A Comparison of Small Scale Farming in Barbados, Dominica, and Trinidad and Tobago

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Abstract

In this paper, the authors compare current small scale farming systems among three Caribbean nations - Barbados, Dominica, and Trinidad and Tobago. They then address the Extension education challenge in the future. Small scale farming is an established concept among food production systems throughout the developing world in which the production system is a mix of food crops and sometimes small livestock. The small scale producer in these islands must meet expectations in a changing agrarian environment of reduced Gross Domestic Product from agriculture, yet the small scale producer is still a resilient member of the food production system. Small scale operations are more practical and experience varying levels of efficiencies given local conditions and constraints. The purpose of this study was to investigate the relationship between small scale producers and the agricultural sector in the nations under study while the said producers maintain economic and social independence. Given the trends in Extension systems for developing countries, the authors conclude that the state must still play a role in financing the Extension systems for small producers. Given current advocacy to multi-faceted extension systems, the authors recommend the use of appropriate system options for the small scale farmer with support from the state.

Key words: small scale farming, Barbados, Dominica, Trinidad and Tobago, multiple approaches
Introduction

Small scale farming is an established occupation among food production systems throughout the developing world in which the production system is a mix of food crops and sometimes small livestock. Following the Green Revolution, much of the challenge among small scale producers resided in using unfamiliar and high input technologies which were not easily accepted and which introduced high costs of production and consequently, high costs of locally produced food. The introduction of new technologies is often a complex endeavour, but an inevitable reality in order for any producer to meet the competition in a globalised market economy. Almost always, this challenge is exacerbated by a severe lack of resources albeit land, labour or capital. The current biotechnological revolution only increases the challenges. A consequential lack of capital affects the application of pesticides and other such inputs on small farm holdings. When inputs can be accessed, a lack of knowledge constrains the most appropriate use of these inputs. In most cases, the small farmer either overuses or underutilises required inputs. Many female small producers remain invisible in the process. There is a lack of succession among the group which will have serious impacts on sustained small farm occupations in the future. Yet the small scale producer is still a resilient member of the food production system in developing regions, such as in Africa and South Asia where small farms account for more than 80% of total farms and more than 40% of total agricultural output (Hazell, 2006). Often times, the occupation is still very operable within local conditions and challenging constraints. All of this holds true in the Caribbean region where the small scale farmer has always been central to food production and agricultural development. According to Hazell (2006), in the current age of globalisation there is a new breed of agricultural skeptics that argues that developing countries should give in to the changing paradigm of shifting mainly to large-scale, more industrialised and often, state-managed, farming because the challenges faced by the small scale farmer may be too daunting. While there may be merit to some of these arguments, this is not a practical solution to feeding those who lack adequate food supplies. Small scale farming allows for individuals to have a certain amount of independence in the generation of their livelihoods, and more importantly, allows them to have much-needed food security, which is one of the main problems in the developing world, where food security and poverty are intimately connected.

Purpose and Objectives

In this paper, the authors compare and characterise small scale farming among three Caribbean countries - Dominica, Barbados, and Trinidad and Tobago - in order to assess how much they contribute to the individual countries’ agricultural sectors. The comparisons will enable Extension providers to evaluate which kinds of suitable services could contribute to the quest for food security and income-generating capacities in each island nation.

Defining the small producer. Smallness is relative and may be evaluated by quantum of income, size of operation, amount of possessed resources, etc. A more functional definition resides in the perspective that smallness is part of a syndrome which includes low status, lack of influence, insecure or irregular sources of income and a limited range of social and economic opportunities beyond the local community (CAEP, 1985). The said producers maintain economic and social independence (NFFA, 1987).
Hence, there are many definitions of the “small scale” form of livelihood which falls outside the ambit of area of cultivation holding. This is especially relevant to most Caribbean states which occupy relatively small areas of land. For instance, the entire size of the three countries under study, Barbados, Dominica, and Trinidad and Tobago, is 116, 290 and 2000 square miles, respectively. In these islands, some small farms can occupy half an acre juxtaposed to a large farm of 10 acres. Other small farms may be 10 acres juxtaposed to a larger holding of 20 acres in size.

