective of the work was to characterize the multistrata agroforestry system, to identify the technical coefficients, and carry out a financial analysis. We used the method of technological panel, with selected key informants from project RECA and researchers from the Embrapa Acre who had recognized experience and knowledge in agroforestry systems. The agroforestry system was defined with the species, spacing and number of plants per hectare as follows: cupuaçu (6 x 8m), 221; coffee (4 x 8 m), 300; teak (8 x 18 m), 65; banana (6 x 8 m), 143; and açaí (4 x 8 m), 288. The technical coefficients for the implantation and maintenance of 1 hectare of the model were used as parameters for the financial analysis. The NPL (10% pyear) calculated was of USD 6761. The value of the BC (6% p.year) was 1.34. Remuneration of labour-family was USD 19, greater than the opportunity cost of USD 10. The agroforestry system shows economic viability, beyond the environmental benefits.

Achieving economic diversification and environmental sustainability through agroforestry in St Vincent and the Grenadines

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Preferred session   *C3. Agroforesty, water quality and environmental amelioration*

Abstract   Banana has been the lifeline of St Vincent and the Grenadines for many decades. However, declining prices, the removal of preferential access to European markets, the high cost of production, and the inability to compete with other producers has made diversification a necessity. The decades of monoculture of bananas on the island has led to a vicious cycle of small-scale farmers who are economically and socially marginalized, a result of the decline of banana prices, and a negative spiral of environmental and natural resources depletion that is increasing vulnerability to natural disasters and climate change. Among the natural resources and environmental changes as a result of monoculture are increased river siltation, damage and destruction of riparian vegetation, decline in crustacean river populations as a result of chemical pollution of rivers and waterways and river bank collapse. This paper will discuss efforts by the Ministry of Agriculture, Forestry and Fisheries, including the Integrated Forestry Management Project, to address declining watershed quality through agroforestry. Small-scale farmers are intercropping using medicinal and niche-market species such as Neem *(Azadirachta indica)* and Mauby *(Colubrina elliptica)* in their banana fields. Intercropping allows for the diversification of small-scale producers from traditional