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**THE CONTRIBUTION OF SMALL FARMS AND
COMMERCIAL LARGE FARMS TO THE FOOD SECURITY
OF TRINIDAD AND TOBAGO**

A Thesis Presented in Partial Fulfillment of the
Requirements for the Degree of Master of Arts
August 2012

By

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Abstract

The purpose of this study is to investigate and analyze Trinidad and Tobago's recent agricultural policy decisions and their effect on the way small farms and commercial large farms coexist to contribute to the country's food security. Food security is defined as when all persons can access sufficient and nutritious food to maintain a healthy and active life, and have enough income to access that food in a safe, socially acceptable way. This research uses qualitative data from farmers, representatives of agricultural organizations, and consumers/vendors at open air markets in Tobago, and secondary data from local government offices and international organizations. Information also comes from the country's three main daily newspapers. The research suggests that the State has been striving to integrate the commercial farms into domestic, regional and international markets by emphasizing the role of technology and aggressive marketing. The research also suggests that the State is striving to improve the circumstances of small farmers through education, training and technology with regard to farming methods based on best practices; higher output quality standards; inclusion into the commodity value chain process; marketing support; and increased access to credit and financial incentives. The link between increased output at the commercial farms and lower domestic food prices has not been fully explored in this research, but initial reactions from farmers suggest that small farm incomes have been negatively affected.

Keywords

food security and agricultural policy, land distribution, farming technologies, state marketing, access to credit

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Chapter One: Introduction and Background

I. Introduction

In 2000, renowned scholar and environmental activist Vandana Shiva wrote that "most of the world's farmers are small-scale farmers working on less than 2 acres both to meet their diverse food needs and to market some of their products."¹ This statement holds true in Trinidad and Tobago (T&T) where about 87% of agricultural holdings are on plots of land of 5 acres or less.² T&T's small farmers produce a range of food crops and animals products for both their families and for the market. Essential to this research is the role they play in promoting food security because small farms offer employment; nutritious products that are culturally significant; and frequently can boast higher output per acre (Binswanger 1995, Deininger 1999, Rosset 1999, Vollrath 2007) at lower overall costs than larger establishments (Adelman and Berck 1990 and Mitchell 2002).

Beginning in 2008, T&T's small farmers have had to share the country's agricultural space, due to the government's *Agricultural Transformation Plan*³. The Plan outlines a range of strategies to promote food security in T&T and to reduce the high food import bill that has plagued the country for a number of years. A central piece of the Plan was the establishment of a state partnership with the private sector to establish and develop eleven large commercial agricultural farms on state lands. Each commercial farm would occupy at least 100 acres of land. This agricultural model – the Commercial Large Farm Programme [*sic*] – is reminiscent of the colonial-era plantation-style agriculture which has left the two-island country scattered with sugar, cocoa, coffee and fruit plantations, many of which have been abandoned. At the same time, commercial large farms do

¹ Vandana Shiva. 2000. *Stolen Harvest: The Hijacking of the Global Food Supply*. Cambridge, MA: South End Press, pg. 97.

² *Agricultural Census 2004*, Central Statistical Office

³ The Ministry released the *Transformation Plan for the Agriculture Sector: Strategies For Increasing Agricultural Production For Food And Nutrition Security And Competitiveness In Trinidad And Tobago* in December, 2008.

constitute a new model in T&T, and they have the potential to reshape how food is produced, marketed, and consumed.

The policy is still in the early phases of implementation, so little is known about the effects of commercial farming on existing small farming activities. The reshaping of T&T's agricultural sector may also have unknown implications on national food security, which is when all persons have consistent, dignified access – either directly or by means of an adequate income – to affordable, quality foods in adequate quantities for a healthy diet according to local standards. So the research is two-pronged, and hopes to explore the effect of these large farms on small farmers, as well as on food security in T&T.

II. Statement of problem

The purpose of this study is to investigate and analyze how small farms and commercial large farms coexist to contribute to Trinidad and Tobago's food security. Small farmers typically contribute to food security by employing more people and producing a more nutritious product at a lower overall cost, compared to larger commercial agro-processors (Mitchell 2002). The T&T government expects commercial large farms to boost agricultural efficiency and productivity and raise the regional and international competitiveness of the agricultural sector. They also expect the model to lower domestic food prices and the number of food items imported.

The Agriculture Transformation Plan does not only take cues from neoliberalism, the hallmark economic theory embraced and endorsed by influential international organizations like the World Bank and the International Monetary Fund (IMF). Alongside its neoliberal foundation, the Plan also exhibits some elements of import-substitution industrialization (ISI), especially as regards the commercial large farm programme. Whereas neoliberalism encourages privatization of state-owned companies, free trade and decreased government regulation, ISI favors domestic production of

manufactured goods over imports, in order to reduce import dependency. ISI is based on the Singer–Prebisch thesis that warns of the deterioration of terms of trade between primary commodities and manufactured goods (Bruton 1998). Further research will be able to more fully define the ways Trinidad and Tobago is merging different economic ideologies.

An important component of the CLFP is that private companies will operate farms on state lands. The expectation is that domestic production will replace many imports, with much of the local output geared towards domestic markets in an attempt to counterbalance some of the unwanted effects of increased free trade. Many argue that free trade handicaps domestic industries since lower-cost imports reduce domestic output market share and profits. Free trade also creates dependency on the global market thereby increasing vulnerability in times of global crisis.⁴

The implications of commercial farms on small farmers are still unclear, as this issue has not yet been explored in T&T. The research hypothesizes that this commercial large farm model will not increase competitiveness, given the general contraction of preferential trade agreements. The research also hypothesizes that commercial large farms will negatively affect the small farm sector in T&T by dominating the market, by reducing small farm competitiveness through economies of scale, and by reducing small farmer access to land, capital and new technology. The overall impact will be that commercial large farms will obstruct small farmer livelihoods and diminish their contribution to local and national food security. In addition, scholars like Whatmore (2002), Mitchell (2002) and Weis (2007) feel that small farmers around the world are being marginalized and categorized as “an outmoded class in the age of globalization.”⁵ Governments are turning to

⁴ The T&T Minister of Food Production has clearly expressed this concern (see <http://www.guardian.co.tt/news/2011/07/13/government-breathes-new-life-mega-farms>). New and developing industries may struggle to establish themselves in a competitive global environment, while open markets may also cause structural unemployment as workers try to find work in the growth industries. At the same time, free trade demands limit government intervention in the market, which can have damaging effects (Stiglitz 2003).

⁵ Tony Weis. 2007. “Small Farming and Radical Imaginations in the Caribbean Today,” *Race and Class* 49: 114.

intensive, large-scale farming as a strategy to increase food security and to increase the agricultural sector's competitiveness globally.

This research is a case study in Trinidad and Tobago for how different agricultural models may impact food security. This research hopes to contribute to the generalizable body of knowledge about how small farmers and intensive, commercial large farms interact and contribute to a country's food security by using the example of Trinidad and Tobago. The research hopes to contribute to the knowledge base regarding farming practices in the Caribbean region, and the knowledge base of agricultural policy decision-making in small petroleum-exporting countries.

III. Background

A. Defining Food Security

The key concept of this case study is food security. Its definition and measurement has been contested over decades and across organizations, so a specific definition will be identified for this research. The Food and Agriculture Organization (FAO) and the United States Department of Agriculture (USDA) indicate that food security exists when all persons have quality food in adequate quantities according to local norms. Food should also contribute to a healthy diet at a reasonable price, and people should be able to access food consistently, in a dignified way, as is culturally and socially acceptable. Friedmann (1982) adds that adequate income to purchase food is an essential part of any food security discussion, since the current international food order has commodified food, has encouraged mass urbanization, and has thus cut off direct access to the land for many people, who must pay to access food. While this research recognizes the import of this last component, the issue of adequate income levels exceeds the scope herein, and will only be addressed briefly.

Increased food security is important to both the individuals of a country, and a country's standing in the international community. The *Via Campesina* movement advocates that autonomous countries be allowed the right to determine food policy, to pursue domestic staple crop and livestock production, to support farmer livelihoods and to protect consumers.⁶ The movement calls this right *food sovereignty*. The *Via Campesina* movement advocates placing the needs of the country and its people over the ideological demands of influential external players like the IMF, the World Bank and the World Trade Organization (WTO). They see programs like intensive commercial large farms as potentially detrimental to small farmers, and want countries to reclaim their food sovereignty rights and pursue a food security model that benefits their own people first.⁷ *Via Campesina* does not promote isolation from the international economy, nor does their literature suggest that a country can or should attempt to supply all of its food needs domestically, which would be akin to autarky. However, food sovereignty or food autonomy is the freedom to choose a food supply and access system that reduces exposure to external political pressure and irregular markets (Barraclough and Utting 1987).

Pursuing ways to increase food security advances Trinidad and Tobago's long-term development plan, *Vision 2020*, and the first United Nations Millennium Development Goal (MDG),⁸ to eradicate extreme poverty and hunger. The UN expects countries to achieve this goal by reducing the proportion of people living on less than a dollar a day; achieving full and productive, decent employment; and reducing the proportion of persons suffering from hunger. Statistically, households with incomes below the poverty line are most at risk of being food insecure.⁹ In Trinidad and Tobago in 2009, 4.2% of employed persons lived below \$US 1 purchasing power parity

⁶ For more about the food sovereignty movement, see La Via Campesina International Peasant Movement: <http://viacampesina.org/en/>.

⁷ Menezes 2001.

⁸ United Nations Millennium Development Goals: <http://www.undp.org.tt/mdg/>.

⁹ Vasant Bharath. "Developing the action plan for national food security." *Trinidad Guardian*, October 11, 2011.

(PPP) per day, and 21% of the population lived below the national poverty line.¹⁰ The proportion of the population living below the minimum dietary energy consumption levels has hovered around 11% between 1990 and 2006.¹¹

B. A Brief History of Trinidad and Tobago's Agriculture Industry

Clearly, a country's food security hinges on its agricultural policy. So, a basic understanding of the country's agricultural history and how it engages domestic and international food markets is a necessary step. For T&T, agriculture has been shaped by the country's colonial history. Colonial agriculture in the Caribbean region was a "capitalistic, agro-industrial form of economic organization"¹² from inception – cash crops created to supply foreign markets with tropical items (Mintz 1966). Under colonial rule, T&T produced and exported sugar, cocoa, coffee, cotton and citrus fruit for the metropolis – England.

Sugar was, of course, the primary cash crop. In the 1880s, there were more than 300 independent sugar plantations in Trinidad. After independence in 1962, sugar continued to be the most important cash crop. In 1970 the government acquired a 51-percent share of Tate and Lyle, a powerful sugar multinational corporation, and five years later, the enterprise was fully government-owned. The miller-planter enterprise was renamed Caroni (1975) Limited, controlled by the state, and operated on about 77,000 acres of land. It was the largest landholder in T&T, with about 9,200 employees. Up to the early 2000s, sugar production figured at 91,000 tons. In addition to sugar, the company also produced rice, citrus fruits and rum along with some other items. Outside of Caroni 1975 Ltd, Trinidad had an estimated 6,000 independent sugar cane farmers (Chullén 2010).

Due to the gradual reduction in the competitiveness of sugar, the government eventually dismantled Caroni (1975) limited in 2002-2003, effectively ending employment for its more than

¹⁰ UN MDG Info 2009: <http://www.devinfo.info/mdginfo2009/>

¹¹ UN: <http://www.un.org/en/databases/>.

¹² Sidney W. Mintz. 1966. "The Caribbean as a Sociocultural Area," *Cahiers d' Histoire Mondiale*. IX (4): 931.

9000 workers.¹³ At the end of the July 2003 crop, one of Caroni's two factories closed, and the remaining factory - Usine Ste. Madeleine – reduced production to 75,000-80,000 tons of sugar. To offset this drop in national production, small- and medium-sized farmers had to increase production to help Usine Ste. Madeleine supply domestic and export markets. Meanwhile, the State has been dedicated to providing the industry with the best resources available, such as land, crop varieties and machinery (Chullén 2010).

Management of these 77,000 Caroni lands came under the control of a new state agency called the Estate Management and Business Development Company. A voluntary separation of employment package (VSEP) was offered to Caroni farmers. It included the distribution of residential land and 2-acre agricultural plots. As of 2006, three years after Caroni was disbanded, only 6382 of these plots were distributed to farmers in 17 areas in Trinidad. More than 4000 farmers are still waiting to receive lands. The leases for agricultural land involve a \$200 annual fee to the government.¹⁴ Aside from the disbursement of these 2-acre plots and 7500 lots of residential land, several other aspects of the shutdown are still in process, including issues relating to pensions and national insurance, and other outstanding legal matters still in process in the industrial and supreme courts.

C. Agriculture Today in Trinidad and Tobago

Free trade means that T&T depends on the global market to satisfy national food consumption needs, and at the same time continues to export commodities to industrialized nations. Following independence, T&T enjoyed preferential trade status with Europe, and so the plantation model, composed then of sugar, cocoa, fruits and vegetables, continued without the reality of

¹³ Some commentators believe that this estimate of about 9000 is an approximate figure only, as it excludes contractors, ancillary staff, private sugar cane suppliers, etc, thus grossly under-representing the number of persons affected by the 2003 Caroni 1975 Ltd. shutdown.

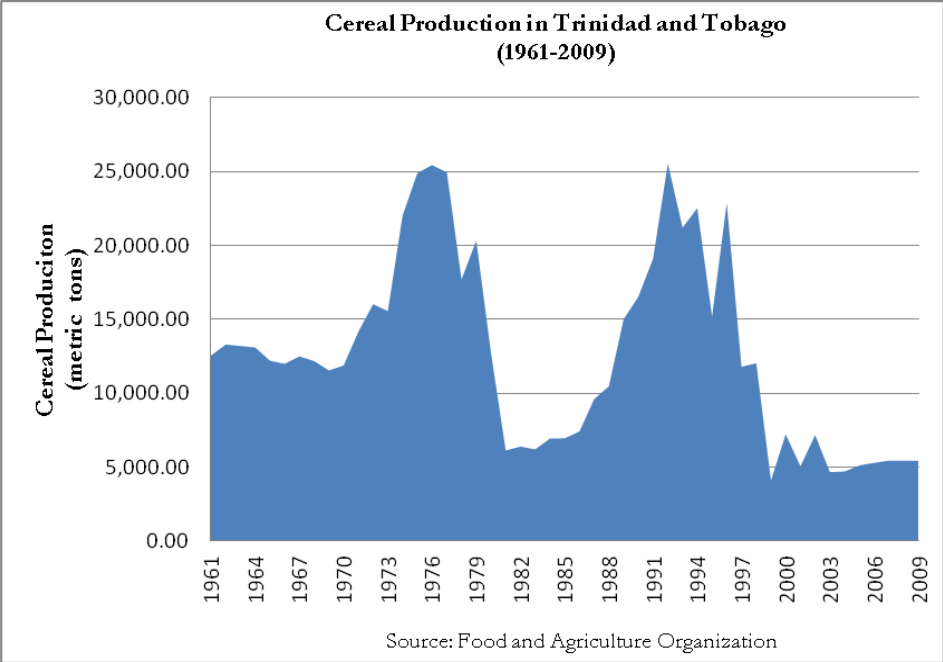
¹⁴ This fee was originally \$1000 annually, but was reduced to \$200 after collective outcry from former sugar workers.

competition on the global market. Today, T&T is engaged in an Economic Partnership Agreement with the European Union, but the terms of the agreement are much less favorable compared with those under the Lomé Conventions or Cotonou Agreements.

T&T is heavily dependent on food imports. For example, all the wheat consumed in T&T is imported from the United States. Wheat is the staple cereal consumed most in the country,¹⁵ but no wheat is produced domestically because of the tropical climate. Cereals previously produced locally are now imported, such as rice and corn (see Table 1.1). Between 2001 and 2009, these have come mainly from the US, Guyana and Brazil (see Table 1.2). Many argue that this model diverts the importance of culturally relevant foods¹⁶, alter traditional diets, and take away small farmers' livelihood (Menezes 2001), which are all important for long-term food security.

Table 1.1

Cereal Production in Trinidad and Tobago (1961-2009)



¹⁵ FAO.

¹⁶ Richard R. Wilk. (1999: 244) uses the example of Belize’s discernible attempt to develop a national cuisine portfolio after independence in 1981 to illustrate the importance of food as a “potent symbol of personal and group identity.”

Table 1.2
Trinidad and Tobago's main cereal imports by cereal type and country of origin, 2001-2009
(US \$1000)

Cereal type	Country of origin	2001	2002	2003	2004	2005	2006	2007	2008	2009
Rice	USA	4094	2148	4779	4473	4699	363	158	1590	300
	Guyana	4840	3258	5063	5595	6368	6798	9996	15232	12153
	Brazil	1909	942	312	210	1175	2357	2574	5309	2626
Wheat and meslin	USA	16241	14492	16370	19080	24279	29575	43091	47496	42423
Maize (corn)	USA	12175	12104	10210	13169	14810	16715	21708	37625	24124

Source: International Trade Centre calculations based on COMTRADE statistics.

T&T's agriculture sector has also struggled because of its highly profitable petroleum industry and the reluctance of the nation to invest in agriculture. It is the leading Caribbean producer of oil and gas and suffers from the "Dutch disease," the phenomenon where a natural resource like oil is so profitable that sectors like agriculture appear less competitive and are neglected. With oil rents, the country has so far been able afford a high and steadily increasing food-import bill that far outstrips exports.¹⁷ However, the continued focus on energy resources is worrying, given the IMF's projection that in less than 20 years, T&T's energy reserves will be exhausted.¹⁸ Therefore, Trinidad and Tobago has a limited window in which to reevaluate and readjust its development strategy.

D. The Transformation Plan in Brief

The Transformation Plan explains the expected role of small farmers and commercial farms and outlines strategies for supporting each sector. For small farms, strategies include establishing farmers' associations and commodity or industry associations, and providing technical and financial support for them; supporting entrepreneurship and ownership of agro-related facilities; providing

¹⁷ Trinidad and Tobago Central Statistical Office: <http://www.cso.gov.tt/Pages/default.aspx>.

¹⁸ International Monetary Fund Trinidad and Tobago Staff Report for the 2008 Article IV Consultation. December 23, 2008.

training, and; promoting lower cost inputs. Small-farmers have identified priority issues that hinder their ability to maximize production, especially land tenure, road access, and water management. Historically, other major obstacles include praedial larceny, labor shortages, and a lack of markets along the value-added chain. For the large farms, the three main approaches are private lease arrangements on state lands; government funded large commercial demonstration farms; and privately funded commercial demonstration farms.

The Plan aims to increase production and lower prices of foods important to local cuisine and diet in the six major food groups (see Table 1.1 below). It also hopes to make these commodities more competitive in both regional and international markets.