From the perspective of livelihood, there must be reference to the small farmer in the context of his/her capabilities, assets and activities which contribute to a means of living (Chamber and Conway, 1992).

Emergence of the Caribbean small farmer. The emergence of the Caribbean small farmer is linked to a history of a plantation system which cultivated export crops for a metropolitan market. Upon export, these crops were processed into value-added products. These crops included sugarcane, cocoa, coffee, cotton and bananas. The crops were cultivated within the limits of respective island ecologies and the geopolitical and economic strategies of the European countries from which plantation owners emanated.

According to Marshall (1985), the patterns of these economic trends began with the arrival of African slaves to the islands during the 15th century and then, indentured East Indian labourers in the 19th century. Both groups provided the bulk of rural labour required for successful cultivation and the groups sometimes worked alongside the remains of an indigenous Amerindian population.

The first change which contributed to a new heritage of small farm settlement began with the emancipation of slaves and the arrival of East Indian indentured labour. There were three distinct and important growth phases which initially led to the development of the rural sector. Firstly, there was the period of establishment after the emancipation of slaves in 1838. The initial period post-emancipation engaged rapid acquisition of land holdings and a consequent increase in the number of small farmers. There became into existence many small farms on the periphery of plantations and in the mountainous areas of some countries. These small farms produced a variety of agricultural produce thereby meeting food security requirements for expanding island populations. These small farms were juxtaposed to the plantations which still supported large monoculture export operations.

During the second phase, small holding population grew and consolidated. Many became engaged in export production. In the third phase, an element of saturation occurred as the shortage of land imposed further expansion. According to Marshall (1985), the respective time periods for these three phases were 1838-1860, 1860-1900 and 1900-1961.

With reference to data from the West Indian Agricultural Census in 1946, Marshall (1985) articulated that some islands expanded the size of their small holding population in order to cope with saturation. Other islands had decreased the number of small holdings as larger holdings became more popular. Marshall also noted competition for rural labour among non-agricultural economic activities such as oil in Trinidad, bauxite in Jamaica and tourism in several islands. There was also competition from the government and service sectors as many farmers’ children left the land to work and reside in newly-developed urban and suburban centres which had employment and residential offerings from government generated occupations and then, the service sector. Yet another early migration effect was the movement of rural folk from their own
agricultural and fishing bases in one island to the growing industrialised centres in another island where mining and other major non-agricultural activity provided better livelihood opportunity.

By the 1960’s many countries were seeking independence and had begun to rationalise agricultural production endeavours. Independent governments of some countries overtook large plantation investments. Other countries consolidated on newer commodities like bananas. Yet other countries aggressively facilitated specialised food crop production, small livestock production and where possible, dairy and beef production. Smaller islands focussed on one or two plantation enterprises among them being sugar, arrowroot, cotton or bananas. Very small islands abandoned the plantation system of crop production at the earliest opportunity. Larger islands like Jamaica maintained all plantation crops and used a variety of state and private management systems of production. In 2009 Jamaica still prides its endeavours in a wide range of cultivation options in the rural parts of the country.

One concludes that, historically, a small farm population is an essential element in the agricultural productive capacity of the islands of the Caribbean.

Method and Data Sources

A review of records, official documents and other relevant data from the three countries provided the evidence on which the character and resolve of the small scale farmer with respect to Extension and agricultural education in the Caribbean was compared. A review of perspectives regarding Extension options will then inform the type of Extension service which will assist the small scale producer in these islands.

Results

Barbados. Barbados, with an area of 166 square miles (Information Please Almanac, 1998) and a population of 272,400, is one of the most stable and prosperous states in the Caribbean given its Gross Domestic Product (GDP) per head at an estimated US $11,237 (FAO, 2008). The island’s economy is very broad, its main industry being tourism. Off-shore finance and light manufacturing, along with the sugar industry are other important sectors of the island’s economy. Although sugar has declined in the past years, it still serves as an important exporter. Dairy, fishing, livestock and vegetable production focus mainly on meeting local demand (FAO, 2008).

