

Sampling design for an integrated socioeconomic and ecological survey by using satellite remote sensing and ordination

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Environmental variability is an important risk factor in rural agricultural communities. Testing models requires empirical sampling that generates data that are representative in both economic and ecological domains. Detrended correspondence analysis of satellite remote sensing data were used to design an effective low-cost sampling protocol for a field study to create an integrated socioeconomic and ecological database when no prior information on ecology of the survey area existed. We stratified the sample for the selection of tambons from various preselected provinces in Thailand based on factor analysis of spectral land-cover classes derived from satellite data. We conducted the survey for the sampled villages in the chosen tambons. The resulting data capture interesting variations in soil productivity and in the timing of good and bad years, which a purely random sample would likely have missed. Thus, this database will allow tests of hypotheses concerning the effect of credit on productivity, the sharing of idiosyncratic risks, and the economic influence of environmental variability.