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Decision analysis of the transition from rice to vegetables in upland areas of Indonesia

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Abstract

Indonesia is one of the largest rice producers globally, with a significant portion of its agricultural sector consisting of smallholder farmers. However, many of these farmers face economic challenges, including low incomes and limited access to resources. In upland regions, there is growing potential for smallholder farmers to transition from rice farming to vegetable production. This transition offers higher economic returns in the short-term but its lasting prospects are uncertain and involve risks. We explore the feasibility of this transition with a case study in the West Sinjai district of Sinjai Regency, South Sulawesi Province, Indonesia. We apply decision analysis methods to evaluate the benefits, costs and risks of this transition and forecast its long-term viability, considering associated support and activities. This study simulates scenarios under current government assistance programmes and farmers' diversification strategies for additional income from vegetable farming, including composting, vegetable processing and agrotourism. We also conducted a stakeholder analysis to understand the roles and influence of various stakeholders in this agricultural transition process. Our findings suggest that the transition from rice to vegetable farming is profitable, regardless of government assistance. This indicates that government support may not significantly affect the overall projected outcomes of this transition in the long term. The sensitivity analysis identifies vegetable prices and yields as variables that positively influence the profitability of this transition. While vegetable farming offers economic benefits and is feasible in the long term, the potential negative impact of this transition on rice farming should not be overlooked. Our model also considers the growing concern about the potential loss of local upland rice varieties due to this transition. Effective collaboration among relevant stakeholders, particularly through public-private-people partnerships, such as contract farming with vegetable trading or processing companies, can be a key strategy to support the sustainability of this transition.

Keywords: Decision analysis, rice farming, risks, smallholder farmers, stakeholder, transition, vegetable farming