



## **Current Trends in Agricultural Information Services for Farmers in Trinidad and Tobago/Caribbean**

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### **Abstract**

*At present, farmers in the Caribbean are at the dictates and vagaries of the various trade agreements and government policies. Limited by colonisation and geographic location, in order to survive from an economic standpoint, trade agreements are being signed by Caribbean countries with surrounding and relevant countries/trade blocks which may work against the best interest of farmers, especially those who produce for export markets.*

*Government resources are being committed to politically expedient policies and procedures which are often not holistic and do not take into full consideration farmer's livelihoods, food security issues and the protection of the environment. In addition, the implications of climate change, reduced water availability, production of genetically-modified crops, and the mitigation of the effects of years of "green revolution" practices on agricultural production are some of the relatively new issues to be addressed.*

*The information needs of the small farmers in this changing scenario, beyond that of merely traditional production and marketing information, should be recognised and addressed. To a large extent, authoritative, appropriate, factual information in a format and at a level that enables them to make wise pre-production, production and marketing decisions is not being made accessible to farmers.*

*This paper discusses the sources of information for the Caribbean farmer including the traditional and the relatively new sources as well as those using ICTs. An overview of the current information providers, social networking efforts as well as barriers and constraints in the utilisation of agricultural information by farmers is provided.*

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## **Background**

Trinidad and Tobago, the southernmost islands of the Caribbean, share a colonial heritage with the other West Indian countries, whether formerly French, Spanish, Dutch or British colonies. As a result, Caribbean countries are multi-ethnic, multi-lingual, multi-cultural and multi-religious. They are also fragmented by sea.

Trinidad and Tobago was a British colony and, in this paper, the countries discussed refer to the English-speaking Caribbean. These countries make up most of the Caribbean Community (CARICOM) which comprise 12 small-island states and 3 larger mainland countries<sup>1</sup>. They have, historically, been agricultural-based economies, though, in recent times, tourism has become equally important. Trinidad and Tobago, today, has an oil and gas-based economy with a declining agricultural sector. CARICOM has a population of approximately 15.7 million with 10 countries having a population of less than 300,000. The largest country is Haiti with about 9 million people and, the second largest is Jamaica with 2.8 million people (See Appendix 1).

## **Current trends in Agriculture**

Having been plantation economies, banana and sugar were the main export crops of the region, and since the 1975 Lomé Convention, have had preferential treatment for exports to the UK. With the Lomé conventions not being compatible with the World Trade Organization (WTO), the latest round of trade agreements, e.g. the EU-CARIFORUM Economic Partnership Agreement (EPA) are characterised by reduced preferential access to external markets and reciprocity. As countries attempt to produce and process agricultural products in order to gain access to markets extra-regionally, CARICOM's food import bill in 2006 was about 3 billion USD (Carmichael, Jacque, & Francis, 2009) and after the food price challenges in the last few years, may now be around 5 billion USD dollars (Jessop, 2009). WTO-complaint trade requires products to comply with, among other things, Sanitary and Phyto-Sanitary (SPS) measures, so the resultant Good Agricultural Practices (GAP) undertaken may increase the cost of production.

There are serious challenges in terms of policies and priorities when it comes to balancing agriculture for the objectives of food security, poverty alleviation and sustainable rural and environmental development. In the smaller countries, there is a decrease in land available for agriculture as alternative uses take priority. Many farmers have land tenure issues.

The current trend of economists and policy makers is to view agriculture only as a business. Politicians often toss around short-term policies to win electoral votes, so consumer welfare by way of supplying cheap food may be a priority despite negative effects on the small farmer. For the majority of small farmers in the region who produce mainly fruits, vegetables and root crops and/or rear poultry or small ruminants, farming may be seen as a chosen way of life, living in harmony with the environment.

## **Current description of farms/farmers**

The Caribbean Farmers Network (CaFAN) has reported that the average age of farmers is above 45 years, with many being over 60 years old (Greene, 2010). Agriculture is not perceived as a viable occupation for young people so few are becoming farmers. Due to low returns and changes in markets, many farmers are now working part-time as they are forced to look elsewhere for additional income. In Trinidad and Tobago, the agriculture sector is

declining, going from approximately 43,000 registered farmers in 1991 (Seereeram, 1992) to 19,051 farm holdings (Trinidad and Tobago, 2004). Of these, about 98% are small farms.

