

The influence of household farming systems on dietary diversity and caloric intake: the case of Uganda

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Background

In rural areas in developing countries, agricultural practices largely determine diets of small-holders. Food security is not only the access to and utilization of sufficient food but also a diverse diet. In a few studies, there is evidence for a positive link between farming practices like the use of improved inputs of maize production and diversity of the diets. For Uganda, the link between the farming system and dietary diversity has not been investigated. With the theory of farming households, we investigated the link.

Objective

- This paper investigates the impact of farm production diversity and diversity of food consumption and caloric intake of small holders in rural Uganda.

Data

We used a panel of rural farming households from three waves of the Living Standard Measurement Survey (LSMS) for Uganda 2009-2011. The LSMS survey includes nutrition indicators, production indicators and other socio-economic, farm and climate characteristics. Figure 1 displays the Dietary Diversity Score (DDS), Food Variety Score (FVS) and the caloric intake per capita. DDS is based on 12 food groups and FVS as well as caloric intake on 56 food items.



Figure 1. Diet diversity score, food consumption score and caloric intake per day in rural Uganda for the different regions in 2009-2011.

Both DDS and FVS indicate a slight increase in diet diversity with a minor dip in 2010 for all regions in Uganda. The caloric intake per capita however showed a decrease after 2009. Only in Western Uganda there was an increase in 2011. Note that the caloric intake in western Uganda is lower than the other regions, and there is also less diversity in diets.

Table 1. Selection of fixed effects regression results on DDS, FCS and caloric intake

	Dietary Diversity Score (DDS)			Food Variety Score (FVS)			Caloric intake		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Production diversity									
Crop count	0.062 ***			0.665 ***			2.23 ***		
Simpson's index		0.363 ***			2.403 *			3.45	
Own-production ratio			0.093 ***			0.955 ***			2.380 *
Number of observations	5,083	4,609	5,083	5,083	4,609	5,083	5,079	4,606	5,079
R-squared	0.024	0.022	0.022	0.017	0.015	0.016	0.015	0.014	0.013
Adjusted R-squared	0.016	0.014	0.015	0.011	0.01	0.01	0.01	0.009	0.009
F-statistic	5.426 ***	4.387 ***	5.101 ***	3.940 ***	3.039 ***	3.589 ***	3.453 ***	2.781 ***	2.979 ***

Note: *p<0.1; **p<0.05; ***p<0.01, Calories intakes are estimated by household (x 1,000 kcal). Standard errors between brackets.



Figure 2. Crop count, Simpson index and own-crop count in rural Uganda for the different regions in 2009-2011.

The crop diversity of farm households in Uganda showed mixed developments, see Figure 2. In East, West and North, the production diversity clearly declined over. In Central Uganda, the diversity increase in 2010 and declined in 2011. In addition, the own-crop count share, i.e. the share of crops both grown and consumed, declined in 2010 and increased in 2011 for all regions. In western Uganda, farm households grew more types of crops that they also consumed.

Results

Production diversity was regressed on nutrition diversity. Fixed-effects models were estimated because it was not rejected with the Hausman-test. Table 1 shows the regression results for all nine combinations of nutrition diversity and production diversity indicators. Despite the mixed developments of nutrition and production diversity in Uganda between 2009 and 2011, our results indicate that there is a positive effect of production diversity and nutrition diversity. The coefficients of the crop-count index and the own-production share are positive for all nutrition diversity regressions. The more sophisticated Simpson index only shows a significant positive link for DDS and to a lesser extent for FVS. It has no effect on caloric intake. So, the more detailed the nutrition diversity indicator, the less significant is the effect of the Simpson index. Other determinants, not shown in Table 1, are significant in the nutrition diversity regressions but the determinants differ across nutrition diversity indicators.

Conclusions

- Levels and developments of production diversity and nutrition diversity for rural farming households differ across regions in Uganda.
- Our results confirm previous findings for other African countries; several production diversity indicators increase food consumption diversity as well as caloric intake.

