

Abstract

Outcomes of Agroforestry and Monocropping—Comparison and Assessment [†]

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Abstract: Agroforestry is considered as a solution for improving livelihoods of smallholder farmers and reducing land degradation. However, the upscale is required objective assessments and appropriate solutions. Five agroforestry options established in 2014 in Northwest Vietnam include Macadamia+coffee+soybeans, Acacia+mango+maize+forage grass, Acacia+longan+coffee+soybeans+forage grass, Teak+plum+coffee+soybeans and *Docynia indica*+forage grass, were used to evaluate the annual income, cumulative profit, multi-year return on investment (ROI) and efficiency on soil erosion control compared with mono-maize and mono-*Docynia indica*. Mono-maize provides annual income. However, tends to decrease. Break-even point of mono-*Docynia indica* happened in the year 4th after planting. Depend on agroforestry options, the break- even presented in the year 2nd to year 4th. The cumulative profit of mono-maize and mono-*Docynia indica* for five-year study were 1196 and 875 USD ha⁻¹, respectively. Meanwhile, five agroforestry options were provided the cumulative profit from 29 to 10,000 USD ha⁻¹. ROI of five-year investment of monoculture maize and *Docynia indica* were 38% and 33%, respectively. Agroforestry options gave the value of 1%, 25%, 39%, 59% and 141% for Macadamia+coffee+soybeans, Acacia+mango+maize+forage grass, Acacia+longan+coffee+soybeans+forage grass, Teak+plum+coffee+soybeans+forage grass and Sontra+forage grass, respectively. The effectiveness on soil erosion control in agroforestry options are clear, decreasing from 53% in the second year to 98% in the fifth year after establishment compared to mono-maize. The analysis results show that agroforestry options provided attractive income for farmers only 2nd or 3rd year after establishment. However, higher investment cost is required, and appropriate supports are needed for wider application.

Keywords: agroforestry option; return on investment; erosion



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