

On-farm challenges and solutions for small-scale farmers to establish agroforestry: A case example from Cambodia

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Introduction

While many studies have shown the potential of agroforestry ecosystem services, few have looked at farmers' challenges in adopting agroforestry

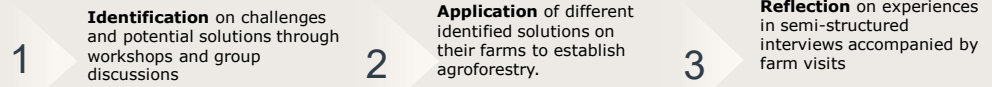
Study objectives:

1. Identify on-farm challenges faced by farmers to establish agroforestry systems
2. Identify locally adapted solutions to establish agroforestry systems

Methods

Longitudinal action research study conducted 2021-2024 in northern Cambodia

A learning group of 24 small-scale farmers engaged in implementing agroforestry



Results

Identified challenges

For establishing tree seedlings in the field are extreme weather events like flash floods and prolonged drought periods. These challenges were interrelated with land degradation, leading to water-logging, and increased pest problems.

Identified solutions

- »» 1) **On-farm water management** to secure supply during extreme drought and manage water oversupply in the rainy season.



Integrated swale and canal systems for flood prevention



Ponds and full moon systems conserve water for the dry season

- »» 2) **Soil management** Essential to increase water infiltration and improve soil and plant health.



Mulching banana stems and algae around seedlings for moisture retention and soil improvement



Soil cover with legume Stylo to prevent erosion, fix nitrogen, increase organic matter and feed livestock. Improved crop health using Stylo

- »» 3) **Pest management strategies**. Soil improvement, crop diversification, integration of natural enemies and botanical pesticides.



Improving plant health through improved soil fertility for example with Stylo



Integrating climbing wattle as fast-growing understory for daily income, erosion prevention and nitrogen fixation

- »» 4) **Identifying resilient plant species and short-term companion species** for income generation

Discussion

- Although agroforestry has the potential to overall improve climate resilience, which is confirmed by many earlier studies, farmers experienced increased challenges of implementing agroforestry due to climate change effects.
- For research and development projects, it is crucial to adapt solutions to specific farm conditions, using participatory approaches when introducing agroforestry in the area.

Conclusion

- » For successful adoption of agroforestry despite increasing climate change effects it is important to identify
- 1) on-farm solutions in a transdisciplinary manner and
 - 2) agricultural practices based on ecosystem services.

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