

GIS based land suitability assessment for sustainable agricultural land-use allocation: a case study in Tam Dao region of Vietnam

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Land suitability assessment is one of the most important steps in land-use allocation towards sustainable uses. It is particularly significant for the highlands where land degradation is being a serious threat to the destruction of ecosystem services as well as sustainable livelihood. This study aims at the land suitability assessment in the buffer zone of Tam Dao national Park in Vietnam. The land suitability analysis can facilitate the adjustment of land-use decisions through land-use allocation process towards sustainable uses. Land suitability is analyzed for paddy rice, maize and eucalyptus systems. Soil database, terrain and climate data are used to generate fuzzy factor images: slope, soil depth, soil texture, distance-to-irrigation, soil organic matter, pH, temperature, soil fertility, and distance to roads. They are used as the input variables for fuzzy multicriteria evaluation procedure in IDRISI Andres. Then, multi-objective land allocation procedure is applied for the sustainable land-use allocation process. The assessment result recommended that an area of 48,000 ha (48.1%) of the buffer zone should be allocated to eucalyptus plantation for sustainable use and the other areas of 25,000 ha (24.5%) and 29,000 ha (28.4%) should be allocated to paddy rice and maize respectively.