



Pathways to improved nutrition in the Ethiopian highlands: Do agricultural production systems address nutrition?

Key messages

- Taking an inter-sectoral approach to agriculture will help leverage its contribution to improve the production and accessibility of nutritious foods.
- Reshaping the current production model from high yielding mono-cropping to a nutritionally-diversified production system encompassing vegetables, fruits, root crops, poultry and small ruminants will enhance household nutrition security.
- It is critical to invest in bio-fortification, fortification of cereals, improved agronomic practices and enhanced efficiency of fertilizer use to improve the nutritional quality of staple crops.
- Prioritizing nutrition-sensitive value chains for fruits, vegetables, animal-source foods (milk, cheese, butter, etc.), pulses and cereals is a high priority.
- Transforming traditional production practices and beliefs through intensive social behaviour change strategies is critical to improve nutrition outcomes.

The issue

The food production system is an important part of nutrition; it includes the production, availability, access and desirability of food. It largely determines traditional consumption practices and shapes diets.

So far, Ethiopia has made remarkable progress in addressing food insecurity through strong policies and multi-sectoral approaches at national level. In its current agriculture strategy, much attention is paid to the production and productivity of high-yielding cereal crops to increase food availability. Agriculture offers a potentially strong pathway to nutrition; however, leveraging this potential requires a shift from a cereal-based production system to a more diversified production system; one that ensures availability and access to nutritious foods.

In the Ethiopian highlands, nutritionally-deficient food production and consumption patterns threaten nutrition security, especially for vulnerable women and children. Most farmers consume a cereal-based diet with limited fruit, vegetables, fortified foods and animal-source foods. This focus on cereals contributes significantly to food security, but has failed to address nutrition, particularly micronutrient deficiencies affecting women and children.

Evaluating and identifying current challenges will help mainstream nutrition into existing food production systems and ensure access to nutritious foods.

Findings

With an impressive 8% annual growth, agriculture has an enormous potential to address food and nutrition security in Ethiopia. Current production systems observed in selected Africa RISING sites will not adequately leverage this potential due to several challenges, including:

Limited knowledge among key district stakeholders on the contribution of diversified crop production system to nutrition

Limited research on soil health, fertility and bio-fortification to improve the quality of crops

- Local research centres have not adequately mainstreamed nutrition into crop breeding programs; bio-fortification as a strategy to address nutrition remains relatively untapped.
- The potential of micronutrient fertilizer to improve nutrient quality and yield of crops is not fully exploited.
- Existing soil health and fertility may have a negative impact on the nutrient density of crops and livestock. The nutrient composition of soils is not known.

Few coping strategies of farmers in the face of adverse environmental changes

- Environmental changes (disease and climate changes) affect the production system; farmers experience continuous crop failure due to erratic rain patterns, mainly during the short rainy season. Food security crops and homestead gardens are particularly affected, contributing to chronic food and nutrition insecurity.

Lack of diversified or nutrition-sensitive farming systems

- Farmer practices are dominated by a mono-cropping system producing cereals and pulses.
- Demand and supply of nutritious foods, such as vegetables and fruits, is low.
- Nutrition opportunities within the livestock sector are not fully harnessed; nutrient-rich livestock products are mostly sold in urban markets.
- Farmers lack access to inputs such as irrigation and improved seeds that will help them grow vegetables.

Lack of expertise and experience in nutrition-sensitive value chain approaches

- Existing value chain interventions focus more on increasing income and less on improving nutrition.
- Nutrient conservation and enhancement processing, packaging, transport and storage facilities are limited.
- Evidence gaps on technologies limit understanding of the feasibility of value chains to enhance nutrition.

Inadequate access to and availability of food

- Farmers typically prefer to sell nutritious animal-source foods (milk, eggs, butter, meat, etc.) to generate income.
- Access to fresh fruit, vegetables, meat and dairy produce at *kebele* level is limited as food markets open once a week and the supply of fruits and vegetables is subject to seasonal constraints.
- Evidence on gender dynamics within the food system, and how they affect household nutrition, is limited.

Recommendations

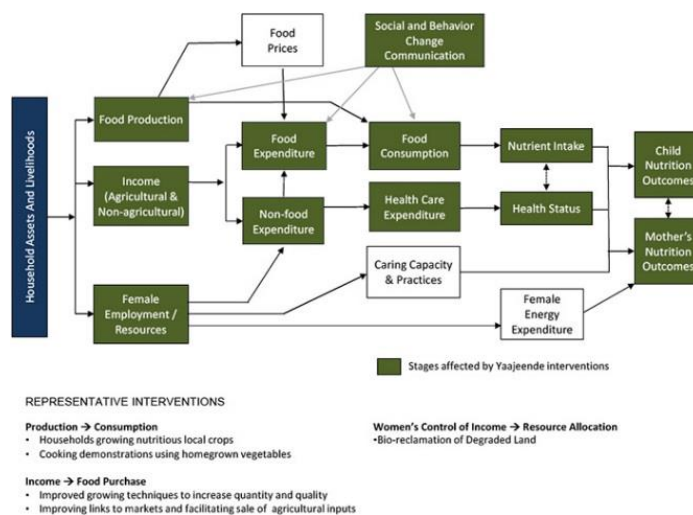
- Develop short advocacy briefs highlighting the importance of production diversification at the *woreda* and *kebele* levels.
- Conduct trials to assess the feasibility to enhance the nutritional value of existing crop livestock systems through bio-fortification, micronutrient fertilizers, soil enhancement and improved agronomic practices.
- Conduct location-specific soil testing to map existing deficiencies.
- Conduct on-farm trials to test the feasibility/impact of fertilizer treatment on crop yields and nutrition content.
- Provide timely information on relevant environmental dynamics (rainfall pattern and disease outbreak) and, where possible, promote small scale irrigation through existing health and agricultural extension systems, including the 1:5 networks.
- Support crop rotation and inter-cropping, including legumes and vegetables, to improve soil fertility and crop diversification.
- Improve the breeding of dairy cows, small ruminants and poultry to increase the availability of animal-source foods.
- Establish nutrition gardens, where feasible, supported by small scale irrigation system and community-improved vegetable seed systems.
- Assess the feasibility of nutrition-sensitive value chain approaches, such as small scale food fortification, enriched complementary processed baby foods, meat and fruit conservation, milk, cheese and butter processing etc.
- Identify suitable postharvest technologies facilities to minimize losses.
- Use a train the trainer model to instruct *woreda* experts, development agents and innovation platform members on production diversification.

- Promote crop and livestock diversification using innovative training and behavioural change tools, such as radio, storytelling, songs and drama, innovation platforms, farmer field days, cooking demonstrations, and print materials.
- Undertake research to understand constraints and opportunities in the food system affecting household nutrition.

Methodology

The research was conducted between May and June 2015 in Basona Worena and Sinana districts. Researchers collected quantitative data in two intervention *kebeles*, and undertook desk research on the national nutrition program policy document, the growth and transformation plan, national strategy for child survival, national strategy for infant feeding, food security strategy, as well as focused group discussions and key informant interviews. Before the research phase, Africa RISING local partners formed nutrition research teams in each district where they served as data collectors and field officers. Each team also comprised members from the *woreda* agriculture and health office, university and agricultural research centres.

Figure 1: Pathways showing agriculture, income and gender as pathways to improved nutrition



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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