

Issues in Caribbean Food Security: Building Capacity in Local Food Production Systems

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1. Introduction

1.1 The concept of food security

In this section I will discuss some key concepts of food security which will frame the discussion of the issue in the Caribbean context. The Food and Agricultural Organization (FAO) defines food security as a condition where "... all people at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 2002). Four broad dimensions of food security are usually identified- availability-the supply of food in an area, access-the physical and economic ability of people to obtain food, utilization- the proper consumption of food and stability- the sustainability of food supplies (World Food Program, 2009). *Availability* speaks to the supply of food and is influenced by factors such as food production, stockpiled food reserves and trade (EC-FAO Food Security Programme, 2008). Aspects of food availability include the agro-climatic essentials of crop and animal production and the socio-cultural and economic milieu in which farmers operate (Schmidhuber and Tubiello, 2007). The second dimension *access* addresses the ability of individuals and households to purchase food. It takes into consideration the availability of financial resources to acquire adequate food both in terms of quantity and quality. Concerns about access take cognizance of the fact that availability of adequate food at the national or international level does not guarantee individual or household food security (EC-FAO Food Security Programme, 2008; Schmidhuber and Tubiello, 2007). The issue of *entitlements* is therefore critical (Sen, 1981). Entitlements may be defined as "the set of those commodity bundles over which a person can establish command given the legal political, economic and social arrangements of the community of which he or she is a member" (Schmidhuber and Tubiello, 2008 p.19703). The dimension of *utilization* is closely related to consumption patterns and behaviour which impact nutritional status and hence health and productivity. It is also related to food safety, preparation, and diversity in diets (EC-FAO Food Security Programme, 2008; Schmidhuber and Tubiello, 2007). The fourth dimension *stability* refers to long term consistency in the other three dimensions. It accounts for the reality of individual or households losing access and becoming food insecure periodically, seasonally, temporarily or permanently (EC-FAO Food Security Programme, 2008; Schmidhuber and Tubiello, 2007). Food security objectives cannot be genuinely met unless these four dimensions are concurrently fulfilled.

Food insecurity may be described as *chronic*, *transitory* or *seasonal* (Schmidhuber and Tubiello, 2007). Chronic food insecurity which occurs when individuals cannot meet minimum food needs is long term and sustained and results from persistent poverty and lack of assets and resources. In contrast transitory food insecurity is short term and temporary occurring suddenly when the ability of people to produce and access food diminishes as a result of factors such as variations in food production and supply, increases in food prices and reduction in income. Seasonal food insecurity is generally predictable given that it results from a regular and cyclical pattern of inadequate availability and access to food which may be caused by seasonal climatic variations, cropping patterns and unavailability of work (Schmidhuber and Tubiello, 2007).

The final term which will be central to this discussion is *vulnerability* defined here to mean conditions which create susceptibility to food insecurity. In other words the concept refers to possible and future threats to food security even though food security may prevail at the present time. This concept underscores the fact that food security is not a static condition but is dynamic and is influenced by risk factors, the ability of people to manage risks, and vulnerability to certain events (Schmidhuber and Tubiello, 2007).

The FAO suggests that the world produces enough food to provide all its 6 billion plus inhabitants with sufficient daily nutrition (FAO, 2008). Despite this nearly a billion people qualify as being hungry and between 2007 and 2008 some 115 million people were added to the global figures of the chronically hungry (Josette Sheeran, Executive Director, World Food Program, 2009). The world's poorest people continue to face an uphill battle in food security (Chen and Ravillion, 2004). In this context the global food crisis and the prevalence of hunger is indeed a paradox: the paradox of hunger in the midst of plenty. Food insecurity is the absence of food security implying that hunger exists as a result of problems with availability, access and utilization or that there is susceptibility to hunger in the future (World Food Program, 2009).