Table 1.3
Examples of locally grown agro-items marked for increased production in the Caribbean

Category		Example of locally grown items
1	Staples (cereals, starchy fruits, roots, tubers/ground provisions)	dasheen, yam, eddoes, cassava
2	Vegetables (dark green leafy and yellow vegetables and other vegetables)	lettuce, dasheen leaves, patchoi, spinach, cabbage, cauliflower, tomato, sweet pepper, ochro, hot pepper, melongene, christophene
3	Fruits	paw-paw, watermelon, pineapple, mango, citrus
4	Fats and oils	cream/milk, avocado, coconut oil
5	Legumes and nuts	bodi beans, pigeon peas, string beans, 'seim' (seim ki phalli) beans
6	Food from animals	beef, chicken, mutton, pork, goat, rabbit, eggs

Source: Ministry of Food Production, Land and Marine Affairs and Central Statistical Office

IV. Research Methods

(i) Subjects/Sources

This research involves the collection of purposive qualitative data from farmers, representatives of agricultural organizations, and consumers/vendors at open air markets in Trinidad and Tobago, and secondary data from local government offices and international organizations. The research also

builds on existing knowledge and ideas through a literature review that provides some background on food security and how it may be impacted by different agricultural models.

(ii) Data-gathering

Primary qualitative data was gathered through four structured key-informant interviews conducted face-to-face or via telephone; one structured interview with a large farm administrator via telephone; one interview with a representative of a crop farmers' association; participant observation in open-air markets in Tobago; and surveys of vendors and consumers at an open-air market. Public quantitative data came from online and hardcopy datasets from the Trinidad and Tobago government and from some international non-governmental bodies. Datasets include: labor force statistics, production and productivity statistics, food prices and food price inflation, import and export statistics, poverty statistics and dietary statistics. Another source of information was a faculty member at the St. Augustine (Trinidad) campus of the University of the West Indies (UWI), who recommended reading materials about T&T's land tenure laws.

Data was also retrieved with the assistance of newspaper articles and journalists who operate at the two major national newspapers in the country, the *Trinidad and Tobago Guardian* and the *Trinidad Express*, and occasionally from the *Trinidad and Tobago Newsday*. The newspapers were used as a source of information, as well as opinions. Data from newspapers was corroborated with government documents and other sources where possible. Newspaper articles were used provide snapshots of how the population responded to events that affect the country's food security ambitions, as well as how small farmers are faring under the government's agricultural Plan. Sourcing information from daily newspapers proved invaluable, as this was the best way to get period-based, on-the-ground feedback from a wide range of constituents across the country, and to understand the gamut of interests involved, particularly given the newness of the farms.

(iii) Scope and Limitations

The research explores the major agricultural model prevalent in Trinidad and Tobago during and after colonialism compared to the current model, focusing on small farms and commercial large farms. The research investigates the impact of these two farm types on food security in Trinidad and Tobago with regard to farmer access to land, credit, training and technology; farm employment and income levels; and market access.

The Agriculture Transformation Plan is still quite new – it was established in 2008, and has existed at a time of transition between different government administrations. The most recent round of general elections was held in 2010. What this means is that some data may not be available to the public since the commercial farms are still in the early stages of development. As of mid-2012, only four of the eleven anticipated farms had been launched. It was hoped that the novelty of the farms would encourage an eagerness to share farm data, but this was only the case for two of the four commercial farms. Additionally, this same newness means that the research findings can only be presented as an introductory recording of the short-term, initial effects of these two agricultural models on T&T's food security. When more commercial farms come on stream and continue to interact with the small farm sector, further analysis will be able to supplement and deepen the preliminary findings documented herein, as it is simply too soon to usefully assess the short-term outputs.

Some in the international community consider Trinidad and Tobago to have a “weak capacity”¹⁹ for collecting, monitoring and evaluating data. Efforts are being made to address this, specifically for the agro-sector, through agencies such as the National Agricultural Marketing and Development Corporation (Namdevco), charged with managing registered farmers, and monitoring

¹⁹ United Nations Development Programme, specifically in reference to the limitations Trinidad and Tobago faces in attaining its Millennium Development Goals <http://www.undp.org.tt/poverty/index.html>.

production levels and food prices, and the Estate Management and Business Development Company. Regarding data on food expenditure and consumption, both the FAO and Pan-American Health Organization indicate that data measuring poverty, hunger and inequality in the Caribbean is difficult because household survey data is either unavailable or infrequently collected.

Additionally, as per Whatmore (2002), nationally collected data often focuses on individuals or groups overtly engaged in the international community, so that data may not reflect more rural farmers. In an effort to juxtapose this secondary data, research includes interviews with rural small farmers “on the margin” (Whatmore 2002). These interviews were conducted with small farmers in Tobago only, as farmers located on the smaller of the two islands were more accessible to the researcher compared to small farmers in Trinidad. Therefore, this group should be considered a non-probability sampling of the small farmer population in T&T, and some of their feedback is non-generalizable. To balance the narrative of Tobagonian small farmers, the research includes feedback from the many Trinidadian farmers who often voice their concerns and opinions in the daily newspapers. Additionally, the four existing commercial large farms are located in Trinidad, which means their impact may be felt unevenly amongst small farmers in different parts of the country. The research did not find that the State planned to establish any large farms on the island of Tobago.

Chapter Two: Literature Review

This research investigates how the newly established commercial large farm programme and the small farm sector in Trinidad and Tobago co-exist, and how each model impacts food security in T&T. ‘Food security’ itself is a debated term. Based on the 1996 World Food Summit, the Food and Agriculture Organization (FAO) of the United Nations says food security exists “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life.”²⁰ This definition is broad. It allows different cultures to operationalize individual concepts like “healthy,” “nutritious,” and “sufficient.” Even within a country, regional or ethnic distinctions may exist (Gulliford et al. 2003).²¹

To the FAO definition, the United States Department of Agriculture (USDA) adds that persons must be able to source food in “socially acceptable ways” without having to resort to “emergency food supplies, scavenging, stealing, or other coping strategies.”²² Friedmann (1982) identifies static or declining income levels²³ as the greatest threat to household food security, as it determines the ability to purchase²⁴ sufficient quantities of healthy and nutritious foods on the marketplace.

²⁰ Food and Agriculture Organization (FAO) of the United Nations. <http://www.fao.org/>. Accessed April 16, 2010.

²¹ The study by Martin C Gulliford et al. (2003) evaluated whether there was a link between obesity and food insecurity, but did not specifically test for or anticipate ethnic differences. However, Frongillo (2003) critiqued the applicability of the questionnaire as it was based on an American understanding of food security, and was not modified to suit the local conceptualization of food security. Frongillo stresses the importance of investigating “equivalent meaning” and feels the reported food insecurity differences between Afro-and Indo-Trinidadians is due to the “differential validity of the food security measure across the ethnic groups” (517). Despite Frongillo’s critique, the study still exemplifies the importance of clearly identifying culturally relevant interpretations of the term.

²² Definitions are from the Life Sciences Research Office, S.A. Andersen, ed., “Core Indicators of Nutritional State for Difficult to Sample Populations,” *The Journal of Nutrition* 120:1557S-1600S, 1990.

²³ Christian Romer Lovendal, Kristian Thor Jakobsen and Andrew Jacque (2007) show that overall wages in T&T increased, but that inflation rose higher than the wages of the poorest segments of the population. The poor typically spend a larger portion of their income on food than do other households (FAO, 2003). Food price inflation increased from 11% in 2002 to 21% in 2008 (Bharath, 2011).

²⁴ Bharath (2011) offers statistics that show 17-20% of the T&T population in 2009 (more than 200,000 individuals) lived on less than US\$1 per day, and so were unable to procure food for themselves.

Friedmann's analysis raises the issue of urban food access, where most people rely on the market and not farming for food. This dependency of urban populations, especially the urban poor, on food purchases has made them vulnerable to food price increases. For example, the application of structural adjustment programs in Jamaica in the 1980s led to an increase in food prices. This reduced household purchasing power and reduced food security for children (Handa and King 2003). The study demonstrated that rural children were more food secure than urban children, since rural households could access to food grown in family gardens or farms. Friedmann (1982) also shows that access to home gardens – often occurring in a more rural setting – increases food security. This may explain why the T&T government encourages households to create home gardens.²⁵

The T&T government has identified four categories of policies relating to food security: market interventions which hope to stagnate or lower food prices; increased competitiveness in the agro-sector; food welfare programs for those in the lower-income brackets; and removing obstacles to free trade. Adelman and Berck (1990), in their economic model, show that agricultural development as a national strategy reduces poverty and increases food security of especially rural households. Their findings are similar to Datt and Ravallion (1996) in India, Gallup et al. (1997), Warr (2001) in South East Asia and Hazell (2005). In the T&T case, the Transformation Plan marks a renewed determination to prioritize the development of the agricultural sector. The expectation is that local consumers will benefit from lower food prices.

However, T&T's agri-Plan appears to give prominence to the commercialized large farms despite the expressed intentions to fully support rural small farmers in various ways. This is important because as de Janvry and Saddoulet (1996), Timmer (1997) and Bourguignon and

²⁵ See Vasant Bharath. 2011. "New ad campaign to promote agriculture," *Trinidad Guardian*, October 27. Here, Bharath promoted the availability of step-by-step 'how-to' videos about starting a home garden and about growing local crops.

Morrisson (1998) have pointed out, the initial distribution of assets, especially land, and the inequalities that existed in the first place between farmers – such as access to capital and technology – affect how much agricultural development can actually reduce poverty.²⁶

Using Irma Adelman's economic modeling, Mitchell (2002) explains how transferring land to small- and medium farmers can spur sustained growth in developing economies compared to the unevenness of the export-led growth strategy imposed by the industrialized world. He highlights that equitable land reform, infrastructural investment and higher producer prices would “stimulate rural employment and consumption [,] would result in higher rates of growth and larger exports than export-led policies [would],” and that such changes would also result in “a substantial redistribution of income from rich to poor.”²⁷ Pottier (1999) provides an overview of the generally accepted effects of commercialization on farmers: they are less secure, they are less self-sufficient in terms of food and farm inputs, and they become more reliant on external assistance financially and technologically.

Mitchell (2002) addresses the acute consequences of an underdeveloped local agriculture through his case study of Egypt in the 1970s. He discusses landholdings and the distinction in agricultural production between small family farms and the larger, more capital-intensive farms. He points out that “small farmers produce larger yields per acre than large farmers.”²⁸ That institutions like USAID and the IMF showed a bias towards the large-scale agro-processors in Egypt, overlooks the fact that smaller agro-processors often employ more people, often produce a more nutritious product, and often do so at a lower overall cost.

²⁶ Anne Thomson et al. 2004. *Agriculture, Growth and Poverty Reduction*. Agriculture and Natural Resources Team of the UK Department for International Development and Oxford Policy Management, Oxford. October. Available online at <http://dfid-agriculture-consultation.nri.org/summaries/wp1.pdf>.

²⁷ Timothy Mitchell. 2002. *Rule of Experts: Egypt, Techno-Politics, Modernity*. Berkeley, CA: The University of California Press. 232.

²⁸ Mitchell 2002: 220.

Deolalikar's (1981) research in India modifies Mitchell's (2002) because it shows that this hypothesis that small-farm productivity is higher than that of large-farms does not take into account technology use on the farms. Deolalikar shows that at high levels of technology, large farms are more productive than small farms. This is important in the Trinidad and Tobago context because it means that with economies of scale, large areas of land, easy access to credit and the availability of a range of inputs, the privately operated commercial farms should be able to produce at a lower cost per unit. And based on Deolalikar's research, it also stands to reason that increasing technology use on small farms is important for augmenting their productivity and small farm incomes.

Some research draws attention to the impact diversification can play in agriculture, and the potential for small farmers to experience better growth performance under conditions of diversity in agricultural production. For example, Joshi, Gulati, Birthal and Tewari (2004) found that regions that diversified in favor of non-cereal items performed better than cereal farmers. This was also the case when farmers focused production on high-value commodity items. High-value crops may be better suited to a small farm environment because they often require more intensive labor, rather than mechanization.

Because smaller farms are more amenable to human labor than are larger commercially-oriented farms, high-value crops can also generate employment. High-value crops also perform well in international markets. Taken as a whole, carefully selected categories of high-value crop diversification have the potential to increase farm incomes, generate employment, alleviate poverty of those directly implicated in production, and also conserve soil and water resources. Von Braun 1995, Pingali and Rosegrant 1995, Ramesh Chand 1996 and Ryan and Spencer 2001 provide micro-level studies to support this.

Mitchell (2002) critiques the neoliberal model of development by illustrating how the international development community imposes its purported expertise on the developing world while maintaining an ostensibly objective but spurious detachment from the people and the action on the ground. He calls such objectiveness into questions because large scale agro-processors in developing countries are important to the food supply in the developed world. Atkins and Bowler (2001) support the notion that the neoliberal concept of development on the South ensures continued commodity flows to the North, because “the market has become synonymous with development” (Atkins and Bowler 2001, 247). At the same time, the developing world is heavily dependent on agricultural inputs from the industrialized world.

Cuba exemplifies the pitfalls of heavy dependence on imported inputs. Before 1989, Cuba’s agricultural industry relied on imported inputs from the Soviet Bloc – fuel, fertilizers, pesticides, and so on. Cuba also had privileged access to subsidized markets in Eastern Europe. They received premium prices for agro-outputs, particularly sugar. The collapse of the Soviet Bloc meant the end of these privileges. This circumstance was accompanied by the US-sanctioned embargo, and Cuba’s subsequent reduced ability to earn foreign exchange. As Wright (2009) explains in detail, Cuba reevaluated the industry, and out of necessity, focused on domestic production of substitutes for those previously imported inputs. Beginning in 1991, the “Special Period” of economic depression saw the country transition from large scale commercial production that involved externally sourced inputs, to smaller-scale systems with low-input agriculture.

Weis (2007) and Wright (2009) explain how in the past decade, Cuban small-farmers have been playing a central role in the sector, thereby challenging the dominant narrative of the superiority of the plantation-style model. The Cuban government sold state lands to farmers in the early 1990s, intensified small-farm marketing, and with the help of the local scientific community, focused on

lower-input, agro-ecological practices such as biological pest control, more efficient crop rotations and multi-cropping methods. Weis advocates similar measures in the English-speaking Caribbean, despite his belief that small farmers continue to be marginalized as “an outmoded class in the age of globalization” (Weis 2007, 114).

Cuba’s transformation focused on sustainable, organic production practices, including biological, control-based, integrated pest management (IPM) approaches at all levels, throughout the country. In addition to this shift to organic agriculture,²⁹ Cuba is also considered a pioneer in urban agriculture, which has been important in increasing their food security. The most obvious benefits of urban agriculture are two-fold. Firstly, ‘excess’ labor in the city is readily available to combat labor shortages. Secondly, urban agriculture has helped improve food availability and likely food costs for Cuba’s urban population, because it means reduced transportation costs related to bringing food into the cities from rural areas traditionally associated with agricultural production.

Wilk (1999) discusses how in Belize, the poorer segments of the population felt that compared to items popular and available in the rural diet (such as root crops, game and vegetables), store-bought (often imported) food was considered as superior. Similarly, Mitchell (2002) and Rosing (2009) depict how in Egypt and in the Dominican Republic respectively, food preferences can be shaped by income and the social value assigned to foods. This socioeconomic dichotomy between locally produced and imported food also manifests itself in Trinidad and Tobago: the food-insecure are more likely to consume locally produced ground provisions like yam, cassava, dasheen and eddoes, whereas the more food secure have greater access to foreign foods (Gulliford et al 2003).

²⁹ Note that a recent USDA report has said that “not all of Cuba’s “organic” products would satisfy the organic certification requirements for most developed countries” but that with appropriate investments, “Cuba could well establish itself as a global supplier of organic products.” *Cuba’s Food & Agriculture Situation Report*. 2008. Office of Global Analysis, Foreign Agriculture Service, USDA. March.

The T&T government has embraced the social and national importance of food, which can be seen in the national food security campaign, called *Put T&T on Your Table*.³⁰ This campaign, launched in July 2011, concurrently encourages consumption of more traditional, locally produced food items,³¹ and tries to halt the popularity of foods of foreign origin often associated with higher levels of saturated fats, which lead to increased incidence of non-communicable diseases like heart disease, stroke, hypertension and some kinds of cancer.

The Ministry hopes the *Put T&T on Your Table* campaign can, in effect, transform locally produced foods into “a brand called Trinidad and Tobago foods.”³² The campaign format shows similarities with the Belizean example, as per Wilk (1999), where “government appeals for people to consume local foods are couched in the language of health...Belizean foods are touted as fresh and natural, as opposed to preserved and processed imports” (Wilk 1999, 254). Increased production of local foods could help increase nutrition levels, as individuals would have more access to “healthy, diverse local foods,” (Weis 2007, 113) instead of eating ‘trendy’ foods popular because of foreign influence (Henry 2004). Many of the agro-items at the forefront of the Plan are important to traditional cuisine.³³

Whatmore (2002) explains that new technologies tend to be concentrated on larger, commercialized farms. Rural and small farmers tend to be marginalized and under-represented within the global food network. Whatmore contends that different kinds of agro-food networks are possible, do exist, and must necessarily co-exist. Pottier (1999) confirms that it is necessary that

³⁰ Ministry of Food Production, Land and Marine Affairs, *Launch of National Food Security Campaign*: <http://agriculture.gov.tt/fplma/index.php?q=content/launch-national-food-security-campaign-3711312483711>.

³¹ In October 2011, the Minister of Food Production, Land and Marine Resources indicated that “[w]e need to realize that buying local and eating local is not simply a matter of being patriotic. Rather it is a call to eat healthy and preserve our way of life, our culture.” See: Vasant Bharath. 2011. “New ad campaign to promote agriculture,” *Trinidad Guardian*, October 27.

³² Vasant Bharath. 2011. “Creating a brand called T&T foods,” *Trinidad Guardian*. October 20.

³³ These include dasheen, yam, eddoes, ochro, hot pepper, christophene, paw-paw, mango, citrus, avocado and coconut oil. See Table 1 for additional items.

policy-makers first “situate farming practices and associated knowledges [*sic*] in the context of life itself” (Pottier 1999, 187), before prescribing changes in how farmers work, because such changes have a direct effect on how they subsist.

Weis (2007) calls for a reduction in further market liberalization in order to increase food sovereignty in the Anglophone Caribbean. In the face of declining preferential trade agreements, the plantation-style agricultural model has become less competitive. Developing the small farm sector would mean increased employment and also opportunities for dignified labor – both of which are related to lower incidences of theft and other crimes – and crime, especially drug-related crime, is a significant problem in Trinidad and Tobago.³⁴

The fact that the government has prioritized agricultural expansion and has been taking steps to address small farmer concerns in stride with the commercial large farms augurs well for increased food security. This research will investigate how the new commercial large farms have been co-existed with small farmers, and their effect on the vulnerability of the small farm sector.