According to the latest available data from the year 2003, agriculture accounted for 5.4% of the total GDP. The sugar industry, which exported 34,000 tonnes of the 38,800 tonnes of sugar it produced in 2005, is the most important agricultural sector even though it faces a precarious future as a result of poor soils and resulting high cultivation costs, occasional droughts, and low prices of sugar on the global market (FAO, 2008). Large amounts of fruits and vegetables are imported, but about 3,600 hectares of land are used for the cultivation of onions, carrots, tropical root crops and other vegetables. The dairy industry produces enough to meet local standards and manages to export a small amount of several products to other Caribbean nations. Agricultural contribution to total imports and exports in 2004 was 9.9% and 26%, respectively. The agricultural trade deficit decreased from US $103 million in 2002 to US $67.5 million in 2004 (FAO, 2008).

Future planning by the Ministry of Agriculture is geared towards a commodity-focused approach which will enable the sector to be more competitive as it turns towards a more sustainable path that will promote the improvement of food safety and food security (FAO, 2008). Among the initiatives that will be undertaken to help small scale farmers are: 1) measures
to assist with the sale of fresh agricultural produce, 2) a programme aimed to increase cotton production through a combination of incentive and information provision, 3) a focus on promoting agriculture in rural areas which will include increased assistance provision such as agricultural training and investment, equipment and machinery, 4) cottage industry establishment and development in rural areas (Ministry of Agriculture and Rural Development, 2008). In doing so, the Ministry of Agriculture is seeking technical assistance in a number of areas one of which is training for Extension workers and service providers (FAO, 2008).

**Dominica.** Dominica, with an area of 290 square miles (Information Please Almanac, 1998) and a population of 72,514 (Encarta MSN, 2008) has fertile volcanic soil and excellent water resources (FAO, 2008). Its GDP per head in 2006 was an estimated US $4,758 (US Department of State, 2009). The island’s economy weakened during 2001-2003 because of declining banana production, but as a result of government programmes and foreign aid, growth reached 4% in 2006, and thereby stabilised the economy (FAO, 2008). Following a grant aid agreement from China, in 2004 public finances improved markedly, posting an overall surplus of 2.6% of GDP (FAO, 2008).

High rainfall, a relatively low number of accessible white-sand beaches for which the Caribbean is famous and less than adequate air transport connections have prevented the development of an expansive tourism sector such as in Barbados, but ecotourism is a priority within the sector. The island has a small off-shore finance sector which in 2006 included 11,452 international business companies, internet gambling companies and the sale of passport rights to overseas investors (FAO, 2008). According to Chesney, in 2006 agriculture accounted for 19% of the GDP, 30% employment, 37.5% exports and 60% food needs. The banana industry is the main agricultural sector, the product being mainly exported to the United Kingdom, but it has seen a very drastic decrease in revenue as a result of the EU import regime – revenues fell from US $30 million in 1992 to US $6 million in 2006. Plantains are also an important export and in 2004 bananas and plantains accounted for about 58% of all exports (FAO, 2008). Other important crops that are grown include coconut, citrus fruits, vegetables and mango. Produced from coconuts, copra provides the basis for the soap industry, which is the island’s main manufacturing activity, but a reduction in export demand has impacted coconut producers negatively since 2000 (FAO, 2008). The soap, mainly destined for Jamaica, accounted for $30.1 million in export earnings in 2004 (Chesney, 2006). Agricultural contribution to total imports and exports in 2004 was 26% and 37%, respectively. In 2004, the agricultural trade deficit increased from US $10.3 million in 2002 to US $15.3 million (FAO, 2008).

Future planning in Dominica is focused on food security by introducing organic farming and improving vegetable production under irrigation, as well as agricultural diversification, fisheries expansion and agro-industries (FAO, 2008). The push for increased organic farming is directly correlated to the afore-mentioned emerging sector of eco-tourism, which by virtue of its main objective demands the sustainable use of natural resources. According to Chesney (2006), “This type of low impact environmentally conscious tourism fits in well with agriculture in general, but even better when agriculture is practised organically and is allied to the concept of wellness or health maintenance for the visitors and the hosts alike. The marriage of organic agriculture with ecotourism/wellness tourism provides the ideal mix for a sustainable use of Dominica’s natural resources and the attainment of ‘organic island’ status.” Based on this premise, Chesney et al have proposed a comprehensive and detailed 10-year programme to make Dominica an “organic island” by revitalising the declining economic sector in a resource-
efficient manner. This programme has seven projects: 1) product development, 2) post harvest handling and packaging, 3) institutional capacity building, 4) knowledge management, 5) promotion/media campaigns, 6) integrating women and youth into organic agriculture and wellness tourism, and 7) long-term operational and financing options.

