



# Adaptation of crop portfolios to perceived indicators of climate variability by smallholder farmers in south-western Uganda

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## Introduction

- Rainfed agriculture is the major source of livelihood for smallholder farmers in Uganda
- This form of agriculture is vulnerable to variations in climate, a current global phenomenon

## Research questions

1. How do smallholder farmers in south-western Uganda perceive climate variability?
2. How does farmer's perception of climate variability influence crop selection?

## Methods

### Data collection

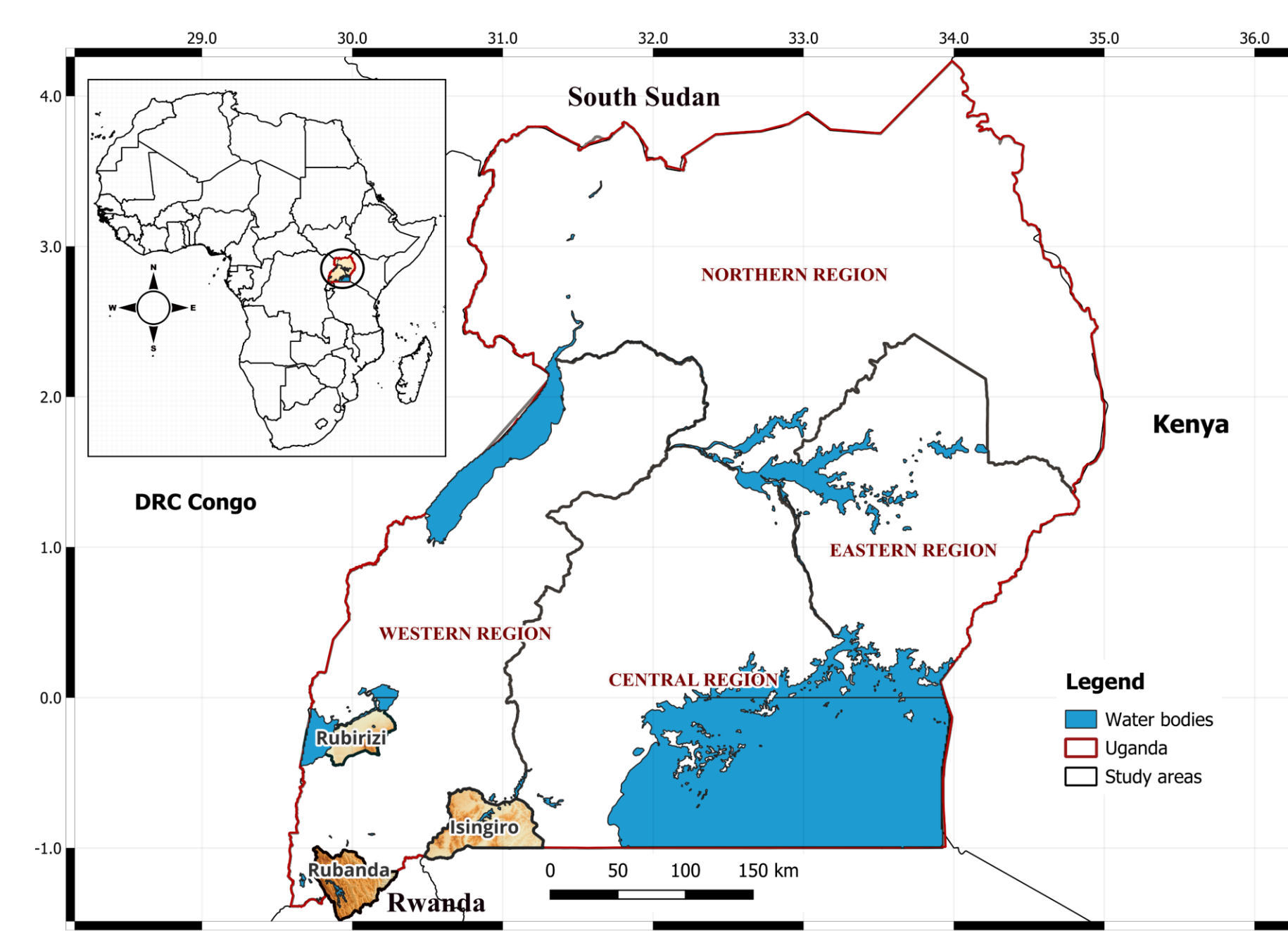
#### Approach

- Household survey; Probability sampling techniques (n=583)
- Key informant interviews (n=22)