³⁴ For example, the T&T government declared a limited State of Emergency in August 2011 because of a spate of murders linked to the earlier police discovery of drugs worth more than \$20 million.

Chapter Three: Food Security in Trinidad and Tobago

I. Defining food security

This research focuses on how two of Trinidad and Tobago's agricultural models coexist within the context of the recently implemented agricultural policies, and is based on defining food security as the circumstance in which all people can access sufficient and nutritious food to maintain a healthy and active life, and have enough income to access that food in a safe, socially acceptable way.³⁵ This definition relies on culturally operational terms: each country and culture has its own understanding of how much food is sufficient and nutritious, what kind of lifestyle is considered healthy and active, and how much income is necessary to achieve these local food standards. Beyond country and culture, there may even be further levels of differentiation among ethnic groups within the same country (Gulliford et al. 2003). Essentially, food security is a three-fold concept involving availability (based on production and imports), access (that is, the local systems in place to connect individuals with food) and nutritive value. Persons who are food-insecure have food intake levels below the minimum caloric energy requirements. An insufficient or unbalanced diet may cause them to suffer from energy and nutrient deficiencies, and they are more susceptible to diseases and infections.

II. Measuring Trinidad and Tobago's food security status

In order to understand the impact of the T&T government's agriculture policy changes on food security, the first step is to understand the country's current food security status. The international community uses indicators that combine nutrition consumption, malnutrition levels and anthropometric measures to gauge a country's food security. To understand how a country

³⁵ This definition combines those of the Food and Agriculture Organization and the United States Department of Agriculture. The issue of adequate income exceeds the scope of this research, and will be addressed only briefly.

ensures a consistent and long-term supply and availability of nutritious food to its population, an exploration of that country's agricultural productivity and the import/export models is also essential. This latter part is the main thrust of the *Via Campesina* movement, which advocates that autonomous countries be allowed the right to determine food policy, to pursue domestic staple crop and livestock production, to support farmer livelihoods and to protect consumers.³⁶

Food security as defined above is inversely proportional to poverty³⁷, and households with incomes below the poverty line are most at risk of becoming food insecure and enduring chronic hunger because they lack the financial resources to access food.³⁸ Therefore, it is worth exploring T&T's poverty statistics. Trinidad and Tobago is currently classified as a high income country³⁹ because of oil rents, but this classification has shifted regularly over the past several decades between middle- and high-income, due to volatile oil prices. T&T does not receive food aid, but the reality is that there are pockets of extreme poverty that exist alongside those who have managed to achieve a high standard of living. In 2009, 4.2% of employed persons lived below US\$1 purchasing power parity (PPP) per day, and 21% of the population lived below the national poverty line. This is barely improved from the 22% living below the poverty line in 1995.⁴⁰ This consistency over a decade and a half does not augur well for T&T's hopes for achieving the first UN MDG of halving poverty and hunger by 2015.

United Nations Children's Fund (UNICEF) data for the country indicate that poor households in rural areas were most vulnerable to poverty and malnutrition. Considering that about

³⁶ See La Via Campesina International Peasant Movement for more details: <http://viacampesina.org/en/>.

³⁷ Note that having a high income does not equate to being food secure. A nutritive, balanced diet is the cornerstone of food security, not simply access to food.

³⁸ Vasant Bharath. 2011. "Developing the action plan for national food security," Trinidad Guardian. October 11. <http://www.guardian.co.tt/news/2011/10/06/developing-action-plan-national-food-security>. Note that the connection between poverty and food insecurity is less clear when comparing urban and rural households, where the latter may more readily have access food from home gardens.

³⁹ World Bank: <http://data.worldbank.org/about/country-classifications>

⁴⁰ UN MDG Info 2009: <http://www.devinfo.info/mdginfo2009/>

23% of the 1.3 million Trinbagonians are rural, under-nutrition touches over 300,000 persons. The other highly vulnerable groups were persons of Indian origin – especially Indian women – and children aged less than five years. Between 1995 and 2002, ten percent of Indian children were undernourished, whereas less than 4% of all T&T's children were undernourished. The anthropometric indicators of under-nutrition for children under 5 years of age suffering from moderate and severe stunting, underweight and wasting was 4%, 7% and 4%, respectively for the period 1995 to 2001. The FAO and World Health Organization (WHO) promote food fortification as one element in the fight against micronutrient deficiencies, and T&T does fortify a few items (see Table 3.1 and Table 3.2). Wheat is essential to the local diet, and it is legally mandated that it be fortified with certain micronutrients.⁴¹ However, rice, animal fats and vegetable oil and sugar, all important to the local diet are not fortified.

Table 3.1

Incidence of Malnutrition in Trinidad and Tobago (1995-2005)		
Year	Measure	%
2000-2005	Undernourished Population	12.0%
1995-2002	Chronic Malnutrition in Children Under Five Years of Age	3.6%
1997	Children <5 Years with Subclinical Vitamin A Deficiency	N/A
2004	Households Consuming Iodized Salt	N/A
1995-2005	Prevalence of Anemia	
	Preschool Aged Children	30.4%
	Women	23.3%
	Pregnant Women	29.7%

Source: UNICEF

⁴¹ According to the Food & Drugs Act, Chapter 30:01, Act 8 of 1960, and amended by 39 of 1968, 156/1972, wheat must be fortified with vitamins B1 (thiamine), B2 (riboflavin), B3 (niacin), Fe sulphate (iron) and calcium.

Table 3.2

Food Fortification in Trinidad and Tobago (1989)		
Food fortified	Nutrients added	Amount (mg/kg)
wheat flour	thiamine	4.1
	riboflavin	2.5
	niacin	30.1
	iron	26.4
	calcium	1,100
pineapple juice (canned)	vitamin C	unknown
grapefruit juice (canned)	vitamin C	unknown
cold drinks (sorrel, orange, passion fruit, grapefruit)	vitamin C	unknown
condensed milk (full-cream, sweetened)	vitamin A	2,133
	vitamin D	29.6
	thiamine	4.9
milk powder (full-cream)	vitamin D	1,212
margarine	vitamins A and D	unknown

Source: William K. Simmon. 1989. *Food fortification in the English-speaking Caribbean*. The United Nations University.

The proportion of the population living below the minimum dietary energy consumption level hovered around 11% between 1990 and 2007.⁴² A breakdown of caloric intake of households according to income shows that the poor and low-income households had the lowest caloric intake across 4 major food groups, namely cereals, oils and fats, meats and milk.⁴³ In 2007, the major components of the daily diet across all income groups were cereals, sugar and sweeteners, vegetable oils, meat and milk (see Figure 3.1). These five components have consistently made up the bulk of T&T's daily diet for at least the past five decades. Throughout the 1960s, cereals accounted for about 50% of the daily diet. However, there has been a gradual decline in the dominance of cereals. Cereal consumption as a percentage of the total diet declined with each successive decade, and between 2000 and 2007, they only made up about 37% of the diet, according to the FAO's latest available

⁴² UN MDG Indicators: <http://mdgs.un.org/unsd/mdg/>

⁴³ Micronutrient Initiative, 2007. "Latin America and Caribbean Region Food Industry Assessment."

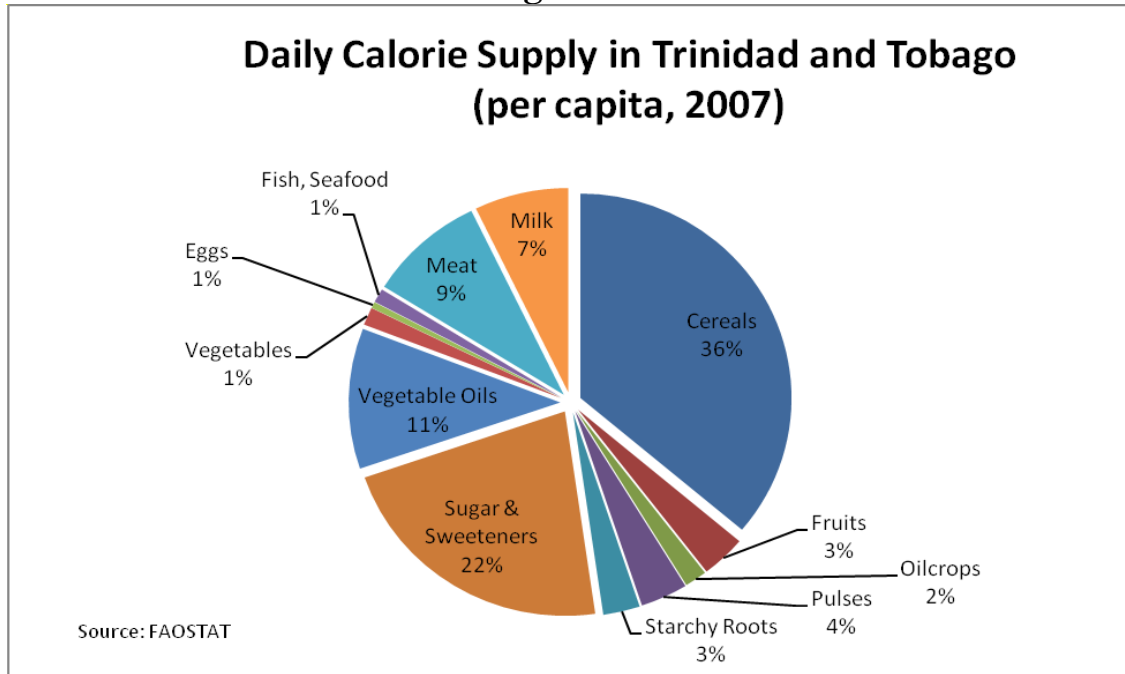
data. That organization's data suggests that the trend in cereal consumption tends to average about 33% of the daily diet as countries move closer to developed-country status.

With regard to fruits and vegetables, T&T's daily consumption in 2007 only accounted for 3% and 1% of the daily diet respectively, which corresponds to less than 200 grams and under 100 grams daily. These amounts are far below the WHO recommended minimum daily intake of 400g of fruit and vegetables combined, excluding potatoes and other starchy tubers. The 400g minimum can help reduce the prevalence of chronic diseases like heart disease, cancer, diabetes and obesity. It can also help prevent and alleviate a range of micronutrient deficiencies, particularly in less developed countries.⁴⁴ Fruits and vegetables are particularly important in the T&T context, because of the high incidence of these chronic, non-communicable diseases. Heart disease is the leading cause of death in the country, followed closely by diabetes mellitus, which itself contributes to heart disease. Hypertension and obesity are both on the rise, and these also contribute to the aforementioned chronic diseases.⁴⁵

⁴⁴ WHO 2003. "Diet, Nutrition and Preventing Chronic Diseases: Report of a Joint WHO/FAO Expert Consultation," *WHO Technical Report Series*, 916.

⁴⁵ A high incidence of obesity may want to imply greater food intake and thus greater food security. However, Gulliford et al. (2003) show that obesity in T&T reflects that persons are consuming greater amounts of easily available, cheap, high-energy, low-nutrient foods to compensate for their limited access to pricier but more nutritive fruits and vegetables.

Figure 3.1



Despite these statistics showing low fruit and vegetable consumption, these items actually make up a large portion of domestic crop production in Trinidad (Lovendal et al 2007). As noted, agriculture has historically been important for the country. Under colonial rule, T&T produced and exported sugar, cocoa, coffee and cotton and citrus fruit. Sugar continued to be the most significant product long after the British left, and understanding its evolution is important for any exploration of the country's agricultural future. For several decades after independence, sugar continued to be the most important cash crop despite the overwhelming structural problems that industry faced. But aside from sugar, many other items are produced locally and are geared towards the domestic market. These include green vegetables (such as tomato, cucumber, ochro (okra), lettuce, patchoi (pak choi) and hot pepper), root crops (like cassava, dasheen, yam and sweet potato) and pulses (like corn and pigeon peas), as well as the meat of poultry and small ruminants (such as goat, sheep and rabbit). Small farmers are heavily implicated in producing items for the domestic market.

Trinidad and Tobago achieved independence in 1962, and has since been part of the Africa, Caribbean and Pacific (ACP) group of developing states. In large part, the ACP group of states is made up of former British, Dutch, Belgian and French colonies that received trade and/or aid assistance from their former colonizers. Many agricultural and mineral exports could enter the European Community with little or no duty fees. T&T received preferential access for items like sugar, based on a quota system. Many of T&T's economic policies were influenced by the trade agreements the ACP developed with the European Community through the four Lomé Conventions (1975 through 1999) and the Cotonou Agreement signed in 2000 and adopted in 2003.

Those advantageous ACP-EU terms of trade have waned gradually because they were considered incompatible with the guidelines set forth by the World Trade Organization established in 1995 of which T&T is a member. Therefore, T&T has been slowly adjusting its trade policy to comply with WTO rules by reducing barriers to trade. As of 2008, T&T trade with the European Union has developed under the Economic Partnership Agreement (EPA). More specifically, T&T is part of the Caribbean Forum (CARIFORUM), a subgroup of the ACP group of states trade bloc that does business with the EU. The EPA guarantees: Duty-Free Quota-Free (DFQF) access for exports to the EU – excluding rice until 2010 and excluding sugar until 2015; a gradual liberalization of import duties over 10-25 years to minimize the revenue effect⁴⁶ and allow infant sectors to build their competitiveness; and exclusion from tariff reduction for sensitive sectors such as locally-produced agricultural products. The principal agricultural products geared toward the export market are sugar, cocoa beans and coffee beans, which is quite typical of the Caribbean region.

The result is that food imports are essential, the most important of which are cereals, cereal preparations, dairy products, fruits, vegetables, oilseeds and miscellaneous food preparations,

⁴⁶ The revenue effect refers simply to the income a government receives from the duty imposed on imported goods. When duty is lowered or removed, locally-produced goods may become less competitive to consumers.

according to FAO data. T&T has been a steady market for grain, mainly from the United States, Guyana and Brazil. These increased cereal imports coincide with the country's own declining grain production. In 2009, all US wheat that T&T imported was worth just under US\$42 million.⁴⁷ For the past two decades, wheat imports from the US have fluctuated, but since 1986, the price per metric ton of that wheat has quintupled.

In fact, many argue that the relationship between Trinidad and Tobago and the United States reflects modern-day dependency theory, where the United States is a core, wealthy, developed country, whose interactions with the twin-island state serves to keep the small country on the periphery of the world system. For example, aside from wheat, a long list of other foods items are imported from the United States, in large quantities, the most costly of which are animal feed, corn, eggs and chicken meat (see Table 3.3). In 2009 alone, T&T spent more than USD \$10 million on each of these top 5 commodities imported from the US. The United States is in turn a ready market for T&T's oil and natural gas, which is the T&T's main source of foreign currency.

Table 3.3

Value of Top 8 Food Items Imported by Trinidad and Tobago from the US (2009)	
Item	Value (US \$1000)
Wheat	42395
Compound Feed	27120
Food Preparations*	24553
Maize	24108
Hen eggs (in shell)	10740
Cake of Soybeans	10698
Chicken meat	10430
Soybean oil	9685
*homogenized composite food preparations like soups, seasonings and condiments	

Source: FAO

⁴⁷ FAO

At the same time, T&T's food processing industry is considered one of the most advanced manufacturing sub-sectors in the Caribbean region⁴⁸. While the country imports large quantities of wheat from the US, it also processes wheat, exporting it as wheat flour to many of its regional Caribbean Community (CARICOM) partners. The largest quantities go to Antigua and Barbuda, Barbados, Dominica, Guyana, Jamaica and Suriname. In 2009, T&T exported wheat flour valued at just over US \$4 million to these and other CARICOM partners.⁴⁹ Other cereal imports like rice and corn have replaced local production, which in the last decade have come mainly from the US, Guyana and Brazil.

Because of petroleum reserves, the country relies heavily on the contribution of oil exports to the GDP. The profitability of oil far outstrips that of agriculture, making the country susceptible to the "Dutch Disease", where important industries like agriculture suffer from a lack of long-term investment. For example, in 2009, the petroleum industry contributed 42.5% to the US \$28.6 billion total GDP value, whereas the agriculture sector contributed a mere 0.4%.⁵⁰ Measured in 2000 prices, agriculture's contribution to the GDP has been waning since 1995. Over the past 10 years, output value for export-oriented agriculture and the sugar industry has also declined (Lovendal, Romer, Jakobsen and Jacque 2007.) But given the IMF's 2007 report affirming that the country's oil reserves will be depleted within 20 years, T&T cannot afford to ignore its agricultural history.⁵¹

The 2009 employment statistics for these industries further illustrate the need to focus more intensely on agriculture: the petroleum sector employed only 3.3% of the population in 2009, whereas the agriculture sector employed 3.8% of the population. Because the overall labor force has

⁴⁸ Micronutrient Initiative. 2007. "Latin America and Caribbean Region Food Industry Assessment," *Solutions for Hidden Hunger*.

⁴⁹ FAO

⁵⁰ CIA World Factbook (www.cia.gov).

⁵¹ International Monetary Fund Trinidad and Tobago Staff Report for the 2008 Article IV Consultation. December 23, 2008.

about doubled since 1965, agriculture's relative share of the labor force may seem quite small. But in absolute terms, T&T's agriculture labor force has declined only slightly over the past 50 years or so, from 60,000 persons in 1965 to 47,000 people in 2005. These figures represent 20% and 8% respectively of the total labor force (Lovendal et al 2007). What this means is that agriculture is an important source of employment for many people, despite the oil sector's dominance.

III. Strategies to increase food security

All these factors mean that Trinidad and Tobago's reality is a considerable food import bill of about US \$4 billion per year. T&T has been relying on a combination of imports and medium- and small-scale farming to meet its food consumption needs. But the underdeveloped agriculture industry means an overwhelming – and expensive – reliance on exports. The 2008 *Agricultural Transformation Plan* is an agricultural model that combines the development of the small farm sector that focus on production for the domestic market, as well as the establishment of commercial large farms geared toward the export market, but that also supports domestic consumption.

The plan hopes to balance WTO trade liberalization requirements such as tariff reductions, while also protecting the domestic agriculture industry by increasing local production. The CLFP can be understood as an attempt to deepen and further integrate the relationship between the private sector and the State. The government has partnered with the private sector to establish these large commercial agricultural farms on state lands. The State also has an important role in the marketing decisions made at each farm, though the full extent of this role is unclear, and may largely depend on the terms of the contract between the State and each private actor. In subsequent chapters, the research will explore will review the government policies concerning the new Commercial Large Farms and will try to explain the intended effect on food security. A separate chapter will explore the same for the small farm sector.

