

## Improving Dietary Diversity to Enhance Women's and Children's Nutritional Status in Guatemala's Western Highlands: Recommendations for the Guatemalan Agriculture Sector

Nearly one out of every two children under 5 years of age in Guatemala is stunted. In the Western Highlands, the situation is far worse, with 7 out of every 10 children stunted.<sup>1</sup> Stunting causes children to be shorter than healthy children of the same age. Stunting is a result of chronic malnutrition caused by inadequate quantity and variety of nutrient-rich foods and/or by repeated illnesses, and can lead to adverse health and physical and cognitive development.<sup>2</sup> Stunting in young children increases the risk of: mortality from infections, impaired cognitive ability, late school enrollment, poor school performance, dropping out of school, lower future adult labor productivity, and chronic diseases in adulthood. Preventing stunting through key interventions during the critical 1,000 days from pregnancy through the first 2 years of life is important because it can become increasingly difficult to reverse stunting's negative consequences after this period.<sup>3</sup>

One of the World Health Organization's recommendations to prevent chronic malnutrition is to promote the consumption of nutrient-dense, diverse, locally available foods.<sup>4</sup> However, this can be a challenge for families in poor communities

### Box 1: Summary of Food-Based Recommendations

**Pregnant and lactating women:** consumption of liver, vegetables, and a thick drink made from fortified blended flour.

**Children 6–11 months:** consumption of eggs, beans, and a porridge made from fortified blended flour.

**Children 12–23 months:** consumption of green leafy vegetables, eggs, beans, and a porridge made from fortified blended flour.

in the Western Highlands of Guatemala who earn very little income, have limited access to fertile land and safe water for food production, and have many dependents to feed. In an effort to better understand the feasibility of using local foods to meet nutrient needs in this area of Guatemala, FANTA partnered with the Institute of Nutrition of Central America and Panama (INCAP) to conduct a study to identify and test a set of food-based

- 1 Ministerio de Salud Pública y Asistencia Social. 2010. *Encuesta Nacional de Salud Materno Infantil 2008 (ENSMI-2008/09)*. Guatemala: Ministerio de Salud Pública y Asistencia Social/Instituto Nacional de Estadística/Centros de Control y Prevención de Enfermedades.
- 2 Black, R.E. et al. 2013. "Maternal and child undernutrition and overweight in low-income and middle-income countries." *The Lancet*. Vol. 382, No. 9890, p. 427–451; Grantham-McGregor, S. et al. 2007. "Developmental potential for children in the first 5 years for children in developing countries." *The Lancet*. Vol. 369, No. 9555, pp. 60–70; Hodinott, J. et al. 2008. "Effect of a nutrition intervention during early childhood on economic productivity in Guatemalan adults." *The Lancet*. Vol. 371, p. 411–416; Maluccio, J.A. et al. 2009. "The impact of improving nutrition during early childhood on education among Guatemalan adults." *The Economic Journal*. Vol. 119, pp. 734–763; Martorell, R.; Khan, L.K.; and Schroeder, D.G. 1994. "Reversibility of stunting: epidemiological findings in children from developing countries." *European Journal of Clinical Nutrition*. Vol. 48, Suppl 1, pp. S45–57.
- 3 Martorell et al. 1994.
- 4 World Health Organization. 2008. *Strengthening action to improve feeding of infants and young children 6–23 month of age in nutrition and child health programmes*. Report of proceedings, Geneva, October 6–9.

recommendations (FBRs). The FBRs that were developed and tested were specifically targeted to fill nutrient gaps among women and young children in the Western Highland departments of Huehuetenango and Quiché. Box 1 provides a summary of the final FBRs, which are intended to be consumed in addition to the regular diet.

The feasibility tests revealed challenges that women experienced when trying to access, prepare, and consume the recommended foods for themselves or their children (see Table 1). These challenges were primarily related to:

- Lack of economic access to the recommended foods or markets where they are sold

- Household constraints such as lack of time to travel to markets and/or resources to keep foods from spoiling
- Lack of, or inadequate production of, recommended foods in the home
- Cultural barriers related to family support or permission to buy and prepare certain recommended foods, particularly from grandmothers, husbands, and mothers-in-law

Other challenges mentioned by families included lack of land ownership and inconsistent year-round access to water for production of recommended foods or other foods that could be sold to purchase the recommended foods.