Small holding agriculture is beset by poor infrastructure, inadequate institutional support and, despite the “contribution to staple food supply, employment, environmental sustainability and cultural heritage, it has been largely neglected” (FAO, 2010). Caribbean agriculture is characterised by low productivity and is at the vagaries of natural disasters, such as, hurricanes, volcanic eruptions, floods and, more recently, drought. In addition, the implications of climate change, reduced water availability, production of genetically-modified crops, and the mitigation of the effects of years of “green revolution” practices on agricultural production are some of the relatively new issues to be addressed.

## **Methodology**

In order to gather data to describe the current situation, an informal survey, was conducted during March and April 2010 via e-mail and telephone to persons involved in agriculture in CARICOM countries (except Haiti). Responses were obtained from nine: Antigua & Barbuda, Barbados, Belize, Grenada, Jamaica, Montserrat, St. Lucia, St. Vincent and the Grenadines, and Trinidad & Tobago. Appendix 2 provides a list of the persons who responded. The following discussion provides an overview of the sources of agricultural information and the channels used, as well as on the barriers and constraints facing farmers in obtaining such.

## **Sources of Information**

Small farmers in the region rely heavily on traditional knowledge and informal meetings among themselves for farming. In Trinidad and Tobago, questions as to what to plant; what moon phase is best for sowing seeds and transplanting seedlings; and how often to rotate crops are answered by consulting Chase and McDonalds Calendars/Farmers Almanacs (Boodoo-Dhun, 2010).

Agricultural Societies in Barbados, Jamaica and Trinidad and Tobago use mainly meetings to provide information for their members. In the case of the Agricultural Society of Trinidad and Tobago (ASTT), with a membership of about 3,000 farmers within 50 or so farmers’ groups, these efforts reach less than 20% of the total farming population of about 19,000 farmers. The Jamaica Agricultural Society (JAS) acknowledges the work of CaFAN in disseminating information to farmers.

The Jagdeo Initiative, a strategy for removing constraints to the development of agriculture, identified “Weak and non-integrated information and intelligence systems” as one of ten key binding constraint on the development of Agriculture in the region (Private Sector Commission of Guyana, 2007). Countries have made efforts to address this issue. In Grenada, in recent times the Ministry has boosted its marketing capability with the recruitment of a marketing officer and a marketing and promotion project currently being implemented. In Antigua & Barbuda, no current online market info is available, though there used to be a printed document –PROMIS but this is no longer published. In St. Lucia, no online market information is available.

According to ASTT, farmers feel that some extension information is available via the Ministry of Agriculture or its website. They are aware of the National Agricultural Marketing and Development Corporation (NAMDEVCO) website but, if only few members have access to the Internet (Boodoo-Dhun, 2010), then the ability to use this medium is limited. ASTT

says that the primary source of information for farmers are the Extension officers, the second source is the Society itself, next is NAMDEVCO or the Trinidad and Tobago Agri-business Association (TTABA). ASTT communicates with farmers via regular mail and cell phone and has organised a payment package deal for farmers with one of the local providers, Digicel. The Barbados Agricultural Society (BAS) said that marketing information was not available except directly from individual buyers and sellers of produce and inputs.

### **How agricultural research institutes and universities cater to the information needs of farmers**

The University of the West Indies is a regional university with three campuses in Jamaica, Barbados, and Trinidad and Tobago. The only Faculty of Science and Agriculture, is located at St. Augustine Campus in Trinidad and Tobago. Established in 1960, the Agriculture School evolved from the Imperial College of Tropical Agriculture, a postgraduate institution for citizens of the British Commonwealth which was founded in 1924. In the 1980s and 1990s, there were outreach activities, when funding was available, whereby the Department of Extension would provide extension services for the nearby islands. However, in recent times this no longer happens on a regular basis, there is only the occasional consultancy. Factsheets for farmers on popular short crops are produced.

The Caribbean Agricultural Research and Development Institute (CARDI) serves the CARICOM region and is key institution in disseminating information. Though there is no longer a formal library service at the Trinidad and Tobago office, when it did function, about nine percent of its clientele were farmers. CARDI provides factsheets on various commodities for farmers, and though listed on their website, are available only in print (CARDI, 2010). In St. Lucia, it offers farmers tours of research plots, training and other information as requested by farmers. In Jamaica, CARDI provides information on the application of new technologies in production, processing, storage and distribution of agricultural products. CARDI does not work directly with the farmers in Montserrat.

