



Mercator Research Program | Call 1

Managing Trade-Offs in Coffee Agroforestry

Background

The livelihoods of some 26 million smallholders in over 70 countries depend on coffee production. While coffee is mostly grown as full-sun monoculture, India is one of the few countries where it is still produced under native shade tree canopy. Those biodiversity-rich agroforestry systems are believed to be both more resilient and sustainable. Coffee agroforestry systems are celebrated for achieving multiple objectives including food production, ecosystem service delivery, biodiversity conservation and sustainable livelihoods, yet there is still little scientific evidence to support these beliefs. Meanwhile there is an increasing trend towards replacement of native canopy shade trees with fast growing marketable exotic species. The implications of the associated trade-offs are not well understood and optimal management strategies are unclear.

Objective

The overall research objective is to understand how shade tree density and diversity management on organic and conventional farms can contribute to more sustainable and resilient coffee production systems. Research is being carried out in Kodagu, Karnataka, which is the most important coffee production region in India and part of one of the most important biodiversity hotspots worldwide.

Research Approach

Functional trait analysis of shade trees using participatory approaches; litter and soil analysis; reduced rainfall simulation; pollination trade-off analysis; and coffee performance and quality assessments.

Relevance and Expected Outcomes

The project is (1) expanding the mechanistic understanding about the implications of intensification in coffee agroforestry; and (2) clarifying trade-offs related to shade tree types, thereby informing stakeholders about the impact of different management strategies. The research is identifying the longer-term costs to sustainability and resilience of coffee agroforestry systems that trade-off with the short-term benefits of intensification. Results will inform debate about agroforestry's ability to deliver the purported benefits, with particular relevance for poor coffee farmers around the world.

Food System Challenges Addressed

Resilience, climate change and agroecosystems, alternative markets/certification

www.worldfoodsystem.ethz.ch/research/research-programs/MRP

Principal Investigator Prof. Jaboury Ghazoul,
Ecosystem Management

Co-Investigators Prof. Peter Edwards,
Dr. Christoph Küffer

Doctoral Student Maike Nesper

Partners University of Agricultural and
Horticultural Sciences, Shimoga, CIFOR, CIRAD

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