



Innovative Community-Based Agriculture: a Strategy for National Food Production and Security

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ABSTRACT

Food security is a key national priority for Trinidad and Tobago. The goal is to “create a food secure nation” by providing access to adequate, nutritious, safe and affordable food to all people at all times. Some factors negatively affecting the country’s food security include: a high food import bill estimated at TT\$4 billion; vulnerability to adverse impacts of climate change and; an increase in the incidence of nutrition-related chronic Non-Communicable Diseases (NCDs).

This paper includes a general framework for developing community-based agriculture which has been identified as a strategy to achieve food security in Trinidad and Tobago.

The study, through interviews, examines the experiences of several Trinidad and Tobago community-based agriculture initiatives, highlighting their strengths and challenges. Regional and international examples of community-based agriculture are also outlined.

Recommendations are given to facilitate the expansion of community-based agriculture in Trinidad and Tobago and the wider Caribbean.

Keywords: community-based agriculture; food and nutrition security; sustainable agriculture; Trinidad and Tobago

INTRODUCTION

Agriculture is recognised as a major component of food security and economic viability within the Caribbean Community (CARICOM). At the thirtieth meeting of CARICOM heads of government in July 2009, the Liliendaal Declaration on Agriculture and Food Security identified the importance of agriculture for 1) food and nutrition security and; 2) the development of countries within CARICOM (CARICOM Secretariat 2011). It is within this context that the subsequent Caribbean Regional Food and Nutrition Security Policy (CRFNSP) was developed in order to ensure that all aspects of the region's food chain, food safety and agricultural public health system realise the capability of providing safe, adequate, nutritious and affordable food for the people of the region at all times (CARICOM Secretariat 2011).

Food security is a key national priority for Trinidad and Tobago (T&T). The goal is to “create a food secure nation” by providing access to adequate, nutritious, safe and affordable food to all people at all times (MFPLMA 2011). Given that Trinidad and Tobago's most recent food import bill is TT\$4 billion (GISL 2014), a goal is to increase local food production, thereby reducing dependence on imported food and hence vulnerability to high global food prices and possible fluctuations in global food supply and demand. The effect of climate change (increased occurrence of floods, drought, high temperatures, rising sea-levels) also threaten T&T's food production and security, especially considering that T&T is a Small Island Developing State (SIDS) with limited land and natural resources. Hence, climate change adaptation and mitigation strategies are also crucial to food security. Additionally, increases in nutrition-related chronic Non-Communicable Diseases (CNCDs) in Trinidad and Tobago negatively impact the country's food security. In this regard, steps taken to encourage healthy diets and facilitate access to nutritious foods will boost the nutritional aspect of food security. The National Food Production Action Plan (NFPAP) 2012-2015 has outlined steps to be taken to address food and nutrition security in Trinidad and Tobago (MFPLMA 2011).

This paper presents and examines community-based agriculture as a potential strategy for addressing challenges of adequately addressing food and nutrition security. The experiences of some local agricultural initiatives in T&T aimed at combating food security by increasing local agricultural production are presented.

COMMUNITY-BASED AGRICULTURE

Community-based agriculture is a common development strategy to boost local economic growth (Brown et al. 2014). The University of California, Sustainable Agriculture Research and Education Program (SAREP) (2015) defines a sustainable community food system as “a collaborative network that integrates sustainable food production, processing, distribution, consumption and waste management in order to enhance the environmental, economic and social health of a particular place.” The spatial scope of the community may range from a neighbourhood to a town, city, county or region (Cornell University, n.d.). Hence, community-

based agriculture can be used to improve food security at the household (Faber et al. 2011) and other levels (community or national) within any particular country. Community participation, ownership and empowerment are key elements of this system (Ismail et al. 2003). Strengthening existing or developing new partnerships among farmers, consumers and other components of the food system is also a goal of community-based agriculture (Cornell University, n.d.). Organisational examples of community-based agriculture include farmers' markets, community gardens and community supported agriculture (Martinez et al. 2010; Brown et al. 2014).