The Ministry of Agriculture Research Division at the Central Experiment Station in Trinidad and Tobago provides services for farmers, such as, soil testing, pest/disease alerts, on farm demonstrations, and advisory services. In terms of information services, there are the usual factsheets, and videos. However, they do provide access to in-house databases on local problems. Persons can send in photos vial e-mail or cell phones and follow-up action is taken. The Research Division Library provides information services to farmers by telephone/cell phone, e-mails, fax and visits. Twenty percent of the walk-in clientele are farmers.

### **Strategies adopted by extension service providers to meet the information needs of farmers**

All CARICOM countries have government ministries responsible for agriculture and provide public agricultural extension services. Traditional farm visits are still maintained and printed material i.e. factsheets and manuals, continue to be produced and circulated.

In Trinidad and Tobago, most of the printed materials are updated and are now in digital form. A few videos have been produced. A bus was converted into a mobile learning unit and visits various districts routinely or on request. A pilot project is being planned to provide support to a group of rabbit producers using “a Virtual Extension Officer” whereby a web-based medium will be used and through e-mail interaction and the ability to upload and download information, it is expected that there would be a 24-hour turnaround time for

responding. Extension manages a Farmers' Training Centre, which has been doing face-to-face teaching for many years on various topics ranging from basic farming techniques, keeping records to fixing 2-stroke engines. There are plans to offer 3 courses online in the near future.

In Montserrat, extension visits farmers on a one-on-one basis and does on farm demonstrations. In Jamaica, the Rural Agricultural Development Authority (RADA), the extension arm of the Ministry of Agriculture, provides information for farmers using the full range of traditional methods: on farm demonstrations, field training days, demonstration plots, farm and home visits, mass media, exhibitions, printed materials, workshops and seminars (RADA, 2010). In Grenada, many crops production guides written with the educational level of farmers in mind are provided by Extension. In St. Lucia, extension provides information by way of workshops, certification programmes, technical packs and meetings. They produce radio and television programmes e.g. Agri Focus, a TV show. In St. Vincent and the Grenadines, extension provides info and training for farmers and some leaflets are posted online.

In terms of private extension in Trinidad and Tobago, companies e.g. Arawak (poultry processors or Nestlé, provide information services for farmers via visits (up to daily depending on the issue), training sessions and print e.g. quarterly newsletters attached to payslips (to ensure delivery) and posters. Cell phone calls, were reported as preferred, rather than SMS text. TTABA provides their contract farmers with training to ensure that the resultant product is what is desired.

### **Open access to agricultural extension bulletins**

There are no open access extension bulletins, however, in Trinidad and Tobago, NAMDEVCO produces a newsletter, "Green Vine" which is available online.

### **Digital diagnostic services for farmers**

Only from St. Lucia, was there confirmation that research officers use digital diagnostic services. In St. Vincent and the Grenadines, these services have been considered but not implemented.

### **How private firms/agencies disseminate product based information to farmers**

Many, if not, most farmers obtain product-based information primarily from direct interaction with private firms. In some countries, firms employ a trained agriculturist as a sales representative who advises farmers when they come in to purchase. Or they would visit farms on request or visit each farmer systematically in an area as part of a promotional project. They are invited to have input at workshops, field days, training days organised by the Ministries of Agriculture or farmers' associations/ boards.

One supplier "Caribbean Chemicals" based in Trinidad and Tobago, actively seeks out farmers in other countries in the region, e.g. Antigua and Barbuda. They answer calls, make visits to farmers, partner with the Ministry of Agriculture and other agencies to provide information and support training sessions. This company produces a 15-minute radio programme which is broadcast twice daily on two days a week for many years and used to do a television programme called "Ask the Plant Doctor" which aired once a week. The firm

claims to conduct trials on products in the local environment before promoting products to farmers.

In St. Lucia, a firm “Renwick and Co.” employs an officer who visits farmers providing them with product information, especially, of new products on the market. Other private firms have trained agriculturist as sales representative who advises farms when they come in to purchase items. In Belize, the Citrus Growers Association and the Sugar Cane Board (SCB) include private firms when conducting workshops. The SCB is embarking on a minikit programme to disseminate basic product info in packages to large numbers of farmers to yield rapid results.

