

# Vulnerability to climate variability of productive livelihoods in the Talgua watershed, Honduras

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## 1. Introduction

Climate change and variability impact the agricultural production of smallholder farmers worldwide [1], posing a threat to food insecurity, especially in developing countries with climatically vulnerable agricultural systems and where agriculture is the primary source of income for the population [2].

Despite the extensive scientific debate on the impacts of climate variability, not much is known about smallholder farmers' perception of these impacts on their livelihoods at the local level [3], so understanding the vulnerability of livelihood systems is a priority [1] to guide efforts to formulate adaptation strategies in the face of adverse climate conditions.

Therefore, the objective of this study is to analyze the main livelihoods and their climate vulnerability in the Talgua river basin, understanding that climate vulnerability encompasses climate change, climate variability, and events extremes.

## 2. Materials and Methods

### 2.1 The geographical location of the study area

The Talgua river basin is part of the Patuca river basin in Honduras, which flows into the Caribbean Sea (Fig. 1).

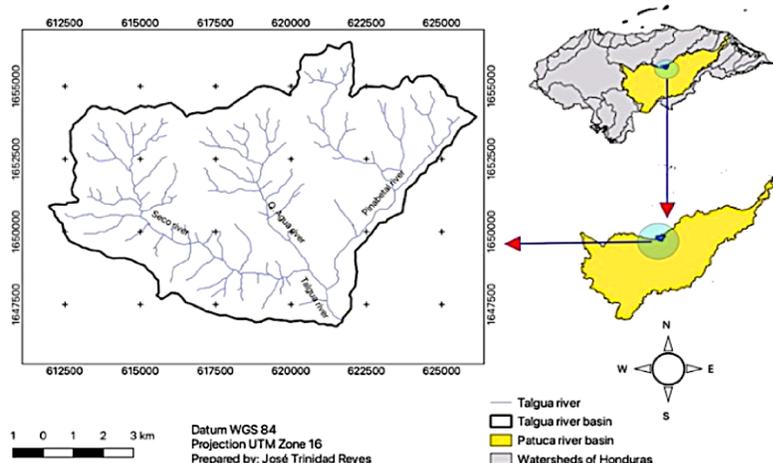


Fig. 1 Geographical location of the Talgua river basin, Honduras

### 2.2 Methodology

The procedure included the review of databases, diagnoses, and research reports as a basis for obtaining information of interest in this study. Information on productive livelihoods was obtained through previously validated surveys applied to the family units in the basin and verified through focus group discussions [4]. The study population consisted of 316 smallholder farming families in the area.

### 2.3 Analysis of productive livelihoods

The factors related to productive livelihoods describing farmer typologies were subjected to confirmatory factor analysis. The analysis of the vulnerability to climate variability of production systems or livelihoods based on the perceptions of small subsistence producers [4].

## 3. Results

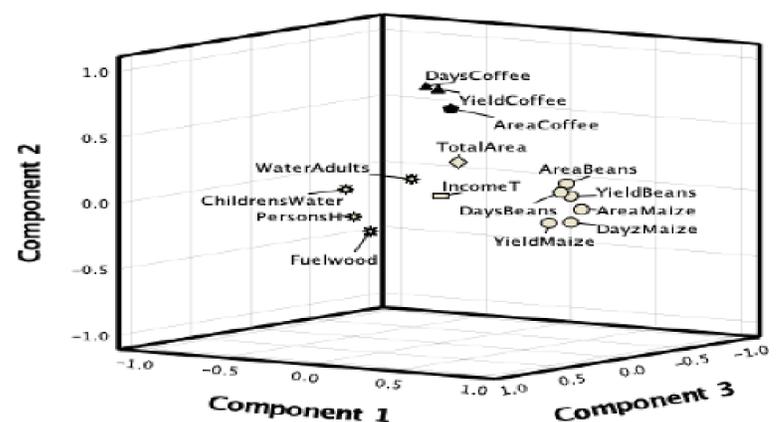


Fig. 2 A component graph in rotated space in 3D

Table 1. Typical patterns and perceived trends changing in weather over the last five years by smallholder basic grains and coffee farmers

	Regular Weather Pattern	Perception of changing weather trend
<b>Rainfall</b>	- Rainy season from May to November - Heavy rains in September and October	- Rainy season June to December, but with much uncertainty - Heavy rains in October and November
<b>Temperatures</b>	- Regular temperature of 26 to 28 °C - Hot months: March and April with 30 to 32 °C. - Cooler months: November, December and January with 20 to 22 °C.	- Hot months: March, April, May and August with sweltering heat and 30 to 32 °C. - Cooler months: December, January and February with 20 to 22 °C.
<b>Canícula</b>	- Between 15 July and 15 August last two weeks	- May start at the end of June until August lasting three weeks. - Very irregular period can be dry or with downpours.
<b>Winds</b>	- Strong winds occur in November and December.	- November, December and January with the incidence of solid winds

## 4. Conclusions

According to the vulnerability analysis, farmers perceive are exposed to climatic threats that have caused the total loss of maize and bean production and partial loss of coffee production. These livelihoods are perceived as vulnerable to climate variability. It is necessary to formulate an adaptation strategy to cope with the adverse effects of this global phenomenon.

## 5. Bibliography

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