COMMUNITY-BASED AGRICULTURE: FRAMEWORK

Communities can buffer themselves from the negative effects of the global food system only if they develop the needed infrastructure, maintain a sufficient farmland base, and provide enough technical expertise so that local farmers can successfully compete in the local marketplace (Lyson 2004). When developing community-based agriculture programmes, factors to consider include, but are not limited to, the following (adapted from Ismail et al. 2003):

i. The national policy and available budgetary and other types of support:

The presence of an enabling food and nutrition policy environment is an important criterion for the successful implementation of a community-based programme (Ismail et al. 2003). National policies should also have a supporting budget as well as the necessary technical, structural and administrative support. Successful implementation on the national level is also dependent on public awareness of food and nutrition issues. A national urban-planning policy that encourages urban food production is also recommended. Cuba is one of three countries in Latin America and the Caribbean that has urban agriculture included in land use plans in some cities (FAO 2014). The NFPAP 2012-2015 (MFPLMA 2011) and the CRFNPS (CARICOM Secretariat 2011) provide the recommended food and nutrition security policy framework for developing community-based agriculture in Trinidad and Tobago.

ii. Programme design:

The programme design should be based on 1) the needs of the geographic area and/or socio-economic group targeted by the programme and 2) the financial, human and physical resources available. Consider the level of community participation for the programme. Are people just recipients of services offered by the programme or are they to be actively engaged in decision making and implementation of project activities? Objectives, linkages with other programmes, management structure and a monitoring and evaluation component should also be outlined in the design (Ismail et al. 2003).

iii. Collaboration and partnerships

Linking with existing community groups provides a great entry-point to develop community-based agriculture projects, as it enables 1) identification of the community's food and nutrition needs; and 2) community ownership of programme. Partnerships among government and non-

government institutions across several sectors (e.g. health, industry, education and environment) facilitate sharing of information, experiences, resources; and access to technical support (Ismail et al. 2003).

The Caribbean Agricultural Research and Development Institute (CARDI) and the Alumina Partners of Jamaica (ALPART) have collaborated on a community-based agriculture project on mined out bauxite lands in Jamaica. The project provided training and technical assistance in goat production to tenant farmers in ALPART's Nain and other mined out bauxite areas. Under the partnership, the Sam Motta Demonstration and Training Centre (SMDTC) was established and has conducted research and development in goat production, forages, by-product feeds and integrated crop/livestock production on reclaimed bauxite lands. In 2008 it was reported that 200 farmers from Knockpatrick and surrounding mining districts benefitted from SMDTC. "More than 3000 farmers, students and householders have gained practical experience from the Centre" (JIS 2008).

CARDI is willing to collaborate with donor agencies and other organisations in developing community-based agriculture projects in Trinidad and Tobago.

iv. Technical advice and expertise to support the programme

Technical advice and expertise is crucial to the success of community-based agriculture projects. Links should be established with research and training institutions to assist with developing capacity in 1) agriculture production, processing and distribution; and 2) leadership / management skills and organization structure.

For instance, technical assistance to the urban agriculture programme in Havana, Cuba includes a Technical Advisory Board comprising 11 agricultural research institutes; seed farms; agricultural supply chains; veterinary clinics. The College of Urban and Suburban Agriculture also trains producers and technicians; and introduces new technologies to the urban agriculture programme (FAO 2014).

The technical expertise and resources at CARDI are available to communities embarking on agriculture projects in sheep and goat production; cultivation of cassava, sweet potato and hot peppers. CARDI can also provide guidance on vegetable production under protected agriculture systems; and best practices for organic agriculture, water and soil management

Access to markets, primary and value-added production of locally produced crops and livestock products are key to achieving the goal of sustainable livelihoods for persons in the community. The CRFNSP has identified the value chain approach and product clusters development as mechanisms to 1) "to increase cost efficiency of value added production for locally produced and

imported semi-processed foods and livestock products” and 2) “improve market access of small producers” (CARICOM Secretariat 2011).

A value chain is defined as “a sequence marked by value growth and coordination at each stage of production, processing and distribution, driven by consumer demand. It carries with it a range of support functions, such as input supply, financial services, transport, packaging, market research and advertising. The nodes in an agricultural value chain may consist of input providers, farmers, processors, packagers, distributors and retailers – all the links in the sequence between the genesis of a product and its journey to the consumer.” (CTA 2012).

CARDI is involved in strengthening producer groups and value chain clusters in several CARICOM countries. In Trinidad and Tobago, CARDI through a Common Fund for Commodities (CFC)/European Union (EU) funded project in Root and Tubers, assisted Tobago Cassava Products Ltd., Rio Claro Cassava Farmers’ Group and Cunupia Farmers’ Association. Technical assistance to these groups included: needs assessment, business plan development; training in Good Agricultural Practices (GAP), crop production, post harvest technologies, value added product development. Hazard Analysis Critical Control Point (HACCP) / Good Manufacturing Practices (GMP) training was also offered to the Trinidad & Tobago Agribusiness Association (TTABA) and farine producer groups in Tobago. The CARDI /CFC/EU project also provided planting materials and equipment (Reid 2013).