### **Role of international/regional organizations in facilitating transfer of agricultural information to farmers**

In the Caribbean, the international organisations which are most active are the Technical Centre for Agricultural and Rural Co-operation ACP-EU (CTA) and the Food and Agricultural Organisation of the United Nations (FAO) and, regionally, there is the Inter-American Institute for Cooperation on Agriculture (IICA) a specialized agency which provides innovative technical cooperation to achieve sustainable agricultural development among its member states (IICA, 2010). These institutions play a major role in the development of agriculture in the region and directly or indirectly, affect the agricultural information available to farmers.

CTA is considered one of the most useful and effective institutions in disseminating information to agricultural organizations and farmers through publications and other strategies to assist in the improvement of managing information in the sector. CARDI along with CTA introduced the Question and Answer service (QAS) in 2000 in the region. Today, this service is managed by the Ministries of Agriculture in only four countries (de Freitas, 2007) – Trinidad and Tobago, Barbados, Jamaica and St Vincent and the Grenadines and through Gilbert's Agricultural & Rural Development Center (GARDC) in Antigua & Barbuda.

FAO has been enormously supportive of the farming fraternity. Many training programmes are supported by the FAO and their vast publications have been disseminated to many stakeholders of the agri-food sector. In St. Lucia, FAO was responsible for introduction of the Farmer Field School methodology. In Trinidad and Tobago, in order to get the media to produce quality agricultural information IICA along with CARDI presented awards for Excellence in Agricultural Journalism.

### **Use of Information and Communication Technologies (ICTs) by farmers**

#### ***Mobile Technology***

“In the Caribbean, most of the small island nations are above the 100% and some are over 200% mobile penetration mark” (Paul Budde Communication, 2010). This reflects that many persons have more than one cell phone. At this time, 4G/WiMAX technology is being deployed in Trinidad and Tobago.

Throughout the Caribbean, cell phones are being used by farmers to get information. In a study on use of technology by ASTT members, Boodoo-Dhun (2010) found that 100% of the farmers used cell phones. However, plans for using cell phones to disseminate information by

the government Extension services have been put on hold at this time. NAMDEVCO, in addition to call-in services, has launched an SMS texting service to disseminate prices.

In Grenada, all farmers have cell phones and SMS texting is used to provide information to them. In St. Lucia, cell phones are used by some extension officers (texting and calling) but there is no overall/formal plan in place for their use in the dissemination of information to farmers. In St. Vincent and the Grenadines, there is a project proposal to establish an SMS texting service for farmers and fisherfolk. In Jamaica, mobile phones are being fully utilized by the Ministry of Agriculture to correspond with the farmers. It is preferred due to its cost effectiveness. Cell phones are not used by the Government extension to interact with farmers in Montserrat nor Antigua & Barbuda.

Research in Trinidad and Tobago on cell phone use at the level of gender concluded that “Women in agriculture need special attention and considerations if they are to successfully use ICT's in support of their agricultural occupations...as [they] use the cell phone to help in the conduct of their triple role as producers, reproducers and community leaders. Telecommunication providers may wish to consider a special rate for small food crop producers ... to offset the costly endeavours in producing food in a very competitive environment” (Dolly, 2006).

### ***Internet***

According to Internet World Stats CARICOM has an overall 23.3% Internet penetration rate (without Haiti, 40.7%). The nations of St. Kitts and Nevis, has the highest penetration rates of 87.2% and Suriname the lowest at 10.2% (See Appendix 1).

Use of information technology is affected by access, therefore, in countries where there is low Internet penetration, farmers' ability to access available resources would be limited. Often, rural areas are the last to get connected, and modern WiFi/WiMAX systems are considered high cost.

Many of the Ministries of Agriculture, throughout the region, have websites or are part of an overall Government website. Several sites are in the process of being redesigned, moving from static to more dynamic/interactive styles. One issue e.g. is that forms are available but often not for online submission. Another problem is that of maintaining and keeping the websites up-to-date.

NAMDEVCO, in Trinidad and Tobago, provides Internet kiosks and digital display boards at farmers markets. It publishes traditional print and newspaper info as well as maintains an up-to-date website with market data. The Agricultural Development Bank in Trinidad and Tobago, has posted on their website, information regarding over 60 cost of production models for crops, livestock, fishing and agro-processing.

