Contribution of plant diversity to farmers' income in cocoa-based agroforestry systems

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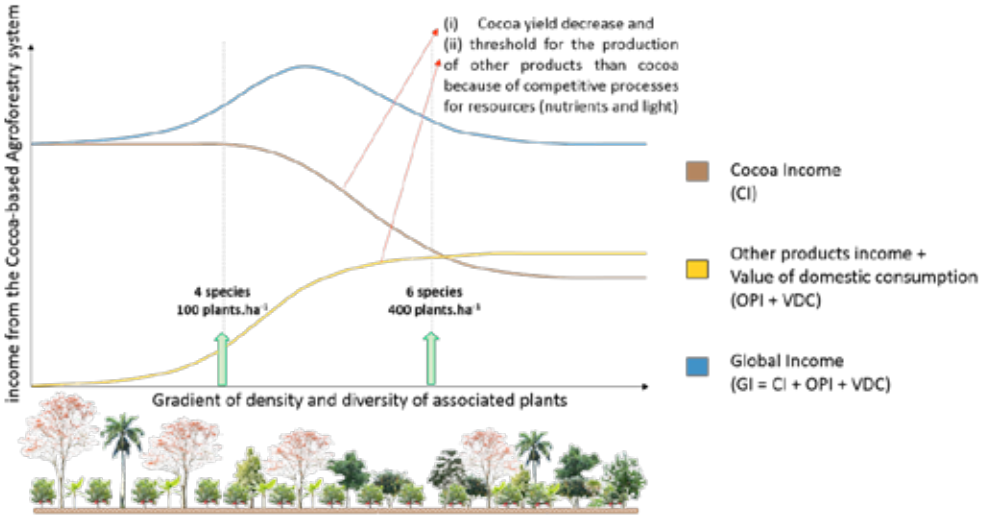
The diversity of associated crops within cocoa-based agroforestry systems (CAFS) generates different productions that can be either sold or self-consumed. This wide range of plant species and densities directly influence the amounts of products to be sold and/or self-consumed by the producers and their families. Consequently, the impacts on the overall economic performances of these CAFS can be important but have been poorly assessed. We characterized 140 CAFS distributed over 3 production areas in the Dominican Republic in order to (i) build a typology of Dominican CAFS according to their cultivated plant structure, and (ii) compare the agro-economic performances of each type of CAFS. We found that the sum of the different sales, including cocoa, do not differ significantly among the 3 types of CAFS that we characterized. However, a high degree of diversification combined with a significant densification of associated fruit species weakens the economic performance of cocoa sales, but increases fruit sales and the level of self-consumption of the farming household. On the other hand, a low diversification of plants associated with nitrogen-fixing trees increases the economic performance linked to the sales of cocoa but reduces fruit sales and self-consumption. This study evidences different farmer's strategies. It also provides elements for the improvement of agricultural practices towards different economic options between sold and self-consumed products provided by CAFS.



Evolution of incomes according to a gradient of density and diversity of plants associated with cocoa trees in AFS: CI for cocoa income, OPI for other products income, VDC for value of domestic consumption and GI for global income.

Keywords: Cocoa-based Agroforestry system, Diversity of associated plants, Density of associated plants, Economic performances.