Trinidad and Tobago. Trinidad and Tobago, with a combined area of about 2000 square miles (Information Please Almanac, 1998) and a population of 1,310,000 has a per capita income that was estimated at US $12,107 in 2006 (FAO, 2008). The largest segment of the islands’ economy is energy and this has led to an increase in other sectors such as construction, transportation and retail, which accounted altogether for about 25% of GDP in 2006. This twin-island nation is the Caribbean’s largest exporter of oil (Maximay, 2005) and its petrochemical sector, which accounts for 6% of the GDP and employs 10% percent of the labour force, has seen a very strong growth as a result of rising oil prices as indicated by a real GDP rise of 8% in 2005 while agriculture has seen a steady decline as a result, accounting only for about 0.6% of the GDP in 2006 (FAO, 2008).

Historically, the sugar industry was the main agricultural sector, but following steady operational losses, the industry was removed in 2003. Current exports include citrus, coffee and cocoa. Along with a local fishing industry, fruits, flowers, some livestock and vegetables are produced mainly for the local market. Agricultural contribution to total imports and exports in 2004 was 8.6% and 1.8%, respectively. In 2004, the agricultural trade deficit increased from US $94.3 million in 2002 to US $303 million (FAO, 2008). According to Maximay (2005), 35% of farming takes place at the subsistence level (tree crops, root crops, vegetables, legumes and livestock), while the remaining 65% takes place at the commercial level (vegetables, sugarcane, rice, root crops, cut flowers, ornamentals, citrus, cocoa and bananas).

Funded partly by the FAO, future planning in Trinidad includes the establishment of eight commercial farms to increase production of fresh food and agro-industries (FAO, 2008). “The Government has proposed a National 2020 vision plan whose implementation emphasizes the need to increase productivity, profitability and competitiveness through (a) the adoption of improved technologies, varieties and new commodities, (b) the improvement of efficiency and effectiveness of marketing and agricultural health and food safety, and (c) linkages with agro-industry. This is complemented by efforts to improve infrastructure, land tenure, credit and reduce production risk” (FAO, 2008). There are a number of local institutions that serve as a primary source of agricultural information, the majority being in printed form such as factsheets, newsletters and brief publications (Maximay, 2005).

These summary reviews indicate that although there are agricultural livelihoods among the three islands in which many small farmers will engage, there are inherent concerns. All countries have agricultural trade deficits. Agriculture is not the most important contributor to GDP and there is declining contribution to GDP from agriculture. The influences of the older plantation systems of agricultural production are declining and hence, there will be need to enhance small farmer contribution to the agricultural sector. This perspective is valid even if there are attempts to develop a larger farm model as in the case of Trinidad and Tobago. Any new model needs process and product evaluation following inception.

The Extension viewpoint. Food security, food safety, food production and food marketing are contemporary issues necessitating strong and vibrant Extension and Outreach programs in developing countries (Lindner and Dolly, 2008). This must be kept in mind in order to focus on
what will be a most appropriate Extension and Outreach system for the small farmer of the Caribbean.

According to Rivera (1990), the appropriate Extension model or system is situational in context, content, culture and politics. When it comes to small farmers in the Caribbean, it becomes necessary to reflect on these situational elements in order to provide the best service possible.

Caribbean Extension and Outreach began with the initiation of botanic gardens of the then, crown colony governments of the British West Indies in the 1860’s. These gardens were key institutional mechanisms which supported the region’s agricultural development. The gardens stocked museum plots of local and exotic plants. The gardens housed plants which were considered economically suitable to replace the plantation crops should the option have arisen as was the case with the depressed sugar cane industry during the late 19th century and its eventual replacement in some locations with bananas. The gardens also considered appropriate crops which could interplant well in order to contribute to a wider repertoire of commodities in mixed cropping systems. The gardens, therefore, acted as centres for the propagation and distribution of economically and agriculturally important plants. This mechanism led to the early beginnings of agricultural instructor positions which were to advise on matters of agricultural production.