A third important aspect of the Plan is the government's attempts to increase the desirability of locally grown foods as a way to wean Trinbagonians off the idea that foreign, imported foods are of a better quality than food produced locally, or that foreign products are a status symbol regardless of quality and health benefits. This preference for foreign foods has been blamed on the social, cultural and economic legacy of the plantation economy – which Sudama calls “the persistence of foreign-dictated taste patterns” (Sudama 1979: 73). At the same time, this promotion of local foods downplays and discounts the fact that some foods of foreign origin may over time develop local cultural significance.

The strategy – called *Put T&T on your Table* – focuses on the superiority of locally grown foods, but is not unique to Trinidad and Tobago. For example, Wilk (1999) provides an extensive discussion of how the Belizean government developed a concerted campaign to promote locally grown foods as healthier than imported items. This was articulated using nationalistic language, promoting locally produced food items as a representation of resilience of the Belizean people. Like the circumstance in Belize, there is a higher probability that the food-insecure in T&T will consume locally produced ground provisions like yam, cassava, dasheen and eddoes, whereas the more food secure have greater access to foreign foods (Gulliford et al 2003). What the *Put T&T on your Table* marketing strategy does not explore is the fact that culturally relevant food may not only refer to locally produced foods. Foods that have entered the diet through foreign influence can become culturally relevant. However, this fact has been deemphasized, as it interferes with the government's economic motivations for promoting local foods.

Truth be told, the “buy local” strategy is not new to T&T. In the late 1950s, the country's first native, post-independence Prime Minister, the Honorable Dr. Eric Williams, promoted a similar campaign, which could be understood as a nationalistic response to the oppression of colonization.

A matching campaign was launched in the 1960s, encouraging consumption of local foods.⁵² In the mid-1970s local foods like ground provisions (like yam, dasheen, and cassava), bake-and-salt fish, breadfruit and *roti* all formerly denounced by the middle class as inferior, were quickly becoming acceptable foods for that income group. Vendors at the time also experienced price hikes which were passed on to consumers, which may account for the change increased consumption of these items by the middle income group, since those earning lower incomes could no longer afford these products.⁵³

The government's home gardening initiative plays a role here too, in two important ways. First, it strengthens the prominence and acceptability of locally produced food items, because of the effort required to produce crops. The initiative also establishes alternate routes to accessing and affording food items that do not rely so much on one's income level. The language coming out of the MFPLMA includes the following: "knowing exactly what one is eating; free from pesticides; satisfaction that the produce was the product of one's own hands and from one's own yard; and the savings one can accumulate."⁵⁴ Perhaps because of high food prices because of the country's heavy food import bill, the home garden initiative has seen at least some promising success across communities.

However, when it comes to T&T's "buy local" campaign, the first obstacle is that some imported foods are not produced domestically for climatic reasons, as is the case with wheat. So a major challenge is encouraging people to accept a local substitute for the foreign item that may have to be processed and handled differently. This is the case in countries like Trinidad and Tobago,

⁵² Dixie-Ann Dickson. 2011. "Glut, lower prices worry farmers," in *Trinidad Guardian*. December 8. <http://www.guardian.co.tt/business-guardian/2011/12/08/glut-lower-prices-worry-farmers>

⁵³ Victoria Pasley. 1997. "Black Power, Gender Ideology, Cultural Change and the Beginnings of a Feminist Discourse in Urban Trinidad in the 1970s," *Working Paper Series*. Centre for Gender and Development Studies, University of the West Indies, St. Augustine, Trinidad.

⁵⁴ MFPLMA, *National Food Production Action Plan 2012-2015*.

Jamaica and other parts of the Caribbean region, where advocates are trying to reduce dependence on foreign cereals, by advocating production and consumption of breadfruit, a high-yielding fruit, of Oceanic origin.⁵⁵ Breadfruit has certain challenges for the Caribbean such as limited availability of varieties in the region, and the fact that it is a seasonal tree crop. Because of limited research, the issue of its short shelf-life has not yet been resolved. But despite the fruit's ubiquity and the fact that a tree can bear anywhere from 25-200 fruits annually depending on the region where it grows, not to mention its numerous alimentary and culinary applications, it has not yet been explored as a serious challenge to the ever-popular imported wheat.

The Food Production Ministry's *Put T&T On Your Table* campaign has been marketing locally grown items to the private sector too, to directly replace the exact food import (such as rice or corn), or substitute it with a similar item (such as sweet potato or cassava instead of wheat and Irish potatoes). In the instance of sweet potatoes, this crop is being channeled into fast food chains to replace imported Irish and other types of potatoes. The government has procured contracts with companies like Kentucky Fried Chicken and so, can guarantee a market for small farmers' and mega-farms' output.

Another avenue being explored is with the hospitality industry including tourism, hotel and restaurant operations, which continue to be important to the economy. The hospitality industry may be a way to reposition local foods as desirable and dominant, since at present, foreign-themed restaurants with non-local menus may be contributing to changing local consumption patterns. Engaging with agro-tourism could help promote national cuisine.

The other prospect to boost the "buy local" initiative is to inject local foods into the National School Feeding Programme [*sic*] by mandating that a standard percentage of the foods used

⁵⁵ The Trees That Feed Foundation is one organization that also promotes a return to local sources of cereals <http://treesthatfeed.org/index.htm>

be locally sourced. In addition, Former Namdevco chairman, Robert Ramsamooj, has emphasized this idea even from the point of production, touting the benefits of local, greenhouse-grown foods as healthier and “more natural” for the consumer because of reduced use of pesticides and other chemicals to boost production. Namdevco has also given priority market access to farmers who use greenhouses.⁵⁶

IV. Summary

The idea of “buying local” and the call for each person to take pride in developing the local agriculture industry is the language that drives the government’s recent endeavors. Presumably, this would help engender political support from different segments of the population, regardless of each person’s interaction with this industry. And of course, there are very real economic reasons why the country needs to reaffirm its commitment to this industry, not the least of which is the fact that the petroleum industry that funds food imports will dwindle in less than 20 years. The next chapters will address important particulars of the Transformation Plan, namely small farmers and commercial large farms.

⁵⁶ Geisha Kowlessar. 2011. "Namdevco to set up greenhouse farms," in Trinidad Guardian. January 10. <http://www.guardian.co.tt/news/2011/01/10/namdevco-set-greenhouse-farms>

Chapter Four: Small Farmers

I. Origins, role and relationship with the government

“The Government fully recognises that over the years the small farmer and family farms have been the backbone of the agricultural sector and is therefore fully committed and wedded to the development and growth of the sub-sector, alongside the large farms.”⁵⁷

Historically, small farms developed alongside but in opposition to the plantation model. The mandate behind the plantation model was England’s market demand both during colonialism and for much time afterwards. Small farms were important for meeting the immediate household needs of the family. Any surplus was traded in the local marketplace. Because plantations were custom-designed for export to foreign markets, they traditionally were located in the most accessible and most arable lands, while small farmers were historically located in less fertile, less convenient areas, such as hillside land (Mintz 1966). Thus, plantation output per acre, for a given combination of complementary inputs, would typically exceed that of the small farmer (Beckford 1968).

Despite their importance to food security, small farmers have traditionally not received the same type of infrastructural and financial support from the government – such as transportation, communication and irrigation – as have the more large-scale, industrial farms. Lovendal, Jakobsen and Jacque (2007) affirm that this trend continues to dominate the T&T agricultural industry. Additionally, the *Transformation Plan* expressed plans to focus on the development of farmers’ associations based on industry type. However, this aspect of the *Plan* has been slow to fruition. What this suggests is that small farmers may continue to have limited political leverage and may be

⁵⁷ *Strategies for Increasing Agricultural Production for food and Nutrition Security in Trinidad & Tobago*. 2008. Ministry of Food Production, Land and Marine Affairs.

unable to effect changes beneficial to their needs. Participating in farmers' associations would help farmers maintain their livelihoods which is a cornerstone of the Via Campesina ideology.

Notwithstanding some apparent oversight towards small farmers, T&T agriculture policy in the latter half of the 2000s appears to mark a renewed focus on the small farm sector, or at least recognition of the need to reevaluate their position in the industry. The convergence of a number of factors may explain the impetus for this renewed engagement with small farmers. The most obvious is the volatile price of oil, exacerbated by the IMF's prediction that T&T's fossil fuels will be depleted by about 2030. This connection between oil and agriculture is not new. In T&T, the two are inversely related. Increased oil revenues have typically meant reduced focus on agriculture, with food items previously produced locally being instead imported. The 1970s oil crisis is one of the more pronounced examples of this tendency.

A second reason for an agro-policy more closely aligned with small-farmer development is the rapid decline in plantation model competitiveness, especially over the past two decades. The country's trade agreements have gradually become less attractive because of the World Trade Organization guidelines. Access to European markets shrank with each new Lomé Convention and the Cotonou Agreement. A third element is the decline and eventual dissolution of T&T's inefficient state-run sugar industry, which endured low productivity and labor shortages because of rural-to-urban migration. At the same time, about 10% of the country's labor force is involved either directly (crop and livestock farming, fishing or forestry) or indirectly in the agriculture industry. These factors have contributed to the reassessment of agriculture policy.

II. The small-farm experience

First of all, it should be reiterated that increased productivity and increased levels of production by themselves do not equate food security, although these are essential components of

the idea. However, particularly in terms of food supply and rural employment, this research specifically wants to investigate how the small farm sector in T&T has been affected by the large commercial farms, so an exploration of their agricultural activities is necessary.

The development of small farmers as part of the national plan is a key strategy in poverty reduction. The relationship between increased agricultural productivity, a reduction in poverty, and an increase in household food security has been consistently proven across contexts (see Adelman and Berck 1990, Datt and Ravallion 1996, Gallup et al. 1997, Warr 2001 and Hazell 2005). However, the degree to which these policies can help increase productivity among small farmers depends on how resources are distributed across the farming sector – regardless of the size of the farms. It also depends on the impact of commercial farms on small farmers and if the two systems production can work together. These are the underlying concerns that warrant further investigation.

The potential for T&T's small farmers to boost food security has been hindered by slow action of successive governments to support them. For example, land distribution under the 2003 Caroni (1975) Ltd. VSEP is still only partially complete today. Less than half the land promised being actually disbursed (Clyne 2012). So their capacity to engage fully in food production is stymied by the same government that proposes to support them.

Actions by the current (People's Party) administration suggest that the different governmental ministries do not act as a cohesive whole. There appears to be a lack of communication between the Ministries who use limited land resources for their individual mandates. A prime example of this is when in April 2011 the Housing and Development Corporation (HDC) bulldozed about 25 acres of cultivated land in order to make space for residences, at the request of

the Ministry of Housing.⁵⁸ Another example of the lack of inter-Ministerial communication was when in 2011 the National Gas Company bulldozed about 30 acres of cultivated agricultural plots given to former sugar workers as part of VSEP.⁵⁹ Without a well-integrated government effort to support farmers, situations like these continue to occur.

Some commentators feel that both the previous People's National Movement (PNM) and the current People's Party (PP) administrations have both displayed an unwillingness or inability to adequately develop and execute a functioning agriculture strategy, and that they have only a myopic understanding of how to address the conflicting needs of the country.⁶⁰ Even Namdevco's executive chairman, Noel Garcia, felt the need to emphasize this, when he underlined that "all the agencies under the Ministry of Agriculture are part of a strategic plan, where the question of agriculture is approached in a more coordinated manner" (Singh 2011). While theoretically, agencies within the Ministry understand the exigency of the food security mandate, these scandals involving the Ministries of Housing and Energy exemplify that food security is an isolated, Ministry-specific objective. So, the institutional environment is one where there is often little definitive and consistent support for small farmers.

⁵⁸ Carolyn Kissoon. 2011. "Farmers to get \$\$," *Trinidad Express*. Jun 26.

http://www.trinidadexpress.com/news/Farmers__to_get___-124577139.html Note that this incident, not uncommon on the island, involved squatters – persons illegally living on and cultivating state lands. However, in the majority of similar cases, the arable state lands had been in disuse often for decades at a time, reflecting the misapplication of a limited resource. In the words of Prime Minister Persad-Bissessar, "On the one hand, there is an urgent need for agriculture and food production while on the other hand there is a huge demand by people for their basic right to housing." (Swamber, 2011) Additionally, the large expanse of crops destroyed means an unexpected reduction in food supply, which directly influences food prices on mostly the local market. Squatter farmers also suddenly find themselves with no way to support their families financially.

⁵⁹ Ariti Jankie. 2011. "Bulldozers level crops for NGC pipeline: Union knocks Govt as ex-Caroni workers lose land," *Trinidad Express*. Feb 5. http://www.trinidadexpress.com/news/Bulldozers_level_crops_for_NGC_pipeline-115386634.html. Note that this occurrence did not involve squatters. The bulldozed land was designated for former Caroni (1975) Ltd. employees as part of their voluntary separation of employment package.

⁶⁰ For example, see Michael Harris. 2011. "PNM wine in Partnership bottles," *Trinidad Express*. May 1. http://www.trinidadexpress.com/commentaries/PNM_wine_in_Partnership_bottles-121066403.html

III. Small farm statistics

A small farmer is categorized as a person involved in crop or animal production on two acres or less of state or private land, using mainly family labor, with output dedicated primarily for family use, and the surplus being sold on mainly local markets. By law, any person who trades or deals in at least 55 lbs of agricultural produce must register their business with the government. This allows them access to incentives and services the government provides, and also allows them to be included in statistical data analysis. The average farmer in Trinidad and Tobago is over 45 years, many of whom are over 60 years old (see Table 4.1). In 2004, the total number of all holders was 19,143⁶¹. This represents a 37.4% decline from 30,566 in 1982, the year the previous census was conducted. Of the 19,143 total holders, 19,055 or 99.5% were categorized as Individual/Household/Sole Proprietor (18505 holders) and Joint Partnerships (550 holders). The remaining 88 holders or 0.5% were classified as private companies or government institutions.

Table 4.1

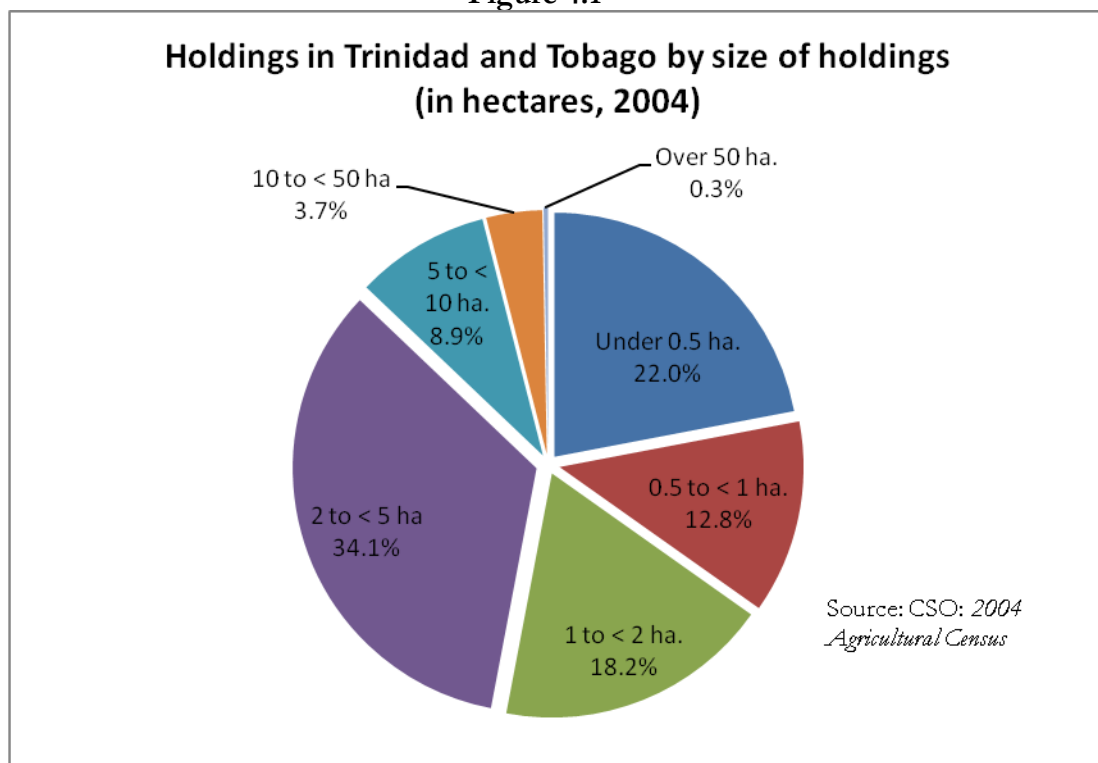
Private Holders of Agricultural Land in Trinidad and Tobago by Age	
Age Group	# of holders
Under 25 years	437
25-34 years	1974
35-44 years	4621
45-54 years	5157
55-64 years	3872
65 and over	2958
Not stated	36
Total private holders	19055

Source: Trinidad and Tobago Central Statistical Office, *2004 Agricultural Census: Preliminary Report*

⁶¹ In the 2004 Agricultural Census, 94.9% of the holders were in Trinidad, and 5.1% of holders were counted in Tobago.

In terms of farm size, 96% of all holdings were less than 10 hectares, or about 24.7 acres. The two largest categories of farms are 2 to <5 hectares (34.1%) and under 0.5 hectares (22%) (see Figure 4.1 below and Maps 4.1 and 4.2 in Appendix). By their proportion alone, these figures suggest the important place farmers with small holdings play in the country's agricultural present and future, but their resource endowment remains poor in comparison to the larger farms. These just over 19,000 small farmers operate on about 110,000 acres of land. As announced in December 2008, the government planned to provide about 15,000 acres to about 7,248 former Caroni VSEP farmers, in the form of a 2-acre plot each.⁶² These figures are in addition to the 6,382 acres that had already been disbursed in 2006 to just over 3000 former sugar workers, and also do not include the new farmers being trained and incentivized into the field.

Figure 4.1



⁶² *Transformation Plan for the Agriculture Sector: Strategies For Increasing Agricultural Production For Food And Nutrition Security And Competitiveness In Trinidad And Tobago*. December 2008.

IV. Land ownership and tenure

Fertile agricultural land is a valuable asset because in the first place, the country's two islands are small: Trinidad is 1,841 square miles (about 476,800 hectares or about 1,178,200 acres), while Tobago is 116 square miles (about 30,000 hectares, or 74,200 acres).⁶³ Only about 10.5% (just over 50,000 hectares) of the country's overall land area is considered agricultural land, that is, arable, under permanent crops, or under permanent pastures.

Since independence in 1962, the government has distributed state lands for agricultural and residential purposes at subsidized rates, with large agricultural land transfer occurring about every decade in the last fifty years. Some of these distributions faced organizational challenges: inadequate infrastructure and extension support for farmers, and poorly selected farmers for a given project (Pollard 1981), coupled with unsuitable soils in a particular location have meant many distribution projects failed to achieve production and sustainability expectations (Mohammed 2003). Loans are often tied to land access (Kowlessar 2011) but many farmers do not own the land they work. In addition, land transfers would often occur without "vital complementary services such as credit, marketing and technical assistance" (Barraclough and Utting 1987), so farmers could potentially procure land, but not be in a position to maintain it.