Other considerations:

Sustainable agriculture and climate change

It is important that community-based agricultural programs be developed within a sustainable agriculture framework. Three main goals of sustainable agriculture are 1) Profit over the long term; 2) Stewardship of our nation's land, air and water; 3) Quality of life for farmers, ranchers and their communities (SARE, 2010). In the Caribbean, agriculture is predominantly rain-fed which makes it particularly vulnerable to climate change or variability. Increased occurrence of floods, drought, high ambient temperatures and the increased prevalence of pest and diseases are amongst the challenges to Caribbean agriculture.

‘Climate smart’ practices have been developed and introduced widely as adaptation and mitigation strategies against the impact of a changing climate on agriculture. The term ‘climate-smart’ agriculture refers to practices, technologies and approaches that sustainably increase productivity, support farmers’ adaptation to climate change, and reduce levels of greenhouse gases emitted into the atmosphere by these activities (Nyasimi et al. 2014).

The Food and Agricultural Organisation of the United Nations (FAO) introduced a “Save and Grow” initiative in 2011 with the objective of adopting an ecosystems approach to agriculture which focuses on the reliance on nature’s contributions to crop growth, such as soil organic matter, water flow regulation, pollination and bio-control of insect pests and diseases (FAO,

2011). In the Caribbean region, CARDI with the support of several partners in agriculture, has promoted climate smart technologies such as protected agriculture, rainwater harvesting, organic agriculture and soil conservation techniques.

CASE STUDIES

Through interviews and/ or desktop research, the experiences of community-based agriculture initiatives in the Caribbean, Trinidad and Tobago are examined, highlighting their strengths and challenges.

National Backyard Gardening Programme- Antigua and Barbuda

The National Backyard Gardening Programme started in 2011 to increase local food production and reduce the food import bill (Joseph 2012). This urban agriculture project is part of the Antigua and Barbuda government's National Food and Nutrition Security Policy, the National Poverty Reduction Strategy and the Zero Hunger Challenge Plan of Action. It has 2500 registered households. Vegetable production is the major commodity focus of the programme. The Ministry of Agriculture Lands, Housing & the Environment manages the programme and supports the backyard gardeners through technical officers and community facilitators; provision of vegetable seeds and seedlings and other inputs; and the introduction of agricultural technologies (FAO 2014). Antigua and Barbuda's food security has improved through the National Backyard Gardening Programme, with 7% of the country's vegetable production coming from backyard gardens (FAO 2014). The programme has improved participating households' nutrition status and their sale of produce and value-added products (jams, sauces) has increased their income.

Government funding is crucial to long-term sustainability of the initiative. Networking among gardeners, training in integrated pest management and food safety are some recommendations for future development of the programme (FAO 2014).

Farm to School: Collaboration between National Agricultural Marketing and Development Cooperation (NAMDEVCO) and National School Dietary Services Limited (NSDSL)

In order to stimulate agriculture by using locally produced food, NAMDEVCO, with its certified farmers programme, is a potential source of safe food commodities for NSDSL. NAMDEVCO'S role in the partnership is to promote the consumption of locally produced food through enhancing farmer to market linkages with NSDSL (Simon 2015). For instance, it is estimated that 156,000 meals are served daily by the NSDSL to 196 preschools; 475 primary; 144 secondary schools and; 58 vocational/technical schools (Joint Select Committee 2012).

One challenge for NSDSL is the low meal acceptance by students, some of whom seem to prefer fast food types to local traditional foods. A recent effort to improve food presentation includes

the introduction of the cassava muffin, made from local cassava, as part of the NSDSL menu to combat this challenge (NAMDEVCO, 2015).

NAMDEVCO's challenges include a low sensitisation of farmers and buyers within the local market; low synchronization between supply and market demand; high prices of produce and; inconsistent supplies offered by farmers (Maharaj 2015).

Despite challenges, the NAMDEVCO-NSDSL initiative has truly contributed to improved livelihood of farmers through providing a sure market for local farmers participating in the programme. NAMDEVCO has also provided the necessary training and sustained support for the adoption of best practice by farmers in the programme. This has resulted in a supply of safe, healthy, locally produced foods for children nationwide. According to NAMDEVCO (2015), farmers have been able to increase the local production of 21 items identified by the NSDSL as part of MFPLMA's eat local program. This has allowed the NSDSL to use local produce on each of its 20-day menu cycle.