#### Process

- Lists of smallholder farmer households ( $\leq 1$  ha) were collected from village chairpersons (54)
- Survey tool was pre-tested
- Face to face interviews were conducted

## Study Area – South western Uganda



**Figure 1:** Map of the study area. Surveys were conducted in 3 districts of SW Uganda: Isingiro, Rubirizi, Rubanda

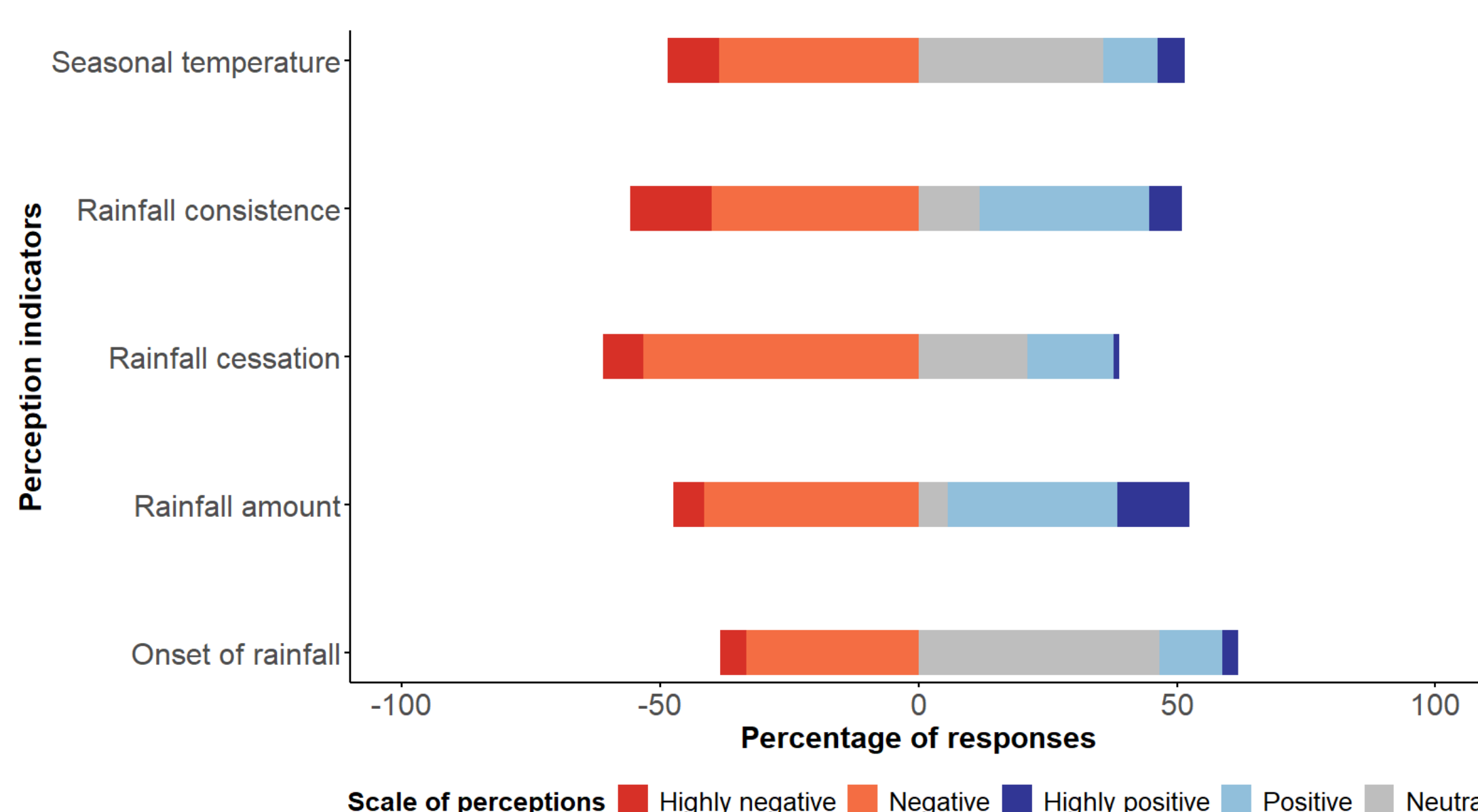