In general, challenges to the statelands distribution program have been poor farmer selection, inconsistent enforcement of the terms of leases, a poor revenue-collection system, a deficient record-keeping system, squatting, and delays in both the processing of applications and the distribution of state lands because of limited capacity to survey lands.⁶⁴ Land rent is in arrears, and the actual rent charged by the State is very low compared to market rates, because it has not been

⁶³ Tobago's topographical difficulties – steep, inaccessible slopes and soil with a high erosion risk – means that 2/3 of the land is considered unsuitable for intensive cultivation. Intensive agriculture is concentrated in the flatter southwest of the island, while less intensive agriculture is practiced elsewhere. See Map 4.2.

⁶⁴ *Trinidad and Tobago: An Agricultural Sector Study of Tobago, July 1994*. IICA, 41-43.

adjusted over time to reflect changes in inflation.⁶⁵ In late 2011, the MFPLMA Minister announced the distribution of 3980 acres of agricultural lands that were previously fallow. Preference would be given to farmers producing specific items, in particular: cassava, sweet potato, tomato, pumpkin, pak choi, ochro, coconut, sweet pepper, pigeon peas, aquaculture and small ruminants such as rabbits and goats.⁶⁶

V. Access to credit and farmer incentives

The Agricultural Development Bank (ADB) is very important to T&T's farmers, much more so than commercial banks in the country. The Bank grants a large number of microloans to large numbers of farmers at comparably low rates, most often for primary agriculture. Local commercial banks have historically designated only a small proportion of their funding to the agricultural sector in order to minimize their risk. In addition, commercial banks focus on lending to the value-added or processing end of the sector. The ADB is about 97% government-owned, and its sole purpose is to direct finance to accelerate the development of the agricultural sector by improving access to credit, providing long-term, low-interest financing, financing start-up activities and financing employment-creating activities. Between 2000 and 2004, commercial banks lent about 0.9% of their portfolio to the sector. During the same period, the ADB allocated about 45% of their funds to the agricultural sector. The Bank cannot provide non-agriculture-related loans and it is vulnerable to sector declines, but these factors also mean it has a vested interest in focusing fully and deeply on the needs of the industry.

⁶⁵ After the 2010 government elections, the State imposed a freeze on land and building taxes while the government explored some “legal hurdles” associated with re-evaluating property values. The freeze was still in effect in mid-2012. See Lord 2012.

⁶⁶ Richard Lord. 2011. Cabinet approves ‘largest ever’ land distribution: 3,980 acres to go to farming, in *Trinidad Guardian*. September 24. <http://www.guardian.co.tt/news/2011/09/23/cabinet-approves-largest-ever-land-distribution>

The closing of Caroni 1975 Ltd. was another moment for the Bank to step in to address farmers' needs at the same time that commercial banks stepped back to minimize their risk. As Table 4.2 shows, the ADB made a dramatic increase in market share after 2002, whereas the market dominance of commercial banks notably declined. The increased ADB market dominance in 2003 was in part because of a new product the ADB developed along with the Trinidad and Tobago Unit Trust Corporation (UTC), the state's financial services company. The monies that sugar farmers received via the VSEP could be deposited into the UTC then used as collateral for taking out a loan with the ADB. Such a strategic alliance between the ADB and the UTC is an example of the continued relevance and importance of the Bank to the country's farmers.

Table 4.2

Market Share in the Agriculture Credit Market as a % of Total Agricultural Loans						
	1995	2000	2001	2002	2003	2004
Agricultural Development Bank loans	32.9	42	26.7	16.9	72.3	77.4
Commercial bank loans	60.4	51.8	66.6	80.4	26.8	21.3

Source: Agricultural Development Bank: Annual Reports, various years; Central Bank of Trinidad and Tobago: Annual Economic Survey, various years

The problem of access to credit has been especially acute in T&T: land ownership has been considered the most important criteria for receiving a loan, and many farmers do not own the land they cultivate. A further alliance between the Food Production Ministry and ADB has sought to minimize the importance of land ownership as the main criteria for granting loans of up to \$50,000. In fact, there have been other favorable changes in how the ADB loans to farmers. Beginning in 2011, the Bank announced that loans under \$50,000 would fetch a lower interest rate than previously: between 3% and 5%, compared to between 6% and 8% in previous years. This has increased credit demand by about 50% (Dookeran 2011). The ADB chairman announced in early 2012 that farmer access to ADB loans would be faster and less complicated. For example, mobile ADB locations have been set up to accommodate rural farmers and increase ADB market penetration. There are ongoing efforts to cut the loan approval timeline from the current three

months to just a few days, with some types of loans – those similar in concept to an overdraft – to be approved on the same day that the application is submitted.⁶⁷

Additionally, 2011 saw the ADB set aside a \$186 million fund to provide low-interest loans to both new and experienced farmers.⁶⁸ These loans are also at the new low rate of between 3 and 5 percent. For amounts up to \$50,000, farmers may receive unsecured loans to purchase seedlings, fertilizers and small tools, without land tenure being the most crucial basis of eligibility assessment.⁶⁹ There is also a range of financial products specially designed to attract graduates from youth programs, rural communities, niche markets and high-growth markets.

Another \$20 million dollars was set aside for pest control, specifically the Red Palm mite, which caused the collapse the country's coconut industry. The government wants to resuscitate that sector and has sweetened the deal with an incentive of \$6,000 for each hectare produced. This \$6,000-per-hectare incentive also extends to cocoa and citrus, and it is clear the State has calculated that these plantation-era crops are still competitive in the global market, and that T&T has a "natural advantage"⁷⁰ in these industries. Other incentives include \$50,000 for the purchase of new and second-hand equipment and up to \$200,000 for rice combine harvesters to encourage increased rice production. In addition, and in an effort to increase water access, the government plans to reimburse 75% of costs to farmers who institute irrigation systems.

A primary and consistent small farmer complaint is the issue of theft. To address this, the Food Production Ministry has established the Praedial Larceny Squad in 2011. The Ministry closely monitors the actions of the group. They work directly with the police, are allowed to carry firearms,

⁶⁷ *Trinidad Guardian*, 2010. "ADB chairman: Bank has \$150m to lend in 2011." Dec. 30.

<http://www.guardian.co.tt/business/2010/12/30/adb-chairman-bank-has-150m-lend-2011-bg>

⁶⁸ Miranda La Rose. 2012. "Bharath: \$2 billion food bill by 2015," in *Trinidad and Tobago Newsday*. March 13.

<http://www.newsday.co.tt/business/0,156799.html>

⁶⁹ 2010. "ADB chairman: Bank has \$150m to lend in 2011" in *Trinidad Guardian*. Dec. 30.

<http://www.guardian.co.tt/business/2010/12/30/adb-chairman-bank-has-150m-lend-2011-bg>

⁷⁰ *National Food Production Action Plan 2012-2015*. Ministry of Food Production, Land and Marine Affairs.

and are placed in strategic locations across the country. An additional measure is an incentive of \$30,000 for farmers who install security systems on their farms (Femline 2011).

ADB loan patterns are aligned with the order of importance the government places on different categories of farmers. For example, 2004 ADB data show that about 76% of borrowers were food crop farmers, and of these, about 69% were sugar farmers. This corresponds with the national portfolio: as a member of the ACP group of states, T&T has sugar export quota obligations to the European market, and especially since the sugar industry is no longer nationalized, the government is heavily invested in the success of private sugar farmers. After the food crop category, persons in livestock and fishery formed the bulk of the remaining borrowers, at 10% and 7% respectively. The remaining borrowing categories are small, but important because they reflect fledgling efforts to diversify the national agricultural sector. For example, only 3.3% of borrowers received loans for agricultural services like landscaping and plant propagation, 0.4% for apiculture, and 0.5% receive loans for floriculture.

VI. Technology, training and education

Deolalikar's (1981) research in India shows that the hypothesis of small-farm productivity being higher than large-farm productivity is only true at low levels of technology. The inverse relationship between increased farm size and lower productivity breaks down with technological progress. Megafarms have the advantage of economies of scale. With increased land and more capital for more inputs than smaller-scale farms, they can produce at a lower cost per unit. Therefore, the issue of technology use and how the small farm sector is able to access updated farming methods in order to maximize productivity and increase their competitiveness really forms the basis for the commercial farm/ small farm relationship.

The government provides training for small farmers in the form of crop and livestock

agricultural extension, which is delivered mainly through two divisions of the Ministry of Food Production, Land and Marine Affairs: through the Extension, Training and Information Division (ETID) and the two Regional Administrations. The ETID does not engage in daily extension training in the field, but they provide one- to three-day training courses and information services for farmers at the Farmer Training Centre in Port-of-Spain, Trinidad, and other locations throughout the country. Regional Administration field staff have frequent day-to-day, on-site contact with farmers across the country. These services are well advertised and are available to farmers and the general public at no cost. Topics include livestock, crops, apiculture, small gas engines and agri-business (Seepersad 2003).

There is also farmer training in the private sector, as input suppliers typically have between 15 and 20 persons in the field to provide product information. This also occurs in the poultry sector where contract farming dominates; field staff from the contracting companies provides guidance to commercial poultry farmers about their poultry operations (Seepersad 2003). There is also collaboration between these private enterprises, the government and the academic community. Both the University of the West Indies (UWI) and the University of Trinidad and Tobago (UTT) have begun offering courses and academic programs. UTT also offers farmer training events.⁷¹

Aside from basic training, the government established a range of incentive programs to help farmers introduce technologies into their practice. For example, in 2011, the MFPLMA made \$20 million available to those farmers interested in adopting and establishing greenhouse technology. Greenhouse farming is beneficial because it reduces the effect of harsh weather conditions on crops and helps control pests, ultimately limiting the amount of pesticides consumers ingest. The state marketing company, Namdevco, is also implicated in this push towards greenhouses, giving priority

⁷¹ *Trinidad and Tobago Newsday*. 2009. "Students benefit from CDA work experience programme." May 7. <http://www.newsday.co.tt/sport/print,0,99729.html>

marketing access to farmers who engage in greenhouse construction in vulnerable, flood-prone areas. By January 2011 Namdevco had trained and certified 1,200 farmers in greenhouse management, and anticipated training an additional 2,000 in the next six months (Kowlessar 2011).

In terms of the interaction between small farmers and the megafarms, it is notable that the private model farm in Point Lisas and publicly funded demonstration farm in Tucker Valley each has a built-in component as 'teaching farms' for the small- and medium-sized farmers, providing them with several options that can increase their productivity and efficiency. At PCS Nitrogen Model Farm, they offer simple soil-testing kits for farmers, who can then accurately address the chemical needs of their farm soils. In addition, this farm has developed a database for farmers to enable them to track production costs, yields, crop rotation, profitability, and so on. This teaching farm focuses on what one administrator called “farming economics” that is, teaching farmers how to make farming profitable. The farm company works with small farmers to find ways to reduce labor intensity of work and to increase efficiency based on best practice techniques from around the world.⁷²

One large farm administrator who was interviewed described the kinds of technologies used on his company's farm that are later shared during the demonstration sessions with the small farmers. These technologies include drip irrigation, important to accommodate the country's long dry season; selection of crop varieties resistant to common pests; greenhouses; chemical soil testing, and sophisticated soil moisture testing, for informed crop watering. This is important to note because as Sanders and Johnson (1982) point out, agricultural research has often shown a heavy “engineering” bias towards highly sophisticated systems more suited to large farms, “regardless of whether these systems are profitable, or whether they shifted the comparative advantage in labor-

⁷² There is no indication whether commercial farms are contractually obligated to offer such free training services to small farmers. Additionally, it is not known whether small farmers pay commercial farms for additional services such as soil testing kits.

intensive cropping activities from small to large farmers.” (Sanders and Johnson, 1982: 307) Often, the technology introduced to small farmers would emphasize large-scale farming and processing technologies, mechanical innovation or seed variety development appropriate for mechanized areas, typically not the circumstance on small farms. In contrast, T&T’s model farms are paying attention to the specific characteristics of the local environment, and are researching and disseminating technologies suited to the small farmers that they serve parallel with their own more mechanical daily agricultural activities.

The measurement of success is when farmers are able to replicate the methods learned on the farm on their own plots, and produce a comparable yield. Notably, PCS Nitrogen has also developed 2-acre demonstration plots within the acreage, where they display techniques more suited to smaller farms. These are free training programs for small farmers, and are usually oversubscribed, which suggests continued enthusiasm and interest on the part of the small farmers. The farm also works to benefit farmers through “deliberate intervention,” by training government agricultural extension officers at no charge, in an effort to reduce instances of misinformation or outdated information about farming techniques.

VII. Labor

Small farm labor typically depends on the farmer and his or her family. Full-time, hired labor is rare, for two main reasons: reliable and trustworthy agricultural laborers are scarce and keeping them on the payroll is expensive. The general assumption in T&T is that the future of farming is in jeopardy because young people have no interest joining the ranks of the industry, preferring instead, the air-conditioned comfort of a “clean” or “easy” job in one of the urban centers. Others say that farm incomes are too low to attract newcomers, and so, the industry is held in low esteem.⁷³ One

⁷³ Ministry of Agriculture, Land and Marine Affairs. 1995. *Food and Agriculture Policy White Paper*. Port of Spain, Trinidad and Tobago.

farm owner in Tobago expressed disappointment that the laborers he did hire had been consistently stealing produce and even small equipment from him, despite his best efforts to compensate them, such as giving them shares in sales profits. During an interview, an administrator of a cocoa farmers' association said, "farm labor is the most difficult thing. Young people do not want to be cocoa farmers, it's an old-person's thing."

Agricultural labor in T&T encounters the same types of obstacles that occur in other parts of the Caribbean region. Quite a few characteristics of the sector make development and improvement difficult. For example, the average farmer is about 42 years old, whereas for T&T's total labor force, the average age is 36. The average farmer income is just above 50% of the average income of all occupations in T&T combined. Compared to other sectors, agriculture has low remuneration, little job security and few health insurance benefits. Most farming households engage in part-time farming, and labor demand is usually seasonal. It is difficult to access land, tenure is sometimes insecure, and older farmers are weary of technology. On top of this, farmers often encourage their children to leave the agricultural tradition, and work in other industries,⁷⁴ so the sector has developed a social stigma. In short, farming has low appeal, and is considered by some a place of employment of last resort.

Despite the prevalence of this attitude, not all farmers feel the same way. Ganpat and Bholasingh (1999) show that there is a high level of positivity among farmers regardless of differentiation based on part-time or full-time status, farm size, enterprise type (crop vs. livestock), land tenure status, age, education, gender or ethnicity. The factor that most affected farmer attitudes towards agriculture was the degree to which they engaged with technology. Those who saw

⁷⁴ *Trinidad and Tobago: An Agricultural Sector Study of Tobago*. 1994. Inter-American Institute for Co-operation on Agriculture. Center for Programs and Investment Projects. Tobago Division of Agriculture, Forestry and Marine Affairs. July.

increased technological use as a benefit rather than a risk, with useful applications that could be easy to learn, had a much more positive outlook on the future of the industry, and the role and value of their labor. Other farmers exhibit this positivity through the strategies they develop to cope with labor shortages. One cocoa farmers' association administrator who was interviewed explained that to relieve a labor shortage at harvest time, the farmers in the association would use a members' rotation system: each Sunday, members would visit someone's cocoa farm for a *len-ban*: they would lend-a-hand and help pick each other's cocoa pods at no cost. The reward would come in the form of a reciprocal *len-ban*.

To address the inadequate labor supply, the MFPLMA has initiated labor program that will employ persons from the Unemployment Relief Programme [*sic*] (URP). These individuals are trained to build the knowledge and skills that can help them pursue agriculture as a viable livelihood. During the 3-month training process, individuals may also work on the commercial farms as part of the hands-on training experience. The State expects that this introduction to the industry and the knowledge of the various support programs the State offers to farmers will encourage URP workers to pursue farming as a career. The MFPLMA/URP partnership also has the potential to develop rural communities.

VIII. Market access

The state-run marketing agency, National Agriculture Marketing and Development Corporation (Namdevco) was incorporated in 1991. It is responsible for identifying and expanding local and export marketing opportunities, conducting market research, maintaining daily, weekly and historical data on commodity prices, developing marketing opportunities and agribusiness investments, linking buyers and sellers, managing wholesale markets and export infrastructure, and conducting training. As regards pricing information, the institution keeps a record of historic prices

over the period 2001- present, for over 40 commodities commonly traded on the market place. Information on volumes traded at the wholesale market is available from as far back as 2006. In an effort to increase the use of information technology to make data more widely available, the National Agricultural Market Information System (NAMIS), an online tool, has been created. It allows farmers to make informed business decisions, by connecting them to potential buyers via buyer-seller forums, providing them with relevant data and publications, and allowing them direct contact with Namdevco staff.

Namdevco's work with small farmers is tightly aligned with the Food Production Ministry's goals of increasing technology use in the sector. To help encourage the establishment of greenhouses, Namdevco has given new greenhouse farmers two- and three-year contracts to supply the state company with their produce. So, the use of this technology is associated with a guaranteed market, clearly a boon to producers. The greenhouse initiative focuses on 11 crops, including tomatoes, melongene, sweet peppers and cauliflower. The state company also has the responsibility of using market indicators to advise farmers about when they should plant what items. Output is intended for both fresh markets and agro-processing industries. Namdevco has also encouraged farmers to produce disease-resistant bananas for the local market, particularly for the National School Feeding Programme, which currently relies on mainly on imported items in response to inconsistencies in local supply.

One of the recent strategies employed to achieve the goal of improving the competitiveness of non-traditional agricultural products has been the development of commodity value chains of the following items: hot peppers, pumpkin, cassava, cucumber, sweet potato and dasheen leaves. The marketing company has been working to help farmers engage in commodity value chains – a strategy which hopes to improve the value of the product with each level of value added, such as

research and development, input, production, processing, marketing and finance. Often, however, value chain models often benefit larger farms more than smaller farms because buyers consider large farms more reliable, with lower transaction costs. Particularly in the case where items are geared towards export markets and products must adhere to the strictest quality requirements, it is the larger farms with easier access to capital that can afford to institute higher phytosanitary and health standards, not to mention inspection costs and laboratory analysis. These are only some of the factors that contribute to an increasing business concentration on the supply side in value chains.

Given this challenge, Namdevco has explored ways to help smaller-scale farmers access a wider piece of domestic, regional and international markets by offering a Farm Monitoring and Certification Programme whose goal is to increase farmer awareness of quality standards, support their efforts to augment farm incomes, and help them meet the required international standards under the United States new Food and Drug Administration Food Safety Modernization Act. The state marketing institution identifies, develops and promotes market opportunities for farmers, then gives contracts to farmers selected from the certification program, to produce selected commodities depending on market demand.