2. The Caribbean and Jamaican context

Food production in Jamaica is mainly the purview of thousands of small-scale farmers who cultivate small holdings on mostly marginal land in the hilly interior, certain river valleys and flood plains and the dry southern coastal plains (Barker and Beckford, 2008). Most of this food is sold, processed, resold and consumed locally, thus providing the foundation of people's nutrition, incomes and livelihoods and contributing to rural and national development (Beckford and Bailey, 2009). This is achieved despite enormous documented challenges facing small-scale food producers (McGregor, Barker and Campbell, 2009; Campbell and Beckford, 2009; Beckford and Bailey, 2009; Beckford, 2009; Barker and Beckford, 2008; Beckford, Barker and Bailey, 2007). The significance of agriculture in Jamaica is historical and goes beyond satisfying household needs. It makes an indispensable contribution to national, community and household food security. Agricultural policy in the 1970s shifted to focus on food self-sufficiency in which domestic food production and eating locally grown foods were prioritized. Agriculture which had historically been the backbone of the economy and the small-scale domestic food sector which had always been the driver of food security became even more important. Domestic food farming in Jamaica is still dominated by traditional farming techniques.



Fig. 1. A farmer transport farm inputs to a farm plot on a mule.

Despite the importance of agriculture and the small-scale food production sector in particular, Jamaica like almost every country in the CARICOM region except perhaps Guyana has seen dramatic reduction in food output and has become a net importer of food. In his welcoming remarks to a forum on agriculture, food production and food security in the Caribbean and Pacific regions in 2005, CARICOM Secretary General Edwin Carrington pointed out that up to the mid-1980s the CARICOM region was a net exporter of food but had since become a net importer of food. Food insecurity in Jamaica and the wider CARICOM (with the exception of Haiti) tends to be under stated. It is often construed simply in terms of availability and complacency exists because again with the exception of Haiti, the dramatic and sensationalized incidents of hunger often seen in parts of Sub-Saharan Africa and Asia are largely unknown in the region. However, it is now acknowledged that the region including Jamaica, faces urgent and significant food security challenges. Jamaica, like the rest of the CARICOM has been experiencing declining agricultural productivity, decreasing earnings from traditional export crops, a high and growing dependence on imported food, increasing levels of poverty and increases in diet-related diseases like diabetes, hypertension and obesity. The World Food Summit (WFS) set a goal of reducing global hunger by 50 percent by 2015. To this end the FAO established a Trust Fund for Food Security and Food Safety to be used to strengthen and sustain projects within the FAO Special Program for Food Security (SPFS). The increasing concerns about food security in the Caribbean prompted the CARIFORUM to ask the FAO to prepare a CARIFORUM Regional Special Programme for Food Security (CRSPFS) under the SPFS. The original deadline of 2007 was later extended to 2010. In 2002 the FAO and the CARICOM

Secretariat collaborated and launched the US\$26 Million Food Security Project. In April, 2003 a \$5million joint food security project was launched under the aegis of the CARICOM, the CARIFORUM, the FAO and the Government of Italy. Then in December, 2003 the Caribbean Food Security, Health and Rural Poverty Program was launched by the CARIFORUM and the FAO aimed at ensuring food security, reducing poverty, and improving nutrition and health in the region (Caribbean Food Emporium, 2003) In July 2009, the University of the West Indies, Mona hosted academics, agriculturalists and leaders in a conference on Food Security and Agricultural Development in the Americas. These events clearly indicate a certain level of urgency no doubt spurred by the recognition that food security is now a national and regional priority which cannot be ignored.