**Figures 2:** Farmer survey and key informant interviews during field work

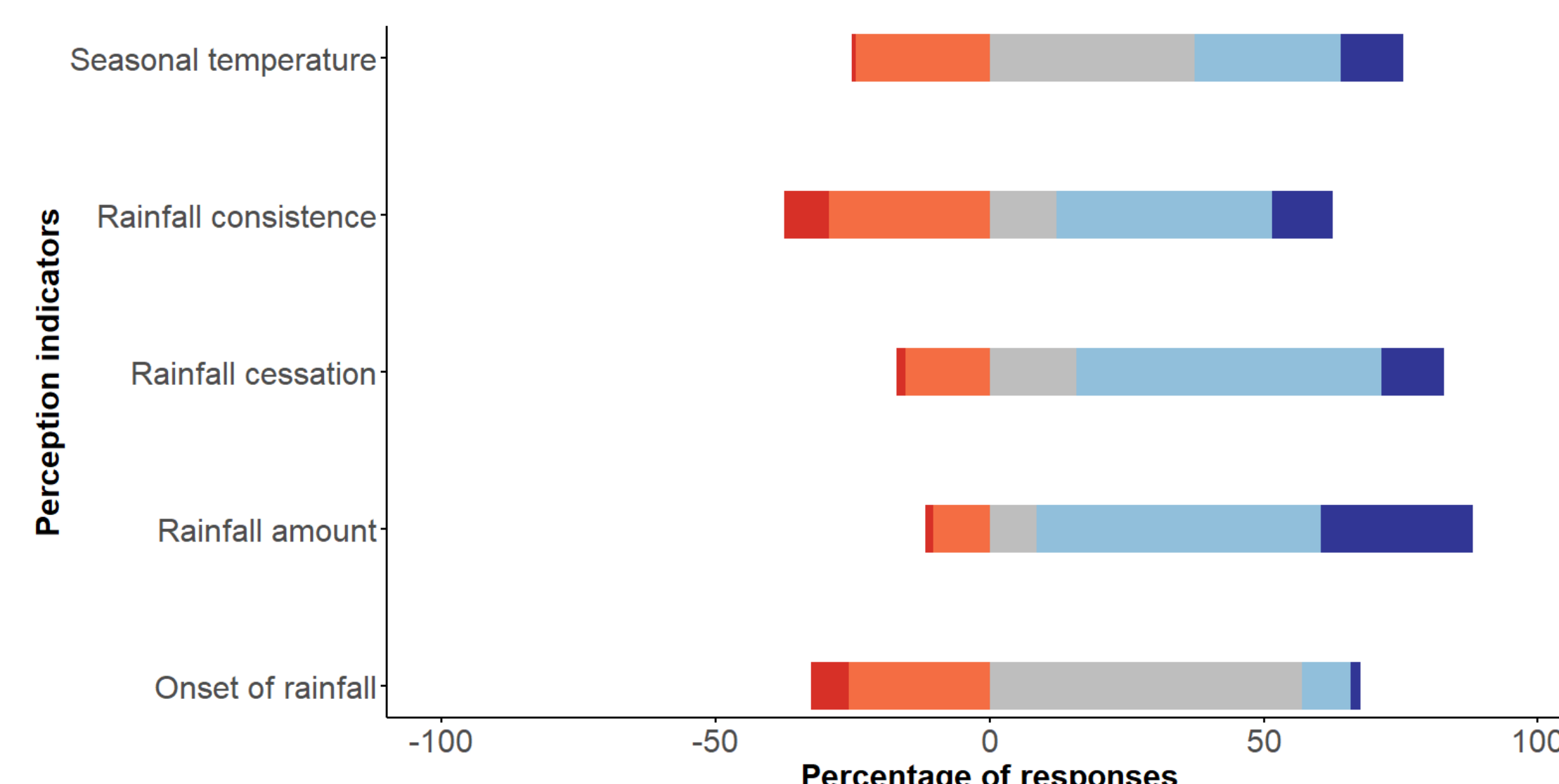
## Results

### 1. Farmer perceptions of seasonal climatic characteristics in the past 10 years (2013 - 2023)

#### a. First Rain season : March to May



#### b. Second Rain Season: September to November



**Figure 