Relationship Between Farmers' Climate Risk Vulnerability and Food Security Status

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Introduction

- Climate change is observed in the local environment over the past twenty years as evident in extreme environmental events such as droughts, floods, extreme high or low temperatures (Bryan et al., 2013).
- Vulnerability is a state of human systems which is influenced by political and socioeconomic factors that may put people at risk and also reduce their capability to adapt to those risks (Abid et al., 2016).
- Smallholder farmers are one of the most vulnerable social groups to climate change, due to severity of droughts and floods to crop failure and livestock mortality (IPCC, 2014).
- The study analyzed the association between farmers' vulnerability level and food security status.

Methodology

- A semi-structured quantitative survey was conducted between October 2020 and February 2021 with 1,080 farming household heads across 6 agro-ecological zones of Nigeria (figure 1).

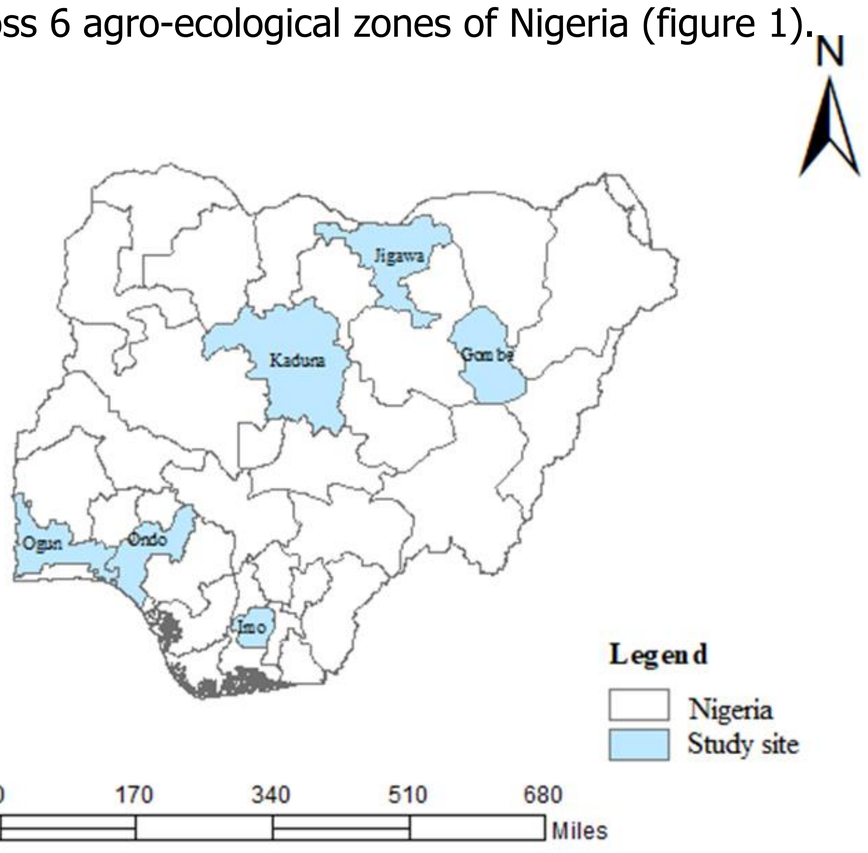

Figure 1: Map of Nigeria showing the study sites

- Vulnerability index (exposure, sensitivity and live impact in the last 10 years) was used to group the farmers into low vulnerability (1-5), medium vulnerability (6-10) and high vulnerability (11-15).
- Food consumption score (FCS) was computed for household and farmers were categorized into: poor (<28), borderline (28-42) and acceptance (>42).
- Chi-square test was used to test the level of vulnerability categories and food security status categories.

Results

- Farmers experienced flood(74%), extreme temperature (71%) and drought (67%) (figure 2).

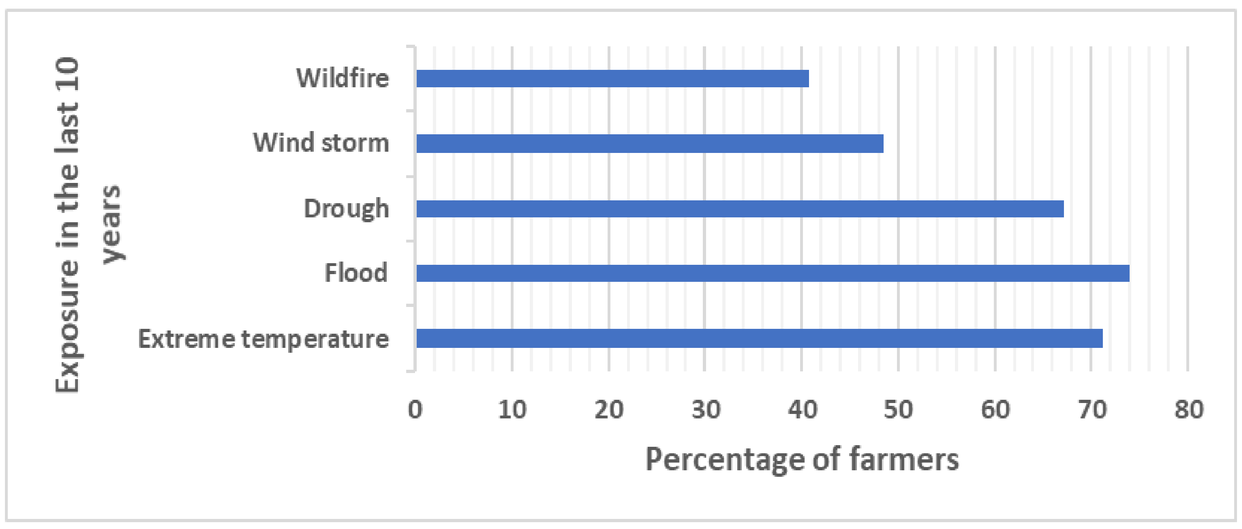

Figure 2: Farmers' climate risk exposure in the last 10 years

- Farmers experienced reduction of crop yield (88%), complete crop failure (72%), crop pest and disease outbreak (65%) and shortage of livestock feed (74%) (figure 3).

