

## Dealing with financial constraints in a complex agroforestry system in the Brazilian rainforest

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Ecological and socioeconomic advantages have been attributed to agroforestry (Montagnini 2005). Complex systems based on diversity of natural ecosystems are rising in importance since they provide more biodiversity and diversification of products per cultivated area. However, high costs of implementation have been one of the main constraints for widely adoption (Alavalapati *et al.* 2004; Franzel *et al.* 2005). This investigation aimed to test the financial viability of a complex and successional agroforestry system.

The study was carried out in April 2018, in harsh environmental conditions in the state of Espírito Santo, Brazil. The financial analysis was based on Arco-Verde & Amaro (2014) regarding economic and technical coefficients applied over 2 years and simulated for a 20-year period. Twenty-two plant species with different density, function and time in the system were used per hectare.

Most costs were concentrated in the first year. Overall, major costs were related to the labor. Costs and revenues per species over time were obtained. Cash flow was positive by the end of the first year when production of annual species occurred (Figure).

Annual, semi-perennial and perennial species combined in a successional system resulted in a positive environmental impact in a long-lasting production system. Annual species allowed minimizing costs of implementation. Simulations enabled adjustments in terms of species selection and management in order to reach sustainability.



**Keywords:** financial assessment, successional system, annual species, technical coefficients.

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