3. Factors affecting food security in the Caribbean

Food security and insecurity in the Caribbean is affected by several major factors. i) declines in productivity of land, labour and management in the agricultural sector resulting in a weakening capacity to supply food competitively; ii) decline in earnings from traditional export crops resulting in a reduced ability to purchase food; iii) the erosion and threatened loss of trade preferences for traditional export crops, the earnings of which are used to buy imported food; iv) the very high dependence on imported food and the uncertainty of food arrival associated with external shocks; v) the increasing incidents of pockets of poverty which affects peoples access to food; vi) concerns over the association of the high use of imported foods and growing incidents of diet-related diseases as people become estranged from local traditional foods and environment and adopt North American foods and lifestyles. These issues are all manifested in Jamaica where domestic food production has plummeted from the halcyon period of the mid-1990s when food production peaked over 650,000 tons. Since then a number of factors have combined to decrease food production. Significant among these were a series of devastating hazards including hurricanes, droughts and floods. It is estimated that agricultural losses just from hurricanes in 2007 was around US\$285 million (McGregor, Barker and Campbell, 2009). Small-scale food producers are also facing daunting competition from cheap foreign imports. With their low resource base, high price of inputs, unsophisticated marketing and distribution, general lack of access to financial resources, and inability to engage in scale economies many have succumbed to this competition mainly from the USA and have been forced out of farming (Beckford and Bailey, 2009). An entrenched structural dualism in Jamaican agriculture has resulted in certain resource allocation biases against the domestic food production sector as the lion's share of resources goes to the traditional export crop sector including, sugar, coffee, citrus, and bananas. This dualism has influenced agricultural policy, creating asymmetrical relationships between small-scale food farmers and centers of economic and political power (Beckford, Barker and Bailey, 2007). These problems are exacerbated by limited size of the domestic market for the range of products offered by local farmers and limited farmland (FAO, 2007).

Assessed in the context of the various dimensions of food security, the situation in the Caribbean becomes clearer. The famine and hunger which characterize much of Sub-Saharan Africa and parts of Asia are typically not associated with the Caribbean – with the notable exception of Haiti. However, in light of declining food production, great reliance on imported food, growing poverty, and the growing incidence of diet-related diseases, food

security in Jamaica may be described as precarious or, to use a technical food security term *vulnerable* (Beckford and Bailey, 2009). In the case of availability it might be argued that the Caribbean region is safe. Food availability is determined by local production, agro processing, food aid, food trade and food reserves or stockpiles. We have already seen that local production has declined significantly over the last two to three decades and CARICOM countries as a whole have moved from net exporters to net importers of food. The region is now very heavily dependent on food imports to meet its food needs (Beckford and Bailey, 2009). In 2006 for example, Jamaica imported some US\$1.64 billion worth of food which was half the country's total import bill (Beckford and Bailey, 2009).

The situation is similar in many other CARICOM states and the developing world where markets have been opened up through trade liberalization (Short, 2000; Spitz, 2002; Walelign, 2002). I would argue that this dependence on food imports constitutes a major threat to Caribbean food security. First of all, purely from a livelihood perspective it does immeasurable damage to local producers and rural development. Faced with unfair competition and the dumping of cheap, heavily subsidized food mainly from the USA, many farm families experience difficulty providing a satisfactory livelihood for themselves (Beckford and Bailey, 2009; CIOEC, 2003; Via Campasina, 1996, 2003; UNDP, 2005). Most of the imported food to the Caribbean comes from the USA where heavily subsidized production enables farmers to sell for less than the cost of production (Windfuhr, 2002, 2003; Windfuhr and Jonsen, 2005). Local farmers are therefore forced into unfavourable, often times insurmountable competitive situations and in Jamaica for example, many have succumbed to this dumping of cheap exports and gone out of business (Beckford and Bailey, 2009).

It might be argued that opening up local markets to international competition is beneficial to consumers through lower prices and that this competition should stimulate more efficient local production thereby providing even greater access to affordable food. The problem with this argument is that unfettered competition from heavily subsidized foreign food producers has coincided with the removal of subsidies from local producers creating an uneven playing field. The over-reliance on imported food raises other obvious dangers as well. For one thing the structure of the world economy means that external shocks often reverberate throughout the system with devastating consequences for the most vulnerable nations and people. Market stability is a major concern here causing uncertainty of supplies and raising prices which could both result in food shortages in the region. Given the dependence of the Caribbean on food from the United States, terrorist attacks on the food system in America could have serious implications for Caribbean food security. The US\$26 Million Food Security Project implemented in 2002 was partly in response to the near food crisis in some Caribbean countries in the aftermath of the September 11 terrorist attacks on the United States. Food safety is an important part of food security which perhaps does not get enough attention in the literature on the subject. In the context of the Caribbean I would suggest that this should be a real concern. Apart from the threat to safe food posed by terrorist attacks, the long distance traveled by food imported from distant places significantly increases the risk of food being contaminated (Halweil, 2005). Beckford and Bailey (2009) pointed out that the longer food travels the more it changes hands thus increasing the risks for contamination. Halweil, (2005) argues that the centralized nature of American food production and processing increases the risks of contaminated food while

the sheer size and uniformity of farm operations creates ideal conditions for the rapid spread of diseases. The dependence on foreign food and especially American food is therefore cause for concern.

