Can coffee cultivation lead to food security under a changing climate? Evidence from western Honduras

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Objective

Understand how coffee value chain actors address food insecurity of coffee households under climate stress.
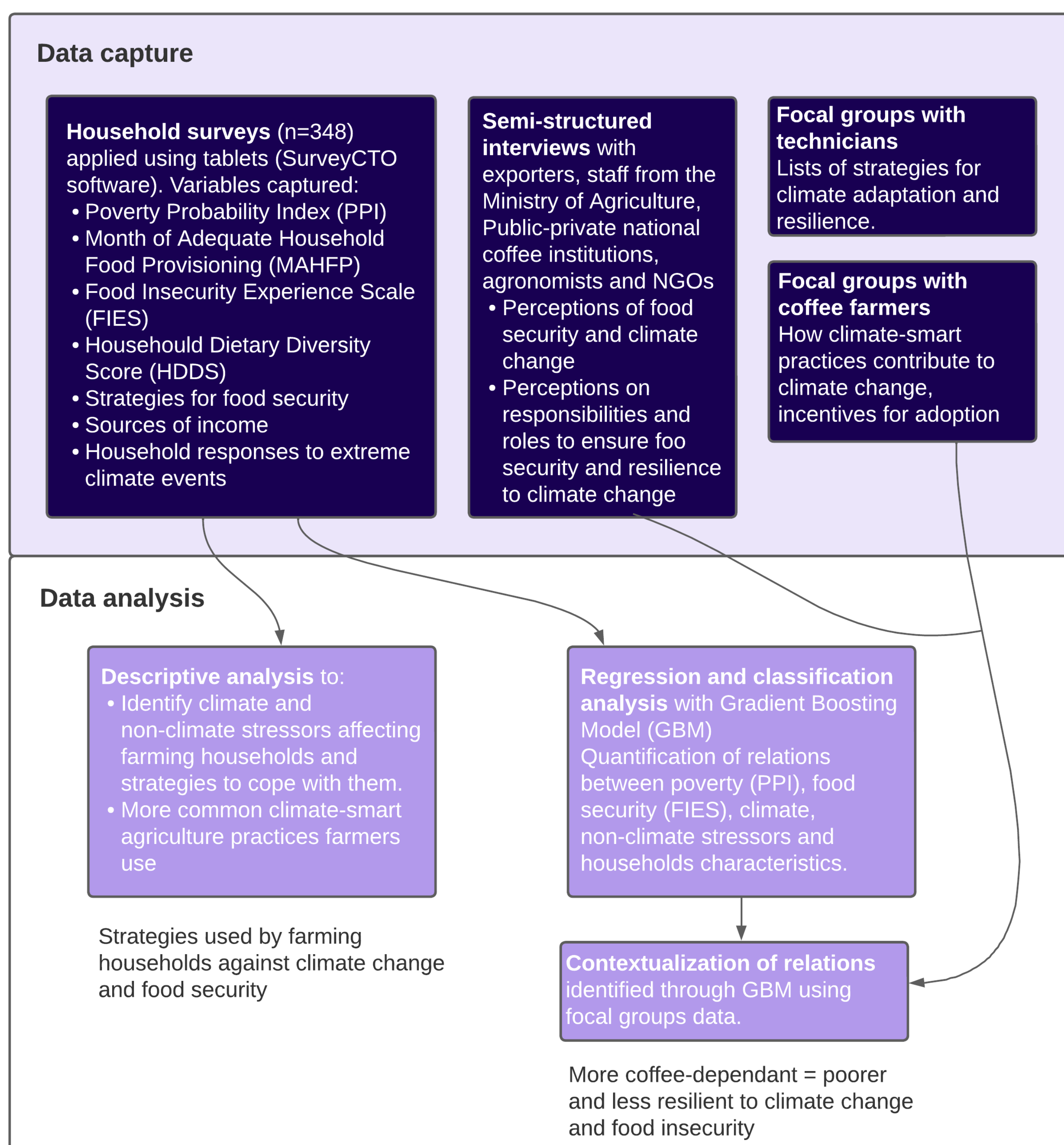
Introduction

- Coffee is the most traded commodity in the world, but 80% of the coffee farmers live with less than USD 1,25 per day FAO (2015).
- Coffee farmers confront major challenges such as extreme and recurrent climate events.
- Fifty-six percent of farmers interviewed in Honduras and Guatemala experienced recurrent food insecurity and 36% experienced episodic food insecurity because of extreme climate events (Alpízar et al., 2020).
- Coffee sector is promoting new strategies to confront climate hazards affecting coffee farms in Honduras.
- In Central America, there are gaps in understanding farmers households' vulnerability to climate change and the types of adaptation strategies that fit in for them (Donatti et al., 2019).

Figure 1: Area of study lies within the dark blue rectangle. Source: Wikimedia Commons

Methods

Data capture

Household surveys (n=348) applied using tablets (SurveyCTO software). Variables captured:
- Poverty Probability Index (PPI)
- Month of Adequate Household Food Provisioning (MAHFP)
- Food Insecurity Experience Scale (FIES)
- Househould Dietary Diversity Score (HDDS)
- Strategies for food security
- Sources of income
- Household responses to extreme climate events

Semi-structured interviews with exporters, staff from the Ministry of Agriculture, Public-private national coffee institutions, agronomists and NGOs
- Perceptions of food security and climate change
- Perceptions on responsibilities and roles to ensure foo security and resilience to climate change

Focal groups with technicians Lists of strategies for climate adaptation and resilience.

Focal groups with coffee farmers How climate-smart practices contribute to climate change, incentives for adoption

Data analysis

Descriptive analysis to:
- Identify climate and non-climate stressors affecting farming households and strategies to cope with them.
- More common climate-smart agriculture practices farmers use

Strategies used by farming households against climate change and food security

Regression and classification analysis with Gradient Boosting Model (GBM) Quantification of relations between poverty (PPI), food security (FIES), climate, non-climate stressors and households characteristics.

Contextualization of relations identified through GBM using focal groups data.

More coffee-dependant = poorer and less resilient to climate change and food insecurity

Results

- The poverty index increases when households depend more on coffee income.
- Diversified households, whose income depends less in coffee, have a greater chance of being food secure.
- Interviewed coffee households are not sure on how to ensure their food security under climate variation, and most of the climate-resilience practices fostered by the coffee sector are focused on improving coffee tree resilience and soil against climate variability.

Figure 2: Coffee sector field day to promote climate-smart practices for coffee plantations in Ocotepeque (Honduras). Credit: F. Rodríguez-Camayo

Discussion and conclusions

- Diversified households, whose income depends less on coffee, have a greater probability of being food secure, while the opposite is true for coffee specialized and coffee-dependent households.
- Coffee sector largely invests on climate-resilience practices oriented to coffee production, while coffee households have a weak resilience capacity to face food insecurity during extreme climate events. Coffee farmers often use credits and savings to cope with food insecurity, but these strategies are unsustainable in the long term.
- Efforts focusing on production as a strategy for climate resilience threatens coffee sustainability in the medium term and the well-being of coffee-growing households.
- The stakeholders of the coffee value chain need to understand the role of food security of coffee households as part of climate resilience and its potential benefits for farmers and the value chain sustainability in the medium and long term.
- There is a great opportunity to co-design, pilot, and assess strategies on the field with all users of climate resilience practices/technologies towards climate adaptation and food security under more recurrent climate variations in the future.

Acknowledgements

References

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