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Farmers' perceptions and the economics of transitioning to organic apple production

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Abstract
The transition to organic apple production is increasingly relevant in Nepal, where the demand for sustainable agricultural practices is growing. This study explores farmers' perceptions and evaluates the economic implications of transitioning to organic apple production in three major apple-growing regions of Nepal: Mustang, Jumla, and Dolpa. Using data from farmer surveys and interviews, the research highlights the challenges, opportunities, and financial outcomes associated with organic farming. The findings reveal that while organic apple farming offers environmental benefits and higher market premiums, farmers face significant challenges during the transition period, including high initial costs, yield variability, and limited access to organic markets. Strategies for overcoming these challenges and enhancing profitability are discussed to support Nepalese farmers in adopting organic apple production.

Keywords: Organic apple production, transition to organic farming, farmers' perceptions, sustainable agriculture in Nepal

Introduction
Apple farming in Nepal is a key agricultural activity in the mountainous regions, providing livelihoods to local communities and contributing to rural economies. The country's unique climatic conditions are favourable for producing high-quality apples, particularly in Mustang, Jumla, and Dolpa. With the rising global and local demand for organic produce, transitioning to organic apple farming presents an opportunity for Nepalese farmers to increase their income while contributing to environmental sustainability.
However, the shift from conventional to organic farming is fraught with challenges, including the need for new farming techniques, certification processes, and market adjustments. This study aims to understand the perceptions of farmers in Nepal regarding organic apple farming and assess the economic feasibility of this transition. By focusing on the three-primary apple-producing regions, the research provides insights into the drivers, barriers, and financial dynamics of organic apple production in Nepal.

Methods
This study employed a mixed-methods approach, combining quantitative and qualitative data collection. Surveys were conducted with 120 apple farmers across Mustang, Jumla, and Dolpa to capture their perceptions and experiences with organic farming. Semi-structured interviews were used to explore their motivations, challenges, and expectations regarding the transition. Economic data, including production costs, yields, and market prices, were analyzed to evaluate the financial implications of organic apple farming in these regions.

Results
Farmers' Perceptions
Farmers in Mustang expressed optimism about transitioning to organic apple farming due to the region's established reputation for premium-quality apples and access to tourism-driven organic markets. In Jumla, perceptions were mixed; while some farmers were motivated by the potential for higher prices, others were concerned about the labor-intensive nature of organic practices. Dolpa farmers showed hesitation due to limited infrastructure and market access, although they recognized the long-term environmental benefits.
Across all three regions, common motivators for transitioning included health benefits, soil

preservation, and consumer demand for chemical-free apples. However, challenges such as yield reductions during the transition period, increased labor requirements, and difficulties in obtaining organic certification were frequently cited.

Economic Implications

1. **Production Costs:** Transitioning to organic farming increased production costs by 25–30% across all three regions. This was primarily due to higher labor costs for activities such as manual weeding and the preparation of organic compost.
2. **Yield Variability:** Farmers reported an average yield decline of 20% during the first two years of transition. However, yield levels began to stabilize in the third year, and some farmers in Mustang reported a slight improvement in yield quality.
3. **Market Prices:** Organic apples in Mustang commanded a premium of 50–60% over conventional apples, driven by demand from both local and international tourists. In Jumla and Dolpa, the price premium was lower (20–30%) due to limited market reach and competition from conventional produce.
4. **Certification Challenges:** The cost of organic certification ranged from NPR 15,000 to NPR 30,000 per orchard annually, posing a significant barrier for small-scale farmers in Dolpa and Jumla. Farmers in Mustang, with better access to financial support and cooperative networks, found it easier to navigate the certification process.
5. **Long-Term Profitability:** Despite initial challenges, farmers who completed the transition reported a 40% increase in profitability over conventional farming due to reduced dependence on synthetic inputs and access to premium markets.

Discussion

The findings highlight the economic potential of transitioning to organic apple production in Nepal, particularly in regions with strong market linkages such as Mustang. However, the process is not without challenges. Yield reductions and increased labor costs during the transition period discourage many farmers, especially in remote regions like Dolpa. The lack of adequate infrastructure and market access further compounds these challenges.

Farmers in Mustang have benefited from proximity to tourism hubs, where organic produce is highly valued. The region's cooperative networks also play a significant role in reducing the costs and complexities of organic certification. In contrast, Jumla and Dolpa require targeted interventions, including subsidies, infrastructure development, and market promotion, to facilitate the transition.

Conclusion

Transitioning to organic apple production offers significant economic and environmental benefits for farmers in Nepal, particularly in regions like Mustang with strong market access. However, the challenges of increased production costs, yield variability, and certification barriers must be addressed to make this shift feasible for all farmers. By implementing supportive policies and infrastructure improvements, Nepal can enhance the resilience and profitability of its apple farming sector, ensuring a sustainable future for both farmers and consumers.

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