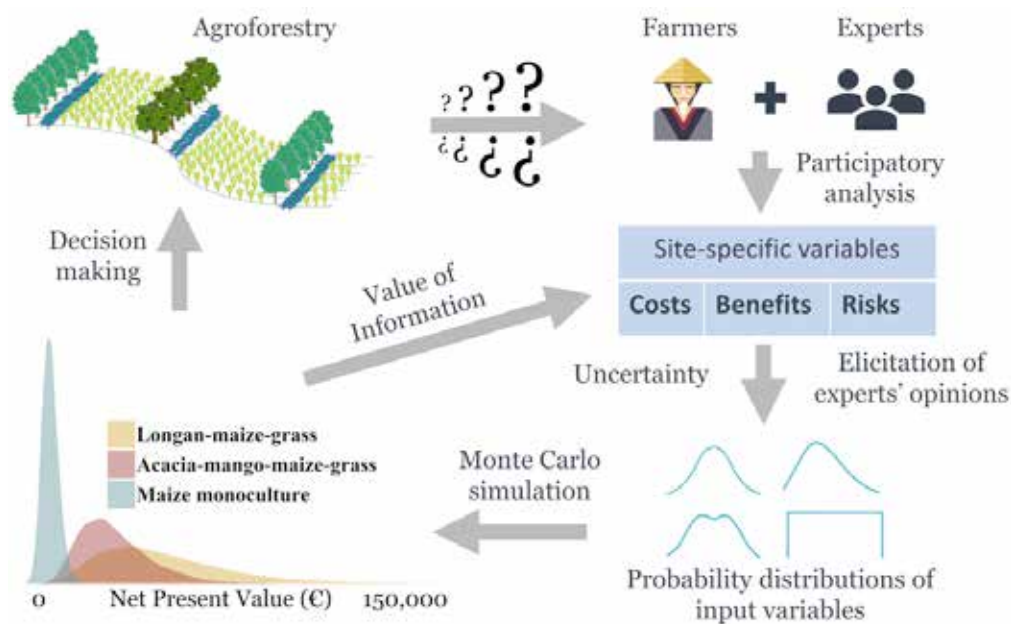


Uncertainty analysis in agroforestry planning: A case study in Northwest Vietnam

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Agroforestry may benefit many farmers of Northwest Vietnam, but it is often difficult to anticipate which of many possible options promises the greatest returns on investment. We applied holistic modelling approaches to provide ex-ante assessments of Net Present Values for seven agroforestry interventions promoted by the World Agroforestry Centre in the mountains of Northwest Vietnam. The region faces serious soil erosion and land degradation due to unsustainable cropping systems, such as maize monoculture on steep slopes. Model results show that these monocultures may be attractive to farmers in that they provide relatively early incomes without lags, yet annual profits decrease over time. All agroforestry systems, on the other hand, return substantial profits in the long term. However, the high costs of establishment and maintenance reduce economic returns in the short term, with many systems generating net losses during the first few years. Initial financial incentives to compensate for short-term economic losses may be needed to promote the adoption of agroforestry. Value of Information analysis revealed key uncertainties (i.e. discount rate, crop yield and crop price). Further information about these variables should be collected to reduce uncertainty about which agroforestry option promises the greatest financial returns.



Decision analysis for agroforestry intervention in Northwest Vietnam

Keywords: decision analysis, holistic model, risks and uncertainties, agroforestry.

References:

1. Luedeling E, Shepherd K, 2016. Solutions 7(5), 46-54.
2. Luedeling E, 2015. Frontiers in Environmental Science 3, article 16, 1-18.
3. Luedeling E, Goehring L, 2018. R package version 1.103.8.
4. R Core Team, 2018. R Foundation for Statistical Computing.