**Table 1. Challenges to Implementing Food-Based Recommendations**

Challenges	FBR Foods for Pregnant and Lactating Women		FBR Foods for Children 6–23 Months of Age		
	Liver	Vegetables	Eggs	Black Beans	Green Leafy Vegetables
<b>Economic</b>	Cost due to recommended frequency; need to buy/prepare for entire family	✓	✓	✓	
	Seasonal access/high cost in certain seasons		✓	✓	✓
	Money needed from family to purchase/other family members control purchase			✓	✓
	Money needed to travel to market	✓	✓		✓
<b>Household</b>	Time, water, and firewood needed for cooking			✓	
	Time needed to access market	✓	✓	✓	
	Spoils quickly	✓	✓		
<b>Food Production</b>	Home production absent, inadequate, or seasonal*		✓	✓	✓
	Production for sale only		✓		
	Mortality among chickens			✓	
	Drought				✓
<b>Cultural</b>	Not recognized as nutritious or family does not support purchase/use		✓		✓
	Permission needed from family to buy/prepare			✓	

\* Liver is generally not obtained from animal-raising in the home, so was not mentioned in relation to lack of home production.

## Recommendations for the Guatemalan Agriculture Sector

Agriculture is one of the principle livelihoods of households in the Western Highlands and the agriculture sector (both public and private) has a significant role to play in improving the nutritional status of women and children. Strengthening the link between agriculture and nutrition is critical to improve availability of and access to nutrient-dense local foods to improve dietary diversity and reduce nutrient gaps among pregnant and lactating women and children 6–23 months of age.

The results of the FBR feasibility testing and the challenges that families experienced with putting the FBRs into practice point to a number of actions that the agricultural sector in Guatemala (including government, nongovernmental organizations, and the private sector) can take. The following are key actions and specific agricultural sector activities that can help fill nutrient gaps for women, especially pregnant and lactating women and young children.

Key Actions	Agricultural Sector Activities
Improve production of FBR foods	<ul style="list-style-type: none"> <li>• Increase focus on production of and production support for FBR foods that can make a real difference in addressing nutrition gaps at the household and community level. These include eggs, black beans, vegetables, and green leafy vegetables.</li> <li>• Improve agricultural sector staff knowledge on the importance of the FBR foods.</li> <li>• Train households in the use of sustainable technologies to improve yields of FBR crops to reduce costs to purchase FBR foods and women's dependency on cash from family members to buy FBR foods.</li> <li>• Improve management of rain water (e.g., construction of cisterns), recycling of gray water, and expanded availability of drip irrigation systems to improve crop production (including FBR crops).</li> <li>• Support production of locally adapted, drought-resilient crop varieties to improve access to nutrient-dense foods, such as black beans, even when families face difficult climatic conditions.</li> <li>• Provide technical assistance for raising laying hens to decrease hen mortality. Assistance should include support for good management practices, such as vaccinations and treatment for parasites and provision of water, supplementary feed, and improved shelter.<sup>5</sup></li> </ul>
Improve access to markets	<ul style="list-style-type: none"> <li>• Support establishment of low-cost, local markets or access to mobile vendors/butchers or community stores to reduce the transportation cost and time it takes for families to purchase FBR foods.</li> </ul>
Promote improved storage of FBR foods	<ul style="list-style-type: none"> <li>• Identify low-cost, appropriate technologies to improve storage of perishable foods, such as liver and vegetables, including green leafy vegetables, and train community members in their use to decrease spoilage of high-nutrient foods.</li> </ul>
Promote consumption of FBR foods	<ul style="list-style-type: none"> <li>• Promote home or commercial processing of FBR foods, such as grinding beans into flour to make them easier, faster, and more convenient to prepare and feed in small portions to young children, resulting in the need for less time, water, and/or firewood.</li> <li>• Target social and behavior change strategies to key family decision makers to encourage home production and consumption of FBR foods; increase understanding of their nutritional importance, especially for pregnant and lactating women and young children; and increase demand for their consumption.</li> <li>• Promote consumption of nutrient-rich dark green leafy native plants (e.g., amaranth) that are well suited to climate conditions in the Western Highlands.</li> </ul>

5 For more information, see: Food and Agriculture Organization of the United Nations. 2004. "Chapter 10: Research and Development for Family Poultry." In *Small-Scale Poultry Production Technical Guide*." Available at: <http://www.fao.org/docrep/008/y5169e/y5169eOb.htm>.

In addition to the above key actions to overcome challenges producing and accessing FBR foods, the Guatemalan agricultural sector should continue to strengthen its policies and strategies to improve food systems and support the achievement of the goals of the National Strategy for the Prevention of Chronic Malnutrition. The Guatemalan government and its development partners should also strengthen funding for, and planning and implementation of, the national program for family agriculture, including supporting:

- Improvements in general crop production and livestock raising
- Access to appropriate land for agricultural production for those without access
- Production and post-harvest activities to improve incomes so families can afford more nutrient-dense food
- Ensuring women's access to productive resources, information, agricultural extension services, and income-generation opportunities

Learn more about Optifood and the study results from Guatemala at [www.fantaproject.org/tools/optifood](http://www.fantaproject.org/tools/optifood).



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