Trinidad and Tobago Goat and Sheep Society (TTGSS)

An interview with Ravie Renie, Trinidad and Tobago Goat and Sheep Society on 8 June 2015. (Renie 2015)

In the case of the small ruminant sector in Trinidad and Tobago, community-based farming initiatives have been attempted by the Trinidad and Tobago Goat and Sheep Society (TTGSS). Currently there are 40 farmers registered in TTGSS. Difficulties faced by farmers include a lack of markets for their produce; a lack of facilities and resources required for post slaughter management; limited capacity for processing of value added products; adequate finance; and appropriate technologies needed to sustainably increase the production of small ruminants in T&T.

Benefits of TTGSS membership include the provision of a sure market for meat and milk products produced by farmers; year round access to training and advice on best production practices. Additionally, due to TTGSS' linkages with organisations such as Nutrimix Feeds Ltd, farmers have access to subsidised inputs which help with decreasing production costs.

TTGSS is currently inactive as a co-operative due to challenges of delayed payments and inconsistent cash flow from buyers to farmers. One way the institution is evolving to address gaps and improve their approach towards forming a co-operative is to source funding that can act as a buffer fund for the improvement of cash flow between farmers and grocers. Another major challenge has been the inconsistent supply of small ruminant products from farmers to buyers which has resulted in a decline in the confidence and dependence of grocers on locally produced products. It is believed that with the support of larger local farms, the Co-operative may have the

necessary resources to provide consistent supplies in the interim while smaller farmers catch up to further increase supplies.

The Cropper Foundation

An interview with Mark Thomas, The Cropper Foundation on 9 June 2015. (Thomas 2015)

The programmes by The Cropper Foundation (TCF) are centred on capacity development; environment and resource education; and public policy. As part of their public policy programme, TCF embarked on a project geared towards the enhancement of technical skill sets of farmers living in selected areas of the Northern Range region of Trinidad and Tobago. TCF, under a United Nations Development Program (UNDP) funded project sought to develop a community based model for sustainable hillside farming in order to derive greater economic gain for small scale hillside farmers. The project also aimed to sustain the natural resource base of the Northern Range in Trinidad by the alleviation of environmental threats caused by unsustainable farming practices.

As the project progressed, farmers' low adoption of sustainable practices including reduced pesticide use and terracing on hillside farms were seen as a challenge by TCF. For instance, in the case of eliminating pesticide use from farm activities, farmers were not convinced that their adoption of reduced pesticide would result in tangible gains of premium price of their produce. In response to the low adoption rates, TCF recognized that profitability had to be addressed in order for there to be an increased adoption of the sustainable practices.

TCF under an International Development Bank (IDB) funded project will be partnering with local organisations, including supermarket chains and technical organisations with accreditation and monitoring systems to assess pesticide residue on farmers' produce and pesticide use on farms. The project will enable farmers to capitalise on the niche of consumers willing to pay premium prices for local pesticide free agricultural goods. The objective is also to initiate linkages between different stakeholder groups and farmers which will then be sustained independent of TCF involvement at the end of the project.

Cash flow is another challenge for farmers. Currently farmers supply supermarket outlets with produce and have to wait 90 days before they are paid. To address this issue, TCF has incorporated a buffer fund where farmers are able to get paid on delivery of produce. This buffer fund will also be incorporated in the project funded by the IDB.

LESSONS LEARNT

Major factors influencing the success of the case-studies presented include, but are not limited to: policy environment, finances, market access, consistency of supply, cooperation and public awareness.

The successful implementation of community-based agriculture is near to impossible without solid supporting national policy, budgets or structures in place to facilitate such developments. These policies should preferably take a multi-sectoral approach.

Finances are critical to the continuation of community-based agriculture. Cash flow and profitability are challenges facing participants in the community-based agriculture programmes. Both TCF and TTGSS are attempting to address this challenge by the incorporation of a buffer fund from which farmers can be paid in the interim for their produce.

The ability of farmers to maintain a consistent supply of local goods is a major factor influencing the sustainability and longevity of community-based agricultural initiatives. Inconsistent supplies impede farmers' access to markets as buyers will source alternate suppliers for produce.

Co-operation among stakeholders involved in community-based agriculture is necessary for sharing of human, technical and information resources. Technical support from research and training institutions is very important to build institutional capacity and manage production and marketing.

Generally, community-based agriculture can lead to increased local agricultural production in Trinidad and Tobago thereby improving the country's food security.

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