Contract farming itself is a significant way to improve small farmer market access, in the same way it has been assisting commercial large farms. It connects them to more sources of extension advice, mechanization, seed varieties, fertilizers and credit, not to mention guaranteed and profitable markets for produce. Contracts can build mutual trust between buyers and small producers, and improve the likelihood of longer-term contract farming relationships. This is beneficial to small-producer incomes, as contracts typically specify prices in advance. Contract farming often introduces new technology and also enables farmers to learn new skills. It also has the

potential to give the small farmers access to new and niche markets otherwise be unavailable to them (Eaton and Shepherd 2001).

For example, rice farmers, who produce only about 5% of the country's rice, are able to contract with National Flour Mills Limited (NFM), which specializes in the production, packaging and distribution of flour and feed milling. NFM has been purchasing paddy and processing local white rice since 1985, which farmers grow and harvest three times a year. Outside of these rice farmers, NFM imports all other grains used, mainly from the US.

Added to this, T&T state efforts to develop create and support farmer associations by location and commodity would be beneficial since a representative group could act as a united voice for a group of farmers and give them more bargaining power than an individual farmer. Joshi, Gulati, Birthal and Tewari (2004) explain that cooperatives and group actions are useful to farmers because they help farmers overcome risk and uncertainty. They also help farmers establish strong vertical links between production, processing and marketing, along the value chain.

This is not to say there has been a seamless integration between small farmer production and access to markets. The basic first step in this integration process is developing the basic, appropriate infrastructure, such as roads, water and utilities, so that farmers can physically access markets, conveniently. While the government has made some strides here, there are still numerous farmers who complain that these basic essentials continue to be neglected, typically those farmers located in the most rural areas of Trinidad and of Tobago. A dearth of infrastructural development and maintenance, not to mention theft of produce, continues to plague many farmers.

There have been obstacles in the contractual relationship between rice farmers and NFM. One incident of note occurred in late 2011, with rice farmers complaining that NFM did not pay them for rice purchased in October, November and December of 2011. Lack of payments created

additional difficulties, such as their inability to repay bank loans or purchase farming machines (Hassanali 2012).

There have also been hiccups in Namdevco's relationship with small farmers. For example, in March 2012, farmers in Debe, Trinidad, complained that the institution abruptly and without warning changed the opening hours of their wholesale market, to a time very inconvenient to regular customers, thereby negatively impacting their revenues (Sookraj 2012). Some small farmers may not even directly feel the effects of this government establishment, however. For example, one Tobagonian farmer interviewed was able to clearly explain that Namdevco provided price guidelines for specific commodities and that farmers and produce vendors had the option to set their own price. Beyond these guidelines, which he believes accommodated Trinidad markets only, the institution held little value for him as a Tobagonian farmer. Other farmers, particularly the older or the more rural, still hold on to an "old-school" mindset, seeing agriculture as following a linear and unchanging path of planting, reaping, and selling at market, without too much worry about technology.

IX. Analysis of small farmer production models

Small farmers in T&T have engaged not only in subsistence farming, but have also traditionally been an essential part of the domestic food market. In the last 4 decades, small farmer use of resources and the value of their output to domestic agriculture have far outstripped that of the export sector (Seepersad 2003), so it is important to explore how these stewards of domestic supply have been operating and under what conditions they have been doing so.

Overall, the main type of agricultural activity was crop production (72.4%). Livestock production trailed far behind this with only 10.7% and 0.8% was attributed to other activities such as apiculture (beekeeping), aquaculture and horticulture. The remaining 16.1% was designated mixed

agricultural activity. However, distinctions in agricultural activity were not uniform across both islands. While crop production was the primary focus in the industry both in Trinidad and in Tobago, the distribution among categories was far less consistent. Table 4.3 compares these proportions across both islands, while Map 4.1 and Map 4.2 show the distribution of these activities for each island.

Table 4.3

Percent of Agricultural Holders in Trinidad and Tobago by Type of Agricultural Activity (2004)			
	Overall	Trinidad	Tobago
Crop production	72.4	74.3	38.9
Livestock	10.7	9.7	28.5
Mixed	16.1	15.3	30.6
Other*	0.8	0.7	2.0
*includes beekeeping, aquaculture, horticulture, etc Source: CSO: 2004 <i>Agricultural Census</i>			

Small farmer production focuses on crops such as corn, rice, peas, beans, potatoes, other vegetables, and a wide variety of fruits. These are geared mainly to the domestic market, although there are some farmers who produce for the export market. In an effort to diversify sector output, the government had given priority to the production of certain food crops. These include rice, citrus, corn, cassava, peanuts, and pigeon peas, sweet potato, cassava, yam, dasheen, tomato, ochro (okra), cucumber, melongene (eggplant), pumpkin, eddoes, cabbage, lettuce, green pigeon peas, carrots and string beans. To stimulate production in these areas, the government offered incentives like production contracts, with a minimum price guarantee were prices to fall below a certain level (Birchwood, 2007).

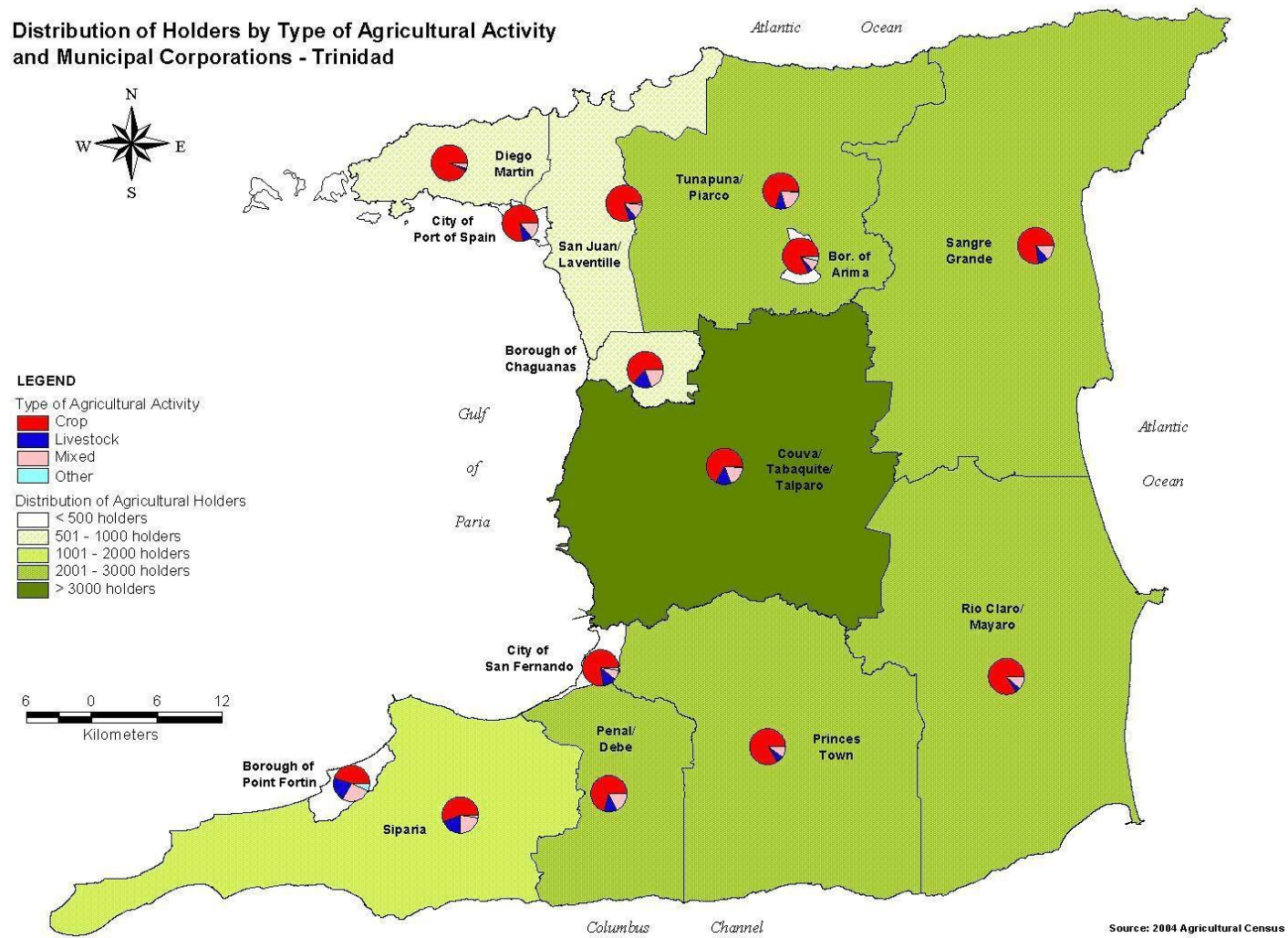
Agricultural diversification is important, especially for small farmers. Diversification is essentially a shift of resources from one area to another, such as from a particular crop to livestock, or to a larger or smaller combination of crops and livestock. Diversification may also refer to value-added activities like food processing, or even providing services to other farmers. Typically in more

industrialized countries, the definition of agricultural diversification is expanded to include non-farming activities such as restaurants and shops. A farm may embark on diversification after considering the risks involved in producing each agro-item, availability of laborers, the rate of return, and simply how diversification would affect the farm's income.

T&T farmers pursue diversification to optimize income by focusing on high-value items like fruits, vegetables, and livestock and fish products. These typically require more intensive human labor, thus generating more employment. High-value, non-cereal crops also tend to fetch better market prices (Joshi, Gulati, BIRTHAL and Tewari, 2004). This is a way to balance national policies that try to augment farmer incomes by focusing only on increasing yields and cropping intensity. Diversification is of special interest to this research because of its potential to benefit a wide range of small farmers and other marginal holders, where it depends on added human labor.

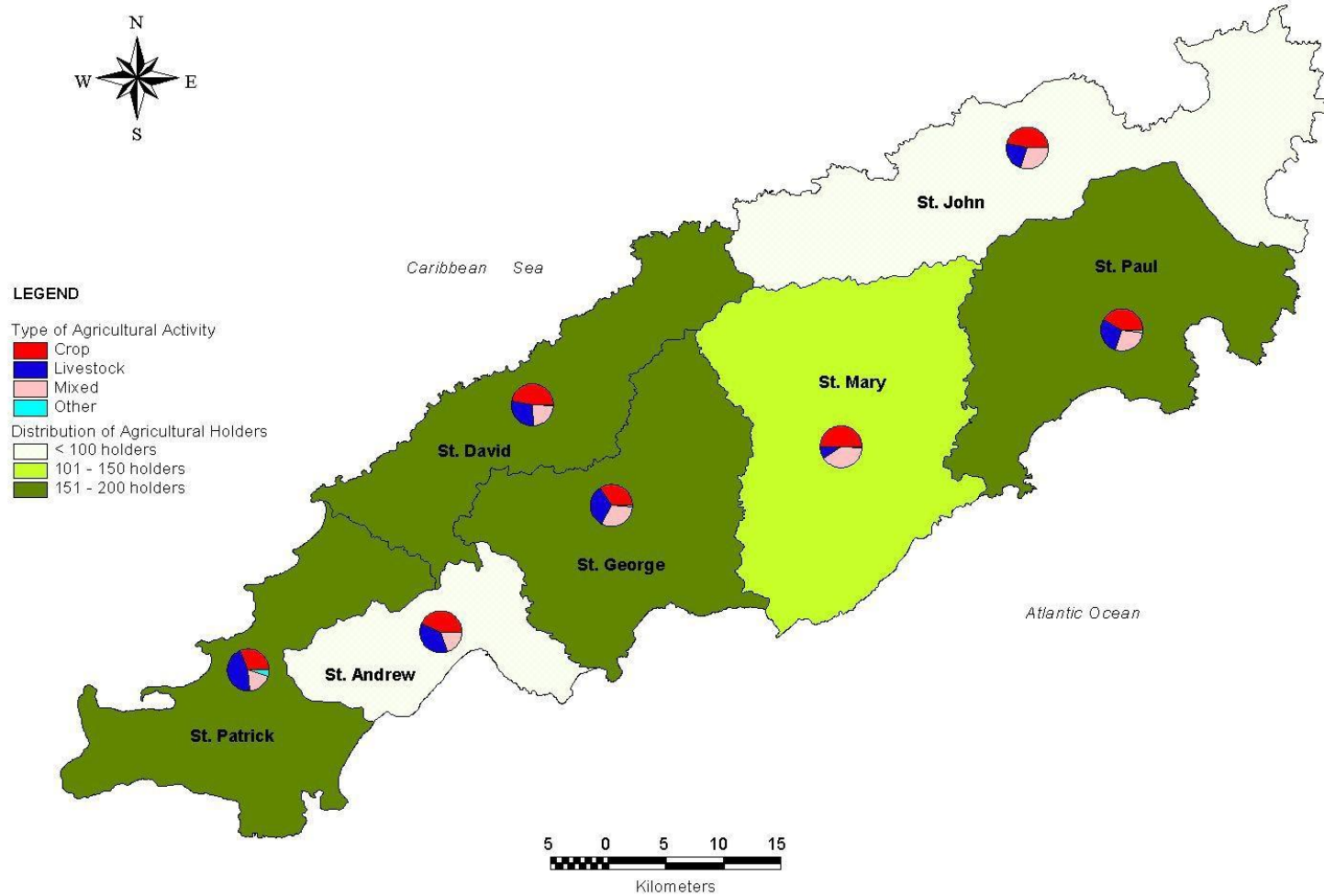
As indicated, some small farmers have also been involved in producing crops for the export market. While the importance of sugar to T&T's economy has been discussed, it has not yet been explained that their input has also been important for cash crops. During the reign of Caroni 1975 Ltd, a small group of large, company-owned estates worked alongside thousands of small farmers who together shouldered the task of producing the crop. About 80% of the output was exported. Another traditionally important export crop where small farmers have been involved has been cocoa, but its production has greatly declined since the 1970s. And, despite high demand for the exotic *Trinitario* and *Criollo* varieties of T&T cocoa on the international market today, the country is unable to consistently meet that demand due largely to crop disease. Another crop with historical significance for all T&T farmers is coffee. However, as is the case with cocoa, coffee has fallen victim to low production levels because of crop disease, uncertainty in the international markets and inefficient organization.

Map 4.1: Distribution of Holders by Type of Agricultural Activity and Municipal Corporations in Trinidad



Map 4.2: Distribution of Holders by Type of Agricultural Activity and Parishes in Tobago

Distribution of Holders by Type of Agricultural Activity and Parishes - Tobago



Source: 2004 Agricultural Census

Chapter Five: Commercial Large Farm Programme

I. Origins, role and relationship with the government

“The agricultural sector is no longer a sleeping giant.”⁷⁵

The State embarked on the commercial large farm programme (CLFP) to tackle domestic sources of inflation. Essentially, the CLFP hopes to increase domestic supply, contain demand pressures and effect a change in local food consumption patterns. These farms are to produce a range of commonly consumed crops to lower food prices and by extension, reduce the cost of living. The CLFP expects to complement the work done by the rest of the farming community.

The CLFP can be understood as a mixed farm type that draws from two economic ideas. The farms show elements of plantation economy era farms in that they are dedicated to mass producing selected items and a portion of their output will be directed towards regional and international export markets. However, a closer examination reveals that several factors distinguish them from plantations, and that they represent the state's attempts to integrate some level of import-substitution industrialization (Braxton-Benjamin 2011). Plantations tend to place economic benefit in the pockets of the metropolis, since the raw material is sent overseas for manufacturing, and value-addition means increasing the price of a good compared to the cost of the unprocessed raw material. But T&T's state/private partnership strongly advocates and promotes the commodity value chain approach, which allows them to participate in each stage of the process, from production to processing to marketing, etc. The expectation is lower domestic food prices accompanied by a smaller quantity of imported food items with associated lower overall import costs.

⁷⁵Vasant Bharath, February 29, 2012 (<http://www.guardian.co.tt/news/2012-03-01/no-tears-over-onion-crop>)

Of course, import-substitution industrialization holds its own share of challenges. The theory was popularized in the 1950s and 1960s as a way for developing countries to guide their own path to development by reducing their dependence on the “core” countries of the industrialized world as the market locus where all their principal products could be sold (Griffith 2002). But the failure of ISI in Latin American during the 1980s debt crisis has left many weary of this inward-facing type of economic model. At the same time, T&T continues to participate in the regional and international markets via both food imports and exports, emphasizing that the country employs a mixed bag of economic policies in an effort to balance its dependence on foreign foods and reduce its food import bill.

Locally called ‘megafarms,’ these large commercial farms are expected to fill specific roles. They are supposed to increase efficiency and productivity in the sector through economies of scale and through the rapid increase in the acquisition and utilization of new technologies. Raw output is directed to the agro-processing and food manufacturing sectors. The farms should increase the volume and reliability of the domestic food supply thus stabilizing domestic food prices. They are supposed to facilitate the transfer of new technologies to the small farms sub-sector. They are also expected to provide the country with a competitive export sub-sector. The megafarms are expected to achieve these hefty charges through private-sector lease arrangements, government-funded demonstration farms, and privately-funded demonstration farms.⁷⁶ Table 5.1 provides details released by the government in 2008 about the expected size and production focus of each site, and also indicates the expected cost to the T&T government. It must be noted, however, that the reality of these farms has fallen short of government expectations, and issue that will be explored later in this chapter.

