

'Improving nutrition through increased utilisation of local agricultural biodiversity in Kenya' – the INULA initiative



Individual interviews - Nutrition



Farm inventory



Focus Group Discussion



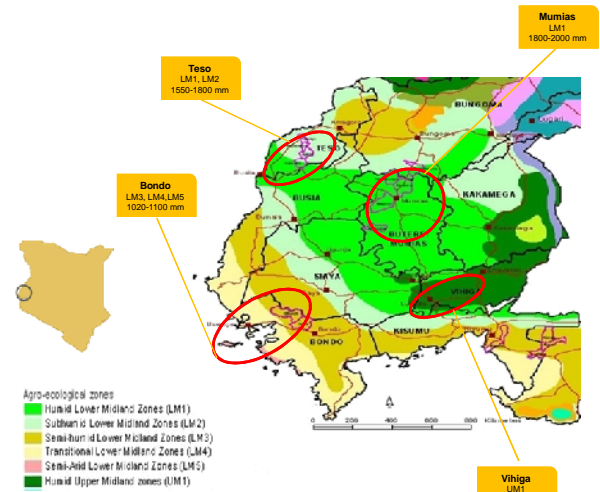
Anthropometric measurements

Background

- Women living in resource-poor settings in Kenya are at a high risk of malnutrition because the diets they consume lack diversity and are dominated by staple foods.
- Similarly, foods fed to children are mostly starchy staples and include little or no animal source foods, fruits and vegetables. In addition, inappropriate nutrition knowledge and feeding practices are a major cause of inadequate complementary feeding.
- Whether the quality of food is directly related to the type of agro-ecological zone (AEZ) and, thus, the level of agricultural biodiversity, still needs to be understood.
- Smallholder farmers produce food for home consumption and for commercial purposes, but often they are net buyers of food.

Research Objectives

- Document available and accessible local food diversity on-farm, in markets and from the wild as well as seasonal changes.
- Determine food intake levels, dietary diversity, anthropometrics and socio-economic characteristics of mother-child pairs pre and post intervention (nutrition education).
- Conduct and analyse participatory nutrition education sessions on the increased use of local food diversity for nutrient adequate complementary foods.



Map of Western Kenya with study districts

© Bioversity 2012

Materials & Methods

Nutrition survey: 4 districts – 15 villages per district – 10 households per village = 600 households/ mother-child pairs (baseline)
Agricultural survey: sub-sample of 10%: 4 districts – 3 villages per district – 5 households per village = 60 households/farms

Individual interviews

- **Baseline survey:** Jul/Aug 2012; n=596; socio-economic; 24h recall, child feeding practices
- **Middle survey:** Dec 2012; same hh (n=439)
- **Endline survey:** Jul/Aug 2013; 20 intervention villages + 20 matched control villages (n=410; partly different hh than during baseline)

Focus group disc.

- Nutrition:**
 - Nov 2012 (39 FGD; 20 female, 19 male groups)
 - Complementary feeding practices; dietary diversity
- Agriculture:**
 - Sep/Oct 2012 (24 FGD; 12 female, 12 male groups)
 - Seasonal calendar; incentives and disincentives for high ABD

Farm inventory

- **First survey:** Sep/Oct 2012 (n=60; 10% of nutrition survey); species (plants and animals) richness and abundance; production (quantity, usage, income)
- **Second survey:** Nov/Dec 2012 (n=60; same hh); same as first survey + farmer's perception on ABD; hh food sources

Market survey

- Sep/Oct 2012 (n=15 markets/ 185 market stands) – close to villages of agricultural survey
- **Inventory** of at least 1 market stand per food group per market
- For each product: price per unit; quantity sold per day; origin/source; seasonality

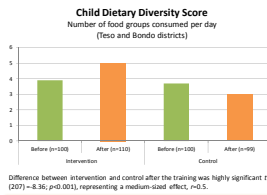
Results I – Study area characteristics

Selected characteristics of study households, women and children (n=596)	
Household size (mean, range)	6 (2-17)
Age of mother/ caregiver (years) (mean, range)	27 (16-65)
Male headed households	91%
Stunting in children 6-23 months	Moderate 20% Severe 10%
Weight status of women	Underweight 9% Overweight 13% Obese 5%
Child Dietary Diversity Score (mean) – out of 7 food groups per day	3.7
Children who received < 4 out of 7 food groups per day	45%
Women Dietary Diversity Score (mean) – out of 9 food groups per day	4.2
Agricultural characteristics of sub-sample (n=60)	
Farm size (m ²) (mean, range)	6,600 (80 - 35,000)
Farm richness (No. of crop species/farm) (mean, range)	16 (4-29)

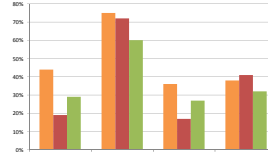
Results II – Comparison before/after nutrition training

Nutrition training

- In 20 intervention villages (5 per district) as compared to 20 matched control villages
- 4 nutrition education sessions over a period of 5 months for mothers on complementary feeding/ diversifying diets



Selected food groups consumed by children during the last 24 hours (Teso and Bondo districts)



Market survey

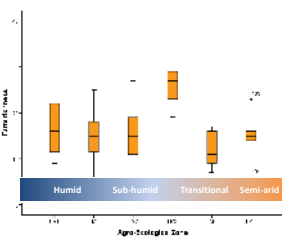
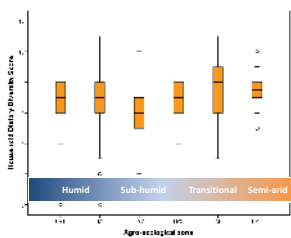


Training of Community Health Workers

Difference between intervention and control after the training was highly significant (2017) = -8.36; p<0.001, representing a medium-sized effect, n=0.5.

Conclusion – Outlook

- Differences in Household Dietary Diversity Score showed that household food access was better in the transitional/arid zones than the humid/sub-humid zones during the dry season → Other determinants than the agro-ecological zone (AEZ) are important
- No relationship between dietary diversity scores (Household Dietary Diversity Score, Women's Dietary Diversity Score, Children's Dietary Diversity Score) and farm richness → On-farm crop diversity is less crucial for dietary diversity – market food diversity need to be considered
- The differences between intervention and control groups suggest that nutrition education among caregivers is associated with increased diversity of complementary foods → In future research initiatives nutrition education shall be combined with agricultural interventions



Dry season (Jul/Aug); Kruskal-Wallis Test: Total N = 596; p < 0.001

Start of rainy season (Sep/Oct); Kruskal-Wallis Test: Total N = 60; p = 0.001