28th Conference Asic 2021
From 28 June to 1 July 2021

Local agroforestry knowledge and development of an online decision-support tool (shadetreeadvice.org) for selection of trees to be associated to coffee in Northwest Vietnam

S5-PO-01

World Agroforestry

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Introduction

In agroforestry systems, trees provide multiple services and contribute to 1) improve soil fertility, 2) buffer climate extremes and help adapt to climate change, 3) provide refuge for biodiversity and a micro-climate favourable to biological antagonists to pests and diseases (P&D), 4) provide fodder to improve diet of livestock and 5) diversify on-farm revenues and reduce exposure to price volatility.

This study aims to document local knowledge on trees and develop a decision-support tool to help select the right tree species adapted to local context.

Materials/Methods

The study was conducted in Son La & Dien Bien Provinces, Northwest Vietnam, through interviews of 124 farmers in 12 villages, according to the following steps:

1) Inventory of existing tree species at the farm and landscape levels

2) Documentation of ecosystem services and disservices that farmers associate with the various tree species. Ranking of tree species for each service.

3) Development of the decision-support tool (shadetreeadvice.org).

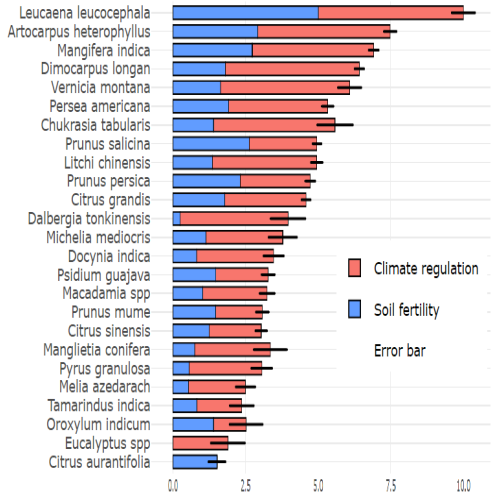

Figure 1: Result of accumulated tree species ranking scores for selected ecosystem services on shadetreeadvice.org

Figure 2: Coffee agroforestry landscape in Northwest Vietnam (Nguyen Mai Phuong)

Figure 3: Farmer ranking tree species for intercropping with coffee (Nguyen Mai Phuong)

Results/Discussion

- Farmers implemented agroforestry in 80-90% of their coffee areas.
- 47 tree species were inventoried in coffee plots and less than 25 in non-coffee plots, including orchards, annual crops or forest plantations. Thai farmers conserve more tree species in coffee AFS compared to Kinh and H'mong ethnic groups.
- Most farmers were aware of obvious ecosystem services such as reducing soil erosion, improving soil fertility, enhancing biodiversity, preventing damages from wind and frost, and providing shade to coffee plants. However, farmers have limited experience or knowledge on impact of trees on P&D, coffee yield and quality.
- Both men and women farmers from the three ethnic groups (Kinh, Thai, H'mong) ranked *Leucaena leucocephala* as the best tree species providing multiple services to coffee.
- Farmers select tree species mainly based on economic benefits and market access. Farmers near main roads tend to plant more commercial fruit trees, while farmers far away from roads plant more timber trees.

Conclusion/Perspectives

The decision-support tool is available online (shadetreeadvice.org) for the Northwest coffee producing regions of Vietnam, to help agricultural services and cooperatives selecting the right tree species adapted to local ecological conditions and households' needs and constraints. On top of recommended tree species, the tool needs to be improved to give practical advices on tree planting density and management.

References:

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