3:** Farmer perception of climatic characteristics in first (a) and second (b) rain season of the year

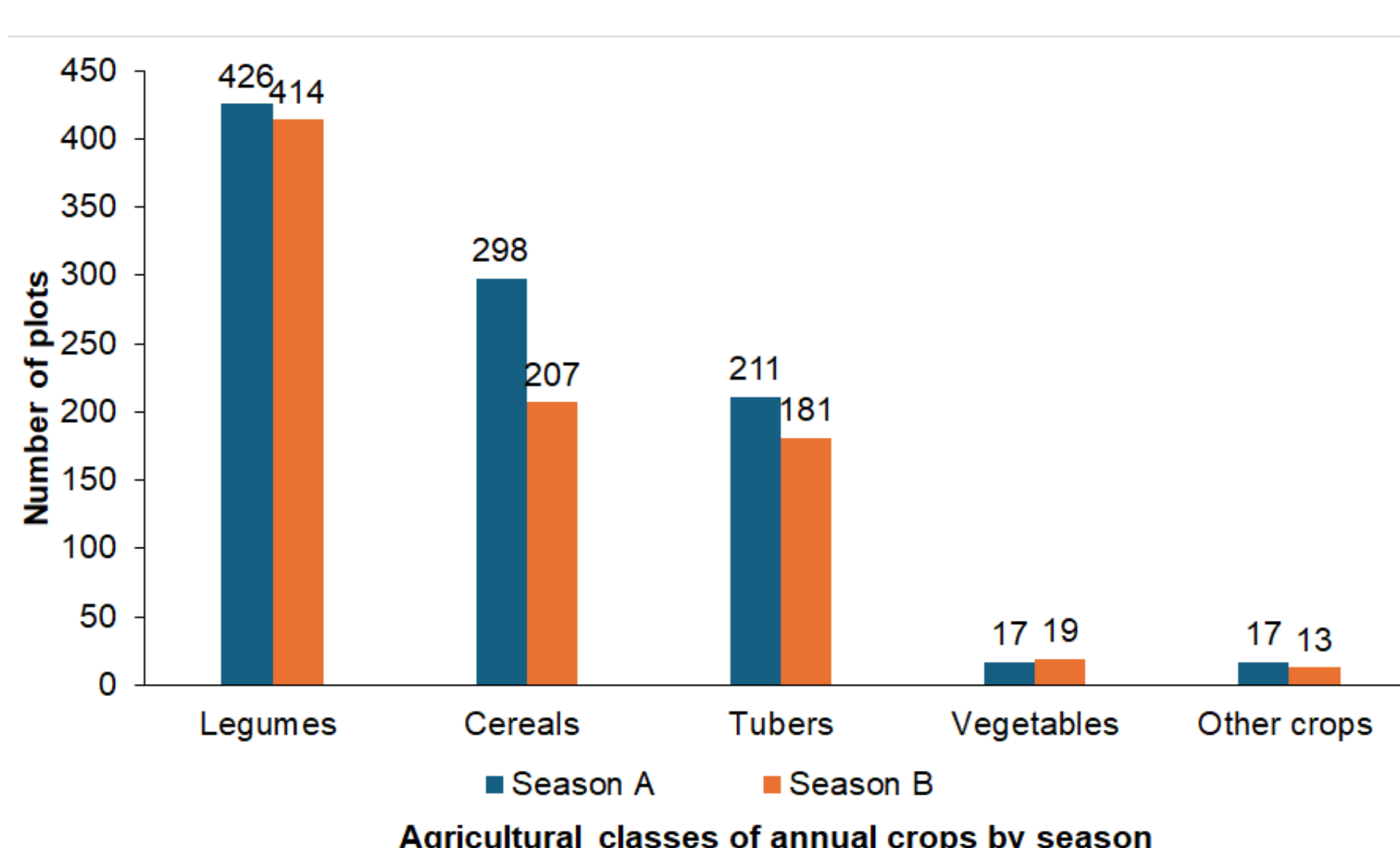
=> Farmers have a more negative perception of the consistence and amount of rainfall, and the timing of end of the season, during the first rain season (March-May) than the second season (September-October-November/December)