St. Lucia has plans to make market information online. St. Vincent and the Grenadines is in the process of implementing an Agri-Portal – One-Stop-Shop for Agri-Information including a National Agricultural Market Information System (NAMIS). In Jamaica, however, Internet access is minimal with limited knowledge of the technology and inadequate resources are the main impediments. In Montserrat and Antigua & Barbuda, there are no Government online services or websites dealing with agricultural issues.

A Directory of Caribbean Agricultural Information Sources 2009 published by the Agricultural Librarians Group of the Association of Caribbean University Research and Institutional Libraries is available online.

### ***Social Networking***

Social networking in Caribbean agriculture efforts are few. There is a highly successful listserv, FAO-Carib-Agri which has many subscribers including farmers. ASTT has a Facebook page. BAS acknowledged that farmers were familiar with social networking tools. In Montserrat some of the younger farmers use social networking mostly for setting up sales and socializing. The Agricultural Librarians Network of Trinidad and Tobago (ALINTT) has started a blog: Caribbean Librarians for Agriculture to highlight online information resources.

### **Barriers and constraints in utilization of agricultural information by farmers**

#### ***Low literacy /Low educational level***

“Literacy rates in the Caribbean have decreased, twenty years ago, figures show most islands had a mid-90 or higher literacy rate but in the late 1980s and 1990s, literacy rates slipped to the 80 and 70 percentile” (Adams, 2005). As noted earlier, the average farmer is aged over 50 years, often living under rural conditions with possibly limited schooling. One solution tried in Belize is that high school students are brought in and taught so they can go home to their parents and explain the concepts.

#### ***Computer literacy and affordability***

Personal computers became popular in the early 1980s; the Web in the 1990s; information technology and Internet access have only recently become available and affordable. Chances of the farmer being unfamiliar with computer technology or even owning one is quite high.

#### ***Information literacy levels***

Information literacy is “knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner” (CILIP, 2010). Often, farmers’ children will assist in researching issues that might arise. Many persons, who use computers for social reasons, are not necessarily familiar with resources in a particular field or can consistently find info at the level needed effectively and efficiently. De Freitas says that “users need to become more “information literate” so that they can be empowered to successfully participate in the development process” (de Freitas, 2007). Boodoo-Dhun (2010), in a survey of ASTT members found that 97.3% of persons would be willing to be trained and attend seminars to learn about new possibilities that exist over the Internet.

#### ***Information Services – access and coverage***

Farmers’ opinion of the services as reflected by comments from the BAS and ASTT is that the services are ad hoc and not organised. It was expressed that information providers do not understand agriculture and farming well enough to service them properly and that “anyone” could produce info for farmers. It was acknowledged that some persons tend to guard information jealously.

Some respondents commented that farmers were not willing to change, innovate or try new techniques. But investment in farming is risky for the farmer, especially those at low income levels where they may not have leeway, after expenditure on basic needs. For this reason, it may be difficult to evaluate the effect of access to information.

CaFAN views rapid changes in ICTs as an aid to transforming agriculture from subsistence to modern. Though farmers need information, there does not appear to be a demand for it. Also agricultural information is available but not necessarily accessible. The limitations of access include not knowing what is available, how to access, affordability of access, in some cases, the ability to understand/use the information.

There is also the issue of coverage, for example, in Trinidad and Tobago, on a formal basis, only 3,000 or so farmers are in the Ministry's database and the ASTT claim a membership of a similar amount, even though there are 19,000 farmers. This begs the question - what strategies could be put in place to reach those who are "off the radar"?

## **Conclusion**

At present, farmers in the Caribbean are at the dictates and vagaries of the multi/bilateral trade agreements and government policies which may work against their best interest, especially those who produce for export markets. Government resources are being committed to politically expedient policies and procedures which are often not holistic and do not take into full consideration farmers' livelihoods, food security issues and the protection of the environment.

Throughout CARICOM, the agriculture sector is experiencing many and varied problems, socially, economically and physically. However, there is the consciousness that agricultural information is important. From the discussion above, the technocrats surveyed indicate that agricultural information is provided albeit through different channels and formats. Government ministries, research institutions, international and regional agricultural organisations are all supporting the generation or providing information for persons in the agricultural sector including farmers.

With 100-200% mobile telephony penetration and an average 40.7% Internet penetration, the region has started using ICTs to disseminate agricultural information. This trend holds for most countries and if not, there are plans to do so in the near future. Increasing use of cell phones, especially, SMS texting and is being implemented. The trend of using social networking is in its early stages.