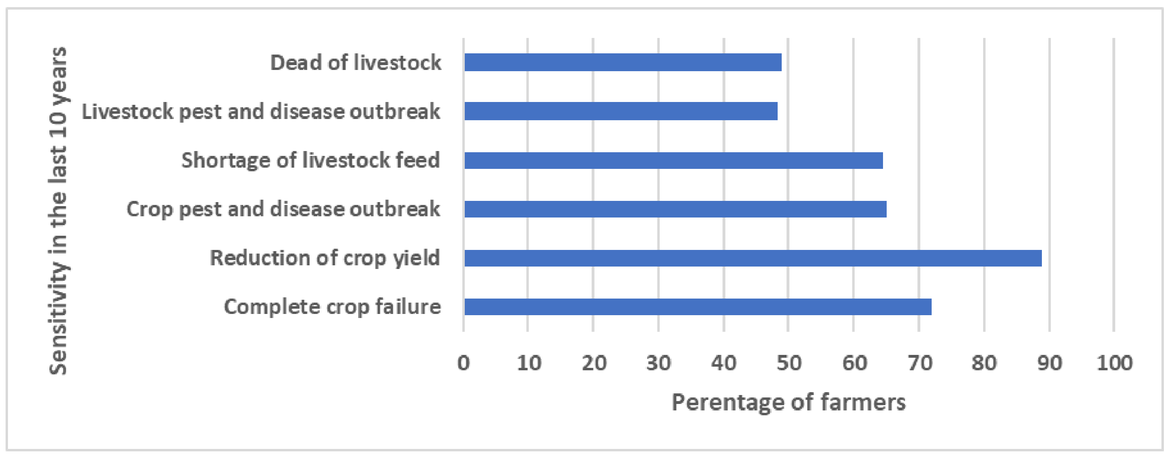

Figure 3: Farmers' climate risk sensitivity in the last 10 years

- Farmers experienced destruction of farm produce store (45%) and home (39%) (figure 4).

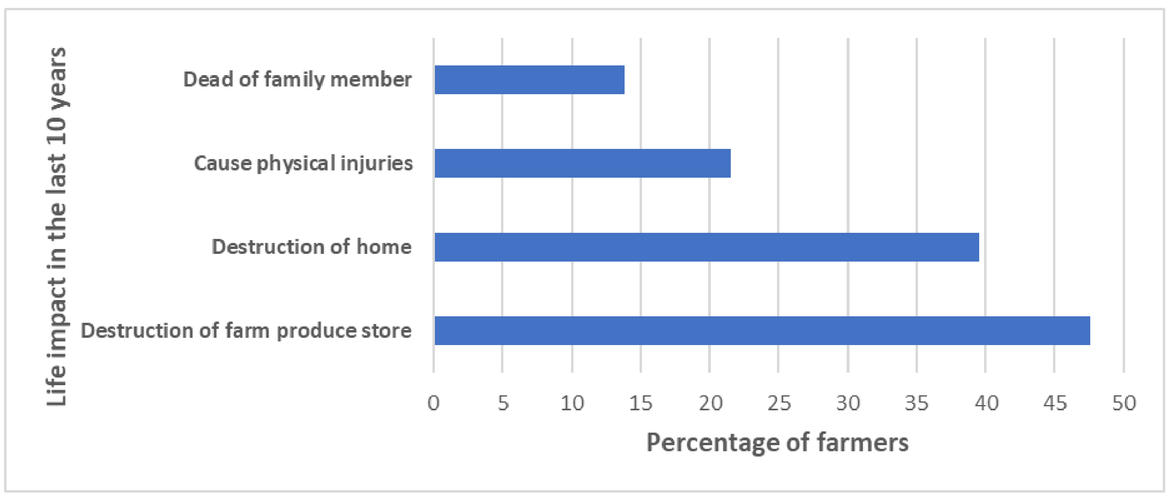

Figure 4: Farmers' climate risk live impact in the last 10 years

- A significant ($p<0.01$) association between climate risk vulnerability of farmers and food security status.
- As 51% of farmers with acceptable level of food security are from low climate risk vulnerability and only 13% from high vulnerable category (table 1).

Table 1: Relationship between climate vulnerability and food security (N=1,080)*

Food consumption score	Climate risk vulnerability (%)			Sig.
Categories	Low	Medium	High	
Poor (28<)	8.6	35.7	55.7	0.000
Borderline (28-42)	22.9	61.3	15.8	
Acceptable (>42)	51.3	35.0	13.7	

***X^2 test result, Low (1-5), medium (6-10) and high (11-15)**

Conclusion

- There is an association between the extent of climate risk vulnerability of farmers and their food security status.
- Farmers should be supported with climate risk adaptation strategies to make their agriculture resilience to the climate risk and in turn improve their food security.

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