In terms of the food security dimension of access, the rising and persistent poverty among pockets of the population in some Caribbean countries has been a concern which has featured in the regional food security strategy. While it is no doubt true that the poverty, hunger and starvation common in some parts of the developing world is largely unknown in the Caribbean, it is also true that many households and individuals in the region experience hunger from time to time with rising use of food stamps and other food aid programs being observed. It could be argued that there is incomplete and perhaps distorted knowledge about the extent of hunger in Caribbean populations.

4. Building capacity and empowering local food producers

The food security challenges of the developing world cannot be solved by food aid or dependence upon food imports. As we have seen, despite the claims that globally there is enough food to feed everyone, world hunger is at its worse with dire prospects. This paper reflects the view that to achieve real food security developing countries must become more food self-sufficient by increasing productivity, diversifying and expanding the range of crops with a focus on maximizing the use of traditional foods, reducing post harvest losses, improving the marketing and distribution of farm produce and increasing women's participation in the food security endeavour. The paper is also framed within the general principles of *food sovereignty* (McMichael, 2009b), or as some prefer, *food democracy* (Lang, 2009a). Food sovereignty speaks to the right of local farmers and peoples to define their own food and agriculture in contrast to having food largely subject to international market forces (Beckford and Bailey, 2009). Windfuhr and Jonsen (2005) described food sovereignty as a platform for rural revitalization at the global level based on equitable distribution of resources, farmers having control over planting stocks and productive small farms supplying consumers with healthy, locally grown food. A food sovereignty approach advocates the right of people to be able to protect and regulate domestic agriculture and trade in order to achieve sustainable development goals: to determine the extent to which they want to be self reliant; and to restrict dumping of products in their markets (Beckford and Bailey, 2009). This incorporates into the discussion the issue of *agency*, with the empowerment of farmers and rural peoples to solve their own problems. Such approaches would specifically draw on local agro-ecological knowledge and wisdom of elders.

According to Dr Kayano Nwanze, President of the United Nations International Fund for Agricultural Development, "Smallholder farmers supply 90 percent of the food for developing countries and feed one-third of the world." This means that for small developing island states like Jamaica and the rest of the CARICOM Region any serious effort at enhancing food security must start with increasing local production and improving self sufficiency. In this regard building the capacity of small-scale food producers to increase agricultural output is fundamental. Of critical importance is the reimagining of the role of women in the production and marketing of food. This is important to national food security but it is critical to community and household food security and nutrition. To be effective and sustainable food security strategy in Jamaica and CARICOM must create the conditions for females to improve their own food security and their families, improve nutrition, and achieve greater economic independence.

The empowerment of local food producers in the Caribbean should focus on activities aimed at strengthening local food production and distribution systems, increasing the capacity of farmers to increase food production through sustainable systems and practices and increasing income and improving livelihoods. As part of the strategy to accomplish this, governments must address the role of women in the production and marketing of farm produce and nutrition. This paper suggests the following thematic priority areas:

1. Contributing to the development of gender responsive technologies and innovations to increase agricultural productivity, improve nutrition and reduce post harvest losses. The focus should be initiatives which will increase women's participation in food production and marketing and improve their food security, nutrition and economic livelihoods.
2. Supporting on-farm research informed by sound social and gender analysis to identify technological adoption benefits and economic and ecological viability of small-scale farming. Farmers should be engaged in on-farm adaptive research through field trials, demonstrations, crop experimentation under normal farm field conditions, field schools and other techniques.
3. Developing underutilized species for the achievement of food, nutrition, and income security. This can be addressed through explorations of local/traditional knowledge about wild edible plants and their food security, nutritional and medicinal uses.

