

Diversify production and improve diets?

Evidence from Malawi



Maize, soybean, and groundnut rotation promoted by Africa RISING in Ntcheu District in Malawi. In addition to diversifying their diets, farmers get various ecological benefits like improved soil fertility when they practise grain-legume rotations in the farms.

Photo credit: Jonathan Odhong/IITA

Key messages

- Malawian households which are applying project technologies have higher on-farm production and product diversity, relative to randomly drawn non-beneficiary households from project target and non-target villages.
- Improvements in product diversity did not translate into better diets, measured by the diversity and value of foods consumed within the household.

The issue

While advances in agricultural technologies have helped improve productivity over the last several decades, achieving sustainable nutrition security remains more elusive. In light of this, the CGIAR initiated a research program – Agriculture for Nutrition and Health (A4NH) – to ensure that successes in agriculture translate into better nutrition and health. Improved agricultural innovations that boost the productivity and diversity of agricultural production can affect diets directly (by affecting the diets of subsistence-oriented households) and indirectly (by enhancing the food purchasing power of commercial-oriented households). Since the majority of food-insecure and malnourished people in sub-Saharan Africa are smallholder farmers, on-farm diversification has the potential to improve dietary diversity, an outcome that has been found elsewhere to be positively correlated with the nutritional status of individuals.

Establishing a causal link between farm diversity and dietary diversity is challenging due to potential simultaneity between production and consumption decisions and confounding factors that could affect both outcomes. An ideal way to measure causal relationship is by inducing an exogenous change in production and assessing the subsequent effects of this change on diet. This study investigated the quasi-exogenous increase in on-farm diversity among Africa RISING beneficiary households in Malawi to examine the link between production and dietary diversity.

Findings

After controlling for observable differences between the three groups through matching-based regression analysis, we find:

- Beneficiary households have more diverse farms, on average and across quartiles, relative to non-beneficiary and control group households (Fig.1).
- No statistically significant difference between beneficiary households and the other two groups in terms of the household dietary diversity index which is measured by the count of food items consumed within the household (Fig.2).
- No statistically significant difference between beneficiary households and households in the other two groups in terms of the value of foods consumed during the reference week (Fig.3).

