

Stories of change

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A farm to fork approach for nutritious school meals: tackling childhood obesity in the Caribbean

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Key messages

- In St Kitts-Nevis and Trinidad and Tobago, institutions of agriculture, health and education have joined in an integrated, *Farm to Fork* effort to tackle childhood obesity.
- The *Farm to Fork* model is built on three pillars: increased fruit and vegetables in school lunches; procurement from local farmers; and support for increased horticultural production.
- Locally-produced fruit and vegetables supplied up to 90% of children's lunches. Prior to the project, almost no local, fresh produce was used.
- Vegetable and fruit consumption among over 1,000 children significantly increased, approaching international guidelines.
- In St Kitts-Nevis, the government has established a Joint Communications Committee to enhance public awareness of *Farm to Fork* in addressing obesity.

Context

The Caribbean region has the highest rate of non-communicable diseases in the Americas, including diabetes, heart disease and hypertension (Hospedales *et al.*, 2011). This places a significant burden on national health systems, which absorb up to 8% of gross domestic product, double the global average for lower and middle income countries. Poor diets and lack of physical activity, leading to high rates of obesity (currently around 30% of the adult population), are major factors behind the poor health statistics. This reflects a transition in the region from an earlier period when under-nutrition was the dominant food security challenge. Childhood obesity, in particular, is now of great and growing concern.

School feeding programs provide an excellent opportunity to influence children's food choices and reduce their risk of becoming obese, continuing into adulthood. These programs depend, however, on building stronger links between agriculture, health and education in order to increase the availability and consumption of healthy foods in schools. A systematic approach is therefore needed, involving all the essential



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stages from food production to consumption, or from ‘farm to fork’. In particular, a coordinated approach is needed to supply schools with fresh fruit and vegetables produced locally, improving the nutritional quality of school meals, providing a market for local farmers, and reducing dependence on imported foods.

Based on strong institutional partnerships, the *Farm to Fork* project has developed an innovative model for food and nutrition security in the Caribbean Community (CARICOM). The model incorporates social science research findings about innovation and collective action, and requires the integration of three fundamental ‘pillars’ of activities: a) improving children’s diets by increasing the quantity of fruit, vegetables and animal sourced products in school meals; b) procurement of produce from local farmers to meet the needs of school lunch programs; c) equipping smallholder farmers to enhance their year-round production of local fruit and vegetables. In developing such a model, the *Farm to Fork* project has taken an integrated, multi-disciplinary approach involving institutional changes, capacity building, promotion of new agricultural technologies and changes in school feeding, while also targeting women as innovators of technology.

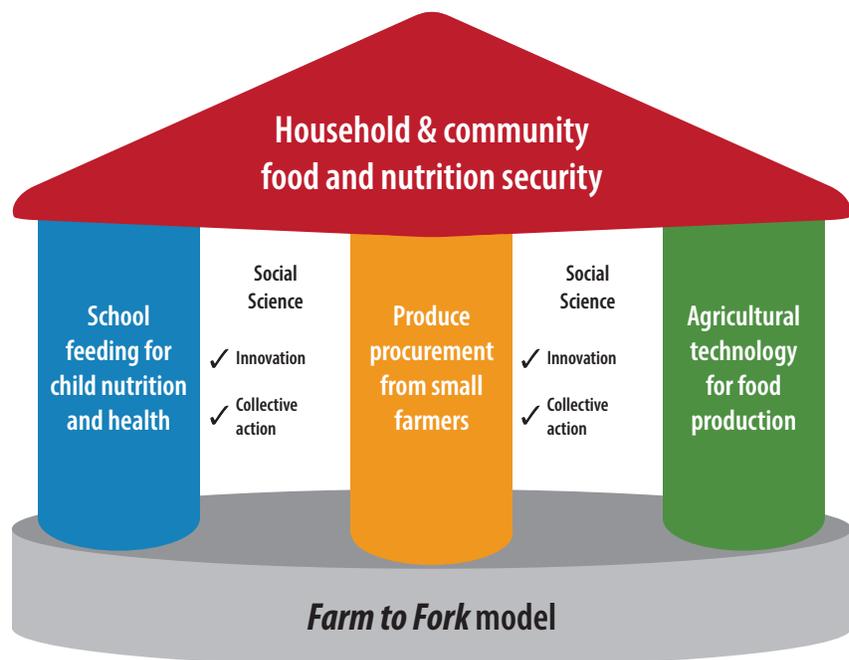


Figure 1: Farm to Fork model

committee to enhance public awareness of work being done to address obesity in primary schools. A national policy on procurement of local produce for public institutions is under consideration.