The overall goal should be the development and implementation of an integrated and comprehensive strategy aimed at building the capacity of small-scale food producers in the region to increase productivity and improve livelihoods and income through gender responsive sustainable agricultural technologies and practices. The main objectives should be to:

1. Increase food security and nutrition and enhance the role of women through on-farm adaptive applied research and education of farmers and food distributors aimed at strengthening local food production and marketing systems;
2. Utilize the local/traditional knowledge and epistemologies within a framework of collaborative and participatory research to help small-scale farmers explore solutions to some of their most pressing problems.

There are a number a number of urgent specific areas to be addressed if the capacity of local farmers to produce more, more diverse, and better quality and affordable food.

Enhancing Farming Expertise. This paper takes the position that increasing farmers' knowledge and understanding and ability to apply this knowledge and understanding is a fundamental issue in capacity building and empowerment of local food producers. Research among small-scale farmers in the Caribbean consistently point to a wealth of traditional or local knowledge based on intergenerational knowledge and experience. This has served farmers well over the years and is largely responsible for the success and survival of many small-scale food producers who have been forced to survive without any significant institutional support. The education of farmers being conceived of here is a structured and systematic program of practical information dissemination based on evidence-based identification of the gaps in farmers' knowledge and priorities for action. This dissemination should be done through *agricultural extension services, farmer field schools and on-farm adaptive research* based on participatory and collaborative principles. Based on recent research from

Jamaica, priority areas identified by farmers include post harvest storage of crops, irrigation, pest management and control, marketing and distribution of crops, organic farming, record keeping, grading of fresh produce, soil management and adaptation and coping strategies with regard to meteorological hazards which are ubiquitous to the Caribbean (Campbell and Beckford, 2009; McGregor, Barker and Campbell, 2009; Beckford and Bailey, 2009; Rhiney, 2009).

A major problem within the small-scale food production sector in general is the lack of knowledge about proper post harvest food storage, absence of proper storage facilities for farmers, and knowledge and experience of general advanced post harvest management of farm produce. Farmers do not keep good records and so the volume of post harvest crop loss is hard to quantify but evidence gathered from field research suggest they are significant. Crops most affected include perishable fruits, vegetables, condiments, and peas and beans which are susceptible to weevil. There is little or no capacity to store produce during periods of over-supply and releasing food to market at different times thereby sustaining income over longer periods. The economic viability of domestic food cultivation can be significantly enhanced by reduction in food loss due to damage and decay. This would allow farmers to increase production knowing that they would have a much longer window on marketing their produce while regulating market supply (Beckford, Campbell and Barker, 2011, Farr, 2010). Examples from places with similar experiences suggest that solutions can be simple and inexpensive. In Tamil Nadu, India for example, post harvest losses of potatoes was significant as they were stored in mounds and the ones at in the middle and bottom rotted quickly due to trapped moisture. This was mitigated by inserting plastic pipes with holes drilled in them into the piles which facilitated air exchange and circulation and slowed down the decay process (Bechard, 2010). Also in Tamil Nadu, post harvest losses of chilli peppers have been reduced by 95% using simple solar tunnel dryers (Bechard, 2010).

Education and training in the proper cleaning, sorting and grading of fresh produce - especially for the export market-is also needed. This would allow farmers to market produce differently based on quality. Training in sustainable pest management is also very important. There needs to be more efforts at promoting non-chemical pest control protocols among small-scale food producers. Just as important is the promotion of organic fruit and vegetable production among small-scale producers. This would cut the use of chemical fertilizers and raise farm incomes through higher prices while supplying healthy and nutritious produce to the market and protecting the environment.

Education about natural hazard mitigation is also needed. The region is prone to a host of such hazards with hurricanes getting most of the attention, but droughts, floods, and landslides are all features of Caribbean life. Farmers need to be aware of what they can do before and after extreme events to mitigate losses. For example, how can plants already in the ground be safely removed until after a hurricane? What crops can be harvested early and how should they be stored?

Small-scale domestic food farmers are notorious for their poor record keeping and the absence of a business approach to farming. This makes it difficult to accurately analyze their operations and identify reliable solutions to their problems. Their operations are typically very informal with little application of principles of business. Even for the multitude of

farmers for whom crop cultivation is their only source of income, farming appears to be more of a way of life than a business. Record keeping would ensure accurate applications of inputs and facilitate better planning. Farmers also need education about the marketing and distribution of produce.

