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### **Title:**

Assessing the impact of multiple groups of agroecological practices on moderate and severe food insecurity: analysis of household data from the Sufosec alliance

### **Abstract:**

Smallholder farmers contribute significantly to global food production but are highly vulnerable to climate change, ecosystem degradation, and food insecurity. The FAO's most recent assessment reported that in 2022, approximately 2.4 billion people lacked access to nutritious, safe, and sufficient food. This issue disproportionately affects women and residents of rural areas (FAO et al., 2023). In the global South, an important body of literature has explored the critical role that agroecology can play in reducing food insecurity and improving nutrition. Agroecology aims to promote the harmonious coexistence of crops and natural ecosystems while providing food for all (Altieri et al. 2017). In a recent review, Bezner Kerr et al. (2021) reviewed 56 articles that focused on the relationship between agroecology and food security. They show that a majority of studies (78%) found positive relationships between the adoption of agroecological practices and food security and nutrition outcomes. Their research also suggests that more complex agroecological systems with multiple components (e.g., crop diversification, mixed crop-livestock, farmer-to-farmer networks) are more likely to have positive food security and nutrition outcomes.

In this paper, we analyze data from a household survey conducted by the Sufosec alliance to examine the relationship between the adoption of agroecological practices and food security. The Sufosec alliance (Alliance for Sustainable Food Systems and Empowered Communities) consists of six Swiss NGOs and oversees over 400 projects focused on strengthening and implementing shorter supply chains, local agroecological production, climate change adaptation, and participatory research. In 2021, 2022, and 2023, alliance members collected data from 30,000 households across 18 countries. This dataset includes information on the use of 18 agroecological practices, household characteristics, and food security status, measured using the Food Insecurity Experience Scale (FIES) methodology.

We analyse the link between the adoption of different agroecological practices and food security. Following Bezner Kerr et al. (2021), we explore the relationship between the adoption of various groups of agroecological practices—such as input reduction, integrated livestock, soil health, and biodiversity—and food security outcomes. Our analysis uses a mixed-effect regression model to account for variability at the project and country levels. Our results indicate a positive association between the adoption of agroecological practices and improved food security. Additionally, we find that households adopting practices from multiple groups show better food security outcomes, while controlling for contextual factors such as household size and the gender of the respondent. We conclude by discussing the impact of major events, such as natural disasters, on the adoption of agroecological practices and subsequent food security outcomes.

### **Bibliographic references**

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