### 2. Crop selection

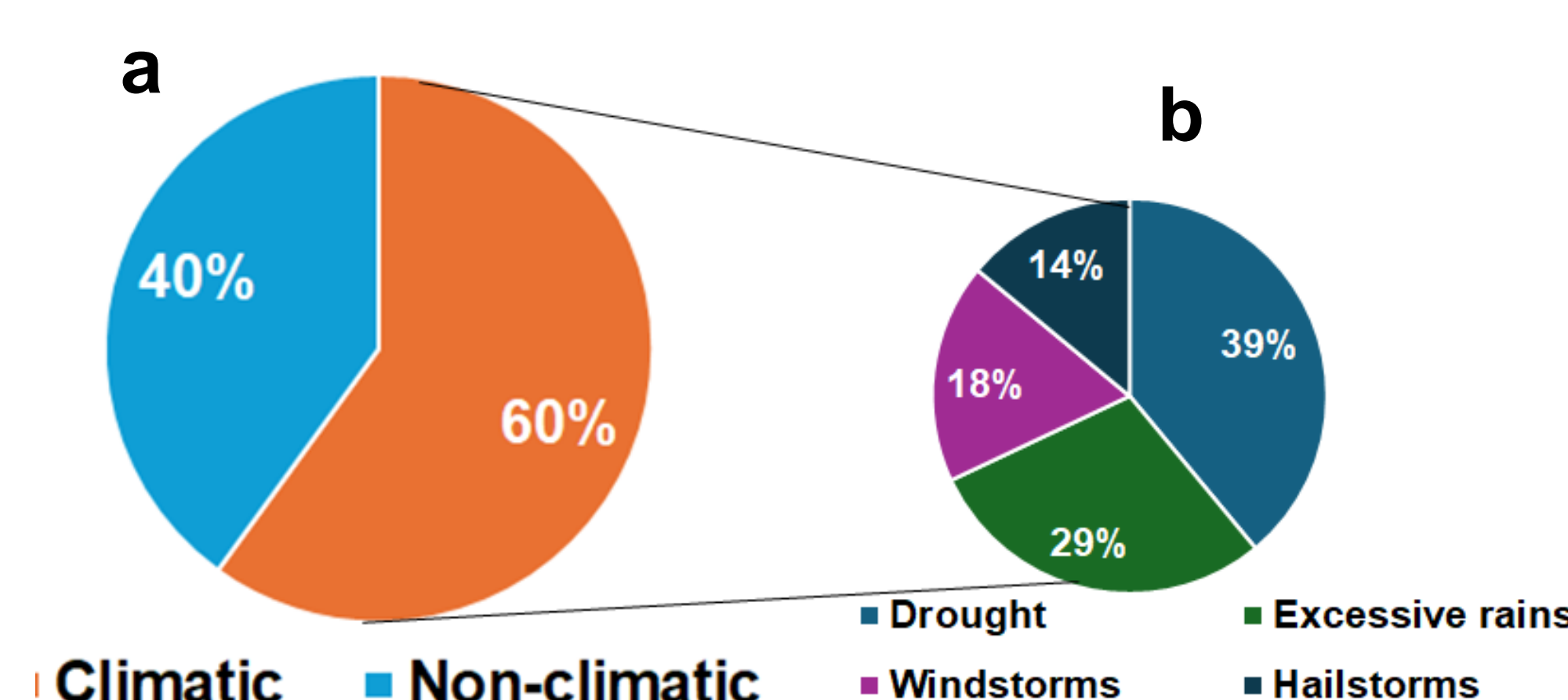
- A total of 36 crop types were recorded
- Annual crop portfolios constituted 58%
- Perennial crop portfolios constituted 42%
- Diversity of the crops was high;  $H' = 2.74$

- Major agricultural crop classes were legumes, cereals and tubers (**Figure:4**)
- Season A had a higher number and diversity of crops than season B ( $p < 0.05$ )
- Season A ;  $H' = 1.19$ ; Season B;  $H' = 1.17$

- For 60% of the farmers, there was a climate-related component among the reasons for crop selection (**Figure 5a**)
- Drought and excessive rains were the dominant climatic hazards influencing for crop selection (**Figure 5b**)



**Figure 4:** Agricultural plots of annual crops in the two seasons



**Figure 5:** (a) Percentage of respondents with and without a climatic reason for crop selection ; (b) Proportions of climatic hazards influencing crop selection

## Conclusions

- Higher negative perceptions of rainfall consistence and cessation in season A may drive increased crop diversification as an adaptation strategy to drought.
- Crop diversification is a common strategy among smallholder farmers to reduce production risks from climate variability.

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