5. Rediscovery of local foods

This paper submits that the problem of food security in the Caribbean requires local solutions which should revolve around the discovery and rediscovery of local or traditional foods. Food security in the Caribbean is being undermined by changes in tastes and diet to North American influences as people become estranged from their local foods and consumption habits. This is not unique to the Caribbean. In Lebanon for example, it has been found that food security is compromised as many Lebanese transition from a traditional, diverse Mediterranean diet to Western style diets which are deficient in micro-nutrients and heavy on white flour, corn, sugar and vegetable oils which are not as nutritious as local olive oil (Boothroyd, 2010). This has resulted in a high incidence of high blood pressure and high cholesterol among people 40-60 years old.

In Jamaica, many traditional foods, wild and edible plants have lost their place in local diets. There is a need for reintroducing some of these plants and foods back into the local diets. Research and education is needed about local edible wild plants. These should be documented highlighting their uses, preparation and nutritional and health benefits. A study in Lebanon funded by Canada's International Development Research Center (IDRC) found that villagers who regularly used wild edible plants and kept gardens enjoyed greater food security and better health than those who did not. Researchers studied the nutritional value of over 40 edible plants, how they were used, and identified local nutritious and healthy affordable dishes which were then widely promoted (Boothroyd, 2010).

6. Increasing women's participation in food production

Sustainable food security in the Caribbean requires the effective participation of women in food production. This is significant in the context of the dimensions of availability, access and nutritious foods and the implications for overall household food security. There are many commercial female farmers in the Caribbean but using the Jamaican context as an example, women are mainly involved in the marketing and distribution of food as they make up a disproportional amount of sellers in local produce markets across the country. The strategic participation of women in food production could be an effective strategy for addressing food security at the household level. This can be done through a Kitchen Garden Project or Backyard Garden Project in which women receive training in growing organic foods especially fruits and vegetables mainly for home consumption. The aim would be to increase supplies of safe and nutritious foods for their households. Women should also receive training in food handling and preparation to maximise the nutritional value of their families' meals.

An interesting aspect of the IDRC study discussed earlier which holds lessons for the Caribbean is the development of a communal "Healthy Kitchen" by women in three villages. The project centered on the preparation of traditional dishes using wild plants and other produce. The women obtained training in commercial food preparation and marketing and became nutritional ambassadors selling their produce in local markets,

catering at weddings and other events and operating an eco-lodge which show-cased their Healthy Kitchen cuisine. This is the kind of approach which may be necessary to bring Caribbean populations back to local and traditional foods. It is different from conventional eat local campaigns conducted through the media which have been largely unsuccessful due to the top down approach and lack of grassroots community and household engagement.



Fig. 2. A female farmer prepares land for cultivation

7. Community and household agro-processing

Most of the food which is produced in the Caribbean is sold as fresh produce. An important component of food security and women's participation should be initiatives to promote increases in agro-processing at the household or community levels. Agro-processing would drastically reduce post-harvest losses, preserve food, and add value thus increasing farm incomes. Cottage industries based on locally produced fresh farm produce should be promoted, encouraged and supported. In this regard there should be efforts to establish properly constituted cooperatives but household level industries should also be pursued. Women could also play an instrumental role here as the history of cottage industries in the region suggests that they have always taken a leadership role. Again there will be a need for training and ongoing learning in areas like food processing, business management, marketing and distribution and accounting.

8. Distribution and marketing of fresh produce

This is an area requiring urgent attention. The marketing and distribution of domestic food crops is done through various informal commercial activities. The primary strategy is where

farmers sell their produce to people mainly women who sell in produce markets across the country. Traditionally these women who are called higglers would go around to various farms and purchase different kinds of farm produce which would then be transported in a truck to the market place. Some farmers now take their produce to these markets themselves where they are sold in bulk to higglers or retailed to shoppers. The marketing and distribution of domestic foods have been identified as a major obstacle to production in Jamaica. There is no regulated system in place and small-scale farmers are basically left to their own devices in marketing farm produce locally.