In Trinidad, the National School Dietary Services Limited introduced systems for tracking the use of local produce in school meals, and designated specific staff to facilitate procurement from local farmers. A major challenge is the sale of sugary snacks and drinks within the school environment. Such practices, often designed to raise funds for schools, increase the complexity of the obesity problem. Following involvement with the project, one primary school in Trinidad banned the sale of carbonated drinks in its cafeteria.

Emerging outcomes

Institutional changes

In St Kitts-Nevis, for the first time in the Caribbean, ministries of agriculture, health and education have joined in an integrated effort, formalized in a ministerial memorandum of understanding, to tackle childhood obesity. This includes early nutrition interventions in schools and policy that links healthy eating in schools to produce procurement from local farmers. The government has also established a joint communications

School feeding

In St Kitts-Nevis, the project began with the introduction of pumpkin, onions and Irish potatoes into school lunches; ultimately, 11 different fruit and vegetables were added, including tomatoes, sweet potatoes, carrots, string beans, cabbage, cucumber and watermelon. Schools in Trinidad added local fruits such as watermelon, tangerines and bananas. Quantities of fruit and vegetables served in the *Farm to Fork* schools were 10 times greater than in non-participating schools.

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Quantities of fruit and vegetables served in participating schools were 10 times greater than in other schools

The lunches provide a third of children's energy needs and excellent sources of vitamin A, iron, and other nutrients. In Trinidad, registered dieticians were involved in giving nutrition education to children, and caregivers/parents. An acceptability survey showed the proportion of children accepting fruit and vegetables ranged from 34% for carrots and 70% for tomatoes to 85% for watermelon.

Agricultural technology and innovation

The project connected smallholder farmers and the school lunch programs in both countries. This included support for improved agricultural

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Farmers were connected with school lunch programs

technologies, in order to boost yields. Over a two-year period, the project introduced the use of drip irrigation on selected crops; as a result, tomato yields increased from 18 to 32 metric tons per hectare, string beans from 3 to 10 mt/ha and pumpkin from 17 to 25 mt/ha. Farmers were able to produce vegetables all year round, including during the dry season, and could therefore offer a consistent supply to schools.

The development of a water balance model enabled farmers to irrigate according to crop requirements (previously, many had over-watered), reducing production costs and conserving water resources. Other technologies tested under the project include: improved varieties of tomato, sweet pepper and pumpkin; use of locally-made compost for greenhouse cultivation; establishment and cultivation of drought-tolerant mulato grass and sorghum forages for small ruminants; and a variety of simple interventions to reduce post-harvest losses.

The project also gained knowledge on how farmers made decisions, for instance on whether to adopt a technology, and recognized the central role played by women farmers in this process. Building social capital among farmers and institutions proved key to facilitating technology adoption, collective action and innovation. This led to the formation of a Small Ruminant Farmers' Association to capture markets and stimulate innovation and growth in the sector.

Capacity building and skills training

Institutional and human capacity building was a major achievement of the project, with over 2,000 participants gaining skills in drip irrigation, protected agriculture, forage conservation and catering. This led to a 32% increase in the cropping area under drip irrigation and a six-fold expansion in the area used for cultivating fodder crops. Catering staff received skills training in food service and safety, and best practices were developed for hygienic delivery of school meals. This provision of skills training and new technologies to both farmers and catering staff, combined with strengthened systems for procuring vegetables, fruit and meat from local

farmers, resulted in the daily delivery of 1,000 lunch meals with improved nutritional quality.

Partnership building

The project developed a number of national, regional and international partnerships. It was led by McGill University, Canada and the University of the West Indies, Trinidad and Tobago, in collaboration with local ministries of agriculture, health and education, and with support from other institutional partners in four CARICOM countries (St Kitts-Nevis, Trinidad and Tobago, Guyana and St Lucia). Partnership between the National Agricultural Research and Extension Institute (NAREI) in Guyana and McGill University led to the water balance model for more efficient use of water resources for crop production. A national and regional partnership on small ruminant productivity was also developed, involving the Caribbean Agricultural Research and Development Institute (CARDI), Ross University School of Veterinary Medicine in St Kitts-Nevis, the Ministry of Agriculture of St Kitts-Nevis, and McGill University. One output was the formation of the Small Ruminant Farmers' Association, described above. Further partnerships allowed Caribbean farmers to benefit from lessons learned in Latin America on technology adoption.

Conclusion

The *Farm to Fork* approach to food and nutrition security has proven to be an effective model for improving the nutrition and health of primary school children, with the potential to control overweight and obesity, a key health challenge in the Caribbean. Equipping local farmers with the necessary agricultural technologies and strengthening collaboration between institutions have helped to increase the year-round availability, productivity and diversity of local produce for school meal programs. Based on the outcomes



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Nutrition education also addressed physical activity

of the project, the *Farm to Fork* model can be adopted and scaled up regionally within CARICOM and other international communities.

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