The earlier scenarios no doubt focussed on the plantation owner, however, in the ensuing decades the small farmer became the focus especially through new state-run systems as the islands became independent. In the process, Extension departments of Ministries of Agriculture assumed responsibility for Extension. Hence, there was and still is the overlying understanding that Extension responsibility to farmers and other clients resides with the state-run system commonly known as the typical Extension system of developing countries.

In ensuing developments the Caribbean region has attempted to introduce other Extension approaches which were implemented in developing countries. There was a major effort of the United States Agency for International Development (USAID) based Caribbean Agricultural Extension Project which introduced a farming system perspective to the Eastern Caribbean (CAEP, 1985). A model began to relate the state’s effort to non-state institutions and the Department of Agricultural Extension of the University of the West Indies. This model was short-lived after the curtailment of USAID funding.

The Training and Visit (T&V) system engaged a brief stint in Trinidad and Tobago and Jamaica, where the commodity systems tried specific innovations such as contractual farming which continues to serve the poultry sectors of the region. There are also commodity type services for coffee, cocoa, sugarcane and bananas. These services face many challenges.

Another innovation occurred in Jamaica where the Extension services separated from the remaining services within the Ministry of Agriculture to become an autonomous unit, The Rural Agricultural Development Agency (RADA). This autonomy relieved the service from protocol bottlenecks especially regarding release of resources to conduct Extension work.

Most recently Extension’s newest innovation - The Farmer Field School (FFS) - has been introduced through initiatives of the Food and Agricultural Organization (FAO). These schools proved a measure of early success among Asian farmers. There are also schools throughout the tropical farming environment. The Commonwealth of Dominica and Trinidad and Tobago have introduced this Extension approach to small vegetable producers. Evaluations of this approach are still ongoing and begin to show promise (Lindner and Dolly, 2008).

The current processes of Extension are aided by many other national, regional and international institutions existing in the Caribbean. There are also advisory systems which non-
governmental agencies contribute. There are faith-based interventions. There are interventions of farmers’ organisations and specific commodity groups. These agencies base their responsibility on needs-assessments of mutual interest to producers and the organisations’ mandates. Many lack an acceptance of classical Extension philosophy and method.

There is much debate regarding the ability of a predominantly state-run Extension system to deliver its mandate to Caribbean producers. There is a conclusion that the Extension agent’s expectations are too multi-faceted for meaningful influence. The cost of these services is becoming prohibitive to many governments more so with declining contribution of agriculture to the GDP. The research efforts for these systems are also severely limited. Consequently, research must settle for unacceptable compromise in the fast-changing pace of cutting-edge agricultural scientific discovery and development.

Nevertheless, Rivera et al (2001) have summarised that no single approach best suits Extension development in all circumstances. They recommend that the state still needs to take a central role in financing the advisory services of Extension, especially those services which are not important to the private sector. Suggested areas of responsibility are: Management of Natural Resources, Integrated Pest Management, advisory services to the very poor, establishing markets for commercial and farmer-to-farmer Extension services, providing rural communication infrastructure and developing human resources. Rivera et al reasoned that no one single reform measure can be considered a panacea and success would depend on commitment, resources capacity, attitudes and motivation of the stakeholders at various levels.

**Conclusion and Recommendations**

It can be concluded that small scale farming will remain an integral part of food production systems given the transitory historical elements which have contributed to its development in Barbados, Dominica, and Trinidad and Tobago. Given the role of state Extension in these countries, small farming will need specific focus in a multi-faceted approach. In this mechanism, state Extension agents will need to identify other stakeholders to assist with the multiple approaches which are required.

The small farmer is an icon in the Caribbean and is responsible for maintaining and sustaining agriculture within the Caribbean region. It is important to maintain and facilitate the small farmer within the Caribbean region. Understanding the perspective of this producer will help to maintain the region’s food security. The small farmer must also be incorporated as a stakeholder in any Extension system which is expected to assist.

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