Fig. 3. A farmer prepares produce for sale at a roadside

A major irony of Jamaican and Caribbean agriculture more generally is what might aptly be described as the estranged relationship between the region's world famous tourist industry and its local agriculture. Local tourism is booming while local agriculture stagnates and declines (Thomas-Hope and Jardine-Comrie, 2007; Dodman and Rhiney, 2008). This is not a new phenomenon as indicated by research from the 1970s and 1980s lamenting the limited benefits the small-scale domestic food sector enjoyed from the tourism industry (Momsen, 1972; Belisle, 1983; Belisle, 1984). In more recent work it has been suggested that several changes including more openness towards serving local cuisine in resort facilities and globalization of food consumption habits and the desire of tourist to eat local foods, could serve to strengthen the link between local agriculture and tourism (Momsen, 1998; Torres, 2003; Conway, 2004; Rhiney, 2009). However, recent research into the role of tourism in local

food supply chain suggests that there are still considerable problems for farmers [Rhiney, 2009]. This paper argues that the tourism sector is an area where the potential for creative use of more local foods in the cuisine could be harnessed and successfully promoted (Beckford, Campbell and Barker, 2011). The extent to which locally grown foods and traditional foods are used in the hotel kitchens requires research but indications are that use is limited.

Generally, a more proactive State role in the marketing and distribution of domestic food crops could enhance viability by providing stable markets and fair prices. Farmers in Jamaica have consistently identified the collapse of the government agency the Agricultural Marketing Cooperation (AMC) as a watershed event in their declining fortunes. The AMC was a government run marketing board which bought domestic fresh foods from farmers and ensured a reliable distribution outlet. Farmers should also be encouraged and educated in the establishment of local marketing cooperatives. Examples of successful marketing by small-scale farming cooperatives can be found in Jamaica and used as models (Rhiney, 2009; Timms, 2006). Recent experiments with Farmers Markets in Jamaica are encouraging. Organized by the Ministry of Agriculture these provide a space for farmers to sell fresh produce. They cut out the middle man allowing the farmer to sell retail directly to consumers increasing their profits and providing more affordable food to consumers.

The distribution and marketing of fresh foods is important to food security as lack of markets and profitability is a major hindrance to increasing the participation of people in commercial farming and raising food production.

9. Conclusion

This discussion has demonstrated that food security is considered to be an area requiring urgency in regional development. The region has made some strides in addressing food security concerns but there is still a great deal of work to be done from the standpoint of policy but also at the grassroots level. Erwin Larocque, CARICOM's Secretariat's Assistant Secretary-General for Regional trade and Economic Integration underscored this in highlighting two pressing regional food security issues. First he made reference to the impact of international developments on the Caribbean's ability to be self sufficient in food production and internationally competitive to afford necessary imports. Secondly, he stressed the need to address food security issues in the context of the Millennium Development Goals. He stressed that the region's dependence on imported food made it vulnerable and noted the climb in diet related diseases.

Improving food self-sufficiency and reducing dependence on imported food are thus big priorities for local agriculture and food security. Based on previous research with small-scale farmers in Jamaica this paper identified a number of specific suggestions for addressing food security in the region. These may be summarized as: (i) increasing farmer expertise to in areas such as post harvest storage of crops, irrigation, pest management and control, marketing and distribution of crops, organic farming, record keeping, grading of fresh produce, soil management and adaptation and coping strategies with regard to meteorological hazards. (ii) The discovery or rediscovery of local or traditional foods including wild and edible plants. (iii) Increasing the participation of women in local agriculture through for example, kitchen gardens, local kitchens, and cottage industries. (iv)

Improve the marketing and distribution of fresh foods in general and more specifically improve linkages between local agriculture and tourism. Together these strategies can help to increase food production and hence food self-sufficiency, reduce the need for food imports, improve availability of nutritious foods, increase value added for farmers thereby improving economic viability and rural livelihoods, and improve the sustainability of local small-scale food systems.