However, de Freitas (2006) noted that "lack of appropriate strategies and implementation plans in information and communication to produce information in a frequent and timely fashion" is a constraint.

Despite the decline in farming and the aging population, farmers have major role to play in terms of food security, managing the environment and natural resources of countries. The information needs of the small farmers in this changing scenario, beyond that of merely traditional production and marketing information, should be recognised and addressed. To some extent, authoritative, appropriate, factual information in a format and at a level that enables them to make wise pre-production, production and marketing decisions is not being accessed by farmers.

Further research is needed as to how best to reach all farmers and provide them with the information that they need not necessarily what we think they need.

## References

- Adams, A. (2005). Quality education: Key to economic survival, duh! Retrieved April 30, 2010, from <http://www.caribbeannetnews.com/2005/12/21/economic.shtml>
- Boodoo-Dhun, K. (2010). *The role of communication in an era of globalization: A study of farmers' use of technology of the Agricultural Society of Trinidad and Tobago*. MBA Final Project, Arthur Lok Jack Graduate School of Business, The University of the West Indies, Trinidad and Tobago.
- Caribbean Agricultural Research and Development Institute (CARDI). (2010). Factsheets Retrieved April 30, 2010, from <http://www.cardi.org/default.asp?id=40>
- Carmichael, C., Jacque, A., & Francis, D. (2009). *Investing in Food and Nutrition Security Identifying Potential Investment Opportunities in the Agriculture and Food Industries in CARICOM*. Port-of-Spain, Trinidad and Tobago: Inter-American Institute for Cooperation in the Americas (IICA).
- Chartered Institute of Library and Information Professionals (CILIP). (2010). Information literacy: definition Retrieved April 30, 2010, from <http://www.cilip.org.uk/get-involved/advocacy/learning/information-literacy/pages/definition.aspx>
- de Freitas, C. (2007). Experiences in Developing Customised Information Services for a Competitive Agricultural Sector: the case of the Caribbean Question and Answer Service (QAS). In C. Peltier-Davis & S. Renwick (Eds.), *Caribbean Libraries in the 21<sup>st</sup> Century: Changes, Challenges, and Choices* (pp. 157-169). Medford, NJ: InfoToday.
- Dolly, D. (2006). Testing the use of Mobile Cell Phones among a Select Group of Female and Male Farmers in Trinidad and Tobago: final report. Trinidad and Tobago: The University of the West Indies.
- Food and Agricultural Organisation (FAO). (2010). Thirty-First Regional Conference for Latin America and The Caribbean, Panama City, Panama, 26 to 30 April 2010- Implementation of the Programme of Work and Budget 2010-11 and Areas of Priority Action for the Region for the following Biennium Retrieved April 19, 2010, from <http://www.fao.org/docrep/meeting/018/k7627E.pdf>
- Greene, J. (2010). CaFAN Youth in Agriculture Regional Workshop Retrieved April 10, 2010, from [http://www.caribbeanfarmers.org/index.php?option=com\\_content&task=view&id=102&Itemid=73](http://www.caribbeanfarmers.org/index.php?option=com_content&task=view&id=102&Itemid=73)
- Inter-American Institute for Cooperation on Agriculture (IICA). (2010). About IICA Retrieved April 30, 2010, from <http://www.iica.int/Eng/foinstitucional/Pages/default.aspx>
- Internet World Statistics. (2010). Internet Usage Statistics for the Caribbean Retrieved April 30, 2010, from <http://www.internetworldstats.com/stats2.htm>
- Jessop, D. (2009, March 27). Caribbean Agriculture and Food Security.
- Paul Budde Communication. (2010). Latin American Mobile Voice and Mobile Data Market Retrieved April 30, 2010, from <http://www.budde.com.au/Research/Latin-American-Mobile-Voice-and-Mobile-Data-Market.html>
- Private Sector Commission of Guyana. (2007). The Jagdeo Initiative. *Technical Information Bulletin*(No. 8).
- Rural Agricultural Development Authority (RADA). (2010). Services offered Retrieved April 30, 2010, from [http://www.rada.gov.jm/site\\_information.php?ID=139](http://www.rada.gov.jm/site_information.php?ID=139)
- Seereeram, A. (1992). The Farmers Registration Programme of the Ministry of Food Production and Marine Exploitation: a status report. Trinidad and Tobago: Central Statistical Office.

