



Increasing crop diversity to increase economic and environmental efficiency in coffee and pepper farming systems in Vietnam

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Context: In the Central Highlands in Vietnam, farmers often rapidly reshape their farming systems to adjust to price fluctuations and government incentives. This explains the rapid emergence of Robusta coffee in the 80s and 90s, followed by the expansion of black pepper in the 2000s, and of fruit trees (durian, avocado and macadamia trees) in the 2010s. The resulting mosaic of farming systems comprises monoculture plots as well as agroforestry plots, where coffee is intercropped with pepper and/or fruit trees. Due to high levels of inputs, yields are among the highest worldwide. On the other hand, these intensive farming systems cause in numerous environmental degradations and result in low economic efficiency in times of low commodity prices. Objective: This study aims to assess the impact of crop diversification on economic and environmental performances of coffee and pepper farming systems, to guide their transition towards more sustainable farming systems. Method: More than 200 coffee and pepper farmers were interviewed between October and December 2021, representing a diversity of farming systems throughout the three provinces of Dak Lak, Dak Nong and Gia Lai in the Central Highlands. Methods based on envelop analysis will be used to estimate economic and environmental efficiencies of the various farming systems (Ho et al., 2018), and outline the role of diversification in their performances. Results & Discussion: The analysis will allow the identification of optimal crop mixes (% coffee, % pepper, % fruit trees) for economic and/or environmental efficiency. These optimal crop mixes can in turn guide the numerous public and private programs towards adoption of more sustainable farming systems, therefore reducing environmental degradations, lowering financial risks for smallholder farmers, and ensuring the long-term production of coffee and pepper in Vietnam.