Policies and strategies to improve food security in Jamaica and the wider Caribbean should be informed by high quality research. Individual Caribbean governments and CARICOM should therefore draw on the expertise of the local research community and involve the University of the West Indies as a partner. In the past twenty five years or so there has been significant research in the region on the topic of food and agriculture including research about renewable and sustainable agriculture, food security, traditional knowledge and agriculture, hazards and local agriculture among other topics. This existing research provides an ideal starting point for dissecting the issue of regional food security. However, there is need for ongoing research in a number of vital areas including: ongoing analyses of the extent of food insecurity and hunger in the Caribbean; enhancement of the role, place and fortunes of women in agriculture to serve the goals of improved food security and nutrition; ecological and economic sustainability of small-scale farming systems in the region; the role and potential of local knowledge and epistemologies in enhancing food security and nutrition in the region; identifying the main obstacles faced by farmers in increasing the production of affordable, nutritious food; and the marketing and distribution of locally grown fresh foods with a focus on strategies for strengthening linkages between the local agriculture and tourism sectors.

The key to enhancing food security in the region is improving the capacity of local food producers to significantly increase the production and supply of affordable nutritious food produced using environmentally and economically sustainable production systems. To this end, this paper argues that this can be done by adopting elements of a food sovereignty approach (Beckford and Bailey, 2009; Holt-Gemenez, 2006; Schwind, 2005;). Food sovereignty has been described as a basis for the revitalization of rural spaces with equitable distribution of resources and small scale producers having the ability to supply locally grown healthy foods (Windfuhr and Jonsen, 2005). This concept also speaks to the rights of people to determine the source of their foods, to be able to protect and regulate domestic agriculture and trade and to restrict unfair competition from cheap foreign food imports (Via Campesina, 1996; Institute for Agriculture and Trade Policy, 2003). Food sovereignty philosophy does not eschew international trade but rather advocates the formulation of trade regulations which serve the interests of local peoples and farmers. A food sovereignty approach in the Caribbean would prioritize local agriculture by providing farmers with the capacity to produce affordable healthy and safe foods while protecting them from unfair competition which place their livelihoods and regional food security at risk (Schwind, 2005; Kent, 2001). It would enhance food self-sufficiency and reduce the dependence on food imports. Food sovereignty strategy should also increase the participation of farmers and local peoples in agricultural planning and decision-making (Beckford and Bailey, 2009; Stamoulis and Zezza, 2003).

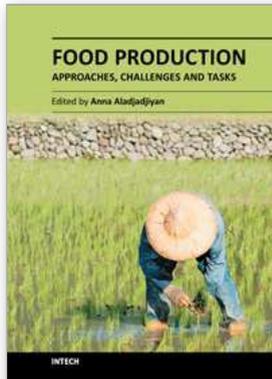
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Food Production - Approaches, Challenges and Tasks

Edited by Prof. Anna Aladjadjyan

ISBN 978-953-307-887-8

Hard cover, 270 pages

Publisher InTech

Published online 20, January, 2012

Published in print edition January, 2012

This book is devoted to food production and the problems associated with the satisfaction of food needs in different parts of the world. The emerging food crisis calls for development of sustainable food production, and the quality and safety of the food produced should be guaranteed. The book contains thirteen chapters and is divided into two sections. The first section is related to social issues rising from food insufficiency in the third world countries, and is titled "Sustainable food production: Case studies". The case studies of semi-arid Africa, Caribbean and Jamaica, Burkina Faso, Nigeria, Pacific Islands, Mexico and Brazil are discussed. The second section, titled "Scientific Methods for Improving Food Quality and Safety", covers the methods for control and avoidance of food contaminants. Substitution of chemical treatment with physical, rapid analytical methods for control of contaminants, problems in animal husbandry related to dairy production and hormones in food producing animals, approaches and tasks in maize and rice production are in the covered by 6 chapters in this section.

How to reference

In order to correctly reference this scholarly work, feel free to copy and paste the following:

Clinton Beckford (2012). Issues in Caribbean Food Security: Building Capacity in Local Food Production Systems, Food Production - Approaches, Challenges and Tasks, Prof. Anna Aladjadjyan (Ed.), ISBN: 978-953-307-887-8, InTech, Available from: <http://www.intechopen.com/books/food-production-approaches-challenges-and-tasks/issues-in-caribbean-food-security-building-capacity-in-local-food-production-systems->

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