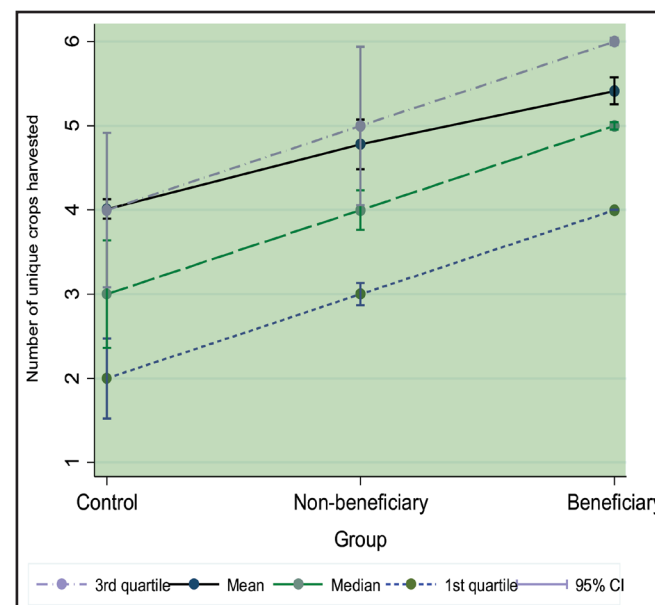


Figure 1: Household production diversity

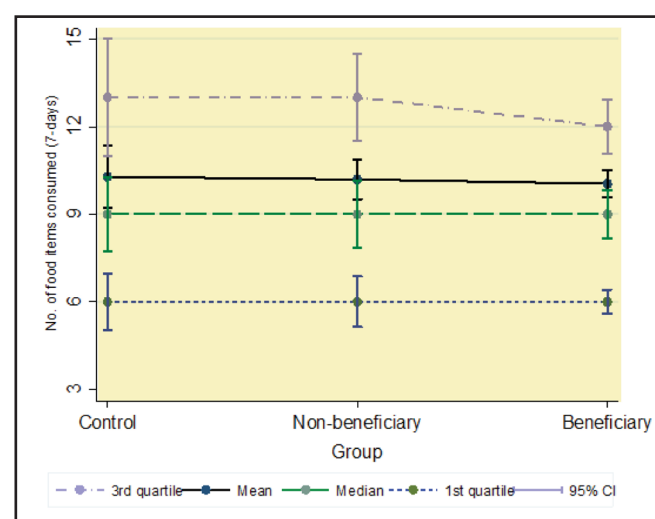


Figure 2: Household dietary diversity (per week)

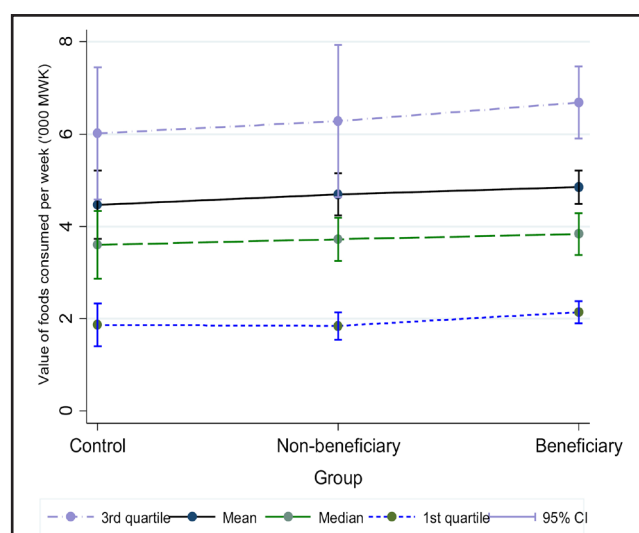


Figure 3: Value of food consumed inside the household (per week)

Recommendations

- Efforts aimed at increasing agricultural production and productivity may need to go hand in hand with efforts to improve nutrition.
- One potential approach to ensure a “nutrition-sensitive” agricultural intervention could be through nutrition promotion and education, as is currently being implemented by the Africa RISING Malawi team.
- When the local context allows, efforts that integrate the crop and livestock sector could help improve nutrition, as the latter could improve the availability of nutrient-dense, animal-source foods.

Methodology

Using geographic information systems (GIS), the two study districts (Dedza and Ntcheu) were stratified using temperature-adjusted rainfall and elevation. Subsequently, three “development domains” were identified based on historical average rainfall (R) and elevation (E): low R and low E; medium R and medium E; and high R and high E.

After project managers identified four program-target sections, the M&E team randomly selected four control sections such that they represent similar agro-ecologies as program sites, while being distant enough from program-target sites to avoid contamination.

Next, three groups of households were recruited into this research study all households who were testing innovations as of June 2013 (“beneficiary” group), randomly sampled households in project villages who did not participate in the project (“non-beneficiary” group), and randomly sampled households from non-project villages representing similar development domains as Africa RISING villages (“control” group).

Finally, a detailed socio-economic survey was conducted between August and October 2013 covering 54 villages (including 26 project targets) and 1,134 households (397 beneficiaries, 199 non-beneficiaries, and 538 controls).

Agricultural production data refer to the main season October 2012 - May 2013, the first main harvest season since beneficiaries joined the program. The analysis here excludes eight farmers testing mother trials as of June 2013. Food consumption data is based on a seven-day recall, and refers to the one week preceding the interview date.

Limitation

The analyses is based on one wave of data, and the usual limitations with cross-section based analysis apply, including selection based on unobservable factors and the inability to capture possible longer term effects.



The Africa Research In Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development as part of the U.S. government’s Feed the Future initiative.

Through action research and development partnerships, Africa RISING will create opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base.

The three projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads an associated project on monitoring, evaluation and impact assessment.

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