⁷⁶ *Transformation Plan for the Agricultural Sector, 2008*

Table 5.1
2008 Proposed Site Information for the Commercial Large Farm Programme

No.	Site	Acres	Recommended Farm Type(s)	Government Cost (\$TTD)
1	Jerningham	108	Vegetable Crops	\$ 2,314,825
2	Edinburgh	354	Vegetable Crops	\$ 10,036,236
3	Orange Grove	100	Vegetable Crops	\$ 10,578,700
4	Caroni	100	Root Crops & Rice	\$ 4,491,025
5	La Gloria	364	Mixed Farming / Livestock	\$ 14,357,420
6	Morne Jaloux	417	Integrated farming (Crops, Livestock & Aquaculture)	\$ 11,632,819
7	Picton Estate (multiple farms)	1201	Livestock / Tree Crops / Root Crops	\$ 44,987,800
8	Tucker Valley	200	Root Crops / Vegetable Crops	Not indicated
9	PCS Nitrogen	75	Vegetable Crops	Not indicated
10	Palo Seco Agricultural Enterprises	300	Mixed Farming / Livestock	Not indicated
11	Cunupia Farmers	300	Vegetable Crops	Not indicated
	TOTAL	3519		\$ 98,398,825

Source: Trinidad and Tobago Ministry of Food Production, Land and Marine Affairs

II. The Large-Farm Experience

The government has promoted the CLFP as a beneficial aspect of the country's strategy to reduce its food import bill. The new Transformation Plan was established in 2008, and a new political administration came to power in 2010, which meant that the megafarms developed during a transition period. These farms have been at the center of a polemic across the country, with various interest groups fighting to be heard. It has remained in the media as a 'hot button' issue, pitting the former People's National Movement (PNM) administration against the current People's Party (PP). Food Production Minister, Vasant Bharath (PP), often identifies weaknesses in the original planning of the megafarm establishment to highlight the changes his administration has made.⁷⁷ Meanwhile,

⁷⁷For example, in mid-2010 Bharath said that "When one looks at the amount of money that has been expended, it appears that we could have had a better rate of return...out of the 15, only two have had any production on it, so there is

the former PNM Agriculture Minister, Arnold Piggott, has accused the current PP coalition of being shortsighted about the potential of the CLFP to mitigate the country's food security struggle.⁷⁸

Large swathes of state lands have been leased to private companies, in exchange for guarantees to the government that the farming companies will undertake agro-production in key strategic areas. In fact, a considerable degree of planning went into deciding which crops were best suited for individual farms based on soil type etc; training of personnel at each farm was also an important element of farm establishment. The megafarms are essentially private companies operating on state-owned lands. Funding comes from private sources, and once the land is leased, the companies are wholly responsible for furnishing their infrastructural needs, including roads, irrigation and so on.

What the large farm program makes apparent is that the State is striving to take the initiative with strategic steps forward by investigating and implementing a system of food production that hopes to bolster supply domestically, and reduce dependence on foreign sources of food. According to Neil Garcia, the former head of Namdevco, this government strategy means diversifying the markets and focus of each of the two sectors. Whereas small farmers can focus on continuing to supply the domestic market with fresh fruit, vegetables, meats and dairy products, the large farms can place emphasis on food processing and value addition that has greater potential to be competitive in the export market.

still a lot of work to be done." (Allaham 2010)

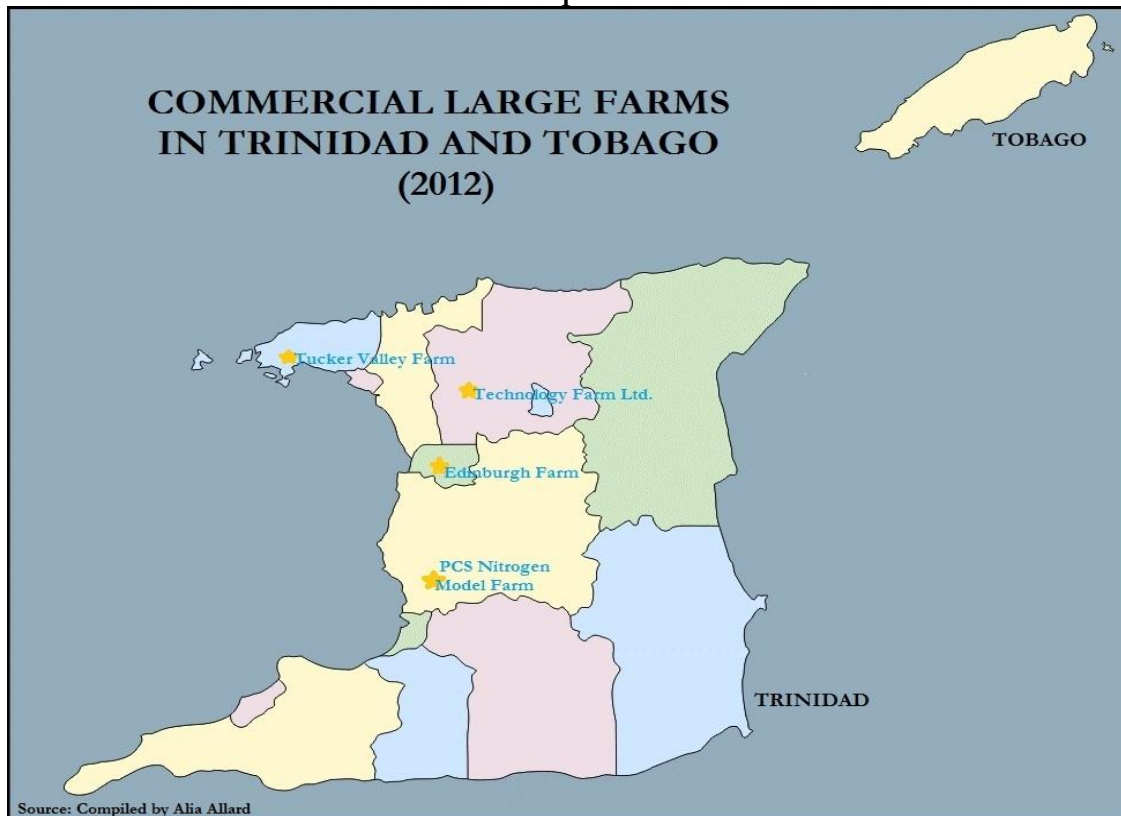
⁷⁸ Arnold Piggott. 2011. "Tucker Valley mega farm under attack," *Trinidad Express*. October 25.

http://www.trinidadexpress.com/commentaries/Tucker_Valley_mega_farm_under_attack-132507938.html

III. Large farm statistics, production models and analysis

In 2008, the government anticipated the establishment of 11 commercial large farms at various locations throughout Trinidad. The farms were to be at least 100 acres each, and would operate on government-owned land. They would engage in either crop or livestock production, which would be capital-intensive and would focus on economies of scale, specialization, mechanization, and maximization of yields. Output would be geared towards domestic, regional and international markets as identified by the state marketing company. Table 5.1 provides details about what the government envisioned several years ago for each anticipated farm site. As of mid-2012, however, only 4 of the farms are actually in operation, and the resulting establishments are somewhat different from their original conceptualization. Map 5.1 illustrates the location of these commercial farms.

Map 5.1



The most well-known of the four farms, the PCS Nitrogen Model Farm holds a special place in this cadre of commercial farms. It lies on 75 acres of state-owned land in Point Lisas in west central Trinidad. It is owned and operated by the Canadian company PCS Potash Corporation, the world's largest fertilizer company. They produce phosphate (P), nitrogen (N) and 20 percent of the world's potash (K). Their farm in Trinidad is specifically designed for training development. In an effort to exhibit the effectiveness and superiority of their technological expertise, this farm employs the strategy of planting crops the same crops using both 'old' and 'new' techniques to compare traditional methods with more modern technologies based on best practices in the field. One administrator interviewed at the farm boasted of the superior quality of the produce and the successful yields by multiple factor as a result of this ongoing experiment.

The second is Tucker Valley Farm, a 200-acre demonstration farm in Chaguaramas, in northwestern Trinidad. The farm came into being with the technical assistance of the Cuban government. In 2008, a Cuban Technical Mission executed a diagnostic study to explore the feasibility of the project, and this event was followed by a Cuban management and technical team. Their scientific and technical assistance laid the groundwork for the farm's development, and a review of the Tucker Valley farm activity reflects use of some of Cuba's organic farming techniques.

This location possesses soil characteristics considered ideal, and permits the cultivation of a wide range of food crops and vegetables. It has good drainage, adequate access roads and utilities are readily available. In March 2012, the farm successfully produced a commercially viable onion crop, and is also the new location of the Food Production Ministry's Seed Production Facility. The facility will provide seedlings for staple crops like corn, pigeon peas, bodi beans, ochro, eggplant and sorrel. The local farming community is able to access these seedlings. Tucker Valley Farm is notable because it is, finally, the first example of onions grown successfully on a commercial scale in T&T. This is despite the findings of research conducted in the 60s and 70s confirming this crop's viability

in the region, and despite the success of the crop in other Caribbean countries over the past few decades (Bridglal 2012).

When fully operational this farm is expected supply 4,000 tons of agricultural produce per year including leafy vegetables, carrots, beets, radishes, turnips, sweet peppers, bodi beans, broccoli and root crops. Very important for this research is that this farm also trains local farmers in modern mechanization and operations of commercial farming and the development of a commercial agri-business model which can be adopted for private enterprise. The farm will specialize in four agricultural production methods: organic, semi-protected, protected and conventional technology.⁷⁹

Edinburgh Farms, launched in mid-2011, is located in Chaguanas in central Trinidad. It is a 115-acre farm owned by Caribbean Chemicals and Agencies Ltd., a Guyanese-based company, which shares management of the farm with two other companies. The focus of this farm is rice production, and it aims to produce 20 percent of the country's domestic needs. This farm is ultimately an attempt at resuscitating a near lifeless industry. In 2011, T&T only produced five percent of the rice consumed domestically compared to a decade ago, when it was producing 30 percent of domestic consumption. The company plans to employ 20 persons from the Edinburgh area permanently and another 20 on contract.

Caribbean Chemicals and Agencies Ltd. also operates Technology Farms Ltd, a 135 acre megafarm in Orange Grove in Trincity, northeastern Trinidad. Like Edinburgh Farms, operation and management of Technology Farms Ltd is shared with ADM Distributors and the T&T Agri-Business Association (TTABA). It should be noted that Caribbean Chemicals and Agencies Ltd. represents on an exclusive basis some well-known international companies in the agricultural and industrial chemicals industry, including DuPont, Monsanto, Dow Corning, and Miller Chemical,

⁷⁹ *Chaguaramas News*, "Tucker Valley Farm Project." <http://www.chagdev.com/Pages/Chag-News-TuckerValleyFarm-Projectin-Chaguaramas.htm>

which themselves have been at the center of a polemic about the use of natural vs. genetically modified seeds. While little data was forthcoming during this research from Technology Farms Ltd., the implication is that the technologies used here may be less inclined to have an organic slant, as is the case at PCS Nitrogen Model Farm and Tucker Valley Demonstration Farm.

IV. Technology, Training and Education

The technologies used at these farms are varied. At PCS Nitrogen Model Farm drip irrigation is given particularly priority because of the long dry season in T&T. An administrator there described in detail a drip irrigation technique developed by Israeli farmers who farm in desert lands. Other important technologies include selecting crops that are resistant to common pests and diseases, accurately determining moisture levels of soil below the surface, to ensure adequate watering, satellite mapping (i.e. soil testing via satellite) to discover soil characteristics, including irrigation patterns, sand streaks, clay lenses, and organic matter and crop residue variations of soil. In addition, one large farm administrator pointed out that locally-performed soil chemical testing had proved to be very slow, with often questionable results. He compared this to soil samples sent to the U.S. for testing that was returned to the farm in a shorter period, with accurate results. In terms of the number of farmers trained, the 2011 data available from the PCS Nitrogen Model Farm show that an average of 96 persons were trained each month, for a total of about 1159. In January to May of 2012, the monthly average was 135 persons, for a total of 677 during that period (PCS Nitrogen Model Farm administrator, personal communication).

Tucker Valley Farm uses a combination of grow box technologies, greenhouse, conventional and semi-protected technology using organic matter as the main fertilizer. For example, they have embarked on vermiculture – composting with worms. Vermicompost aerates and conditions the soil, allows soil to hold moisture better than other fertilizers, whether organic or chemical, and is a

nutrient-rich, organic fertilizer. These types of techniques reflect the influence of Cuba's organic farming.

The farm's management institution – the Chaguaramas Development Authority – has been working with tertiary-level institutions to provide practical experience for students in an effort to encourage them to pursue viable careers in the industry and revitalize the sector. This “Work Experience Programme” [sic] has been developed in conjunction with the Eastern Caribbean Institute of Agriculture and Forestry Division of the University of Trinidad and Tobago (UTTI). The Work Experience is instrumental in exposing a wide cross-section of students involved in agriculture to best practices in the agricultural techniques utilized at the Tucker Valley Farm. Under the program students are assigned to a two-week training programme and are exposed to various aspects of farm operations, including planting, cultivation of crops utilizing greenhouse, grow-box and conventional technology and post-harvest operations. To date a total of forty-four (44) students have participated in the program.⁸⁰

V. Labor

Labor on the megafarms reflects a high incidence of mechanization. For example, the Managing Director of Caribbean Chemicals, which operates Edinburgh Farms, estimates that for every 100 acres of onions planted, only 35 laborers would be required (Mc Kenna 2012). The PCS Nitrogen Model Farm staff is also quite small. There are three individuals who work in an administrative or supervisory capacity. They are responsible for all trainings, and they oversee greenhouse and high tunnel production. Of the three administrators, one is also an agronomist. Aside from these three, there are also 15 persons who work in the field. Their responsibilities include tractor operation, pesticide spray and other routine field activities. The machines used at PCS

⁸⁰ *Trinidad and Tobago Newsday*. 2009. “Students benefit from CDA work experience programme.” May 7. <http://www.newsday.co.tt/sport/print,0,99729.html>

Nitrogen include two tractors with attachments, two plows, a transplanter, two rotovators, a fertilizer spreader and a mulcher. Lighter, hand-held equipment includes whackers, mist blowers and hand blowers.

VI. Market Access

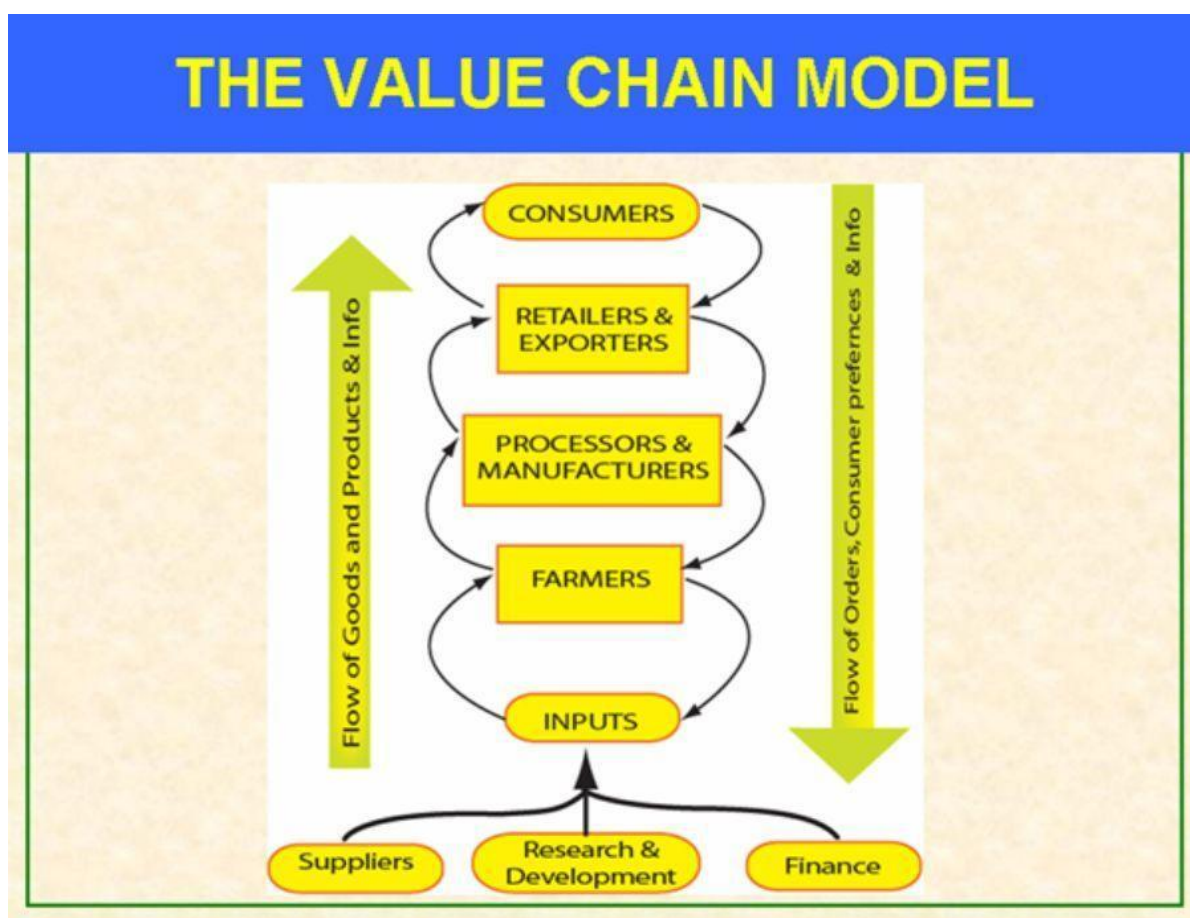
Namdevco plays an important role in ensuring that the megafarms are able to find suitable markets for their outputs. As indicated, megafarm output is intended for domestic, regional and international markets. Decisions about market selection depend on market needs as well as the type, quality, and quantity of the output. The State has emphasized the importance of the commodity value chain approach to the industry, and has placed the large farms at the center of this strategy. Porter (1985) defines a value chain as a sequence of production, processing and marketing activities, where products will pass through each activity in a specific order. At each stage of the activity, the product gains value. In ideal circumstances, the value of the end-product should be greater than the sum of valued-added. Figure 5.1 shows Namdevco's value chain model, which includes research and development, input suppliers, production, processing, marketing and finance.

With regard to local food supply, large farms have been contracted to produce agricultural goods for the Trinidad and Tobago Agribusiness Association (TTABA) after which these products will be price-tagged before being sent to local supermarkets. This has undoubtedly affected the price of items on the local market because it means an increase in supply, which means that small farmers may be negatively affected. Especially where the value chain model is employed, commercial farms may dominate markets, by nature of their comparative size. Large producers are often thought to be more reliable and they generate lower transaction costs.

Table 5.2 shows the prices of selected food items between 2003 and 2010. In nearly all categories food prices increased between 2003 and 2010. Some high-value, labor-intensive vegetables

like dasheen, eddoes, tomatoes, cabbage and cucumbers did experience a drop in average annual cost between 2008 and 2009, but this trend did not continue into 2010. These price drops cannot simply be accounted for by the launching of the CLFP. Further analysis would also need to take into account the source of a particular food item, that is, whether the item is produced locally or whether it is imported. Many other factors affect domestic food prices, such as climate changes, and fluctuations in the global economy, like higher oil prices, lower food reserves, and growing consumer demand, all of which exceed the scope of the current research.