Trinidad and Tobago, C. S. O. (2004). Table 2.1 – Number of Private Holders by Area of Residence, Gender and Age Group Retrieved April 19, 2010, from <http://cso.gov.tt/files/cms/TT2.1.pdf>

## EndNotes

1 The members of CARICOM are as follows:

Antigua & Barbuda	Jamaica
Barbados	Montserrat
Bahamas, The	St. Kitts and Nevis
Belize	St. Lucia
Dominica	St. Vincent and the Grenadines
Grenada	Suriname
Guyana	Trinidad and Tobago
Haiti	

For this paper, as Haiti recently became a member and the major historical, social and cultural differences that exist, they are not included in the discussions.

### Appendix 1 - Population, Internet Use, % Penetration, and Growth of Internet Use (2000-2009) for CARICOM Countries as at December 31, 2009

Country	Population	Users	% Penetration	Growth (2000-2009)
Antigua & Barbuda	85,632	65,500	75.9	1200.0%
Bahamas, The	307,552	142,000	46.2	984.0%
Barbados	284,589	188,000	66.1	3033.3%
Belize	307,899	60,000	19.5	300.0%
Dominica,	72,660	27,500	37.8	1275.0%
Grenada	90,739	27,000	29.8	558.50%
Guyana	752,940	205,000	27.2	6733.0%
Haiti	9,035,536	1,000,000	11.1	16,566.7%
Jamaica	2,825,928	1,540,000	54.5	2466.7%
Montserrat	5,097	1,200	23.5	0.0%
St. Kitts and Nevis	40,131	35,000	87.2	1650.0%
St. Lucia	160,267	110,000	68.6	3566.7%
St. Vincent and the Grenadines	104,574	66,000	63.4	1785.7%
Suriname	481,267	50,000	10.4	327.4%
Trinidad and Tobago	1,229,953	227,000	27.3	127.0%
<b>Total</b>	<b>15,784,764</b>	<b>3,743,700</b>	<b>23.7</b>	
<b>Total (without Haiti)</b>	<b>6,749,228</b>	<b>2,743,700</b>	<b>40.7</b>	

Note. The data is adapted from (Internet World Statistics, 2010). Copyright © 2010, Miniwatts Marketing Group. All rights reserved.

## Appendix 2 – List of persons surveyed

<b>Name</b>	<b>Post</b>	<b>Institution</b>	<b>Country</b>	<b>Method</b>
Mohammed Hallim	Vice-President	Agricultural Society of T&T	T&T	Telephone
Pauline Dowlath	Director, Extension, Training and Information Services	Ministry of Agriculture, Land and Marine Resources	T&T	Telephone
Wayne Ganpat	Deputy Director, Extension, Training and Information Services	Ministry of Agriculture, Land and Marine Resources	T&T	
Alvin Bedassie	Sales Representative	Caribbean Chemicals	T&T	Telephone
Elbert Johnson	Chief Executive Officer	National Agricultural Marketing and Development Company (NAMDEVCO)	T&T	Telephone
Robin Phillip	Director or Marketing and Public Relations	Arawak (Poultry) Co.	T&T	Telephone
Cynthra Persad	Director or Research	Research Division, Ministry of Agriculture, Land and Marine Resources	T&T	Telephone
Aman Hosein	Manager, Agri. Services	Nestlé	T&T	Telephone
Vassell Stewart	Chief Executive Officer	Trinidad and Tobago Agri-Business Association (TTABA)	T&T	Telephone
Sarojini Ragbir	Communications Coordinator	Faculty of Science and Agriculture, UWI	T&T	Telephone
Majeed Mohammed	Senior Lecturer	Faculty of Science and Agriculture, UWI	T&T	Telephone
Sarah Maharaj	Librarian	Research Division, Ministry of Agriculture, Trinidad and Tobago	T&T	Telephone
Claudette de Freitas	Information Manager	Caribbean Agricultural Research and Development Institute (CARDI)	T&T	Interview
Earlene Sambury	Information Officer	Agricultural Development Bank, Trinidad and Tobago	T&T	Interview
Lisa Martinez		FAO – TT	T&T	E-mail
Jennifer Maynard	Director of Agriculture	Ministry of Agriculture	Antigua & Barbuda	E-mail
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