Figure 5.1: Namdevco Value Chain Model



Source: National Agricultural Marketing and Development Corporation

Table 5.2

Price of Selected Foods In Trinidad and Tobago, 2003 - 2010 (in TT\$)									
ITEM	QUANTITY	2003	2004	2005	2006	2007	2008	2009	2010
Meat									
Beef-Fresh	454g	8.3	9.72	10.87	12.30	14.50	16.43	17.10	18.1
Pork Fresh	454g	9.5	10.49	11.26	12.67	14.21	15.85	17.04	16.8
Chicken-Live	454g	3.9	4.38	4.21	4.59	5.42	5.93	6.05	5.9
Fish & Crustacean									
Fish-Fresh	454g	9.9	10.59	12.34	13.44	15.27	16.85	17.61	18.3
Shrimp	454g	12.4	13.02	13.31	14.27	16.00	17.85	20.66	20.2
Dairy Products									
Powdered Milk	1kg	24.0	24.66	25.18	28.91	37.05	44.98	42.33	41.0
Sta - fresh Milk	1L	6.7	6.73	6.92	7.04	7.87	9.12	9.18	9.4
Eggs-Large	1doz	7.9	8.66	9.02	9.26	10.56	14.29	15.25	15.1
Fresh Butter	454g	9.4	9.72	10.90	12.12	13.80	22.38	24.92	23.8
Cheddar Cheese	454g	11.3	11.92	25.03	30.23	35.82	53.93	38.62	39.4
Cereals									
Flour-loose	454g	1.6	1.69	1.61	1.61	1.66	2.34	2.92	2.8
Rice-packaged	2 kgs	8.6	10.34	12.06	12.15	12.42	19.28	20.93	17.3
Fruit									
Bananas-Ripe	454g	2.3	2.42	2.77	3.30	4.06	4.96	4.74	5.1
Grapefruit-Large	each	1.1	0.93	0.99	1.03	1.42	1.52	1.74	1.5
Orange-Large	each	1.3	0.88	1.03	1.10	1.45	1.32	1.67	1.8
Tubers and Similar Products									
Irish Potatoes	454g	1.3	1.30	1.41	2.06	2.23	2.36	2.09	2.3
Sweet Potatoes	454g	4.1	3.06	5.33	3.94	5.85	5.02	4.76	6.9
Yams	454g	3.4	3.28	4.60	3.76	4.32	5.34	5.49	6.1
Dasheen	454g	3.4	3.79	4.59	4.95	4.87	6.00	4.92	6.5
Plantains	454g	3.4	2.79	3.86	4.21	4.95	6.12	5.80	6.5
Green Bananas	454g	1.2	1.27	1.43	1.85	2.24	2.80	2.84	3.5
Eddoes	454g	4.1	3.36	5.00	5.32	5.41	6.21	6.14	8.1
Green and Other Vegetables									
Tomatoes	454g	4.2	5.87	6.52	6.29	6.54	8.01	7.11	8.8
Pumpkin	454g	1.4	1.71	2.15	1.96	2.01	2.59	2.51	2.8
Melongene	454g	1.8	2.58	3.22	3.47	3.17	4.87	4.27	5.0
Cucumber	454g	1.7	2.07	2.42	2.79	3.47	4.14	3.71	4.1
Lettuce	head	3.2	3.61	4.07	4.41	4.86	5.23	5.54	6.6
Carrots	454g	3.9	4.50	4.88	4.97	5.24	5.46	4.92	5.3
Cabbage	454g	3.2	3.07	4.20	4.29	4.40	5.12	4.83	5.3
Callaloo Bush	bundle	2.8	2.81	3.32	3.86	4.33	4.89	5.00	5.7

Source: Central Statistical Office

It is often the case when commercial producers control production that the acreage sown and yields of annual crops are affected by relative product prices and the availability of inputs and credit (Barraclough and Utting, 1987). However, because the State is so strongly implicated in these commercial farms in terms of land use and marketing, the large farms have less decision-making power than in the typical commercial establishment, based entirely on market signals.

Chapter Six: Summary and Conclusion

I. Role of government in agricultural policy decision-making

Import-substitution is in essence a development theory with a trade theory basis. What Trinidad and Tobago has embarked on is not really new. In fact, many argue that each country has at one point or another, established varying levels of ISI across industries. For the agriculture industry, this is in opposition to the former plantation economy model where small farming was devalued in preference for large mono-crop farms. The underlying premise of large, mono-crop farms was that producing large quantities of a crop that was popular on the international market would fetch a good price at least in the short term, despite heavy reliance on external inputs, which was frequently the case, and despite the vulnerability such an approach created. In such a scenario, the lifestyle of the small farmer is debased. But ISI can be understood as an interventionist economic policy to protect domestic producers. In the T&T case the companies have not been fully nationalized although they do enjoy strong state support, as seen through the leasing of state lands, and because the state marketing company is heavily implicated in how their output is directed to markets.

The Food Production Ministry and its various supporting bodies – including the Agriculture Development Bank, Namdevco, Estate Management Business Development Company and the Trinidad and Tobago Agri-Business Association appear to be well-aligned in mission and approach to increasing food security and developing the CLFP and small farm sub-sectors. At the same time, there remains a huge gulf between different ministries of government, which compete for the same limited resources, particularly land. Incidents such as when the Housing ministry and the Energy ministry separately bulldozed agricultural lands to pursue their own needs, exemplify this problem. Different government ministries need to work to find a more balanced approach to fulfilling their divergent mandates.

II. Contributions of each agricultural model to food security

This research has attempted to explore how two agricultural models in Trinidad and Tobago affect the country's food security by reviewing the government's recent policies concerning commercial farms and small farms. Because the commercial farms are quite new, this research should be understood as a preliminary, first-stage documentation of the agricultural policy changes. Certainly, more research is necessary for a deeper understanding of the impact of the CLFP.

Small farms and family farms continue to be important to food security in Trinidad and Tobago. Through diversity of production they are able to supply a range of fresh crop and livestock products to the local community, which are consistent with the range of food groups that ensure good nutrition. Because small farmers engage in production of high-value, labor-intensive crops, they have the potential to make jobs available in rural communities and can therefore help develop those areas. Not only does this increase direct access to food items, but job creation means income creation, and by extension, poverty reduction. And because of increased marketing support at the state level, small farmers also have greater access to the export markets because they are developing the knowledge required for food processing and value addition of their raw materials.

At the same time, the commercial large farms are filling another role in T&T's domestic market. By increasing the domestic food supply, they should undoubtedly help to lower the cost of food, although food price statistics do not yet reflect this, and understanding why exceeds the scope of this research. Lower food prices of course means the consumers are the winners, while the small farmers potentially suffer from gluts in the markets. But commercial farms are also increasing the standard of food quality, making output more desirable on the regional and international markets, and potentially paving the way for small farmers by assisting in creating the infrastructural base for accessing these markets in the short and long term.

There are times when the two sectors appear at odds with each other, particularly with regard to labor. The large farm model values and pursues opportunities to reduce the labor-intensity of the farming process by using as many technological and mechanical inputs as possible. Meanwhile, for the small farm sector, food security is enhanced exactly because it is an opportunity for employment. Barraclough and Utting (1987) show that to guarantee a stable and consistent level of food security, there needs to be a substantive increase in a country's capacity to generate jobs and income, and the small farms seem able to do just that.

III. Technology, training and education

As has been emphasized, educating food producers about improved agricultural techniques based on best practices from around the world, about crop selection, disease prevention, post-harvest processing and transportation are all essential for increasing yields and farmer incomes. Access to this type of technology has been long available to those involved in export crops – competition has meant that T&T's food exports have to meet or exceed international standards, and export producers would have to employ these types of techniques to achieve this. Now, small- and medium-scale farmers are beginning to gain access to these types of technologies. The megafarms have emphasized this knowledge-sharing. Future research may explore whether this knowledge-sharing is based on the commercial farms' contractual obligations to the State, to gauge whether small farmers will have access to the knowledge base in the long-term. Additionally, farmer education needs to be prioritized: farmers skill set must be expanded to include understanding the importance of financial planning, management practices and regulatory changes in making their business successful.

IV. Access to Credit

The commercial farms are managed and maintained by private companies that fund their

daily activities as well as their research and development needs. For small farmers, the financial circumstances are much more delicate. As discussed, the Agricultural Development Bank (ADB) has shown steady commitment to providing substantial support to this sub-sector. The smaller scale of their work means relatively higher transaction costs and increased risk premiums. In comparison to the large farms, they are more asset-poor and less willing to take risks with their already limited asset base, which is what the new technological landscape requires them to do to be financially viable. However, it is notable that the ADB has de-linked land tenure from acquiring loans as this has been a longstanding obstacle for small farmer development.

V. Market Access

The state marketing company is clearly implicated in each sub-sector. Their push to involve not only the commercial farms but also the small farmers in the commodity value chain model is commendable. It suggests the State is investing time and resources to providing small farmers with the knowledge and training they need to engage with agriculture outside of their villages. The State supports the idea that they have the capacity to improve T&T's regional and international competitiveness. Additionally, the introduction of information technology through the National Agricultural Market Information System (NAMIS) means that farmers can readily access pricing information, production data, food sector reports, a buyers and sellers forum to market their items directly, and a document repository, not to mention easy access to Namdevco staff.

Additionally, Namdevco has promoted partnerships between small farmers and agribusinesses. This essentially is in the form of contractual agreements where a reference price is agreed upon, and farmer output must meet some predetermined standard. This has the effect of formalizing small farmer participation in the commodity value chain. They can increase their market orientation, see agriculture as a viable business, develop their negotiation skills and their leverage and

in essence more easily adopt market-driven technologies.

Barraclough and Utting (1987) have said that progress cannot occur without parallel changes between the two sub-sectors, and it appears that the State has taken serious steps to find ways to help commercial farms and small farms advance together. The fact that model farms are playing a role in providing training for small farmers to educate them about agricultural best practices is an example of the favorable interaction between these two sectors. At the same time, “technological change is not a panacea and should not be regarded as the solution to all small farmer problems” (Sanders and Johnson, 1982: 315). Many small farmers do not work on ideal land – for example, flat, well-irrigated areas with fertile soils. Poor soils may reduce the viability and profitability of some technologies (Ruthenberg, 1980). This is why farmers need technology as just a part of an overall package of policy measures. Such a package necessarily needs provisions like price supports, credit support for diversification, and specific extension support to ensure that farmers are using appropriate and informed farming methods (Sanders and Johnson 1982).

VI. Regional and international implications of T&T as a case study

The Caribbean region has for a long time engaged in regional trade liberalization and other forms of economic cooperation, as well as the promotion of mutual political interests. This cooperation has evolved from a free trade area to a customs union, to efforts to create a single market and economy. In many ways, this has benefited the region, especially because free trade areas have been multiplying elsewhere. However, there are limitations to trading options between neighboring small island states; after all, neither T&T nor the Caribbean region exist in isolation from the rest of the world. So, the success of regional cooperation will ultimately have to be judged by the region’s impact on the overall competitiveness of its members relative to the rest of the world (Briguglio, Persaud, and Stern, 2006). As one of the pioneers of this agricultural model in the

Caribbean region, whatever achievements Trinidad and Tobago may make will likely be replicated in other islands to boost regional food security and competitiveness. Of course, resource endowments and opportunities to transform the agricultural industry differs amongst countries, so each country would have to identify their own combination of agricultural and economic models that accommodate both their domestic and export needs. And while certain historically preferential agro-items are losing their advantage on international markets, this may be an opportunity for the Caribbean region to take a harder look at their industries and find ways to make other commodities competitive (Briguglio, Persaud, and Stern, 2006).

VII. Additional questions for further study

A question that was difficult to answer during the research process was how the State was able to find a balance to decide how to divide resources between commercial farms and small farmers, and what level of investments should be made for each sub-sector. As said before, the CLFP is still in its initial phases, and many of the planned farms do not yet even exist. Barraclough and Utting (1987) show that “the sum of small investments by countless peasant producers may turn out to be as crucial for food security and future growth as are large projects financed by the State or other sources.” The hope is that this will help inform the government on how to decide future investments. In essence, the State will need to continually and consistently find ways to support both the small farm sector and the commercial farms for the long-term viability of both sectors. It is the sum of the successes of the two sectors that will determine how far T&T can carry out its food security goals.

There are a number of scenarios that could describe T&T’s agricultural sector and food security ambitions in the long term. For example, further analysis of T&T’s food prices over the next decade or so could show that the increased food items supplied by the CLFs have effectively

lowered prices, which would decrease T&T's food import bill, and allow the population greater access to food. But an unchecked increase in food supply most likely would mean market saturation. So while consumers would benefit, small farmers would not. So, further long-term exploration of agriculture in T&T could see reduced small farmer incomes, if there is no consistent State support for small farmers, providing them with training to improve their techniques and opportunities to engage in a range of markets. The result may be that they become further marginalized. It is important to point out that this research presents only an introductory documentation of the interaction between the two farming sectors, and that further exploration over the long term is necessary to more deeply perceive how the two affect each other and affect T&T's food security.

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Appendix

I. Data Collection Methods

Data Type	Format	Source	Reason/Data Set
Quantitative Data	Tables, charts, graphs	Central Statistical Office	To retrieve secondary data for the purpose of comparison and analysis, such as labor force statistics, quantity and size of land holdings, annual productivity, food prices, and food price inflation, import and export statistics, domestic cereal production
Quantitative Data	Tables, charts, graphs	Trinidad and Tobago Ministry of Food Production, Land and Marine Affairs	Food items marked for increased local production
Quantitative Data	Tables, charts, graphs	Food and Agriculture Organization (FAO)	To retrieve secondary data for the purpose of comparison and analysis, such as: crop production statistics; cereal production; T&T food import and export statistics including country of origin and destination
Quantitative Data	Tables, charts, graphs	United Nations (UN)	Statistics related to the Millennium Development Goals, such as poverty statistics, dietary energy supply and consumption, etc
Quantitative Data	Tables, charts, graphs	World Health Organization (WHO)	Health statistics related to obesity and non-communicable illnesses that have increased in prevalence due to increased nutrient-poor diets in the Caribbean region
Quantitative Data	Tables, charts, graphs	Pan-American Health Organization (PAHO)	Health statistics related to obesity and non-communicable illnesses that have increased in prevalence due to increased nutrient-poor diets in the Caribbean region
Quantitative Data	Tables, charts, graphs	International Monetary Fund (IMF)	Oil production statistics, sector employment figures

Data Type	Format	Source	Reason/Data Set
Quantitative Data / Qualitative Data	Informal survey	Consumers at open-air market in Scarborough, Tobago (about 3 to 5 consumers during each visit to the market, but no more than 10 in total)	To get anecdotal feedback about what people are buying and why, to see to what degree availability, price, personal preference etc may affect buying choice
Qualitative Data	Structured interview; either face-to-face or via email; questions emailed before-hand	PCS Nitrogen Administrator, in Point Lisas, Trinidad	To gain feedback of successes at model farm; to gain sense of challenges being the model farm/structural template for other farms; to have feedback from a person who is charged with putting the government's mandates into a real setting; to get responses about how farmers have been responding to the training; to get a sense of the relationship between farmers and PCS Nitrogen post-training; sense of how administrator understands the role of PCS Nitrogen and other farms or future large farms in the country's and the Caribbean region's food security - specifically, effect on prices, food availability, employment; sense of government support financially and for the future (sustainability and longevity of the agri projects)
Qualitative Data	Structured interview; either face-to-face or via email; questions emailed before-hand	Association representing small farmers	Given the emphasis within the government's Transformation Plan, an interview with an administrator within an association developed for a group of small farmers (specific association TBD) will be useful for gaining feedback about what changes they have observed since the inception of the Plan. Questions will be open-ended and allow the individual the opportunity to speak about items outlined in the Plan, specifically (as per pg. 22 of the <i>Transformation Plan</i>): 1. provision of contract production and marketing arrangements at guaranteed prices; 2. provision of financial and technical support for the development and sustainability of the association; 3. establishment of Commodity/Industry Associations and provision of financial and technical support for the development of these industries; 4. support for entrepreneurship and establishment of formal agri-businesses; 5. support for acquisition of ownership of agro-processing, food manufacturing and marketing facilities in order to obtain greater percentage share of the sector's value chain; 6. provision of extension and training services especially to new farmers and farming communities; 7. support for sourcing of lower cost inputs and assistance with sourcing new technologies and funding

Data Type	Format	Source	Reason/Data Set
Qualitative Data	Informal/unstructured interviews with 3 to 5 small farmers	Food crop farmers in Trinidad and in Tobago (about 3 to 5 farmers)	To gain insight into farm management; what influences their decisions to plant what crops (such as government policy; association membership directive; consumer preference; personal preference; tradition/habit, etc?); what their experience has been since the establishment of the Transformation Plan
Qualitative Data	Participant Observation	Open-air market, Scarborough, Tobago	As a participant observer at the open-air food market in Scarborough, I plan to talk to some of the vendors, typically women, and to observe the kinds of foods individuals are buying. The aim of this is to get some anecdotal information regarding consumer trends, or even trends in prices for certain staple items

II. Qualitative Data Collection Tools

A. Key Informant Interviews

1. Interview Questions for Commercial Large Farm Administrator

Format: Structured interview, either face-to-face or via email based on respondent's preference/convenience. Questions will be emailed before-hand to allow the respondent time to prepare responses.

1. Which successes at ['X' farm] are you most proud of?
2. What are some of the challenges/setbacks you have encountered?
3. What is the general feedback you have received from farmers who have undergone training at the model farm?
4. How do you think the Commercial Large Farm Programme (CLFP) affects Trinidad and Tobago's ability to become and continue to be food secure in terms of employment in the agriculture industry, food prices, food availability, and food choices for consumers?
5. The CLFP is a way to promote the development of the large farm sector. How would you say that the government's agricultural Transformation Plan affects the small farm sector?
6. If you could make one suggestion to policy makers in government as to how to improve the CLFP, what would that be?

2. Interview Questions for a representative of a Farmers' Association

Format: Structured interview, either face-to-face or via email based on respondent's preference/convenience. Questions will be emailed before-hand to allow the respondent time to prepare responses.

1. What is the relationship between this farmers' association and the government?
2. What is the role of this association in supporting [type X] crop farmers?
3. What has been the impact of the Transformation Plan on the association so far?
4. What has feedback from farmers been like regarding the new government policies for small farmers under the Plan?

B. Interviews with Small Farmers

Format: Informal/unstructured conversations with 5 small farmers. The following questions are guidelines and may be altered on-site depending on willingness of the farmer to expound on his/her opinions.

1. What crops have you planted this year/last year/past few years?
2. What made you decide to plant X/Y/Z crop(s)?
3. Are you a part of a farmers' association? / What does being part of the association mean for you?
4. How do you feel about the government's agricultural transformation plan?
5. As an independent/small farmer, what are some of the changes you have noticed since the implementation of the Plan? (e.g. an increase/decrease/no change in services/loans/technology/marketing, etc.)

C. Short Survey with Consumers/ Vendors at Open-Air Market in Tobago

Format: Informal survey of 10 persons. The following questions are guidelines and may be altered on-site depending on willingness of the consumer/vendor to talk to the researcher.

[For Vendors]

1. What items have sold the most today? What are people buying the most of today?
2. Do you think that [staple crop X] is expensive? Has the price of [staple crop X] been pretty stable?

[For Consumers]

1. What did you buy today?
2. Do you think you got a good price for [item X] today?
3. What made you decide to buy [item X] here today?